KMC CONTROLS
In touch.

Catalog

Catalog

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KMC Controls
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SP-071E

How to Maximize Using this Catalog!

Tips for Print and On-line Versions

Use one of the following references or lists to locate information about a particular product:

- **Contents**—The table of contents lists products alphabetically by application.
- **Index**—All catalogued KMC Controls model/part numbers as well as various topics are listed alphabetically.
- **Reference**—This section contains a series of selection guides and other material (abbreviations, codes, definitions, and sample networks) to guide the purchaser to the correct product model. This section contains a series of selection and sizing guides. Formulas, conversion tables, and other useful information are also included for reference. The Pneumatic and Electronic Cross-Reference is an aid in the substitution and replacement of discontinued and competitive devices, but final determination of replacement should include evaluation of specifications and dimension of the competitive device and its application.

Sections and products by section are in alphabetical order wherever feasible. This includes categories within sections (e.g., Actuator Accessories and Repair Parts, Actuators, Enclosures, Fan Speed and Fan Coil Unit Controls) and product model numbers within their respective sections (e.g., CME-1000, CME-2001/2002, CME-2003).

Cross-References (SEE ALSO) refer to related sections.

Tips for On-line Navigation

This catalog is available in printed and online formats. **In the Adobe® Acrobat® PDF version of this catalog**, the following items have (blue) **hyperlinks** to their referred pages:

- Contents topics (lines)
- Index page numbers
- Cross-reference (SEE ALSO) italicized references

Click on a hyperlink to easily go to that page. In the PDF files, the **bookmarks** on the left of the screen also offer easy navigation to the relevant sections and the **search function** (Ctrl key + F) can find appearances of entered text.

Contents

Introduction

Finding Information in this Catalog

Tips for Print and On-line Versions

Use one of the following references or lists to locate information about a particular product:

- **Contents**—The table of contents lists all products alphabetically by application. The sections, however, are listed "oldest" technology to "newest" technology, with pneumatic products followed by analog electronic products and then digital BACnet products.
- **Index**—All catalogued KMC Controls model/part numbers as well as various topics are listed alphabetically.
- **Reference**—This section contains a series of selection guides and other material (abbreviations, codes, definitions, and sample networks) to guide the purchaser to the correct product model. This section contains a series of selection and sizing guides. Formulas, conversion tables, and other useful information are also included for reference. The Pneumatic and Electronic Cross-Reference is an aid in the substitution and replacement of discontinued and competitive devices, but final determination of replacement should include evaluation of specifications and dimension of the competitive device and its application.

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Cross-References (SEE ALSO) refer to related sections.

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SEE ALSO: **The interactive *Product Selection Tools* for actuators and valves in the Products section of the *KMC web site*.**

SEE ALSO: **The interactive *KMC Desktop* in the Products section of the *KMC Partner web site* for quick and easy downloading of brochures, data sheets, installation guides, and other information.**

Products in this Catalog

Electronic and pneumatic controls for heating, air conditioning, and ventilation shown in this catalog are available worldwide from KMC Controls authorized wholesalers. System distributors can also sell digital BACnet products.

Although every effort is made to make the information in this catalog accurate, not all models listed or implied by a chart may be available. KMC reserves the right to discontinue models at any time or change specifications or designs without notice and without incurring obligation. KMC further reserves the right to substitute a similar device for a device not in stock or no longer sold by the company.

Still . . . Made in the U.S.A.

We manufacture exclusively within the United States of America. This includes our pneumatic, analog electronic, and DDC (direct digital control) products and related software with the exception of those listed below. The vast majority of our manufacturing takes place at our corporate headquarters in Indiana. Some pneumatic products are assembled in Virginia from components produced in Indiana. (See more on **http://www.kmccontrols.com/products/ARRAFunding.aspx**.)

Our manufacturing includes circuit board assembly, injection molding of components and cases, and electronic assembly, mechanical assembly, and final product assembly. A 5-minute video, available on the KMC web site (**http://www.kmccontrols.com/default.aspx?id=american**), provides some visual insight into some aspects of our production processes.

As a convenience tour customers, KMC Controls supplies some products on a "pass-through" arrangement from other manufacturers. **We cannot claim Buy American conformance or non-conformance for these catalog products. The following product series are included in this category:**

- CTE-3000 Series Limit Controls
- HMO-4532 Temp. Sensor Thermal Compound
- HMO-4534/4544 Temp. Sensor Wells
- IEI-1001 LCD Display Module
- MEP-3000/3500 Series Actuators
- MEP-425/455 Series Actuators
- REE-2004 Solid State Relay
- REE-3200 Series Relays
- SAE-1000/1100 Series CO_2 and CO Sensors
- STE-1400 Series Temperature Sensors
- TPE-1400 Series Pressure Transducers
- VEZ-41/42/43/44 Series Zone Valves
- VFZ Series Valve Body Replacements
- XEE-6000 Series Transformers

About KMC Controls

KMC Controls (formerly Kreuter Manufacturing Company) has been designing and manufacturing building automation solutions, HVAC control products, and energy management solutions since 1970. KMC remains the only privately held US controls manufacturer with a full line of digital, electronic, and pneumatic products in the USA.

KMC is dedicated to developing and maintaining controlled processes to competitively service our world-wide customer base, with building control products that meet government regulations, international standards, and customers requirements. KMC has an ISO 9001:2000 registered quality system in place. We meet the highest quality standards and can still quickly make changes dictated by the needs of the market. Our quality and quick response have led to reliable production of a complete line of pneumatic, analog electronic, and digital controls.

KMC maintains regional sales offices throughout the U.S. and distributes its solutions and products through value-added, authorized installing contractors, wholesalers, and OEMs throughout North America as well as authorized distributors worldwide.

KMC's intellectual property includes dozens of patents, but even the very best widgets would be worthless without proper support. Our Customer Service representatives excel at establishing personal relationships with their assigned customers. They know our product

lines, have real-time inventory information at their fingertips, and can advise on product cross-reference information as well as all shipping options. The responsiveness of our team is unsurpassed, and they are available via toll-free telephone/fax and email.

For technical support, authorized installing contractors have unlimited free access to our knowledgeable team of Technical Support representatives from 8 AM to 8 PM (Eastern Standard Time) every business day. Our representatives are experienced in field operations, are fully trained in KMC product lines, have a wealth of product and system information available to them, and have ready access to design and software engineers as needed.

KMC Web Site and Publications

The purpose of the award-winning **www.kmccontrols.com** is to support you, our valued partners in your KMC-related endeavors. Once you log in, general and product-specific information will be at your fingertips.

To get the most from the site, log in using your current user name and password. Your rep login determines what information you can access. The "Portal" button will allow you to go to the "Manage Account" page where you can edit your profile and specify preferences for receiving automatic information updates.

Most product information is available through the "Products" button or the Product Search field. In the Product Wizard, our product line has been organized into major product categories and subcategories. Follow these branches to find specific products. You may also enter model numbers or key words into the search box for immediate access to the specific product you seek. While the public can view basic product information, you must be logged in to see product pricing and other associated information.

The "Support > Downloads" button offers access to numerous files that are organized into Marketing/Sales Information and Technical Support information. You can also download and print groups of data sheets from the catalog files.

Besides product data, you can also find information about KMC as a company, contacts, training, sales tools, upcoming events, press releases, and other information.

We are constantly striving to improve the quality of the information we provide. This quest for quality is reflected in the web site and a number of our publications having won awards for publication excellence in recent years.

SEE ALSO: **The interactive *KMC Desktop* in the Products section of the *KMC Partner web site* for quick and easy downloading of brochures, data sheets, installation guides, and other information.**

KMC Terms and Conditions of Sale

Contact Information

Customer Service

- Phone: 866.302.4562
- Fax: 800.276.5555
- Email: customerservice@kmccontrols.com

Technical Support

- Phone: 866.303.4562
- Fax: 800.276.5555

Standard Terms & Conditions of Sale

All sales by KMC Controls, Inc. ("KMC") to Customer are governed by and subject to the following Standard Terms & Conditions of Sale. "Customer" refers to the original purchaser of KMC products. These Standard Terms & Conditions of Sale form a binding agreement between KMC and Customer, and this agreement incorporates by reference all additional terms and conditions stated in quotations, pricelists, invoices, order acknowledgements and other master agreements and documentation furnished by KMC to Customer. Any proposal for additional or different terms, or any attempt by Customer to vary in any degree any of the terms of these Standard Terms & Conditions of Sale shall be rejected by KMC. These Standard Terms & Conditions of Sale may be amended from time to time at the sole and exclusive discretion of KMC without any obligation to notify customer of such changes. All such changes shall be effective on the earlier of (i) written notice of such change(s) to Customer, or (ii) such change(s) as modified on the Standard Terms & Conditions of Sale published on KMC's website. Any changes to the KMC Standard Terms & Conditions of Sale are binding and enforceable only if made in writing and signed by an authorized officer of KMC. If Customer has not otherwise agreed to these terms, Customer's acceptance of delivery of, or full or partial payment for, the products will constitute Customer's acceptance of these Standard Terms & Conditions.

Any cause of action arising from these Standard Terms & Conditions of Sale, or breach hereof, must be commenced within thirty (30) calendar days after the cause of action occurs, and in any event within one (1) year from the delivery of the product to Customer, provided that this limitation shall not apply to actions by KMC to recover the purchase price of products sold hereunder. These Standard Terms & Conditions of Sale and any description in KMC's price (listing) manual constitute a complete and exclusive statement of the terms and conditions of the sale of the products by KMC to Customer. There are no other promises, conditions, understandings, representations or warranties. No waiver of any right will be effective against KMC unless supported by consideration and expressly stated in writing signed by a duly authorized officer of KMC. The failure of KMC to enforce any right will not be construed as a waiver of KMC's right to performance in the future. Customer may not assign any right to, or delegate any performance owed under, these Terms & Conditions of Sale without the written consent of an authorized officer of KMC. KMC shall have the right to credit any sums which may now or hereafter be owed by KMC to Customer toward the payment of any monies that may become due by KMC hereunder.

Customer is encouraged to visit the KMC website at www.kmccontrols.com to obtain the current version of the Standard Terms & Conditions of Sale.

Orders; Acknowledgements

Any purchase order form may be used by Customer to send an order to KMC. Orders may be submitted to KMC via email, facsimile or US Mail. Partial orders will be invoiced as shipped. Customer should specify at time of order if partial shipments are unacceptable. KMC will issue Customer, via email or facsimile, an order acknowledgement for each purchase order received by KMC from Customer, and the order acknowledgement will provide the anticipated ship date.

Non-Cancellable Non-Returnable Items

Some items have been designated as "NCNR" for Non-Cancellable and Non-Returnable. KMC reserves the right to designate or indesignate products as "NCNR."

Cancellation/Restocking Fee

Any order over $25,000 is subject to a cancellation fee at KMC's discretion based on product mix.

- Cancellation eleven (11) or more days prior to scheduled ship date will be assessed a fee equal to 25% of the items total value.
- Cancellation ten (10) days or less prior to scheduled ship date will be assessed a fee equal to 40% of the items total value.

In addition, standard restocking fees may apply for order line items that are cancelled per the above schedule.

Storage Fee

Storage fees will be assessed to all orders in which KMC must hold a shipment more than five (5) business days pending KMC's receipt of incomplete information from the Customer such as delivery address and shipping method.

- Orders with a total value of less than $10,000 will be assessed a fee of $50.00 per day.
- Orders with a total value of more than $10,000 will be assess a fee of $100.00 per day.

Expedited Delivery and Fee

An order with a requested ship date less than the normal lead time will be assessed an Expedite Fee. The Expedite Fee will be equal to the greater of $25.00 Net or 5% of the net value of the expedited products.

An order will only be expedited if:

- Customer account is in good standing
- Order is received by 12:30 PM Eastern Time for same day shipment; and
- Customer Service agrees that the products can be expedited

If the products are not in stock and cannot be shipped on the requested ship date, KMC shall issue notification of the anticipated ship date to the Customer. The Expedite Fee will apply if the Customer's requested ship date is earlier than five (5) business days after receipt of the order by KMC.

Advanced warranty replacement parts will not be assessed the Expedite Fee. The RMA Number assigned by Customer Service must be specified on the purchase order.

Minimum Order

KMC's minimum order is $100.00 Net. A handling fee of $30 will be applied to any orders under this Net value.

COD Fee

A COD Fee of $25.00 will be assessed to any shipment requiring Cash On Delivery. COD orders cannot be expedited and may require an extension of the normal lead time for shipment.

Shipping

All products shall be shipped *F.O.B. Point of Origin and/or Vendor's Facility* (dependent upon the location of the products at the time of loading for shipment to Customer) by the method of shipment and routing determined by KMC, except as otherwise specifically agreed in writing by KMC and Customer. Shipments are subject to the standard limitations on loss or liability imposed by the carrier, except to the extent Customer submits an advance written request for higher loss coverage as available from the carrier at Customer's cost.

Providing inaccurate shipping account numbers to KMC will result in a separate billing of your freight and a $50 penalty fee.

For shipments via truck line, damage claims must be handled directly with the truck line. Customer shall be responsible for any and all claims for damage during truck line shipment.

Customer shall inspect ALL shipments immediately upon receipt for damages caused during shipment, and Customer shall notify both the carrier and KMC of any damage immediately. Product furnished by KMC in all events will be deemed to have been accepted by Customer within thirty (30) days after receipt by Customer. Any claim for credits and/or charge backs related to damage during shipment will be considered by KMC only if (a) received by KMC within thirty (30) days of the shipping date and (b) submitted to KMC in writing with a complete description identifying the specific product and the reason that Customer is claiming a credit and/or chargeback for damage during shipment. Credits and/or charge backs may be denied by KMC in KMC's sole discretion.

Credit Terms; Credit Hold

Terms of sale are determined by KMC. Terms begin the date of the shipment, which is also the invoice date. All invoices paid after the due date listed on the invoice will be assessed the late payment service charge the lesser of eighteen percent (18%) per annum or the maximum amount allowed by applicable law. If, in the sole discretion of KMC, the financial condition of Customer at the time products are ready for shipment does not justify the terms specified, KMC reserves the right to change the terms or to require full or partial payment in advance of shipment. KMC may, at any time, (1) suspend performance of any order, or (2) require payment in cash, security or other adequate assurances satisfactory to KMC in advance of KMC's shipment; all without further obligation to Customer. All sales are subject to the approval of KMC's credit department. Service charges are not optional. Any unpaid invoice will result in Customer being placed on credit hold, as determined by KMC. Orders will not be released to production if Customer's account is on credit hold.

Returned Check Fee

A Returned Check Fee will be charged to accounts when a check is returned to KMC Controls for non-payment by the issuing bank. The returned check fee is $50 and is charged for each returned check. KMC Controls reserves the right to refuse to accept checks as payment and may, at our discretion, accept only credit card or COD payments.

When a check is returned, the account is still considered due and is subject to Credit Hold under the policy stated above.

Returns Policy

This returns policy applies to all products returned to KMC from Customers in the United States or Canada within the respective warranty period applicable to the returned product. The warranty period begins on the date stated on the product date code.

NOTE: In markets outside of the United States and Canada, the Company reserves the right to further limit our factory warranty coverage due to the cost of trans-shipment of warranty goods between countries. Customers in these countries should consult directly with KMC to establish the warranty policies that will be in effect in their markets.

Products may be returned to KMC by contacting your Customer Service Representative and requesting a Return Material Authorization (RMA). All products returned to KMC without RMAs will be rejected. Customer will be provided with a RMA number and Customer must include this assigned RMA number on the shipping label of the product to be returned. Products should be returned (transportation prepaid) to:

KMC Controls
Attn: Returns
19514 Industrial Drive
New Paris, IN 46553

Returned products must be adequately packaged to protect the products from damage during transportation. This will enable KMC to more accurately evaluate returned products and continuously achieve quality improvement. KMC will not be responsible for any damage to returned product resulting from improper packaging or damage during return shipment to KMC. Customer shall be solely responsible for the packaging and protection of returned product during return shipment to KMC.

When returned products are received, KMC will notify Customer of KMC's receipt. Replacement product, if required, will be shipped within three (3) business days of KMC's receipt of the returned product when possible. KMC reserves the right to replace any defective or damaged product with a functional equivalent if available. KMC shall provide Customer with a Returns Summary no later than two (2) weeks after receipt of the returned product.

Failure to follow these product return requirements or return of product that is out of warranty will result in a thirty (30) calendar day in-house storage of Customer's product, pending disposition and no further reconciliatory action on the part of KMC shall be required. Should Customer fail to provide instruction regarding the disposition of product to KMC after the expiration of the thirty (30) day periods set forth herein, the product shall become the property of KMC and KMC shall dispose of such products in any manner as KMC deems appropriate.

Product being returned for restocking must be (i) no older than six (6) months from the date of shipment of the product, (ii) new, (iii) unused, and (iv) in the original packaging in which the product was received by Customer from KMC. A 25% restocking fee will be assessed for all products returned for restocking.

Limited Warranty

(*See also the separate warranty section on the next page.*)

KMC provides a limited warranty on its products. KMC warrants that its product sold hereunder will, for sixty (60) months from the product date code, be free and clear of all liens and encumbrances and will be free from defects in material and workmanship and will conform to KMC's applicable specifications, all as set forth in KMC's Limited Warranty. To obtain a copy of the complete KMC Limited Warranty, Customer is encouraged to (i) visit www.kmccontrols.com, (ii) contact Customer's KMC Customer Service at (574) 831-5250, or (iii) submit a written request to obtain a copy of the KMC Limited Warranty to KMC Customer Service via facsimile at (574) 831-5252.

CUSTOMER ACKNOWLEDGES AND DECLARES THAT THESE LIMITATIONS AND WAIVERS HAVE BEEN BROUGHT TO CUSTOMER'S ATTENTION AND EXPLAINED, THAT CUSTOMER HAS READ AND UNDERSTANDS ALL TERMS AND AGREES TO BE SO BOUND, AND THAT CUSTOMER'S RECEIPT OF THE STANDARD TERMS & CONDITIONS OF SALE, LIMITED WARRANTY AND PRODUCTS, AND ANY PAYMENT FOR THESE, SIGNIFIES THAT CUSTOMER HAS VOLUNTARILY AND KNOWINGLY CONSENTED TO ALL TERMS, INCLUDING THE WAIVERS AND LIMITATIONS CONTAINED HEREIN.

NOTE: In markets outside of the United States and Canada, the KMC reserves the right to further limit its factory warranty coverage due to the cost of trans-shipment of warranted products between countries. Customers in these countries should consult directly with KMC to establish the warranty policies that will be in effect in their markets.

Force Majeure Clause

Fulfillment of any order is contingent upon the availability of materials. KMC shall not be liable for any delay in delivery or for non-delivery, in whole or in part, caused by the occurrence of any contingency beyond the control of either KMC or all suppliers to KMC including but not limited to war, sabotage, acts of civil disobedience, failure or delay in transportation, act of any government or agency or subdivision thereof, judicial action, labor dispute, fire, accident, explosion, epidemic, quarantine, restrictions, storm, flood, earthquake or acts of God, shortage of labor, fuel, raw material or machinery or technical failure where KMC has exercised ordinary care in the prevention thereof. If any contingency occurs, KMC may allocate production and deliveries among KMC's customers as KMC shall determine. If the KMC, in its sole discretion, determines that KMC's performance hereunder would result in a loss to KMC on this sale, as computed under KMC's normal accounting procedures because of causes beyond KMC's control, then KMC may terminate Customer's order in whole or in part without liability for any delay in the delivery of or failure to deliver the goods sold hereunder.

Confidential Information

All drawings, diagrams, specifications, pricing and other materials furnished by KMC and identified as confidential, relating to the use and service of products furnished and the information therein, are proprietary property of KMC. Such materials have been developed at great expense and they contain trade secrets of KMC. Customer may not reproduce or distribute such materials. All such materials relating to the products supplied directly by KMC (except information as may be established to be in the public domain or disclosed pursuant to judicial or government action) shall be received in confidence and Customer shall exercise reasonable care to hold such information in confidence.

Prices

The Customer's purchase price for products shall be the price in effect at the time of receipt of the purchase order by KMC. KMC shall notify Customer of any change in the price of products through the order acknowledgement. If there is a delay in completion of shipment of an order due to any change requested by the Customer or as a result of any delay on Customer's part in furnishing information required for completion of the order, the price agreed upon at the time of acceptance of the order is subject to change. Prices are F.O.B. Point of Origin and/or Vendor's Facility and are exclusive of all taxes.

Governing Law

These Terms & Conditions of Sale shall be considered to have been made in the State of Indiana and shall be governed by and interpreted according to Indiana law, without giving effect to conflict of law principles. Except as provided below, any action or claim arising out of or relating to these Standard Terms & Conditions of Sale may be brought only in a state court in Elkhart County, Indiana, or a federal court in the Northern District of Indiana, South Bend Division, having jurisdiction over the subject matter, and Customer irrevocably consents that such court shall have personal jurisdiction over Customer and waives any objection that the court is an inconvenient forum. Alternatively, and at KMC's sole election, any dispute arising out of or relating to these Standard Terms & Conditions of Sale shall be submitted to binding arbitration in Elkhart, Indiana in accordance with the rules of the American Arbitration Association. Any award ordered in such arbitration shall be enforceable in any court of competent jurisdiction. In the event any claim, lawsuit or demand for damages is brought against KMC by Customer for any reason, including but not limited to any claims, lawsuits or demands for damages relating in any way to KMC's products, claims of violation of these Standard Terms & Conditions of Sale, or claims waived or released under these Standard Terms & Conditions of Sale, Customer agrees to pay KMC's attorney, paralegal fees and KMC's expenses and costs to defend such suit.

KMC Limited Warranty

To the original purchaser, KMC Controls, Inc. ("KMC") warrants its products for sixty (60) months from the product date code (i) to be free and clear of all liens and encumbrances, (ii) to be free from defects in material and workmanship and (iii) to be in conformity with KMC's applicable specifications. THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES NOT EXPRESSLY SET FORTH HEREIN, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE OR USE. THE REMEDY OF REPAIR, REPLACEMENT OR REFUND PROVIDED UNDER THIS WARRANTY IS EXCLUSIVE TO KMC AND IN LIEU OF ALL OTHER REMEDIES. KMC WILL, AT ITS ELECTION, REPAIR, REPLACE OR MAKE APPROPRIATE ADJUSTMENTS WHERE KMC INSPECTION DISCLOSES ANY SUCH DEFECTS OCCURRING IN NORMAL USAGE WITHIN SIXTY (60) MONTHS FROM THE PRODUCT DATE CODE. KMC IS NOT RESPONSIBLE FOR REMOVAL OR INSTALLATION COSTS. KMC SHALL HAVE NO LIABILITY TO THE CUSTOMER OR ANY OTHER THIRD PARTY FOR CONSEQUENTIAL, SPECIAL, INCIDENTAL, INDIRECT, EXEMPLARY OR PUNITIVE DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION PERSONAL INJURY, DEATH, PROPERTY DAMAGE, LOST PROFITS, LABOR COSTS, OR ANY OTHER PECUNIARY DAMAGE, WHETHER DUE TO ANY DEFECT IN THE PRODUCT, BREACH OF KMC'S STANDARD TERMS & CONDITIONS OF SALE, DELAY, NON-DELIVERY, NON-PERFORMANCE, RECALL OR ANY OTHER REASON. ALL CLAIMS IN TORT, STRICT LIABILITY, AND FAILURE OF ESSENTIAL PURPOSE ARE WAIVED, RELEASED, AND EXCLUDED, INCLUDING CLAIMS OF KMC'S NEGLIGENCE. KMC SHALL NOT BE LIABLE TO THE CUSTOMER IN TORT, STRICT LIABILITY, OR ANY OTHER LEGAL OR EQUITABLE THEORY FOR ANY DEFECT IN THE DESIGN OR MANUFACTURE OF THE PRODUCTS, OR FOR THE OMISSION OR ALLEGED INADEQUACY OF THE WARNINGS OR INSTRUCTIONS ACCOMPANYING THE GOODS. EXCEPT FOR THE LIMITED WARRANTY HEREIN, THE CUSTOMER ACCEPTS THE GOODS "AS IS" WITH ALL FAULTS AND ASSUMES THE RISK OF LOSS FOR ANY DEFECTS OR NONCONFORMITY. CUSTOMER WAIVES, RELIEVES AND RELEASES KMC FROM ANY AND ALL CLAIMS, CAUSES OR RIGHTS OF ACTION, AND LIABILITY FOR ANY PATENT OR LATENT DEFECTS IN THE PRODUCTS, EXCEPT AS SPECIFICALLY PROVIDED IN THIS LIMITED WARRANTY. UNDER NO CIRCUMSTANCES SHALL KMC'S LIABILITY FOR ANY DEFECT IN THE PRODUCTS, WHETHER BASED ON CONTRACT, TORT, WARRANTY, STRICT LIABILITY, OR ANY OTHER THEORY, EXCEED THE PURCHASE PRICE OF THE DEFECTIVE GOODS.

NOTE: In markets outside of the United States and Canada, the KMC reserves the right to further limit coverage of the KMC Limited Warranty due to the cost of trans-shipment of warranted products between countries. Customers in these countries should consult directly with KMC to establish the warranty policies that will be in effect in Customers' respective markets.

Some states/provinces do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of special, incidental or consequential damages, so these limitations and exclusions may not apply to the Customer. This limited warranty provides Customer with specific legal rights. Customer may also have other rights which vary from state/province to state/province.

Contact KMC Controls

Address (Mailing/Shipping)
KMC Controls
19476 Industrial Drive
New Paris, Indiana 46553

Web Site
www.kmccontrols.com
info@kmccontrols.com

Toll-free Sales
Telephone 866.302.4KMC (4562)
FAX 800.276.5555

Returns Policy

Material Return Form

Form must be entirely completed to expedite the material return process.
Incomplete forms or inaccuracies will cause delays.

Submitted by: _____ Date: _____

Company: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Tel. No.: _____ Fax No.: _____ Email: _____

Reason for Return:

- ☐ Credit: New & Unused
- ☐ Warranty Repair Request
- ☐ Shipping Error

Please provide 1 of the following:

Customer PO #: _____

KMC Sales Order #: _____

KMC Invoice #: _____

▶ **Return Product to**: ☐ **Address Above** or ☐ **Address Below**

Company: _____ Attn.: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Tel. No.: _____ Fax No.: _____ Email: _____

Qty.:	Model No.:	Date Code:	Specific Reason for Return:	KMC Use:

Please carefully package and ship product returns prepaid to:

KMC Controls
Return Material
19514 Industrial Drive
New Paris, IN 46553

RMA No.: _____ (Factory Assigned)

Featured New Products

FlexStat Controllers/Sensors/Thermostats

The award-winning FlexStat is a **controller and sensor(s)** in a single, attractive package that creates a flexible solution to stand-alone control challenges or BACnet network challenges. Temperature sensing is standard with **optional humidity, motion, and CO_2 sensing**. Flexible input and output configurations and built-in or custom programming ensure that a variety of application needs can be met. Such applications include single- and multi-stage packaged, unitary, and split systems (including high SEER/EER variable speed packaged equipment), as well as factory-packaged and field-applied economizers, water-source and air-to-air heat pumps, fan coil units, central station air handling units, and other similar applications.

In addition, an on-board library of programs permits a single model to be rapidly configured for a wide range of HVAC control applications. Thus, a single "one size fits all" FlexStat model can replace multiple competitor models. A single BAC-120163CW, for example, can be quickly configured for any of these application options:

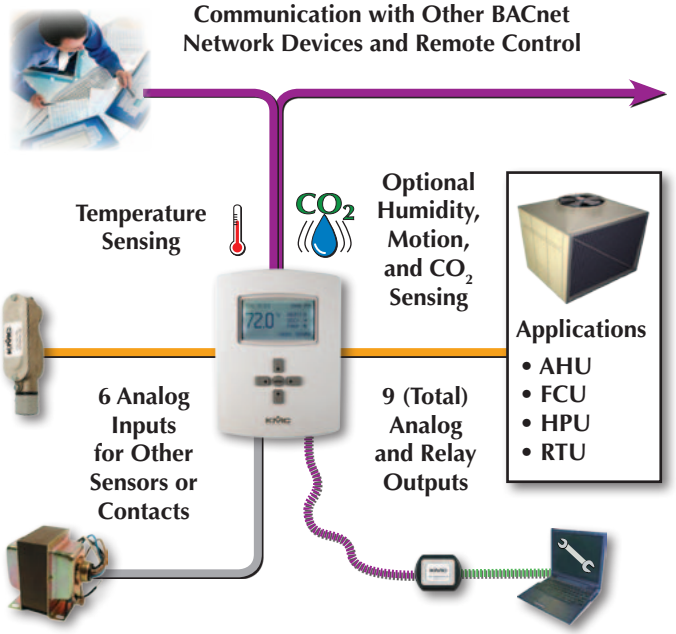
- Air handling unit, with proportional heating and cooling valves, and with optional economizer, dehumidification, and/or fan status
- Fan coil unit, 2-pipe or 4-pipe, proportional or 2-position valves, with optional dehumidification (w/ 4-pipe option) and/or fan status
- Heat pump unit, with up to two compressor stages, and with optional auxiliary heat, emergency heat, dehumidification, and/or fan status
- Roof top unit, with up to two H/C stages, and with optional economizer, dehumidification, and/or fan status

BACnet over **MS/TP** communication is standard. **"E" versions, with an RJ-45 jack, add BACnet over Ethernet, BACnet over IP, and BACnet over IP as Foreign Device** (for communication across the Internet).

When using applications **with a modulating economizer option**, the three types of Demand Control Ventilation (DCV) configurations available are:

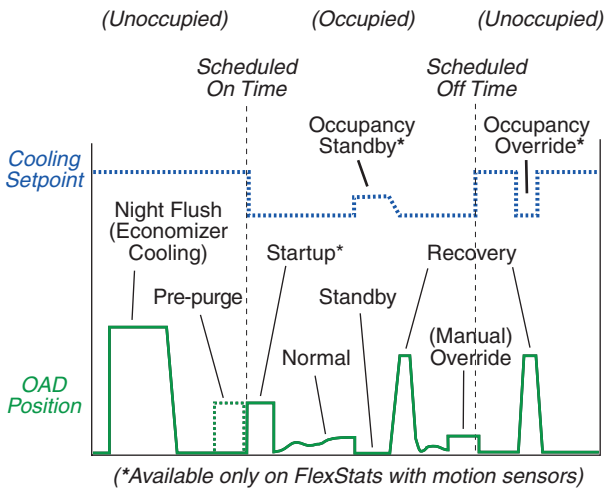
- Basic—provides basic DCV, modulating the outside air damper in direct response to the current CO2 level with respect to its setpoint.
- Standard—When the BAC-13xxxx settings are properly configured, complies with CA Title 24, Section 121(c).
- Advanced—When the settings are properly configured, complies with ASHRAE Standard 62.1-2010 and follows guidelines by Portland Energy Conservation, Inc. (PECI).

Although BAC-12xxxx FlexStats do not have a built-in CO2 sensor, they still have DCV control sequences available.



Sample Installation

SEE: *BAC-12xxxx/13xxxx/14xxxx FlexStat™ BACnet Programmable Thermostats on page 81* as well as the SB-049 FlexStat brochure. See also the SB-057 Sensors brochure for general sensor information.



Example Schedule, DCV, and Motion Sensor Applications

MEP-4042/4842 Modular Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.)

These compact but powerful direct-coupled actuators provide proportional control for small dampers or valves in HVAC systems. The MEP-4042/4842 models are most typically used to control small modulating zone dampers in underfloor air distribution or simple residential and light commercial zoning applications. They may also be field-applied to KMC VEB-43/46 series valve and linkage assemblies for modulating hydronic heat in appropriate applications.

For easy installation, these models feature **six-wire RJ-12 modular jack wiring connections** that supply power and signal to the actuators and allow them to be "daisy-chained" together in parallel. Multiple actuators may be driven in parallel from one analog output provided by an analog room thermostat (such as a KMC CTE-5201-16), digital controller (such as the BAC-5841/5842 series with modular jack outputs), or another manufacturer's DDC controller with the appropriate cables.

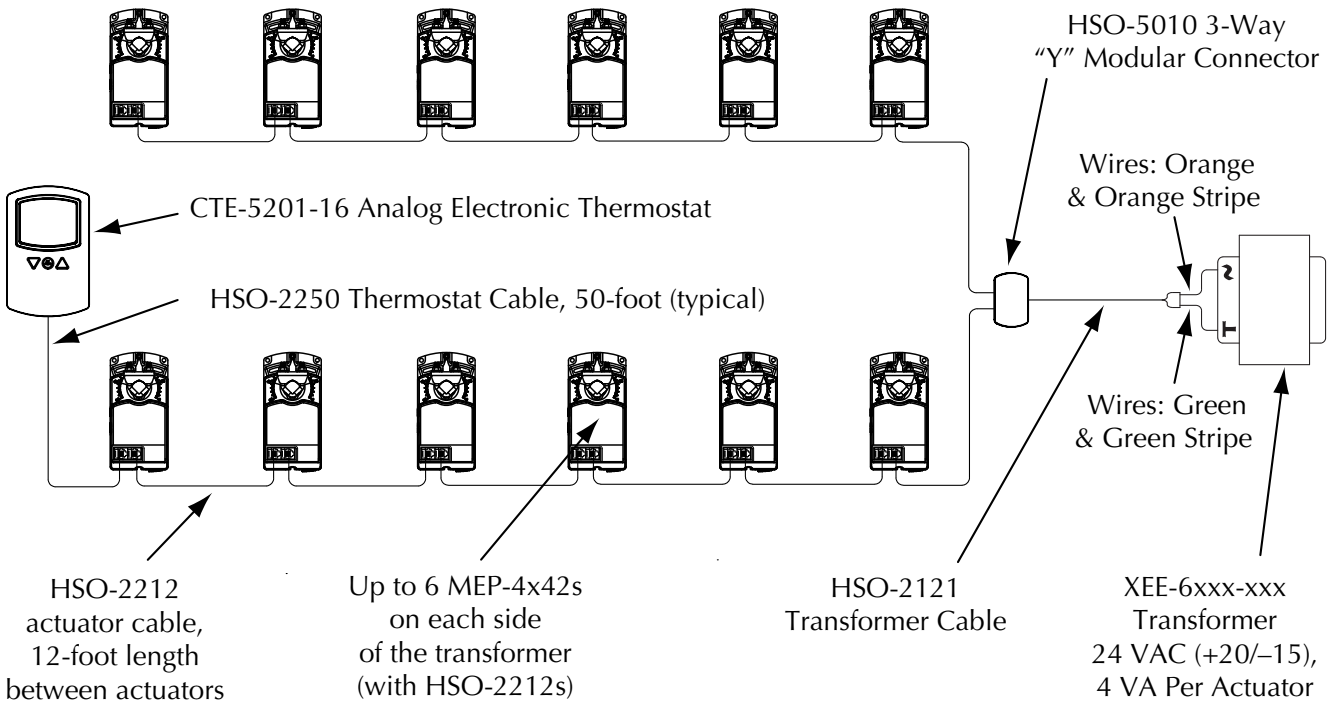
These **proportional** actuators accept a **2–10** VDC control signal input from a thermostat, controller, or building automation system. "**Anti-jitter**" circuitry significantly reduces hunting and needless wear on the actuator and valve packing or damper components (from unnecessary miniscule position changes caused by undamped analog input signals).

At power up, the actuator initiates a **self-calibration** procedure. It first travels fully CCW and assigns 2 VDC to this position, it then travels fully CW and assigns 10 VDC to that position, and it then begins normal function and goes to the setpoint position.

A minimum torque of 40 (MEP-4042) or 80 (MEP-4842) in-lbs. is available over the actuator's 95° angular rotation. A non-rotation bracket, to prevent lateral movement, is included with each actuator. A gear disengagement button allows manual positioning of the actuator.

The actuators mount directly to 1/4- to 5/8-inch (6 to 16 mm) round shafts or 1/4- to 7/16-inch (6 to 11 mm) square shafts, eliminating the need for expensive and complicated linkages. However, a crank arm kit is available if desired (see the Accessories section).

SEE: ***MEP-4042/4842 Modular Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.) on page 36*** **as well as the SB-009 ControlSet Actuators brochure for general actuator information.**



Sample Installation with CTE-5201-16

MEP-4101
Direct-Coupled, ControlSet® Actuator (10 in-lbs.)

(Size Shown Relative to a Quarter)

SEE: *MEP-4101 Direct-Coupled, ControlSet® Actuator (10 in-lbs.) on page 37*.

This compact direct-coupled actuator controls small dampers in HVAC systems that require relatively high rotation speed and low torque. This **three-wire tri-state** actuator is designed for use with **floating** thermostats, controllers, or building automation systems. A minimum torque of 10 in-lbs. is available over the 95° angular rotation (with an adjustable end stop).

When the actuator reaches the **end of rotation**, the motor is disengaged, and (after about five seconds) the appropriate **LED indicator** under the translucent cover **illuminates**—green for "power open" (CCW) or red for "power closed" (CW). The LED remains on until:

- Power to the terminal is simply removed
- Power is switched to the other terminal, and the actuator starts turning again in the opposite direction

The actuator mounts directly to 1/4- to 5/8-inch (6 to 16 mm) round shafts or 1/4- to 7/16-inch (6 to 11 mm) square shafts, eliminating the need for expensive and complicated linkages. An integrated non-rotation screw mounting slot prevents lateral movement. A gear disengagement button allows manual positioning of the actuator.

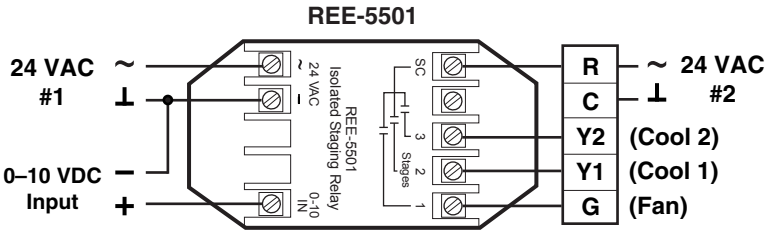
REE-5501 Relay Module, 3-Stage Reheat, Isolated Outputs

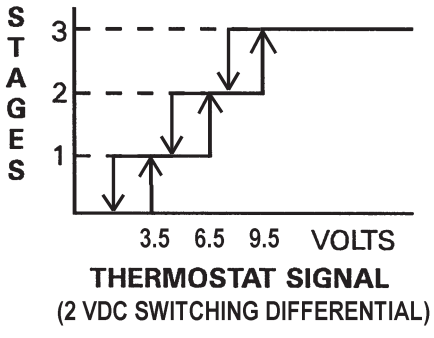
The REE-5501 is similar to the older REE-5001 but has isolated outputs added to it. This three-stage reheat triac relay module is designed primarily for use with VAV terminal units in HVAC systems. When used in conjunction with reverse acting outputs of the CTE-5100 series room thermostats, up to three stages of reheat may be controlled.

Each output circuit is capable of handling contactors of up to 10 VA @ 24 VAC. The three circuits are calibrated to actuate at equally spaced intervals across the thermostat's proportional band. The 0–10 VDC input signal has a 2 VDC switching differential on each stage.

By using the REE-5501, the heating requirements of a particular VAV terminal may be actuated in three separate steps, providing precise temperature control.

SEE: *REE-5001/5501 Relay Modules, 3-Stage Reheat on page 64*.





Brochures, Reference, and Promotional Items

General Information

SB-037 Product Overview Brochure

SB-052 KMC Corporate Capabilities Brochure

SB-048 Controlling Your Green Building Brochure !

SB-046 Green Building and Controls Glossary !

SB-031 Pneumatics Overview Brochure

SB-055 KIT-1000 Series Pneumatic Repair Kits Brochure

SB-023 (SLE-1001, IEI-1110) FirstWatch Refrigerant Monitor Brochure

! SB-009 ControlSet Actuators Brochure

SB-049 FlexStat Brochure !

! SB-057 KMC Sensors Brochure

= Award Winner

! = New/Updated in 2010–2011

These documents may be downloaded from the KMC web site in Adobe Acrobat PDF format. For more detailed product information, see the relevant sections in this catalog as well as the individual product data sheets on the web site.

Miscellaneous

SB-029 Literature Folder

SB-033 Proposal/Submittal Cover with 3/8" Spine

SP-013 KMC Authorized *Distributor* Door/Window Decal (9 x 6 inches)

SP-001 Screwdriver, flat blade and hex ends, with KMC logo

SP-066 KMC Authorized Representative Truck Decal (22 x 12 inches)

SP-045 KMC Counter Mat (24 x 18 inches, rubber back)

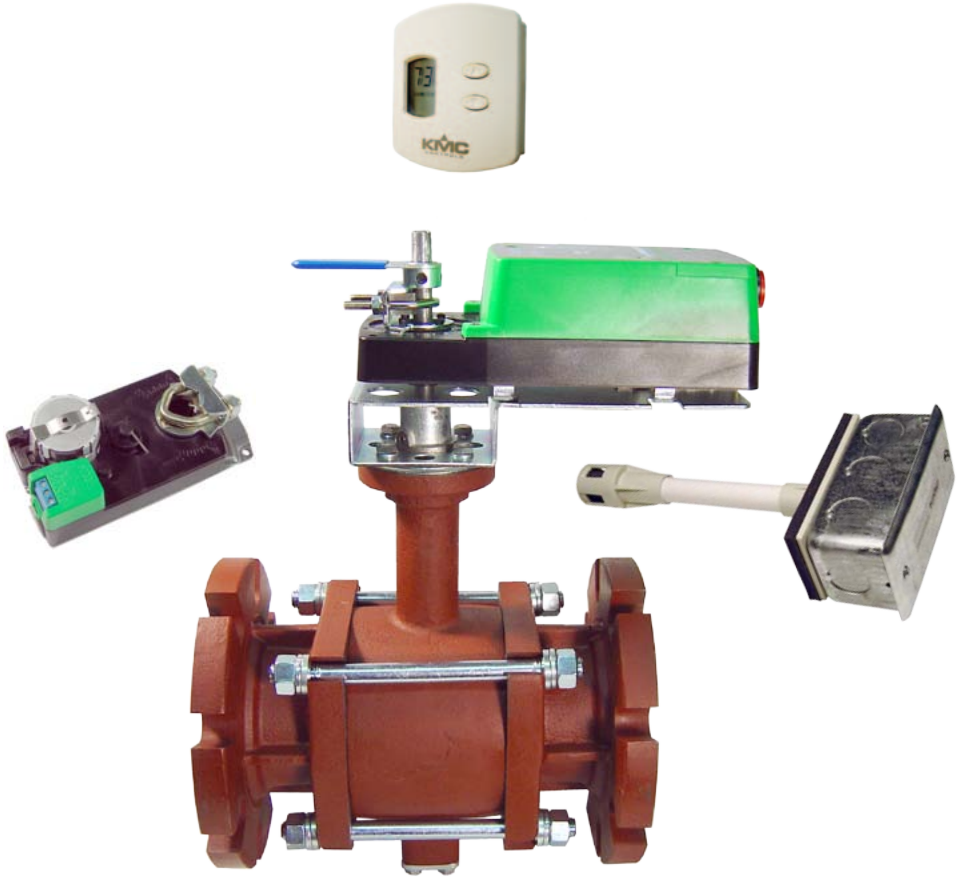
SP-012 KMC Banner (6 x 2 feet)

KMC Gear Merchandise

KMC Gear items can be ordered by going to www.kmccontrols.com and selecting *How to Buy* > *Get KMC Gear*. Items available include:

- **Men's and Women's Apparel**
- **Office Supplies**
- **Tools**
- **Sporting Items**

Electronic Products



Actuator Accessories and Repair Parts

CME-1000 Series
Rotary Cam Auxiliary Switches

The CME-1000 series switches are designed to start and stop auxiliary items such as electric heat or fans in terminal unit applications. Models are available with one or two SPDT switches and mount to certain KMC controller actuators, electric actuators or directly to damper shafts. Switches are actuated by independently adjustable cams allowing for a trip point anywhere within the angular rotation of the driving actuator. Field application to existing actuators is easy with a snap-on feature. For field mounting to damper shafts, order required kit HMO-4509.

Mounts on any MEP-1500/5000 series actuator, any CEP/CSP series controller/actuator, or any TSP series sensor/actuator

Specifications

Switch Action	SPDT
Switch Ratings	15 Amp; 1/2 hp @ 125/250 VAC 1/2 Amp @ 125 VDC 1/4 Amp @ 250 VDC
Adjustment Range	120° per cam
Material	Black Polycarbonate
Regulatory	Switches are UL Recognized
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

CME-1001	Single SPDT switch: 45 to 60° actuators
CME-1002	Single SPDT switch: 100° actuators
CME-1003	Dual SPDT switches: 45 to 60° actuators
CME-1004	Dual SPDT switches: 100° actuators

Accessories

HMO-4509	Kit to mount CME-1000 series and CME-2001/2002 onto extended damper shafts. (See under CME-2001/2002 below.)

CME-2001/2002
Rotary Position Feedback Potentiometers

The CME-2001/2002 rotary feedback potentiometers indicate the angular position of VAV terminal dampers and AHU dampers. Models are available in two ranges and mount to certain controller actuators, electric actuators or directly to damper shafts.

Potentiometers are gear driven from the CEP or MEP output drive or by the AHU damper shaft. Field installation to existing actuators is easy with a snap-on feature. For field mounting to damper shafts, order required kit HMO-4509.

These units are intended for use with the **CEP-4000 series, CSP-4000 series, and MEP-1500 series** controllers/actuators.

Specifications

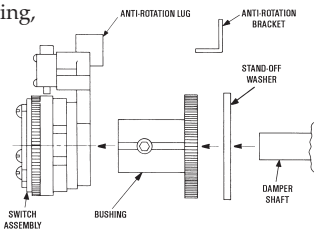
Power Rating	1 Watt
Linearity	±1%
Material	Black Polycarbonate
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

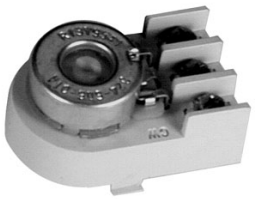
CME-2001	10 K ohm (7500 Ω change through 90° rotation)
CME-2002	1 K ohm (750 Ω change through 90° rotation)

Accessories

HMO-4509	Kit (bracket, bushing, and washer) to mount CME-1000 series and CME-2001/2002 onto extended damper shafts. (Will **not** work with the CME-2003.)



CME-2003
Rotary Position Feedback Potentiometer (for MEP-5000)



The CME-2003 rotary feedback potentiometer indicates the angular position of VAV terminal dampers and AHU dampers.

Specifications

Power Rating	1/3 watt
Resistance	10K ohm

The MEP-5065 comes with a factory-installed CME-2003. The CME-2003 field-mounts on the **following (tri-state, non-fail-safe) actuators ONLY:**

- MEP-5061
- MEP-5063
- MEP-5071
- MEP-5073
- MEP-5223
- MEP-5233

CME-2003s are **NOT for the MEP-5062/5072/5372/5373/5374 or any other actuators**.

CME-7001/7002
Auxiliary Switches (for MEP-7000)

c UL US LISTED

The CME-700x switches are designed to start and stop auxiliary items such as electric heat or fans in terminal unit applications. Models are available with single or double switches and mount to KMC Controls MEP-7000 series actuators. Switches are independently adjustable for a trip point anywhere within the angular rotation of the driving actuator.

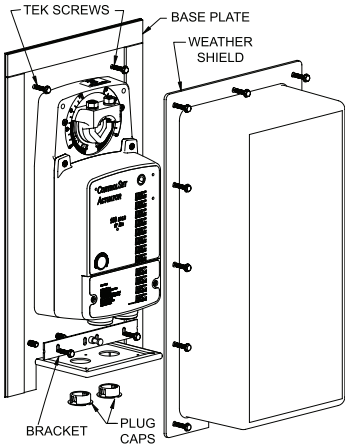
Specifications

Switch Rating	12 A @ 250 VAC 1/3 hp @ 250 VAC 1/4 hp @ 125 VAC
Switching Point	Fully adjustable over 0–90° actuator rotation
Electrical Connection	3 ft. 18 gauge cable
Temperature Limits	
Operating	–5 to 120° F (–21 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Material	Black flame-retardant plastic
Approvals	UL 873 Temperature Indicating and Regulating Equipment

Models

CME-7001	Single auxiliary switch, 1 SPDT
CME-7002	Double auxiliary switch, 2 SPDT

HCO-1151/1152
Weather Enclosures



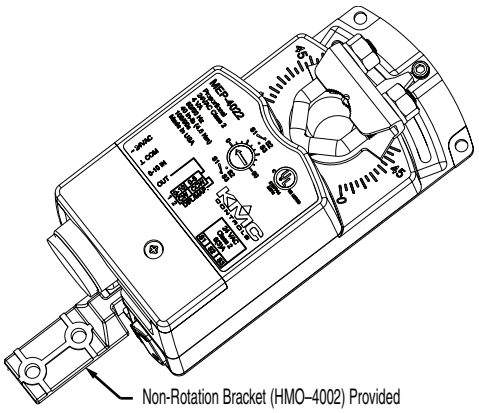
HCO-1152 (with installed actuator shown in installation view)

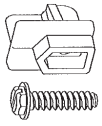
The HCO-1151/1152 enclosures, consisting of a metal mounting plate, plastic cover, non-rotation bracket, plug caps, and screws, are designed to shield actuators from inclement weather.

Models

HCO-1151	12-7/16 x 7 x 3-1/4" NEMA 3R enclosures (for MEP-4000/4800, MEP-425, and MEP-5000 series actuators)
HCO-1152	15-3/8 x 8-1/4 x 4-1/16" NEMA 3R enclosures (for MEP-1200, MEP-455, and MEP-7000 series actuators)

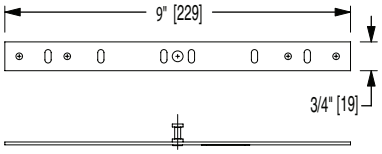
MEP Series Brackets





HMO-4004 Kit for Ball Valve (Without Quick Mount)

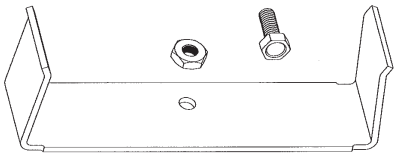
Non-Rotation "T" Bracket (HMO–4001) Order Separately



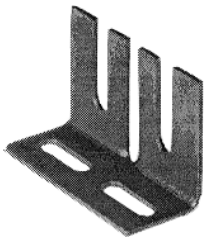
HMO-4001 Non-rotation "T" bracket for MEP-4000/4800 series actuators

HMO-4002 Replacement plastic non-rotation bracket for MEP-4000/4800 series actuators

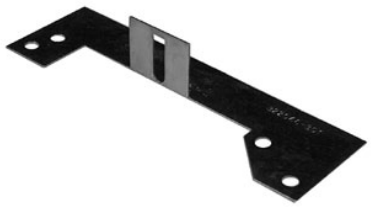
HMO-4004 Non-rotation bracket kit for MEP-4000/4800 series actuators on VEB ball valves (without Quick Mount)



HMO-4005 Non-rotation bracket kit for MEP-537x series actuators on VEB ball valves



HMO-1003 Replacement non-rotation bracket for MEP-1500 and MEP-5000 series actuators



HMO-4531 Non-rotation bracket supplied with MEP-5223/5233

HMO-4517 Front mounting bracket for MEP-1200 series actuators (for use when actuator must be mounted remote of the damper shaft)—includes hardware to mount bracket to actuator

HMO-4519 Replacement non-rotation bracket for MEP-**1200** series actuators

HMO-4535 Replacement non-rotation bracket for MEP-**7000** series actuators

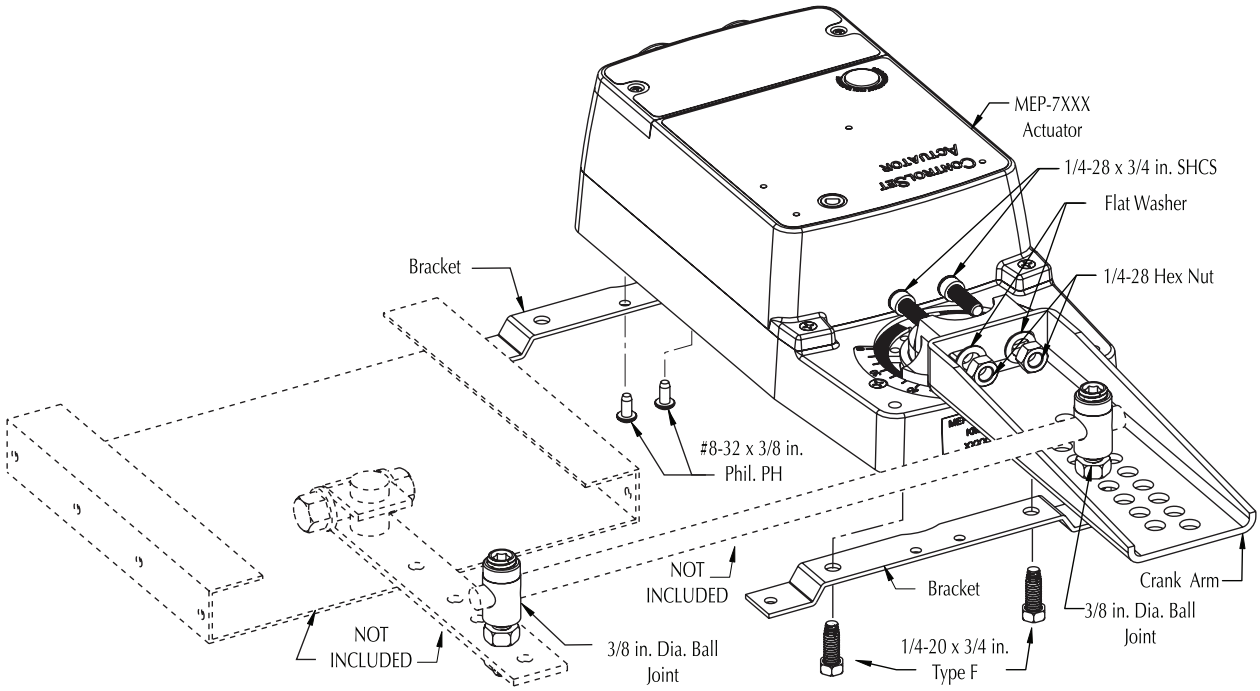
MEP-1200/5000 Series Connectors

HMO-4520 Compression connector for plenum cable for MEP-1200 and MEP-5000 series actuators

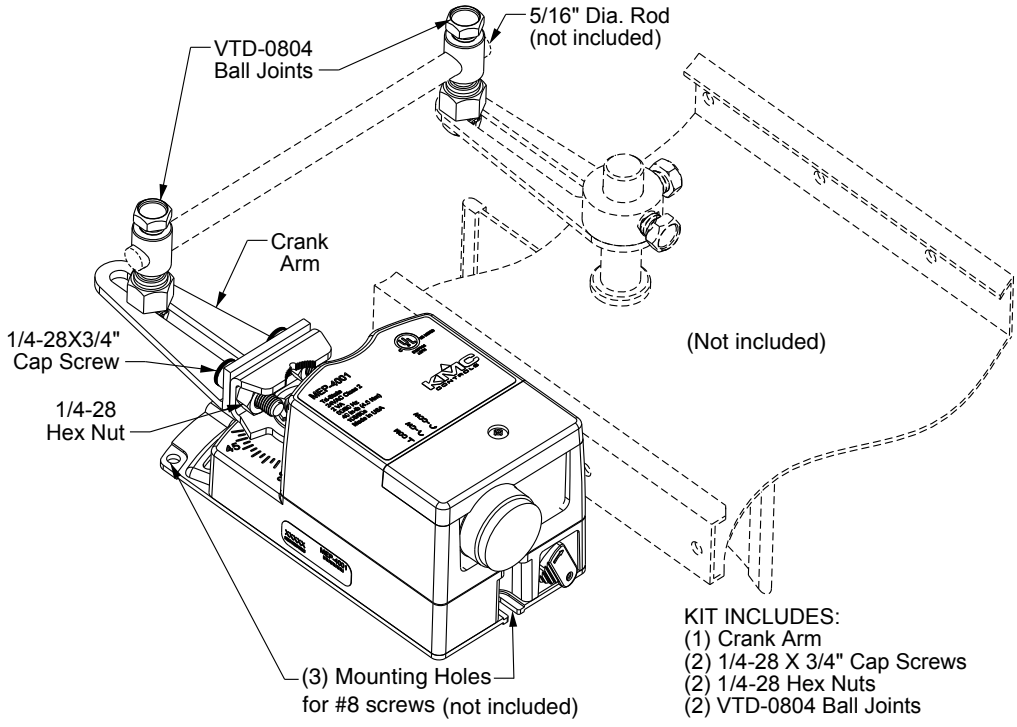
HMO-4526 Female connector for 1/2" conduit for MEP-1200 and MEP-5000 series actuators

HMO-4518 Snap-in connector for 1/2" flexible metal conduit for MEP-1200 and MEP-5000 series actuators

MEP-4xxx/7xxx Series Crank/Damper Arms and Linkage



HLO-1020 Linkage kit for MEP-7000 series.



HLO-4001 Linkage kit for MEP-4000 series

VTD-1403	Slotted crank/damper arm, short for 3/8" shafts
VTD-1404	Slotted crank/damper arm, short for 1/2" shafts
VTD-1405	Slotted crank/damper arm, long for 1/2" shafts
VTD-1406	Slotted crank/damper arm, long for 3/8" shafts
VTD-1414	Three-hole crank/damper arm for 3/8" shafts
VTD-1415	Three-hole crank/damper arm for 1/2" shafts

NOTE: In the VTD-1403/1404 (short) arms, a ball joint can be adjusted from 3/4" (minimum) from the center of the shaft to 2-7/8" (maximum) from the center. In VTD-1405/1406 (long) arms, the maximum is 4-5/8".

VTD-0803	Ball joint, 1/4-20 male x 5/16-24" female for use on end of actuator shafts
VTD-0804	Ball joint, 1/4-20 male x 1/4-20" female for use with VTD-1400 series crank arms

MEP Series Miscellaneous Hardware

HFO-0011	Reducer bushing, for allowing MEP-1500 or MEP-5000 series to be mounted on 3/8" diameter shafts.
HPO-0062	Replacement 300 RPM electric motor/gearbox for (w/ date codes after 9225) CEP/CSP-4xxx and MEP-15xx.

HTO-1001	Conduit wrench, 1/2 and 3/4" (simplifies the tightening of locknuts at conduit boxes and other similar applications)
HMO-4536	Adjustable stop kit for MEP-7000 series

Actuators

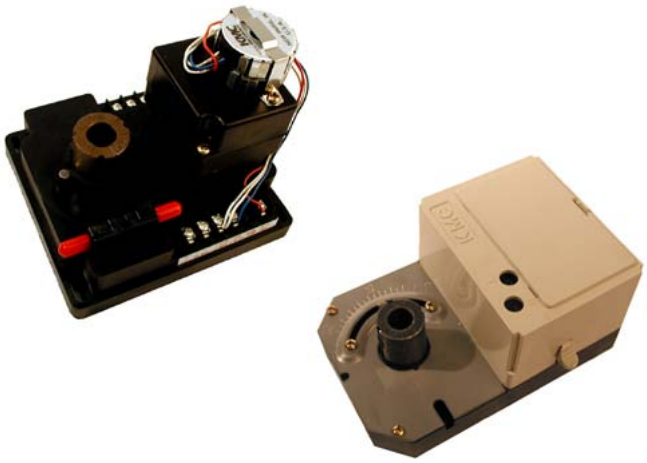
SEE ALSO: The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*.

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* and *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: *TSP-5000 Series Air Flow Transducer-Actuators on page 99* and *TSP-6001/6051 Air Flow Transducer-Actuators (3-State Analog) on page 99*.

CEP-4000 Series, CSP-4000 Series, and CSP-5001/5002 VAV Controller-Actuators



SEE: *CEP-4000 Series VAV Flow Controller-Actuator (Electronic Analog) on page 45*, *CSP-4000 Series VAV Flow Controller-Actuator (Electronic Analog) on page 47*, and *CSP-5001/5002 VAV Flow Controller-Actuator (Electronic Analog) on page 48*.

MEP-1200 Series Cross-Reference

Obsolete Model Number	Torque (in-lb)	Control	Replacement Model Number	Torque (in-lb)	Control
MEP-1201/1261	135/100	Tri-State	MEP-7201	120	Tri-State
MEP-1202/1262	135/100	**2**–10 VDC or 4–20mA	MEP-7202	120	**0**–10 VDC or 4–20mA
MEP-1203/1263	135/100	Tri-State	MEP-7203	120	Tri-State
MEP-1221/1271	135/100	Tri-State	MEP-7251	120	Tri-State
MEP-1222/1272	135/100	**2**–10 VDC or 4–20mA	MEP-7252	120	**0**–10 VDC or 4–20mA
MEP-1223/1273	135/100	Tri-State	MEP-7253	120	Tri-State

MEP-1200 Series Accessories and Repair Parts

HCO-1152	15-3/8 x 8-1/4 x 4-1/16" weather enclosure
HMO-4517	Front mounting backplate
HMO-4518	Snap-in connector for 1/2" flexible metal conduit
HMO-4519	Replacement non-rotation bracket
HMO-4520	Compression connector for plenum cable
HMO-4526	Female connector for 1/2" conduit
VTD-0804	Ball joint
VTD-1404	Short crank arm
VTD-1405	Long crank arm

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*.

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* **and** *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: **The interactive** *Product Selection Tools* **for actuators in the Products section of the** *KMC web site*.

MEP-1500 Series
Tri-State Direct-Coupled Actuators (35 in-lbs., up to 360°)

These economical rotary electric actuators are designed to operate variable air volume or other small dampers in HVAC systems. Models offer four stroke ranges (CW or CCW) of up to a **full 360°** (at 18° per minute) with 35 to 55 in-lbs. of torque. To accommodate easy installation on typical damper arrangements, models are available that are shipped fully stroked to the clockwise or counterclockwise position. (Unlike most other KMC actuators, these do not have a gear disengagement button.) The internal magnetic clutch allows the units to be stalled at either end of stroke with no heat rise from the actuator.

They mount directly on 1/2" shaft, or an optional reducer bushing allows them to be used directly with 3/8" damper shafts. Optional auxiliary switches or feedback pots may be field-installed.

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*.

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* **and** *Actuator Sizing for Dampers Guide on page 176*.

Specifications

Supply Voltage	24 VAC (+20%/–15%), tri-state
Supply Power	2 VA
Torque	35 to 55 in-lbs. (4 to 6 N•m)
Angular Rotation	45°, 60°, 100°, and 360°
Stroke Time	18°/minute (2.5 minutes for 45° and up to 20 minutes for 360°)
Material	Glass-filled nylon
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

MEP-1501	100° shipped CW
MEP-1502	60° shipped CW
MEP-1503	45° shipped CW
MEP-1504	360°, no stops
MEP-1505	100° shipped CCW
MEP-1506	60° shipped CCW
MEP-1507	45° shipped CCW

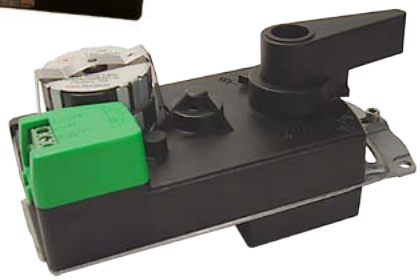
Accessories and Repair Parts

CME-1000 series	Rotary cam switches
CME-2000 series	Rotary feedback potentiometers
HFO-0011	3/8" shaft adapter
HMO-1003	Replacement non-rotation bracket
HPO-0062	Replacement motor and clutch assembly (for date codes after 9225)

MEP-4000/4800 Series
Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.)

MEP-4002

(Size Shown Relative to a Quarter)



MEP-4003V with Quick Mount

These direct-coupled models offer 40 (MEP-40xx) or 80 (MEP-48xx) inch-pounds of torque (available over the 95° angular rotation) and a variety of features in a compact size. All MEP-4000s mount directly to 1/4- to 5/8-inch round shafts or 1/4- to 7/16-inch square shafts, eliminating the need for expensive and complicated linkages.

The M**EP-4002/4022/4802/4822 proportional** actuator models accept a 0-10 volts DC control signal input from a thermostat, controller, or building automation system. **"Anti-jitter"** circuitry significantly reduces hunting and needless wear on the actuator and valve packing or damper components (from unnecessary miniscule position changes caused by undamped analog input signals). A user-initiated, **auto-mapping** feature provides better equipment control by reassigning the 0-10 volts DC input signal range over a reduced rotation range (from 45° to 95°). These models also feature a **switch-selectable, 0-5 or 0-10 volts DC voltage feedback** output that is proportional to the actuator position.

The **MEP-4001/4003/4013/4021/4801/4813/4821 tri-state** models are designed for use with floating thermostats, controllers, or building automation systems. The MEP-4013/4813 models feature a 10,000 ohm (+/- 10%), three-wire **potentiometer feedback** output. (Functionally like the MEP-4001, the **MEP-4003** does not have the larger green top enclosure.)

The **MEP-4021/4022/4821/4822** models also have a fully adjustable, built-in **SPDT auxiliary switch**, for remote position indication or controller and equipment interface.

MEP-4002V/4003V actuators have brackets with a patent-pending, **quick-mounting** mechanism that mounts directly on VFB-43...BC and VFB-46...BC series valve bodies (or VFB-43...BX and VFB-46... BX series with HPO-5074 kit). See the *MEP-400x "V" Models Valve Cross-Reference on page 177*.

Accessories

HCO-1151	Weather shield kit
HLO-4001	Crank arm kit
HMO-4001	Non-rotation "T" bracket
HMO-4002	Replacement non-rotation bracket (included)
HMO-4004	Non-rotation bracket kit for VEB ball valves (without Quick Mount)
HPO-5072	Ball valve to actuator repair kit for standard MEP-4000 series actuators
HPO-5074	Ball valve to actuator quick mount kit for MEP-400x**V** actuators (only)

Specifications

Supply Voltage	24 VAC, +20%/–15%
Supply Power	Tri-state, 2 VA Proportional, 4 VA
Control Signal	Tri-state, 24 VAC Proportional, 0 to 10 VDC
Feedback Output	Tri-state, 10K ohm ±10% Proportional, 0 to 5 VDC or 0 to 10 VDC (switch selectable)
Auxiliary Switch	Adustable 0 to 95°, SPDT 6A resistive load (3A motor load) @ 24 VAC
Angular Rotation	0 to 95°; fully adjustable with mechanical stop
Motor Timing	90 seconds for 90° @ 60 Hz 108 seconds for 90° @ 50 Hz
Torque	(MEP-40xx) 40 in-lbs. (4.5 N•m) (MEP-48xx) 80 in-lbs. (9 N•m)
Mounting	Direct to 1/4 to 5/8 inches (6–16 mm) round or 1/4 to 7/16 inches (6–11 mm) square shaft by adjustable "V" bolt and non-rotational bracket HMO-4002 (supplied); minimum recommended damper shaft length is 1-5/8 inches
Connections	Wire clamp type; 14 to 22 AWG
Enclosure	Flame-retardant plastic
Noise Level	< 35 dBA max. at 1 meter
Approvals	UL 873 Temperature Indicating and Regulating Equipment FCC Class B, Part 15, Subpart B; Complies with Canadian ICES-003

Models

Model Number	Torque		Control		Built-in Options		
MEP-	40 in-lbs. min. (4.5 N•m)	80 in-lbs. min. (9 N•m)	Tri-state (Floating)	0 to 10 VDC Proportional	Feedback: 10k ohm Potentiometer	Feedback: 0–5 or 0–10 VDC	Auxiliary Switch (Adjustable, SPDT)
4001	X		X				
4002(V)*	X			X		X	
4003(V)**	X		X				
4013	X		X		X		
4021	X		X				X
4022	X			X		X	X
4801		X	X				
4802		X		X		X	
4813		X	X		X		
4821		X	X				X
4822		X		X		X	X

*MEP-4002V and MEP-4003V have quick-mount option.
**Functionally like the MEP-4001, the MEP-4003 and MEP-4003V do not have the larger green top enclosure.

MEP-4042/4842
Modular Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.)

(Size Shown Relative to a Quarter)

These compact but powerful direct-coupled actuators provide proportional control for small dampers or valves in HVAC systems. The MEP-4042/4842 models are most typically used to control small modulating zone dampers in underfloor air distribution or simple residential and light commercial zoning applications. They may also be field-applied to KMC VEB-43/46 series valve and linkage assemblies for modulating hydronic heat in appropriate applications.

For easy installation, these models feature **six-wire RJ-12 modular jack wiring connections** that supply power and signal to the actuators and allow them to be "daisy-chained" together in parallel. Multiple actuators may be driven in parallel from one analog output provided by an analog room thermostat (such as a KMC CTE-5201-16), digital controller (such as the BAC-5841/5842 series with modular jack outputs), or another manufacturer's DDC controller with the appropriate cables.

These **proportional** actuators accept a **2–10** VDC control signal input from a thermostat, controller, or building automation system. "**Anti-jitter**" circuitry significantly reduces hunting and needless wear on the actuator and valve packing or damper components (from unnecessary miniscule position changes caused by undamped analog input signals).

At power up, the actuator initiates a **self-calibration** procedure. It first travels fully CCW and assigns 2 VDC to this position, it then travels fully CW and assigns 10 VDC to that position, and it then begins normal function and goes to the setpoint position.

A minimum torque of 40 (MEP-4042) or 80 (MEP-4842) in-lbs. is available over the actuator's 95° angular rotation. A non-rotation bracket, to prevent lateral movement, is included with each actuator. A gear disengagement button allows manual positioning of the actuator.

The actuators mount directly to 1/4- to 5/8-inch (6 to 16 mm) round shafts or 1/4- to 7/16-inch (6 to 11 mm) square shafts, eliminating the need for expensive and complicated linkages. However, a crank arm kit is available if desired (see the Accessories section).

Models

MEP-4042	40 inch-lbs. minimum torque
MEP-4842	80 inch-lbs. minimum torque

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*.

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* **and** *Actuator Sizing for Dampers Guide on page 176*.

Specifications

Supply Voltage	24 VAC (+20%/–15%), Class 2
Supply Power	4 VA max.
Control Signal	Proportional, 2 to 10 VDC
Frequency	50/60 Hz
Angular Rotation	0 to 95°, fully adjustable with mechanical stop
Motor Timing	90 seconds for 90° @ 60 Hz; 108 seconds for 90° @ 50 Hz
Torque	(MEP-4042) 40 in-lbs. (4.5 N•m); (MEP-4842) 80 in-lbs. (9 N•m)
Mounting	Direct to 1/4 to 5/8 inches (6–16 mm) round or 1/4 to 7/16 inches (6–11 mm) square shaft by adjustable "V" bolt and non-rotational bracket HMO-4002 (supplied); minimum recommended damper shaft length is 1-5/8 inches
Dimensions	5.3 x 2.6 x 2.5 inches (135 x 66 x 63.5 mm)
Weight	1.1 lb. (0.50 kg)
Enclosure	Flame-retardant plastic
Noise Level	< 35 dBA max. at 1 meter
Approvals	UL 873 Temperature Indicating and Regulating Equipment; FCC Class B, Part 15, Subpart B
Environmental Limits	
Operating	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 176° F (–40 to 80° C)
Humidity	5 to 95% RH (non-condensing)
Connections	Two 6-pin RJ-12 modular jacks

Accessories

CTE-5201-16	Analog electronic LCD thermostat with modular jack
HSO-2350	DDC controller analog output cable, 50 ft., with RJ-12 plug on one end (provides 2–10 VDC control signal to actuator from remote controller)
HSO-2121	Transformer cable, 12 inches, with RJ-12 plug on one end (provides local power to actuator from transformer mounted at actuator location)
HSO-5010	"Y" connector with 3 RJ-12 jacks (allows powering of two strings of actuators when power is applied through an HSO-2121 and the HSO-5010 "splitter" is mounted in the center of each string)
HSO-22xx	Modular cables, RJ-12 plug on both ends (see the table below)

Cable P/N	Cable Length	Max. # of Daisy-Chained MEP-4x42s	
		WithOUT HSO-5010	WITH HSO-5010
HSO-2203	3 feet	6	12
HSO-2206	6 feet	6	12
HSO-2212	12 feet	6	12
HSO-2220	20 feet	4	8
HSO-2250	50 feet	2	4

NOTE: See also the accessories for *MEP-4000/4800 Series Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.) on page 35*.

MEP-4101
Direct-Coupled, ControlSet® Actuator (10 in-lbs.)

(Size Shown Relative to a Quarter)

This compact direct-coupled actuator controls small dampers in HVAC systems that require relatively high rotation speed and low torque. This **three-wire tri-state** actuator is designed for use with **floating** thermostats, controllers, or building automation systems. A minimum torque of 10 in-lbs. is available over the 95° angular rotation (with an adjustable end stop).

When the actuator reaches the **end of rotation**, the motor is disengaged, and (after about five seconds) the appropriate **LED indicator** under the translucent cover **illuminates**—green for "power open" (CCW) or red for "power closed" (CW). The LED remains on until:

- Power to the terminal is simply removed
- Power is switched to the other terminal, and the actuator starts turning again in the opposite direction

The actuator mounts directly to 1/4- to 5/8-inch (6 to 16 mm) round shafts or 1/4- to 7/16-inch (6 to 11 mm) square shafts, eliminating the need for expensive and complicated linkages. An integrated non-rotation screw mounting slot prevents lateral movement. A gear disengagement button allows manual positioning of the actuator.

Notable features include:

- LEDs under the translucent cover indicate (energized) open and closed states for position indication and troubleshooting
- Adjustable end stop for min./max. position capability to allow adjustment of the design CFM flow into a zone
- Quick damper opening and closing (30 seconds for 90° rotation @ 60 Hz)
- Direct mounting to standard shaft sizes
- Integrated non-rotation screw mounting slot
- Gear disengagement button for easy set-up

Specifications

Supply Voltage	24 VAC (+20%/–15%), Class 2
Supply Power	2 VA
Control Signal	Tri-state, 24 VAC
Frequency	50/60 Hz
Angular Rotation	0 to 95°, fully adjustable with mechanical stop
Motor Timing	30 seconds for 90° @ 60 Hz; 36 seconds for 90° @ 50 Hz
Torque	10 in-lbs. (1.1 N•m)
Mounting	Direct to 1/4 to 5/8 inches (6–16 mm) round or 1/4 to 7/16 inches (6–11 mm) square shaft by adjustable "V" bolt and integrated non-rotation screw mounting slot; minimum recommended damper shaft length is 1-5/8 inches
Connections	Wire clamp type; 14 to 22 AWG, copper
Dimensions	5.3 x 2.6 x 2.5 inches (135 x 66 x 63.5 mm)
Weight	0.85 lb. (0.39 kg)
Enclosure	Flame-retardant plastic black base and translucent cover
Noise Level	< 35 dBA max. at 1 meter
Approvals	UL 873 Temperature Indicating and Regulating Equipment (pending); FCC Class B, Part 15, Subpart B (pending)
Environmental Limits	
Operating	–22 to 140° F (–30 to 60° C)
Shipping	–40 to 176° F (–40 to 80° C)
Humidity	5 to 95% RH (non-condensing)

Accessories

HCO-1151	Weather shield kit

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* **and** *Actuator Sizing for Dampers Guide on page 176*.

MEP-425 Series
Fail-Safe, Spring-Return Actuators (62 in-lbs.)

These direct-coupled, spring-return actuators are designed to control small-sized dampers and valves requiring fail-safe operation. The MEP-425 series actuators mount to 1/4 to 3/4 inch diameter shafts or 1/4 to 1/2 inch square shafts. The actuators produce 62 inch-pounds of torque, running and spring return minimum, over a maximum 95° rotation. They come with removable pre-cabled wiring and integrated conduit adapter.

Models

MEP-425100	2-position, 24 VAC/VDC
MEP-425300	2-position, 120 VAC
MEP-425500	Tri-state, 24 VAC/VDC
MEP-425502	Tri-state, w/ dual SPDT auxiliary switches
MEP-425600	0–10 VDC, w/ feedback
MEP-425602	0–10 VDC, w/ feedback and dual SPDT auxiliary switches

Specifications

Supply Voltage		
	24 V Units	VAC ±20% (50/60 Hz)/ VDC ±15%
	120 V Units	VAC ±10%
Current Input		
	24 V Units	5 VA (AC) / 3.5 W (DC)
	120 V Units	7 VA (AC) / 5 W (DC)
Control Input		
	2–position, 24 VAC/VDC	MEP-425100
	2–position, 120 VAC	MEP-425300
	Tri-state, 24 VAC/VDC	MEP-425500/425502
	0 to 10 VDC	MEP-425600/425602
Feedback (0 to 10 VDC)	MEP-425600/425602	
Auxiliary Switches (2 SPDT)	MEP-425502/425602	
Torque	62 in-lbs. (7 N•m)	
Angular Rotation	90° nominal (95° Max.)	
Motor Timing	90 seconds	
Spring Return Time	15 sec. typical	
Connectors	Pre-cabled, 18 AWG, 3 foot (0.9 m)	
Enclosure	Die cast aluminum alloy, NEMA 1 IP54 per EN60529	
Temperature Limits		
	Operating	–25 to 130° F (–32 to 55° C)
	Shipping	–40 to 158° F (–40 to 70° C)
	Humidity	95% RH (non-condensing)
Agency Listing	CE compliant, cUL (C22.2 No. 24-93) listed, UL 60730 (replaces UL873)	

Accessories

HCO-1151	12-7/16 x 7 x 3-1/4" weather enclosure

MEP-455 Series
Fail-Safe, Spring-Return Actuators (160 in-lbs.)

These direct-coupled, spring-return actuators are designed to control dampers and valves requiring fail-safe operation. The MEP-455 series actuators mount to 3/8 to 1 inch diameter shafts or 1/4 to 3/4 inch square shafts. The actuators produce 160 inch-pounds of torque, running and spring return minimum, over a maximum 95° rotation. They come with pre-cabled wiring and integrated conduit adapter.

Models

MEP-455100	2-position, 24 VAC/DC
MEP-455300	2-position, 120 VAC
MEP-455600	0–10 VDC, w/ 0–10 VDC feedback
MEP-455602	0–10 VDC, w/ feedback and dual SPDT auxiliary switches

Specifications

Supply Voltage		
	24 V Units	VAC ±20% (50/60 Hz)
	120 V Units	VAC ±10 (50/60 Hz)
Current Input	7 VA (AC) or 5 W (DC)	
Control Input		
	2-position, 24 VAC/VDC	MEP-455100
	2-position, 120 VAC	MEP-455300
	0 to 10 VDC	MEP-455600/455602
Feedback	0 to 10 VDC (MEP-455600/455602)	
Auxiliary Switches	Dual SPDT (MEP-455602)	
Torque	160 in-lbs. (18 N•m); at –25° F, the spring return is 142 in-lbs. (16 N•m)	
Angular Rotation	90° nominal (95° Max.)	
Motor Timing	90 seconds	
Spring Return Time	15 sec. typical	
Connectors	Pre-cabled, 18 AWG, 3 foot (0.9 m)	
Enclosure	Die cast aluminum alloy, NEMA 2, IP54 per EN60529	
Temperature Limits		
	Operating	–25 to 130° F (–32 to 55° C)
	Shipping	–40 to 140° F (–40 to 60° C)
	Humidity	95% RH (non-condensing)
Agency Listing	CE compliant, cUL (C22.2 No. 24-93) listed, UL 60730 (replaces UL873)	

Accessories

HCO-1152	15-3/8 x 8-1/4 x 4-1/16" weather enclosure

MEP-5061/5071
Direct Coupled, Tri-State, ControlSet® Actuators (50 in-lbs.)

These tri-state ControlSet Actuators are designed to control small dampers, such as air terminal unit dampers. The MEP-5061 is an 18°/minute actuator, and the MEP-5071 is a 60°/minute actuator. A minimum of 50 in-lbs. of torque over the maximum angular rotation of 95° is provided.

The actuator mounts to a 1/2-inch or 3/8-inch diameter damper shaft, eliminating the need for expensive and complicated linkages. When mounting to a 3/8-inch diameter shaft, the HFO-0011 shaft adapter is required and must be ordered separately.

These bidirectional motors may be controlled via an SPDT floating thermostat or building automation system. Both minimum and maximum end stops are standard to limit the rotation. A non-rotation bracket, to prevent lateral movement, is included with each actuator. A gear disengagement button allows manual positioning of the damper and/or gear train without energizing the actuator.

The actuators are protected against overloading. An optional feedback potentiometer and/or a (single or double) auxiliary switch can be field installed.

Specifications

Supply Voltage	24 VAC (+20%/–15%), Class 2
Control Input	Tri-state (see Supply Voltage)
Maximum Power	2 VA
Torque	50 in-lbs.. (5.7 N•m) minimum
Angular Rotation	0 to 95°, stop adjustable, both ends
Motor Timing	
MEP-5061	18°/minute @ 60 Hz; 15°/minute @ 50 Hz
MEP-5071	60°/minute @ 60 Hz 50°/minute @ 50 Hz
Material	Flame retardant plastic
Approvals	UL 873 Temperature Indicating and Regulating Equipment
Environmental Limits	
Operating	0 to 120° F (–18 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	5 to 95% RH (non-condensing)

SEE ALSO: *MEP-5223/5233 Direct-Coupled Replacement Damper Actuators for Residential Zone Dampers on page 40* **and** *MEP-5372/5373/5374 Direct-Coupled, Fail-Safe ControlSet® Actuators (50 in-lbs.) on page 41*.

Models

MEP-5061	18°/minute actuator
MEP-5071	60°/minute actuator

Accessories

CME-1002	Single SPDT, rotary cam auxiliary switch
CME-1004	Dual SPDT, rotary cam auxiliary switch
CME-2003	Rotary feedback, three-wire pot. (10K ohm)
HFO-0011	3/8" shaft adapter
HMO-1003	Replacement non-rotation bracket
HCO-1151	12-7/16 x 7 x 3-1/4" weather enclosure

MEP-5000 Series Cross-Reference

Obsolete Model Number	Torque (in-lb)	Timing (sec/90°)	Control	Replacement Model Number	Torque (in-lb)	Timing (sec/90°)	Control
MEP-5001	50	300	Tri-State	MEP-5061	50	300	Tri-State
				MEP-4003	40	90	Tri-State
MEP-5021	50	90	Tri-State	MEP-5071	50	90	Tri-State
				MEP-4003	40	90	Tri-State
MEP-5002/5062	50	300	**2**–10 VDC	MEP-4002	40	90	**0**–10 VDC
MEP-5003/5063	50	300	Tri-State	MEP-4001	40	90	Tri-State
MEP-5005/5065	50	300	Tri-State	MEP-4013	40	90	Tri-State
MEP-5022/5072	50	90	**2**–10 VDC	MEP-4002	40	90	**0**–10 VDC
MEP-5023/5073	50	90	Tri-State	MEP-4001	40	90	Tri-State

MEP-5223/5233
Direct-Coupled Replacement Damper Actuators for Residential Zone Dampers

The MEP-5223 and MEP-5233 are replacement damper actuators designed for residential dampers. The 24 VAC, tri-state, 10 inch-lbs., direct-coupled actuator provides smooth and quiet performance, with fast, **15-second** closings and openings.

These actuators are intended for **replacement on series B and C style residential dampers** only—not the A series dampers. The MEP-5223 is intended for replacement on **round** dampers with a fully closed blade angle of 45 degrees. The MEP-5233 is intended for replacement on **rectangular** dampers with a fully closed blade angle of 90 degrees.

Specifications

Control Input	24 VAC (+20%/–15%), tri-state
Supply Power	2 VA maximum
Motor Timing	
MEP-5223	15 seconds @ 60 Hz, 18 seconds @ 50 Hz
MEP-5233	15 seconds @ 60 Hz, 18 seconds @ 50 Hz
Angular Rotation	
MEP-5223	45 degrees
MEP-5233	90 degrees
Minimum Output Torque	
	10 in-lbs. (1.1 N•m) running
Connections	Plated screw terminals for 14–22 AWG copper
Enclosure	Black, flame-retardant plastic
Weight	2 lbs. (0.9 kg)
Dimensions	6-7/64 H x 4 W x 3-3/16" D (155 x 102 x 81 mm)
Temperature Limits	
Operating	32 to 140° F (0 to 60° C)
Shipping	–40 to 150° F (–40 to 65° C)

Accessories

CME-1001	Single SPDT switch for MEP-5223
CME-1002	Single SPDT switch for MEP-5233
CME-1003	Dual SPDT switches for MEP-5223
CME-1004	Dual SPDT switches for MEP-5233
CME-2003	Rotary feedback potentiometer
HCO-1151	12-7/16 x 7 x 3-1/4" weather enclosure
HFO-0011	3/8" shaft adapter
HMO-4531	Replacement non-rotation bracket
HMO-4518	Snap-in connector for 1/2" flexible metal conduit
HMO-4520	Compression connector for plenum cable
HMO-4526	Female connector for 1/2" conduit

Models

MEP-5223	15 second/ 45 degree; replaces: Carrier DAMPACT45DEG and 33CC500621, KMC MEP-5203-30
MEP-5233	15 second/ 90 degree; replaces: Carrier DAMPACT90DEG and 33CC500623, KMC MEP-5213-30, Johnson M9101-AGA-2N2

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*.

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* and *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.

MEP-5300 Series Cross-Reference

Obsolete Model Number	Replacement Model Number
MEP-5322	MEP-5372
MEP-5323	MEP-5373
MEP-5324	MEP-5374

SEE ALSO: *MEP-5372/5373/5374 Direct-Coupled, Fail-Safe ControlSet® Actuators (50 in-lbs.) on page 41*.

MEP-5372/5373/5374
Direct-Coupled, Fail-Safe ControlSet® Actuators (50 in-lbs.)

These ControlSet Actuators are designed to control small dampers such as air terminal unit dampers or specific VEP/VEG/VEB series valves. They mount directly to a 1/2" or 3/8" diameter damper shaft, eliminating the need for expensive and complicated linkage. When mounting to a 3/8" diameter shaft, the HFO-0011 shaft adapter is required and must be ordered separately. A minimum of 50 in-lbs. of torque over the maximum angular rotation of 95° is provided. Both minimum and maximum end stops are standard to limit the rotation. A gear disengagement feature allows positioning of the damper and/or gear train without energizing the actuator.

The bidirectional **tri-state** models may be controlled via an SPDT floating thermostat or building automation system. They can also be wired for two-position operation. The MEP-5374 incorporates a 10K ohm feedback potentiometer for use if remote indication of actuator position is desired. An optional auxiliary switch can be field added.

In the MEP-5372 **proportional** model, a 1–5 VDC feedback voltage output is provided that is proportional to the control signal. This feedback can be used for remote indication of damper position. An 18 VDC auxiliary power supply output is also supplied for powering CTE-5100 series thermostats or other control devices in the system.

Models

MEP-5372	Proportional
MEP-5373	Tri-state with**out** feedback potentiometer
MEP-5374	Tri-state with feedback potentiometer

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*.

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* and *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.

Specifications

Supply Voltage	24 VAC, +20%/–15% or 22–35 VDC
Supply Power	6 VA/19 VA peak inrush
Proportional Model	
Control Input	2 to 10 VDC
Feedback	1 to 5 VDC
Tri-State Models	
Control Input	(See Supply Voltage)
Feedback	10 K ohm, 1/3 watt potentiometer (MEP-5374 only)
Torque	50 in-lbs. (5.7 N•m) minimum
Angular Rotation	0 to 95°, stop adjustable, both ends
Motor Timing	45 to 60 seconds, load dependent for 95° rotation
Fail Safe	
Direction	Switch selectable
Charge Time Delay	One minute delay allows full charge before normal operation
Timing	35–50 seconds load dependent for 95° rotation
Material	Flame-retardant plastic
Approvals	UL Recognized
Temperature Limits	Operating: 0 to 120° F (–18 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Accessories

CME-1002	Single SPDT, rotary cam auxiliary switch
CME-1004	Dual SPDT, rotary cam auxiliary switch
HCO-1151	12-7/16 x 7 x 3-1/4" weather enclosure
HFO-0011	3/8" shaft adapter
HMO-1003	Replacement non-rotation bracket
HMO-4005	Non-rotation bracket kit for VEB ball valves
HMO-4518	Snap-in connector for 1/2" flexible metal conduit
HMO-4520	Compression connector for plenum cable
HMO-4526	Female connector for 1/2" conduit

MEP-7200/7500/7800 Series
Direct-Coupled, ControlSet® Actuators (120/180/320 in-lbs.)

These powerful, efficient, durable, direct-coupled actuators provide tri-state or proportional control for large control air dampers or valves in HVAC systems. A minimum torque of 120, 180, or 320 in-lbs. is available over the 94° angular rotation. **Capacitor-driven fail-safe models provide efficient operation with switch-selectable fail direction.**

The **proportional** actuator models accept a **0–10 VDC or 4–20 mA control signal** input from a thermostat, controller, or building automation system. "**Anti-jitter**" circuitry significantly reduces hunting and needless wear on the actuator and valve packing or damper components (from unnecessary miniscule position changes caused by undamped analog input signals). A user-initiated, **auto-mapping** feature provides better equipment control by reassigning the (0–10 VDC or 4–20 mA) input signal range over a reduced rotation range (from 45° to 94°). These models also feature a switch-selectable, **0–5 or 0–10 VDC voltage feedback** output that is proportional to the actuator position.

The **tri-state** models are designed for use with **floating** thermostats, controllers, or building automation systems. They feature a 10,000 ohm (±10%), three-wire **potentiometer feedback output**. These models can also be wired for 2-position operation.

All actuators mount directly on 3/8" up to 1.05" round or 5/16" up to 5/8" square shafts, eliminating the need for expensive and complicated linkages. A non-rotation bracket, to prevent lateral movement, is included with each actuator. A gear disengagement button allows manual positioning of the damper and/or gear train without energizing the actuator. Removable terminals and 1/2" NPS conduit fittings make wiring easier. The actuators are protected against overloading and do not require end or limit switches.

Models

Model # MEP–	Torque			Control		Built-in Options		
	120 in-lbs. min. (13.5 N•m)	180 in-lbs. min. (20 N•m)	320 in-lbs. min. (36 N•m)	Tri-state (Floating)	0–10 VDC or 4–20 mA Proportional	Feedback: 10k ohm Potentiometer	Feedback: 0–5 or 0–10 VDC	Fail Safe (Switch Selectable Direction)
7x01	7200 series (x=2)	7500 series (x=5)	7800 series (x=8)	•				
7x02					•		•	
7x03				•		•		
7x51				•				•
7x52					•		•	•
7x53				•		•		•

MEP-7200 series (120 in-lbs.) replaces MEP-1200 series (100 in-lbs.)
MEP-7500 series (180 in-lbs.) replaces MEP-7000 series (150 in-lbs.)
MEP-7800 series (320 in-lbs.) replaces MEP-7700 series (300 in-lbs.)

Specifications

Supply Voltage	24 VAC (+20%/–15%) Class 2, or 22–35 VDC
Supply Power	
MEP-720x/750x	6 VA
MEP-725x/755x	8 VA normal (25 VA peak while initializing)
MEP-780x	8 VA
MEP-785x	10 VA normal (40 VA peak while initializing)
Control Input	
Tri-state	(See Supply Voltage)
Proportional	0–10 VDC or 4–20 mA
Feedback	
Tri-state	10K ohm potentiometer (MEP-7xx3 models only)
Proportional	0–5 VDC or 0–10 VDC (switch selectable)
Angular Rotation	94°; fully adjustable with HMO-4536 stop kit
Motor Timing	(Powered)
MEP-72xx	75–90 seconds, load dependent
MEP-75xx/78xx	90–115 sec., load dependent
Fail-Safe Timing	(Switch-selectable clockwise, counter-clockwise, or off; up to 40 second delay while charging capacitor after initial connection to power)
MEP-725x	65–100 sec., load dependent
MEP-755x/785x	80–115 sec., load dependent
Torque	
MEP-72xx	120 in-lb. (13.5 N•m)
MEP-75xx	180 in-lb. (20 N•m)
MEP-78xx	320 in-lb. (36 N•m)
Connections	Wire clamp type; 14–22 AWG, copper
Mounting	Direct mounting on 3/8" to 1.05" round or 5/16" to 5/8" square shaft by adjustable "V" bolt and non-rotational bracket HMO-4535 (supplied); minimum recommended damper shaft length is 2.5"
Dimensions	10-1/8 x 5 x 3 inches (257 x 127 x 76 mm)
Weight	MEP-7x0x: 5 lb. (2.3 kg); MEP-7x5x: 5.4 lb. (2.5 kg)
Enclosure	Flame-retardant polymer
Noise Level	< 45 dbA max. at 1 meter
Approvals	UL 873 Temperature Indicating and Regulating Equipment FCC Class B, Part 15, Subpart B
Environmental Limits	
Operating	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 176° F (–40 to 80° C)
Humidity	5 to 95% RH (non-condensing)

Accessories and Repair Parts

CME-7001	Rotary aux. cam switch, single
CME-7002	Rotary aux. cam switch, double
HCO-1152	Weather shield kit
HLO-1020	Crank arm kit
HMO-4535	Replacement non-rotation bracket
HMO-4536	Adjustable end stop kit

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*.

SEE ALSO: *Actuator (MEP Series) Selection Guides on page 173* **and** *Actuator Sizing for Dampers Guide on page 176*.

MEP-7000/7700 Series Cross-Reference

Obsolete Model Number	Torque (in-lb)	Control	Replacement Model Number	Torque (in-lb)	Control
MEP-7001/7011	150	Tri-State	MEP-7501	180	Tri-State
MEP-7002/7012	150	**2**–10 VDC or 4–20mA	MEP-7502	180	**0**–10 VDC or 4–20mA
MEP-7003/7013	150	Tri-State	MEP-7503	180	Tri-State
MEP-7051/7061	150	Tri-State	MEP-7551	180	Tri-State
MEP-7052/7062	150	**2**–10 VDC or 4–20mA	MEP-7552	180	**0**–10 VDC or 4–20mA
MEP-7053/7063	150	Tri-State	MEP-7553	180	Tri-State
MEP-7701/7711	300	Tri-State	MEP-7801	320	Tri-State
MEP-7702/7712	300	**2**–10 VDC or 4–20mA	MEP-7802	320	**0**–10 VDC or 4–20mA
MEP-7703/7713	300	Tri-State	MEP-7803	320	Tri-State
MEP-7751/7761	300	Tri-State	MEP-7851	320	Tri-State
MEP-7752/7762	300	**2**–10 VDC or 4–20mA	MEP-7852	320	**0**–10 VDC or 4–20mA
MEP-7753/7763	300	Tri-State	MEP-7853	320	Tri-State

SEE ALSO: *MEP-7200/7500/7800 Series Direct-Coupled, ControlSet® Actuators (120/180/320 in-lbs.) on page 42*.

TSP-5000/6000 Series
Air Flow Transducer-Actuator for VAV Systems

SEE: *TSP-5000 Series Air Flow Transducer-Actuators on page 99* **and** *TSP-6001/6051 Air Flow Transducer-Actuators (3-State Analog) on page 99*.

Controllers and Switches

CEP/CSP Accessories

CME-1000 Series — Auxiliary cam switches—see *CME-1000 Series Rotary Cam Auxiliary Switches on page 28* for more information

CME-2001/2002 — Rotary feedback potentiometers (see *CME-2001/2002 Rotary Position Feedback Potentiometers on page 28* for more information

HFO-0011 — Reducer bushing to allow CEP/CSP controllers to drive 3/8" diameter shafts

HFO-0034 — In-line 5 micron filter for use on "Hi" sensor connection of CSP-4000 series. Not required for CSP-5001/5002.

HMO-1003 — Non-rotation bracket, 1 each furnished with each CEP/CSP. Can be ordered separately.

HMO-4518 — Snap-in connector for 1/2" flexible metal conduit

HMO-4526 — Female connector for 1/2" conduit

HMO-4520 — Compression connector for plenum cable

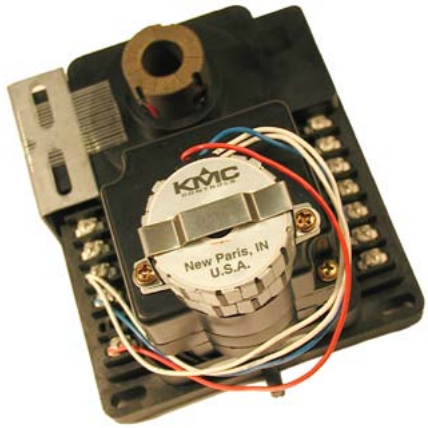
HPO-0062 — Replacement electric motor/gearbox for CEP/CSP-4000 (with date codes after 9225)

HSO-5001 — Test leads

SSE-1000/2000 — Air flow sensors—see the *SSE-1000/2000 Series VAV System Duct Flow Sensors on page 72* for more information)

NOTE: In the place of a discontinued HFO-0108 fitting, use a standard 3/8" barb x 1/4" barb union adapter.

CEP-4000 Series VAV Flow Controller-Actuator (Electronic Analog)



The CEP-4000 series is a pressure-independent combination controller-actuator designed primarily for use on variable air volume terminal units. Cooling and heating air flow is sensed by a **temperature-compensated hot-wire anemometer**. Velocity sensing is unaffected by changes in the duct air temperature.

The CEP-4000 series offers full-range flow control of VAV terminal units when used with the CTE-1000/1100/5000 series room thermostats. Air-velocity flow control limits are set at the room thermostat or remotely with the REE-1012 remote-limits accessory module. The actuator section provides a magnetic clutch that allows the actuator to be stalled at either end of stroke, eliminating the requirement for mechanical stops or end switches. The controller-actuator is available with (100°, 60°, and 45°) built-in stops or (360°) no stops.

Accessories

Thermostats/Controllers

CEE-1100 series	Thermostats, remote
CTE-1000 series	Thermostats
CTE-1100 series	Thermostats
CTE-5000 series	Thermostats
REE-1012	Relay module, min. and max. limit

Feedback and Auxiliary Switches

CME-1000	Rotary cam auxiliary switches
CME-2001	10K ohm potentiometer
CME-2002	1K ohm potentiometer

Mounting Adapter

HFO-0011	For 3/8" shaft

Standard Air Flow Sensors

SSE-1001/1002	4"/8" insertion
SSE-2001/2002	4"/8" insertion, with thermistor

Conformal Coated Air Flow Sensors

SSE-1011/1012	4"/8" insertion
SSE-2011/2012	4"/8" insertion, with thermistor

Other

HPO-0062	Replacement electric motor/gearbox for date codes after 9225

REE-1000/4000 Series Relay modules

NOTE: For operation principles, model history and replacement issues, adjustment/calibration/troubleshooting procedures, and sample applications, see the CEP-4000 Series VAV Flow Controller-Actuators Applications Guide. It is available for download from the CEP-4000 page on the KMC Controls web site.

Specifications

Operating Voltage	24 VAC, –15%/+20%, 50/60 Hz
Supply Power	9 VA
Output Supply	9.1 VDC (22 mA)
Output Torque	45 ±10 in-lbs. (5 ±1 N•m)
Velocity Range	0–3000 fpm (15.24 m/s)
Velocity Dead Band	±50 fpm
Velocity Output	1–5 VDC (0–3000 fpm)
Reset Voltage	3–6 VDC (0–3000 fpm)
Angular Rotation	45°, 60°, 100°, 360°
Stroke Time	18° per minute
Mounting	Direct to 1/2" (13 mm) diameter shaft or 3/8" (10 mm) diameter with HFO-0011 adapter
Material	Glass-filled nylon
Weight	1.75 lb. (0.79 kg)
Connections	Plated screw terminals
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

CEP-4 X Y Z (C)*

- X:
  - 1: SSE-10x1 sensor
  - 2: SSE-10x2 sensor
  - 3: SSE-20x1 sensor
  - 4: SSE-20x2 sensor
  - 5: No sensor
- Y:
  - 0: CCW to close**
  - 1: CW to close
  - 6: CW to close—special ±100 fpm deadband
- Z:
  - 0: 100° rotation
  - 2: 60° rotation
  - 4: 45° rotation
  - 6: 360° rotation

*NOTE: **Model numbers with a "C" on the end come with a silicon conformal coated air sensor.** (Not all possible model number configurations may be available. See the web site.)

**NOTE: The default rotation direction can easily be reversed by swapping the red and blue motor wires.

When replacing an older model, the **CEP-4995** (100° rotation, CW to close, no sensor) is a **"universal replacement"** for most applications and will replace **MOST** CEP-1000/3000/4000 series controllers. If replacing a CEP-1000 or CEP-3000 series controller, the REE-1000 series relay may also need to be replaced with the equivalent REE-4000 series module. See the CEP-4000 Applications Guide for more information.

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *CEP/CSP Accessories on page 44*, *Relays on page 56*, **and** *Thermostats on page 81*.

CSE-1102/1103
Differential Pressure Switches

The KMC CSE-1102/1103 Differential Pressure Switches are used to remotely sense low pressure or differentials of pressure.

Typical applications include sensing fan or blower operation in ducted ventilation systems, sensing pressure drop across filters, and sensing frost build-up on coils. The SPDT switch allows remote status or alarm indication or operation of electrical circuits to other control devices.

Model CSE-1102 (shown) has barbed tubing connections, while the CSE-1103 is furnished with compression connectors for use with copper tubing. Both models are UL Recognized and CSA Approved.

Models

CSE-1102	Differential Pressure Switch with barbed connections
CSE-1103	Differential Pressure Switch with compression connections

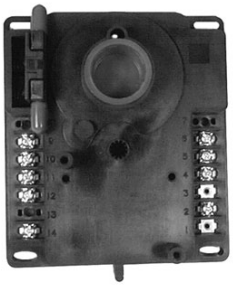
Specifications

Setpoint Range	0.05" ±0.02 wc to 12" ±0.01" wc, adjustable (0.012 kPa ±0.005 kPa to 3 kPa ±0.02 kPa)
Differential	0.02" wc (0.005 kPa) rising to 0.8" wc (0.02 kPa) @ highest setting
Max Pressure	0.5 psi (3.4 kPa)
Electrical Ratings	
Inductive	1/4 hp @ 125 VAC, 1/2 hp @ 250 VAC, 0.50 amp @ 125 VDC, 0.25 amp @ 250 VDC
Pilot Duty	300 VA @ 115 to 277 VAC
Resistive	15 amps @ 125 to 277 VAC
Approvals	UL Recognized, File MH6213 CSA Approved, File LR18754
Temperature Limits	Operating: –40 to 180° F (–40 to 82° C) Shipping: –40 to 180° F (–40 to 82° C)

Accessories

HFO-0015	4" (102 mm) long sensing tube
HFO-0016	6" (152 mm) long sensing tube

CSE-4840 Series
VAV Flow Controller w/o Actuators (Electronic Analog)



These controllers have the control function of the CSP-4000 Series VAV Flow Controller-Actuators but **without the attached actuators**. See the CSP-4000 Series section for more information.

Models

CSE-4846	0–2" wc velocity range (1–6 VDC)
CSE-4847	0–2" wc velocity range (0–5 VDC)
CSE-4848	0–1" wc velocity range (1–6 VDC)

CSP-4000 Series
VAV Flow Controller-Actuator (Electronic Analog)

The analog electronic CSP-4000 VAV Flow Controller-Actuators are pressure-independent combination controller-actuators designed primarily for use on variable air volume terminal units. They use a multi-point or single-point differential (velocity) pressure measuring station or pitot tube for sensing airflow. Designed with a passive mass airflow sensor utilizing two Wheatstone bridges, each measures dynamic differential pressure, which corresponds linearly to reset.

These units afford full-range flow control of VAV terminal units when used with the CTE-1000, CTE-1100, or CTE-5000 series room thermostats. Minimum and maximum flow control limits are set at the wall thermostat. Available control options include proportional or on/off wet or electric reheat, dual minimum, fan induction, dual duct, and computer interface.

The internal magnetic clutch ensures that excessive torque will not be applied to the gear train.

Models

CSP-4 X Y Z

- X
  - 6: 0–2" wc Velocity Range
  - 8: 0–1" wc Velocity Range
- Y
  - 0: CCW to Close
  - 1: CW to Close
- Z
  - 0: 100° Rotation
  - 2: 60° Rotation
  - 4: 45° Rotation
  - 6: 360° Rotation

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *CEP/CSP Accessories on page 44*, *Relays on page 56*, and *Thermostats on page 81*.

Specifications

Supply Voltage	24 VAC (–15%/+20%), Class 2
Supply Power	3 VA
Output Supply	9.1 VDC (22 mA)
Output Torque	45 ±10 in-lbs. (5 ±1 N•m)
Velocity Range	1" wc (249 Pa) or 2" wc (498 Pa)
Angular Rotation	45°, 60°, 100°, or 360°
Stroke Time	18° per minute
Control Action	PI
Proportional Band	0.012" (1" wc range) 0.024" (2" wc range)
Integral Time	23.5 seconds
Mounting	Direct to 1/2" (13 mm) diameter shaft or 3/8" (10 mm diameter with adapter
Connections	
Wire	Plated screw terminals
Air	0.2" nipples for 1/4" OD tubing
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Accessories and Repair Parts

Thermostats/Controllers	
CEE-1100 series	Thermostats/controllers (w/ remote sensors)
CTE-1000 series	Thermostats
CTE-1100 series	Thermostats
CTE-5000 series	Thermostats
Feedback and Auxiliary Switches	
CME-1002	Single auxiliary cam switch
CME-1004	Dual auxiliary cam switch
CME-2001	Rotary feedback pot., 10K ohm
CME-2002	Rotary feedback pot., 1K ohm
Standard Air Flow Sensors	
SSS-1002	Airflow sensor, 1 sensing point, 3-5/32" length
SSS-1003	Airflow sensor, 2 sensing points, 5-13/32" length
SSS-1004	Airflow sensor, 3 sensing points, 7-21/32" length
SSS-1005	Airflow sensor, 4 sensing points, 9-29/32" length
Other Accessories	
HFO-0011	Adapter for 3/8" shaft
HFO-0034	In-line 5 micron filter for use on "Hi" sensor connection
HPO-0062	Replacement electric motor/gearbox (for date codes after 9225)

CSP-5001/5002
VAV Flow Controller-Actuator (Electronic Analog)

The electronic analog KMC CSP-5001/5002 VAV Flow Controller-Actuators are pressure-independent combination controller-actuators, designed primarily for use on variable-air-volume terminal units. Airflow is sensed by using a single or multi-point differential (velocity) pressure measuring station or pitot tube (such as an SSS-1000 series airflow sensor). Designed with an onboard flow-through sensor using twin platinum resistance temperature detectors, these models are capable of controlling a velocity setpoint from 0 to 3,300 fpm with an accuracy of 3%.

The CSP-5001/5002 offers full-range flow control of VAV terminal units when used with the CTE-5100 series room thermostats. Air velocity flow control limits may be set at the thermostat or internal to the CSP-5001/5002. The actuator section provides adjustable stops, magnetic clutch, and a gear disengagement button. Internal status LEDs indicate green for opening and red for closing.

Available control options include proportional or two position wet or electric reheat, changeover, dual minimums, fan induction, dual duct, and automation interface.

Models

CSP-5001	CCW to close
CSP-5002	CW to close
	(Factory-set rotation direction on both can be reversed by changing the position of a jumper.)

NOTE: For operation principles, calibration/troubleshooting procedures, and sample applications, see the CSP-5001/5002 Series VAV Flow Controller-Actuators Applications Guide. It is available for download from the CSP-5001/5002 page on the KMC Controls web site.

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *CEP/CSP Accessories on page 44*, *Relays on page 56*, and *Thermostats on page 81*.

Specifications

Supply Voltage	24 VAC (–15/+20%), 50/60 Hz, Class 2
Supply Power	4 VA
Output Supply	16 VDC (22 mA)
Output Torque	50 in-lbs. min., 70 in-lbs. max. (5.6 N•m min., 7.9 N•m max.)
Velocity Range	0 to 3300 fpm (16.76 m/s), dependent on DP pickup, tubing size/length, and connections
Velocity Output	0 to 10 VDC (0 to 100% flow)
Angular Rotation	0 to 95°, both end stops adjustable
Stroke Time	18° per minute @ 60 Hz 15° per minute @ 50 Hz
Reset Voltage	0 to 10 VDC
Reset Limits	Adjustable, 0 to 100%
Mounting	Direct to 1/2" (13 mm) diameter shaft or 3/8" (10 mm diameter with adapter)
Connections	Wire clamp type, 14 to 22 AWG
Material	Flame-retardant polymer, UL94-5V, black housing with white cover
Weight	2.4 lbs. (1 kg.)
Temperature Limits	Operating: 32 to 120° F (0 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Accessories

Thermostats	
CTE-5100 series	Thermostats
Feedback and Auxiliary Switches	
CME-1002	Single auxiliary cam switch
CME-1004	Dual auxiliary cam switch
CME-2001	Rotary feedback pot., 10K ohm
CME-2002	Rotary feedback pot., 1K ohm
Standard Air Flow Sensors	
SSS-1002	Airflow sensor, 1 sensing point, 3-5/32" length
SSS-1003	Airflow sensor, 2 sensing points, 5-13/32" length
SSS-1004	Airflow sensor, 3 sensing points, 7-21/32" length
SSS-1005	Airflow sensor, 4 sensing points, 9-29/32" length
Other Accessories	
HFO-0011	Adapter for 3/8" shaft
HMO-4518	Snap-in connector for 1/2" flexible metal conduit
HMO-4520	Compression connector for plenum cable
HMO-4526	Female connector for 1/2" conduit
HSO-5001	Test leads
REE-1005	Relay module, heat/cool changeover
REE-5001	Electric relay module, 3-stage reheat
REE-5002	Triac relay module, fan with 2-stage reheat

CTE-3006/3007
Low Limit Controllers, SPDT

These low limit controllers are SPDT devices designed for use on HVAC equipment requiring low-temperature control and/or indication in duct work or on heating/cooling coils.

On a decrease in sensed temperature, the unit will actuate at its setpoint. The CTE-3007 (manual-reset model) will reset when the reset button is pushed and the sensed temperature is at least 5° F (2.8° C) above the setpoint. The CTE-3006 (automatic-reset model) will automatically reset when sensed temperature rises 5° F above the setpoint. A test lever, located under the cover, allows the unit to be manually actuated to facilitate system checkout.

For use in stratified airstreams, the unit will respond to the lowest temperature sensed along any one foot section of the sensing element.

To aid installation of capillaries, HMO-4523 capillary-mounting clips (ordered separately) are recommended.

Specifications

Range	35 to 68° F (1.7 to 20° C)
Differential	4.5° F fixed (2.5° C)
Switch Action	SPDT, snap-acting
Element	3/32" (2.4 mm) diameter, 20-foot (607 cm) length, vapor-filled, tin-plated copper capillary, max. temperature 300° F (149° C)
Electrical Ratings	
Inductive	24 FLA (Full Load Amperes) @ 120/240 VAC 144 LRA (Locked Rotor Amperes) @ 120/240 VAC 2 HP @ 120 VAC, 3 HP @ 240 VAC
Pilot Duty	720 VA max. @ 120 to 600 VAC, 144 VA max. @ 24 VAC
Approvals	CUL US Listed, CE Compliant, RoHS compliant
Materials	Plated steel case, plastic cover
Mounting	Surface mount with capillary installed in horizontal serpentine pattern
Temperature Limits	Operating: –60 to 160° F (–51 to 71° C) Shipping: –60 to 160° F (–51 to 71° C)

Models

CTE-3006	Automatic reset
CTE-3007	Manual reset

Accessories

HMO-4523	Capillary clip (ordering about 5 clips per unit is recommended)

CTE-3017
Low Limit Controller, DPDT

This low limit controller is a DPDT device designed for use on HVAC equipment requiring low-temperature control and/or indication in duct work or on heating/cooling coils.

On a decrease in sensed temperature, the unit will actuate at its setpoint. Manual-reset models will reset when the reset button is pushed and the sensed temperature is at least 5° F (2.8° C) above the setpoint. A test lever, located under the cover, allows the unit to be manually actuated to facilitate system checkout.

For use in stratified airstreams, the unit will respond to the lowest temperature sensed along any one foot section of the sensing element.

To aid installation of capillaries, five HMO-4523 capillary-mounting clips are shipped for the 20-foot-capillary.

Specifications

Range	34 to 70° F (1.1 to 21° C)
Differential	4.5° F fixed (2.5° C)
Switch Action	DPDT
Element	3/32" (2.4 mm) diameter, 20-foot (607 cm) length, vapor-filled, tin-plated copper capillary, max. temperature 300° F (149° C)
Electrical Ratings	
Inductive	14 FLA (Full Load Amperes) @ 120 VAC, 12 FLA @ 240 VAC 84 LRA (Locked Rotor Amperes) @ 120 VAC, 72 LRA @ 240 VAC 3/4 HP @ 120 VAC, 2 HP @ 240 VAC
Pilot Duty	720 VA max. @ 120 to 600 VAC, 144 VA max. @ 24 VAC
Approvals	CUL US Listed, CE Compliant, RoHS compliant
Materials	Plated steel case, plastic cover
Mounting	Surface mount with capillary installed in horizontal serpentine pattern
Ambient Limits	Operating: –60 to 160° F (–51 to 71° C) Shipping: –60 to 160° F (–51 to 71° C)

Accessories

HMO-4523	Replacement/extra capillary clip (5 provided)

CTE-6001
Manual Reset High Limit Control

The CTE-6001 is a push-button manual-reset high-limit control (firestat). It is designed for installation in supply air ducts to shut down heating/air-conditioning equipment or ventilation fans when the duct air temperature exceeds a preset limit.

The "cut-out" temperature setpoint is field adjustable in a range of 100 to 250° F (38 to 121° C). Once set, the temperature setpoint can be "locked in place" by tightening the screw in the setpoint lever.

This device is shipped with the "cut-out" temperature preset at 135° F (57° C). It can be manually reset without removing the cover. The helix bimetal sensing element is protected from damage by a rigid outer shield. The insertion length is 7-1/2" (191 mm).

Specifications

Switch Action	SPST, manual reset
Element Length	7-9/16" (192 mm)
Adjustment Range	100 to 250° F (38 to 121° C)
Electrical Ratings	
Full Load Amps	9.8 FLA@ 115 VAC, 4.9 FLA @ 230 VAC
Locked Rotor Amps	58.8 LRA @ 115 VAC, 29.4 LRA @ 230 VAC
VA	2,000 VA maximum connected
Approval Listing	UL listed
Temperature Limits	Operating: 40 to 120° F (4 to 49° C)
	Shipping: –40 to 140° F (–40 to 60° C)

SSE-1000/2000 Series Duct Sensors for VAV Systems

SEE: *SSE-1000/2000 Series VAV System Duct Flow Sensors on page 72*.

SSS-1000 Series Differential Pressure Flow Sensors for VAV Systems

SEE: *SSS-1000 Series VAV Differential Pressure Flow Sensors on page 157*.

TSP-5000/6000 Series Air Flow Transducer-Actuators for VAV Systems

SEE: *TSP-5000 Series Air Flow Transducer-Actuators on page 99* **and** *TSP-6001/6051 Air Flow Transducer-Actuators (3-State Analog) on page 99*.

Enclosures

Accessories and Miscellaneous

HCO-1020A	Replacement lock and keys for HCO-1034/1035/1036/1037/2424/2436 panels Mounts with large hex nut.
HPO-1315	KMC Label, 4 x 8 inches, durable, polycarbonate material

HCO-1008/1009
Relay/Transducer Enclosures

HCO-1008
(gray)

HCO-1009
(silver)

Models

HCO-1008	Holds 1 or 2 REE-3100 series relays, 3.125 W x 5 H x 2.5" D, gray steel w/ plastic cover
HCO-1009	Holds up to 8 REE-3100 series relays, 9.5 W x 5 H x 2.5" D, steel

HCO-1037 Steel Control Panel Enclosure Cross-Reference

Use HCO-1034 instead.

Accessories and Repair Parts

HCO-1020A	Replacement lock and keys

HCO-1034/1035/1036
Steel Control Panel Enclosures

These enclosures provide a convenient method of surface mounting and protecting pneumatic, electrical, and digital devices. The cabinet is easily mounted on the wall, while the subpanel with the control devices may be added later.

Cabinet doors can be configured to open to the right or left. If more than one enclosure is necessary, they are easily mounted next to each other and/or joined by removing the required knockouts which are on all four sides. Fastened with appropriate fittings and lock nuts, these enclosures provide a neat, flexible installation.

Specifications

Mounting	Keyhole/surface
Weight	HCO-1034: 23 lbs. (10 kg) HCO-1035: 36 lbs. (16 kg) HCO-1036: 75 lbs. (34 kg)
Materials	
Cabinet	14 gauge (HCO-1034) or 16 gauge (HCO-1035/1036) steel
Subpanel	18 gauge perforated steel, 1/8" (3 mm) holes on 1" (51 mm) centers
Finish	Textured dark blue PMS 288
Knockouts	Provided on all 4 sides
Door	Welded hinge, key operated latch, tamper-resistant outputs
Approvals	UL Listed Type 1, CSA Type 1, NEMA Type 1, IEC 60529 IP 30

Models

HCO-1034	(14 gauge) 16" W x 18" H x 6" D
HCO-1035	(16 gauge) 20" W x 24" H x 6" D
HCO-1036	(16 gauge) 24" W x 36" H x 6" D

Accessories

HCO-1020A	Replacement lock and keys
HPO-1315	KMC Label, 4 x 8 inches, polycarbonate

HCO-1101
Control Panel Enclosure

This economical enclosure made of flame retardant plastic can contain a variety of different control devices. It is 10-1/2" long x 4-3/4" wide x 3-1/8" deep. Base incorporates 3-1/4" snap track. Cover includes communications port door. Can hold three XEC-300x transducers (gauges cannot be used with XEC-300x).

NOTE: The HCO-1101 consists of the HCO-1121 and the HCO-1120 assembled together.

Accessories

HCO-1121: Enclosure cover

HCO-1120: Enclosure base

HCO-1102
Controller Enclosure

HCO-1102 (shown with a KMD-7401 controller mounted inside)

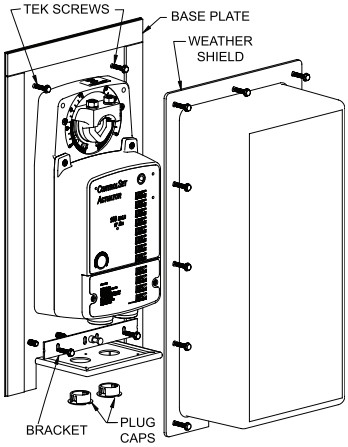
The HCO-1102 is a two-part enclosure that features:

- Made of 18-gauge (base) and 22-gauge (cover) steel
- Black electrocoated finish
- 10.1 W x 2.4 H x 7.1" D (257 x 62 x 181 mm)
- Cover snaps onto base and is secured by a single screw
- Screw bosses provided for mounting one of any of the KMD-5801/5802 controllers, KMD-7300/7400 series controllers, BAC-5801/5802 controllers, BAC-7300/7400 series controllers, or KMD-5540 series CommTalk protocol interfaces
- Optional HMO-1102 perforated sub-panel mounts on screw bosses and allows other devices (with different mounting holes) to be installed in the enclosure

Accessories

HMO-1102	5-7/8 x 7" perforated sub-panel, 18-gauge steel, black electrocoated finish

HCO-1151/1152
Weather Enclosures



HCO-1152 (with installed actuator shown in installation view)

The HCO-1151/1152 enclosures, consisting of a metal mounting plate, plastic cover, non-rotation bracket, plug caps, and screws, are designed to protect actuators from inclement weather.

Models

HCO-1151:	12-7/16 x 7 x 3-1/4" NEMA 3R enclosures (for MEP-4000/4800, MEP-425, and MEP-5000 series actuators)
HCO-1152:	15-3/8 x 8-1/4 x 4-1/16" NEMA 3R enclosures (for MEP-1200, MEP-455, and MEP-7000 series actuators)

HCO-2424/2436 Series Enclosures/Assemblies

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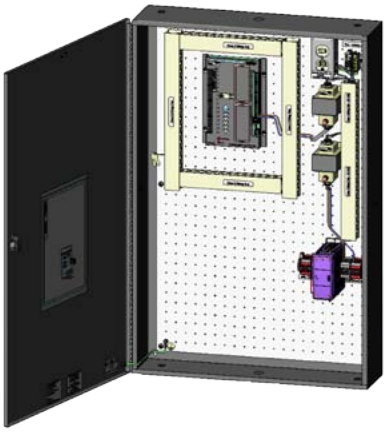


HCO-2436-4 Shown (Controller Not Included)

These control enclosures provide a convenient method of surface mounting and protecting control devices. The cabinet is easily mounted on the wall, while the sub-panel contains spaced holes for easy mounting of controllers. The enclosure is designed for such KMC controllers (purchased separately) as the KMD/BAC-5801/5802, KMD/BAC-5831, and BAC-A1616BC.

If more than one enclosure is necessary, they are easily mounted next to each other and/or joined by removing the required knockouts which are on all four sides. Fastened with appropriate fittings and locknuts, these enclosures provide a neat, flexible installation.

Options include two different heights and different combinations of included transformers, power supply, switched receptacle, wire ducts, terminal blocks, and other accessories.

Accessories and Repair Parts

HCO-1020A	Replacement lock and keys
HPO-1315	KMC Label, 4 x 8 inches, polycarbonate
XEE-6112-075	Replacement transformer

Models

Model #	Dimensions (inches)	Interior Electrical Options*		
		24 VDC Power Supply	24 VAC Trans-formers	Terminal Blocks
HCO-2424	24 x **24** x 6 (61 x 61 x 15 cm)	(Enclosure Only)		
HCO-2424-1			1	1
HCO-2424-2			2	2
HCO-2424-3		1	1	2
HCO-2424-4		1	2	3
HCO-2436	24 x **36** x 6 (61 x 91 x 15 cm)	(Enclosure Only)		
HCO-2436-1			1	1
HCO-2436-2			2	2
HCO-2436-3		1	1	2
HCO-2436-4		1	2	3

*HCO-24xx**-x** models with interior electrical options have an accessories package installed that includes a switched receptacle, 1-1/2 inch wire duct, and a spare parts kit (two replacement fuse bulbs, five replacement 2-pin jumpers, and six 249 ohm resistors). (The resistors can be used for converting a 4–20 mA input into a voltage that KMC controllers can read.) Controllers are **not** included.

Specifications

Approvals	NEMA 1 UL Listed Enclosed Industrial Control Panel (UL 508A)
Materials	
Cabinet	Gray, 14 gauge steel
Sub-panel	White, 16 gauge perforated steel with 1/8" (3 mm) holes on 1" (51 mm) centers
Door	Tamper resistant, with welded piano hinge and key-operated latch
Mounting	Keyhole/surface
Knockouts	Provided on all four sides

Power Supplies and Transformers

XEE-4002/5002
Power Supplies

The KMC XEE-4002 and XEE-5002 power supplies are designed to provide the CTE-1000/1100/5000 and CTE-5100 room thermostats with the appropriate supply voltage from a 24 VAC power source. VAV applications use the appropriate CEP/CSP VAV controller to provide the thermostat power supply. These power supplies allow these thermostats to be used in non-VAV applications.

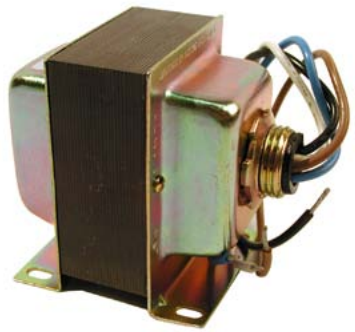
Specifications

Supply Voltage	24 VAC @ 1 VA, +20/–15%
Output Voltage	XEE-4002: 9.1 VDC @ 22 mA, ±5% XEE-5002: 16 VDC @ 25 mA, ±5%
Temperature Limits	Operating: 0 to 120° F (–18 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

XEE-4002	9.1 VDC for CTE-1000/1100/5000 series thermostats
XEE-5002	16 VDC for CTE-5100 series thermostats

XEE-6000 Series
Transformers



XEE-6000 series transformers (single hub shown above) can be mounted using either the mounting base pad or the threaded hub(s). Models are available to provide power for **UL Listed or UL Recognized** applications. All XEE-6100 series transformers 75 VA and higher and all XEE-6300 series multi-tap transformers have a manual reset circuit breaker on the secondary output.

Specifications

Secondary Voltage	24 VAC
Configuration	Split bobbin design, steel end bells
Wiring	18 AWG leads, 7.5 to 9.5" (191 to 241 mm) long, stripped and tinned
Weight	2.4 to 5.3 lbs. (1.09 to 2.4 kg)
***UL Certification**	R C 2 = UL Recognized Class 2 L C 2 = UL Listed Class 2 UUKL** = Approved for use in smoke control systems REC*** = UL Recognized (***not for use with Class 2 devices***)
Other Approvals	CE and RoHS compliant

Models

Model Selection Guide

24 VAC Secondaries—all circuits are non-supervised and all secondaries (except for XEE-6111-150) are power limited

Model #	Primary Voltage	Power Rating	Circuit Breaker	Threaded Hub	UL*	Dimensions (w/o hubs) (inches/millimeters)	Mounting Hole Dimensions
XEE-6111-040	120 VAC 60 Hz	40 VA	None	Single	R C 2	2.7 W x 2.9 H x 2.2" D (68.6 x 73.7 x 55.9 mm)	2.0 W x 1.8" D (50.8 x 45.7 mm)
XEE-6112-040				Dual	L C 2		
XEE-6111-050		50 VA		Single	R C 2	2.8 W x 2.9 H x 2.2" D (71.1x 73.7 x 55.9 mm)	2.0 W x 1.8" D (50.8 x 45.7 mm)
XEE-6112-050				Dual	L C 2		
XEE-6211-050	277 VAC 50/60 Hz			Single	R C 2	2.8 W x 2.9 H x 2.2" D (71.1x 73.7 x 55.9 mm)	2.0 W x 1.8" D (50.8 x 45.7 mm)
XEE-6212-050				Dual	L C 2		
XEE-6311-050	120/240/ 277/480 VAC 50/60 Hz		Included	Dual	L C 2	3.5 W x 3.1 H x 2.5" D (88.9 x 78.7 x 63.5 mm)	1.9 W x 2.0" D (48.3 x 50.8 mm)
XEE-6111-075	120 VAC 60 Hz	75 VA		Single	R C 2	3.9 W x 3.1 H x 2.5" D (99.1 x 78.7 x 63.5 mm)	2.3 W x 2.0" D (58.4 x 50.8 mm)
XEE-6112-075				Dual	L C 2	3.9 W x 3.1 H x 2.5" D (99.1 x 78.7 x 63.5 mm)	2.3 W x 2.0" D (58.4 x 50.8 mm)
XEE-6311-075	120/208/ 240/480 VAC 50/60 Hz			Single	R C 2	3.9 W x 3.0 H x 2.5" D (99.1 x 76.2 x 63.5 mm)	2.3 W x 2.0" D (58.4 x 50.8 mm)
XEE-6111-100	120 VAC 60 Hz	96 VA		Single	R C 2	4.1 W x 3.1 H x 2.5" D (104.1 x 78.7 x 63.5 mm)	2.5 W x 2.0" D (63.5 x 50.8 mm)
*XEE-6112-100***				Dual	L C 2 UUKL**		
XEE-6311-100	120/240/ 277/480 VAC 50/60 Hz			Dual	L C 2	4.3 W x 3.1 H x 2.5" D (109.2 x 78.7 x 63.5 mm)	2.6 W x 2.0" D (66.1 x 50.8 mm)
*XEE-6111-150****	120 VAC 60 Hz	150 VA		Single	REC***	3.5 W x 3.3 H x 3.8" D (88.9 x 83.8 x 96.5 mm)	2.5 W x 3.2" D (63.5 x 81.3 mm)

Relays

SEE ALSO: *Controllers and Switches on page 138* and *Transducers on page 94*.

REE-1004
Relay Module, Constant Volume w/ Override

The KMC REE-1004 Relay Module is designed for constant volume control of VAV terminal units in HVAC systems. Used in conjunction with CEE/CEP/CSE/CSP-4000 series of controller-actuators, it is capable of controlling a terminal at a constant setting, but has the ability to drive it fully open or closed with a contact closure. Since the desired air flow setting is made at the relay module, no room thermostat is required.

Specifications

Supply Voltage	9.1 to 18 VDC (2 mA)
Material	Flame retardant plastic
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

REE-1005
Relay Module, Heat/Cool Changeover

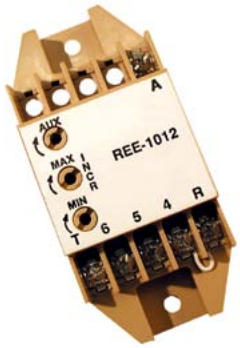
The KMC REE-1005 Relay Module is designed primarily for automatic heating /cooling changeover applications on single duct VAV terminal units in HVAC systems.

Used in conjunction with the SSE-2000 series sensors, they have the ability to change the action of the VAV terminal to either heating or cooling based on the temperature of the supply air to the VAV terminal. They are designed for use with CEE/CEP/CSE/CSP-4000 and CSP-5000 series controller actuators and with CEE/CTE-1103 and CTE-5103 thermostats. (For use with CTE-5001/5011 thermostats, see the *REE-1014 Relay Module, Heat/Cool Changeover on page 57*.)

Specifications

Supply Voltage	9.1 to 18 VDC (2 to 4 mA)
Setpoint	77° F ±4° F (25° C ±2° C)
Contact Voltage (NC, C, NO)	Supply voltage minus 1 VDC
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

REE-1012
Relay Module with Min. and Max. Limit



The KMC REE-1012 relay modules are designed for use with the CTE series room thermostats. They provide the capability for setting minimum and maximum limits remote from the thermostat.

When used with the CTE thermostat in a VAV system, the REE-1012 maintains the minimum and maximum cfm setpoints to the CEE/CEP/CSE/CSP-4000 series of flow controller-actuators,

Specifications

Supply Voltage	9.1 to 18 VDC (2 to 4 mA)
Material	Flame retardant plastic
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

REE-1014
Relay Module, Heat/Cool Changeover

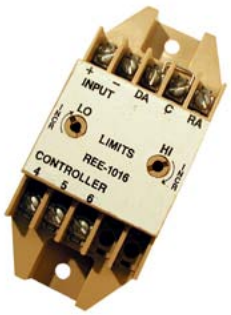
The KMC REE-1014 Relay Module is designed primarily for automatic heating /cooling changeover applications on single duct VAV terminal units in HVAC systems.

Used in conjunction with the SSE-2000 series sensors, they have the ability to change the action of the VAV terminal to either heating or cooling based on the temperature of the supply air to the VAV terminal. They are designed for use with CEE/CEP/CSE/CSP-4000 and CSP-5000 series controller actuators and with CTE-5001/5011 thermostats. (See also the ***REE-1005 Relay Module, Heat/Cool Changeover on page 56***.)

Specifications

Supply Voltage	9.1 VDC (2 to 4 mA)
Setpoint	77° F ±4° F (25° C ±2° C), factory set
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

REE-1016/1022
Relay Modules, BAS Computer Interface



Models

REE-1016	4 to 20 mA input
REE-1022	2 to 10 VDC input

KMC Computer Interface Relay Modules are designed for interfacing a Building Automation System signal to reset specific CEE/CEP/CSE/CSP-4000 series controller-actuators on VAV terminal units in HVAC systems. The 4–20 mA or 2–10 VDC inputs are converted to an output signal, which is linear over the adjusted "LO" and "HI" air velocity limit setpoints. The low adjustment may be set at 0 and the high at 6 VDC to allow the flow limits to be set directly by a building automation system.

Specifications

Supply Voltage	9.1 VDC (3 mA) ±5%
Input Signal	See Models list
Output	0 to 6 VDC, adjustable, linear
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

REE-2004
Solid State Relay (25 A)

REE-2004 solid-state relays are rugged, single-phase devices with 25 amp ratings (with proper heat sinking). They accept a DC logic control input and provide precise zero-crossing on-off control in a panel mounted package.

Rugged internal snubber circuitry attenuates most industrial noise. The high dv/dt and "blocking voltage" provide excellent immunity to voltage spikes. A new, fast-responding input circuit allows the relay to survive high-energy, non-repetitive power-line surges and continue normal operation.

Relay status can be seen via the built-in LED status indicator under the clear plastic safety cover.

A current-limited DC input (4 to 32 VDC) allows a wider selection of control devices and simplifies integration with PLCs and other externally powered circuits.

The REE-2004 provides an effective replacement for electromechanical contactors. An excellent application for this relay is switching electric resistance heating elements. The fast switching reduces the thermal cycling of the heating elements resulting in longer element life. In addition, the elimination of mechanical contacts reduces both maintenance costs and downtime.

No heat sink is required for loads up to 4 amperes. **Loads greater than 4 amperes require a heat sink and thermal pad. See the Accessories section.**

Models

REE-2004-10	(Discontinued; use REE-2004-25)
REE-2004-25	25 amperes$_{RMS}$*

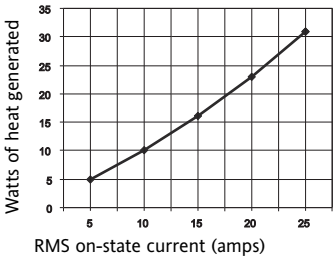
*With proper heat sinking. No heat sink is required for loads up to 4 amperes. **Loads greater than 4 amperes require a heat sink (**HPO-4611**) and thermal pad** (HPO-4612)**.**

SEE ALSO: ***REE-2002 Power Supply, E-E/I Converter on page 94*** **and** ***REE-2005 Voltage-to-Current Converter Module on page 94*****.**

Specifications

Max. Recommended Resistive Heater Loads		
@ 120 VAC	**@ 240 VAC**	**@ 480 VAC**
2400 W	4800 W	9600 W
Max. Recommended Single Phase Motor Control		
@ 120 VAC	**@ 240 VAC**	**@ 480 VAC**
1/3 hp	1 hp	2 hp

REE–2004-25 Derating Curve

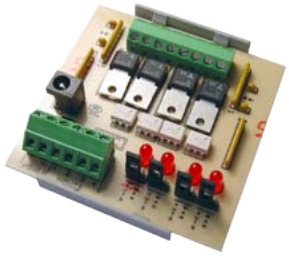


Output Voltage Rating	24 VAC to 330 VAC
Output Over Voltage	800 V peak
Control Input	Min. Turn-on: 4 V @ 5.4 mA Max. Turn-on: 32 V @ 10 MA Max. Turn-off: 1 VDC Impedance: 1500 ohms
Input Reverse Voltage Protection	–75 VDC
Connections	Screw terminals for 12 to 22 AWG
Temperature Limits	Operating: 32 to 104° F (0 to 40° C) Shipping: –40 to 140° F (–40 to 60° C)
Weight	2 oz. (57 grams)
Approvals	UL recognized, CSA certified, CE compliant

Accessories*

HPO-4611	Heat sink (2.36" W x 3.40" L x 2.80" H)
HPO-4612	Thermal pad

REE-2101/2102
Solid State Relays (1 A)



These solid-state triac relays provide zero-crossing AC switching (up to 1 A at 30 VAC) for use in building automation systems or any system where transients may pose a problem.

The REE-2101 relay provides four separate outputs, and the REE-2102 provides a single output. A status LED is associated with the output of each relay to indicate when the output is switched on. An Auto-Manual-Off jumper is provided so the output may be overridden.

(For higher power needs, see the REE-2103/2104 relays below.)

Specifications

Output Rating	12 VAC min. to 30 VAC max, 20 mA min. to 1 A max.
Control Input Power	10–14 VDC, 18–30 mA
Auxiliary Power (only for enabling manual-override functions)	
REE-2101	10–14 VDC, 72–120 mA
REE-2102	10–14 VDC, 18–30 mA
Mounting	Provided with 3.25" (83 mm) Snap Track
Material	Flame retardant plastic
Approvals	UL Recognized
Temperature Limits	Operating: 0 to 120° F (–18 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

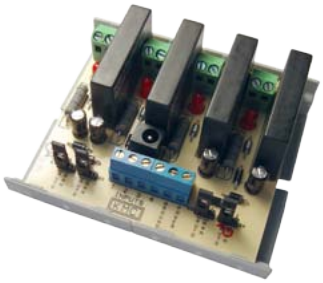
Models

REE-2101	**Four** triac output with zero-crossing switching
REE-2102	**Single** triac output with zero-crossing switching

Accessories

HCO-1008	Steel enclosure with plastic cover for REE-2102
HCO-1009	Steel enclosure for REE-2101

REE-2103/2104
Solid State Relays (5 A)



These high-power solid-state triac relays provide zero-crossing switching (up to 5 A at 280 VAC) for use in energy management systems and where transients may pose a problem.

The REE-2103 has four separate outputs, while the REE-2104 has one. A status LED is associated with the output of each relay to indicate when the output is switched on. An AUTO-MANUAL-OFF jumper is provided to override the output.

(For less demanding applications, see the REE-2101/2102 relays above.)

Specifications

Output Rating (47 to 63 Hz @ 25° C)

Parameter	Min.	Max.
Load Voltage	24 VAC	280 VAC
Load Current	0.05 A	5 A
Horsepower Rating (@ 240 VAC)		1/2 hp

Control Input Power	24 VDC, 1.6 VA max. 6 to 40 VDC, 4 to 56 mA
Auxiliary Power (only for enabling manual-override functions)	
REE-2103	24 VAC, 6.4 VA max. or 6 to 40 VDC, 16 to 224 mA
REE-2104	24 VAC, 1.6 VA max. or 6 to 40 VDC, 4 to 56 mA
Mounting	Provided with 3.25" (83 mm) Snap Track
Approvals	UL Recognized
Temperature Limits	Operating: 0 to 120° F (–18 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

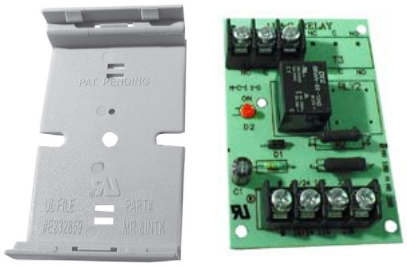
Models

REE-2103	**Four** triac output with zero-crossing switching
REE-2104	**One** triac output with zero-crossing switching

Accessories

HCO-1008	Steel enclosure with plastic cover for REE-2104
HCO-1009	Steel enclosure for REE-2103

REE-3100 Series
Multi-Voltage (24/115/230) Relays (10 A)



(REE-3101 with Snap Track Mounting)

The KMC REE-3100 series relays are ideal for applications where local or remote contacts are required for system status, control of electrical loads and general all-purpose switching. They are suitable for use in systems such as HVAC, fire, security, and lighting control.

These devices offer SPDT or DPDT 10 A contacts, which may be operated by one of four input control voltages. A single relay may be energized from a voltage source of 24 VDC/VAC, 115 VAC, or 230 VAC by wiring to the appropriate input terminals. Each relay module has a red LED to visually indicate when the relay coil is energized. Four-relay module assemblies may be snapped apart for independent use.

Accessories

HCO-1008	For single relay modules
HCO-1009	For four relay modules or multiple single relay modules

Specifications

Power Requirements

SPDT Relay	18 mA @ 24 VAC/VDC, 115 VAC, 230 VAC
DPDT Relay	40 mA @ 24 VAC/VDC, 115 VAC, 230 VAC

Contact Rating

Resistive	7 A @ 30 VDC, 10 A @ 125 VAC, 7 A @ 250 VAC
Inductive	0.25 hp @ 125/250 VAC for NC contacts, 0.33 hp @ 125/250 VAC for NO contacts

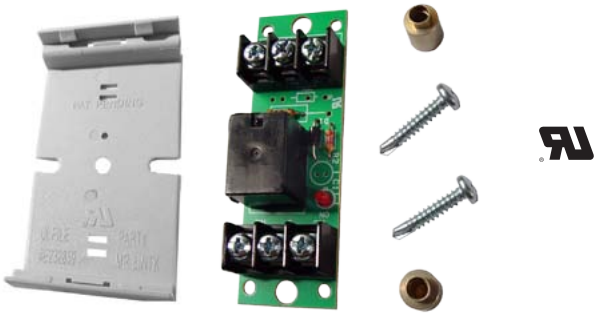
Approvals UL Recognized

Models

REE-3101	Single SPDT relay and Snap Track mounting
REE-3102	Single SPDT relay mounted in an HCO-1008 enclosure
REE-3103	Four SPDT relays and Snap Track mounting
REE-3104	Four SPDT relays and mounted in an HCO-1009 enclosure
REE-3105	Single DPDT relay and Snap Track mounting
REE-3106	Single DPDT relay and mounted in an HCO-1008 enclosure
REE-3107	Four DPDT relays and Snap Track mounting
REE-3108	Four DPDT relays and mounted in an HCO-1009 enclosure

NOTE: Those with model numbers ending in an even digit are mounted in an enclosure. Those ending in odd digits come with Snap Track.

REE-3110 Series
Multi-Voltage (12/24) Relays (10 A)



(Relay modules come with Snap Trak OR stand-offs)

The REE-3110 series relays are ideal for applications where local or remote contacts are required for system status, control of electrical loads and general all-purpose switching. They are suitable for use in systems such as HVAC, fire, security, and lighting control.

These devices offer SPDT contacts, which may be operated by one or two input control voltages. A single relay may be energized from a voltage source of 12 VDC or 24 VDC by wiring to the appropriate input terminals. Each relay module has a red LED to visually indicate when the relay coil is energized. Four-relay or eight-relay module assemblies may be snapped apart for independent use.

Specifications

Contact Rating	10 A (resistive) @ 120 VAC or 30 VDC
Power Requirements	17.5 mA @ 12 VDC, 21.2 mA @ 24 VDC
Approvals	UL Recognized
Mounting	Stand-offs or Snap Track mounting hardware
Operating Limits	–58 to 185° F (–50 to 85° C)

Models

REE-3111	Single SPDT relay with standoffs
REE-3112	Single SPDT relay with track mounting hardware
REE-3113	Four SPDT relays with standoffs
REE-3114	Four SPDT relays with track mounting hardware
REE-3115	Eight SPDT relays with standoffs
REE-3116	Eight SPDT relays with track mounting hardware

Accessories

HCO-1008	Holds 1 or 2 relays, 3.125 W x 5 H x 2.5" D
HCO-1009	Holds up to 8 relays, 9.5 W x 5 H x 2.5" D

REE-3211/3212/3213/3221
Encased Multi-Voltage SPDT Relays

REE-3211/3212/3213 REE-3221

These UL Listed single or dual SPDT relays, packaged in protective cases, can be either panel- or conduit-mounted. The multi-voltage relay coils and relay contact outputs have color-coded wires for simplified installation. The relays also have visible LEDs that indicate when the relays are energized. The come in a protective case (with 1/2-14 NPT integral nipple) that comes with two mounting screws and 1/2" conduit nut for simple installation.

Models

Model Number	Coil Voltage				SPDT Contacts
	10 to 30 VAC/VDC	24 to 30 VAC/VDC	120 VAC	208/277 VAC	
REE-3211	X		X		Single
REE-3212		X	X		Single
REE-3213	X			X	Single
REE-3221	X		X		Dual

Specifications

Contact Ratings

REE-3211/3213/3221

Ballast	480 VA @ 277 VAC
HP	1/3 (NO) @ 120/240 VAC; 1/4 (NO) @ 277 VAC; 1/6 (NC) @ 120/240 VAC; 1/8 (NC) @ 277 VAC
Pilot Duty	480 VA @ 240/277 VAC
Resistive	10 A @ 28 VDC and 277 VAC
Tungsten	600 W (NO) @ 120 VAC; 240 W (NC) @ 120 VAC

REE-3212

Ballast	10 A (NO) @ 277 VAC 5 A (NC) @ 277 VAC
HP	1/2 (NC) @ 250 VAC; 1/4 (NC) @ 125 VAC; 2 (NO) @ 250 VAC; 1 (NO) @ 125 VAC
Resistive	10 A @ 28 VDC and 277 VAC
Pilot Duty	470 VA (NO) @ 125/240 VAC; 360 VA (NC) @ 240 VAC; 290 VA (NC) @ 125 VAC

Expected Life 10 million mechanical operations min.

Material Black, NEMA 1, plenum-rated UL94-5 flame-retardant plastic

Approvals UL508, UL2043

Dimensions

REE-3211/3212/3213	1.7 x 2.8 x 1.5" (43 x 71 x 38 mm)
REE-3221	4 x 4 x 1.8" (102 x 102 x 46 mm)

Mounting Panel or conduit, hardware included

REE-3214/3222
Encased Multi-Voltage Relays With Override Switch

These UL Listed relays, packaged in protective cases, can be either panel- or conduit-mounted. The multi-voltage relay coils and relay contact outputs have color-coded wires for simplified installation. The relays also have visible LEDs that indicate when the relays are energized. They have a true manual override Hand-Off-Auto switch with a three-position (On-Off-Auto) override switch (in the REE-3222, on the SPST relay but not on the SPDT relay). They are mounted in a protective case (with 1/2-14 NPT integral nipple) that comes with two mounting screws and 1/2" conduit nut for simple installation.

Specifications

Coil Inputs	10–30 VAC/VDC or 120 VAC (50/60 Hz) (with 2.0/35 VAC or 2.8 VDC drop-out and 9/105 VAC or 10 VDC pull-in)
Contact Ratings	10 A Resistive, 125/250 VAC
Ballast	480 VA @ 277 VAC
Horsepower	1/3 hp (NO) @ 120/240 VAC; 1/4 hp (NO) @ 277 VAC; 1/6 hp (NC) @ 120/240 VAC; 1/8 hp (NC) @ 277 VAC
Pilot Duty	480 VA @ 240/277 VAC
Resistive	10 A @ 277 VAC or 28 VDC
Tungsten	240 W (NC) @ 120 VAC; 00 W (NO) @ 120 VAC
Expected Life	10 million mechanical operations min.
Material	Black, NEMA 1, plenum-rated UL94-5 flame-retardant plastic
Approvals	UL508, UL2043
Mounting	Panel or conduit, hardware included

Models

REE-3214	SPST (NO) w/ override
REE-3222	1 SPST (NO) w/ override and 1 SPDT

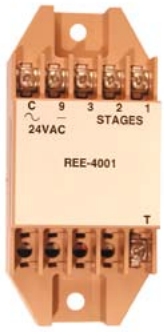
REE-3231
Encased DPDT Relay

This 24 VAC/VDC relay is packaged in a small protective case that can be either panel or conduit mounted. The relay coil and relay contact outputs have color-coded wires for simplified installation. The relay also has a visible LED that indicates when the relay is energized.

Specifications

Coil Inputs	18–24 VAC (50/60 Hz) or 24–30 VDC (with 5.5 VAC or 6.5 VDC drop-out and 12 VAC or 17 VDC pull-in)
Contact Output	DPDT
Coil Current	125 mA @ 24 VAC, 100 mA @ 18 VAC, 50 mA @ 24 VDC, 70 mA @ 30 VDC
Contact Ratings	
Ballast	20 A @ 277 VAC (50/60 Hz)
Horsepower	1 hp @ 120/480/600 VAC, 1.5 hp @ 208/240 VAC
Pilot Duty	660 VA @ 120 VAC, 915 VA @ 208 VAC, 960 VA @ 240 VAC, 765 VA @ 480/600 VAC, B600
Resistive	20 A @ 300 VAC or 15 VDC, 13 A @ 28 VDC, 5 A @ 600 VAC
Expected Life	10 million mechanical operations min.
Material	Black, NEMA 1, plenum-rated UL94-5 flame-retardant plastic
Approvals	UL508, UL2043
Dimensions	4 x 4 x 1.8" (102 x 102 x 46 mm)
Mounting	Panel or conduit, hardware included

REE-4001
Relay Module, 3-Stage Reheat



KMC REE-4001 relay modules are designed primarily for use with VAV terminal units in HVAC systems. When used with CTE series room thermostats, up to three stages of reheat may be controlled. They may also be controlled by a 0 to 10 VDC output from a DDC or analog controller. (They are primarily intended for use with the CEE-1103, CTE-1004, CTE-1103, and CTE-5002/5012.)

Each triac output circuit is capable of handling contactors of up to 10 VA @ 24 VAC. The three circuits are calibrated to actuate at equally spaced intervals across the thermostat's proportional band.

By using the REE-4001, the heating requirements of a particular VAV terminal may be actuated in three separate steps affording more precise temperature control.

Specifications

Supply Voltage	24 VAC (+20%/–15%) @ 1 VA plus output loads
Input Signal	0 to 6 VDC
Switching Differential	0.33 VDC (each stage)
Output Capacity	10 VA per stage @ 24 VAC
Material	Beige flame-retardant plastic
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

REE-4002

Relay Module Fan Box Control, 2-Stage Reheat

Specifications	
Supply Voltage	24 VAC, +20%/–15% @ 1 VA plus output loads
Input Signal	0 to 6 VDC
Output Capacity	10 VA per stage @ 24 VAC
Fan Setpoint	3 VDC, adjustable 2–6 VDC
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

The KMC REE-4002 relay module is designed for use with VAV fan powered induction boxes. When used in conjunction with a direct acting CTE series room thermostat, the unit mounted fan and two stages of reheat can be controlled.

Each output circuit is capable of handling contactors of up to 10 VA @ 24 VAC. The "FAN" output circuit may be adjusted to start the unit fan at an air flow setting of 0 to 3,000 fpm. The two reheat circuits are factory set to sequentially actuate after the fan starts if the room temperature continues to fall. Using the REE-4002 allows full adjustment of the unit fan starting point so that optimum use can be made of the warm air in the return air plenum before actuating reheat coils.

REE-4106

Relay Module, Proportional Reheat for NC Valves w/ Thermostat Supply

NOTE: The REE-4106 replaces the discontinued REE-4006.

Specifications	
Supply Voltage	24 VAC, +20%/–15% @ 1 VA
Input Signal	0 to 6 VDC
Output Capacity	10 VA max. @ 24 VAC
Thermostat Power Supply	9.1 VDC, ±10%
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

The KMC REE-4106 relay module is designed primarily for the proportional control of electric hot water valves on VAV terminal units in HVAC systems.

The percent on-time of the electric hot water valve varies in direct proportion to the CTE series room thermostat signal. As the thermostat signal increases, the percent on-time of the electric hot water valve increases.

The REE-4106 must be used in conjunction with the VEP series 2-way and 3-way hot water valves. Up to three VEP valves may be powered from an individual REE-4106.

Each module contains a built-in 9.1 VDC power supply which can be used to power any CTE room thermostat (except CTE-5100 Series) when a VAV box flow controller is not used. The REE-4106 is intended for use with the CEE/CEP/CSE/CSP-4000 series controllers/ actuators and the CEE-1102/CTE-1004/CTE-1103 thermostats.

REE-5001/5501
Relay Modules, 3-Stage Reheat

These triac relay modules are designed primarily for use with VAV terminal units in HVAC systems. When used in conjunction with CTE-5100 series room thermostats, up to three stages of reheat may be controlled.

Each output circuit is capable of handling contactors of up to 10 VA @ 24 VAC. The three circuits are calibrated to actuate at equally spaced intervals across the thermostat's proportional band.

By using the REE-5001/5501, the heating requirements of a particular VAV terminal may be actuated in three separate steps affording more precise temperature control.

Specifications

Supply Voltage	24 VAC (+20%/–15%) @ 1 VA plus output loads
Input Signal	0 to 10 VDC
Switching Differential	2 VDC (each stage)
Output Capacity	10 VA per stage @ 24 VAC
Connections	Plated screw terminals
Wire Size	14–22 AWG, stranded
Material	Beige flame-retardant plastic
Weight	2 oz. (57 grams)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

Models

REE-5001	Triac relay module
REE-5501	Triac relay module with isolated outputs

REE-5002
Relay Module Fan with 2-Stage Reheat

The REE-5002 reverse acting relay module is designed primarily for use with VAV fan powered induction boxes. When used in conjunction with a direct acting CTE-5100 series room thermostat, the unit mounted fan and two stages of reheat can be controlled.

Each output circuit is capable of handling contactors of up to 10 VA @ 24 VAC. The "FAN" output circuit may be adjusted to start the unit fan at an air flow setting of 0 to 3,000 fpm. The two reheat circuits are factory set to sequentially actuate after the fan starts if the room temperature continues to fall.

Using the REE-5002 allows full adjustment of the unit fan starting point so that optimum use can be made of the warm air in the return air plenum before actuating reheat coils. The REE-5002 is intended for use with the CSP-5001 controller/actuator and the CTE-5101/5103/5105 thermostats.

Specifications

Supply Voltage	24 VAC, +20%/–15% @ 1 VA plus output loads
Input Signal	0 to 10 VDC
Output Capacity	10 VA per stage @ 24 VAC
Fan Setpoint	4.0 VDC, adjustable 3–8 VDC
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

REE-5017/5024
Relay Modules, Fan and Proportional Reheat for Valves

These relay modules are designed primarily for use with VAV fan powered induction boxes requiring proportional control of electric hot water valves on VAV terminal units in HVAC systems.

The "FAN" output circuit is capable of handling contactors up to 10 VA @ 24 VAC. This circuit may be adjusted to start the unit fan on a requirement for heat prior to the valve opening, or when the valve begins to open. The "VALVE" output circuit is time proportional providing 24 VAC output to a VEP series valve. This provides complete modulation of the valve over the proportional band of the CTE-5100 series thermostat's heating setpoint.

Adjustment of the unit fan starting point is allowed so that optimum use is made of the warm air in the return air plenum before opening the hot water valve. The intended use is with the CSP-5001 controller/actuator and the CTE-5104 thermostat. Associated valves have thermic actuators.

Specifications

Supply Voltage	24 VAC (+20%/–15%) @ 1 VA plus output loads
Input Signal	0 to 10 VDC
Output Capacity	10 VA per output @ 24 VAC
Fan Setpoint	0 to 5 VDC, adjustable
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

REE-5017	Relay Module for Fan and NC Valves
REE-5124	Relay Module for Fan and NO Valves

REE-5106/5123
Relay Modules, Proportional Reheat for Valves, with Thermostat Power Supply

These relay modules are designed with an AC control signal output for time proportional control of valves using thermic actuators and a DC control signal output for time proportional control of solid state relays typically used in VAV terminal unit reheat applications.

The percent on-time of the valves, or the solid state relay, varies in direct proportion to the CTE-5100 series room thermostat signal. Therefore, as the thermostat signal increases, the percent on-time of the valve, or solid state relay, increases. The REE-5106/5123 can control up to three valves or one solid-state relay.

They also have a built in 16 VDC power supply that can be used to power a CTE-5100 series room thermostat when a CSP-5100 series VAV terminal unit controller is not used. They are intended for use with the CSP-5001 controller/actuator and the CTE-5104 thermostat.

Specifications

Supply Voltage	24 VAC (+20%/–15%) @ 1 VA
Input Signal	0 to 10 VDC
Output Capacity	
AC Terminal	10 VA max. @ 24 VAC
DC Terminal	10 mA @ 14 VDC (REE-5106 only)
Thermostat Power Supply	16 VDC, ±10%
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

REE-5106	Relay Module for NC Valves, plus DC output
REE-5123	Relay Module for NO Valves

Sensors and Transmitters

SEE ALSO: *Transducers on page 94*.

CAE-1003/1103
Duct Smoke Detectors

CAE series duct smoke detectors provide early detection of smoke and products of combustion in air moving through HVAC ducts in commercial, industrial, and residential applications. These detectors are designed to prevent the circulation of smoke by the air handling systems, fans, and blowers. Complete systems can be shut down in the event of smoke detection. Ionization and photoelectric modes are available.

Both models include two alarm contacts, trouble contact and outputs for remote accessories such as horns, strobes, remote status indicators and test/reset switches or push buttons.

Additional key features include round duct or flat surface duct mounting, smoke tested with cover on, cover removed trouble indicator, magnet test capability (magnet included), reset and test are same switch that is accessible with cover on, and front loading sample tubes.

The intake sampling and the 7 in. (178 mm) long exhaust tubes are front loaded and extend into the duct. The intake sampling tube is available in three different lengths and must be ordered separately.

Specifications

Power Requirements

	Standby	Alarm
24 volts AC	9.4 mA	128.7 mA
24 volts DC	39.5 mA	59.3 mA
115 volts AC	13.8 mA	27.0 mA
230 volts AC	7.9 mA	16.0 mA

Relay Contact Rating

Alarm Contacts	2 SPDT rated 10 A @ 115 volts resistive 1 SPST @ 2 A
Trouble Contacts	1 SPDT rated 10 A @ 115 V resistive
Radioactive Element	(CAE–1003 only) Americium 241, 0.9 microcuries
Air Velocity	300 to 4000 fpm (1.5 to 20.3 mps)
Temperature Limits	
Temperature	32 to 100° F (0 to 38° C)
Humidity	10 to 85% Relative humidity, (non-condensing, non-freezing)
Dimensions	13.5 x 4.5 x 2.25 in. 342.9 x 114.6 x 57.2 mm
Approval	UL 268A

Models

Detectors

CAE-1003	Ionization duct smoke detector
CAE-1103	Photoelectric duct smoke detector

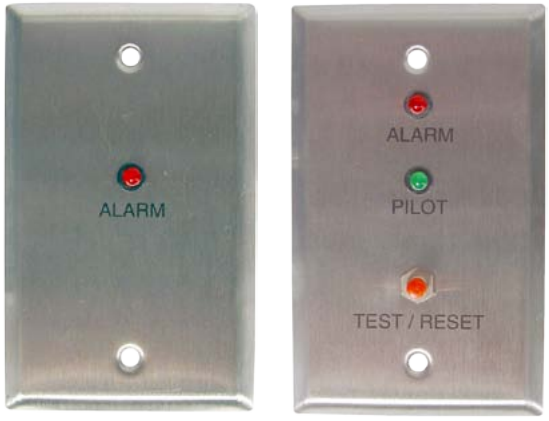
Intake sampling tube (one required)

SAA-1030	Duct width 12 to 36 inch
SAA-1060	Duct width 36 to 60 inch
SAA-1120	Duct width 60 to 120 inch

Accessories

IEE-1000 Series	Remote control and indicator plates

IEE-1000 Series
Remote Accessory Plates (for CAE-1003/1103)



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The IEE-1000 Series Remote Accesssory Plates are designed for use with the CAE-1003/1103 Duct Smoke Detectors to provide remote status indication and control functions.

Each 24 VDC device is constructed of stainless steel with a brushed finish. The units mount on standard single-gang 2 x 4" electrical boxes (except for the IEE-1008 which mounts in a double-gang 4 x 4" box).

The IEE-1007/1008 alarm horn produces 78 dB @ 10 feet. Alarm indication is also provided by a red alarm LED, and normal indication is provided by a green pilot LED.

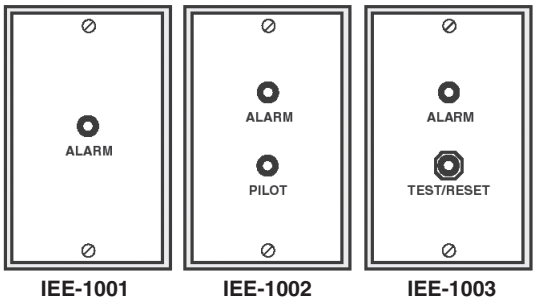
A momentary push-button or key switch is used for remote test and reset of the detector. Testing is performed by operating this switch, which energizes all alarm relays and outputs in the detector. Once the detector is in alarm, it is reset by operating and releasing this switch. (Reset is automatic on release of this switch.)

Specifications

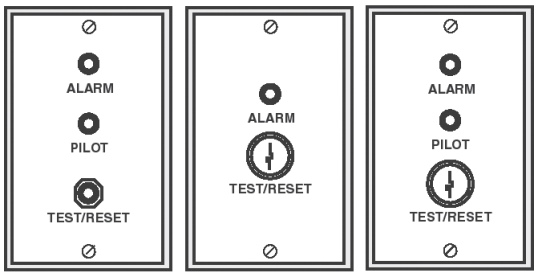
Power Supply		
	Alarm LED	15 mA at 24 VDC
	Trouble LED	15 mA at 24 VDC
	Pilot LED	15 mA at 24 VDC
	Alarm Horn	20 mA at 24 VDC
Wiring		
	LEDs/Horn	6-inch 24 AWG pigtails
	Switches	6-inch 22 AWG pigtails
Dimensions		
	IEE-1001 to 1007	2.75 x 4.5" (70 x 114 mm)
	IEE-1008	4.5" x 4.5" (114 x 114 mm)
Sound Pressure		78 dB at 10 feet
Finish		Brushed stainless steel
Mounting		Standard single gang box except IEE-1008 which requires a 4 x 4 box
Approvals		UL Listed for use with CAE-1003/1103 duct smoke detectors, UL URRQ.S7425 CSFM 7300-1004:107 MEA 73-92-E VOL 25

Models

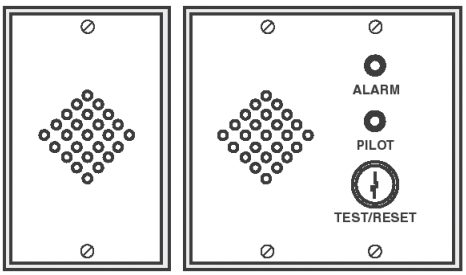
IEE-1001	Remote alarm LED (red)
IEE-1002	Remote alarm LED (red) and pilot LED (green)
IEE-1003	Remote alarm LED (red) and push-button test/ reset switch
IEE-1004	Remote alarm LED (red), pilot LED (green) and push-button test/rest switch
IEE-1005	Remote alarm LED (red), key operated test/rest switch
IEE-1006	Remote alarm LED (red), pilot LED (green) and key operated test/reset switch
IEE-1007	Alarm horn
IEE-1008	Alarm horn, remote alarm LED (red), pilot LED (green) and key operated test/reset switch



IEE-1001 IEE-1002 IEE-1003



IEE-1004 IEE-1005 IEE-1006



IEE-1007 IEE-1008

IEI-1110

Refrigeration Alarm Monitor (for SLE-1001 FirstWatch)

The IEI-1110 Refrigeration Alarm Monitor (RAM-1) is a stand-alone operator interface for the SLE-1001 FirstWatch Refrigerant Monitor. Use the IEI-1110 to:

- Monitor and display flash gas and moisture signals from FirstWatch.
- Set flash gas and moisture alarm levels.
- Display visual and sound audible alarms when predefined alarm limits are exceeded.

The IEI-1110 uses nine-function buttons, a bright, four-character display, and an audible alarm to provide critical information and convenient operation. An auxiliary input for closed-switch contacts suspends IEI-1110 operation during system service or when the system is not operating.

Accessories

HMO-5042	4 x 4 inch adapter plate, almond
XEE-6111-040	120 volt transformer, single-hub
XEE-6112-040	120 volt transformer, dual-hub
SLE-1101	Refrigeration alarm monitoring kit, includes SLE-1001, IEI-1110, and 40 VA transformer

Specifications

Operation Buttons

Flash Alarm Level	Displays and sets the flash gas alarm level.
Flash	Displays the current corrected flash gas level.
H_20 Alarm Level	Displays and sets the moisture alarm level.
H_20	Displays the current corrected moisture level.
Base Set	Displays and sets the current uncorrected flash gas or moisture level.
Delay	Displays and sets the flash gas alarm delay setting.
Mute	Silences audible alarms.
∧ and ∨	Increments or decrements the displayed value.

Display Views

Power On	ON
Flash Gas Alarm	FLSH
Moisture Alarm	H_20
Override	HOLD

Display	Red LED, four-character, seven-segment, 0.37 inch high
Mounting	HMO-5040 backplate (supplied) to 2 x 4 in. vertical standard electrical handy box
Connections	Six-inch, four-conductor, 22 AWG cable for flash gas, moisture, power and ground Two, six-inch, 22 AWG wires for auxiliary input
Material	Light almond flame-retardant plastic
Power Supply	24 VAC (+20, –15%) 1.5 VA, 50–60 Hz
Approvals	CE compliant

Environmental Limits

Operating	32 to 140° F (0–60° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	0–95% relative humidity (non-condensing)

SAE-1011/1012/1062
Carbon Dioxide (CO_2) Detectors

SAE-1062 (Duct) SAE-1012 (Space)

CE RoHS COMPLIANT

These detectors are designed to sense and transmit CO_2 levels to any compatible building automation system for the control of ventilation equipment in industrial and commercial applications. Such information is crucial for demand control ventilation that ensures adequate indoor air quality while minimizing the energy costs of conditioning outside air.

These self-calibrating detectors use the sensor's on-board microprocessor to remember the lowest CO_2 concentration measured in a 24 hour period. The sensor assumes this low point is at outside levels. (The smart sensor discounts periodic elevated readings that might occur if, for example, a space was used 24 hours per day over a few days.) After collecting 14 days worth of low concentration points, the sensor performs a statistical analysis comparing sensor readings to background levels. If there have been any small changes that could be attributable to sensor drift, a small correction factor is made to the sensor calibration to adjust for this change.

If a space does not experience a periodic drop to outside levels (e.g. where occupancy is 24 hours, 7 days/week), the auto-calibration software should be deactivated. If the software has been deactivated (via menu buttons), calibration may be required every two to three years.

These detectors designed to meet ventilation requirements specified in the ASHRAE Standard 62.1-2010 *Ventilation for Acceptable Indoor Air Quality*.

Models

SAE-1011*	Space CO_2 sensor, with hidden LCD display (replaces older SAE-1001)
SAE-1012*	Space CO_2 sensor, with SPST relay (replaces older SAE-1002)
SAE-1062	Duct CO_2 sensor (replaces older SAE-1051)

*NOTE: All models have an LCD display, but the one inside the SAE-1011 is hidden from view when the cover is closed. Only the SAE-1012 has a relay.

Accessories

XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, **single**-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, **dual**-hub

Specifications

Gas Detected Carbon Dioxide (CO_2)
Monitor Range 0–2000 ppm (factory default) configurable from 0–7500 (in 500 ppm increments)
Sample Method Diffusion or flow-through, sample tube for duct
Standard Accuracy ±75 ppm @ 1000 ppm @ 72° F (22° C) when compared to certified calibration gas
Sensing Element Non-Dispersive Infrared (NDIR)
Operation Conditions 32–122° F (0–50° C), 0–95% RH non-condensing
Temperature Dependence < 0.2% full scale per °C
Stability < 2% full scale over life of sensor (15 years typical)
Pressure Dependence 0.13% of reading per mm Hg
Altitude Correction Configurable from 0–5000 feet
Response Time < 2 minutes for 90% step change
Warm-up Time < 2 minutes
Power Supply 20–28 VAC/VDC (non-isolated half-wave rectified)
Consumption 100 mA max. @ 24 VDC, 185 mA max. @ 24 VAC (with all options)
Protection Circuitry Reverse voltage protected and output limited
Programming and Selection Via internal push-buttons
Wiring Connections Screw terminal block (14–22 AWG)
Output Signal 4–20 mA active (sourcing), 0–5 VDC, or 0–10 VDC
Output Drive Capability 550 ohm max. for current output, 10K ohm min. for voltage output

Relay Output (SAE-1002 only)
- Configuration: One form "A" contact (NO SPST), 2 A @ 140 VAC, 2 A @ 30 VDC, power factor = 1
- Trip Point: 500 to 5,000 ppm, configurable in 100 ppm increments
- Hysteresis/Deadband: 25 to 200 ppm, configurable in 25 ppm increments

LCD Display (Not visible in SAE-1011 when the cover is closed) displays configuration menus and ppm level, 1 ppm resolution, 1.4 W x 0.6" H (35 x 15 mm), alpha-numeric 2 line x 8 characters, with selectable backlight

External Dimensions
- SAE-1011/1012: 3.3" W x 4.7" H x 1.15" D (84 mm x 119 mm x 29 mm)
- SAE-1062: 5.7" W x 3.95" H x 2.5" D (145 mm x 100 mm x 63 mm)
- Duct Probe: 7" Long x 1" Diameter (177 mm x 25.4 mm)

Weight
- SAE-1011/1012: 5 oz. (141 g)
- SAE-1062: 11 oz. (312 g)

Manufacturing ISO 9001 registered quality system
Approvals CE and RoHS compliant
Certified to comply with CA Title 24, Section 121(c), as well as sub-paragraph 4.F that specifies accuracy will be maintained within tolerance for a minimum of 5 years without recalibration and that a detected sensor failure will cause the controller to take appropriate corrective action.

SAE-1100 Series
Carbon Monoxide (CO) Detectors

RoHS COMPLIANT

CE

The SAE-1100 series detectors are designed to sense and transmit CO (carbon monoxide) gas levels to any compatible electronic analog control or DDC automation system for the control of ventilation equipment in industrial and commercial applications. Such information is crucial to demand controlled ventilation that ensures adequate indoor air quality while minimizing the energy costs of conditioning outside air.

The KMC SAE-1100 series environmental, industrial, and commercial indoor detectors are available in both space and duct mount versions. They are for use in any industrial or commercial indoor environment where accurate CO detection is required. Detector features include:

- Electrochemical sensing elements with range of 0–300 ppm and 5% accuracy
- Field replaceable calibrated sensor module
- Optional audible alarm (SAE-1102/1152)
- Optional on-board relays with field-adjustable trip points (SAE-1102/1152)
- Powered by either 15–30 volt AC or DC source with no change to circuit required
- Choice of field-adjustable analog output signals, linearized over full range
- Menu-driven configuration set-up and testing (using the IEI-1001 LCD Display Module)

Models

SAE-1101	Space CO sensor
SAE-1102	Space CO sensor with two relays and audible alarm
SAE-1151	Duct CO sensor
SAE-1152	Duct CO sensor with two relays and audible alarm

Accessories

IEI-1001	LCD Display Module (required for configuration beyond the defaults—replacement in SAE-1002 or retrofit for SAE-1001/1051)
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, **single**-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, **dual**-hub

Specifications

Gas Detected	Carbon Monoxide (CO)
Range	0–300 ppm
Sample Method	Diffusion or flow-through, sample tube for duct
Standard Accuracy	±5 ppm or ±5% of reading (whichever is greater) @ 41-113° F (5–45° C), 15–95% RH
Sensing Element	Electrochemical with life expectancy of 5 to 7 years in air
Accuracy	±5 ppm or 5% of reading for 0-300 ppm (whichever is greater) @ 32 to 122° F (0 to 50° C)
Operation Conditions	–4 to 122° F (–20 to 50° C), 10 to 90% RH, non-condensing
Temperature Dependence	< 0.2% full scale per °C
Stability	< 5% signal loss/year
Response Time	< 35 seconds for 90% step change
Warm-up Time	200 seconds
Pressure Coefficient	0.020 ± 0.008% signal/mbar
Typical Coverage Area	7500 ft^2 (700 m^2)
Power Supply	15–30 VAC/VDC (non-isolated half-wave rectified)
Consumption	80 mA max. @ 24 VDC with all options on, 150 mA average @ 24 VAC
Input Voltage Effect	Negligible over specified operating range
Protection Circuitry	Reverse voltage protected and output limited, transient protection
Programming and Selection	Via internal push-buttons, with LCD display option and jumpers
Wiring Connections	Screw terminal block (14–22 AWG)
Output Signal	4–20 mA active (sourcing), 0–5 VDC, or 0–10 VDC, jumper selectable
Output Drive Capability	500 ohm max. for current output, 10K ohm min. for voltage output
Output Resolution	10-bit PWM
Relay Outputs	
Configuration	Two form "C" contacts (NO and NC), 5 A @ 250 VAC, 5 A @ 30 VDC, power factor = 1
Trip Point	Relay 1: Programmable 25 or 40–350 ppm in 10 ppm increments Relay 2: Programmable 100–400 ppm in 10 ppm increments
Hysteresis/Deadband	Programmable 10, 15, 25, 50, or 75 ppm
Enclosure Ratings	IP21, NEMA 1
External Dimensions	
Space	4.9" W x 7.22" H x 1.69" D (124 mm x 183 mm x 43 mm)
Duct	4.9" W x 7.22" H x 9.9" (with duct insertion tube) D (124 mm x 183 mm x 250 mm)
Weight	1.05 lbs. (0.47 kg)
Approvals	UL Recognized Component for ANSI/UL-2034 and UL-2075, E240671; CE and RoHS compliant
Manufacturing	ISO 9001 registered quality system

SLE-1001
FirstWatch Refrigerant Sight Glass Monitor

The KMC SLE-1001 FirstWatch refrigerant monitor detects problems with critical refrigerant conditions long before visual observation can spot trouble. When mounted on an approved sight-glass window, this easy-to-install optical sensor detects the following refrigerant conditions:

- Moisture content
- Flash gas content (bubbles of non-condensed refrigerant)

By combining an SLE-1001 with a KMC digital facilities management system you can also:

- Remotely monitor systems in difficult to reach locations.
- Record the actual condition of the refrigerant.
- Initiate alarms to alert personnel to possible trouble areas.

The SLE-1001 FirstWatch Refrigeration monitor is designed for use with **Sporlan Valve Company's See•All® Combination Moisture and Liquid Indicators** or equivalent. FirstWatch is an ideal way to monitor critical areas that do not meet ANSI/ASHRAE Standard 15-1994.

Specifications

Output Signal	
Flash gas	0–5 VDC, 100K ohm load impedance
Moisture	0–5 VDC, 100K ohm load impedance
Indicators	
Flash gas	Red LED, flashing rate is proportional to concentration of bubbles
Moisture	Yellow LED, brightness is proportional to presence of moisture
Connections	10 foot, four-conductor, 22 AWG cable
Power Supply	24 VAC (+20,–15%) 1.5 VA, 50–60 Hz
Approvals	CE compliant
Environmental Limits	
Operating	32 to 140° F (0–60° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	0–95% relative humidity (non-condensing)

Approved Sight Glass Windows

The SLE-1001 is approved for use with the following models of the Sporlan Valve Company's See•All® sight glass:

SA-14S, SA-14SU, SA-14UU
SA-15S, SA-15SU, SA-15UU
SA-17S
SA-19S

Requires adapter ring (supplied with SLE-1001):

SA-12S
SA-13S, SA-13SU, SA-13UU

Accessories

IEI-1110	Refrigerant Alarm Monitor (RAM-1)
XEE-6111-040	120 volt power transformer, single-hub
XEE-6112-040	120 volt transformer, dual-hub
SLE-1101	Refrigeration alarm monitoring kit, includes SLE-1001, IEI-1110, and 40 VA transformer.

SSE-1000/2000 Series
VAV System Duct Flow Sensors

The KMC SSE-1000 Duct Sensors are designed for use with VAV terminal units in HVAC systems. They are used in conjunction with the **CEP-4000** series of controller-actuators to maintain the desired airflow to an occupied space. The CEP model must be ordered separately (refer to the CEP-4000 Series section).

Two sensor lengths are available to accommodate various box inlet sizes. Sensors are inserted into the inlet collar of the box; the foam backing on the sensor head protects against conditioned air leakage.

The **SSE-2000 series** incorporates two additional terminals ("X" and "Y") which allow duct **temperature sensing** for items such as the REE-1005 heating-cooling change over relay. In addition, the airflow portion of the signal is fully compensated for changes in temperature for accurate control of delivered air.

SSE-10**1**1/10**1**2/20**1**1/20**1**2s are "conformal" silicon coated for air streams that may have high humidity or may be contaminated with corrosive materials.

NOTE: For a duct **transmitter**, see *TTE-2001 Duct Temperature Transmitter on page 80*.

Specifications

Connections	Plated screw terminals
Material	Light gray ABS/polycarbonate (UL94-5V
Temperature Limits	Operating: 40 to 120° F (4 to 49° C)
	Shipping: –40 to 140° F (–40 to 60° C)

Models

Standard	
SSE-1001/2001	3-7/8" long (98 mm)
SSE-1002/2002	7-7/8" long (200 mm)
Conformal Coated	
SSE-1011/2011	3-7/8" long (98 mm)
SSE-1012/2012	7-7/8" long (200 mm)

NOTE: For maximum measurement accuracy, install the longest sensor that will fit into the duct. SSE-**2**0xx models have the additional X and Y terminals for temperature sensing.

SSS-1000 Series
VAV Differential Pressure Flow Sensors

RoHS COMPLIANT

These sensors are designed to sense differential pressure in the inlet section of VAV (Variable Air Volume) terminal units and fan terminal units. They can also be used to sense differential pressure at other locations in the main or branch duct systems. The differential pressure read between the high "H" port and the low "L" port can be used to determine the air flow. Models offer up to four sensing points and sensing lengths of 3-5/32 to 9-29/32 inches to accommodate box size diameters of 4 to 16 inches.

These sensors are typically used in conjunction with the CSC-1000/2000/3000 series, CSP-4000/5000 series, KMD-7000 series, and BAC-7000 series of VAV controllers for individual zone control in HVAC systems.

With CSC-3000 series, CSP-4000/5000 series, TSP-5000/6000 series, KMD-7000 series, and BAC-7000 series controllers, use a 3/8" to 1/4" barb union adapter and appropriate polyethylene tubing to the sensor and controller. For maximum accuracy in the CSP-5000 series, KMD-7000 series, and BAC-7000 series controllers, the 3/8" OD tubing between the sensor and the adapter should be as short as possible, and the 1/4" OD tubing from the adapter to the controller should be 24" long (on both the High and the Low sides).

SEE ALSO: *TSP-5000 Series Air Flow Transducer-Actuators on page 99*, *TSP-6001/6051 Air Flow Transducer-Actuators (3-State Analog) on page 99*, *Actuator Accessories and Repair Parts on page 28*, *Actuators on page 33*, *Transducers on page 94*, *Controllers and Switches on page 44*, *Relays on page 56*, *Thermostats on page 81*.

Specifications

Material	Light almond ABS plastic (UL94-5V)
Mounting	Integral flange with gasket
Connections	1/4" (6 mm) nipples for 3/8" (10 mm) OD polyethylene tubing
Sensing Points	
SSS-1002	One set
SSS-1003	Two sets
SSS-1004	Three sets
SSS-1005	Four sets
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

SSS-1002	One sensing point, 3-5/32" (80 mm) length
SSS-1003	Two sensing points, 5-13/32" (137 mm) length
SSS-1004	Three sensing points, 7-21/32" (195 mm) length
SSS-1005	Four sensing points, 9-29/32" (252 mm) length
KIT-1005	Group of one each of all four models

NOTE: For maximum measurement accuracy, install the longest sensor that will fit into the duct.

STE-1400 Series
Temperature Sensors

STE-1400 Series 10,000 ohm, Type III thermistor, temperature sensors are available in different housings for surface, duct, duct averaging, immersion, strap-on, and outside air applications. All probes are constructed to provide good heat transfer and fast response. The averaging sensors are available in both plenum-rated cable or with a copper probe.

Each **STE-1401/1402/1404/1405/1405 duct sensor** is encapsulated in a 1/4-inch OD stainless-steel probe. The probe protrudes from the bottom of the sensor housing (if included), minimizing lead-length error. The probe can be inserted directly into the duct for single-point monitoring, and mounting holes are provided to rigidly support the assembly.

An **STE-1411/1412/1413/1414/1415/1416/1417 averaging duct sensor** incorporates numerous sensors inside a copper tube and is available in a 5/16-inch OD bendable copper probe or in a flexible plenum-rated cable. The completed assembly acts as a single sensor and any temperature change is averaged across the sensor. The probes can be bent to fit any size duct.

An **STE-1421/1422 immersion sensor** is encapsulated in a 1/4-inch OD 304 stainless-steel probe. The probe protrudes from the bottom of the sensor housing, minimizing lead length error. The probe has a 1/2-inch NPT fitting to be screwed into the HMO-4534/4544 stainless-steel well.

The **STE-1455 strap-on sensor** is encapsulated in a two-inch-long, 1/4-inch OD stainless-steel probe. The probe has a five-foot lead wire. The **STE-1454** strap-on sensor also comes with an enclosure.

The **STE-1451 outside air sensor** is mounted in a weatherproof gasketed enclosure with a sun shield for protection against the outdoor elements. It comes with an LB c/w 1/2" NPT fitting for connection to conduit.

The **STE-1430 room sensor**, designed for temperature measurement of occupied spaces, can be mounted on an interior hollow wall in a standard single-gang electrical box. The sensor is mounted behind a flat brushed stainless-steel plate.

Accessories

For the **STE-1421 and STE-1422**, these thermowells and thermal compound are available:

HMO-4532	Thermal compound, 1 oz.
HMO-4534	4" 304 Stainless-steel well
HMO-4544	6" 304 Stainless-steel well

NOTE: NPT Thread Size = 1/2"

Models

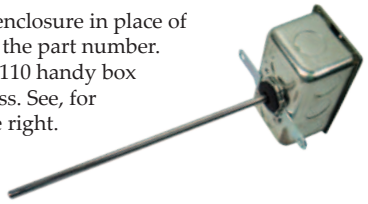
STE-1401	8-inch Duct Rigid (w/ 10-ft. plenum-rated cable and w/o enclosure)
STE-1402	8-inch Duct Rigid (w/ 5-ft. non-plenum-rated cable)
STE-1404	12-inch Duct Rigid
STE-1405	4-inch Duct Rigid (w/o enclosure)
STE-1411	6-ft. Duct Averaging (copper)
STE-1412	12-ft. Duct Averaging (copper)
STE-1413	24-ft. Duct Averaging (copper)
STE-1414	20-ft. Duct Averaging (copper)
STE-1415	6-ft. Duct Averaging (flexible)
STE-1416	12-ft. Duct Averaging (flexible)
STE-1417	24-ft. Duct Averaging (flexible)
STE-1421	4-inch Immersion (without well)
STE-1422	6-inch Immersion (without well)
STE-1430	Room, Flat Plate
STE-1451	Outside Air
STE-1454	2-inch Strap-On
STE-1455	2-inch Strap-On (w/o enclosure)

Enclosures

A black 3.3 x 2.1 x 4.55" (84 x 53 x 116 mm) ABS **plastic** utility box comes as the standard enclosure for these sensors:

STE-1402	STE-1412	STE-1422
STE-1403	STE-1413	STE-1454
STE-1404	STE-1414	
STE-1411	STE-1421	

To order the optional **metal** enclosure in place of plastic, add an M to the end of the part number. The steel enclosure is a 2 x 4" 1110 handy box with wings that are 3-7/8" across. See, for example, the STE-1402M to the right.



Specifications

Sensor Type III thermistor, 10K ohm @ 77° F (25° C)
Accuracy ±0.36° F (±0.20° C)
Temperature Limits
Std. Limits: –4 to 221° F (–20 to 105° C)
Outdoor Air only: –40 to 221° F (–40 to 105° C)
Wiring 22 AWG wire leads
Mfg. Process ISO 9001 registered quality system
Approvals CE and RoHS Compliant
Enclosure Ratings

STE-1451 OAT, Aluminum LB	NEMA 4 & IP66
Other metal (steel) enclosures	NEMA 1 & IP30
Rectangular ABS enclosures	NEMA 12 & IP64
STE-1405, STE-1430, STE-1455	(*No Enclosure*)

STE-5000/6000 Series Cross-Reference

(Obsolete) STE-5000 Model and Description		STE-6000 Model Replacement	
		(with Screw Clamp Terminals)	(with Modular Connector)
STE-5011-10	ROOM SENSOR; 10K OHM	STE-6011	STE-6010
STE-5012-10	ROOM SENSOR W/DEG.F ADJUSTMENT	N/A, STE-6012*	STE-6014-10
STE-5012-11	ROOM SENSOR W/DEG.C ADJUSTMENT	N/A, STE-6012*	STE-6014-11
STE-5012-14	ROOM SENSOR W/+/- ADJUSTMENT	N/A, STE-6012*	STE-6014 -10/11
STE-5013-10	ROOM SENSOR W/NO & LED	STE-6013	STE-6015
STE-5014-10	ROOM SENSOR W/NO;LED;F ADJ.	STE-6020-10	STE-6018-10
STE-5014-11	ROOM SENSOR W/NO;LED;C ADJ.	STE-6020-11	STE-6018-11
STE-5014-14	ROOM SENSOR W/NO;LED;+/-ADJ.	N/A, STE-6012*	N/A, STE-6016*
STE-5015-10	ROOM SENSOR W/NO;3LED;F ADJ.	N/A, STE-6012*	N/A, STE-6016*
STE-5015-11	ROOM SENSOR W/NO;3LED;C ADJ.	N/A, STE-6012*	N/A, STE-6016*
STE-5015-14	ROOM SENSOR W/NO;3LED; +/-ADJ	STE-6020 -10/11	STE-6018 -10/11
STE-5016-10	ROOM SENSOR; W/INC-DEC SWITCHES	N/A, STE-6012*	N/A, STE-6016*
STE-5017-10	ROOM SENSOR; INC-DEC; NO; 1LED	N/A, STE-6012*	N/A, STE-6016*
STE-5018-10	ROOM SENSOR; INCR-DECR;1LED	N/A, STE-6012*	N/A, STE-6016*
STE-5021-10	ROOM SENSOR W/NO SWITCH	STE-6013	STE-6015
STE-5022-10	ROOM SENSOR W/NO;DEG F ADJ.	STE-6019-10	STE-6017-10
STE-5022-11	ROOM SENSOR W/NO;DEG C ADJ.	STE-6019-11	STE-6017-11
STE-5022-14	ROOM SENSOR W/NO;+/- ADJ.	STE-6020 -10/11	STE-6018 -10/11
STE-5111-10	ROOM SENSOR; 10K OHM	STE-6011	STE-6010
STE-5112-10	ROOM SENSOR W/DEG.F ADJUSTMENT	N/A, STE-6012*	STE-6014-10
STE-5112-11	ROOM SENSOR W/DEG.C ADJUSTMENT	N/A, STE-6012*	STE-6014-11
STE-5112-14	ROOM SENSOR W/+/- ADJUSTMENT	STE-6020 -10/11	STE-6018 -10/11
STE-5113-10	ROOM SENSOR W/NO & LED	STE-6013-10	STE-6015-10
STE-5114-10	ROOM SENSOR W/NO;LED;F ADJ.	STE-6020-10	STE-6018-10
STE-5114-11	ROOM SENSOR W/NO;LED;C ADJ.	STE-6020-11	STE-6018-11
STE-5114-14	ROOM SENSOR W/NO;LED;+/-ADJ.	STE-6020 -10/11	STE-6018 -10/11
STE-5115-10	*SPECIAL ORDER*W/NO;3LED;F A	N/A, STE-6012*	N/A, STE-6016*
STE-5115-11	*SPECIAL ORDER*W/NO;3LED;C A	N/A, STE-6012*	N/A, STE-6016*
STE-5116-10	ROOM SENSOR;W/INC-DEC SWITCHES	N/A, STE-6012*	N/A, STE-6016*
STE-5117-10	*SPECIAL ORDER*INC-DEC;NO;1L	N/A, STE-6012*	N/A, STE-6016*
STE-5118-10	ROOM SENSOR; INCR-DECR;1LED	N/A, STE-6012*	N/A, STE-6016*
STE-5121-10	ROOM SENSOR W/NO SWITCH	STE-6013	STE-6015
STE-5122-10	ROOM SENSOR W/NO;DEG F ADJ.	STE-6019-10	STE-6017-10
STE-5122-11	ROOM SENSOR W/NO;DEG C ADJ.	STE-6019-11	STE-6017-11
STE-5122-14	ROOM SENSOR W/NO;+/- ADJ.	N/A, STE-6012*	STE-6014-10
STE-5212-10	ELEC. TEMP. SENSOR; DEG F	N/A, STE-6012*	STE-6014-10
STE-5212-11	ELEC. TEMP. SENSOR; DEG C	N/A, STE-6012*	STE-6014-11
STE-5224-10	ELEC SENSOR W/L.O.;RJ-11;DEG F	N/A, STE-6012*	N/A, STE-6016*
STE-5224-11	ELEC SENSOR W/L.O.;RJ-11;DEG C	N/A, STE-6012*	N/A, STE-6016*
STE-5225-10	ELEC TEMP SENSOR; RJ-11; DEG F	N/A, STE-6012*	N/A, STE-6016*
STE-5225-11	ELEC TEMP SENSOR; RJ-11; DEG C	N/A, STE-6012*	N/A, STE-6016*
STE-5312-10	ELEC. TEMP. SENSOR; DEG F	N/A, STE-6012*	STE-6014-10
STE-5312-11	ELEC. TEMP. SENSOR; DEG C	N/A, STE-6012*	STE-6014-11
STE-5324-10	ELEC SENSOR W/L.O.;RJ-11;DEG F	N/A, STE-6012*	N/A, STE-6016*
STE-5324-11	ELEC SENSOR W/L.O.;RJ-11;DEG C	N/A, STE-6012*	N/A, STE-6016*
STE-5325-10	ELEC TEMP SENSOR; RJ-11; DEG F	N/A, STE-6012*	N/A, STE-6016*
STE-5325-11	ELEC TEMP SENSOR; RJ-11; DEG C	N/A, STE-6012*	N/A, STE-6016*

*Some STE-5000 models have no direct replacement. With only minor changes in the program, however, the STE-6012/6016 can replace any STE-5000 series model, including those with a dial, LED, and switch. *(Rev. 0, 01/2007)*

SEE ALSO: *STE-6000 Series Room Temperature Sensors/Transmitters on page 77*.

STE-5200/5300 Series
Room Temperature Sensors

(STE-5212-10 Shown)

These room temperature sensors are designed for use in building automation systems. They incorporate a 10K ohm (@ 77° F) thermistor for the sensing element, providing precise, stable temperature sensing. They also provide a 10K ohm potentiometer for setpoint adjustment capability, which may be restricted to a single setpoint or specific range.

The STE-5x24 models have, under the cover, an in-line modular connector that allows (using a KMD-5576 or KMD-5559) quick network access through a connected KMC digital controller. The STE-5x24 models also provide two dual-color, LED-lighted push-buttons (powered by KMC controller outputs) for on/off or override functions with three levels of indication (off, red, and green).

Horizontal Fahrenheit scale plates come standard, with either light almond or white plastic covers. Accessories allow setpoint and/or temperature indicator concealment, locked or restricted setpoint adjustment, vertical mounting, and a Celsius display. Optional metal covers are available (separately) in brushed aluminum, painted white, or painted light almond. Mounting kits are also available.

Specifications

Sensor

Type	Type II thermistor
Accuracy	±0.36° F (±0.20° C)
Resistance	10K ohm @ 77° F (25° C)
NTC	4.37%/° C @ 25° C
Dissipation Constant	2.8 mW/° C

Setpoint Potentiometer

Range	85° F (29° C) = 1,410 ohms 70° F (21° C) = 5,000 ohms 55° F (13° C) = 8,590 ohms

Pushbuttons (Momentary, in STE-5x24)

Left	Shunts thermistor
Right	Shunts setpoint potentiometer
Indication	Bipolar red/green LED, 12 VDC max.

Connections

Temp./Setpoint	Screw terminals, 16–22 AWG
Network Coupler	Dual, in-line modular jacks (in STE-5x24)

Models

STE-5212-10	Temp. sensor, light almond
STE-5312-10	Temp. sensor, white
STE-5224-10	Temp. sensor with network connector and lighted buttons, light almond
STE-5324-10	Temp. sensor with network connector and lighted buttons, white

NOTE: Models come with 1 cover and accessories marked by asterisks in Accessories section.

Accessories

Covers for STE-5x12 (Blank, with No Window):

HPO-1501	Light almond ABS plastic
HPO-1502	White ABS plastic
HPO-1503	Brushed aluminum

Covers for STE-5x12 (with Clear Window):

*HPO-1511	Light almond ABS (*replacement*)
*HPO-1512	White ABS (*replacement*)
HPO-1513	Brushed aluminum
HPO-1514	White metal
HPO-1516	Light almond metal

Cover Parts:

*HPO-0044 Cover hex screws (*replacement*)

*HPO-0051 Clear cover window (*replacement*)

*HPO-1320 Label strip, 3 labels per strip (for day/night, summer/winter or heating/cooling indication), 1 furnished with each cover (*replacement*)

Hollow Wall Mounting:

HMO-5023	Mounting strap and screws
HMO-5001	Dual toggle bolts

Scale Plates (includes 2 HPO-0046 scale plate pins):

*HPO-0060-10	° F, horizontal (*replacement*)
HPO-0060-11	° C, horizontal
HPO-0061-10	° F, vertical
HPO-0061-11	° C, vertical

Network Connection:

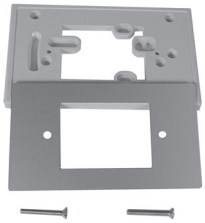
KMD-5690	25-foot plenum cable w/ connector
KMD-5691	50-foot plenum cable w/ connector
KMD-5692	75-foot plenum cable w/ connector

KMD-5576	EIA-485 to USB Communicator

KMD-5559	EIA-485 to EIA-232 CommTalk

Backplate Kits (for mounting to 2 x 4 handy box, with screws and decorative matching plate):

HMO-5024	Light almond w/ aluminum trim
HMO-5026	White w/ aluminum trim
HMO-5030	Light almond
HMO-5031	White



Miscellaneous:

HFO-0027	Setpoint stop strip, 4 "stops" per strip

*HPO-0046	Scale plate pins (*replacement*)

STE-6000 Series
Room Temperature Sensors/Transmitters

Models

Model Number (Light almond, for white, replace last hyphen with W)	Setpoint Adjust		Other Interface Features			Cable Connections			Temperature Output	
	Rotary Dial*	Up/Down Buttons	Override Button(s)	LCD Display	LED Status Indicator	Screw Clamp Terminals	RJ-45 Connector**	EIA-485 Data Port***	10K Ohms Thermistor	0 to 5 VDC Transmitter
STE-6010-10							X	X	X	
STE-6011-10						X			X	
STE-6013-10			X		X	X			X	
STE-6015-10			X		X		X	X	X	
STE-6012-10		X	X	X		X				X
STE-6016-10		X	X	X			X	X		X
STE-6014-10	X						X	X	X	
STE-6017-10	X		X				X	X	X	
STE-6019-10	X		X			X			X	
STE-6018-10	X		X		X		X	X	X	
STE-6020-10	X		X		X	X			X	

*Earlier rotary dial models were marked with ° F or ° C, but dials now have warmer/cooler icons instead of numbers
**Requires KMD-569x sensor to controller cable
***Requires KMD-5624 PC data port cable (see Accessories)

The standard color is almond. **To order in white,** add a "W" in the place of the hyphen near the end of the model number (e.g., STE-6012**W**10).

An STE-6014/6017/6019/6018/6020 includes a **rotary setpoint dial** with warmer/cooler icons.

An STE-6013/6015/6017/6019/6018/6020 allows selection of an **override** condition by pushing the **button** on the front. A **green status LED** (not on the STE-6017/6019) illuminates according to the user-defined controller configuration (e.g., during setback/setup or during normal/override modes).

An STE-6012/6016 **transmitter** includes an **LCD display** for the room temperature and setpoint. The temperature display can be toggled between Fahrenheit and Celsius scales. The setpoint is adjustable via the up and down arrow buttons on the front panel. If the system is in normal/override mode, pressing a button will raise or lower the setpoint. When either button is pushed, the display will toggle from room temperature to the setpoint. When the button is released, the number displayed is the new setpoint, and the display will return to room temperature after ten seconds. If the system is in setback/setup (for heating/cooling) mode, pressing either button selects override mode. (See Power Requirements in the Specifications section.)

An STE-6010/6014/6015/6016/6017/6018 includes a four-pin **EIA-485** (formerly RS-485) **data port** on the cover's underside for easy temporary computer connection to the network. (Access with a KMD-5624 cable.)

Specifications

Connections		Clamp (screw-type) terminals or modular RJ-45 jack (see Models chart)
Material		Light almond or white flame-retardant plastic
Weight		Approx. 1.25 oz. (35 grams)
Sensor		
	Type	Type II thermistor
	Accuracy	± 0.36° F (± 0.20° C)
	Resistance	10K ohm @ 77° F (25° C)
	NTC	4.37%/° C @ 25° C
	Temp. Reading	Thermistor resistance only from all except the 0–5 VDC voltage output from the STE-6012/6016 transmitter
Setpoint Rotary Dial		0–10,000 ±20% ohm linear potentiometer for 54–90° F (12–32° C)
Power Requirements		
	LED Indicator	**10 VDC** (12 VDC max); 5 mA max. current draw at 12 VDC
	LCD Display	**7.5 VDC** (10.4 mA max. current draw) for setback/setup mode or **12 VDC** (9.7 mA) for normal/override modes
Environmental Limits		
	LCD Display	35 to 90° F (2 to 32° C)
	Operating	34 to 125° F (1.1 to 51.6° C)
	Shipping	–40 to 140° F (–40 to 60° C)
	Humidity	0 to 95% RH Non-condensing

Accessories

HMO-6036	Universal backplate, light almond
HMO-6036W	Universal backplate, white
KMD-569**x**	STE-6010/6014/6015/6016/6017/6018 to controller cable with RJ-45 to RJ-11 connectors (-569**3** = 25 ft.; -569**4** = 50 ft.; -569**5** = 75 ft.)
KMD-5624	PC Data Port (EIA-485) Cable
KMD-5576	EIA-485 to USB Communicator

SEE ALSO: *STE-5000/6000 Series Cross-Reference on page 74.*

THE-1002

Duct Mounted Humidity Transmitter w/ Temp.

The THE-1002 duct-mounted humidity transmitter is designed for use with automation systems in commercial buildings, hospitals, museums, or other facilities requiring accurate measurement of relative humidity and temperature. It transmits separate relative humidity (RH) and temperature signals for use in temperature, humidity, or enthalpy-based control applications.

This transmitter now uses a state-of-the-art silicon CMOS chip sensor. This provides much more durable and reliable performance than the older capacitive polymer sensor. Plus, it responds within seconds to changes in humidity with a very high degree of accuracy.

Able to accept VAC or VDC supply voltage, the THE–1002 offers three different standard outputs, any one of which may be used per application. This reduces the need to stock multiple transmitters to accommodate several output requirements.

The THE-1002 also contains a 10,000 ohm (@ 77° F) thermistor for measuring duct temperature. The sensor probe is filtered to reduce the possibility of contamination from airborne dirt and dust.

Specifications

Supply Voltage	24 VAC –15%, +20%; 28 to 40 VDC
Supply Power	0.75 VA at 24 VAC 12.5 mA at 28 VDC
Humidity Element	
Output Range	0 to 100% RH
Sensing Accuracy	@ 25° C ±2% RH over the 10% to 90% RH range
Output Signal over 0 to 100% RH	0 to 5 VDC, 0 to 10 VDC, or 4 to 20 mA
Output Capacity	
0–5 or 0–10 VDC	capable of driving 1000 Ω or greater
4–20 mA	(24 VAC or 28 VDC supply) 250 Ω min. to 650 Ω max.
Temperature Sensor	
Type	Type II thermistor
Accuracy	±0.36° F (±0.20° C)
Resistance	10K ohm @ 77° F (25° C)
NTC	4.37%/° C @ 25° C
Wire Size	18 to 22 AWG w/ max. 250-foot length
Material	Flame-retardant plastic
Weight	12 oz. (34 kg)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	0 to 100% RH, non-condensing

THE-1102

Wall Mounted Humidity Transmitter w/ Temp.

The THE-1102 humidity transmitter is designed for use with automation systems in commercial buildings, hospitals, museums, or other facilities requiring accurate measurement of relative humidity and temperature. It transmits separate relative humidity (RH) and temperature signals for use in temperature, humidity, or enthalpy-based control applications.

This transmitter now uses a state-of-the-art silicon CMOS chip sensor. This provides much more durable and reliable performance than the older capacitive polymer sensor. Plus, it responds within seconds to changes in humidity with a very high degree of accuracy.

The THE-1102 also contains a thermistor for measuring room temperature. The 10,000 ohm (@ 77° F) thermistor provides precise, stable temperature sensing.

The durable, low-profile, thermostat-style cover is visually appealing. These transmitters may be surface-mounted on a hollow wall or to a 2 x 4 in. electrical box.

When used with the REE-2002 relay, these transmitters can accept VAC or VDC inputs, and they can supply outputs of 0 to 5 VDC, 0 to 10 VDC, or 4 to 20 mA. This eliminates the need to stock multiple transmitters for accommodating several output requirements. (See the REE-2002 data sheet for further relay details.)

Accessories

HMO-6036	Universal backplate
REE-2002	Relay module

Specifications

Supply Voltage	
W/o REE-2002	10 to 15 VDC
With REE-2002	24 VAC, –15%, +20% 28 to 40 VDC
Supply Power	
W/o REE-2002	7.0 mA at 12 VDC
With REE-2002	0.75 VA at 24 VAC 9.5 mA at 28 VDC
Humidity Element	
Output Range	0 to 100% RH
Accuracy	@ 25°, ± 2% RH over the 10-90% RH range
Output Signal over 0 to 100% RH	
W/o REE-2002	0 to 5 VDC
With REE-2002	0 to 5 VDC, 0 to 10 VDC, or 4 to 20 mA
Output Capacity	
W/o REE-2002	0 to 5 VDC capable of driving 1000 ohms or greater
With REE-2002	0 to 5 or 0 to 10 VDC capable of driving 1000 ohms or greater 4 to 20 mA (24 **VAC** or 28 **VDC** supply) 250 Ω min. to 650 Ω max.
Temperature Sensor	
Type	Type II thermistor
Accuracy	± 0.36° F (± 0.20° C)
Resistance	10K ohms @ 77° F (25° C)
NTC	4.37%/° C @ 25° C
Dissipation Constant	2 mW/° C
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	0 to 100% RH, non-condensing

THE-1105
Wall Mounted Humidity Transmitter with Temp. Sensor

The THE-1105 humidity transmitter may be used in vertical or horizontal installations in building management systems requiring accurate monitoring of humidity and temperature. It transmits separate relative humidity (RH) and temperature signals for use in temperature, humidity, or enthalpy-based control applications. Environmentally rugged, it is especially suited for hospitals, laboratories, and swimming pool areas.

This transmitter now uses a state-of-the-art silicon CMOS chip sensor. This provides much more durable and reliable performance than the older capacitive polymer sensor. Plus, it responds within seconds to changes in humidity with a very high degree of accuracy.

The THE-1105 has two user-selectable output ranges: 0 to 5 or 0 to 10 VDC, scaled over 0 to 100% RH range.

The THE-1105 also contains a thermistor for measuring room temperature. The 10,000 ohm (@ 77° F) thermistor provides precise, stable temperature sensing.

Accessories

HMO-5023	Mounting strap for mounting on hollow walls, includes 2 #6-32 x 2" screws and "template" printed on envelope
HMO-5001	Dual toggle bolts for mounting on hollow walls
HMO-5024	2 x 4 inch almond horizontal backplate with alum. trim
HMO-5026	2 x 4 inch white horizontal backplate with alum. trim
HMO-5030	2 x 4 inch almond vertical backplate with alum. trim
HMO-5031	2 x 4 inch white vertical backplate with alum. trim
HPO-1501	Light almond, ABS cover
HPO-1502	White, ABS cover
HPO-1503	Brushed aluminum, metal cover
HPO-0044	Replacement cover screws

NOTE: For more information on these accessories, see the accessories section of ***STE-5200/5300 Series Room Temperature Sensors on page 75***.

Specifications

Supply Voltage		24 VAC –15%, +20%; 28 to 40 VDC
Supply Power		0.84 VA at 24 VAC 12.5 mA at 28 VDC
Humidity Element		
	Output Range	0 to 100% RH
	Sensing Accuracy	@ 25° C ±2% RH over the 10% to 90% RH range
Output Signal over 0 to 100% RH		0 to 5 VDC or 0 to 10 VDC
Output Capacity		0 to 5 or 0 to 10 VDC capable of driving 1000 ohm or greater
Temperature Sensor		
	Type	Type II thermistor
	Accuracy	±0.36° F (±0.20° C)
	Resistance	10K ohm @ 77° F (25° C)
	NTC	4.37%/° C @ 25° C
	Dissipation Constant	2 mW/° C
Wire Size		18 to 22 AWG w/ max. 250-foot length
Material		
	Base	Black ABS
	Cover	Light Almond flame-retardant plastic
Weight		3.0 oz. (85 grams)
Temperature Limits		
	Operating	40 to 120° F (4 to 49° C)
	Shipping	–40 to 140° F (–40 to 60° C)
	Humidity	0 to 100% RH, non-condensing

TTE-1001
Room Temperature Transmitter

The KMC TTE-1001 Room Temperature Transmitter is designed for use in HVAC systems where the requirement calls for remote control of space temperature. When used in conjunction with the CEE-1100 series of remote controllers, it provides an accurate method of control with actual settings being made at the CEE controller, rather than at the final control device.

The TTE-1001 transmitter may also be used with the CTE-1100/5100 series thermostats for temperature averaging.

Furnished with a blank cover, the TTE-1001 offers several mounting methods, such as the ability to mount on a 2 x 4 inch electrical box.

Specifications

Supply Voltage*	9.1 VDC, ±10%
Output Range*	3.245 to 4.911 VDC (55 to 85° F) or 3.167 to 4.767 VDC (13 to 29° C) @ 9.1 VDC Supply
Sensor Action	Direct acting
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (40 to 60° C)

*NOTE: Supply voltage can be up to 12 VDC, and then output voltage will be higher. A 10K Type II thermistor is between terminals + and A, and 9.53K ohm resistor is between terminals A and –. See also the (TTE-5001/5011 Mini Room) Temperature Transmitter Cross-Reference below.

Accessories

Associated Remote Controllers:

CEE-1101-10 DA/Cooling (fan powered)
CEE-1103-10 DA/Cooling; RA/Heating (fan powered)
CEE-1105-10 DA/Night; DA/Day (fan powered)

Associated Thermostats:

CTE-1101
CTE-1103
CTE-1105
CTE-5101
CTE-5102
CTE-5103
CTE-5104
CTE-5105

NOTE: For other accessories, see the *CEE/CTE/TTE-1000/1100 Series Accessories on page 83*.

TTE-2001
Duct Temperature Transmitter

Duct temperature transmitter for use with CEE-1100 series remote thermostat controllers, 55 to 85° F, 4" insertion length.

NOTE: A 10K Type II thermistor is between terminals 1 and 2, and 9.53K ohm resistor is between terminals 2 and 3. See also the (TTE-5001/5011 Mini Room) Temperature Transmitter Cross-Reference below. For a duct **sensor only**, see *SSE-1000/2000 Series VAV System Duct Flow Sensors on page 72*.

(TTE-5001/5011 Mini Room) Temperature Transmitter Cross-Reference

As a substitute for a discontinued TTE-5001/5011, see the (3.167 to 4.767 VDC) TTE-1001 above or (0 to 5 VDC) STE-6012/6016 in *STE-6000 Series Room Temperature Sensors/Transmitters on page 77*.

Models	Corresponding Terminals		
TTE-1001	+	A	–
TTE-2001	1	2	3
TTE-5001/5011	B	A	C

NOTE: See the TTE-1001 data sheet and installation guide for more information. For accessories, see *CTE/TTE-5000 Series Accessories on page 88*.

Thermostats

BAC-12xxxx/13xxxx/14xxxx FlexStat™
BACnet Programmable Thermostats

(BAC-13xxxx/14xxxx with Motion Sensor, Light Almond)

(BAC-12xxxx with Motion Sensor, White)

The award-winning FlexStat is a **controller and sensor(s)** in a single, attractive package that creates a flexible solution to stand-alone control challenges or BACnet network challenges. Temperature sensing is standard with **optional humidity, motion, and CO_2 sensing**. Flexible input and output configurations and built-in or custom programming ensure that a variety of application needs can be met. Such applications include single- and multi-stage packaged, unitary, and split systems (including high SEER/EER variable speed packaged equipment), as well as factory-packaged and field-applied economizers, water-source and air-to-air heat pumps, fan coil units, central station air handling units, and other similar applications.

In addition, an on-board library of programs permits a single model to be rapidly configured for a wide range of HVAC control applications. Thus, a single "one size fits all" FlexStat model can replace multiple competitor models. A single BAC-120163CW, for example, can be quickly configured for any of these application options:

- Air handling unit, with proportional heating and cooling valves, and with optional economizer, dehumidification, and/or fan status
- Fan coil unit, 2-pipe or 4-pipe, proportional or 2-position valves, with optional dehumidification (w/ 4-pipe option) and/or fan status
- Heat pump unit, with up to two compressor stages, and with optional auxiliary heat, emergency heat, dehumidification, and/or fan status
- Roof top unit, with up to two H/C stages, and with optional economizer, dehumidification, and/or fan status

BACnet over **MS/TP** communication is standard. **"E" versions, with an RJ-45 jack, add BACnet over Ethernet, BACnet over IP, and BACnet over IP as Foreign Device** (for communication across the Internet).

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Specifications

Supply Voltage	24 VAC (+20%/–10%), Class 2
Supply Power	13 VA (not including relays)
Outputs (3/6 or 6/3)	Binary outputs (NO, SPST, Form "A" relays) carry **1 A** max. per relay **or** a total of **1.5 A per bank** of 3 relays (relays 1–3 and 4–6) @ 24 VAC/VDC Analog outputs produce 0–12 VDC, **20 mA** maximum
External Inputs (6)	Analog 0–12 VDC (active/passive contacts, 10K thermistors)
Connections	Wire clamp type terminal blocks; 14–22 AWG, copper Four-pin EIA-485 (Opt.) eight-pin Ethernet jack
Display	64 x 128 pixel dot matrix LCD
Case Material	White (standard) or light almond flame-retardant plastic
Dimensions*	
BAC-12xxxx	5.551 x 4.192 x 1.125 inches (141 x 106 x 28.6 mm)
BAC-13xxxx/14xxxx	5.551 x 5.192 x 1.437 inches (141 x 132 x 36.5 mm)
Weight*	0.48 lbs. (0.22 kg) or 0.5 lbs. (0.28 kg)
Approvals*	UL 916 Energy Management Equipment; FCC Class B (Class A for BAC-13xxxx/14xxxx), Part 15, Subpart B and complies with Canadian ICES-003 Class B (Class A for BAC-13xxxx/14xxxx); BTL listing pending
Humidity Sensor (optional internal)	
Sensor Type	CMOS
Range	0 to 100% RH
Accuracy @ 25°C	±2% RH (10 to 90% RH)
Response Time	Less than or equal to 4 seconds
Temperature Sensor (without humidity sensor)	
Sensor Type	Thermistor, Type II
Accuracy	±0.36° F (±0.2° C)
Resistance	10,000 ohms at 77° F (25° C)
Operating Range	48 to 96° F (8.8 to 35.5° C)
Temperature Sensor (with humidity sensor)	
Sensor Type	CMOS
Accuracy	±0.9° F offset (±0.5° C) from 40 to 104° F (4.4 to 40° C)
Operating Range	36 to 120° F (2.2 to 48.8° C)
Motion Sensor	Passive infrared with approx. 10 meter (32.8 feet) range
Environmental Limits*	
Operating	34 to 122° F (1.1 to 50° C)
Shipping	–22 to 140° F (–30 to 60° C)
Humidity	0 to 95% RH (non-condensing)

NOTE: The CO_2 models are not approved for residential applications.

FlexStat Models

Model*	Outputs**	Optional Sensors***	Typical Applications
BAC-1**2**xxxx models (e.g., BAC-120036CW) are standard and do not have a CO_2 sensor. BAC-1**3**xxxx/1**4**xxxx models (e.g., BAC-140036CW) have CO_2 sensors to add Demand Control Ventilation to the applications below. **DCV is only available when using an AHU, RTU, or HPU application with a modulating economizer option enabled.** See "Specifications, CO2 Models Only" for more information.			
BAC-1x0036CW	3 Relays and 6 Analog Outputs	None	• 1H/1C, fan, and 6 universal outputs • 3-speed fan, 2- or 4-pipe FCUs with modulating valves • Central station AHUs with modulating/1/2 Heat/Cool • Variable-speed fan output • Single-stage applications
BAC-1x0136CW		Humidity****	• Same as BAC-1x0036CW • Dehumidification sequence • Humidification sequence (AHU or 4-pipe FCU)
BAC-1x1036CW		Motion/Occupancy	• Same as BAC-1x0036CW • Occupancy-based operation
BAC-1x1136CW		Humidity and Motion/Occupancy****	• Same as BAC-1x0136CW • Occupancy-based operation
BAC-1x0063CW	6 Relays and 3 Analog Outputs	None	• 1 or 2 H and 1 or 2 C, fan • Multi-stage packaged or split systems • Multi-stage heat pumps with or without factory-packaged economizers • Central station AHUs with modulating Heat/Cool • 3-speed fan, 2- or 4-pipe FCUs with modulating or 2-position valves
BAC-1x0163CW		Humidity****	• Same as BAC-1x0063CW • Dehumidification sequence (AHU, 4-pipe FCU, or RTU)
BAC-1x1063CW		Motion/Occupancy	• Same as BAC-1x0063CW • Occupancy-based operation
BAC-1x1163CW		Humidity and Motion/Occupancy****	• Same as BAC-1x0163CW • Occupancy-based operation

*__The standard color is white. To order the optional light almond color, remove the "W" at the end of the model number__ (e.g., BAC-121163C instead of BAC-121163C**W**). **To order the IP version**, add an E after the C (e.g., BAC-121163C**E**W)**.** All models have a real-time clock.

__Analog outputs__ produce 0–12 VDC @ **20 mA maximum, and **relays** carry **1 A** max. **per relay or 1.5 A per bank** of 3 relays (relays 1–3, 4–6, and 7–9) @ 24 VAC/VDC.

***All models have an internal temperature sensor and 6 analog **inputs**. All models have optional discharge air temperature monitoring/trending and fan status monitoring. Optional sensors include humidity, motion, and CO_2.

****In models with CO_2 sensors, humidity sensors come standard.

CO_2 Sensor	BAC-13xxxx	BAC-14xxxx
Applications	For zones with **occupied/unoccupied** times*	For zones with **continuous occupancy***
Method	Non Dispersive Infrared (NDIR), with ABC Logic*	Non Dispersive Infrared (NDIR), dual channel*
Calibration	Self-calibrates over several weeks*	Self-calibrates approximately once every 24 hours*
Typical Life of Sensor	15 years	10 years

*The BAC-1**3**xxxx series uses Automatic Background Logic, or ABC Logic, a patented self-calibration technique designed to be used in applications where concentrations will drop to outside ambient conditions (approximately 400 ppm) at least three times in a 14 day period, typically during unoccupied periods. With ABC Logic enabled, the sensor will typically reach its operational accuracy after 25 hours of continuous operation if it was exposed to ambient reference levels of air at 400 ±10 ppm CO_2. The sensor will maintain accuracy specifications with ABC Logic enabled, given that it is at least four times in 21 days exposed to the reference value and this reference value is the lowest concentration to which the sensor is exposed. ABC Logic requires continuous operation of the sensor for periods of at least 24 hours.

NOTE: The BAC-1**3**xxxx series, with ABC Logic, has been certified to comply with CA Title 24, Section 121(c), as well as sub-paragraph 4.F that specifies accuracy will be maintained within tolerance for a minimum of 5 years without recalibration and that a detected sensor failure will cause the controller to take appropriate corrective action.

The BAC-1**4**xxxx series, for zones with continuous occupancy, has a dual channel sensor. A CO_2 channel measures gas concentration, and a reference channel measures the sensor signal intensity. Self-calibrations are performed approximately every 24 hours using the reference channel. During the self-calibration the sensor ppm reading is frozen and will not react to changing CO_2.

FlexStat Accessories

HMO-10000 Horizontal or 4 x 4 handy box wall mounting plate for BAC-12xxxx models only, light almond (shown)

HMO-10000W HMO-10000 in white

HPO-0044 Replacement cover hex screw

HTO-1103 FlexStat firmware flash upgrade kit (formerly KMD-5699)

KMD-5567 Network surge suppressor

KMD-5575 Network repeater/isolator

KMD-5576 EIA-485 to USB Communicator

KMD-5624 PC data port (EIA-485) cable (FlexStat to USB Communicator)—included with the KMD-5576 (buy for third-party EIA-232 interfaces)

SP-001 Flat blade and hex end screwdriver (with KMC logo) for cover hex screws

XEE-6111-040 Transformer, 120-to-24 VAC, 40 VA, single-hub

XEE-6112-040 Transformer, 40 VA, dual-hub

CEE/CTE/TTE-1000/1100 Series Accessories

This page lists accessories for the following series:

- CEE-1100 series
- CTE-1000/1100 series
- TTE-1001

HFO-0026 Blank cover insert "blanks" out window in large thermostats cover, light almond

HFO-0027 Setpoint stop strip, 4 "stops" per strip

HMO-5001 Dual toggle bolt, allows mounting of large thermostats to drywall

HMO-5022 Mounting trim plate, light almond

HMO-5002 Backplate insulators/ extenders, 1-1/8" deep, light almond

HMO-5007 Backplate insulators/ extenders, 1-11/16" deep, light almond

HSO-5001 Thermostat test leads for connecting CEE/ CTE-1000/1100/5100 series thermostats (but **not** for CTE-5000 series) to a voltmeter

HMO-5500 Thermostat universal upgrade kit, for replacing other thermostat brands with KMC, light almond (includes: plates, brackets, screws, O-rings, couplings, and adapters)—See *CTE/TTE-5000 Series Accessories on page 88* for more details.

See also: *REE-4001 Relay Module, 3-Stage Reheat on page 62* **and** *XEE-4002/5002 Power Supplies on page 54*.

CEE-1100 Series
REMOTE Thermostat Controllers

The CEE-1100 series of electronic thermostat controllers are **similar to the corresponding model of CTE-1100 thermostats except the CEE Series requires the use of a remote TTE temperature sensor/ transmitter (see Accessories section)**.

Models

CEE-1101-10	° F, horizontal, single setpoint
CEE-1103-10	° F, horizontal, dual setpoint
CEE-1105-10	° F, horizontal, dual setpoint, night/day

SEE ALSO: *CEE/CTE/TTE-1000/1100 Series Accessories on page 83*.

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Band	2° F (1.1° C)
Thermostat Action	
CEE-1101-10	Direct Acting
CEE-1103-10	Cooling: Direct Acting Heating: Reverse Acting
CEE-1105-10	Direct Acting
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)
Material	"-10" models are available only in white

Accessories (Remote Sensors/Transmitters)

TTE-1001	Horizontal or vertical mount, 55–85° F, blank cover
TTE-2001	Duct transmitter, 55–85° F, 4" insertion length
Mini transmitters, 55–85° F, blank cover:	
TTE-5001	White
TTE-5011	Light almond

CTE-1001/1002
Room Thermostats, Single Setpoint, H or C

The CTE-1001/1002 electronic thermostats are designed for use with specific CEE/CEP/CSE/CSP-4000 series controller-actuators for controlling damper actuators and/or valves in HVAC systems. The ability to adjust minimum and maximum limits is at the thermostat rather than at the controller. They are single-setpoint units for cooling and heating applications. Several mounting methods are available.

An additional output is provided for control of the optional REE series relay modules. This output is not restricted by the minimum and maximum control points. Cover construction allows for the setpoint indicator and thermometer to be either visible or concealed. Optional accessories include an insert for concealing the window, and stops to lock/restrict the setpoint adjustment(s). The CTE-1001/1002 thermostats are intended for use with the CEE/CEP/CSE/CSP-4000 series controller/actuators.

Specifications

Supply Voltage	9.1 VDC (5 mA) ±5%
Output Range	0 to 6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Band	2° F (1.1° C)
Thermostat Action	
CTE-1001	Direct Acting
CTE-1002	Reverse Acting
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-1001-10	° F, horizontal, DA, cooling
CTE-1001-11	° C, horizontal, DA, cooling
CTE-1001-103	° F, vertical, DA, cooling
CTE-1002-10	° F, horizontal, RA, heating
CTE-1002-11	° C, horizontal, RA, heating
CTE-1002-103	° F, vertical, RA, heating

NOTE: See also *CTE-1101 Room Thermostats, Single Setpoint, Cooling on page 86* for an additional proportional band and the option for temperature averaging.

Accessories

See the *CEE/CTE/TTE-1000/1100 Series Accessories on page 83*.

CTE-1003
Room Thermostats, Dual Setpoints, H/C

These electronic thermostat are designed to be used with specific CEE/CEP/CSE/CSP-4000 series controller-actuators for controlling damper actuators and/or valves in HVAC systems. The ability to adjust minimum and maximum limits is at the thermostat rather than at the controller. These are a dual-setpoint thermostat for **heating and cooling** applications. Several mounting methods are available.

An additional output is provided for control of the optional REE-4000 series relay modules which is not restricted by the minimum and maximum control points.

Cover construction allows for the setpoint indicator and thermometer to be either visible or concealed. Optional accessories include an insert for concealing the window, and stops to lock/restrict the setpoint adjustment(s).

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Bands	2° F (1.1° C)
Thermostat Action	
Cooling	Direct Acting
Heating	Reverse Acting
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C)
	Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-1003-10	° F, horizontal
CTE-1003-11	° C, horizontal
CTE-1003-103	° F, vertical
CTE-1003-113	° C, vertical

NOTE: See also the ***CTE-1103 Room Thermostats, Dual Setpoints, H/C on page 87*** for wider proportional bands.

Accessories

See the ***CEE/CTE/TTE-1000/1100 Series Accessories on page 83***.

CTE-1004
Room Thermostats, Dual Setpoints, Cool/Reheat

These electronic thermostats are designed to be used with specific CEE/CEP/CSE/CSP-4000 series controller-actuators for controlling damper actuators and/or valves in HVAC systems. The ability to adjust minimum and maximum limits is at the thermostat rather than at the controller. An **auxiliary flow**, constant volume setpoint may be initiated manually or automatically for desired air flow across a reheat coil. These dual-setpoint thermostats are for **cooling with reheat** applications. Several mounting methods are available.

An additional output is provided for control of the optional REE-4000 series relay modules. This output is not restricted by the minimum and maximum control points.

Cover construction allows for the setpoint indicator and thermometer to be either visible or concealed. Optional accessories include an insert for concealing the window, and stops to lock/restrict the setpoint adjustment(s).

Specifications

Supply Voltage	9.1 VDC, ±5%
Output Range	0–6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Band	2° F (1.1° C)
Thermostat Action	
Cooling	Direct Acting
Heating	Reverse Acting
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C)
	Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-1004-10	° F, horizontal
CTE-1004-11	° C, horizontal
CTE-1004-103	° F, vertical
CTE-1004-113	° C, vertical

Accessories

See the ***CEE/CTE/TTE-1000/1100 Series Accessories on page 83***.

CTE-1005/1008
Room Thermostats, Dual Setpoints, Day/Night

These electronic thermostats are designed to be used with specific CEE/CEP/CSE/CSP-4000 series controller-actuators for controlling damper actuators and/or valves in HVAC systems. The ability to adjust minimum and maximum limits is at the thermostat rather than at the controller. They are DA dual-setpoint thermostats for **day/night** reset applications. Several mounting methods are available.

An additional output is provided for control of the optional REE-4000 series relay modules. This output is not restricted by the thermostat's minimum and maximum control points.

Cover construction allows for the setpoint indicator and thermometer to be either visible or concealed. Optional accessories include an insert for concealing the window, and stops to lock/restrict the setpoint adjustment(s).

Specifications

Supply Voltage	9.1 VDC, ±5%
Output Range	0 to 6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Bands	2° F (1.1° C)
Thermostat Action	Direct Acting
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-1005-10	° F, horizontal, night/day
CTE-1005-11	° C, horizontal, night/day

NOTE: CTE-1008s are now obsolete and only available as replacements for existing units.

Accessories

See the *CEE/CTE/TTE-1000/1100 Series Accessories on page 83*.

CTE-1101
Room Thermostats, Single Setpoint, Cooling

These direct-acting electronic thermostats are designed for use with CEE/CEP/CSE/CSP-4000 series controller-actuators to control damper actuators and/or valves in HVAC systems. The capability to adjust minimum and maximum limits is at the thermostat rather than at the controller. These single-setpoint DA thermostats are for **cooling** applications.

An additional output is provided for control of optional KMC REE-4000 series relay modules. This 0–6 VDC output (T3) is not restricted by the minimum and maximum control points.

An optional XEE-4002 9.1 VDC power supply module can power the CTE-1101 thermostat. Then the CTE-1101 can be used (without the controller-actuator) to control a damper or valve operated by an MEP series actuator or to control other devices via optional REE-4000 series relays.

Cover construction allows the setpoint indicator and thermometer to be either visible or concealed. Optional accessories include an insert for concealing the window, and stops to lock/restrict the setpoint adjustment. Vertical and horizontal mounting methods are available.

NOTE: See also the *CTE-1001/1002 Room Thermostats, Single Setpoint, H or C on page 84*. Compared to the CTE-1001s, CTE-1101s have a different relationship between T1 and T3 that allows them to operate a REE-4002 fan box relay from T3 below setpoint while T1 operates the VAV box above setpoint. The CTE-1101 also has (not found on CTE-1001/1002s)a temperature output (A) that allows temperature averaging with remote temperature transmitters, such as the TTE-1001.

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Band	T1: 2° F (1.1° C); T3: 4° F (2.2° C)
Thermostat Action	Direct Acting
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-1101-10	° F, horizontal
CTE-1101-11	° C, horizontal
CTE-1101-103	° F, vertical

Accessories

See the *CEE/CTE/TTE-1000/1100 Series Accessories on page 83*.

CTE-1103
Room Thermostats, Dual Setpoints, H/C

The KMC CTE-1103 electronic thermostat is designed for use with specific CEE/CEP/CSE/CSP-4000 series controller-actuators to control damper actuators and/or valves in HVAC systems. The ability to adjust minimum and maximum limits is at the thermostat rather than the controller. This is a dual-setpoint thermostat for **heating/cooling** applications. Several mounting methods are available.

An additional output is provided for control of the optional REE-4000 series relay modules. This 0–6 VDC output (T3) is not restricted by the minimum and maximum control points.

The CTE-1103 may also be used without the CEP/CSP controller-actuator. An optional XEE-4002 power supply module can power the CTE-1103 thermostat. The CTE-1103 may then control dampers and/or valves with MEP series actuators or may control other damper or valve actuators using the optional REE-4000 series relays.

Cover construction allows for the setpoint indicator and thermometer to be either visible or concealed. Optional accessories include an insert for concealing the window, and stops to lock/restrict the setpoint adjustment(s).

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Bands	4° F (2.2° C)
Thermostat Action	
Cooling	Direct Acting
Heating	Reverse Acting
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C)
	Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-1103-10	° F, horizontal
CTE-1103-11	° C, horizontal
CTE-1103-103	° F, vertical

NOTE: See also the ***CTE-1003 Room Thermostats, Dual Setpoints, H/C on page 85*** for narrower proportional bands.

Accessories

See the ***CEE/CTE/TTE-1000/1100 Series Accessories on page 83***.

CTE-1105/1108
Room Thermostats, Dual Setpoints, Day/Night

These electronic thermostats are designed for use with specific CEE/CEP/CSE/CSP-4000 series controller-actuators to control damper actuators and/or valves in HVAC systems. The ability to adjust minimum and maximum limits is at the thermostat rather than at the controller. They are dual-setpoint thermostats for **day/night** reset applications.

An additional output is provided for control of optional KMC REE-4000 series relay modules. This 0–6 VDC output (T3) is not restricted by the minimum and maximum control points.

Cover construction allows the setpoint indicator and thermometer to be either visible or concealed. Optional accessories include an insert for concealing the window, and stops to lock/restrict the setpoint adjustment(s).

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6 VDC
Range	55 to 85° F (13 to 29° C)
Proportional Band	2° F (1.1° C)
Thermostat Action	CTE-1105 DA, CTE-1108 RA
Cover	Furnished, light almond, with window
Temperature Limits	Operating: 40 to 120° F (4 to 49° C)
	Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-1105-10	° F, horizontal, night/day, DA
CTE-1105-11	° C, horizontal. night/day, DA
CTE-1108-10	° F, horizontal, day/night, RA*

*NOTE: CTE-1108 Reverse Acting thermostats are discontinued and sold as replacements only.

Accessories

See the ***CEE/CTE/TTE-1000/1100 Series Accessories on page 83***.

CTE/TTE-5000 Series Accessories

This page lists accessories for the following series:

- CTE-5000
- TTE-5000
- (See CTE-5100 series accessories under *CTE-5100 Series Electronic Room Thermostats on page 92*)

Mini-stat backplate, UK:

HMO-5035	White
HMO-5034	Light Almond

Mini-stat setpoint cover:

HPO-0031	White
HPO-0032	Light almond

Adapter backplates, mini-stat to handy box:

HMO-5036	Vertical, light almond
HMO-5037	Vertical, white
HMO-5038	Horizontal, white
HMO-5039	Horizontal, light almond

Replacement mini-stat cover:

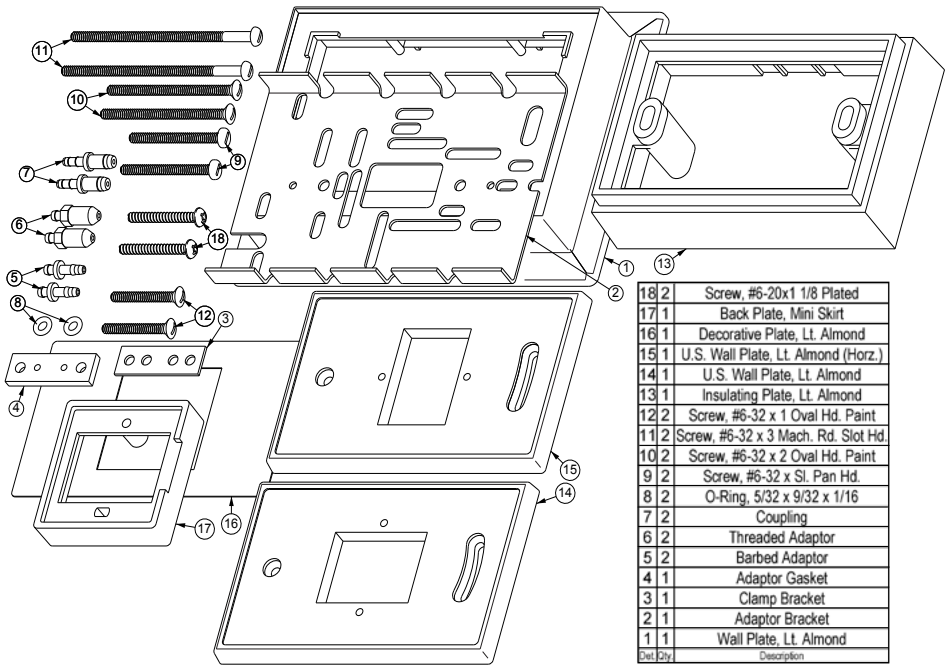
HPO-0035	White
HPO-0036	Light almond

HMO-5001 Dual toggle bolt, allows mounting of wall plates to drywall

Insulating stand-off, mini-stats:

HMO-5016	White
HMO-5014	Light almond

HMO-5500 Thermostat "universal" upgrade kit, for replacing other thermostat brands with KMC, light almond (includes: plates, brackets, screws, O-rings, couplings, and adapters)



Det	Qty	Description
18	2	Screw, #6-20x1 1/8 Plated
17	1	Back Plate, Mini Skirt
16	1	Decorative Plate, Lt. Almond
15	1	U.S. Wall Plate, Lt. Almond (Horz.)
14	1	U.S. Wall Plate, Lt. Almond
13	1	Insulating Plate, Lt. Almond
12	2	Screw, #6-32 x 1 Oval Hd. Paint
11	2	Screw, #6-32 x 3 Mach. Rd. Slot Hd.
10	2	Screw, #6-32 x 2 Oval Hd. Paint
9	2	Screw, #6-32 x Sl. Pan Hd.
8	2	O-Ring, 5/32 x 9/32 x 1/16
7	2	Coupling
6	2	Threaded Adaptor
5	2	Barbed Adaptor
4	1	Adaptor Gasket
3	1	Clamp Bracket
2	1	Adaptor Bracket
1	1	Wall Plate, Lt. Almond

CTE-5001/5011
Room Thermostat, Single Setpoint, DA Cooling or RA Heating

These thermostats are designed for use with certain CEE/CEP/CSE/CSP-4000 series controller-actuators to control dampers and/or valves in HVAC systems. These single-setpoint thermostats provide DA cooling or RA heating, selectable by jumper placement and wiring terminations or automatically by an REE-1014 relay module.

These economical thermostats provide precise control while offering the ability to adjust the minimum and maximum control points at the thermostat rather than at the controller-actuator. The minimum and maximum flow limits can be adjusted from the thermostat (via potentiometers behind the cover). The setpoint adjustment and indication are on the top of the cover and can be hidden by installing the optional setpoint cover.

Thermostats come with a blank cover and choice of optional decorative inserts to mat most decors. The setpoint adjustment and indication are exposed but can be hidden by installing the optional setpoint cover.

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6.5 VDC
Temperature Range	54 to 90° F (12 to 32° C)
Proportional Band	3.6° F (2° C)
Thermostat Action	Direct (DA) or Reverse (RA) Acting
Cover	Light almond or white flame-retardant plastic, with setpoint indicator
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-5001-10	Ash white, ° F
CTE-5001-11	Ash white, ° C
CTE-5011-10	Light almond, ° F
CTE-5011-11	Light almond, ° C

Accessories

REE-1014	Relay module, heat/cool changeover for CTE-5000 series
XEE-4002	Power supply, 24 VAC to 9.1 VDC

See also the *CTE/TTE-5000 Series Accessories on page 88*..

CTE-5002/5012
Room Thermostat, Single Setpoint, DA Cooling w/ Reheat, Aux., & Adjustable Deadband

These thermostats are designed to be used with certain CEE/CEP/CSE/CSP-4000 series controller-actuators for controlling dampers and/or valves in HVAC systems. These are single-setpoint thermostats provide dual 0–6.5 VDC outputs for Direct Acting (DA) cooling with adjustable min./max. limits, auxiliary control point, and Reverse Acting (RA) heating with adjustable deadband.

These economical thermostats provide precise control, while offering the opportunity to adjust control points at the thermostat rather than at the controller-actuator. The deadband, min., max., and auxiliary flow limits can be adjusted from the thermostat (via pots behind the cover). The setpoint adjustment and indication are on the top of the cover and can be hidden by installing the optional setpoint cover.

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6.5 VDC (both outputs)
Temperature Range	54 to 90° F (12° – 32° C)
Deadband Adjustment	1 to 10° F (0.56°–5.6° C)
Proportional Band	2.5° F (1.4° C)
Thermostat Action	
Cooling	Direct Acting (DA)
Heating	Reverse Acting (RA)
Cover	Light almond or white flame-retardant plastic, with setpoint indicator
Size	2" (51 mm) square
Weight	1.25 oz. (35 grams)
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Models

CTE-5002-10	Ash white, ° F
CTE-5002-11	Ash white, ° C
CTE-5012-10	Light almond, ° F
CTE-5012-11	Light almond, ° C

NOTE: For similar thermostats using 16 VDC, see the *CTE-5006/5016 Room Thermostat, DA Cooling w/ Reheat, Auxiliary, and Adjustable Deadband on page 90*.

Accessories

XEE-4002	Power supply, 24 VAC to 9.1 VDC

See also the *CTE/TTE-5000 Series Accessories on page 88*..

CTE-5003/5013

Room Thermostats, DA Cooling w/ Reheat, Aux., Adjust. Deadband, & Refrigeration

These single-setpoint thermostats are designed to be used with CEE/CEP/CSE/CSP-4000 series controller-actuators for controlling dampers, valves, and refrigeration in HVAC systems. These thermostats provide triple 0–6.5 VDC outputs for DA cooling with adjustable min/max limits, auxiliary control point, RA heating with adjustable deadband, and refrigeration staging. Several mounting methods are available, including direct mounting to a hollow wall or to an electrical box using an adapter backplate.

These inexpensive thermostats provide precise control, while offering the ability to adjust the control points at the thermostat rather than at the controller-actuator. The deadband, minimum, maximum, and auxiliary flow limits can be adjusted from the thermostat (via potentiometers behind the cover). The setpoint adjustment and indication are on the top of the cover and can be hidden by installing the optional setpoint cover.

Specifications

Supply Voltage	9.1 VDC ±5%
Output Range	0 to 6.5 VDC (all outputs)
Temperature Range	54 to 90° F (12 to 32° C)
Proportional Band	
Cooling	1.8° F (1° C)
Heating	1.8° F (1° C)
Refrigeration	3.6° F (2° C)
Deadband Adjustment	1 to 10° F (0.56 to 5.6° C)
Thermostat Action	
Cooling	Direct Acting (DA)
Heating	Reverse Acting (RA)
Refrigeration	Direct Acting (DA)
Cover	Light almond or white flame-retardant plastic, with setpoint indicator
Size	2" (51 mm) square
Weight	1.25 oz. (35 grams)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

Models

CTE-5003-10	Ash white, ° F
CTE-5003-11	Ash white, ° C
CTE-5013-10	Light almond, ° F
CTE-5013-11	Light almond, ° C

Accessories

XEE-4002	Power supply, 24 VAC to 9.1 VDC

See also the *CTE/TTE-5000 Series Accessories on page 88*..

CTE-5006/5016

Room Thermostat, DA Cooling w/ Reheat, Auxiliary, and Adjustable Deadband

These thermostats are designed to be used with **CSP-5001/5002** VAV controller-actuators for controlling dampers and/or valves in HVAC systems. The CTE-5006/5016 series are single setpoint thermostats providing dual 0–10 VDC outputs for Direct Acting (DA) cooling with adjustable min/max limits, auxiliary control point, and Reverse Acting (RA) heating with adjustable deadband. Mounting methods include using electrical boxes, toggle bolts, or backplates.

These inexpensive thermostats provide precise control, while offering the opportunity to adjust control points at the thermostat rather than at the controller-actuator. The deadband, minimum, maximum, and auxiliary flow limits can be adjusted from the thermostat. The setpoint adjustment and indication are on the top of the cover and can be hidden by installing the optional setpoint cover.

Specifications

Supply Voltage	16 VDC ±5%
Output Range	0 to **10** VDC (both outputs)
Temperature Range	54 to 90° F (12 to 32° C)
Proportional Band	2.5° F (1.4° C)
Deadband Adjustment	1 to 10° F (0.56 to 5.6° C)
Thermostat Action	
Cooling	Direct Acting (DA)
Heating	Reverse Acting (RA)
Cover	Light almond or white flame-retardant plastic, with setpoint indicator
Size	2" (51 mm) square
Weight	1.25 oz. (35 grams)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

Models

CTE-5006-11	Ash white, ° C
CTE-5016-10	Light almond, ° F
CTE-5016-11	Light almond, ° C

NOTE: For similar thermostats using 9.1 VDC, see the *CTE-5002/5012 Room Thermostat, Single Setpoint, DA Cooling w/ Reheat, Aux., & Adjustable Deadband on page 89*.

Accessories

XEE-5002	Power supply, 24 VAC to 16 VDC

See also the *CTE/TTE-5000 Series Accessories on page 88*.

CTE-5015
Room Thermostat, DA Cooling w/ Integral Action and Velocity Limits

These single-setpoint thermostats have adjustable min/max limits, Direct Acting (DA) cooling, and an integral time of 30 minutes. Mounting methods include using electrical boxes, toggle bolts, or backplates.

These inexpensive thermostats provide precise control, while offering the opportunity to adjust control points at the thermostat rather than at the controller-actuator. The minimum and maximum flow limits can be adjusted from the thermostat. The setpoint adjustment and indication are on the top of the cover and can be hidden by installing the optional setpoint cover.

Specifications

Supply Voltage	16 VDC ±5%
Output Range	**2** to **10** VDC
Temperature Range	54 to 90° F (12 to 32° C)
Proportional Band	4° F (2.2° C)
Integral Time	30 minutes
Thermostat Action	Direct Acting (DA)
Cover	Light almond or white flame-retardant plastic, with setpoint indicator
Size	2" (51 mm) square
Weight	1.25 oz. (35 grams)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

Models

CTE-5015-10	Light almond, ° F
CTE-5015-11	Light almond, ° C
CTE-5015W10	White, ° F
CTE-5015W16	White, ° F, no KMC logo

Accessories

XEE-5002	Power supply, 24 VAC to 16 VDC

See also the *CTE/TTE-5000 Series Accessories on page 88*.

CTE-5100 Series
Electronic Room Thermostats

(Shown with Horizontal Scale Plate and Light Almond Cover Installed)

The CTE-5100 Electronic Room Thermostat series is designed for use with the CSP-5001/5002 Flow Controller-Actuator and/or the REE-1000/4000 series auxiliary relays. Other high impedance (10K ohms or higher) controls, such as MEP series actuators and VEB series valves requiring a 0 to 10 VDC control circuit, may be controlled via any of the CTE-5100 series thermostats. The CTE-5100 series thermostats have both limited and non-limited outputs. The limited output is used to provide adjustable minimum and maximum limits to a CSP-5001/5002 or impose electronic limits to a proportional actuator or valve.

Models are available for cooling, heating, cooling with reheat, cooling/heating changeover, day/night, or night/day applications. Temperature averaging and/or overrides are also available.

All thermostats require a scale plate assembly and cover which may be ordered separately or as part of a value package containing the most frequently ordered accessories (see Accessories). Thermostat and accessories styling feature the setpoint indicator and/or thermometer to be visible or concealed, setpoint adjustment locked or restricted, vertical or horizontal mounting, and attractive color finishes in plastic or metal.

Models

CTE-5101	Single setpoint, direct acting
CTE-5102	Single setpoint, reverse acting
CTE-5103	Dual setpoint, direct acting and reverse acting
CTE-5104	Dual setpoint, direct and reverse acting (no T4 output)
CTE-5105	Dual setpoint, both direct acting

Specifications

Supply Voltage	16 VDC (14–20 VDC), from, for example, the XEE-5002 power supply
Output Range	0 to 10 VDC
Temperature Range	55 to 85° F (13 to 29° C)
Proportional Band	
CTE-5101/2/3/5	2° F (1.1° C) w/ limits output (T1/T2) 4° F (2.2° C) w/o limits output (T3/T4)
CTE-5104	2° F (1.1° C) w/ and w/o limits output (T1/T2/T3)
Thermostat Action	
CTE-5101	Direct Acting (DA) T1/T3
CTE-5102	Reverse Acting (RA) T2/T4
CTE-5103	Direct Acting (DA) T1/T3 Reverse Acting (RA) T2/T4
CTE-5104	Direct Acting (DA) T1/T3 Reverse Acting (RA) T2
CTE-5105	Direct Acting (DA) T1/T2/T3/T4
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

Thermostat Packages

CTE-5101-10:	Direct Acting
CTE-5102-10:	Reverse Acting
CTE-5103-10:	DA/RA (Cooling/Heating)
CTE-5104-10:	DA/RA (Cooling/Reheat)
CTE-5105-10:	DA/DA (Day/Night)

The scale plate assembly and the cover are not included with the thermostat model base and must be ordered separately or as part of a (-10) value package containing the most frequently ordered accessories. Adding -10 to the thermostat model (e.g., CTE-5101-10 or CTE-5105-10) orders a "package." Packages contain one of each of the following models and accessories:

- CTE-5100 series base
- HPO-0060-10 ° F horizontal scale plate
- HPO-1511 light almond full window ABS plastic thermostat cover
- HMO-5030 light almond backplate kit w/ matching decorative plate
- HPO-1320 label strips

NOTE: For more information on these accessories, see the Accessories section under *STE-5200/5300 Series Room Temperature Sensors on page 75*.

Accessories and Repair Parts

Backplate kit (allows thermostat to be mounted to 2x4 handy box, includes 2 #6-32 screws and decorative matching plate):

HMO-5024	Light almond w/ aluminum trim
HMO-5026	White w/ aluminum trim
HMO-5030	Light almond
HMO-5031	White

Thermostat **scale plates** (includes 2 each HPO-0046 scale plate pins):

HPO-0060-10	° F, horizontal
HPO-0060-11	° C, horizontal
HPO-0061-10	° F, vertical
HPO-0061-11	° C, vertical

Thermostat **covers, blank**:

HPO-1501	Light almond ABS
HPO-1502	White ABS
HPO-1503	Brushed aluminum

Thermostat **covers, full window**:

HPO-1511	Light almond ABS
HPO-1512	White ABS
HPO-1513	Brushed aluminum
HPO-1514	White metal
HPO-1516	Light almond metal

Miscellaneous accessories:

HFO-0027	Setpoint stop strip, 4 "stops" per strip
HMO-5023	Mounting strap for mounting on hollow walls, includes 2 #6-32 x 2" screws and "template" printed on envelope
HMO-5001	Dual toggle bolts for mounting on hollow walls
HPO-0044	Replacement thermostat cover screws
HPO-0046	Replacement scale plate pins
HPO-0051	Replacement cover window for thermostat (1 furnished with each cover)
HPO-1320	Label strip, 3 labels per strip (for day/night, summer/winter or heating/cooling indication), 1 furnished with each cover

CTE-5201-16

Electronic Room Thermostat

The KMC CTE-5201 is a single setpoint, direct-acting electronic room thermostat. Use the CTE-5201 with actuators with high impedance inputs (10K ohms or higher) that require a 0–10 VDC input.

It has adjustable minimum and maximum limits. The large, LCD display with backlighting for easy viewing can display space temperature in either degrees Fahrenheit or degrees Celsius.

Connections are through a **six-wire modular jack** (RJ-12 connector) for quick installation.

Accessories

HMO-1161	4 x 4 inch mounting backplate, almond
HPO-0044	Replacement hex screws
HPO-1161	Gasket
MEP-4042/4842	Modular actuators

Specifications

Output	Direct acting 0–10 VDC
Setpoint range	60 to 85° F (15.6 to 29.4° C)
Proportional band	Adjustable from 2 to 6° F (1.1 to 3.3° C)
Limits	Minimum and maximum limits adjustable over 0–100% of output.
Unoccupied Mode	Off or deadband
Off Mode	Output set to 0 volts (safety override—output cycles from 0 to 2 volts to maintain 50 to 55° F)
Deadband Mode	Integral action disabled and setpoint set to default +10° F deadband (deadband output is set midway between the minimum and maximum limits)
Temperature Offset	Adjustable ±2° F (±1.1 C°)
Integration Time	15–60 minutes (0 = none), factory setting is 30 minutes
Connector Type	Output and power supply connect to six-wire RJ-12 connector
Supply Voltage	16 VDC (14–19 VDC)
Display	Temperature continuously updated on 0.56 inch, two-character, liquid crystal display, with automatic backlight
Material	Light almond flame-resistant plastic
Temperature Sensor	
Type	10,000 ohm thermistor
Accuracy	±0.36° F (±0.2° C)
Environmental Limits	
Operating	34 to 125° F (1.1 to 51.6° C)
Humidity	0 to 95% RH, non-condensing
Shipping	–40 to 140° F (–40 to 60° C)

Transducers

SEE ALSO: *Relays on page 56*.

REE-2002
Power Supply, E-E/I Converter

The KMC REE-2002 is designed for use with THE-1101/1102 humidity transmitters. It provides the power supply for the transmitters from a 24 VAC or 24 VDC power source, and additional outputs of 0 to 10 VDC and 4 to 20 mA.

The REE-2002 may also be used to convert 0 to 5 VDC signals from building automation systems to 0 to 10 VDC or 4 to 20 mA signals.

Specifications

Supply Voltage	24 VAC (+20%/–15%) or 22–40 VDC
Supply Power	0.75 VA at 24 VAC or 9.5 mA at 28 VDC
Output Capacity	0 to 10 VDC output into 1000 ohms 4 to 20 mA output into 650 ohms max.
Connections	Plated screw terminals
Wire Size	14–22 AWG, stranded
Material	Flame resistant plastic
Weight	2 oz. (57 grams)
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

REE-2005
Voltage-to-Current Converter Module

The KMC REE-2005 Relay Module is a voltage-to-current transducer designed for use with KMC digital controllers or other building automation systems. It converts a 0–10 VDC control input signal into a 0–20 mA control output signal.

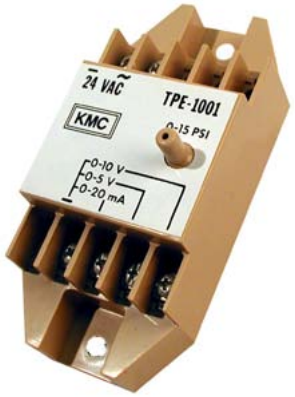
The REE-2005 can be surface- or panel-mounted, or it can be installed in an electrical handy box. It can be powered by either 24 VAC or 22–40 VDC.

Specifications

Supply Voltage	24 VAC (+20%/–15%) or 22–40 VDC
Supply Power	0.5 VA
Input Signal	0–10 VDC
Output Signal	0–20 mA
Output Capacity	0–20 mA output into 650 ohms max. (with 24 VAC supply); for VDC supply, the maximum load is determined by the formula: (VDC – 13.1)/0.0184
Connections	Plated screw terminals
Wire Size	14–22 AWG, stranded
Material	Flame resistant plastic
Weight	2 oz. (57 grams)
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

TPE-1001

Pressure Transducer (P-E/I)



The TPE-1001 is designed to operate as an interface device between pneumatic control components and building automation systems.

Pneumatic devices such as thermostats, transmitters, and receiver-controllers can supply the 0 to 15 psi input signal to the TPE-1001. Any one of the three different outputs may be used to satisfy system requirements. Available outputs are 0 to 5 VDC, 0 to 10 VDC, or 0 to 20 mA. Only one output may be used per application.

It may be mounted in either a **deep** 2" x 4" handy box or on a surface such as a panel backplate. A deep box is required to accommodate the 3/16" (5 mm) diameter tubing connection.

Specifications

Supply Voltage	24 VAC (+20%, –15%)
Supply Power	0.5 VA
Input Signal	0 to 15 psi (103 kPa), 30 psi maximum (207 kPa)
Output Signal	0–5 VDC, 0–10 VDC, 0–20 mA
Output Accuracy	±3%
Material	Beige flame retardant plastic
Wire Size	14 to 22 AWG recommended
Receiver Load	500 Ω maximum, 0–20 mA 1000 Ω minimum, 0–5 / 0–10 VDC
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Weight	2 ounces (57 grams)

TPE-1464 Series

Gauge Pressure Transducers (P-E/I)

RoHS COMPLIANT

CE

These pressure transducers incorporate a gauge pressure transmitter featuring low hysteresis, excellent repeatability, and long-term stability. Up to four field-selectable input ranges are available in most models. The field-selectable feature provides a single model that can be configured to cover all the input pressure ranges for any given application.

Three output ranges are field selectable: 4 to 20 mA, 0 to 5 VDC, and 0 to 10 VDC. The output signal is factory-calibrated and temperature-compensated for the highest start-up accuracy.

TPE-1464s can be powered from a 18 to 28 VAC/VDC (non-isolated half-wave rectified) power source. They incorporate a rugged NEMA 4X and IP65 enclosure.

TPE-1464s may be used with any liquid or gas that is compatible with 17–4 PH stainless steel. They are suited for any application requiring a reliable pressure monitor providing a dependable conditioned and compensated signal output.

Accessories

XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

Models

TPE-1464-1	0 to 10/20/50/100 psig/d pressure ranges
TPE-1464-2	0 to 20/40/100/200 psig/d pressure ranges
TPE-1464-3	0 to 50/100/250/500 psig/d pressure ranges

Specifications

Media compatibility	17-4 pH stainless steel
Supply Voltage	18 to 28 VAC/VDC (non-isolated half-wave rectified)
Supply Current	35 mA, maximum @ 24VDC
Output Signal	4 to 20 mA, 0 to 5 VDC, or 0 to 10 VDC, field selectable
Pressure Ranges	Field selectable, with models up to 500 psig/d; see Models
Proof Pressure	Max. 2X full scale range
Burst Pressure	Max. 5X full scale range
Accuracy	±1% F.S. (Full Scale) combined linearity, hysteresis, and repeatability; lowest range on each model has accuracy ±2% F.S
Pressure cycles	> 100 million
Surge Damping	Normal 4-second averaging, or slow 8-second averaging, switch selectable
Sensor Operating Range	–40 to 185° F (–40 to 85° C)
Long Term Stability	±0.25% typical (1 year)
Zero Adjust	Push-button and remote-input auto-zero
Operating Environment	32 to 122° F (0 to 50° C), 10 to 90% RH, non-condensing
Fittings	1/8" NPT female
Enclosure	ABS with hinged lid and gasket, 5.7" W x 4" H x 2.5" D (145 x 102 x 64 mm), NEMA 4X and IP65
Approvals	CE and RoHS Compliant

TPE-1474 Series
Low Pressure Transducer (P-E/I)

RoHS COMPLIANT

CE

TPE-1474 series Low Pressure Transducers can be used to measure positive, negative, or differential pressure. Four models each offer four easily selectable pressure ranges and three selectable outputs.

The piezoresistive sensor is ideal for monitoring the pressure of air or other clean inert gases and is limited only to those media that will not attack polyetherimide, silicon, fluorosilicone, silicone, EPDM, and neoprene seals.

The units feature jumper-selectable pressure ranges and output signal options for the most flexible applications. They are suited for any application requiring a pressure monitor that provides a reliable, conditioned, and compensated signal output. Typical HVAC applications include monitoring of filter differential pressure or duct pressure. The output signal is factory-calibrated and temperature-compensated for highest startup accuracy and trouble-free operation.

The TPE-1474 can be powered from either a 12 to 28 VAC or 16.5 to 35 VDC power source. The TPE-1474 incorporates a high-impact, black ABS, plenum-rated enclosure.

The unit may be mounted in any position but typically is installed on a vertical surface with the pressure ports on the right and the cable entrance on the left. (Avoid locations where severe vibrations or excessive moisture are present.) The enclosure has a standard 1/2-inch conduit opening and may be installed with either conduit and a conduit coupler or a cable-gland-type fitting.

Key features include:

- Three jumper-selectable voltage/current outputs of 4–20 mA (2-wire), 0–5 VDC (3-wire), or 0–10 VDC (3-wire)
- Can measure positive, negative, or differential pressures
- Four jumper-selectable pressure ranges (inches water column and pascals)
- Can be powered by a range of AC or DC voltages
- Push-button auto-zero

DO NOT USE for these applications:

- Oxygen service
- Explosive/hazardous environments
- Flammable or combustible materials
- Emergency stop devices or in any other application where failure of the product could result in personal injury

Accessories

HFO-0015	Low-pressure pick-up tube, 4" long
HFO-0016	Low-pressure pick-up tube, 6" long
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

Specifications

Pressure Ranges	See under *Models*
Calibration Accuracy	±1% FSO (Full Scale Output)
Measurement Type	Differential (two port), static, velocity, and total pressures
Response Time	1 ms, maximum
Stability	< ±1% FSO per year
Compensated Range	50 to 122° F (10 to 50° C)
Thermal Effects	< ±3% over compensated range
Over Pressure	20 psi or 2 x range (whichever is greater)
Zero Adjustment	Pushbutton auto-zero
Operating Conditions	32 to 140° F (0 to 60° C), 10 to 90% RH non-condensing
Media Compatibility	Limited only to those that will not attack polyetherimide, silicon, fluorosilicone, silicone, EPDM, and neoprene seals; typically, dry air or inert gas but liquid is allowed
Power Supply (at transmitter)	12 to 28 VAC, 16.5 to 35 VDC (non-isolated half-wave rectified)
Supply Current	< 4 mA
Input Voltage Effect	Negligible over specified operating range
Protection Circuitry	Reverse voltage protected and output limited
Output Signal	4 to 20 mA (2-wire) 0 to 5 VDC (3-wire) 0 to 10 VDC (3-wire)
Current Output Drive Capability	400 ohm maximum @ 24 VDC
Voltage Output Drive Capability	2 K ohm minimum for 0 to 5 VDC signal 10 K ohm minimum for 0 to 10 VDC signal
Wiring Connections	Screw terminal block (14 to 22 AWG)
Enclosure	High-impact black ABS plastic, plenum-rated; 2.1 x 4.55 x 3.3 inches (53 x 116 x 84 mm), not including pressure ports
Pressure Connections	Barbed ports for 0.170" ID flexible tubing
Conduit Connection	Access hole for 1/2" NPT conduit or cable gland
Approvals	CE and RoHS Compliant

Models

The models are available with the following jumper-selectable pressure ranges:

TPE-1474-21	–0.5 to +0.5", –1 to +1", 0 to 1", 0 to 2" wc
TPE-1474-22	–1.5 to +1.5", –3 to +3", 0 to 3", 0 to 6" wc
TPE-1474-23	–2.5 to +2.5", –5 to +5", 0 to 5", 0 to 10" wc
TPE-1474-24	–250 to +250", –500 to +500", 0 to 500, 0 to 1000 Pa

TPE-1476 Series
Duct Pressure Transducers (P-E/I)

RoHS COMPLIANT

CE

These duct pressure transducers can be used to measure positive, negative, or differential pressure. Four models each offer four easily selectable pressure ranges and three selectable outputs. **They come with a 4-inch, mounted pressure probe. (For equivalent transducers without the mounted probe, see the TPE-1474 series.)**

The piezoresistive sensor is ideal for monitoring the pressure of air or other clean inert gases and is limited only to those media that will not attack polyetherimide, silicon, fluorosilicone, silicone, EPDM, and neoprene seals.

The units feature jumper-selectable pressure ranges and output signal options for the most flexible applications. They are suited for any application requiring a pressure monitor that provides a reliable, conditioned, and compensated signal output. Typical HVAC applications include monitoring of filter differential pressure or duct pressure. The output signal is factory-calibrated and temperature-compensated for highest startup accuracy and trouble-free operation.

TPE-1476s can be powered from either a 12 to 28 VAC or 16.5 to 35 VDC power source. TPE-1476s incorporate a high-impact, black ABS plastic, plenum-rated enclosure.

The unit may be mounted in any position but typically is installed on a vertical surface with the pressure ports on the right and the cable entrance on the left. (Avoid locations where severe vibrations or excessive moisture are present.) The enclosure has a standard 1/2-inch conduit opening and may be installed with either conduit and a conduit coupler or a cable-gland-type fitting.

Key features include:

- Three jumper-selectable voltage/current outputs of 4–20 mA (2-wire), 0–5 VDC (3-wire), or 0–10 VDC (3-wire)
- Can measure positive, negative, or differential pressures
- Four jumper-selectable pressure ranges (inches water column and pascals)
- Can be powered by a range of AC or DC voltages
- Push-button auto-zero

DO NOT USE for these applications:

- Oxygen service
- Explosive/hazardous environments
- Flammable or combustible materials
- Emergency stop devices or in any other application where failure of the product could result in personal injury

Accessories

HFO-0015	Low-pressure pick-up tube, 4" long
HFO-0016	Low-pressure pick-up tube, 6" long
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

Specifications

Pressure Ranges	See under *Models*
Calibration Accuracy	±1% FSO (Full Scale Output)
Measurement Type	Differential (two port), static, velocity, and total pressures
Response Time	1 ms, maximum
Stability	< ±1% FSO per year
Compensated Range	50 to 122° F (10 to 50° C)
Thermal Effects	< ±3% over compensated range
Over Pressure	20 psi or 2 x range (whichever is greater)
Operating Conditions	32 to 140° F (0 to 60° C), 10 to 90% RH non-condensing
Media Compatibility	Limited only to those that will not attack polyetherimide, silicon, fluorosilicone, silicone, EPDM, and neoprene seals; typically, dry air or inert gas but liquid is allowed
Power Supply (at transmitter)	12 to 28 VAC, 16.5 to 35 VDC (non-isolated half-wave rectified)
Supply Current	< 4 mA
Input Voltage Effect	Negligible over specified operating range
Protection Circuitry	Reverse voltage protected and output limited
Output Signal	4 to 20 mA (2-wire) 0 to 5 VDC (3-wire) 0 to 10 VDC (3-wire)
Current Output Drive Capability	400 ohm maximum @ 24 VDC
Voltage Output Drive Capability	2K ohm minimum for 0–5 VDC signal 10K ohm minimum for 0–10 VDC signal
Zero Adjustment	Push-button auto-zero
Wiring Connections	Screw terminal block (14 to 22 AWG)
Pressure Connections	Probe and one barbed port for 0.170" ID flexible tubing
Conduit Connection	Access hole for 1/2" NPT conduit or cable gland
Enclosure	High-impact black ABS plastic, plenum-rated; 2.1 x 4.55 x 3.3" (53 x 116 x 84 mm), not including pressure probe and low pressure port
Approvals	CE and RoHS Compliant

Models

The models are available with the following jumper-selectable pressure ranges:

TPE-1476-21	–0.5 to +0.5", –1 to +1", 0 to 1", 0 to 2" wc
TPE-1476-22	–1.5 to +1.5", –3 to +3", 0 to 3", 0 to 6" wc
TPE-1476-23	–2.5 to +2.5", –5 to +5", 0 to 5", 0 to 10" wc
TPE-1476-24	–250 to +250", –500 to +500", 0 to 500, 0 to 1000 Pa

TPE-1483 Series
Liquid Differential Pressure Transducers (P-E/I)

These liquid pressure transducers incorporates a wet/wet differential pressure transmitter featuring low hysteresis, excellent repeatability, and long-term stability.

Up to four field-selectable input ranges are available in most models. The field-selectable feature provides a single model that can be configured to cover all the input pressure ranges for any given application.

Three output ranges are field selectable: 4 to 20 mA, 0 to 5 VDC, and 0 to 10 VDC. The output signal is factory-calibrated and temperature-compensated for the highest start-up accuracy.

TPE-1483s can be powered from a 18 to 28 VAC/VDC (non-isolated half-wave rectified) power source. They incorporate a rugged NEMA 4X and IP65 enclosure.

TPE-1483s may be used with any liquid or gas that is compatible with 17–4 PH stainless steel. They are suited for any application requiring a reliable pressure monitor providing a dependable conditioned and compensated signal output.

DO NOT USE for these applications:

- In explosive or hazardous environments
- With combustible or flammable gasses
- As a safety or emergency stop device
- In any other application where failure of the product could result in personal injury

Models

The models are available with the following jumper-selectable pressure ranges:

TPE-1483-1	0 to 5/10/25/50 psig/d
TPE-1483-2	0 to 10/20/50/100 psig/d
TPE-1483-3	0 to 50/100/250/500 psig/d

NOTE: Ensure that the maximum individual port pressure does not exceed the maximum pressure range of the unit!

Specifications

Media compatibility	17-4 PH stainless steel
Supply Voltage	24 VAC or 15 to 30 VDC
Supply Current	35 mA, maximum @ 24VDC
Output Signal	4 to 20mA, 0 to 5 or 0 to 10 VDC, field selectable
Pressure Ranges	Field selectable with models up to 500 psig/d; see Models
Line Pressure	Highest of the selectable ranges on each model
Proof Pressure	Max. 2X F.S. range
Burst Pressure	Max. 5X F.S. range
Accuracy	±1% F.S. (Full Scale) combined linearity, hysteresis, and repeatability; lowest range on each model has accuracy ±2% F.S
Pressure cycles	> 100 million
Surge Damping	Normal 4-second averaging or slow 8-second averaging, switch selectable
Sensor Operating Range	–40 to 185° F (–40 to 85° C)
Temperature Compensation Error	32 to 130° F (0 to 55° C)
Long term stability	±0.25% typical (1 year)
Zero Adjust	Push-button and remote-input auto-zero
Operating Environment	32 to 122° F (0 to 50° C), 10 to 90% RH, non-condensing
Fittings	1/8" NPT female
Enclosure	ABS plastic with hinged lid and gasket, 5.7" W x 4" H x 2.5" D (145 x 102 x 64 mm), NEMA 4X and IP65
Shock	100G, 11 mSec, 1/2 sine
Vibration	20G peak 20 to 2400 Hz
Approvals	CE and RoHS Compliant

Accessories

XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

TSP-5000 Series
Air Flow Transducer-Actuators

These combination air flow transducers and actuator units are designed primarily for variable air volume terminal units controlled via Direct Digital Control (DDC) systems such as KMC's Digital System. They can be used in slave or dual duct tracking applications. Air flow is sensed by utilizing a single or multi-point differential (velocity) pressure measuring station or pitot tube. Air flow sensing is accomplished utilizing twin platinum resistance temperature detectors. Velocity measurement is maintained at 3% accuracy over the range of 0 to 3,300 feet per minute (FPM).

Each unit mounts directly to a 1/2" diameter or 3/8" square damper shaft, or a 3/8" diameter shaft (HFO-0011 shaft adapter required). Damper control is provided by an 18 degree/ minute or 60 degree/ minute actuator. A minimum of 50 inch-pounds of torque is provided. Both minimum and maximum stops are standard to limit the rotation. A gear disengagement feature allows positioning the damper and/or gear-train without energizing the actuator. A 10K ohm feedback potentiometer is standard on the TSP-5003/5023 (only).

NOTE: See also the TSP-6001/6051 Series section.

Models

TSP-5002	2–10 VDC input, 18°/minute @ 60 Hz actuator
TSP-5022	2–10 VDC input, 60°/minute @ 60 Hz actuator
TSP-5003	Tri-state input, 18°/minute @ 60 Hz actuator
TSP-5023	Tri-state input, 60°/minute @ 60 Hz actuator

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Actuators on page 33*, **and** *Controllers and Switches on page 44*.

Specifications

Supply Power	24 VAC (–15/+20%), 5 VA
Flow Sensor	Twin platinum resistive temperature sensors
Velocity Range	0 to 3,300 FPM (16.76 m/s) dependant upon DP pickup, tubing size/length and connections
Velocity Output	1 to 5 VDC (0–100% flow)
Output Torque	50 to 70 in-lbs. (5.7 to 7.9 N•m)
Feedback	10,000 ohm, 1/3 watt potentiometer (TSP-5003/5023 only)
Angular Rotation	0 to 95°, both end stops adjustable
Motor Timing	
TSP-5002/5003	18°/minute @ 60 Hz; 15°/minute @ 50 Hz
TSP-5022/5023	60°/minute @ 60 Hz; 50°/minute @ 50 Hz
Material	Flame-retardant plastic, black housing/ white cover
Temperature Limits	Operating: 32 to 120° F (0 to 49° C) Shipping: –40 to 140° F (–40 to 60° C)

TSP-5000/6000 Series Accessories

Auxiliary Switches	
CME-1002	Single SPDT auxiliary switch
CME-1004	Dual SPDT auxiliary switch
Differential Pressure Flow Sensors	
SSS-1002	3-5/32 inches long (80 mm)
SSS-1003	5-13/32 inches long (137 mm)
SSS-1004	7-21/32 inches long (195 mm)
SSS-1005	9-29/32 inches long (252 mm)
Mounting and Connection Hardware	
HFO-0011	3/8" shaft adaptor
HMO-1003	Replacement non-rotation bracket (one included)
HMO-4518	Snap-in connector for 1/2" flexible metal conduit
HMO-4520	Compression connector for plenum cable
HMO-4526	Female connector for 1/2" conduit
Power	
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

TSP-6001/6051
Air Flow Transducer-Actuators (3-State Analog)

The TSP-6001/6051s are similar to the proportional/tri-state TSP-5000 series, but the actuator is **controlled by a three-state analog signal**: **less than 2 VDC drives CCW, greater than 2.5 VDC drives CW, and 2.25 VDC is idle**.

Models

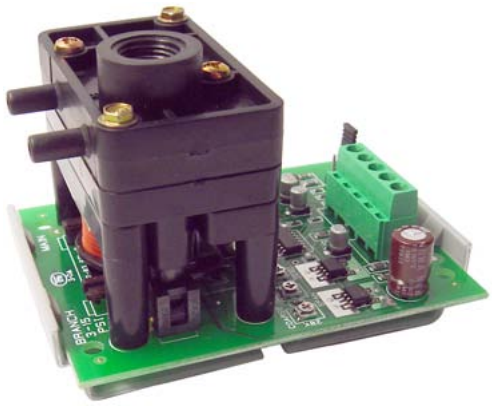
TSP-6001	18°/minute actuator
TSP-6051	60°/minute actuator

Specifications

Velocity Sensor	Platinum/ceramic flow-through
Velocity Output	0 to 5 VDC
Motor Drive Input	< 2.0 VDC = CCW > 2.5 VDC = CW 2.25 ±0.2 VDC = idle
Motor Timing	
TSP-6001	18°/minute @ 60 Hz; 15°/minute @ 50 Hz
TSP-6051	60°/minute @ 60 Hz; 50°/minute @ 50 Hz

NOTE: See the TSP-5000 Series section for accessories and additional specifications.

XEC-3001/3002/3004
E/I-P Transducer



These transducers are used in HVAC systems to provide an accurate signal for positioning damper and valve actuators based on branch line pressure. They convert an analog voltage (E) or current (I) signal into a linear pneumatic (P) output signal for accurate positioning of damper and valve actuators used in HVAC systems.

They are not position sensitive devices and can be mounted vertically or horizontally. They provide a direct output feedback signal for branch line pressure.

They can be powered by either 24 VAC or 24 VDC, and have three selectable input ranges. The analog signal may be either 1 to 5 VDC, 2 to 10 VDC, or 4 to 20 mA, which provides a 3 to 15 psi linear pneumatic output signal. A 1 to 5 VDC output feedback signal, proportional and linear to the 3 to 15 psi output signal, is provided. A gauge tap is also provided for pressure output indication. Standard 3.25" Snap Track is supplied for mounting.

The XEC-3004 (only) also has a manual override that may be initiated by moving a jumper and adjusting a potentiometer.

Models

XEC-3001	Module only
XEC-3002	Module mounted in an HCO-1008 enclosure (not shown)
XEC-3004	Module only with manual override

SEE ALSO: *Relays, P-E on page 148* **and** *Controllers and Switches on page 138*.

Specifications

Input Signals	1 to 5 VDC, 2 to 10 VDC, or 4 to 20 mA
Input Resistance	
1 to 5 VDC	100K ohms
2 to 10 VDC	200K ohms
4 to 20 mA	250 ohms
Output Signal	3–15 psi (21–103 kPa)
Output Capacity	200 scim (55 mL/s)
Main Air	
Supply	20 psi nominal (138 kPa) 30 psi maximum (207 kPa)
Consumption	28.8 scim (7.9 mL/s) @ 20 psig supply (138 kPa)
Supply Voltage	24 VAC (+20%/–15%), 1 VA, or 24 VDC (+66%/-8%), 50 mA
Manual Override	Jumper selectable with potentiometer adj. for 3 to 15 psi output (XEC-3004 only)
Mounting	2.75" (70 mm) section of 3.25" (83 mm) Snap Track supplied for panel mounting and will fit 2.75" (70 mm) Snap Track for horizontal mounting (position insensitive)
Operating Characteristics	
Linearity	1% full scale
Hysteresis and repeatability	0.75% full scale
Connections	
Wiring	Screw terminals for 14–22 AWG, copper
Air	3/16" (5 mm) nipple for 1/4" (6 mm) OD polyethylene tubing. 1/8" (3 mm) female NPT for branch pressure gauge.
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	Non-condensing

Accessories

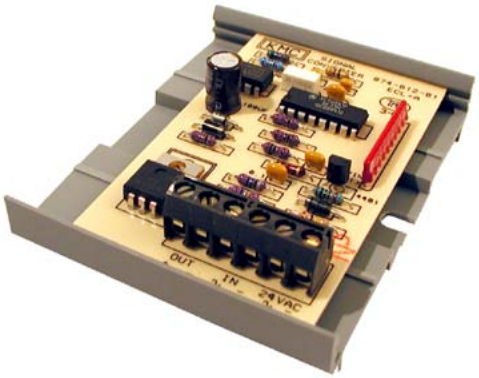
HCO-1008	Enclosure (for XEC-3001/3004)
HFO-0006	In-line control air filter, 25 microns, 3/16" nipples for 1/4" OD poly tubing
ICI-1005	2", 0-30 psi gauge
XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

NOTE: For other pneumatic accessories, such as connectors, tubing, fittings, filters, and gauges, see the *Compressed Air Accessories on page 134*.

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

XEE-1501
Pulse Width to Voltage Transducer



This transducer converts a pulse width signal into a voltage output signal. It is designed for interfacing Building Automation Systems having pulse width modulated outputs with control devices requiring 0–10 VDC proportional signals.

The transducer mounts in a standard 3.25" Snap Track (supplied) and is powered by 24 VAC. The 0–10 VDC output signal is based on a 0–5 second pulse width, with 5 seconds equating to a 10 VDC output signal. The response is linear (e.g., 2.5 second intervals would equate to a 5 VDC output signal).

On a loss of the pulsed input signal, the XEE-1501 will hold its last output for 60 seconds before resetting to 0 VDC.

Specifications

Input Signal	24 VAC, 60 or 50 Hz
Pulse Width	5 seconds (60 Hz) for 100% (10 VDC) 6 seconds (50 Hz) for 100% (10 VDC)
Output Signal	0 to 10 VDC @ 15 mA
Supply Voltage	24 VAC (+20/–15%), 50/60 Hz, 0.5 VA
Accuracy	±2%
Mounting	2.75" (70 mm) section of 3.25" (83 mm) Snap Track supplied for panel mounting; mounting not position sensitive
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	Non-condensing

Accessories

XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, single-hub
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, dual-hub

Valve Accessories and Repair Parts

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

HPO-5000 Series
Flange Valve Packing Kit

HPO-5038 Graphite, 3/8" stem, flanged valves

NOTE: Graphite packing was used on all (discontinued) flanged valves prior to date code 9723 and on certain valves up to date code 9737.

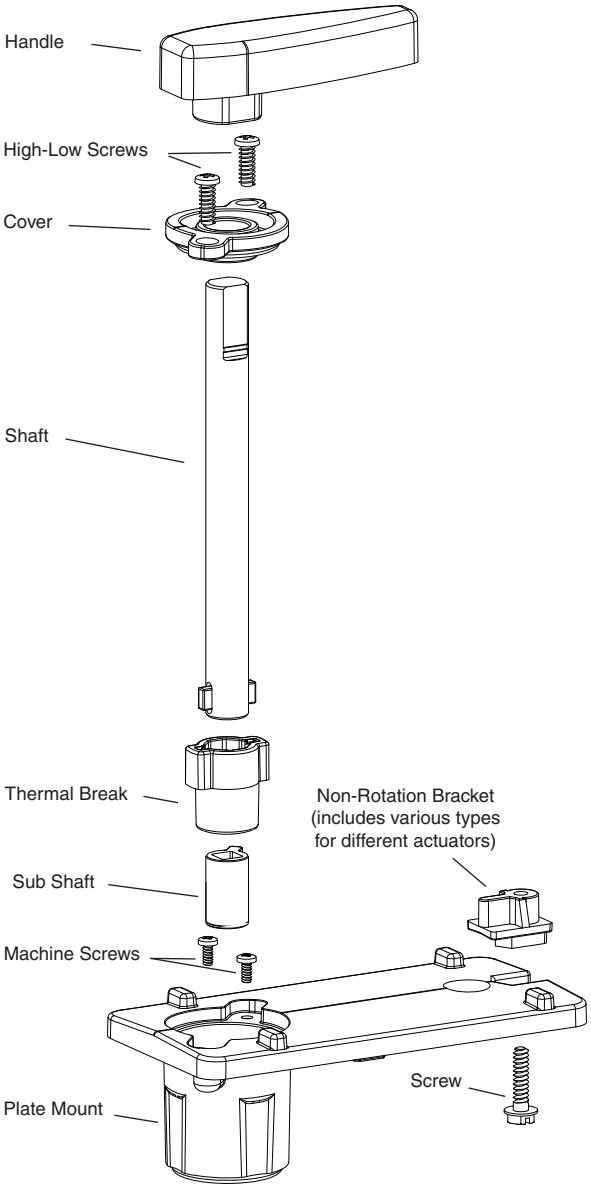
For valves between date codes 9723 and 9737, packing used is determined by the brass bonnet size. For 1" diameter (14 threads per inch) brass bonnets, graphite packing was used. For 1-3/8" diameter (18 threads per inch) brass bonnets, V-ring packing was used. V-ring packing was used on all valves since date code 9737.

V-ring packing is no longer available.

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

HPO-5072/5073
Ball Valve to Actuator Repair Kit



The KMC HPO-507**2** repair kits are designed to replace linkages on VEP-43/45/83/85, VEB-43/46, and VCB-41/42/46 **ball** valves. Hardware for mounting the linkage to the valve, and the actuator to the linkage, are included with the kit. The MEP-4000/5000 series or MCP-3631 series actuators must be ordered separately.

The KMC HPO-507**3** repair kit is similar but is for MEP-4000 series actuators only.

The HPO-507**2** kit can be used to repair the following KMC **ball** valves with MEP-5000 series actuators:

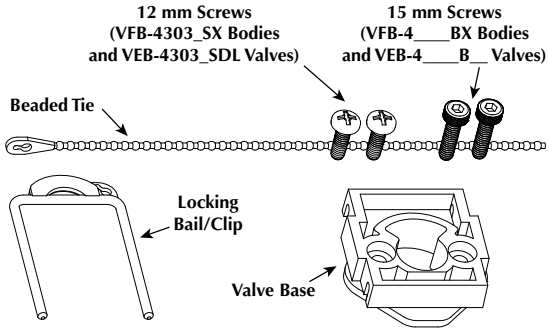
VEP-43ABBxxx through VEP-43GBBxxx
VEP-45A1xxxx through VEP-45H4xxxx
VEP-83ABBxxx through VEP-83FDBxxx
VEP-85A1xxxx through VEP-85F3xxxx
VEB-43/46 series ending in DL or DH

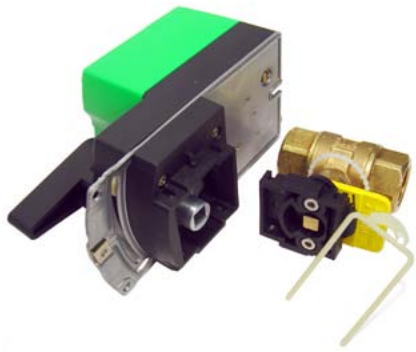
The HPO-507**2 or** HPO-507**3** can be used to repair the following KMC **ball** valves with MEP-4000 series actuators:

VEP-43ABB7xx through VEP-43GBB7xx
VEP-45A1x7xx through VEP-45H4x7xx
VEB-43/46 series ending in CK or CF

NOTE: For obsolete HPO-5071, use HPO-5072 instead.

HPO-5074
Ball Valve to Actuator Quick Mount Kit





HPO-5074 Assembled on Valve Body and MEP-4002V

The HPO-5074 kit is for adapting valve bodies for use with (only) "quick mounting" MEP-400x**V** actuators. MEP-400x**V** actuators have an attached handle and shaft as well as a plastic mounting bracket on the bottom of the actuator.

See the chart below for applications. For more information, see:

- *MEP-4000/4800 Series Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.) on page 35*
- *VEB-43 Series Two-Way, NPT, Control BALL Valves (1/2" to 3") on page 108*
- *VEB-46 Series Three-Way, Mixing or Diverting, NPT, Control BALL Valves (1/2" to 2-1/2") on page 109*

Typical Application	3-way H/C Water	2-way H/C Water	2-way PIC-V H/C Water	2-way Steam (to 30 psi)
KMC Valve Body	VFB-46__BX, *VFB-46__BC**	VFB-43__BX, *VFB-43__BC**	N/A	VFB-4303_SX
KMC Valve	VEB-46___B__	VEB-43___B__		VEB-4303_SDL
Valve Solutions (VSI)	UR3 Series	UR2 Series	SPV Series	75 Series
Griswold	UR3 Series	UR2 Series	SPV Series	N/A
Delta Control Products	ST Series	ST Series	ATI Series	
Honeywell	VBN3 Series	VBN2 Series	N/A	
Siemens	599 Series	599 Series		
*VFB-4___BC valve bodies come with the HPO-5074 installed.				

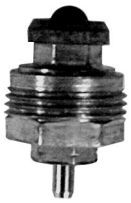
MEP Series Actuator Accessories

See the ***Actuator Accessories and Repair Parts on page 28*** section for such items as auxiliary switches, feedback potentiometers, and connection hardware.

VEP-1x/2x/3x (Discontinued) Series Zone Valves Accessories

Replacement Gasket:

HPO-5017	3/4", for use on VEP-3420
HPO-5018	1", for use on VEP-3421



Bonnet Assembly (consists of stem, plug, packing, bonnet and disc):

HPO-5030	1/2" 2.0 Cv, 2-way
HPO-5031	1/2" 2.6 Cv, 2-way
HPO-5032	3/4" 2.9 Cv, 2-way
HPO-5033	3/4" 4.7 Cv, 2-way
HPO-5035	1/2" 1.6 Cv, 2-way

Replacement Valve Disc:

HPO-5065	1/2" 2.0 Cv
HPO-5066	1/2" 2.6 Cv
HPO-5067	3/4" 2.9 Cv
HPO-5068	3/4" 4.7 Cv

HPO-5058 Replacement union nut for all 1/2" VEP/VFP series valve bodies

HPO-5059 Replacement union nipple for all 1/2" VEP series valve bodies.

MPT Nipple (converts VEP-3420/3421 to 3/4" or 1" MPT, 3 required per valve):

HPO-5026	3/4"
HPO-5027	1"

Valves, NPT (1/2" to 3")

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

VEP-11/12/21/22 Series Cross-Reference

See equivalent VEZ-44/42 valves.

Repair Parts (for VEP-11/12/21/22 Series Only)

HPO-5021	3/4" union nut
HPO-5022	1" union nut
HPO-5030	1/2" bonnet assembly; 2.00 Cv
HPO-5031	1/2" bonnet assembly; 2.60 Cv
HPO-5032	3/4" bonnet assembly; 2.95 Cv
HPO-5033	3/4" bonnet assembly; 4.25 Cv
HPO-5035	1/2" bonnet assembly; 1.60 Cv
HPO-5058	1/2" union nut
HPO-5059	1/2" MPT union
HPO-5065	1/2" replacement disc; 2.00 Cv
HPO-5066	1/2" replacement disc; 2.60 Cv
HPO-5067	3/4" replacement disc; 2.95 Cv
HPO-5068	3/4" replacement disc; 4.7 Cv
MEP-3001	24 VAC replacement actuator, NC, for VEP-12/22/34 Valves
MEP-3006	24 VAC replacement actuator, NO, for VEP-11/21/37 Valves

NOTE: These valves have been discontinued, and repair parts may be available only as long as supplies last.

VEP-15/25 Series Cross-Reference

See equivalent VEZ-43 valves.

Repair Parts (VEP-15/25 Series Only)

HPO-5021	3/4" union nut
HPO-5022	1" union nut
HPO-5030	1/2" bonnet assembly; 2.00 Cv
HPO-5031	1/2" bonnet assembly; 2.60 Cv
HPO-5032	3/4" bonnet assembly; 2.95 Cv
HPO-5033	3/4" bonnet assembly; 4.25 Cv
HPO-5035	1/2" bonnet assembly; 1.60 Cv
HPO-5058	1/2" union nut
HPO-5059	1/2" MPT union
HPO-5065	1/2" replacement disc; 2.00 Cv
HPO-5066	1/2" replacement disc; 2.60 Cv
HPO-5067	3/4" replacement disc; 2.95 Cv
HPO-5068	3/4" replacement disc; 4.7 Cv

NOTE: These valves have been discontinued, and repair parts may be available only as long as supplies last.

VEP-3420/3421 Series Cross-Reference

See equivalent VEZ-44 valves.

Repair Parts (VEP-3420/3421 Series Only)

HPO-5017	3/4" union gasket
HPO-5018	1" union gasket
HPO-5021	3/4" union nut
HPO-5022	1" union nut
HPO-5026	3/4" MPT compression union
HPO-5027	1" MPT compression union
HPO-5070	3/4" replacement disc

NOTE: These valves have been discontinued, and repair parts may be available only as long as supplies last.

VEB-4303*SDL Series
2-Way, Steam-Rated, NPT, Control Ball Valves (3/4")

These two-way, 3/4" NPT, ball valves are designed for the control of hot or chilled water in HVAC applications. They can also control low-pressure (up to 30 psi) steam applications. The valves, with stainless-steel balls, produce equal percentage flow, allowing the heat output at the coil to be linear when compared to the open area of the ball.

The MEP-5372 **proportional** actuators may be controlled via a 2–10 VDC control signal from a thermostat, controller, or building automation system. Actuators are factory-calibrated for a 2–10 VDC input signal (or 4–20 mA with an external 500 ohm resistor) and 90° clockwise rotation. Counterclockwise rotation is obtained by simply toggling a switch.

A 1–5 VDC feedback voltage output, proportional to the control signal, is provided. This feedback can be used for remote indication of valve position. An 18 VDC auxiliary power supply output is provided to power CTE-5100 series thermostats or other system control devices. An optional single or double auxiliary switch can be field-installed.

Capacitor-driven **fail-safe** provides efficient operation with switch-selectable fail direction. A gear disengagement button allows manual positioning of the valve without energizing the actuator.

NOTE: If a different MEP-4000/5000 series actuator is desired (rather than the standard MEP-5372), order the VFB-4303_ SX valve body and the actuator separately.

Specifications

Actuator

Supply Voltage	24 VAC (+20/–15%), Class 2, 50/60 Hz
Supply Power	6 VA/19 VA peak inrush
Control Input	2–10 VDC
Feedback	1–5 VDC
Aux. Power Supply	18 VDC @ 10 mA
Fail-Safe	
Direction	Switch selectable
Charge/Delay	One minute delay allows full charge before normal operation
Timing	35–50 seconds, load dependent, for 95° rotation
Torque	50 in-lbs. (5.7 N•m) minimum
Angular Rotation	0–95°, stop adjustable, both ends
Motor Timing	45–60 seconds, load dependent for 95° rotation
Connections	Wire clamp type; 14–22 AWG, copper
Enclosure	Flame-retardant plastic
Approvals	UL Recognized

Valve Body

Material	
Body	Forged brass, two-piece construction
End	Brass, 3/4" NPT
Ball	Stainless steel
Stem Seals	Single PTFE Seal and Dual Viton O-Rings
Ball Seals	PTFE Seals with Viton O-Rings
Service	Hot or chilled water, up to 50% glycol, up to 30 psi steam
Connections	Female NPT
Flow Characteristics	Equal percentage
Rangeability	300 to 1 turn-down ratio
Leakage Rating	ANSI Class IV
Max. Close Off	150 psi (1,034 kPa)
Max. Differential Pressure	150 psi (1,034 kPa)
Max. Static Pressure	500 psi (liquid), 30 psi (steam)

Combined

Weight	3.6 pounds (1.6 kg)
Temperature Limits	
Medium (liquid)	–25° to 300° F (–31° to 149° C)
Operating	0 to 120° F (–18 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

Models

Valve Model	Cv	Replacement Valve Body
VEB-4303**X**SDL	2.9	VFB-4303**X**SX*
VEB-4303**Y**SDL	5.3	VFB-4303**Y**SX*
VEB-4303**Z**SDL	11	VFB-4303**Z**SX*

*To use an MEP-4000 series actuator instead of the MEP-5372, order an VFB-4303_SX valve body and mount the MEP-4000 series actuator on it.

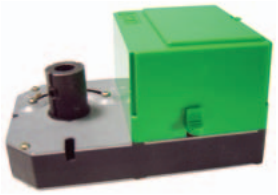
Accessories and Repair Parts

CME-1002	Single auxiliary switch
CME-1004	Dual auxiliary switch
HMO-4518	Snap-in connector for 1/2" flexible metal conduit
HMO-4520	Compression connector for plenum cable
HMO-4526	Female connector for 1/2" conduit
HPO-5072	Ball valve to actuator repair kit
MEP-5372	Replacement proportional, fail-safe actuator
*VFB-4303_SX	Replacement valve body (includes non-rotation brackets for both MEP-4000 and MEP-5000 series actuators)—see the Models section for Cv (X, Y, or Z)

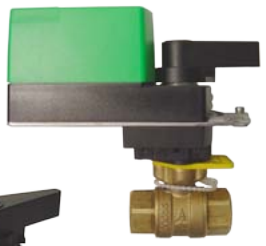
SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

VEB-43 Series

Two-Way, NPT, Control BALL Valves (1/2" to 3")



MEP-5372/5373 Actuator



MEP-4002V Actuator Installed on Valve with Quick Mount

MEP-4003V Actuator

VEB-43 (formerly VEP-45) series, two-way, NPT, ball valves are designed for the control of hot or chilled water in HVAC applications. Valves range in size from 1/2 to 3 inches and feature an optimizing insert (except for indicated models), which reduces the Cv and characterizes the ball opening for equal percentage flow characteristics. They include a field-repairable blowout-proof stem and leak-proof shut-off. The reduced torque seals and O-rings eliminate the need for high torque actuators. KMC's low-torque MEP-4000/5000 series actuators work on all valve sizes.

Valve assemblies with MEP-4002V/4003V actuators have new brackets with a patent-pending, quick-mounting mechanism that creates a universal connection to VSI, Griswold, and other valve bodies. For more information, see *MEP-4000/4800 Series Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.) on page 35* and *MEP-400x "V" Models Valve Cross-Reference on page 177*.

Models

VEB-43 *YYY* B *ZZ*

Actuator

CK: 0–10 VDC (MEP-4002V)
CF: Tri-state (MEP-40**03V**)
DL: Fail-safe, 2–10 VDC (MEP-5372)
DH: Fail-safe, tri-state (MEP-53**73**)

Size/Cv

02B: 1/2" / 0.38 Cv[FD]
02D: 1/2" / 0.68 Cv[FD]
02F: 1/2" / 1.3 Cv[FD]
02H: 1/2" / 2.6 Cv[FD]
02K: 1/2" / 4.7 Cv
02M: 1/2" / 11.7 Cv[FD]*
03G: 3/4" / 2.4 Cv[FD]
03K: 3/4" / 4.3 Cv[FD]
03N: 3/4" / 14.7 Cv*
03L: 3/4" / 10.1 Cv[FD]
04J: 1" / 9.0 Cv[FD]
04Q: 1" / 28.4 Cv[FD]*
04M: 1" / 15.3 Cv
05F: 1-1/4" / 14.9 Cv[FD]
05L: 1-1/4" / 41.1 Cv*
05K: 1-1/4" / 36.5 Cv
06D: 1-1/2" / 22.8 Cv
06J: 1-1/2" / 73.9 Cv*
06G: 1-1/2" / 41.3 Cv
08D: 2" / 41.7 Cv
08M: 2" / 108.0 Cv[FD]*
08G: 2" / 71.1 Cv
10C: 2-1/2" / 55.0 Cv
10D: 2-1/2" / 72.0 Cv
10G: 2-1/2" / 101.0 Cv
12C: 3" / 82.0 Cv
12D: 3" / 124.0 Cv

[FD]"Fast Delivery" stocked items have a delivery time of approximately five business days. For all others, call for delivery time.

* Full-port, no optimizer insert

Specifications

Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Body Rating	360 psi
Max. Close Off	1/2" to 1", 130 psi (896 kPa) 1-1/4" to 3", 100 psi (689 kPa)
Max. Differential Pressure	Same values as Max. Close Off (see above)
Flow Characteristics	Equal percentage (with optimizer insert)
Rangeability	500 to 1
Leakage Rating	ANSI Class IV (0.01% of Cv)
Material	
Body	Forged brass ASTM B283
Stem	Brass
Ball	Nickel-plated brass
Flow inserts	Glass filled polymer
Stem Seals	EPDM O-rings
Ball Seals	Teflon seals w/ EPDM O-rings
Temperature Limits	
Medium	–22 to 250° F (–30 to 121° C)
Operating	0 to 120° F (–18 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Actuators	Refer to the relevant MEP actuator section for more details
MEP-4002V	40 in-lbs., 0–10 VDC
MEP-4003V	40 in-lbs., tri-state
MEP-5372	50 in-lbs., 2–10 VDC, fail-safe
MEP-5373	50 in-lbs., tri-state, fail-safe

Accessories and Repair Parts

Valves With MEP-400xV Actuators (Only)

HPO-5074 Ball valve to actuator quick mount kit

Valves with Standard MEP-4000/5000 Series Actuator

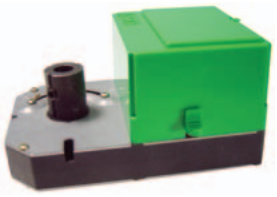
HPO-5072 Ball valve to actuator repair kit

NOTE: See also the MEP-5372/5373/5374 section for actuator auxiliary switches and connector accessories.)

NOTE: To select a **valve body and linkage only**:

- And attach your own **quick-mount MEP-4002V or MEP-4003V** actuator), specify V**F**B-46 ***YYY*** B**C** (e.g., VFB-4605JBC) with ***YYY*** the appropriate size and Cv from chart above.
- Or attach your own **standard MEP-4000/5000 series** actuator, specify V**F**B-46 ***YYY*** B**X** (e.g., VFB-4605JBX) with ***YYY*** the appropriate size and Cv (includes non-rotation brackets for both types of actuators).

VEB-46 Series
Three-Way, Mixing or Diverting, NPT, Control BALL Valves (1/2" to 2-1/2")



MEP-5372/5373 Actuator

MEP-4003V Actuator

MEP-4002V Actuator Installed on Valve with Quick Mount

VEB-46 (formerly VEP-43) series, 3-way, mixing or diverting, NPT control ball valves are designed for the control of hot or chilled water in HVAC applications. Valves range in size from 1/2 to 2-1/2 inches and most feature an optimizing insert, which reduces and characterizes the ball opening for lower Cv ratings similar to globe valves.

The body design also provides a standard "T" pattern to simplify installation. They include a field-repairable blowout-proof stem and leak-proof shut-off. The reduced torque seals and O-rings eliminate the need for high torque actuators and are designed to work with KMC's low-torque, MEP-4000/5000 series actuators on all valve sizes.

Valve assemblies with MEP-4002V/4003V actuators have new brackets with a patent-pending, quick-mounting mechanism that creates a universal connection to VSI, Griswold, and other valve bodies. For more information, see *MEP-4000/4800 Series Direct-Coupled ControlSet® Actuators (40 or 80 in-lbs.) on page 35* and *MEP-400x "V" Models Valve Cross-Reference on page 177*.

Models

VEB-46 YYY B ZZ

Actuator

- **CK**: 0–10 VDC (MEP-4002V)
- **CF**: Tri-state (MEP-4003V)
- **DL**: Fail-safe, 2–10 VDC (MEP-5372)
- **DH**: Fail-safe, tri-state (MEP-5373)

Size/Cv

- **02C: 1/2" / 0.6 Cv[FD]**
- **02E: 1/2" / 1.0 Cv[FD]**
- **02G: 1/2" / 2.4 Cv[FD]**
- **02J: 1/2" / 4.3 Cv[FD]**
- **02L**: 1/2" / 8.0 Cv
- **03G**: 3/4" / 2.4 Cv
- **03J**: 3/4" / 3.8 Cv
- **03M: 3/4" / 11.0 Cv[FD]***
- **04H**: 1" / 8.6 Cv
- **04N**: 1" / 22.3 Cv
- **05E**: 1-1/4" / 12.7 Cv
- **05J**: 1-1/4" / 34.1 Cv*
- **06E**: 1-1/2" / 23.5 Cv
- **06H**: 1-1/2" / 61.1 Cv
- **08B**: 2" / 38.2 Cv
- **08N**: 2" / 108.5 Cv
- **10E**: 2-1/2" / 74.1 Cv
- **10F**: 2-1/2" / 99.5 Cv*

[FD]"Fast Delivery" stocked items have a delivery time of approximately five business days. For all others, call for delivery time.

*Full-port, no optimizer insert

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

Specifications

Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Body Rating	360 psi (2482 kPa)
Max. Close-Off	1/2 to 1" = 50 psi (345 kPa); 1-1/4 to 2-1/2" = 40 psi (276 kPa)
Max. Differential Pressure	Same values as Max. Close Off (see above)
Flow Characteristics	Equal percentage (with optimizer insert)
Rangeability	500 to 1
Leakage Rating	ANSI Class IV (0.01% of Cv)
Material	
Body	Forged brass ASTM B283
Stem	Brass
Ball	Nickel plated brass
Flow inserts	Glass filled polymer
Stem Seals	EPDM O-rings
Ball Seals	Teflon seals w/ EPDM O-rings
Temperature Limits	
Medium	–22 to 250° F (–30 to 121° C)
Ambient	0 to 120° F (–18 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Actuators	Refer to the relevant MEP actuator section for more details
MEP-4002V	40 in-lbs., 0–10 VDC
MEP-4003V	40 in-lbs., tri-state
MEP-5372	50 in-lbs., 2–10 VDC, fail-safe
MEP-5373	50 in-lbs., tri-state, fail-safe

Accessories and Repair Parts

Valves With MEP-400xV Actuators (Only)

HPO-5074	Ball valve to actuator quick mount kit

Valves with Standard MEP-4000/5000 Series Actuator

HPO-5072	Ball valve to actuator repair kit

NOTE: See also the MEP-5372/5373/5374 section for actuator auxiliary switches and connector accessories.)

NOTE: To select a **valve body and linkage only**:

- And attach your own **quick-mount MEP-4002V or MEP-4003V** actuator), specify V**F**B-46 *YYY* **BC** (e.g., VFB-4605JBC) with *YYY* the appropriate size and Cv from chart above.
- Or attach your own **standard MEP-4000/5000 series** actuator, specify V**F**B-46 *YYY* **BX** (e.g., VFB-4605JBX) with *YYY* the appropriate size and Cv (includes non-rotation brackets for both types of actuators).

VEP-43 Series Three-Way, NPT, Control BALL Valves Cross-Reference

See equivalent VEB-**46** valves.

VEP-43/VEG-45 Series, Three-Way, Mixing, Control GLOBE Valves Cross-Reference

See equivalent VEB-**46** valves.

VEP-45 Series Two-Way, NPT, Control BALL Valves Cross-Reference

See equivalent VEB-**43** valves.

VEP-45/VEG-43 Series, Two-Way, Control GLOBE Valves Cross-Reference

See equivalent VEB-**43** valves.

VEP-83 Series, Three-Way, Sweat, Control Ball Valves Cross-Reference

See equivalent VEB-45 ball valve and use a threaded adapter.

VEP-85 Series, Two-Way, Sweat, Control Ball Valves Cross-Reference

See equivalent VEB-43 ball valve and use a threaded adapter.

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

VEZ-41/42/43 Series
2-Way, NPT, Zone Control Valves (1/2 to 1")

With 2-Position Fail-Safe Actuator

c UL US LISTED

With Tri-State or Proportional Actuator

c UL US LISTED CE

These globe zone control valves are designed to regulate the flow of hot or chilled water to such applications as VAV terminal unit reheat coils, fan coil units, and induction units. The compact design of these units allows easy installation within small enclosures.

Valve bodies, available in 1/2 to 1" line sizes, are all normally open. The actuator determines the fail position. Actuators have position indication and manual override. Replacement actuators can be installed on the valve bodies without tools.

Choice of tri-state/floating or proportional fail-in-place or two-position (NO or NC) spring-return fail-safe:

- Spring-return fail-safe actuators feature easy manual override, visual position indication, UL listing for plenum installations, and heat-resistant lead wires
- Non-fail-safe actuators feature manual override (w/ 3 mm hex wrench), visual position indication, and are CE compliant and UL listed

Models

VEZ-4 *X YYY* MB *Z*

Actuator

A: 10–0 VDC (closed-open) Proportional (MEP-3516)
B: 0–10 VDC (closed-open) Proportional (MEP-3511)
F: Tri-State, 24 VAC, Floating (MEP-3510)
M: NO, 2-pos., 24 VAC, Spring Return (MEP-3503)
N: NC, 2-pos., 24 VAC, Spring Return (MEP-3501)
P: NO, 2-pos., 120 VAC, Spring Return (MEP-3504)
Q: NC, 2-pos., 120 VAC, Spring Return (MEP-3502)
(NOTE: Actuators "A," "B," and "F" are fail-in-place)

Size/Cv

02A: 1/2"; 1.0 Cv
02B: 1/2"; 2.5 Cv
02C: 1/2"; 4.0 Cv
03A: 3/4"; 4.1 Cv
04A: 1"; 7.0 Cv

Control Type

1: Normally Open (actuator "M" or "P" only)
2: Normally Closed (actuator "N" or "Q" only)
3: Fail in Place (actuator "A," "B," or "F" only)

Specifications

Valve Body	
Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Seat Style	Metal to metal
Valve Body Rating	ANSI Class 125
Max. Inlet Pressure	125 psig (862 kPa)
Max. Close-Off	1/2 to 3/4" = 44 psi (303 kPa); 1" = 22 psi (152 kPa)
Close-Off Ratings	According to ANSI/FCI 70-2
Leakage Rating	ANSI Class III
Flow Characteristics	Linear
Material	
Body	Brass
Body Trim	Brass
Stem	Stainless steel ASTM A582 Type 303
Packing	Ethylene propylene O ring
Actuators	
All	24 in-lbs. (105 N•m) torque
Proportional	24 VAC, 50/60 Hz, 2.5 VA, 34 sec. running time
Tri-State	24 VAC, 50/60 Hz, 0.8 VA, 150 sec. running time
2-Position	24 VAC or 120 VAC, 60 Hz, 9.8 VA, 35 sec. running time
General	
Mounting Location	NEMA 1 (interior only)
Temperature Limits	
Medium	34 to 230° F (1 to 110° C)
Ambient	41 to 122° F (5 to 50° C) @ 0 to 90% RH (non-condensing)
Approvals	UL 873 and cUL certified to Canadian Standard C22.2 No. 24-93 CE compliant (non-spring return actuators)

Accessories/Repair Parts

NOTE: The last digit of valve model number represents the type of actuator.

Replacement Block Cover and Terminal Plug

HPO-5062	For proportional actuator "A/B"
HPO-5061	For tri-state actuator "F"

Replacement Valve Bodies

VFZ-4102AM	2-way, 1/2", 1.0 Cv
VFZ-4102BM	2-way, 1/2", 2.5 Cv
VFZ-4102CM	2-way, 1/2", 4.0 Cv
VFZ-4103AM	2-way, 3/4", 4.1 Cv
VFZ-4104AM	2-way, 1", 7.0 Cv

Replacement Actuators

MEP-3501	"N" (NC, 2-position, 24 VAC, spring return)
MEP-3502	"Q" (NC, 2-position, 120 VAC, spring return)
MEP-3503	"M" (NO, 2-position, 24 VAC, spring return)
MEP-3504	"P" (NO, 2-position, 120 VAC, spring return)
MEP-3510	"F" (Tri-State, 24 VAC, floating)
MEP-3511	"B" (0–10 VDC proportional)
MEP-3516	"A" (10–0 VDC proportional)

Conduit Connector

HPO-5063	Conduit connector for MEP-3510/3511/3516 "F/B/A" actuators

VEZ-44 Series
3-Way, NPT, Zone Control Valves (1/2 to 1")

With 2-Position
Fail-Safe Actuator

With Tri-State
or Proportional
Actuator

These three-way, diverting, globe zone valves are available in 1/2" through 1" line sizes. They are designed to regulate hot or chilled water in VAV terminal unit reheat coils, fan coil units, and induction units. For limited pressures, the valves can also be used in mixing applications (see data sheet for details). The compact size allows easy installation in small enclosures.

The actuator determines the fail position. Actuators have position indication and manual override. Replacement actuators can be installed on the valve bodies without tools.

Choice of tri-state/floating or proportional fail-in-place or two-position spring-return fail-safe:

- Spring-return fail-safe actuators feature easy manual override, visual position indication, UL listing for plenum installations, and heat-resistant lead wires
- Non-fail-safe actuators feature manual override (w/ 3 mm hex wrench), visual position indication, and are CE compliant and UL listed

Specifications

Valve Body	
Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Seat Style	Metal to metal
Valve Body Rating	ANSI Class 125
Max. Inlet Pressure	125 psig (862 kPa)
Max. Close-Off	(AB-A) 1/2 to 3/4" = 44 psi (303 kPa); 1" = 22 psi (152 kPa)
Close-Off Ratings	According to ANSI/FCI 70-2 (AB-A)
Leakage Rating	ANSI Class III (AB-A)
Flow Characteristics	Linear
Material	
Body	Brass
Body Trim	Brass
Stem	Stainless steel ASTM A582 Type 303
Packing	Ethylene propylene O ring
Actuators	
All	24 in-lbs. (105 N•m) torque
Proportional	24 VAC, 50/60 Hz, 2.5 VA, 34 sec. running time
Tri-State	24 VAC, 50/60 Hz, 0.8 VA, 150 sec. running time
2-Position	24 VAC or 120 VAC, 60 Hz, 9.8 VA, 35 sec. running time
General	
Mounting Location	NEMA 1 (interior only)
Temperature Limits	
Medium	34 to 230° F (1 to 110° C)
Ambient	41 to 122° F (5 to 50° C) @ 0 to 90% RH (non-condensing)
Approvals	UL 873 and cUL certified to Canadian Standard C22.2 No. 24-93
	CE compliant (non-spring return actuators)

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

Models

VEZ-44 *YYY* MB *Z*

Actuator

A: 10–0 VDC (0 V = AB-A) Proportional (MEP-3516)
B: 0–10 VDC (0 V = AB-B) Proportional (MEP-3511)
F: Tri-State, 24 VAC, Floating (MEP-3510)
M: Fail AB-A, 2-position, 24 VAC, (MEP-3503)
N: Fail AB-B, 2-position, 24 VAC, (MEP-3501)
P: Fail AB-A, 2-position, 120 VAC, (MEP-3504)
Q: Fail AB-B, 2-position, 120 VAC, (MEP-3502)
(NOTE: 2-position actuators are spring return fail-safe, and others are fail-in-place)

Size/Cv

02A: 1/2"; 1.0 Cv
02B: 1/2"; 2.5 Cv
02C: 1/2"; 4.0 Cv
03A: 3/4"; 4.1 Cv
04A: 1"; 7.0 Cv

Accessories/Repair Parts

NOTE: The last digit of valve model number represents the type of actuator.

Replacement Block Cover and Terminal Plug	
HPO-5062	For proportional actuator "A/B"
HPO-5061	For tri-state actuator "F"
Replacement Valve Bodies	
VFZ-4402AM	3-way, 1/2", 1.0 Cv
VFZ-4402BM	3-way, 1/2", 2.5 Cv
VFZ-4402CM	3-way, 1/2", 4.0 Cv
VFZ-4403AM	3-way, 3/4", 4.1 Cv
VFZ-4404AM	3-way, 1", 7.0 Cv
Replacement Actuators	
MEP-3501	"N" (NC, 2-position, 24 VAC, spring return)
MEP-3502	"Q" (NC, 2-position, 120 VAC, spring return)
MEP-3503	"M" (NO, 2-position, 24 VAC, spring return)
MEP-3504	"P" (NO, 2-position, 120 VAC, spring return)
MEP-3510	"F" (Tri-State, 24 VAC, floating)
MEP-3511	"B" (0–10 VDC proportional)
MEP-3516	"A" (10–0 VDC proportional)
Conduit Connector	
HPO-5063	Conduit connector for MEP-3510/3511/3516 "F/B/A" actuators

Valves, Flanged (2-1/2" to 12")

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

VEB-53 Series
2-Way, Flanged, Control Ball Valves (4" to 6")

These control ball valves are two-way flanged valves, designed for control of hot water or chilled water. These valves range in size from 4 to 6 inches with equal-percentage flow characteristics. Leak-proof, blow-out-proof stems, and stainless steel ball and stem make these valves ideal for many applications.

These valves use KMC MEP-7200/7500 Series ControlSet® actuators with **proportional or tri-state inputs**. Proportional models accept a 0–10 VDC or 4–20 mA control signal input from a thermostat, controller, or building automation system.

Models

VEB-53 *XXX* S *YY*

Actuator Model

(On 4 and 5 inch valves)
- **FF**: Tri-state (MEP-7201, 120 in-lbs.)
- **FK**: 0–10 VDC (MEP-7202, 120 in-lbs.)
- **FH**: Fail-safe, tri-state (MEP-7251, 120 in-lbs.)
- **FL**: Fail-safe, 0–10 VDC (MEP-7252, 120 in-lbs.)

(On 6 inch valves only)
- **GF**: Tri-state (MEP-7501, 180 in-lbs.)
- **GK**: 0–10 VDC (MEP-7502, 180 in-lbs.)
- **GH**: Fail-safe, tri-state (MEP-7551, 180 in-lbs.)
- **GL**: Fail-safe, 0–10 VDC (MEP-7552, 180 in-lbs.)

Pipe Size/Cv

- **16A**: 4"/91
- **16B**: 4"/118
- **16C**: 4"/152
- **16D**: 4"/197
- **16E**: 4"/254
- **20A**: 5"/144
- **20B**: 5"/185
- **20C**: 5"/240
- **20D**: 5"/309
- **20E**: 5"/400
- **24A**: 6"/208
- **24B**: 6"/268
- **24C**: 6"/346
- **24D**: 6"/441
- **24E**: 6"/577
- **24F**: 6"/650

Specifications

Service	Hot or chilled water, up to 50% glycol
Action	0 to 90°
Flow Characteristics	Equal percentage
Rangeability	500 to 1
Body Pressure Rating	240 psi at 250° F
Close-Off Rating	90 psi on 4 and 5"; 70 psi on 6"
Cv Rating	See Models chart
Leakage Rating	ANSI Class IV (0.01% of Cv)
Valve Sizes	4 to 6 inches
Body Type	Two-way, flanged connections, ANSI Class 125
Valve Material	
Body	Cast iron, ASTM A395, 60-40-18
Ball and stem	316 stainless-steel
Stem seals	EPDM O-rings
Ball seals	Teflon seals
Actuators	Refer to the "Models" section and the MEP-7200/7500/7800 series actuators section for details
Supply Voltage	24 VAC (+20%/–15%) or 22–35 VDC
Input	Proportional 0–10 VDC or tri-state (floating, 24 VAC)
Fail-safe	Switch-selectable fail direction (on relevant models)
Torque	120 in-lbs. or 180 in-lbs.
Material	Flame-retardant polymer
Temperature Limits	
Medium	–22 to 250° F (–30 to 121° C)
Ambient	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 140° F (–40 to 60° C)

Accessories and Repair Parts

CME-7001	Rotary auxiliary cam switch, single
CME-7002	Rotary auxiliary cam switch, double
HMO-4536	Adjustable stop kit
MEP-7xxx	Actuator (see Models section)

VEB-56 Series

3-Way, Mixing or Diverting, Flanged, Control Ball Valves (4" to 6")

These control ball valves are three-way mixing or diverting flanged valves, designed for control of hot water or chilled water. These valves range in size from 4 to 6 inches with equal-percentage flow characteristics. Leak-proof, blow-out-proof stems, and stainless steel ball and stem make these valves ideal for many applications.

These valves use KMC ControlSet® actuators with **proportional or tri-state inputs**. Proportional models accept a 0–10 VDC or 4–20 mA control signal input from a thermostat, controller, or building automation system.

Models

VEB-56 *XXX* S *YY*

Actuator Model

(On 4 and 5 inch valves)

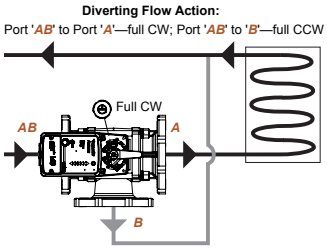
FF: Tri-state (MEP-7201, 120 in-lbs.)
FK: 0–10 VDC (MEP-7202, 120 in-lbs.)
FH: Fail-safe, tri-state (MEP-7251, 120 in-lbs.)
FL: Fail-safe, 0–10 VDC (MEP-7252, 120 in-lbs.)

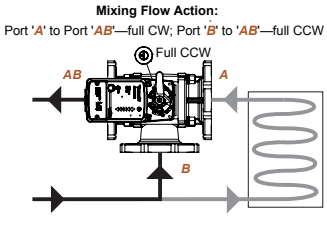
(On 6 inch valves only)

GF: Tri-state (MEP-7501, 180 in-lbs.)
GK: 0–10 VDC (MEP-7502, 180 in-lbs.)
GH: Fail-safe, tri-state (MEP-7551, 180 in-lbs.)
GL: Fail-safe, 0–10 VDC (MEP-7552, 180 in-lbs.)

Pipe Size/Cv

16A: 4"/91
16B: 4"/118
16C: 4"/152
16D: 4"/197
16E: 4"/254
16F: 4"/327
20A: 5"/144
20B: 5"/185
20C: 5"/240
20D: 5"/309
20E: 5"/400
24A: 6"/208
24B: 6"/268
24C: 6"/346
24D: 6"/441
24E: 6"/577
24F: 6"/650





Specifications

Service	Hot or chilled water, up to 50% glycol
Action	0 to 90°
Flow Characteristics	Equal percentage
Rangeability	500 to 1
Body Pressure Rating	240 psi at 250° F
Close-Off Rating	90 psi on 4 and 5"; 70 psi on 6"
Cv Rating	See Models chart
Leakage Rating	ANSI Class IV (0.01% of Cv)
Valve Sizes	4 to 6 inches
Body Type	Three-way, flanged connections, ANSI Class 125
Valve Material	
Body	Cast iron, ASTM A395, 60-40-18
Ball and stem	316 stainless-steel
Stem seals	EPDM O-rings
Ball seals	Teflon seals
Actuators	Refer to the "Models" section and the MEP-7200/7500/7800 series actuators section for details
Supply Voltage	24 VAC (+20%/–15%) or 22–35 VDC
Input	Proportional 0–10 VDC or tri-state (floating, 24 VAC)
Fail-safe	Switch-selectable fail direction (on relevant models)
Torque	120 in-lbs. or 180 in-lbs.
Material	Flame-retardant polymer
Temperature Limits	
Medium	–22 to 250° F (–30 to 121° C)
Ambient	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 140° F (–40 to 60° C)

Accessories and Repair Parts

CME-7001	Rotary auxiliary cam switch, single
CME-7002	Rotary auxiliary cam switch, double
HMO-4536	Adjustable stop kit
MEP-7xxx	Actuator (see Models section)

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

VEP-5300/5400/5500/5800 Series Flanged Globe Valves Cross-Reference

For new installations, see the equivalent *VEB-56 Series 3-Way, Mixing or Diverting, Flanged, Control Ball Valves (4" to 6") on page 114* or *VEB-53 Series 2-Way, Flanged, Control Ball Valves (4" to 6") on page 113*.

NOTE: For exact valve BODY replacement on a VEP-5300/5400/5500/5800, contact Warren Controls:

Warren Controls
2600 Emrick Blvd.
Bethlehem, PA 18020-8010
Phone: 800-922-0085 or 610-317-0800
Fax: 610-317-2989
www.warrencontrols.com

Repair Parts for VEP-5300/5400/5500/5800 Series

See Accessories under the relevant *MEP-1200 Series Cross-Reference on page 34* or *MEP-7200/7500/7800 Series Direct-Coupled, ControlSet® Actuators (120/180/320 in-lbs.) on page 42* section.

VEP-558/568 Series Metal Seat Butterfly Valves Cross-Reference

Contact VSI or see nearest equivalent *VEB-56 Series 3-Way, Mixing or Diverting, Flanged, Control Ball Valves (4" to 6") on page 114*, *VEB-53 Series 2-Way, Flanged, Control Ball Valves (4" to 6") on page 113*, *VEF-56 Series Three-Way, Rubber-Lined, Butterfly Valves (2" to 5") on page 117*, or *VEF-53 Series Two-Way, Rubber-Lined Butterfly Valves (2" to 6") on page 116*.

NOTE: VSI (Valve Solutions Inc.) will install a KMC actuator on a valve body for you:
VSI
1155 Alpha Drive, Suite A
Alpharetta, GA 3004
Tel: 770-740-0800; Fax: 770-740-8777
www.valvesolutions.com

Repair Parts for VEP-558/568 Series

See Accessories under *MEP-7200/7500/7800 Series Direct-Coupled, ControlSet® Actuators (120/180/320 in-lbs.) on page 42*.

VEP-559/569 Series Rubber Lined Butterfly Valves Cross-Reference

For two-way applications, see *VEF-53 Series Two-Way, Rubber-Lined Butterfly Valves (2" to 6") on page 116*. For over 6 inches, contact VSI.

For three-way applications, see *VEF-56 Series Three-Way, Rubber-Lined, Butterfly Valves (2" to 5") on page 117*. For over 5 inches, contact VSI.

VEF-53 Series
Two-Way, Rubber-Lined Butterfly Valves (2" to 6")

Specifications

Max. Differential Pressure	100 psi
Action	Two-way, CCW to close
Body Type	ANSI 125/150 flanges, lug body style
Valve Sizes	2″ through 6″ flange
Flow Characteristics	Modified equal percentage
Sizes & Cv Ratings	See the chart in the Features section
Actuators	See the relevant model in the MEP-7200/7500/7800 section
Material	
Body	Ductile iron
Disc	304 stainless steel
Seat	EPDM
Shaft	416 stainless steel
Bushing	PTFE
Temperature Limits	
Medium	–30 to 275° F (–34 to 135° C)*
Ambient	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 176° F (–40 to 80° C)

* Freeze protection required for mediums below 32° F (0° C).

Cv Values by Size and Disk Position (US GPM @ 1 ΔP)									
Size	Position of Disk								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
2	0.06	3	7	14	26	42	67	101	111
2.5	0.10	6	12	24	43	72	114	171	188
3	0.19	9	17	38	67	112	176	263	290
4	0.29	16	35	75	134	195	350	525	577
5	0.48	28	59	128	228	377	596	894	983
6	0.77	43	91	197	352	582	921	1382	1518

NOTE: For sizes larger than 6 inches, contact Valve Solutions, Inc. (www. valvesolutions.com).

Accessories

CME-7001	Rotary aux. cam switch, single
CME-7002	Rotary aux. cam switch, double
HMO-4536	Adjustable stop kit
MEP-7xxx	Replacement actuator (see label on actuator)

The electronic KMC VEF-53 series butterfly valves are two-way valves for control of straight-through flow in high-capacity hot or chilled water applications. Valves range in size from 2″ to 6″ with modified equal percentage flow characteristics. The lug-style valves feature a stainless-steel disk and shaft with an EPDM seat to assure long life and bubble-tight shut off.

These valves use KMC MEP-7000 series ControlSet tri-state or proportional actuators. An optional "fail-safe" feature allows failure to either open or closed positions upon loss of 24 VAC supply. A gear disengagement feature allows positioning of the valve stem/disk without energizing the actuator.

Models

Model #		Size	Actuator	Weight (lbs.)
VEF-5308ARF	K	2"	MEP-7202, proportional	17.8
	F	2"	MEP-7201, tri-state	17.8
	L	2"	MEP-7252, proportional, fail-safe	18.2
	H	2"	MEP-7251, tri-state, fail-safe	18.2
VEF-5310ARF	K	2.5"	MEP-7202, proportional	17.8
	F	2.5"	MEP-7201, tri-state	17.8
	L	2.5"	MEP-7252, proportional, fail-safe	18.2
	H	2.5"	MEP-7251, tri-state, fail-safe	18.2
VEF-5312ARG	K	3"	MEP-7502, proportional	20.1
	F	3"	MEP-7501, tri-state	20.1
	L	3"	MEP-7552, proportional, fail-safe	20.5
	H	3"	MEP-7551, tri-state, fail-safe	20.5
VEF-5316ARH	K	4"	MEP-7802, proportional	26.7
	F	4"	MEP-7801, tri-state	26.7
	L	4"	MEP-7852, proportional, fail-safe	27.1
	H	4"	MEP-7851, tri-state, fail-safe	27.1
VEF-5320ARJ	K	5"	(2) MEP-7802, 0–10 VDC*	39.1
	F	5"	(2) MEP-7801, tri-state	39.1
	L	5"	(2) MEP-7852, 0–10 VDC, fail-safe*	39.9
	H	5"	(2) MEP-7851, tri-state, fail-safe	39.9
VEF-5324ARJ	K	6"	(2) MEP-7802, 0–10 VDC*	43.7
	F	6"	(2) MEP-7801, tri-state	43.7
	L	6"	(2) MEP-7852, 0–10 VDC, fail-safe*	44.5
	H	6"	(2) MEP-7851, tri-state, fail-safe	44.5
*4–20 mA inputs are not available in Master-Slave applications				

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

VEF-56 Series
Three-Way, Rubber-Lined, Butterfly Valves (2" to 5")

The electronic KMC VEF-56 series control butterfly valves are three-way, mixing or diverting valves for control of flow in high-capacity hot or chilled water applications. Valves range in size from 2" to 5" with modified equal percentage flow characteristics. The lug-style valves feature a stainless-steel disk and shaft with an EPDM seat to assure long life and bubble-tight shut off.

These valve assemblies are shipped as a complete assembled unit ready for field installation. Two valves are mounted on a ductile iron "T" having ANSI B16.1 Class 125 flanges. The Master valve is complete with an actuator while the second (Slave) valve is controlled through a connecting linkage. The valves are linked so that as one valve opens the other valve closes.

These valves use KMC MEP-7xxx series ControlSet actuators. An optional "fail-safe" feature allows failure to either inlet upon loss of 24 VAC supply—the capacitor-driven fail-safe models provide efficient operation with switch-selectable fail direction. The MEP-7xx2 proportional (0–10 VDC or 4–20 mA) models feature a switch-selectable, 0–5 or 0–10 VDC voltage feedback output that is proportional to the actuator position. A gear disengagement feature allows positioning of the valve stem/disk without energizing the actuator.

Accessories

CME-7001	Rotary aux. cam switch, single
CME-7002	Rotary aux. cam switch, double
HMO-4536	Adjustable stop kit
MEP-7xxx	Replacement actuator (see label on actuator)

SEE ALSO: *Actuator Accessories and Repair Parts on page 28*, *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seats in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

Specifications

Valve Body

Max. Diff. Pressure	100 psi
Action	Three-way mixing or diverting
Body Type	ANSI 125/150 flanges, lug body style
Valve Sizes	2" through 5" flange
Flow Characteristics	Modified equal percentage
Sizes & Cv Ratings	See the chart in the Models section
Actuators	See the Models and Actuator sections as well as the MEP-7200/7500/7800 series data sheet
Material	
Body	Ductile iron
Disc	304 stainless steel
Seat	EPDM
Shaft	416 stainless steel
Bushing	PTFE
Environmental Limits	
Medium	–30 to 275° F (–34 to 135° C)
Ambient	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 176° F (–40 to 80° C)

Actuator

Supply Voltage	24 VAC (+20%/–15%) Class 2, or 22–35 VDC
Supply Power	
MEP-720x/750x	6 VA
MEP-725x/755x	8 VA normal (25 VA peak while initializing)
MEP-780x	8 VA
MEP-785x	10 VA normal (40 VA peak while initializing)
Control Input	
Tri-state	(See Supply Voltage)
Proportional	0–10 VDC or (except on Master-Slaves) 4–20 mA
Feedback	
Proportional	0–5 VDC or 0–10 VDC (switch selectable)
Motor Timing	(Powered)
MEP-72xx	75–90 seconds, load dependent
MEP-75xx/78xx	90–115 sec., load dependent
Fail-Safe Timing	(Switch-selectable clockwise, counter-clockwise, or off; up to 40 second delay while charging capacitor after initial connection to power)
MEP-725x	65–100 sec., load dependent
MEP-755x/785x	80–115 sec., load dependent
Connections	Wire clamp type; 14–22 AWG, copper
Enclosure	Flame retardant plastic
Noise Level	< 45 dbA max. at 1 meter
Approvals	UL 873 Temperature Indicating and Regulating Equipment; FCC Class B, Part 15, Subpart B
Environmental Limits	
Operating	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 176° F (–40 to 80° C)
Humidity	5 to 95% RH (non-condensing)

NOTE: For more information, see the MEP-7200/7500/7800 series data sheet.

⚠ CAUTION

Freeze protection required for fluid temperatures below 32° F (0° C).

Models

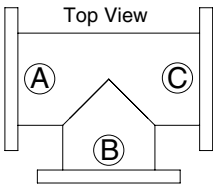
Model #			Size*	Actuator	Weight (lbs.)
VEF-5608ARF	K	**	2"	MEP-7202, proportional	28.2
	F	**	2"	MEP-7201, tri-state	28.2
	L	**	2"	MEP-7252, proportional, fail-safe	28.6
	H	**	2"	MEP-7251, tri-state, fail-safe	28.6
VEF-5610ARG	K	**	2.5"	MEP-7502, proportional	28.2
	F	**	2.5"	MEP-7501, tri-state	28.2
	L	**	2.5"	MEP-7552, proportional, fail-safe	28.6
	H	**	2.5"	MEP-7551, tri-state, fail-safe	28.6
VEF-5612ARH	K	**	3"	MEP-7802, proportional	32.6
	F	**	3"	MEP-7801, tri-state	32.6
	L	**	3"	MEP-7852, proportional, fail-safe	33.0
	H	**	3"	MEP-7851, tri-state, fail-safe	33.0
VEF-5616ARH	K	**	4"	MEP-7802, proportional	45.9
	F	**	4"	MEP-7801, tri-state	45.9
	L	**	4"	MEP-7852, proportional, fail-safe	46.3
	H	**	4"	MEP-7851, tri-state, fail-safe	46.3
VEF-5620ARJ	K	**	5"	(2) MEP-7802, 0–10 VDC***	65.3
	F	**	5"	(2) MEP-7801, tri-state	65.3
	L	**	5"	(2) MEP-7852, 0–10 VDC, fail-safe***	66.1
	H	**	5"	(2) MEP-7851, tri-state, fail-safe	66.1

**Desired Arrangement 1–6 must be included as a suffix on the valve assembly model number. See the charts above and consider these guidelines:

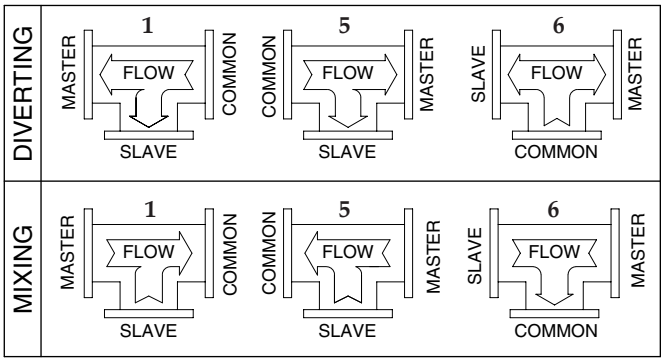
- Each port is designated by A, B, or C.
- Arrangement numbers are based on the top view looking down on the "T" and top of the valve shaft as shown in the chart.
- Select which port is the master and which port is to be the slave and use the table to choose the corresponding arrangement number.
- Add selected arrangement number to the end of the valve assembly model number (see Ordering Example).

*Cv Values by Size and Disk Position (US GPM @ 1 ΔP)									
Size	Position of Disk								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
2	0.06	3	7	14	26	42	67	101	111
2.5	0.10	6	12	24	43	72	114	171	188
3	0.19	9	17	38	67	112	176	263	290
4	0.29	16	35	75	134	195	350	525	577
5	0.48	28	59	128	228	377	596	894	983

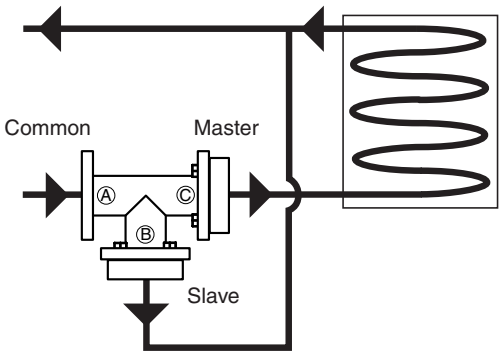
***NOTE: 4–20 mA inputs are not available in Master-Slave applications (5" valves).



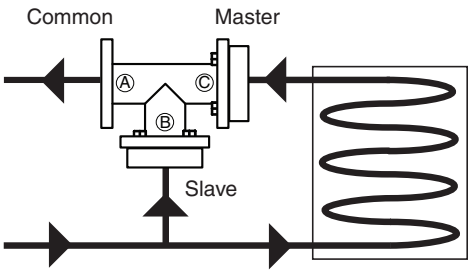
**Arrangement	Master Valve (Actuator)	Slave Valve	Common Port
1	A	B	C
2	A	C	B
3	B	C	A
4	B	A	C
5	C	B	A
6	C	A	B



(Arrangements 2 and 4 not illustrated—see Ordering Example for Arrangement 3)



Arrangement 5 DIVERTING Flow Example



Arrangement 5 MIXING Flow Example

Pneumatic Products

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Actuator Accessories and Repair Parts

CMC-1001

Non-Metallic Positive Positioner for MCP Series

RoHS COMPLIANT

The CMC-1001 relay is designed for use on KMC pneumatic damper actuators. It can be either premounted or field installed on 3", 4", or 6" stroke actuators. It replaces positioners on any MCP actuator with the digit 1 in the fifth (5th) position: MCP-XXXX-1XXX.

The start-point is adjustable from 3 to 10 psi, and the overall span is a function of which feedback spring is used. Feedback springs are available in 5 and 10 psi spans.

When adding a positive positioner to an actuator, an actuator containing an 8 to 13 psi spring should generally be used (so that equal force can be obtained on power and return strokes).

Specifications

Supply Pressure	20 to 30 psig (138 to 207 kPa)
Air Consumption	14.4 scim @ 20 psig (3.93 mL/s at 138 kPa)
Connections	3/16" (5 mm) nipples for 1/4" (6mm) OD polyethylene tubing
Port Markings	
Center	Supply pressure
"1"	Output to actuator
"2"	Signal input
Material	
Body	Flame retardant plastic
Diaphragms	Neoprene
Output Capability	0 to supply pressure
Weight	4 oz. (113 grams)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

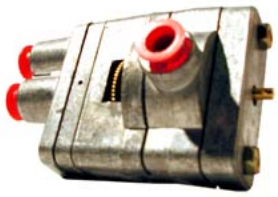
Accessories

VTD-2500	In-line restrictor for CMC-1001
VTD-1500	Feedback arm

NOTE: For feedback springs, see *CMC Series Feedback Springs on page 121*.

CMC-1002

Metal Positive Positioner for MCP Series



RoHS COMPLIANT

The CMC-1002 relay is designed for use on KMC pneumatic damper actuators. It can be either premounted or field installed on 3", 4", or 6" stroke actuators. It is normally furnished on metal actuators but may be applied to the non-metallic units. It replaces positioners on any MCP actuator with the digit 9 in the fifth (5th) position: MCP-XXXX-9XXX.

The start-point is adjustable from 3 to 10 psi, and the overall span is a function of which feedback spring is used. Feedback springs are available in 5 and 10 psi spans. When adding a positive positioner to an actuator, an actuator containing an 8 to 13 psi spring should generally be used (so that equal force can be obtained on power and return strokes).

Specifications

Supply Pressure	20 to 30 psig (138 to 207 kPa)
Air Consumption	28.8 scim @ 20 psig (7.87 mL/s @ 138 kPa)
Connections	1/8" FPT
Port Markings	
"M"	Supply pressure
"B"	Output to actuator
"S"	Signal input
Material	
Body	Zinc
Diaphragms	Neoprene
Output Capability	0 to supply pressure
Weight	1 lb. (.45 kg)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Accessories

VTD-1500	Feedback arm

NOTE: For feedback springs, see *CMC Series Feedback Springs on page 121*.

CMC Series Feedback Springs

Feedback Springs for CMC-1002

5 psi Span:

VTD-2254	On 3" actuators
VTD-2253	On 4" actuators
VTD-2256	On 6" actuators

10 psi Span:

VTD-2264	On 3" actuators
VTD-2263	On 4" actuators
VTD-2266	On 6" actuators

Feedback Springs for CMC-1001

3 psi Span:

VTD-2272	On 6" actuators

7 psi Span:

VTD-2282	On 6" actuators

5 psi Span:

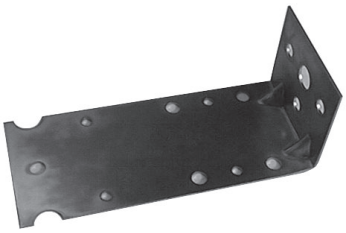
VTD-2250	On 3" actuators
VTD-2251	On 4" actuators
VTD-2252	On 6" actuators

10 psi Span:

VTD-2260	On 3" actuators
VTD-2261	On 4" actuators
VTD-2262	On 6" actuators

MCP Series Brackets, Mounting

VTD-0902 Right-angle bracket used on all right-angle mounted 3" and 4" actuators



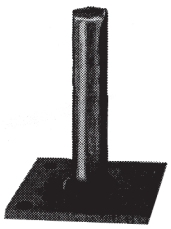
VTD-0903 Right-angle bracket used on all MCP-1020 2" actuators

VTD-1809 1/4-20 mounting bolt used to mount VTD-0902 bracket to 3" and 4" actuators

VTD-1805 10-32 mounting screw used to mount VTD-0903 bracket to 2" actuators

VTD-0905 Offset bracket, used with VTD-0904 for post-mounting of all 3" and 4" actuators

VTD-0904 Rear post used on rear swivel mounting of all 3" and 4" actuators, used with VTD-0905



HMO-1002 Replacement floor flange for rear mounting of MCP-1160/5160 actuators

SEE ALSO: **The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.**

MCP Series Crank/Damper Arms, Linkage, and Other Hardware

VTD-1403 Slotted crank/damper arm, short for 3/8" shafts
VTD-1404 Slotted crank/damper arm, short for 1/2" shafts
VTD-1405 Slotted crank/damper arm, long for 1/2" shafts
VTD-1406 Slotted crank/damper arm, long for 3/8" shafts

NOTE: In the VTD-1403/1404 (short) arms, a ball joint can be adjusted from 3/4" (minimum) from the center of the shaft to 2-7/8" (maximum) from the center. In VTD-1405/1406 (long) arms, the maximum is 4-5/8".

VTD-1414 Three-hole crank/damper arm for 3/8" shafts
VTD-1415 Three-hole crank/damper arm for 1/2" shafts

(See also VTD-0804 ball joint)

HLO-1002 Replacement crank arm assembly for MCP-1160/5160 series

VTD-5002 Entire front end linkage (6" x 6") for MCP-1160/5160

HLO-1001 Replacement clevis for MCP-1160/5160 series

VTD-1007 U-shaped clevis used on post-mounted 3" and 4" actuators (see also VTD-1601/1100/1205)

HMO-1001 Replacement rear strap for rear swivel mounting of MCP-1160/5160 series

VTD-1601 1/4-20 clevis extension used to attach VTD-1007 clevis to post-mounted actuators

HPO-0005 Clevis pin for use with MCP-8031/8035 (only)

VTD-1100 Clevis pin used with VTD-1007 on post-mounted 3" and 4" actuators

HPO-0006 Cotter pin for use with MCP-8031/8035 (only)

VTD-1205 Cotter pin for use with VTD-1100 on post-mounted 3" and 4" actuators

VTD-0803 Ball joint, 1/4-20 male x 5/16-24" female for use on end of actuator shafts

VTD-0804 Ball joint, 1/4-20 male x 1/4-20" female for use with VTD-1400 series crank arms

VTD-1500 Feedback arm, used on all 3", 4", and 6" positioner actuators to attach feedback springs

VTD-1630 Push rod, 5/16" X 6-1/4", for 2" actuators with full linkage

VTD-1634 Push rod, 5/16" X 3-1/4", for 3" and 4" actuators with full linkage

VTD-1611 Push rod, used on all MCP-8031 actuators with full linkage

VTD-5003 Nut, bolt, and sleeve for rear of MCP-1160/5160

VTD-1920 1/2-13 hex nut used on VTD-0904 post

VTD-2101 1/2" ID lock washer used on VTD-0904 post

VTD-1151 Shaft collar, used to limit the “return” stroke of 2" diameter actuators

VTD-1153 Shaft collar, used to limit the “return” stroke of 3" and 4" diameter actuators

Replacement Actuator Diaphragms:

VTD-9422 2" for MCP-01XX, MCP-02XX, and MCP-1020 series

VTD-9423 3" for MCP-03XX and MCP-1030/1130 series

VTD-9433 3" for MCP-03XX and MCP-1030/1130 series, **silicone**

VTD-9424 4" for MCP-04XX and MCP-1040/1140 series

VTD-9434 4" for MCP-04XX and MCP-1040/1140 series, **silicone**

VTD-9426 6" for MCP-06XX and MCP-1160/5160 series

VTD-9430 10" for MCP-5190 series

HPO-0004 Retainer bracket for MCP-8031/8035

VDT-2200 Retainer ring, used to hold VTD-0904 to rear for 3" and 4" actuators

MCP Series Springs, Actuator

For MCP-0100 Series:

VTD-4103	5–10 psi
VTD-4105	8–13 psi

For MCP-0200 and MCP-1020 Series:

VTD-4202	3–12 psi
VTD-4203	5–10 psi
VTD-4205	8–13 psi
VTD-4206	10–15 psi
VTD-4208	4–8 psi

For MCP-0300 and MCP-1030/1130 Series:

VTD-4302	3–12 psi
VTD-4303	5–10 psi
VTD-4305	8–13 psi
VTD-4306	10–15 psi
VTD-4308	4–8 psi

For MCP-0400 and MCP-1040/1140 Series:

VTD-4402	3–12 psi
VTD-4403	5–10 psi
VTD-4405	8–13 psi
VTD-4406	10–15 psi
VTD-4408	4–8 psi

Actuators

MCP-0100/0200/0300/0400/0600 Series "Bare" Pneumatic Actuators

SEE ALSO: *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

"Standard" Body Shown

"Clevis" Body Shown

2" Diameter x 1" Stroke

MCP-0103	5–10 psi, 1/4-20 female shaft
MCP-0105	8–13 psi, 1/4-20 female shaft
MCP-0143	5–10 psi, 5/16-24 male shaft
MCP-0145	8–13 psi, 5/16-24 male shaft

2" Diameter x 2" Stroke

MCP-0202	3–12 psi, Standard body
MCP-0203	5–10 psi, Standard body
MCP-0205	8–13 psi, Standard body
MCP-0206	10–15 psi, Standard body
MCP-0208	4–8 psi, Standard body

Above 5 Actuators Are Used For All MCP-1020 Series

MCP-0243	5–10 psi, 5/16-24 male shaft
MCP-0245	8–13 psi, 5/16-24 male shaft
MCP-0248	4–8 psi, 5/16-24 male shaft
MCP-0252	3–12 psi, Clevis body
MCP-0253	5–10 psi, Clevis body
MCP-0255	8–13 psi, Clevis body
MCP-0256	10–15 psi, Clevis body
MCP-0258	4–8 psi, Clevis body

SEE ALSO: The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.

3" Diameter x 3" Stroke

MCP-0302	3–12 psi, Standard body
MCP-0303	5–10 psi, Standard body
MCP-0305	8–13 psi, Standard body
MCP-0306	10–15 psi, Standard body
MCP-0308	4–8 psi, Standard body

Above 5 Actuators Are Used For All MCP-1030 Series

MCP-0352	3–12 psi, Clevis body
MCP-0353	5–10 psi, Clevis body
MCP-0355	8–13 psi, Clevis body
MCP-0356	10–15 psi, Clevis body
MCP-0358	4–8 psi, Clevis body

Above 5 Actuators Are Used For All MCP-1130 Series

4" Diameter x 4" Stroke

MCP-0402	3–12 psi, Standard body
MCP-0403	5–10 psi, Standard body
MCP-0405	8–13 psi, Standard body
MCP-0406	10–15 psi, Standard body
MCP-0408	4–8 psi, Standard body

Above 5 Actuators Are Used For All MCP-1040 Series

MCP-0452	3–12 psi,Clevis body
MCP-0453	5–10 psi, Clevis body
MCP-0455	8–13 psi, Clevis body
MCP-0456	10–15 psi, Clevis body
MCP-0458	4–8 psi, Clevis body

Above 5 Actuators Are Used For All MCP-1040 Series

Hesitation Actuators

MCP-0460	Fits All MCP-1241 Series

6" Diameter x 6" Stroke

MCP-0655	Fits All MCP-1160 (Nylon)
MCP-0695	Fits All MCP-5160 (Metal)

Miscellaneous Bare Actuators

MCP-0335	3" x 3" Nylon for Phoenix Controls
MCP-0435	4" x 4" Nylon for Phoenix Controls

MCP-1020/020X Series
2" Damper Actuators


Crank Arm Shown

These actuators are designed for use in pneumatic control systems to position automatic air dampers. May be used for gradual or two-position applications.

Models are available with right angle bracket mounting and several linkage arrangements.

Models

MCP-1020- X YYY

Spring Range
- 2 (3–12 psi)
- 3 (5–10 psi)
- 5 (8–13 psi)
- 6 (10–15 psi)
- 8 (4–8 psi)

Linkage
- 308 (w/ ball joint)
- 311 (w/ 1/2" crank arm)
- 312 (w/ 3/8" crank arm)

Accessories and Repair Parts

CMC-1001	Non-metallic positive positioner
CMC-1002	Metal positive positioner
VTD-0803	Ball joint, 1/4-20 male x 5/16-24 female for use on end of actuator shafts
VTD-0804	Ball joint, 1/4-20 male x 1/4-20 female for use with VTD-1400 series crank arms
VTD-0903	Right-angle bracket used on MCP-1020 actuators
VTD-1414	Three-hole crank arm for 3/8" damper shafts
VTD-1415	Three-hole crank arm for 1/2" damper shafts
VTD-1630	Push rod, 5/16 x 6-1/4"
VTD-9422	Replacement actuator diaphragm
MCP-0202	3 to 12 psi actuator for MCP-1020 series
MCP-0203	5 to 10 psi actuator for MCP-1020 series
MCP-0205	8 to 13 psi actuator for MCP-1020 series
MCP-0206	10 to 15 psi actuator for MCP-1020 series
MCP-0208	4 to 8 psi actuator for MCP-1020 series

NOTE: See also the CMC Series Feedback Springs section.

Specifications

Effective Area	3 sq. in. (19 sq. cm.)
Stroke	2" (51 mm)
Supply Pressure	0 to 20 psig (138 kPa) operating; 30 psig (207 kPa) maximum
Spring Ranges	Retracted/Extended Torque (based on 0 and 20 psi applied)
3–12 psi (21–83 kPa)	10/26 in-lbs. (1/3 N•m) @ 90°
5–10 psi (34–69 kPa)	16/32 in-lbs. (2/4 N•m) @ 90°
8–13 psi (55–90 kPa)	26/22 in-lbs. (3/2 N•m) @ 90°
10–15 psi (69–103 kPa)	32/16 in-lbs. (4/2 N•m) @ 90°
4–8 psi (28–55 kPa)	13/38 in-lbs. (1/4 N•m) @ 90°
Supply Connection	3/16" (5 mm) fitting for 1/4" (6 mm) OD polyethylene tubing
Material	
Body	Glass-filled nylon (Nylatron GS63-13)
Diaphragm	Neoprene
Piston	Glass-filled nylon (Nylatron GS63-13)
Shaft	CRS with nickel plating
Bearing	Glass-filled nylon (Nylatron GS63-13)
Damper Ratings	
Gradual	3 sq. ft (0.28 sq. m) @ 1,000 fpm
Two Position	4.5 sq. ft (0.42 sq. m) @ 1,000 fpm
Temperature Limits	

NOTE: If application requires operation near maximum temperature AND maximum pressure, install a tubing restraint at the actuator connection.

Operating	–20 to 180° F (–29 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

SEE ALSO: *MCP-0100/0200/0300/0400/0600 Series "Bare" Pneumatic Actuators on page 125*, *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: The interactive *Actuator Selection Tool* in the Products and Solutions section of the *KMC web site*.

MCP-1030/1130/03xx Series

3" Damper Actuators

Clevis and Post Mount Shown

Crank Arm and Right Angle Mount Shown

These actuators are designed for use in pneumatic control systems positioning automatic air dampers and can be used for gradual or two-position applications.

Select either post or right angle bracket mounting. Right angle mounted versions are furnished with crank arms for either 1/2" or 3/8" damper shafts. Either style can be shipped with a positive positioner. Actuators with positioners are furnished with an 8–13 psi internal spring and a 5 psi span spring. A 10 psi span spring may be ordered separately if required.

Accessories and Repair Parts

CMC-1001	Non-metallic positive positioner
CMC-1002	Metal positive positioner
MCP-0302	3 to 12 psi actuator for MCP-1030 series
MCP-0303	5 to 10 psi actuator for MCP-1030 series
MCP-0305	8 to 13 psi actuator for MCP-1030 series
MCP-0306	10 to 15 psi actuator for MCP-1030 series
MCP-0308	4 to 8 psi actuator for MCP-1030 series
MCP-0335	8 to 13 psi Phoenix actuator
MCP-0352	3 to 12 psi actuator for MCP-1130 series
MCP-0353	5 to 10 psi actuator for MCP-1130 series
MCP-0355	8 to 13 psi actuator for MCP-1130 series
MCP-0356	10 to 15 psi actuator for MCP-1130 series
MCP-0358	4 to 8 psi actuator for MCP-1130 series
VTD-0803	Ball joint, 1/4-20 male x 5/16-24" female for use on end of actuator shafts
VTD-0804	Ball joint, 1/4-20 male x 1/4-20" female for use with VTD-1400 series crank arms
VTD-0902	Right-angle bracket used on all right-angle mounted 3" and 4" actuators
VTD-0904	Rear post used on rear swivel mounting of all 3" and 4" actuators, used with VTD-0905
VTD-0905	Offset bracket, used with VTD-0904 for post-mounting of all 3" and 4" actuators
VTD-1100	1/4" clevis pin, post mount actuators
VTD-1205	Hairpin cotter, post mount actuators
VTD-1414	3-hole crank arm, 3/8" damper shafts
VTD-1415	3-hole crank arm, 1/2" damper shafts
VTD-1500	Positioner feedback arm
VTD-1634	Push rod, 5/16" X 3-1/4"
VTD-1920	1/2-13 hex nut used on VTD-0904 post
VTD-2101	1/2" ID lock washer used on VTD-0904 post
VTD-2200	Retainer ring
VTD-9423	Replacement actuator diaphragm

NOTE: See also the MCP Series Springs, Actuator section and the CMC Series Feedback Springs section.

Specifications

Effective Area	7 sq. in. (45 sq. cm)
Stroke	3" (76 mm)
Control Signal Pressure Input	0 to 20 psig (138 kPa) operating 30 psig (207 kPa) maximum
Control Signal Connections	3/16" (5 mm) for 1/4" OD polyethylene tubing.
Spring Ranges	Retracted/Extended Torque (Based on 0 and 20 psi applied)
3–12 psi (12–83 kPa);	31/84 in-lbs. (4/9 N•m) @ 90°
5–10 psi (34–69 kPa);	52/105 in-lbs. (6/12 N•m) @ 90°
8–13 psi (55–90 kPa);	84/74 in-lbs. (9/8 N•m) @ 90°
10–15 psi (69–103 kPa);	105/52 in-lbs. (12/6 N•m) @ 90°
4–8 psi (28–55 kPa);	42/126 in-lbs. (5/14 N•m) @ 90°
Material	
Body	Glass-filled nylon (Nylatron GS63-13)
Diaphragm	Neoprene
Piston	Glass-filled nylon (Nylatron GS63-13)
Shaft	CRS with nickel plating
Bearing	Nylatron GS63-13 glass-filled nylon (but Delrin in the MCP-0435)
Temperature Limits	

NOTE: If application requires operation near maximum temperature AND maximum pressure, install a tubing restraint at the actuator connection.

Operating	–20 to 180° F (–29 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

Models

MCP-1 X 30 Y ZZZ

Mounting
0 (right angle mount)
1 (post mount)

Spring Range
1 (w/ CMC-1001)
2 (3–12 psi)
3 (5–10 psi)
5 (8–13 psi)
6 (10–15 psi)
8 (4–8 psi)
9 (w/ CMC-1002)

Bracket/Linkage
520 (MCP-1130 w/ clevis)
108 (MCP-1030 w/ ball joint)
111 (MCP-1030 w/ 1/2" crank arm)
112 (MCP-1030 w/ 3/8" crank arm)

SEE ALSO: *MCP-0100/0200/0300/0400/0600 Series "Bare" Pneumatic Actuators on page 125*, *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

MCP-1040/1140/04xx Series
4" Damper Actuators

Clevis and Post Mount Shown

Crank Arm and Right Angle Mount Shown

These actuators are designed for use in pneumatic control systems positioning automatic air dampers and may be used for gradual or two-position applications.

Select either post or right angle bracket mounting. Right angle mounted versions are furnished with crank arms for either 1/2" or 3/8" damper shafts. Either style can be shipped with a positive positioner. Actuators with positioners are furnished with an 8–13 psi internal spring, a 5 psi span spring, and if desired, a 10 psi span spring may be ordered separately and added in the field.

Accessories and Repair Parts

CMC-1001	Non-metallic positive positioner
CMC-1002	Metal positive positioner
MCP-0402	3 to 12 psi actuator for MCP-1040 series
MCP-0403	5 to 10 psi actuator for MCP-1040 series
MCP-0405	8 to 13 psi actuator for MCP-1040 series
MCP-0408	4 to 8 psi actuator for MCP-1040 series
MCP-0435	8 to 13 psi Phoenix actuator
MCP-0452	3 to 12 psi actuator for MCP-1140 series
MCP-0453	5 to 10 psi actuator for MCP-1140 series
MCP-0455	8 to 13 psi actuator for MCP-1140 series
MCP-0456	10 to 15 psi actuator for MCP-1140 series
MCP-0458	4 to 8 psi act. for MCP-1140 series
VTD-0803	Ball joint, 1/4-20 male x 5/16-24" female for use on end of actuator shafts
VTD-0804	Ball joint, 1/4-20 male x 1/4-20" female for use with VTD-1400 series crank arms
VTD-0902	Right-angle bracket used on all right-angle mounted 3" and 4" actuators
VTD-0904	Rear post used on rear swivel mounting of all 3" and 4" actuators, used with VTD-0905
VTD-0905	Offset bracket, used with VTD-0904 for post-mounting of all 3" and 4" actuators
VTD-1100	1/4" clevis pin, post mount actuators
VTD-1205	Hairpin cotter, post mount actuators
VTD-1414	3-hole crank arm, 3/8" damper shafts
VTD-1415	3-hole crank arm, 1/2" damper shafts
VTD-1500	Positioner feedback arm
VTD-1634	Push rod, 5/16" X 3-1/4"
VTD-1920	1/2-13 hex nut used on VTD-0904 post
VTD-2101	1/2" ID lock washer used on VTD-0904 post
VTD-2200	Retainer ring
VTD-9424	Replacement actuator diaphragm

NOTE: See also the MCP Series Springs, Actuator section and the CMC Series Feedback Springs section.

Specifications

Effective Area 11 sq. in. (71 sq. cm)
Stroke 4" (102 mm)
Control Signal Pressure Input
0 to 20 psig (138 kPa) operating
30 psig (207 kPa) maximum
Spring Ranges Retracted/Extended Torque (Based on 0 and 20 psi applied)

3–12 psi (21–83 kPa)	66/176 in-lbs. (7/20 N•m) @ 90°
5–10 psi (34–69 kPa)	110/220 in-lbs. (12/25 N•m) @ 90°
8–13 psi (55–90 kPa)	176/154 in-lbs. (20/17 N•m) @ 90°
10–15 psi (69–103 kPa)	220/110 in-lbs. (25/12 N•m) @ 90°
4–8 psi (28–55 kPa)	88/264 in-lbs. (10/19 N•m) @ 90°

Control Signal Connection
3/16" (5 mm) fitting for 1/4" (6 mm) OD polyethylene tubing

Material

Body	Glass-filled nylon (Nylatron GS63-13)
Diaphragm	Neoprene
Piston	Glass-filled nylon (Nylatron GS63-13)
Shaft	CRS with nickel plating
Bearing	Nylatron GS63-13 glass-filled nylon (but Delrin in the MCP-0435)

Temperature Limits

NOTE: If application requires operation near maximum temperature AND maximum pressure, install a tubing restraint at the actuator connection.

Operating	–20 to 180° F (–29 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

Models

MCP-1 X 40 Y ZZZ

Mounting
0 (right angle mount)
1 (post mount)

Spring Range
1 (w/ CMC-1001)
2 (3–12 psi)
3 (5–10 psi)
5 (8–13 psi)
6 (10–15 psi)
8 (4–8 psi)
9 (w/ CMC-1002)

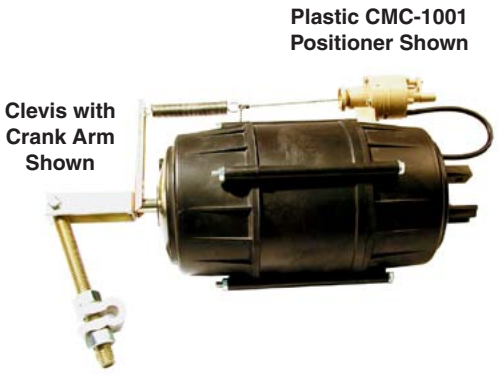
Bracket/Linkage
520 (MCP-1140 w/ clevis)
208 (MCP-1040 w/ ball joint)
211 (MCP-1040 w/ 1/2" crank arm)
212 (MCP-1040 w/ 3/8" crank arm)

Actuator Assemblies for Butterfly Valves

MCP-1140-1003	4" x 4" post-mounted w/ plastic positioner
MCP-1140-1054	4" x 4" post-mounted w/ plastic positioner
MCP-1140-1403	4" x 4" post-mounted w/ plastic positioner
MCP-1140-1443	4" x 4" post-mounted w/ plastic positioner
MCP-1140-5003	4" x 4" post-mounted w/ 8–13 psi spring
MCP-1140-5054	4" x 4" post-mounted w/ 8–13 psi spring
MCP-1140-5403	4" x 4" post-mounted w/ 8–13 psi spring
MCP-1140-5443	4" x 4" post-mounted w/ 8–13 psi spring

SEE ALSO: *MCP-0100/0200/0300/0400/0600 Series "Bare" Pneumatic Actuators on page 125*, *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

MCP-1160 Series
6" Damper Actuator



The MCP-1160 is designed for use with large automatic air control dampers. If features a universal mounting bracket for mounting on dampers, butterfly valves and variable fan inlet vanes.

The MCP-1160 has an 8 to 13 psi main spring for ample return power. The linkage is designed for angular adjustment for 60 to 120° of damper rotation at full stroke. Use in modulating or two-position applications with or without an adjustable start-point positive positioner.

Item pictured is model MCP-1160-1111.

Models

	Mounting Bracket	Bracket Hardware Only	Crankarm Linkage	Clevis Linkage Only	Plastic Positioner	Metal Positioner
MCP-1160-1020		●		●	●	
MCP-1160-1101	●				●	
MCP-1160-1102				●	●	
MCP-1160-1103		●			●	
MCP-1160-1104		●		●	●	
MCP-1160-1111	●		●		●	
MCP-1160-1114	●			●	●	
MCP-1160-5020		●				
MCP-1160-5101	●					
MCP-1160-5102				●		
MCP-1160-5103		●				
MCP-1160-5104		●		●		
MCP-1160-5111	●		●			
MCP-1160-5114	●			●		
MCP-1160-9111	●		●			●
MCP-1160-9114	●			●		●

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

SEE ALSO: *MCP-0100/0200/0300/0400/0600 Series "Bare" Pneumatic Actuators on page 125*, *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

Specifications

Effective Area	24.8 sq. in. (160 sq. cm)
Stroke	6" (152 mm)
Supply Pressure	0 to 20 psig (138 kPa) operating; 30 psig (207 kPa) maximum.
Spring Ranges	Retracted/extended torque (based on 0 and 20 psi applied) 8 to 13 psi (55 to 90 kPa); 576/504 in-lbs. (65/57 N•m) @ 90°
Supply Connection	3/16" (5 mm) nipple for 1/4" (6 mm) OD polyethylene tubing
Material	
Body	Glass-filled nylon
Diaphragm	Neoprene
Piston	Glass-filled nylon
Shaft	CRS w/ nickel plating
Bearing	Glass-filled nylon
Damper Ratings @ 1000 fpm	
Gradual	75 sq. ft (7 sq. m)
Two Position	90 sq. ft (8.36 sq. m)
Temperature Limits	
NOTE: If application requires operation near maximum temperature AND maximum pressure, install a tubing restraint at the actuator connection.	
Operating	–20 to 180° F (–29 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

Accessories and Repair Parts

CMC-1001	Non-metallic positive positioner
CMC-1002	Metal positive positioner
HLO-1001	Replacement clevis for MCP-1160/5160 series
HLO-1002	Replacement crank arm assembly for MCP-1160/5160 series
HMO-1001	Replacement rear strap for rear swivel mounting of MCP-1160/5160 series
HMO-1002	Replacement floor flange for rear mounting of MCP-1160/5160 actuators
VTD-5002	Entire front end linkage (6" x 6") for MCP-1160/5160
VTD-5003	Nut, bolt, and sleeve for rear of MCP-1160/5160
VTD-1500	Positioner feedback arm
VTD-2252	5 psi span spring for CMC-1001
VTD-2256	5 psi span spring for CMC-1002
VTD-2262	10 psi span spring for CMC-1001
VTD-2266	10 psi span spring for CMC-1002
VTD-2272	3 psi span spring for CMC-1001
VTD-2282	7 psi span spring for CMC-1001
VTD-9426	Replacement actuator diaphragm

NOTE: See also the MCP Series Springs, Actuator section.

Actuator Assemblies for Butterfly Valves

MCP-1160-1020	6" x 6" no bracket w/ 8–13 psi spring
MCP-1160-1102	6" x 6" rear swivel w/ 8–13 psi spring
MCP-1160-1103	6" x 6" rear swivel w/ 8–13 psi spring
MCP-1160-1104	6" x 6", clevis 7#
MCP-1160-1114	6" x 6" rear swivel w/ plastic positioner
MCP-1160-5020	6" x 6" no bracket w/ plastic positioner
MCP-1160-5102	6" x 6" rear swivel w/ plastic positioner
MCP-1160-5103	6" x 6" rear swivel
MCP-1160-5104	6" x 6", clevis 8–13#
MCP-1160-5114	6" x 6" rear swivel w/ 8–13 psi spring
MCP-1160-9114	6" x 6" rear swivel w/ metal positioner

MCP-3631 Series
Rotary Actuators

These pneumatic rotary actuators are designed for use on VAV terminal units and other small dampers in HVAC systems as well as VCB-41/42/46 ball valves.

Models ending in "000" will mount to 1/2-inch diameter damper shafts or (using the HLO-1011 shaft adapter) to 3/8-inch diameter shafts. Models ending with a "001" will mount to 3/8-inch square damper shafts.

Actuators may be mounted with either side toward damper to allow clockwise or counterclockwise rotation. A non-rotation bracket is supplied with each actuator and a variety of options are available to lock the actuator's drive hub to the damper shaft.

Models

Actuators for 1/2" or 3/8" Diameter Shafts

MCP-3631-2000	3–12 psi range (21–83 kPa)
MCP-3631-3000	5–10 psi range (34–69 kPa)
MCP-3631-5000	8–13 psi range (55–90 kPa)
MCP-3631-8000	3–8 psi range (21–55 kPa)

Actuators for 3/8" Square Shafts

MCP-3631-3001	5–10 psi range (34–69 kPa)
MCP-3631-5001	8–13 psi range (55–90 kPa)
MCP-3631-8001	3–8 psi range (21–55 kPa)

SEE ALSO: *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: **The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.**

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Specifications

Effective Area	8 sq. in. (52 sq. cm)
Normal Rotation	100°
Supply Pressure	0 to 20 psig (138 kPa) operating; 30 psig (207 kPa) maximum
Spring Range and Retracted/Extended Torque	(based on 0 and 20 psi applied)
3–12 psi (21–83 kPa)	25/68 in-lbs. (3/8 N•m) @ 90°
5–10 psi (34–69 kPa)	42/85 in-lbs. (5/10 N•m) @ 90°
8–13 psi (55–90 kPa)	68/59 in-lbs. (8/7 N•m) @ 90°
3–8 psi (21–55 kPa)	25/102 in-lbs. (3/12 N•m) @ 90°
Supply Connection	3/16" (5 mm) nipple for 1/4" (6 mm) OD polyethylene tubing
Material	
Body	Glass-filled nylon
Diaphragm	Neoprene
Temperature Limits	

NOTE: If application requires operation near maximum temperature AND maximum pressure, install a tubing restraint at the actuator connection.

Operating	–20 to 180° F (–29 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

Accessories and Repair Parts

HLO-1006	Drive bushing (with tabs), 1/2" round or 3/8" square shaft adapter	
HLO-1016	Collar (without tabs) for 1/2" round or 3/8" square shaft adapter (used with HLO-1006 or HLO-1008)	
HLO-1004	Set of 1 drive bushing (HLO-1006) and 1 collar (HLO-1016)	
HLO-1008	Drive pin, allows MCP-3631 to drive 1/2" diameter shaft via cross-hole drilled in shaft (used with HLO-1009 or HLO-1016)	
HLO-1009	Push-on shaft retainer, allows MCP-3631 to be mounted to 1/2" diameter shaft when using HLO-1008	
HLO-1011	Adapter for 3/8" shaft, allows MCP-3631 to be used on 3/8" damper shaft.	
HMO-1003	Replacement, non-rotation bracket (one furnished with each MCP-3631)	
HPO-0038	Replacement MCP-3631 diaphragm	

MCP-5160 Series
6" (Metal) Damper Actuator

The MCP-5160 is designed for large automatic air control dampers. It features a universal mounting bracket for mounting on dampers, butterfly valves and variable fan inlet vanes. **The metal body allows them to be used in ceiling plenums where local safety codes do not allow non-metallic actuators.**

The MCP-5160 has an 8 to 13 psi main spring for ample return power. Use in modulating or two-position applications with or without an adjustable start-point positive positioner.

The linkage is designed for angular adjustment for 60 to 120° of damper rotation at full stroke.

Item shown is model MCP-5160-9111.

Accessories and Repair Parts

CMC-1002	Metal positive positioner
HLO-1001	Replacement clevis for MCP-1160/5160 series
HLO-1002	Replacement crank arm assembly for MCP-1160/5160 series
HMO-1001	Replacement rear strap for rear swivel mounting of MCP-1160/5160 series
HMO-1002	Replacement floor flange for rear mounting of MCP-1160/5160 actuators
VTD-1500	Positioner feedback arm
VTD-2256	5 psi span spring for CMC-1002
VTD-2266	10 psi span spring for CMC-1002
VTD-5002	Entire front end linkage (6" x 6") for MCP-1160/5160
VTD-5003	Nut, bolt, and sleeve for rear of MCP-1160/5160
VTD-9426	Replacement actuator diaphragm

SEE ALSO: *MCP-0100/0200/0300/0400/0600 Series "Bare" Pneumatic Actuators on page 125*, *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: **The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.**

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Specifications

Effective Area	24.8 sq. in. (160 sq. cm)
Stroke	6" (152 mm)
Supply Pressure	0 to 20 psig (138 kPa) operating; 30 psig (207 kPa) maximum
Spring Range	8 to 13 psi (55 to 90 kPa)
Retracted/Extended Torque (Based on 0 & 20 psi applied)	576/504 in-lbs. (65/57 N•m) @ 90°
Supply Connection	1/8" (3 mm) FPT, supplied with brass compression fitting for 1/4" (6 mm) OD copper tubing
Material	
Body	Die-cast aluminum
Diaphragm	Neoprene
Piston	Glass-filled nylon
Shaft	CRS w/nickel plating
Damper Ratings at 1,000 fpm	
Gradual	75 sq. ft. (7 sq. m)
Two Position	90 sq. ft. (8.36 sq. m)
Temperature Limits	
Operating	–20 to 180° F (–29 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

NOTE: If application requires operation near maximum temperature AND maximum pressure, install a tubing restraint at the actuator connection.

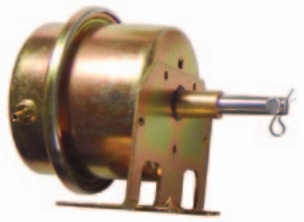
Models

	Mounting Bracket	Bracket Hardware Only	Crankarm Linkage	Clevis Linkage Only	Metal Positioner
MCP-5160-5020		●			
MCP-5160-5101	●				
MCP-5160-5102				●	
MCP-5160-5103		●			
MCP-5160-5111	●		●		
MCP-5160-5114	●			●	
MCP-5160-9020		●			●
MCP-5160-9101	●				●
MCP-5160-9102				●	●
MCP-5160-9103		●			●
MCP-5160-9111	●		●		●
MCP-5160-9114	●			●	●

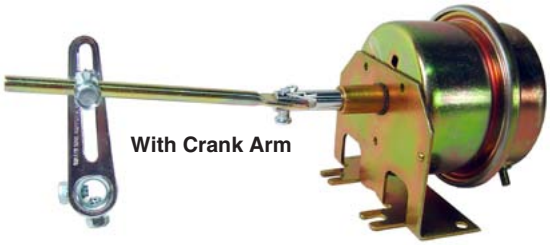
Actuator Assemblies for Butterfly Valves

MCP-5160-1020	6" x 6" no bracket w/ plastic positioner
MCP-5160-5020	6" x 6" no bracket w/ 8–13 psi spring
MCP-5160-5102	6" x 6" rear swivel w/ 8–13 psi spring
MCP-5160-5103	6" x 6" rear swivel w/ 8–13 psi spring
MCP-5160-5114	6" x 6" rear swivel w/ 8–13 psi spring
MCP-5160-9020	6" x 6", clevis, positioner
MCP-5160-9102	6" x 6" rear swivel w/ plastic positioner
MCP-5160-9103	6" x 6" rear swivel w/ plastic positioner
MCP-5160-9114	6" x 6" rear swivel w/ metal positioner

MCP-8031 Series
1-11/16" (Metal) Damper Actuators



With Clevis and Cotter Pins



With Crank Arm

This series of actuators is designed for use in Smoke Control Systems. At elevated temperatures up to 450° F, the actuators position automatic smoke dampers for up to 30 minutes (or indefinitely within normal operating temperatures). They are manufactured and tested to meet Underwriters Laboratories Standard UL555S for use on "*Leakage Rated Dampers For Use In Smoke Control Systems*."

The actuators may be used for gradual or two-position applications. Models come with right-angle bracket mounting. A variety of spring and linkage combinations are available.

Accessories and Repair Parts

HPO-0004	Retainer, bracket	
HPO-0005	Clevis pin	
HPO-0006	Cotter pin	
VTD-1611	Push rod	
VTD-1403	Short crank arm for 3/8" shafts	
VTD-1404	Short crank arm for 1/2" shafts	

SEE ALSO: **MCP-8031-3101s packaged in *KIT-1000 Series Pneumatic Repair Kits on page 136* in the *Compressed Air Accessories on page 134*.**

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Specifications

Effective Area	8 sq. in. (52 sq. cm)
Stroke	1-11/16 in. (43 mm)
Supply Connection	3/16" in. (5 mm) OD metal nipple
Supply Pressure	
Operating	0 to 20 psi (0 to 138 kPa)
Maximum	30 psi (207 kPa)

NOTE: If application requires operation near maximum temperature AND maximum pressure, install a tubing restraint at the actuator connection.

Temperature Limits	
Operating	–20 to 180° F (–29 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)
Materials	
Body	CRS w/ zinc and dichromate
Diaphragm	Neoprene
Bearing	Bronze/Delrin (plastic)
Shaft	CRS w/ nickel plating

Spring Ranges and Retracted/Extended Torque

(Based on 0 and 20 psi applied)

3–8 psi (21–55 kPa), 20/81 in-lbs. (2/9 N•m) @ 90°
4–8 psi (28–55 kPa), 27/81 in-lbs. (3/9 N•m) @ 90°
3–12 psi (21–83 kPa), 20/54 in-lbs. (2/6 N•m) @ 90°
5–10 psi (34–69 kPa), 34/67 in-lbs. (4/8 N•m) @ 90°
8–13 psi (55–90 kPa), 54/47 in-lbs. (6/5 N•m) @ 90°

Damper Rating @ 1,000 fpm (5.08 m/s)	
Gradual	8 sq. ft. (0.74 sq. m)
Two-Position	10 sq. ft. (0.93 sq. m)

Models

Bronze Bushing with Clevis and Cotter Pins

MCP-8031-2101	3 to 12 psi spring range
MCP-8031-3101	5 to 10 psi spring range
MCP-8031-5101	8 to 13 psi spring range
MCP-8031-8101	4 to 8 psi spring range

Bronze Bushing WITHOUT Clevis and Cotter Pins

MCP-8031-2100	3 to 12 psi spring range
MCP-8031-3100	5 to 10 psi spring range
MCP-8031-5100	8 to 13 psi spring range
MCP-8031-8100	4 to 8 psi spring range

Delrin (Plastic) Bushing WITHOUT Clevis and Cotter Pins

MCP-8031-2102	3 to 12 psi spring range
MCP-8031-3102	5 to 10 psi spring range
MCP-8031-5102	8 to 13 psi spring range
MCP-8031-8102	4 to 8 psi spring range

Delrin (Plastic) Bushing with Clevis and Cotter Pins but WITHOUT Mounting Bracket*

MCP-8031-3003	5 to 10 psi spring range

Bronze Bushing (w/ Special 1" Stroke) WITHOUT Clevis and Cotter Pins or Mounting Bracket*

MCP-8031-2099	3 to 8 psi spring range

Bronze Bushing w/ Crank Arm for 1/2" Damper Shaft

MCP-8031-2111	3 to 12 psi spring range
MCP-8031-3111	5 to 10 psi spring range
MCP-8031-5111	8 to 13 psi spring range
MCP-8031-8111	4 to 8 psi spring range

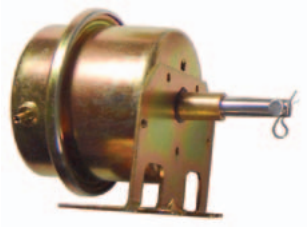
Bronze Bushing w/ Crank Arm for 3/8" Damper Shaft

MCP-8031-2112	3 to 12 psi spring range
MCP-8031-3112	5 to 10 psi spring range
MCP-8031-5112	8 to 13 psi spring range
MCP-8031-8112	4 to 8 psi spring range

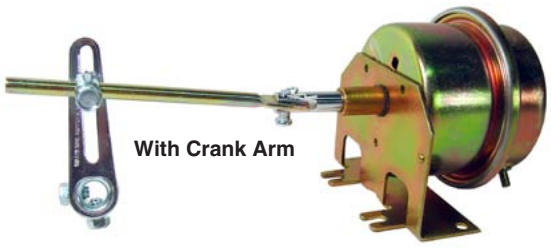
*NOTE: All models execpt -2099 and -3003 have a right-angle mounting bracket.

MCP-8035 Series

1-11/16" Smoke Damper Actuators



With Clevis and Cotter Pins



With Crank Arm

This series of actuators is designed for use in Smoke Control Systems. The metal-body actuators position automatic smoke dampers in ambient, or elevated temperatures up to 450°, for up to 30 minutes. The units may be used for gradual or two-position applications.

MCP-8035s are manufactured and tested to meet Underwriters Laboratories Standard UL 555S for use on "Leakage Rated Dampers For Use In Smoke Control Systems."

Models are available with either post or right angle bracket mounting. Right angle models are shipped with crank arms for either 1/2" or 3/8" damper shafts. A variety of spring and bracket/linkage combinations are available to meet most requirements.

Accessories and Repair Parts

HPO-0004	Retainer, bracket	
HPO-0005	Clevis pin	
HPO-0006	Cotter pin	
VTD-1611	Push rod	
VTD-1403	Short crank arm for 3/8" shafts	
VTD-1404	Short crank arm for 1/2" shafts	

SEE ALSO: *Actuator Accessories and Repair Parts on page 120*, *Compressed Air Accessories on page 134*, and *Actuator Sizing for Dampers Guide on page 176*.

SEE ALSO: The interactive *Product Selection Tools* for actuators in the Products section of the *KMC web site*.

Specifications

Effective Area	8 sq. in. (52 sq. cm)
Stroke	1-11/16 in. (43 mm)
Supply Connection	3/16" in. (4.8 mm) OD metal fitting
Supply Pressure	
Operating	0 to 20 psig (0 to 138 kPa)
Maximum	30 psig (207 kPa)

NOTE: If application requires operation near maximum temperature AND maximum pressure, the actuator should be piped in hard copper.

Temperature Limits

Shipping	–40 to 250° F (–40 to 121° C)
Operating	–20 to 250° F (–29 to 121° C)
Elevated	Up to 450° F (232° C) for up to 30 minutes exposure

Spring Ranges and Retracted/Extended Torque
(Based on 0 and 20 psi applied)

2: 3 to 12 psi; 20/54 in-lbs. (21–83 kPa; 2/6 N•m)
3: 5 to 10 psi; 34/67 in-lbs. (34–69 kPa; 4/8 N•m)
5: 8 to 13 psi; 54/47 in-lbs. (55–90 kPa; 6/5 N•m)
8: 4 to 8 psi; 27/81 in-lbs. (28–55 kPa; 3/9 N•m)

Materials

Body	CRS w/ zinc and dichromate
Diaphragm	Silicone
Piston	Glass-filled nylon
Bearing	Bronze
Shaft	CRS w/nickel plating
Approvals	UL Recognized for UL555S

Models

MCP-8035 *X YYY*

"X" Spring Ranges and Retracted/Extended Torque

(Based on 0 and 20 psi applied, at 90°)

2: 3–12 psi; 20/54 in-lbs.	(21–83 kPa; 2/6 N•m)
3: 5–10 psi; 34/67 in-lbs.	(34–69 kPa; 4/8 N•m)
5: 8–13 psi; 54/47 in-lbs.	(55–90 kPa; 6/5 N•m)
8: 4–8 psi; 27/81 in-lbs.	(28–55 kPa; 3/9 N•m)

"YYY" Linkage

101: with clevis pin and cotter pin (only)
111: with crank arm for 1/2" diameter shafts
112: with crank arm for 3/8" diameter shafts

NOTE: Using the table above choose the model appropriate for your application. Choose one number for "X" spring range and one for "YYY" linkage (e.g., MCP-80352101).

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Compressed Air Accessories

ICI-1005 Pressure Gauge

This 0–30 psi pressure gauge is designed for reliable, long term service under rugged conditions. It is intended for applications that are non-corrosive to brass. Applications include measuring pressures in pumps, compressors, hydraulic and pneumatic systems. It is stem mounted, with a 1/8" MPT connection on the ceter of the back, and a two inch dial face.

HFO-0xxx Series
Connectors, Restrictors, and Tubing Accessories

Gauge Connections

HFO-0001 Gauge L, holes accept #6 mounting screws, 1/8" FPT gauge port.

HFO-0008 Gauge L, holes accept #10 mounting screws, 1/8" FPT gauge port.

HFO-0012 Gauge T, holes accept #10 mounting screws, 1/8" FPT gauge port.

Restrictors

HFO-0010 Restrictor T, 14.4 scim (0.5 scfh), 3/16" nipples for 1/4" OD poly tubing, beige

HFO-0022 Restrictor T, 28.8 scim (1 scfh), 3/16" nipples for 1/4" OD poly tubing, gray

HFO-0025 In-line restrictor, 28.8 scim (1 scfh), 3/16" nipples for 1/4" OD poly tubing, gray

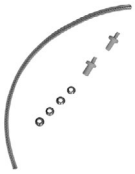
HFO-0029 In-line restrictor, 14.4 scim (0.5 scfh), 3/16" nipples for 1/4" OD poly tubing, beige

HFO-0023 Restrictor insert, converts standard 1/4" compression fitting to 28.8 scim (1 scfh) restrictor

Tubing and Miscellaneous

HFO-0024 Tube assembly, 8" long 3/32" ID tube w/ inside spring and 2 eyelets

HFO-0028 Tube assembly, 8" long 3/32" ID tube w/ inside spring, 4 eyelets, and two 1/4" adapters



HFO-0003 Terminal strip, 10 3/16" nipples for 1/4" OD poly tubing. All nipples are open to opposite side

HFO-0014 Rubber cap for KMC standard 1/8" ports and 5/32" brass barb fittings

HFO-0006 In-line control air filter, 25 microns, 3/16" nipples for 1/4" OD poly tubing

NOTE: For fittings, see **www.dynacononline.com**.

NOTE: In the place of a discontinued HFO-0108 fitting, use a standard 3/8" barb x 1/4" barb union adapter.

KIT-1000 Series
Pneumatic Repair Kits

To make pneumatic repairs and upgrades as easy as possible, we have bundled our popular devices and accessories into cost-effective, convenient repair kits for the most common applications. The kits are detailed below. (See also more detailed descriptions of individual products in their respective sections.)

Models

KIT-1001 Cooling Only

- "Universal" Reset Volume Controller (CSC-3011-10)
- Two-Pipe Room Thermostat, Direct Acting (CTC-1621), with Scale Plate Options
- Damper Actuator (5–10 psi spring range) with Metal Body (MCP-8031-3101)
- Thermostat Universal Upgrade Kit (HMO-5500)
- Tube Assemblies, 8-inch, with Eyelets and Adaptors (from HFO-0028)
- Screwdriver, Flat Blade and Hex Ends, with KMC Logo (SP-001)
- Product Installation Guides and Application Guide

KIT-1002 Fan Powered and Electric Reheat

- "Universal" Reset Volume Controller (CSC-3011-10)
- Two-Pipe Room Thermostat, Direct Acting (CTC-1621), with Scale Plate Options
- Damper Actuator (5–10 psi spring range) with Metal Body (MCP-8031-3101)
- (3) Pneumatic-Electric Relays, SPDT (CCE-1001)
- Thermostat Universal Upgrade Kit (HMO-5500)
- Tube Assemblies, 8-inch, with Eyelets and Adaptors (from HFO-0028)
- Screwdriver, Flat Blade and Hex Ends, with KMC Logo (SP-001)
- Product Installation Guides and Application Guide

KIT-1003 Fan Powered and Hot Water Reheat (up to 22,300 BTUs Capacity)

- "Universal" Reset Volume Controller (CSC-3011-10)
- Two-Pipe Room Thermostat, Direct Acting (CTC-1621), with Scale Plate Options
- Damper Actuator (5–10 psi spring range) with Metal Body (MCP-8031-3101)
- Modulating Reheat Control Valve, 1/2-inch, 2-Way, N.O., 1.0 Cv, 3–8 psi (VCZ-4102AMBD)
- Pneumatic-Electric Relay, SPDT (CCE-1001)
- Thermostat Universal Upgrade Kit (HMO-5500)
- Tube Assemblies, 8-inch, with Eyelets and Adaptors (from HFO-0028)
- Screwdriver, Flat Blade and Hex Ends, with KMC Logo (SP-001)
- Product Installation Guides and Application Guide

KIT-1004 Fan Powered and Hot Water Reheat (up to 55,800 BTUs Capacity)

- "Universal" Reset Volume Controller (CSC-3011-10)
- Two-Pipe Room Thermostat, Direct Acting (CTC-1621), with Scale Plate Options
- Damper Actuator (5–10 psi spring range) with Metal Body (MCP-8031-3101)
- Modulating Reheat Control Valve, 1/2-inch, 2-Way, N.O., 2.5 Cv, 3–8 psi (VCZ-4102BMBD)
- Pneumatic-Electric Relay, SPDT (CCE-1001)
- Thermostat Universal Upgrade Kit (HMO-5500)
- Tube Assemblies, 8-inch, with Eyelets and Adaptors (from HFO-0028)
- Screwdriver, Flat Blade and Hex Ends, with KMC Logo (SP-001)
- Product Installation Guides and Application Guide

KIT-1005 Differential Air Pressure Flow Sensors (1 each)

- 3 5/32 inches long (80 mm) sensor, 1 sensing point (SSS-1002)
- 5 13/32 inches long (137 mm) sensor, 2 sensing points (SSS-1003)
- 7 21/32 inches long (195 mm) sensor, 3 sensing points (SSS-1004)
- 9 29/32 inches long (252 mm) sensor, 4 sensing points (SSS-1005)
- Installation Guide

Controllers and Switches

CCC-1001
Receiver Controller, Single/Dual Input with Remote Setpoint Adjustment, Low Volume

RoHS COMPLIANT

The KMC CCC-1001 Receiver Controller is a pneumatic proportional controller designed for use with pneumatic transmitters, or 3 to 15 psi (21 to 103 kPa) pneumatic devices, to control valves, and actuators in HVAC systems.

The CCC-1001's single or dual inputs accept 3 to 15 psi (21 to 103 kPa) signals. Field selectable proportional band direct or reverse action, setpoints, and an optional remote setpoint adjustment add extra flexibility. The unit's authority is adjustable from 20 to 200% of the primary input signal.

The CCC-1001 is designed to control valves, and actuators in HVAC systems. It is also designed to work with pressure switches, receiver gauges, relays, and temperature transmitters. It is particularly suitable for "low limit" applications.

For "high volume" applications, with an output capacity of 200 scim (55 mL/s), use the CCC-1002 Receiver Controller.

SEE: *Competitor Cross-Reference on page 183* **for replacements of competitive products.**

Specifications

Pressure		
	Supply	20 psig (138 kPa)
	Maximum	30 psig all ports (207 kPa)
Air Consumption		43.2 scim maximum (11.8 mL/s)
Output Capacity		43.2 scim maximum (11.8 mL/s)
Setpoint		1.75 psi (12 kPa), rev. adjustable
Throttling Range		4% to 40% adjustable
Action		Direct or reverse
Authority		20% to 200% of primary input
Remote Setpoint Adjustment		±10% of primary input span, direct acting
Inputs		
	Port "1"	Primary signal 3 to 15 psig (21 to 103 kPa)
	Port "2"	Remote setpoint adjustment 3 to 15 psig
	Port "3"	Secondary signal 3 to 15 psig
Output		Port "B" branch
Connections		3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Material		
	Base	Flame retardant plastic
	Levers, Flexures	Stainless steel
	Diaphragms	Neoprene
	Finish	Beige with clear cover
Temperature Limits		
	Operating	40 to 120° F (4 to 49° C)
	Shipping	–40 to 140° F (–40 to 60° C)
Approvals		RoHS compliant

Accessories

HFO-0022 Restrictor T, 28.8 scim

NOTE: External restrictor HFO-0022 might be required if replacing a receiver/controller using internal restrictors. All transmitters used with the CCC-1001 require an external restrictor.

SEE ALSO: *Compressed Air Accessories on page 134*.

CCC-1002

Receiver Controller, Single/Dual Input with Remote Setpoint Adjustment, High Volume

RoHS COMPLIANT

This pneumatic, proportional control device is used with 3 to 15 psi pneumatic transmitters or sensors for controlling valves and actuators in HVAC systems. Proportional band action, authority, and setpoint are easily adjustable. Single or dual inputs can be used along with an optional remote setpoint adjustment.

The setpoint dial applies to port "1" and is marked from 3 to 15 psi. Adhesive dials (ordered separately) are available to match the ranges of KMC Controls pneumatic transmitters.

With the inputs and features included, it is particularly suitable for most control applications requiring a receiver controller. (For "low volume" applications, see the CCC-1001 Receiver Controller.)

The CCC-1002 is designed to work with pressure switches, receiver gauges, relays, and temperature transmitters. Its applications include controlling temperature, humidity, pressure or static pressure, and even flow used in air handlers, boilers, hot water and steam convertors that require single setpoint, reset control, or even remote setpoint. It can be used for setpoint reset in applications such as AHU discharge or mixed air temperature control, boiler water reset control, and steam to water converter (heat exchanger) control.

The CCC-1002 can replace many competitor single/dual-input receiver/controllers such as:

- Barber-Colman (Schneider Electric) RKS-1001/2001/3002/4002
- Honeywell RP908A/RP908B/RP920A/RP920B
- Johnson T-9000 and T-5801/5802
- Robertshaw (Schneider Electric) P341 and 2341
- Siemens 185 and 195 series

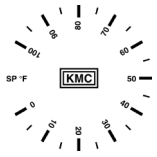
Specifications

Supply Pressure	20 psig (138 kPa), 30 ps max. (207 kPa)
Air Consumption	43.2 scim maximum (11.8 mL/s)
Output Capacity	200 scim (55 mL/s)
Setpoint	1.75 psi (12 kPa), rev. adjustable
Throttling Range	4% to 40%
Action	Direct or reverse
Authority	20% to 200% of primary signal input
Remote Setpoint Adjustment	±10% of primary input span, DA
Inputs	
Port "1"	Primary signal 3 to 15 psi (21 to 103 kPa)
Port "2"	Remote setpoint adjustment 3 to 15 psi
Port "3"	Secondary signal 3 to 15 psi
Output	Port "B" branch
Connections	3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Material	
Base	Flame retardant plastic
Levers, flexures	Stainless steel
Diaphragms	Neoprene
Finish	Beige with clear cover
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Accessories

Adhesive Dials (for the CCC-1002 only)

HDO-2333	0 to 100° F (shown)
HDO-2336	40 to 240° F



External Restrictor

HFO-0022	Restrictor T, 28.8 scim (1 scfh)

NOTE: External restrictor HFO-0022 might be required if replacing a receiver/controller using internal restrictors. All transmitters used with the CCC-1002 require an external restrictor.

CSC-1001

Constant Volume Controller

RoHS COMPLIANT

The CSC-1001 is designed for use on constant volume boxes in HVAC systems. The CSC-1001 has two low volume output connections allowing it to be used in two different modes of operation:

- A constant volume controller without override capability from the thermostat.
- A high limit controller that assumes control of a VAV terminal if the thermostat calls for too much flow.

Specifications

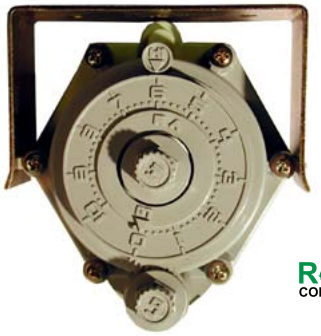
Setpoint Range	0 to 1" wc (249 kPa)
Proportional Band	0.04" wc (10 Pa)
Supply Pressure	20 psig (138 kPa) operating; 30 psig (207 kPa) maximum
Air Consumption	14.4 scim (3.93 mL/s) @ 20 psig
Action	For NO dampers only; requires D.A.thermostat for heating, R.A. for cooling
Material	ABS
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Accessories

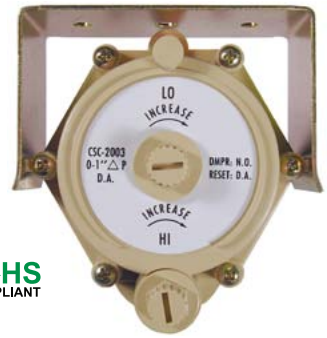
HFO-0006	In-line control air filter, 25 microns
SSS-1000 Series	Differential pressure flow sensors

SEE ALSO: *Compressed Air Accessories on page 134*.

CSC-2000 Series
Reset Volume Controllers



With 0–10 Molded Plastic Dial
(Mount with Face Up Only)



Without Molded Dial

RoHS COMPLIANT

The pneumatic CSC-2000 series are designed for use on VAV terminal units in HVAC systems. These are differential-pressure, sub-master controllers with adjustable minimum and maximum airflow settings. A master controller, typically a room thermostat, resets the CSC velocity setpoint.

Direct acting models are for normally open VAV terminal units. Reverse acting are for normal closed VAV terminal units.

Each is equipped with separate adjustment knobs for minimum and maximum airflow settings. All models should be calibrated with the use of airflow measuring equipment.

Specifications

Output Sensitivity	
0–1" Range Units	5 psig/.02" wc (35 kPA/5 Pa)
0–2" Range Units	5 psig/.04" wc (35 kPA/10 Pa)
Main Pressure Air	15 to 30 psig (103 to 207 kPa)
Maximum Signal Pressure	6" wc (1493 Pa) applied to either port (X or Y)
Material	Flame-retardant ABS (beige or gray)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

NOTE: See also the CSC-2000 Series Pneumatic VAV Reset Volume Controllers Applications Guide for operation principles, calibration/troubleshooting procedures, and sample applications. It is available for download from the CSC-2000 page on the KMC Controls web site.

NOTE: The CSC-2007/2017/2008/2018 models with 14.4 scim air consumption are primarily for replacing Trane, Carnes, and other controllers with small restrictors.

Accessories

HFO-0006	In-line control air filter, 25 microns
HMO-4505	Mounting bracket replacement
SSS-1000	Differential pressure flow sensors

SEE: *Competitor Cross-Reference on page 183* **for replacements of competitive products.**

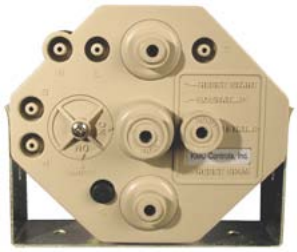
Models — Direct Acting (Beige Controllers) for Normally Open Dampers

Model	Thermostat Required		Setpoint Range		Reset Pressure Band	Air Consumption	0–10 Molded Plastic Dial
	For Cooling	For Heating	Minimum	Maximum			
CSC-2001	Direct Acting	Reverse Acting	0 to 1.0" wc (249 Pa)	Min. plus 1.0" wc (249 Pa)	8 ±0.5 to 13 psig (55 ±3.5 to 90 kPa)	14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)	Yes
CSC-2003						14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)	No molded plastic dial—has paper label instead
CSC-2007						11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)	
CSC-2009			0 to 2.0" wc (498 Pa)	Min. plus 2.0" wc (498 Pa)		14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)	
CSC-2017						11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)	

Reverse Acting (Gray Controllers) for Normally Closed Dampers

Model	Thermostat Required		Setpoint Range		Reset Pressure Band	Air Consumption	0–10 Molded Plastic Dial
	For Cooling	For Heating	Minimum	Maximum			
CSC-2002	Reverse Acting	Direct Acting	0 to Max.	0 to 1.0" wc (249 Pa)	3 ±0.5 to 8 psig (21 ±3.5 to 55 kPa)	14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)	Yes
CSC-2004						14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)	No molded plastic dial—has paper label instead
CSC-2008						11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)	
CSC-2010			0 to Max.	0 to 2.0" wc (498 Pa)		14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)	
CSC-2018						11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)	

CSC-3000 Series
Reset Volume Controllers



(For the CSC-3501/3505 see the next page)

RoHS COMPLIANT

These "universal" reset volume controllers are designed for use on heating or cooling systems with normally open or normally closed VAV terminal units. They are differential-pressure, sub-master air velocity controllers. Each is equipped with separate adjustment knobs for minimum and maximum airflow setpoints. Models are available with various reset start points. A master controller, typically a room thermostat, resets the CSC between the minimum and maximum velocity setpoints.

Their universal design is intended for new or replacement applications that call for direct or reverse acting reset on normally open or normally closed VAV terminal units, using direct or reverse acting thermostats. They can replace many other pressure independent controllers—see the ***Pneumatic and Electronic Cross-Reference*** in the ***Reference*** section.

Models (*CSC-3017-16 is identical to the CSC-3011-10, but it does not come with a mounting bracket or the KMC logo)

Model #	Reset Start Point Factory Set (all field-adjustable 0–10 psig)	Differential Pressure	Min. Setpoint	Max. Setpoint	Output Sensitivity	Air Consumption
CSC-3011-10 CSC-3017-16*	8 psig (55 kPa)	0 to 1.0" wc (249 Pa)	0 to 1.0" wc (249 Pa)	Min. to 1.0" wc (249 Pa)	5 psi/0.02" wc (35 kPa/5 Pa)	28.8 scim @ 20 psig (7.87 mL/s @ 138 kPa)
CSC-3021-10	3 psig (21 kPa)					
CSC-3023-10	10 psig (69 kPa)					
CSC-3026-10	3 psig (21 kPa)	0 to 2.0" wc (498 Pa)	0 to 2.0" wc (498 Pa)	Min. to 2.0" wc (498 Pa)	5 psi/0.04" wc (35 kPa/10 Pa)	
CSC-3016-10	8 psig (55 kPa)					
CSC-3025-10						46.1 scim @ 20 psig (12.59 mL/s @ 138 kPa)

Specifications

Damper Action	Factory set @ NO, field adjustable for NC or NO
Thermostat Action	Direct or reverse action for heating or cooling
Main Air Pressure	15 to 30 psig (103 to 207 kPa)
Maximum Signal Pressure	6" wc (1493 Pa) applied to either port (H or L)
Reset Span	Factory set @ 5 psig (35 kPa)
Material	Flame-retardant plastic
Weight	11 oz. (312 grams)
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

NOTE: See also the CSC-3000 Series Pneumatic VAV Reset Volume Controllers Applications Guide for operation principles, calibration/troubleshooting procedures, and sample applications. It is available for download from the CSC-3000 page on the KMC Controls web site.

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Accessories and Repair Parts

HFO-0006	In-line control air filter, 25 microns, 3/16" nipples for 1/4" OD poly tubing
HFO-0014	G port rubber cap replacement
HMO-4508	Mounting bracket replacement
ICI-1005	Pressure gauge
SSS-1002	One sensing point; 3-5/32" (80 mm) length
SSS-1003	Two sensing points; 5-13/32" (137 mm) length
SSS-1004	Three sensing points; 7-21/32" (195 mm) length
SSS-1005	Four sensing points; 9-29/32" (252 mm) length

SEE ALSO: ***Compressed Air Accessories on page 134*.**

SEE ALSO: These controllers packaged in *KIT-1000 Series Pneumatic Repair Kits on page 136*.

SEE: *Competitor Cross-Reference on page 183* for replacements of competitive products.

CSC-3501/3505/3525 Linear Reset Volume Controllers Cross-Reference

NOTE: These have no direct replacement. If the linear feature is not required, see the nearest equivalent in the CSC-3000 series.

Relays, Logic

HMO-4500 Series
Accessories For Pneumatic Logic Relays

Models	
HMO-4507	Replacement bracket and retaining ring for any RCC-1500 series relay
HMO-4511	Replacement bracket for any RCC-1000 series relay

SEE ALSO: *Compressed Air Accessories on page 134*.

RCC-1000/1100 Series
Pneumatic Relays

RoHS COMPLIANT

RCC-1001/1012/1101/1112 Reversing Relays (pilot capacity) are designed for reversing a proportional signal from a controlling device. Factory adjusted to decrease branch line pressure as the input pressure increases. Comes with a bias adjustment and two factory calibration points (8 and 9 psi).

RCC-1006/1106 Low Pressure Selector Relays are designed to control a final device based on the lower of two pneumatic input signals.

RCC-1008/1108 High Pressure Selector Relays are designed to select the greater of two pneumatic signals as the control signal for a final device. These signals must be supplied by "relieving" type devices such as thermostats and receiver-controllers.

RCC-1009/1109 Adjustable Diverting/Switching Relays are SPDT devices. They divert one signal to either of two branch circuits or select one of two inputs and transmit it to another control device. They can also be used to feed or exhaust a circuit.

RCC-1013 Signal Repeating Relay amplifies a pressure signal. It is most typically used for Trane VAV boxes with CSC-2000 series reset volume controllers.

RCC-1102 Averaging Relay is designed for applications that do not require large amounts of output air volume. Suitable for room or zone applications such as VAV terminals. Use where the output signal to the controlled device must be the average of two source signals.

SEE: *Competitor Cross-Reference on page 183* **for replacements of competitive products.**

Specifications

Supply Air Pressure	0–20 psi (138 kPa) operating 30 psi (207 kPa) maximum
Air Capacity	
RCC-1001/1012/1101/1112	17.3 scim (4.7 mL/s) @ 20 psi (138 kPa)
RCC-1009/1109	432 scim (117.9 mL/s) @ 20 psi (138 kPa)
RCC-1008/1018	260 scim (70.6 mL/s) @ 5 psi (34.5 kPa) pressure drop
Setpoint Range	
RCC-1009/1109	3 to 23 psig (21 to 159 kPa)
Air Consumption	
RCC-1001/1012/ 1101/1112	17.3 scim (4.7 mL/s)
RCC-1006/1106	0–21.6 scim (5.9 mL/s) on Port S2
RCC-1008/1108/1009/1109	None
RCC-1013	14.4 scim (3.9 mL/s)
RCC-1102	17.3 scim (4.7 mL/s) on Main, 0 on Signal
Bias Adjustment	
RCC-1001/1012/1101/1112	±15 psi (103 kPa)
RCC-1009/1109	
Factory Setpoint	18–23 psi (124–159 kPa)
Setpoint Range	3–23 psi (21–159 kPa)
Switching Differential	5 psi (34 kPa)
Action	C and NO connected below setpoint, C and NC connected above setpoint
Connections	3/16" (5 mm) fittings for 1/4" (6 mm) OD polyethylene tubing
Material	RCC-1009/1109 are glass-filled nylon, all other models are beige flame-retardant plastic
Temperature Limits	Operating 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

Without Mounting Bracket	
RCC-1001	Reversing, 9 psi calibration
RCC-1006	Low pressure selector
RCC-1008	High pressure selector
RCC-1009	Diverting/switching, SPDT
RCC-1012	Reversing, 8 psi calibration
RCC-1013	Signal repeating
Includes Mounting Bracket	
RCC-1101	Reversing, 9 psi calibration
RCC-1102	Averaging
RCC-1106	Low pressure selector
RCC-1108	High pressure selector
RCC-1109	Diverting/switching, SPDT
RCC-1112	Reversing, 8 psi calibration

Accessories

HMO-4511	Replacement mounting bracket

RCC-1010
Adjustable Ratio Relay

RoHS COMPLIANT

The RCC-1010 is an adjustable ratio relay designed for sequencing pneumatic control components in HVAC systems. It can reduce the rate at which a pneumatic device responds to a control signal. This ratio may be adjusted on a percentage basis from zero on up to 1 to 1. This feature can be used to reduce instability of a final control device by effectively increasing the proportional band of the circuit.

The output of the device can be biased in a positive direction to increase the output of the relay. This allows the ratio operation to begin at a specific pressure, such as the start point of a pneumatic actuator.

Specifications

Maximum Pressure	30 psig (207 kPa)
Air Consumption	14.4 scim (3.93 mL/s)
Ratio Range	0 to 1
Supply Air	20 psig ±5 psi (138 kPa ±34 kPa)
Bias Adjustment	0 to 8 psi (55 kPa)
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

RCC-1111
Six Input, High and Low Pressure Selector Relay

RoHS COMPLIANT

The RCC-1111 multiple input selector relays are designed for selection of the lowest and/or highest of six different pneumatic inputs. They are restricted devices designed for pilot-duty operation. If a large output volume is required, a volume booster relay should be used. For applications requiring a "low" output, the integral selector valve must be set for the correct number of inputs. If a "high" output is required, this dial does not need be set. The RCC-1111 can be mounted with a supplied right angle bracket.

Specifications

Air Consumption	28.8 scim (7.85 mL/s)
Supply Pressure	
Operating	20 psig (138 kPa)
Maximum	30 psig (207 kPa)
Connections	3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Material	Flame retardant plastic
Temperature Limits	Operating: 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

SEE ALSO: *Compressed Air Accessories on page 134*.

SEE: *Competitor Cross-Reference on page 183* **for replacements of competitive products.**

RCC-1501/1502/1503/1504
Reversing Relays, Adjustable

RoHS COMPLIANT

These main valve capacity reversing relays are designed for reversing a proportional signal from a controlling device. They're factory adjusted to decrease the branch line pressure as the input pressure increases. A bias adjustment is provided to retard or advance the output if required. Use where the desired output signal to the controlled device is to be the reverse of the source signal. Their small size and light weight make them suitable for in-line mounting.

Accessories

HMO-4507	(Replacement) bracket and retaining ring for any RCC-1500 series relay

SEE: *Competitor Cross-Reference on page 183* **for replacements of competitive products.**

Specifications

Maximum Pressure	30 psig (207 kPa)
Connections	3/16" (5 mm) (6 mm) OD polyethylene tubing
Air Consumption	14.4 scim (3.93 mL/s)
Air Capacity	1728 scim (473 mL/s) @ 20 psig (138 kPa)
Material	Flame-retardant plastic
Weight	
RCC-1501/1502	2-1/4 oz. (64 grams)
RCC-1503/1504	3-1/2 oz. (99 grams)
Mounting	
RCC-1501/1503	In-line via air connections
RCC-1502/1504	With mounting bracket
Factory Settings	8 psig in/ 8 psig out (RCC-1501, 1502) 9 psig in/ 9 psig out (RCC-1503, 1504)
Bias Adjustment	±15 psi (103 kPa)
Temperature Limits	Operating 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

RCC-1501	8# calibration; no bracket
RCC-1502	8# calibration; with HMO-4507 bracket
RCC-1503	9# calibration; no bracket
RCC-1504	9# calibration; with HMO-4507 bracket

RCC-1505/1506/1507/1508
Addition and Subtraction Relays

RoHS COMPLIANT

These main valve capacity relays are designed for use in pneumatic control circuits. RCC-1505/1506 are addition relays for adding 2 signals up to 30 psig (207 kPa). They are intended for use in systems where the output signal to the controlled device is to be the sum of the 2 different source signals.

RCC-1507/1508 are subtraction relays for subtracting one signal from another up to 30 psig (207 kPa). They are intended for use where the desired output signal to the controlled device is to be the difference of the 2 source signals.

A bias adjustment is provided to retard or advance the output if necessary for all models. Their small size and light weight make them suitable for in-line mounting and may be in any position.

Specifications

Maximum Pressure	30 psig (207 kPa)
Connections	3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Air Consumption	14.4 scim (3.9 mL/s)
Air Capacity	1728 scim (472 mL/s) @ 20 psig (138 kPa)
Material	Flame retardant plastic
Factory Settings	
RCC-1505/1506	Port 1 = Port 2 + Port 3 (will not exceed the main air pressure
RCC-1507/1508	Port 1 = Port 2 – Port 3
Bias Adjustment	±15 psi (103 kPa)
Temperature Limits	Operating 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

RCC-1505	Addition; no bracket
RCC-1506	Addition; with HMO-4507 bracket
RCC-1507	Subtraction; no bracket
RCC-1508	Subtraction; with HMO-4507 bracket

Accessories

HMO-4507	(Replacement) bracket and retaining ring for any RCC-1500 series relay

SEE ALSO: *Compressed Air Accessories on page 134*.

RCC-1509/1510/1515/1516
Booster Relays

RoHS COMPLIANT

These relays are proportional main valve capacity booster devices. They are designed for pneumatic control circuits when amplifying the volume of control air in the circuit is necessary. System transmission lag is minimized when used in conjunction with a proportional controller operating several diaphragm valves or actuators. Two models are available with a bias adjustment to offset the output if required.

Accessories

HMO-4507	(Replacement) bracket and retaining ring for any RCC-1500 series relay

Specifications

Maximum Pressure	30 psig (207 kPa)
Connections	3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Air Consumption	14.4 scim (3.93 mL/s)
Air Capacity	1728 scim (473.43 mL/s) @ 20 psig (138 kPa)
Material	Flame retardant plastic
Factory Settings	Zero bias
Bias Adjustment	±15 psi (103 kPa)
Temperature Limits	Operating 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

RCC-1509	Booster w/o bias; no bracket
RCC-1510	Booster w/o bias; w/ HMO-4507 bracket
RCC-1515	Booster with bias; no bracket
RCC-1516	Booster with bias; with bracket

SEE ALSO: The *Compressed Air Accessories* section.

RCC-1511/1512
2 to 1 Ratio Relays

RoHS COMPLIANT

These main valve capacity ratio relays are designed to provide an output signal in proportion to the input. Each 1 psi change to the input yields a 2 psi change to the output. They are used in pneumatic control circuits when the final control device must be controlled by a signal that is proportionally different from the source signal.

A bias adjustment is provided and is factory set for 9 psi out with 9 psi in. The size and light weight make them suitable for in-line mounting and can be in any position.

Specifications

Maximum Pressure	30 psig (207 kPa)
Connections	3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Air Consumption	14.4 scim (3.93 mL/s)
Air Capacity	1728 scim (472 mL/s) @ 20 psig (138 kPa)
Factory Settings	9 psig in (62 kPa), 9 psig out
Bias Adjustment	±7.5 psi (52 kPa); but output cannot exceed the main air pressure.
Material	Flame retardant plastic
Temperature Limits	Operating 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

RCC-1511	In-line, without bracket
RCC-1512	With HMO-4507 mounting bracket

Accessories

HMO-4507	(Replacement) bracket and retaining ring for any RCC-1500 series relay

RCC-1513/1514
Averaging Relays

RoHS COMPLIANT

These main valve capacity averaging relays are proportional devices designed to average two signals in pneumatic control circuits. They are used where the desired output signal to the controlled device is to be the average of two different source signals. The air output volume is also amplified thereby minimizing system lag.

Their size and light weight make them suitable for in-line mounting and can be in any position.

SEE ALSO: *Compressed Air Accessories on page 134*.

Specifications

Maximum Pressure	30 psig (207 kPa)
Connections	3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Air Consumption	14.4 scim (3.93 mL/s)
Air Capacity	1728 scim (472 mL/s) @ 20 psig (138 kPa)
Factory Setting	Proportional, with main air pressure applied, branch output is the average of the 2 inputs but cannot exceed the main air pressure
Material	Flame retardant plastic
Temperature Limits	Operating 40 to 120° F (4 to 49° C) Shipping –40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

RCC-1513	In-line, w/o mounting bracket
RCC-1514	With mounting bracket

Accessories

HMO-4507	(Replacement) bracket and retaining ring for any RCC-1500 series relay

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Relays, P-E

SEE ALSO: *Controllers and Switches on page 138*, *Compressed Air Accessories on page 134*, and *XEC-3001/3002/3004 E/I-P Transducer on page 100*.

CCE-1001/1002
Pneumatic-Electric Relays

These pneumatic-electric relays are designed for use in HVAC system control circuits. They are ideal for applications such as starting fan coil unit fans, exhaust fans, and direct control of electric duct heaters.

The CCE-1001 is a single-pole, double-throw unit. The CCE-1002 is a double-pole, double-throw unit.

The CCE-1001/1002 have a case and cover to conceal the switching mechanism. Wiring is accessed through two 1/2" conduit openings.

Models

CCE-1001	SPDT with case and cover
CCE-1002	DPDT with case and cover

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

Specifications

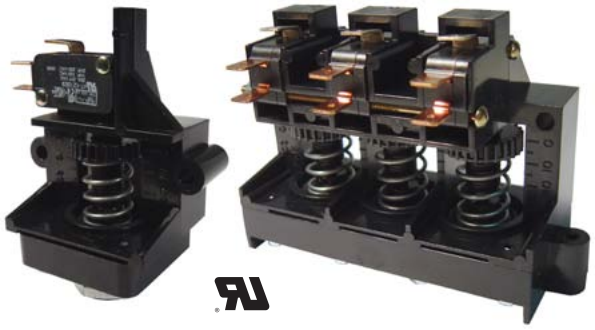
Setpoint Range	2 to 25 psi (14 to 172 kPa)
Differential	2 psi fixed (14 kPa)
Pressure	30 psi maximum (207 kPa)
Switching Action	
CCE-1001	SPDT
CCE-1002	DPDT
Connections	
Air	3/16" (5 mm) nipples for 1/4" (6 mm) O.D. polyethylene tubing
Electrical	8-32 UNC binding head combination terminal screw and cup washer
Electrical Rating	20 A non-inductive @ 120/240/480 VAC; 1 hp @ 120 VAC; 2 hp @ 240 VAC
Approvals	UL Listed
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)

Accessories and Repair Parts

HPO-0009	Replacement diaphragm

SEE ALSO: CCE-1001s packaged in *KIT-1000 Series Pneumatic Repair Kits on page 136*.

CCE-3000 Series
Single/Multi-Stage P-E Relays



The KMC CCE-3001 is a single-stage pneumatic-electric relay designed for applications where a single pneumatic signal requires one predetermined air pressure setting to actuate an electric switch.

The CCE-3002 is a two-stage pneumatic-electric relay, and the CCE-3003 is a three-stage pneumatic-electric relay. These relays are designed for applications where a single pneumatic air signal requires two or three predetermined air pressure settings, each actuating its own electric switch.

These relays are UL recognized. Their electrical ratings make them ideal for applications such as starting fan induction terminals or controlling one, two, or three stages of electric heating or refrigeration.

Specifications

Setpoint Range	2 to 20 psig (14 to 138 kPa)
Differential	Fixed differential, 1 to 2 psi nominal (7 to 14 kPa)
Pressure Max.	30 psig maximum (207 kPa)
Connections	
Air	3/16" (5 mm) nipples for 1/4" (6 mm) OD polyethylene tubing
Electrical	1/4" quick-connect terminals
Switching Action	SPDT on each stage
Electrical Ratings	25 amps each switch (non-inductive) 120/240/277 VAC, 1 hp @ 125 VAC, 2 hp @ 250 VAC, 750 VA pilot duty
Material	
Housing	Black polycarbonate
Diaphragm	Silicone
Temperature Limits	
Operating	40 to 150° F (4 to 60° C)
Shipping	–40 to 150° F (–40 to 60° C)
Approvals	UL Recognized

Models

CCE-3001	One stage
CCE-3002	Two stage
CCE-3003	Three stage

SEE: *Competitor Cross-Reference on page 183* **for replacements of competitive products.**

Sensors and Thermostats

CTC-1000/1500 Series (Discontinued) ONLY Accessories

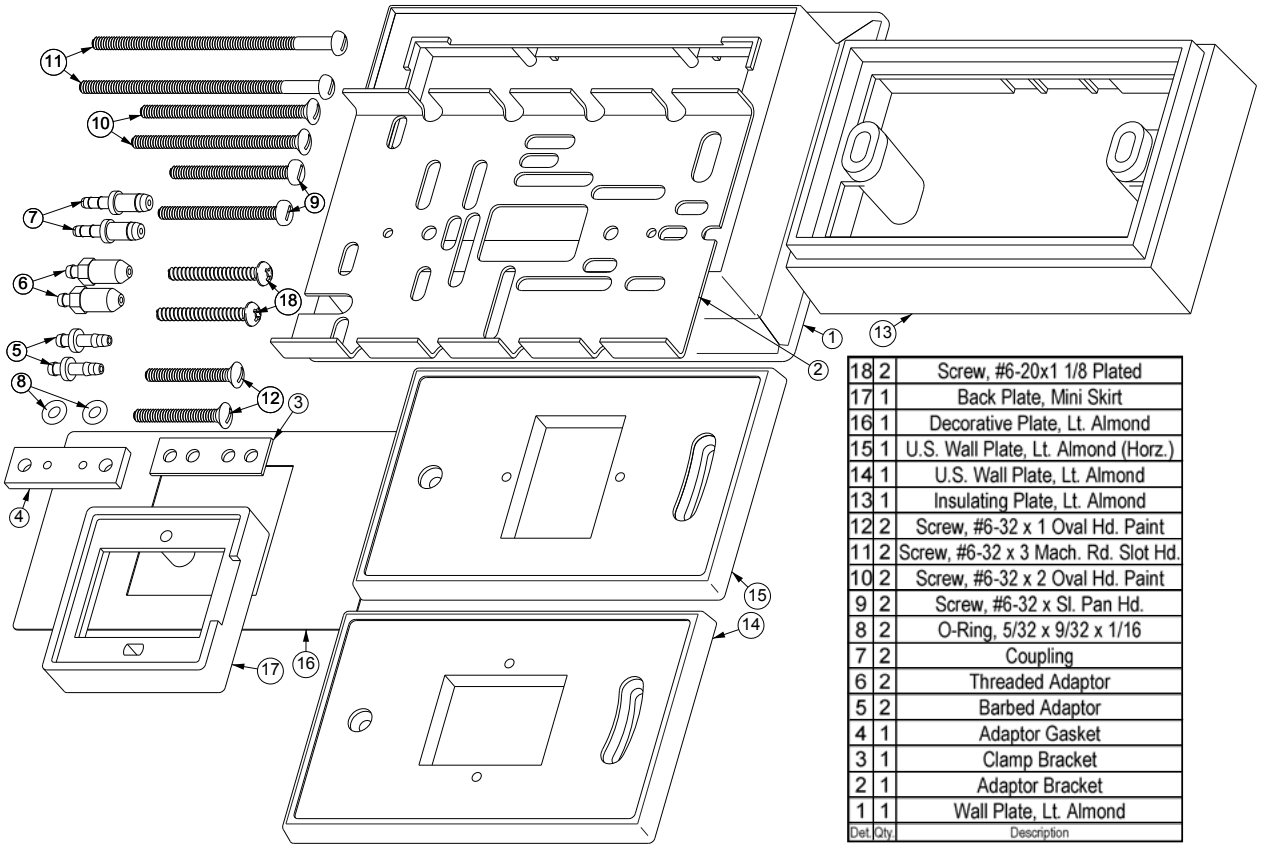
HFO-0026 Blank cover insert "blanks" out window in large thermostats cover, light almond

HMO-5002 Backplate insulators/ extenders, 1-1/8" deep, light almond

HMO-5022 Mounting trim plate, light almond

HMO-5007 Backplate insulators/ extenders, 1-11/16" deep, light almond

HMO-5500 Thermostat universal upgrade kit, for replacing other thermostat brands with KMC, light almond (includes: plates, brackets, screws, O-rings, couplings, and adapters)



Det.	Qty.	Description
18	2	Screw, #6-20x1 1/8 Plated
17	1	Back Plate, Mini Skirt
16	1	Decorative Plate, Lt. Almond
15	1	U.S. Wall Plate, Lt. Almond (Horz.)
14	1	U.S. Wall Plate, Lt. Almond
13	1	Insulating Plate, Lt. Almond
12	2	Screw, #6-32 x 1 Oval Hd. Paint
11	2	Screw, #6-32 x 3 Mach. Rd. Slot Hd.
10	2	Screw, #6-32 x 2 Oval Hd. Paint
9	2	Screw, #6-32 x Sl. Pan Hd.
8	2	O-Ring, 5/32 x 9/32 x 1/16
7	2	Coupling
6	2	Threaded Adaptor
5	2	Barbed Adaptor
4	1	Adaptor Gasket
3	1	Clamp Bracket
2	1	Adaptor Bracket
1	1	Wall Plate, Lt. Almond

CTC-1600 Series ONLY Accessories

Covers

Thermostat covers, blank:

HPO-1501	Light almond, ABS plastic
HPO-1502	White, ABS plastic
HPO-1503	Brushed aluminum

Thermostat covers, full window:

HPO-1511	Light almond ABS plastic
HPO-1512	White ABS plastic
HPO-1513	Brushed aluminum
HPO-1514	White metal
HPO-1516	Light almond metal

HPO-0044	Replacement thermostat cover screws (2 furnished with each thermostat)

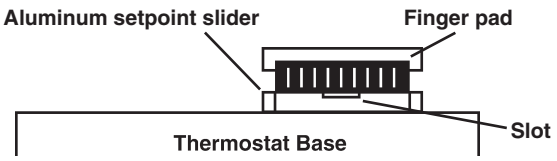
HPO-0051	Replacement cover window for thermostat (1 furnished with each cover)

HPO-1320	Label strip, 3 labels per strip (for day/ night, summer/winter or heating/cooling indication), 1 furnished with each cover

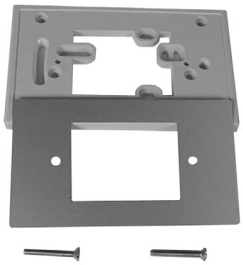
NOTE: To install the cover over the base, be sure scale plate and other accessories are in place and slide cover over base. Locate both setscrews through sides and with a 1/16" hex wrench, turn screws outward (CCW) until cover is held firmly in place. To remove cover, turn screws inward (CW) to provide clearance for lifting off.

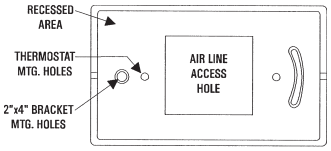
NOTE: To install the symbol-coded label strip, remove the window by removing the cover, applying finger pressure on the underside center of window, flexing the window outward, and releasing the tab from either side. Peel-off and stick desired label into indented area, making sure symbols are on correct sides. Snap window back into place.

NOTE: When using a blank cover the finger pads on the setpoint slider(s) should be removed. Carefully hold the setpoint slider in place by pressing the slider against the thermostat base. Insert a 1/8" flat-blade screwdriver into the slot on the metal setpoint slider and finger pad. The finger pad should pop off with a slight twisting of the screwdriver.



Backplates and Scale Plate Pins





Backplate kit (allows thermostat to be mounted to 2 x 4" handy box (or adapts to Barber-Colman, Johnson Controls, L&G-P, or Robertshaw/Invensys mounting plates) includes two #6-32 screws and decorative matching 2.75 x 4.5" plate):

HMO-5024	Light almond with aluminum trim
HMO-5026	White with aluminum trim
HMO-5030	Light almond
HMO-5031	White

HPO-0046	Replacement pins to hold scale plates onto thermostats (2 furnished w/ each scale plate)

CTC-1000/1500/1600 Series Accessories

Connections and Tools

HFO-0010 Restrictor T, 14.4 scim (0.5 scfh), 3/16" nipples for 1/4" OD poly tubing, beige

HFO-0014 Rubber cap for KMC standard 1/8" ports and 5/32" brass barb fittings

HFO-0024 Tube assembly, 8" long 3/32" ID tube with spring and 2 eyelets.

HFO-0028 Tube assembly, 8" long 3/32" ID tube with spring, 4 eyelets, and two 1/4" adapters.

These 0 to 30 psi pressure gauges have two-inch dials and are useful for calibration.

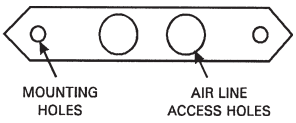
ICI-1005 Pressure Gauge, 1/8" MPT center back

ICI-1007 Pressure Gauge, 1/4" MPT center back

Screwdriver with small flat blade end, 1/16" hex end, and pocket clip, useful for removing covers and calibration.

SP-001 Screwdriver, flat blade and hex ends, KMC logo

Mounting Hardware

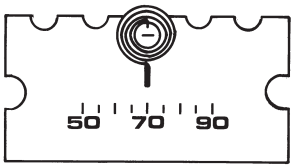


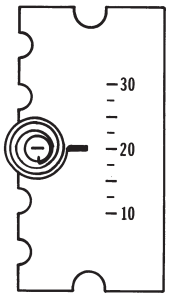
HMO-5023 Mounting strap for mounting on hollow walls, includes two #6-32 x 2" screws and "template" printed on envelope

NOTE: To mount a thermostat to a hollow wall up to 5/8" thick with the HMO-5023 bracket, use the template for a precise 1-1/2" x 2-11/16" wall cutout. Loosely mount thermostat (cover removed) to the bracket with 6-32 x 2" screws. Connect air lines as described on the thermostat installation guide. Insert the bracket through the wall cutout diagonally, center, and tighten screws. The HMO-5001 is for the same function and may be easier to use.

HMO-5001 Dual toggle bolt, allows mounting of large thermostats to drywall

Scale Plates





Thermostat **scale plates** (includes 2 each HPO-0046 scale plate pins):

HPO-0047-10 ° F, horizontal

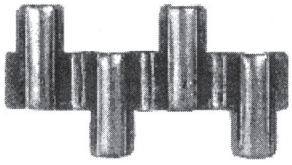
HPO-0048-10 ° F, vertical

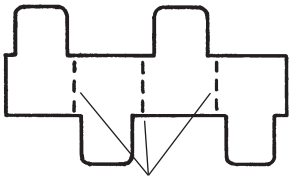
HPO-0049-11 ° C, horizontal

HPO-0050-11 ° C, vertical

NOTE: To install, remove gauge tap cap(s) on thermostat. Slide the plate under the setpoint slider indicator(s) and align, using gauge taps as reference. Insert retaining pins into the holes directly above (or left for vertical) the gauge taps and twist to lock in place. Replace gauge tap caps and install cover. If no temperature indication is desired, turn the thermometer out of view before installing cover.

Setpoint Stops





Setpoints can be locked or limited using these break-apart stops. Set includes four. Stops are inaccessible and hidden when cover is installed.

HFO-0027 Setpoint stop strip with 4 "stops" per strip

NOTE: To install, using pliers, gently grip both sides of a seam and fold to break apart each stop. Insert a stop into the slider track on one or both sides of slider.

SEE ALSO: *Compressed Air Accessories on page 134*.

SEE ALSO: **CTC-1621s and accessories packaged in** *KIT-1000 Series Pneumatic Repair Kits on page 136*.

CTC-1000/CTC-1500 Series Cross-Reference to CTC-1600 Series

CTC-1000/1500 Series Cross-Reference			
Discontinued Model	**Description**	**Equivalent Model***	**Description**
CTC-1001-10	T'STAT;SINGLE DA	CTC-1611	T'STAT; 1-PIPE D.A.
CTC-1001-103	T'STAT;SINGLE DA	(No direct replacement—see nearest desired CTC-16xx below)**	
CTC-1001-11	T'STAT;SINGLE DA		
CTC-1002-10	T'STAT;SINGLE RA	CTC-1612	T'STAT; 1-PIPE R.A.
CTC-1002-103	T'STAT;SINGLE RA	(No direct replacement—see nearest desired CTC-16xx below)	
CTC-1002-11	T'STAT;SINGLE RA		
CTC-1003-10	T'STAT;DUAL DA CLG/RA HTG		
CTC-1003-103	T'STAT;DUAL DA CLG/RA HTG		
CTC-1004-10	T'STAT;DUAL DA CLG/DA HTG		
CTC-1004-103	T'STAT;DUAL DA CLG/DA HTG		
CTC-1005-10	T'STAT;DUAL RA CLG/RA HTG		
CTC-1006-10	T'STAT;DUAL RA CLG/DA HTG		
CTC-1009-10	T'STAT;DUAL;DA/DAY DA/NITE		
CTC-1010-10	T'STAT;DUAL;RA/DAY RA/NITE		
CTC-1011-10	T'STAT;DUAL;DA/NITE DA/DAY		
CTC-1012-10	T'STAT;DUAL;RA/NITE RA/DAY		
CTC-1501-10	T'STAT;2 PIPE;DA T1	CTC-1621	T'STAT; 2-PIPE D.A.
CTC-1501-103	T'STAT;2 PIPE;DA T1	CTC-1621-103	T'STAT; 2-PIPE D.A.; VALUE PKG*
CTC-1501-11	T'STAT;2 PIPE;DA T1	(No direct replacement—see nearest desired CTC-16xx below)**	
CTC-1502-10	T'STAT;2 PIPE;RA T1	CTC-1622	T'STAT; 2-PIPE R.A.
CTC-1502-103	T'STAT;2 PIPE;RA T1	CTC-1622-103	T'STAT; 2-PIPE R.A.; VALUE PKG*
CTC-1502-11	T'STAT;2 PIPE;RA T1	(No direct replacement—see nearest desired CTC-16xx below)	
CTC-1503-10	T,STAT,2 PIPE,DA CLG,RA HTG		
CTC-1503-103	T,STAT,2 PIPE,DA CLG,RA HTG		
CTC-1504-10	T'STAT,2 PIPE,DA,CLG,DA HTG		
CTC-1504-103	T'STAT,2 PIPE,DA,CLG,DA HTG		
CTC-1505-10	T'STAT;2 PIPE;RA CLG/RA HTG		
CTC-1506-10	T'STAT;2 PIPE;RA CLG/DA HTG		
CTC-1509-10	T'STAT;2 PIPE;DA/DAY DA/NITE		
CTC-1510-10	T'STA;2 PIPE;RA/DAY RA/NITE		
CTC-1511-10	T'STA;2 PIPE;DA/NITE DA/DAY		
CTC-1512-10	T'STA;2 PIPE;RA/NITE RA/DAY		

*Unlike the CTC-1000/1500 series, the CTC-1600 series does NOT come with the scale plate and cover included. These are selected from a number of options and ordered separately. Value packages include the most popular accessories. See the CTC-1600 series sections.

CTC-1631/1632/1653/1654 Cross-Reference and and CTC-1600 Series Selection Guide

**CTC-1600 Series Selection Guide (See Nearest Equivalent)		
Model	**Number of Pipes**	**DA or RA**
CTC-1611	1	DA
CTC-1612	1	RA
CTC-1621	2	DA
CTC-1622	2	RA
Discontinued CTC-1631/1632/1653/1654s have no direct replacement. See the remaining models for the nearest equivalent.		

CTC-1611/1612
One-Pipe Room Thermostats, DA and RA

(Shown with Horizontal Scale Plate and Light Almond Cover Installed)

These thermostats are designed for proportional control of pneumatic valve and damper actuators used in HVAC systems. A highly sensitive bimetal element with feedback is used for accuracy and stability.

Models are available for direct or reverse acting proportional action. The throttling range is factory set and field adjustable. Setpoints are adjusted using sliders which can be locked or limited using setpoint stops (HFO-0027).

The thermostats require a scale plate assembly, cover, and an external HFO-0010 restrictor in the supply line. See *CTC-1600 Series ONLY Accessories on page 151* and *CTC-1000/1500/1600 Series Accessories on page 152*.

Specifications

Setpoint Range		55 to 85° F (13 to 29° C)
Throttling Range		3° to 12° F (1.7° to 6.7° C) factory set @ 3° F, field adjustable up to 12° F
Calibration		9 psi (62 kPa) branch pressure
Air		
	Supply Pressure	20 psi (138 kPa), 30 psi (207 kPa) maximum, supplied through 14.4 scim (3.9 mL/s) restrictor sold separately (see the HFO-0010 in the Accessories section)
	Output Capacity	14.4 scim or less when using an HFO-0010
	Consumption	14.4 scim or less when using an HFO-0010
Material		Black flame-retardant plastic

Models

CTC-1611	Direct acting
CTC-1612	Reverse acting

Accessories

See *CTC-1600 Series ONLY Accessories on page 151* and *CTC-1000/1500/1600 Series Accessories on page 152*.

CTC-1621/1622
Two-Pipe Room Thermostats, DA and RA

(Shown with Horizontal Scale Plate and Light Almond Cover Installed)

These thermostats are designed for proportional control of pneumatic valve and damper actuators used in HVAC systems. A highly sensitive bimetal element with feedback is used for accuracy and stability.

Models are available for direct or reverse acting proportional action. The throttling range is factory set and field adjustable. Setpoints are adjusted using sliders which can be locked or limited using setpoint stops (HFO-0027).

The thermostats require a scale plate assembly and cover. See *CTC-1600 Series ONLY Accessories on page 151* and *CTC-1000/1500/1600 Series Accessories on page 152*.

Models

CTC-1621	Direct acting
CTC-1622	Reverse acting

SEE ALSO: CTC-1621s packaged in *KIT-1000 Series Pneumatic Repair Kits on page 136*.

Specifications

Setpoint Range		55 to 85° F (13 to 29° C)
Throttling Range		3° to 12° F (1.7° to 6.7° C) factory set @ 3° F, field adjustable up to 12° F
Calibration		9 psi (62 kPa) branch pressure
Air		
	Supply Pressure	20 psi (138 kPa), 30 psi (207 kPa) maximum
	Output Capacity	200 scim (55 mL/s)
	Consumption	20 scim (5.5 mL/s)
Material		Black flame-retardant plastic

Thermostat Packages

CTC-1621-103	Direct Acting, °F
CTC-1622-103	Reverse Acting, °F
CTC-1621-113	Direct Acting, °C
CTC-1622-113	Reverse Acting, °C

These thermostat packages contain the necessary components to allow replacement of most Barber-Colman, Johnson Controls, L&G-P, or Robertshaw/Invensys thermostats. They also afford the ease of ordering one part number to furnish all necessary components and mounting hardware for **vertically** mounted thermostats. They contain these components:

- CTC-1621 or CTC-1622 base
- HPO-0048-10 °F vertical or HPO-0050-11 °C vertical scale plate
- HPO-1511 light almond full window ABS thermostat cover
- HMO-5030 light almond backplate kit w/ decorative matching plate
- HPO-1320 label strip
- HFO-0027 setpoint stops strip

Accessories

See *CTC-1600 Series ONLY Accessories on page 151* and *CTC-1000/1500/1600 Series Accessories on page 152*.

CTC-5000/5500 Series Cross-Reference

CTC-5000/5500 Series Cross-Reference			
Discontinued Model	**Description**	**Equivalent Model***	**Description**
CTC-5001-10	T'STAT;SINGLE DA	CTC-1611	T'STAT; 1-PIPE D.A.
CTC-5001-11	T'STAT;SINGLE DA	CTC-1611	T'STAT; 1-PIPE D.A.
CTC-5002-10	T'STAT;SINGLE RA	CTC-1612	T'STAT; 1-PIPE R.A.
CTC-5002-11	T'STAT;SINGLE RA	CTC-1612	T'STAT; 1-PIPE R.A.
CTC-5011-10	T'STAT;SINGLE DA	CTC-1611	T'STAT; 1-PIPE D.A.
CTC-5011-11	T'STAT;SINGLE DA	CTC-1611	T'STAT; 1-PIPE D.A.
CTC-5012-10	T'STAT;SINGLE RA	CTC-1612	T'STAT; 1-PIPE R.A.
CTC-5012-11	T'STAT;SINGLE RA	CTC-1612	T'STAT; 1-PIPE R.A.
CTC-5501-10	T'STAT;SINGLE DA	CTC-1621	T'STAT; 2-PIPE D.A.
CTC-5501-11	T'STAT;SINGLE DA	CTC-1621	T'STAT; 2-PIPE D.A.
CTC-5502-10	T'STAT;SINGLE RA	CTC-1622	T'STAT; 2-PIPE R.A.
CTC-5502-11	T'STAT;SINGLE RA	CTC-1622	T'STAT; 2-PIPE R.A.
CTC-5511-10	T'STAT;SINGLE DA	CTC-1621	T'STAT; 2-PIPE D.A.
CTC-5511-11	T'STAT;SINGLE DA	CTC-1621	T'STAT; 2-PIPE D.A.
CTC-5512-10	T'STAT;SINGLE RA	CTC-1622	T'STAT; 2-PIPE R.A.
CTC-5512-11	T'STAT;SINGLE RA	CTC-1622	T'STAT; 2-PIPE R.A.

Accessories

Replacement mini-stat cover:
HPO-0035 White
HPO-0036 Light almond

Insulating stand-off, mini-stats:
HMO-5016 White
HMO-5014 Light almond

Adapter backplates, mini-stat to handy box:
HMO-5036 Vertical, light almond
HMO-5037 Vertical, white
HMO-5038 Horizontal, white
HMO-5039 Horizontal, light almond

Mini-stat setpoint cover, single:
HPO-0031 White
HPO-0032 Light almond

HMO-5500 Thermostat universal upgrade kit, for replacing other thermostat brands with KMC, light almond (includes: plates, brackets, screws, O-rings, couplings, and adapters) See *CTE/TTE-5000 Series Accessories on page 88* for more details.

HFO-0010 Restrictor T, 14.4 scim (0.5 scfh), 3/16" nipples for 1/4" OD poly tubing, beige (for CTC-5000 series)

HFO-0024 Tube assembly, 8" long 3/32" ID tube with internal spring and 2 eyelets (for CTC-5000 series)

HFO-0028 Tube assembly, 8" long 3/32" ID tube w/ internal spring, 4 eyelets, and two 1/4" adapters (for CTC-5500 series)

NOTE: **See also Connections and Tools in *CTC-1600 Series ONLY Accessories on page 151*.**

SSS-1000 Series
VAV Differential Pressure Flow Sensors

RoHS COMPLIANT

These sensors are designed to sense differential pressure in the inlet section of VAV (Variable Air Volume) terminal units and fan terminal units. They can also be used to sense differential pressure at other locations in the main or branch duct systems. The differential pressure read between the high "H" port and the low "L" port can be used to determine the air flow. Models offer up to four sensing points and sensing lengths of 3-5/32 to 9-29/32 inches to accommodate box size diameters of 4 to 16 inches.

These sensors are typically used in conjunction with the CSC-1000/2000/3000 series, CSP-4000/5000 series, KMD-7000 series, and BAC-7000 series of VAV controllers for individual zone control in HVAC systems.

With CSC-3000 series, CSP-4000/5000 series, TSP-5000/6000 series, KMD-7000 series, and BAC-7000 series controllers, use a 3/8" to 1/4" barb union adapter and appropriate polyethylene tubing to the sensor and controller. For maximum accuracy in the CSP-5000 series, KMD-7000 series, and BAC-7000 series controllers, the 3/8" OD tubing between the sensor and the adapter should be as short as possible, and the 1/4" OD tubing from the adapter to the controller should be 24" long (on both the High and the Low sides).

Specifications

Material	Light almond ABS plastic (UL94-5V)
Mounting	Integral flange with gasket
Connections	1/4" (6 mm) nipples for 3/8" (10 mm) OD polyethylene tubing
Sensing Points	
SSS-1002	One set
SSS-1003	Two sets
SSS-1004	Three sets
SSS-1005	Four sets
Temperature Limits	
Operating	40 to 120° F (4 to 49° C)
Shipping	–40 to 140° F (–40 to 60° C)
Approvals	RoHS compliant

Models

SSS-1002	One sensing point, 3-5/32" (80 mm) length
SSS-1003	Two sensing points, 5-13/32" (137 mm) length
SSS-1004	Three sensing points, 7-21/32" (195 mm) length
SSS-1005	Four sensing points, 9-29/32" (252 mm) length
KIT-1005	Group of one each of all four models

NOTE: For maximum measurement accuracy, install the longest sensor that will fit into the duct.

SEE ALSO: These sensors packaged in *KIT-1000 Series Pneumatic Repair Kits on page 136*.

Valve Accessories and Repair Parts

SEE ALSO: **The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.**

HPO-5000 Series
Flange Valve Packing Kits

HPO-5038	Graphite, 3/8" stem, flanged valves
HPO-5039	Graphite, 1/2" stem, 115 sq. in. top, flanged valves

NOTE: Graphite packing was used on all flanged valves prior to date code 9723, on certain valves up to date code 9737, and on all flanged valves using the 115 sq.-inch actuator.

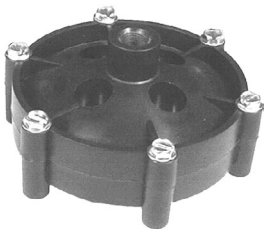
For valves between date codes 9723 and 9737, packing used is determined by the brass bonnet size. For 1" diameter (14 threads per inch) brass bonnets, graphite packing was used. For 1-3/8" diameter (18 threads per inch) brass bonnets, V-ring packing was used.

V-ring packing is used on all valves since date code 9737, with the exception of those using 115 sq.-inch actuators. **V-ring packing is no longer available.**

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

VCP-11/21/34 Series (Discontinued)Valve Accessories



Replacement Actuator:

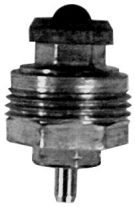
MCP-6001	3–8 psi
MCP-6002	8–13 psi

HPO-5114	Replacement diaphragm for VCP-11/21/34

Model #:	Valve Type:	Cv Rate:	Valve #:	Range:	Actuator #:
VCP-11140141	1/2" Straight N.O., 2-Way	1.6	VFP-111401	3-8 psi	MCP-6001
VCP-11140142				8-13 psi	MCP-6002
VCP-11150141		2.0	VFP-111501	3-8 psi	MCP-6001
VCP-11150142				8-13 psi	MCP-6002
VCP-11160141		2.6	VFP-111601	3-8 psi	MCP-6001
VCP-11160142				8-13 psi	MCP-6002
VCP-11170141	3/4" Straight N.O., 2-Way	2.9	VFP-111701	3-8 psi	MCP-6001
VCP-11170142				8-13 psi	MCP-6002
VCP-11180141		4.7	VFP-111801	3-8 psi	MCP-6001
VCP-11180142				8-13psi	MCP-6002
VCP-11220141	1" Straight N.O., 2-Way	5.0	VFP-112201	3-8 psi	MCP-6001
VCP-11220142				8-13 psi	MCP-6002
VCP-21140141	1/2" Angle N.O., 2-Way	1.6	VFP-211401	3-8 psi	MCP-6001
VCP-21140142				8-13 psi	MCP-6002
VCP-21150141		2.0	VFP-211501	3-8 psi	MCP-6001
VCP-21150142				8-13 psi	MCP-6002
VCP-21160141		2.6	VFP-211601	3-8 psi	MCP-6001
VCP-21160142				8-13 psi	MCP-6002
VCP-21170141	3/4" Angle N.O., 2-Way	2.9	VFP-211701	3-8 psi	MCP-6001
VCP-21170142				8-13 psi	MCP-6002
VCP-34200141	3-Way 3/4"	4.9	VFP-342001	3-8 psi	MCP-6001
VCP-34200142				8-13psi	MCP-6002
VCP-34210141	3-Way 1"	8.5	VFP-342101	3-8 psi	MCP-6001
VCP-34210142				8-13 psi	MCP-6002

Replacement Gasket:

HPO-5017	3/4", for use on VCP/VFP-3420
HPO-5018	1", for use on VCP/VFP-3421



Bonnet Assembly (consists of stem, plug, packing, bonnet and disc):

HPO-5030	1/2" 2.0 Cv, 2-way
HPO-5031	1/2" 2.6 Cv, 2-way
HPO-5032	3/4" 2.9 Cv, 2-way
HPO-5033	3/4" 4.7 Cv, 2-way
HPO-5035	1/2" 1.6 Cv, 2-way

Replacement Union Nut:

HPO-5021	3/4" for use on VCP-3420
HPO-5022	1" for use on VCP-3421
HPO-5058	Replacement union nut for all 1/2" VCP series valve bodies

Replacement Valve Disc:

HPO-5065	1/2" 2.0 Cv
HPO-5066	1/2" 2.6 Cv
HPO-5067	3/4" 2.9 Cv
HPO-5068	3/4" 4.7 Cv
HPO-5069	1/2" 1.7 Cv 3-way
HPO-5070	3/4" 4.9 Cv 3-way

MPT Nipple (converts VCP/VFP-3420/3421 to 3/4" or 1" MPT, 3 required per valve):

HPO-5026	3/4"
HPO-5027	1"

HPO-5059	Replacement union nipple for all 1/2" VCP/VFP series valve bodies

VCP-41/42/43 (Discontinued) Valve Accessories

11.4 sq. in. Diaphragms:

HPO-5110	Assembled in "twisted off" metal top, diaphragm not available separately

Diaphragms:

HPO-5113	43.4 sq. inches, silicone*
HPO-5115	43.4 sq. inches, EPDM*

HPO-5012	Feedback nut, used with HPO-5011 feedback post; two required per valve

CMC-1002	Replacement positive positioner to fit any VCP valve whose model number ends in 0 (zero) (VCP-XXXXXXX0); see the (Pneumatic) Actuator Accessories and Repair Parts section for more information on the CMC-1002

⚠ CAUTION

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

SEE ALSO: *Compressed Air Accessories on page 134*.

VCP-51/52/53/54 Accessories

CMC-1002	Replacement positive positioner to fit any VCP valve whose model number ends in 0 (zero) (VCP-XXXXXXX0); see the (Pneumatic) Actuator Accessories and Repair Parts section for more information on the CMC-1002

Diaphragms:

HPO-5113	43.4 sq. inches, silicone
HPO-5115	43.4 sq. inches, EPDM

Packing Kits:

HPO-5038	Graphite, 3/8" stem, flanged valves
HPO-5039	Graphite, 1/2" stem, 115 sq. in. top, flanged valves

NOTE: Graphite packing was used on all flanged valves prior to date code 9723, on certain valves up to date code 9737, and on all flanged valves using the 115 sq.-inch actuator.

For valves between date codes 9723 and 9737, packing used is determined by the brass bonnet size. For 1" diameter (14 threads per inch) brass bonnets, graphite packing was used. For 1-3/8" diameter (18 threads per inch) brass bonnets, V-ring packing was used.

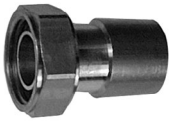
V-ring packing is used on all valves since date code 9737, with the exception of those using 115 sq.-inch actuators. **V-ring packing is no longer available.**

VCP-61/62/63 Accessories

HPO-5015 Replacement ferrule, 1/2", VCP-61/62/63

HPO-5020 Replacement nut, VCP-61/62/63

HPO-5024 1/2" MPT fitting



HPO-5025 1/2" Sweat fitting

Replacement Valve Top with Spring and with NEOPRENE Diaphragm:			With SILICONE Diaphragm:
Spring Range	**2.3 Cv**	**Other Cvs**	**2.3 Cv**
3–8 psi	HPO-5104		HPO-5134
8–13 psi		HPO-5102	

NOTE: Silicone is more heat and ozone resistant than neoprene.

Valves

SEE ALSO: **The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.**

VCP-11/21 and VCP-34 Series Cross-Reference

See equivalent valve in *VCZ-41/44 Series 2-Way/3-Way, NPT, Pneumatic Zone Control Valves (1/2 to 1") on page 166*.

VCB-41/42 Series

2-Way, NPT, Control Ball Valves (1/2 to 3")

These two-way, NPT, ball valves are designed for the precise control of hot or chilled water in pneumatic HVAC applications. Valves range in size from 1/2 to 3 inches and feature an optimizing insert (except for indicated models), which reduces and characterizes the ball opening for equal percentage flow. This design allows the output at the coil to be linear when compared to the open area of the ball.

The valve's dual Teflon ball and stem seals and EPDM O-rings provide leak-proof shut off and meet both "packed" and "packless" construction specifications. The reduced torque seals and O-rings eliminate the need for high torque actuators. KMC's MCP-3631 series actuators work on all valve sizes. The actuator can easily be flipped over in the field to change the fail direction.

Specifications

Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Flow Characteristics	Equal percentage (with optimizer insert)
Rangeability	500:1
Leakage	ANSI Class IV (<0.01% of Cv)
Max. Close Off	1/2" to 1", 130 psi (896 kPa) 1-1/4" to 3", 100 psi (689 kPa)
Temperature Limits	
Medium	–22° to 250° F (–30° to 121° C)
Operating	–20° to 180° F (–29° to 82° C)
Shipping	–40° to 140° F (–40° to 60° C)

NOTE: If the application requires operation near the maximum temperature and maximum pressure, add a tubing restraint to the actuator connection.

Body Rating	360 to 600 psi (temperature dependent—see chart under VCB-46 Series)
Valve Body Material	
Body	Forged brass ASTM B283
Stem	Brass
Ball	Nickel-plated brass
Flow inserts	Glass filled polymer
Stem Seals	Dual Teflon & 1 EPDM O-ring
Ball Seals	Teflon seals w/ EPDM O-rings
Supply Pressure	0 to 20 psig (138 kPa) operating; 30 psig (207 kPa) maximum *(see NOTE under Temperature Limits)*
Supply Connection	3/16" (5 mm) fitting for 1/4" (6 mm) OD polyethylene tubing

Accessories and Replacement Parts

HLO-1006	Replacement drive bushing
HLO-1009	Replacement push-on shaft retainer ring
HPO-0038	Replacement diaphragm
HPO-5072	Repair kit (bracket/linkage)

Models

VCB-4 *X* *XXX* BF *X*

Fail To
- **1**: NO
- **2**: NC

Actuators
- **E**: MCP-3631-5000, 8 to 13 psi range
- **F**: MCP-3631-3000, 5 to 10 psi range

Pipe Size/Cv
- **02B**: 1/2"/0.38 Cv
- **02D**: 1/2"/0.68 Cv
- **02F**: 1/2"/1.3 Cv
- **02H**: 1/2"/2.6 Cv
- **02K**: 1/2"/4.7 Cv
- **02M**: 1/2"/11.7 Cv*
- **03G**: 3/4"/2.4 Cv
- **03K**: 3/4"/4.3 Cv
- **03L**: 3/4"/ 10.1 Cv
- **03N**: 3/4"/14.7 Cv*
- **04J**: 1"/9.0 Cv
- **04M**: 1"/15.3 Cv
- **04Q**: 1"/28.4 Cv*
- **05F**: 1-1/4"/14.9 Cv
- **05K**: 1-1/4"/36.5 Cv
- **05L**: 1-1/4"/41.1 Cv*
- **06D**: 1-1/2"/22.8 Cv
- **06G**: 1-1/2"/41.3 Cv
- **06J**: 1-1/2"/73.9 Cv*
- **08D**: 2"/41.7 Cv
- **08G**: 2"/71.1 Cv
- **08M**: 2"/108.0 Cv*
- **10C**: 2-1/2"/55.0 Cv
- **10D**: 2-1/2"/72.0 Cv
- **10G**: 2-1/2"/101.0 Cv
- **12C**: 3"/82.0 Cv
- **12D**: 3"/124.0 Cv

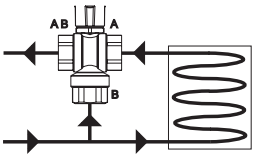
* Full-port, no optimizer insert

NOTE: For more information, see ***MCP-3631 Series Rotary Actuators on page 130***.

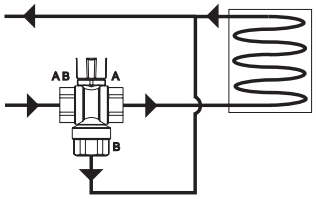
SEE ALSO: **The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.**

VCB-46 Series
3-Way, Mixing or Diverting, NPT, Control Ball Valves (1/2 to 2-1/2")

Mixing Flow Action:
Full CCW (w/ air) = Port A to AB
Full CW (w/o air) = Port B to AB



Diverting Flow Action:
Full CCW (w/ air) = Port AB to A
Full CW (w/o air) = Port AB to B



Models

VCB-46 *XXX* BF *X*

Actuators
E: MCP-3631-5000, 8 to 13 psi range
F: MCP-3631-3000, 5 to 10 psi range

Pipe Size/Cv

02C: 1/2"/0.6 Cv
02E: 1/2"/1.0 Cv
02G: 1/2"/2.4 Cv
02J: 1/2"/4.3 Cv
02L: 1/2"/8.0 Cv
03G: 3/4"/2.4 Cv
03J: 3/4"/3.8 Cv
03M: 3/4"/11 Cv*
04H: 1"/8.6 Cv
04N: 1"/22.3 Cv
05E: 1-1/4"/12.7 Cv
05J: 1-1/4"/34.1 Cv*
06E: 1-1/2"/23.5 Cv
06H: 1-1/2"/61.1 Cv
08B: 2"/38.2 Cv
08N: 2"/108.5 Cv
10E: 2-1/2"/74.1 Cv
10F: 2-1/2"/99.5 Cv*

* Full-port, no optimizer insert

Accessories and Replacement Parts

HLO-1006	Replacement drive bushing
HLO-1009	Replacement push-on shaft retainer ring
HPO-0038	Replacement diaphragm
HPO-5072	Repair kit (bracket/linkage)

The VCB-46 series, NPT, three-way, **mixing or diverting**, control ball valves are designed for the precise control of hot or chilled water in pneumatic HVAC applications. Valves range in size from 1/2 to 2-1/2 inches and feature an optimizing insert (except for indicated models), which reduces and characterizes the ball opening for equal percentage flow. This design allows the output at the coil to be linear when compared to the open area of the ball.

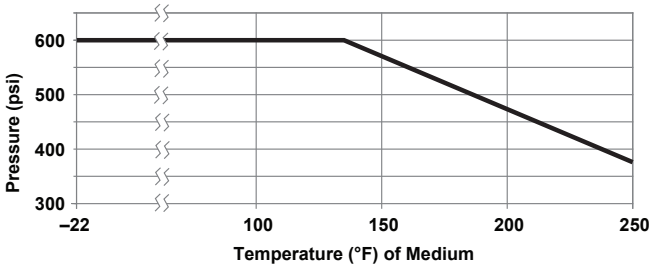
The valve's dual Teflon ball and stem seals and EPDM O-rings provide leak-proof shut off and meet both "packed" and "packless" construction specifications. The reduced torque seals and O-rings eliminate the need for high torque actuators. KMC's MCP-3631 series actuators work on all valve sizes. The actuator can easily be flipped over in the field to change the fail direction.

Specifications

Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Flow Characteristics	Equal percentage (with optimizer insert)
Rangeability	500:1
Leakage	ANSI Class IV (<0.01% of Cv)
Max. Close Off	1/2 to 1" = 50 psi (345 kPa); 1-1/4 to 2-1/2" = 40 psi (276 kPa)
Temperature Limits	
Medium	–22° to 250° F (–30° to 121° C)
Operating	–20° to 180° F (–29° to 82° C)
Shipping	–40° to 140° F (–40° to 60° C)

NOTE: If the application requires operation near the maximum temperature and maximum pressure, add a tubing restraint to the actuator connection.

Body Rating 360 to 600 psi (temperature dependent—see chart below)



Valve Body Material	
Body	Forged brass ASTM B283
Stem	Brass
Ball	Nickel-plated brass
Flow inserts	Glass filled polymer
Stem Seals	Dual Teflon & one EPDM O-ring
Ball Seals	Teflon seals w/ EPDM O-rings
Actuator Material	
Body	Glass-filled nylon
Diaphragm	Neoprene
Normal Rotation	90°
Supply Pressure	0 to 20 psig (138 kPa) operating; 30 psig (207 kPa) maximum *(see NOTE under Temperature Limits)*
Supply Connection	3/16" (5 mm) fitting for 1/4" (6 mm) OD polyethylene tubing

NOTE: For more information, see ***MCP-3631 Series Rotary Actuators on page 130***.

VCP-41/42/43 Series Control Valves Cross-Reference

For two-way valves, see *VCB-41/42 Series 2-Way, NPT, Control Ball Valves (1/2 to 3″) on page 163*. For three-way valves, see *VCB-46 Series 3-Way, Mixing or Diverting, NPT, Control Ball Valves (1/2 to 2-1/2″) on page 164*.

VCP-5150/5170/5250/5270/5360/5450 Series Flanged Valves Cross-Reference

Contact VSI (or, for exact valve body only, Warren Controls).

NOTE: VSI (Valve Solutions Inc.) will install a KMC actuator on a valve body for you:
VSI
1155 Alpha Drive, Suite A
Alpharetta, GA 3004
Tel: 770-740-0800; Fax: 770-740-8777
www.valvesolutions.com

NOTE: For exact valve BODY replacement on a VEP-5300/5400/5500/5800, contact Warren Controls:

Warren Controls
2600 Emrick Blvd.
Bethlehem, PA 18020-8010
Phone: 800-922-0085 or 610-317-0800
Fax: 610-317-2989
www.warrencontrols.com

VCP-558/559/568/569 Series Butterfly Valves Cross-Reference

Contact VSI.

NOTE: VSI (Valve Solutions Inc.) will install a KMC actuator on a valve body for you:
VSI
1155 Alpha Drive, Suite A
Alpharetta, GA 3004
Tel: 770-740-0800; Fax: 770-740-8777
www.valvesolutions.com

VCP-61/62/63 Series Zone Control Valves Cross-Reference

For VCP-**61** Series Two-Way, NO, (Compression) Zone Control Valves (1/2″), see **VCZ-41** Series 2-Way, NO, NPT, Pneumatic Zone Control Valves (1/2 to 1″)*

For VCP-**62** Series Two-Way, NC, (Compression) Zone Control Valves (1/2″), see **VCB-42** Series 2-Way, NC, NPT, Control Ball Valves (1/2 to 3″)*

For VCP-**63** Series Three-Way, Mixing, (Compression) Zone Control Valves (1/2″), see **VCZ-44** Series 3-Way, NPT, Pneumatic Zone Control Valves (1/2 to 1″)*

***NOTE: Nearest equivalents require a compression/threaded adapter, depending on application, and the VCB-42 series is considerably larger in size than the VCP-62 series.**

SEE ALSO: *Actuator Accessories and Repair Parts on page 120* **and** *Compressed Air Accessories on page 134***.**

SEE ALSO: The interactive *Valve Selection Tool* **in the Products and Solutions section of the** *KMC web site***.**

VCZ-41/44 Series

2-Way/3-Way, NPT, Pneumatic Zone Control Valves (1/2 to 1")

Two-Way
VCZ-41
Series

Three-Way
VCZ-44
Series

These pneumatic globe zone control valves are designed to regulate the flow of hot or chilled water to such applications as VAV terminal unit reheat coils, fan coil units, induction units, finned tube convectors, and cast iron radiators. The compact design of these units allows easy installation within small enclosures.

The rugged, precision pneumatic actuators have a glass-filled nylon housing and a neoprene diaphragm. Replacement actuators can be installed on the valve bodies without tools.

Options include 3–8 or 8–13 psi actuators as well as two-way or three-way valve bodies, with multiple sizes and Cvs.

Specifications

Valve Body	
Service	Hot or chilled water, up to 50% glycol
Connections	Female NPT
Seat Style	Metal to metal
Flow Characteristics	Linear
Leakage Rating	ANSI Class III (AB-A in 3-way)
Valve Body Rating	ANSI Class 125
Max. Inlet Pressure	125 psig (862 kPa)
Max. Close-Off	(See data sheet, AB-A in 3-way)
Close-Off Ratings	According to ANSI/FCI 70-2 (See data sheet, AB-A in 3-way)
Material	
Body	Brass
Body Trim	Brass
Stem	Stainless steel ASTM A582 Type 303
Packing	Ethylene propylene O ring
Actuators	
Material	
Housing	Glass-filled nylon
Diaphragm	Neoprene
Operating Range	3–8 or 8–13 psi
Max. Air Pressure	30 psi (207 kPa)
General	
Mounting Location	NEMA 1 (interior only)
Temperature Limits	
Medium	34 to 230° F (1 to 110° C)
Ambient	40 to 180° F (4.4 to 82° C)
Shipping	–40 to 180° F (–40 to 82° C)

Models

VCZ-4 *X YYY* MB *Z*

Actuator
- **D**: 3–8 psi (MCP-6101)
- **E**: 8–13 psi (MCP-6102)

Size/Cv
- **02A**: 1/2"; 1.0 Cv
- **02B**: 1/2"; 2.5 Cv
- **02C**: 1/2"; 4.0 Cv
- **03A**: 3/4"; 4.1 Cv
- **04A**: 1"; 7.0 Cv

Control Type
- **1**: Two-Way (Fail Open)
- **4**: Three Way (Fail AB-A)

Accessories/Repair Parts

HPO-5114	Replacement actuator diaphragm
MCP-6101	"D" actuator, 3–8 psi
MCP-6102	"E" actuator, 8–13 psi
VFZ-4102AM	2-way, 1/2", 1.0 Cv valve body
VFZ-4102BM	2-way, 1/2", 2.5 Cv valve body
VFZ-4102CM	2-way, 1/2", 4.0 Cv valve body
VFZ-4103AM	2-way, 3/4", 4.1 Cv valve body
VFZ-4104AM	2-way, 1", 7.0 Cv valve body
VFZ-4402AM	3-way, 1/2", 1.0 Cv valve body
VFZ-4402BM	3-way, 1/2", 2.5 Cv valve body
VFZ-4402CM	3-way, 1/2", 4.0 Cv valve body
VFZ-4403AM	3-way, 3/4", 4.1 Cv valve body
VFZ-4404AM	3-way, 1", 7.0 Cv valve body

SEE ALSO: *Actuator Accessories and Repair Parts on page 120* and *Compressed Air Accessories on page 134*.

SEE ALSO: *Valve (Three-Way) Application Guide on page 178*, *Valve Sizing Guide on page 178*, and *Valve Effective Cv with Increased Pipe Size on page 179*.

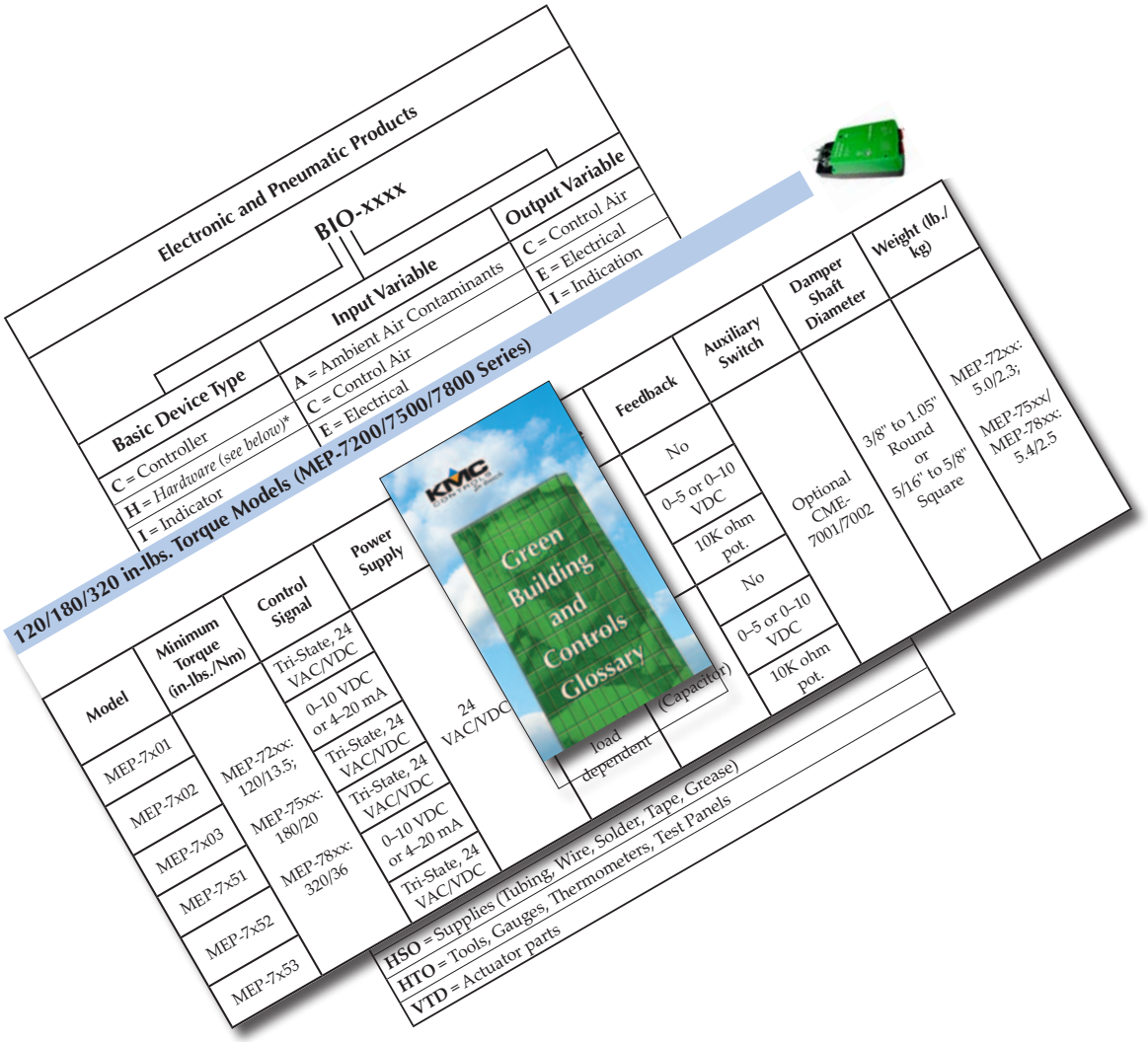
SEE ALSO: VCB-41 series packaged in *KIT-1000 Series Pneumatic Repair Kits on page 136*.

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

⚠ CAUTION

Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

Reference


Electronic and Pneumatic Products
BIO-xxxx
Basic Device Type
C = Controller
H = Hardware (see below)*
I = Indicator
Input Variable
A = Ambient Air Contaminants
C = Control Air
E = Electrical
Output Variable
C = Control Air
E = Electrical
I = Indication
120/180/320 in-lbs. Torque Models (MEP-7200/7500/7800 Series)
Model
Minimum Torque (in-lbs./Nm)
Control Signal
Power Supply
Feedback
Auxiliary Switch
Damper Shaft Diameter
Weight (lb./kg)
MEP-7x01
MEP-7x02
MEP-7x03
MEP-7x51
MEP-7x52
MEP-7x53
MEP-72xx: 120/13.5;
MEP-75xx: 180/20
MEP-78xx: 320/36
Tri-State, 24 VAC/VDC
0–10 VDC or 4–20 mA
Tri-State, 24 VAC/VDC
Tri-State, 24 VAC/VDC
0–10 VDC or 4–20 mA
Tri-State, 24 VAC/VDC
24 VAC/VDC
load dependent
(Capacitor)
No
0–5 or 0–10 VDC
10K ohm pot.
No
0–5 or 0–10 VDC
10K ohm pot.
Optional CME-7001/7002
3/8" to 1.05" Round or 5/16" to 5/8" Square
MEP-72xx: 5.0/2.3;
MEP-75xx/ MEP-78xx: 5.4/2.5
HSO = Supplies (Tubing, Wire, Solder, Tape, Grease)
HTO = Tools, Gauges, Thermometers, Test Panels
VTD = Actuator parts
KMC
Green Building and Controls Glossary

Abbreviations, Codes, and Definitions

Acronyms and Abbreviations

Common acronyms and abbreviations in this catalog include:

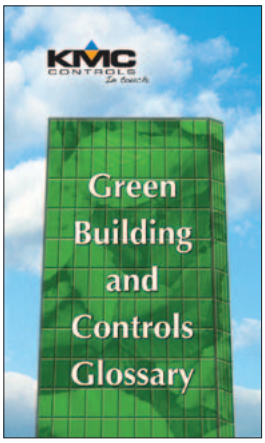
@ = at
° = degrees
Ω = ohms
µs = microsecond
A = amperes
A/C = air conditioning
AAC = Advanced Application Controller
ABS = acrylonitrile butadiene styrene (plastic)
AC = alternating current
amp = amperes
avg. = average
AWG = American Wire Gauge
BACnet = Building Automation Control network
BTU = British Thermal Unit
C = Celsius
cfh = cubic feet per hour
cfm = cubic feet per minute
cm = centimeters
CO = carbon monoxide
CO_2 = carbon dioxide
CSA = Canadian Standards Association
CUL = (UL certification to CSA requirements)
Cv = valve flow coefficient
DA = direct acting
DC = direct current
DPDT = double pole double throw
DPST = double pole single throw
EP = electric to pneumatic
EPDM = ethylene propylene diene monomer (synthetic rubber)
ETL = Electrical Testing Laboratories
F = Fahrenheit
FLA = full load amperes
FPT = female pipe thread
FS = full scale
FSO = full scale output
ft-lbs. = foot pounds
fpm = feet per minute
g = grams
hp = horsepower
HVAC = heating ventilating and air conditioning
Hg = mercury
Hz = hertz
ID = inside diameter
in-lbs. = inch pounds
kbps = kilobits per second
kPa = kilopascals
kW = kilowatt
kWh = kilowatt-hour
LCD = liquid crystal display
LED = light emitting diode
LRA = locked rotor amperes
m = meters
mA = milliamperes
max. = maximum
min. = minimum
MEA = Materials and Equipment Acceptance
mL/s = milliliters per second
mm = millimeters
MPT = male pipe thread
NC = normally closed
NEMA = National Electrical Manufacturers Association
NO = normally open
NPT = National Pipe Tapered (Thread)
NPS = National Pipe Straight
N•m = Newton meters
OD = outside diameter
Pa = pascals
PE = pneumatic to electric (volts)
pF = picofarad
PI = pneumatic to current (amperes)
ppm = parts per million
psi = pounds per square inch
psid = pounds per square inch differential
psig = pounds per square inch gauge
RA = reverse acting
RH = relative humidity
rms = root mean square
RTU = Roof Top Unit
scfh = standard cubic feet per hour
scim = standard cubic inches per minute
SPDT = single pole double throw
SPST = single pole single throw
stat = thermostat
UL = Underwriters Laboratories
UUKL = (a UL category for smoke control devices)
V = volts
VA = volt-ampere
VAC = volts alternating current
VAV = variable air volume
VDC = volts direct current
W = watts
wc = water column
wg = water gauge

Terms Definitions (Glossary)

For **definitions** of various terms in this catalog, refer to the pocket-sized **Green Buildings Controls Glossary (SB-046)**. The goal of this glossary is to provide a common ground of understanding of various terms relating to aspects of green buildings. It lists **three types of related terms**:

- General terms relating to much of the **green building industry**
- Terms specifically relating to **indoor environmental quality** and **energy management**
- Terms relating to **HVAC and building automation systems**

A hyperlinked online version can be downloaded from the Brochures section of KMC Controls web site, **www.kmccontrols.com.**



Product Date Code Location and Interpretation

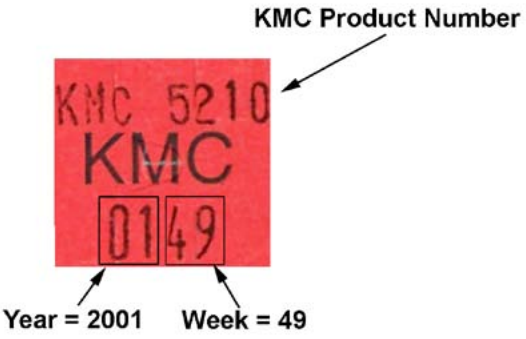
Every KMC product has a label with a coded manufacture date. Replacement parts for some products will depend on the manufacture date. The date code is part of the basic information customers may be asked to provide when contacting KMC's sales and technical support representatives. The label style, placement, and code format changed in 2003.

Products manufactured **BEFORE March of 2003** have bright red/orange (electronic and digital), white (pneumatic) or light blue (system powered) labels. The labels were placed on the outside housing of electronic and pneumatic products. Digital product labels were typically placed on the front or back of the circuit board.

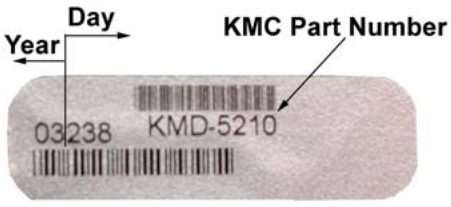
On the label, the KMC part number is located at the top with the manufacture date code at the bottom. The first two digits of the code are the last two digits of the year, the second two digits are the week. The upper label is from a KMD-5210 LAN Controller manufactured in the 49th week of 2001.

Products manufactured **AFTER March of 2003** have silver/gray labels located on the front or side of the unit housing.

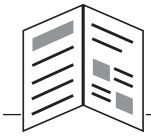
On the label, the KMC part number is located in the middle, between the top and bottom bar codes. The manufacture date code is centered on the left side of the label. The first two digits of the code are the last two digits of the year and the last three digits are the day. The lower label is from a KMD-5210 LAN Controller manufactured on the 238th day of 2003 (August 26, 2003).



Label Before March 2003



Label After March 2003



KMC Model Number Code Meanings

Electronic and Pneumatic Products		
BIO-xxxx		
Basic Device Type	**Input Variable**	**Output Variable**
C = Controller	**A** = Ambient Air Contaminants	**B** = Ball (Valve)
H = *Hardware (see below)**	**C** = Control Air	**C** = Control Air
I = Indicator	**E** = Electrical	**E** = Electrical
M = Motor (Actuator)	**F** = Force	**G** = Globe (Valve)
R = Relay	**H** = Humidity	**I** = Indication
S = Sensor	**L** = Light	**P** = Position
T = Transmitter	**M** = Movement (Position)	**S** = Static
V = Valve	**P** = Pressure	**T** = Thermal
X = Converter	**S** = Static	
S = Selector	**T** = Temperature	

*Hardware
HAO = Air Accessories (Compressors, Dryers, Filters, Regulators)
HCO = Cabinets, Panels, Utility Boxes
HDO = Dials, Receiver Gauge Scales
HFO = Fittings
HLO = Linkage
HMO = Mounting
HPO = Parts (Replacements, Assemblies, Spares)
HRO = Restrictors
HSO = Supplies (Tubing, Wire, Solder, Tape, Grease)
HTO = Tools, Gauges, Thermometers, Test Panels
VTD = Actuator parts

Digital BACnet Products
BAC = BACnet devices and software

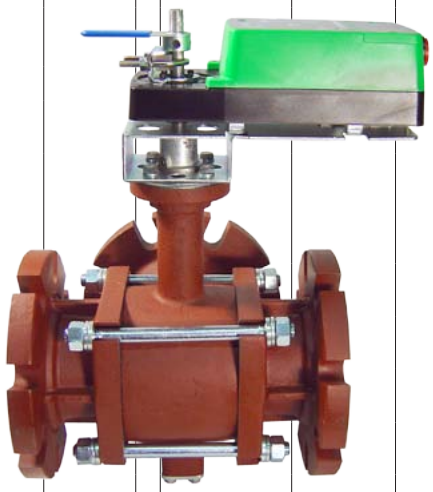
*NOTE: For valves, see also *Valve Numbering System (Details) on page 171*

SEE ALSO: **The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.**

SEE ALSO: **The interactive *Actuator Selection Tool* in the Products and Solutions section of the *KMC web site*.**

Valve Numbering System (Details)

1	2	3	4	5	6	7 and 8	9	10	11	12
Basic Type	Input Variable	Output Variable	–	Connection	Type	Size	Cv	Seat & Misc.	Operator (*Pneumatic*, then **Electric**)	Operator Range (*Pneumatic*, then **Electric**)
V = Valve	C = Control Air	B = Ball		1 = Union	1 = 2-way, NO	02 = 1/2		B = Brass ball and trim	*A = 3 sq. in. (MCP-020X)*	*A = w/ pilot positioner*
	E = Electrical	F = Butterfly		4 = NPT	2 = 2-way, NC	03 = 3/4		C = 125# flange w/ bronze trim	*B = 5 sq. in.*	*B = plastic actuator w/ positioner*
	F = Force	G = Globe		5 = Flanged	3 = 2-way, neither NO nor NC	04 = 1		D = 125# flange w/ bronze trim; double seat	*C = 5.5 sq. in. neoprene*	*C = metal actuator w/ positioner*
		V = PIC-V		6 = Unit, Compression	4 = 3-way, diverting	05 = 1-1/4		E = 125# flange w/ S.S. trim	*D = 5.5 sq. in. silicone*	*D = 3–8 psi*
		Z = Zone		7 = Flared	5 = 3-way, mixing	06 = 1-1/2		F = 125# flange S.S. trim; double seat	*E = 6.89 sq. in. (MCP-030x)*	*E = 8–13 psi*
				8 = Sweat	6 = 3-way, mixing or diverting	08 = 2		G = 250# flange w/ bronze trim	*F = 10.14 sq. in. (MCP-3631)*	*F = 5–10 psi*
						10 = 2-1/2		J = 250# flange w/ bronze trim; double seat	*G = 10.75 sq. in. (4" act.)*	*G = 3–13 psi*
						12 = 3		K = 250# flange w/ S.S. trim	*H = 11.4 sq. in. neoprene*	*H = 3–15 psi*
						16 = 4		L = 250# flange w/ S.S. trim; double seat	*J = 11.4 sq. in. silicone*	*J = 3–9 psi*
						20 = 5		M = Metal seat	*K = 21.5 sq. in. (dual 4" act.)*	*K = 9–15 psi*
						24 = 6		R = Rubber seat	*L = 24.5 sq. in. (6" act.)*	*P = 8–13 psi, plastic act.*
						32 = 8	Alpha per Size and Style — **See Next Page**	S = S.S. ball & trim	*M = 43.4 sq. in. neoprene*	*M = 8–13 psi, metal act.*
						40 = 10			*N = 43.4 sq. in. silicone*	**(Electric)**
						48 = 12		3 = 5.8–60 psid	*P = 49 sq. in. (dual 6" act.)*	A = 10–0 VDC (zone)
								2 = 2.9–60 psid	*Q = 50 sq. in.*	B = 0–10 VDC (zone)
									R = 73.5 sq. in. (3, 6" act.)	C = 24 VDC (zone)
									S = 85 sq. in.	D = 120 VDC (zone)
									T = 98 sq. in. (4, 6" act.)	E = 220 VDC (zone)
									U = 115 sq. in.	F = Tri-state
									(Electric)	G = Tri-state w/ feedback
									A = Electro-thermic (zone)	H = Tri-state w/ fail-safe
									B = Electric motor (zone)	J = Tri-state w/ fail-safe & feedback
									C = 40 in-lbs.	K = Proportional
									D = 50 in-lbs.	L = Proport. w/ fail-safe
									E = 80 in-lbs.	M= 24 VAC, NO spring return
									F = 120 in-lbs.	N= 24 VAC, NC spring return
									G = 180 in-lbs.	P= 115 VAC, NO spring return
									H = 320 in-lbs.	Q= 115 VAC, NC spring return
									J = 640 in lb (dual 320 in-lbs. actuators)	
									K = 960 in lb (three 320 in-lbs. actuators)	
									L = 1600 in-lbs.	
									M = 3500 in-lbs.	
									N = 6000 in-lbs.	



Valve Numbering System (Cv Details–Model Number Digit #9)

BALL Valve Cv									
1/2" 2-way	1/2" 3-way	3/4" 2-way	3/4" 3-way	1" 2-way	1" 3-way	1-1/4" 2-way	1-1/4" 3-way	1-1/2" 2-way	1-1/2" 3-way
B = 0.38		G = 2.4			H = 8.6		E = 12.7	D = 22.8	
	C = 0.6		J = 3.8	J = 9.0		F = 14.9			E = 23.5
D = 0.68		K = 4.3		M = 15.3			J = 34.1	G = 41.3	
	E = 1.0	L = 10.1			N = 22.3	K = 36.5			H = 61.1
F = 1.3			M = 11.0	Q = 28.4		L = 41.1		J = 73.9	
	G = 2.4	N = 14.7							
H = 2.6									
	J = 4.3								
K = 4.7									
	L = 8.0								
M = 11.7									

BALL Valve Cv (Continued)										
2" 2-way	2" 3-way	2-1/2" 2-way	2-1/2" 3-way	3"	4" 2-way	4" 3-way	5" 2-way	5" 3-way	6" 2-way	6" 3-way
	B = 38.2	C = 55		C = 82	A = 91	A = 91	A = 144	A = 144.0	A = 208	A = 208
D = 41.7		D = 72		D = 124	B = 118	B = 118	B = 185	B = 185.0	B = 268	B = 268
G = 71.1			E = 74.1		C = 152	C = 152	C = 240	C = 240	C = 346	C = 346
M = 108			F = 99.5		D = 197	D = 197	D = 309	D = 309	D = 441	D = 441
	N = 108.5	G = 101			E = 254	E = 254	E = 400	E = 400	E = 577	E = 577
					F = 327	F = 327			F = 650	F = 650

BUTTERFLY Valve Cv							
2"	2-1/2"	3"	4"	5"	6"	8"	10"
A = 111	A = 188	A = 290	A = 577	A = 983	A = 1518	A = 3015	A = 5135

ZONE Valve Cv		
1/2"	3/4"	1"
A = 1.0	A = 4.1	A = 7.0
B = 2.5		
C = 4.0		

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

Actuator (MEP Series) Selection Guides

Model Quick Selection Chart (10 to 320 in-lbs. Torque)

Fail-safe	Control Signal	Min. Torque (in-lbs.)	Angular Rotation (degrees)	Timing for 90° (@ 60 Hz)	Feedback	Auxiliary Switch	Notes	Model (see also Model charts)
Yes*	2-position 2-wire	62	95	90 sec.	No	No	24 VAC/VDC, spring-return fail-safe*	MEP-425100
							120 VAC, spring-return fail-safe*	MEP-425300
		142					24 VAC/VDC, spring-return fail-safe*	MEP-455100
							120 VAC, spring-return fail-safe*	MEP-455300
	Tri-state (floating) 3-wire 24 V	50	95	45–60 sec.	No	CME-100x	Optional auxiliary switch	MEP-5373
					10K ohm pot.			MEP-5374
		62	95	90 sec.	No	No	Spring-return fail-safe*	MEP-425500
					No	2 SPDT		MEP-425502
		120	94	75–90 sec.	No	CME-700x	Optional auxiliary switch	MEP-7251
					10K ohm pot.			MEP-7253
		180	94	90–115 sec.	No	CME-700x	Optional auxiliary switch	MEP-7551
					10K ohm pot.			MEP-7553
		320			No			MEP-7851
					10K ohm pot.			MEP-7853
	2–10 VDC	50	95	45–60 sec.	1–5 VDC	CME-100x	Optional auxiliary switch	MEP-5372
	0–10 VDC	62	95	90 sec.	0–10 VDC	No	Spring return fail-safe*	MEP-425600
						2 SPDT		MEP-425602
		160			1K ohm pot.	No		MEP-455600
						2 SPDT		MEP-455602
	0–10 VDC or 4–20 mA	120	94	75–90 sec.	0–5 or 0–10 VDC	CME-700x	Optional auxiliary switch	MEP-7252
		180		90–115 sec.				MEP-7552
		320						MEP-7852
No	Tri-state (floating) 3-wire 24 V	10	95	30 sec.	Red/Green LEDs	No	Translucent cover	MEP-4101
			45	15 @ 45°	No	CME-100x	The faster rotation speed means lower torque than in other MEP-5xxx series	MEP-5223
			90	15 sec.				MEP-5233
		35	up to 360	18°/min	CME-2001/2002	CME-100x	Various strokes/directions; optional aux. switch and feedback pot.	MEP-150x
		40	95	90 sec.	No	No	MEP-4003 does not include green cover	MEP-4001/4003(V)
					10K ohm pot.	No		MEP-4013
					No	SPDT		MEP-4021
		50		300 sec.	CME-2003	CME-100x	MEP-5xxx green cover not included	MEP-5061
				90 sec.				MEP-5071
		80		90 sec.	No	No		MEP-4801
					10K ohm pot.	No		MEP-4813
					No	SPDT		MEP-4821
		120	94	75–90 sec.	No	CME-700x	Optional auxiliary switch	MEP-7201
					10K ohm pot.			MEP-7203
		180		90–115 sec.	No			MEP-7501
					10K ohm pot.			MEP-7503
		320			No			MEP-7801
					10K ohm pot.			MEP-7803
	0–10 VDC	40	95	90 sec.	0–5 or 0–10 VDC	No	Switch selectable feedback	MEP-4002(V)
						SPDT		MEP-4022
		80				No		MEP-4802
						SPDT		MEP-4822
	0–10 VDC or 4–20 mA	120	94	75–90 sec	0–5 or 0–10 VDC	CME-700x	Optional auxiliary switch	MEP-7202
		180		90–115 sec.				MEP-7502
		320						MEP-7802
	2–10 VDC	40	95	90 sec.	No	No	Modular connectors	MEP-4042
		80						MEP-4842

*Fail-safe is capacitor-driven with switch-selectable direction, except for indicated MEP-425xxx and MEP-455xxx models that are spring return.

NOTE: The MEP-4101 and MEP-5223/5233s have the highest rotation speed and lowest torque (10 in-lbs.) of any KMC actuators. See the 10 and 40/80 in-lbs. Torque Models (MEP-4000/4800 Series) and the 10 and 50 in-lbs. Torque Models (MEP-5000/5200/5300 Series) chart.

35 in-lbs. Torque Models (MEP-1500 Series)

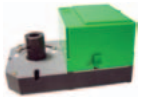
Model	Minimum Torque (in-lbs./Nm)	Control Signal	Power Supply	Motor Timing	Fail-Safe	Feedback	Auxiliary Switch	Damper Shaft Diameter	Weight (lb./kg)
MEP-1501	35/4	Tri-State, 24 VAC	24 VAC	18° per Minute—various strokes (45/60/100/360°) and directions (CW/CCW)	No	Optional CME-2001/2002	Optional CME-100x	1/2" Round or 3/8" Round with shaft adapter	1.2/0.54
MEP-1502									
MEP-1503									
MEP-1504									
MEP-1505									
MEP-1506									
MEP-1507									

10 and 40/80 in-lbs. Torque Models (MEP-4000/4800 Series)

Model	Minimum Torque (in-lbs/Nm)	Control Signal	Power Supply	Motor Timing to 90°	Fail-Safe	Feedback	Auxiliary Switch	Damper Shaft Diameter	Weight (lb./kg)
MEP-4101	10/1.1	Tri-State, 24 VAC	24 VAC	30 seconds at 60 Hz	No	LEDs	No	1/4" to 5/8" Round or 1/4" to 7/16" Square	0.85/0.39
MEP-4013	40/4.5	Tri-State, 24 VAC		90 seconds at 60 Hz		10K ohm	No		1.1/0.5
MEP-4021		Tri-State, 24 VAC				No	SPDT		
MEP-4001		Tri-State, 24 VAC				No	No		
MEP-4003 (V)*		Tri-State, 24 VAC				No	No		
MEP-4022		0–10 VDC				0–5, 0–10 VDC	SPDT		
MEP-4002 (V)*		0–10 VDC				0-5, 0-10 VDC	No		
MEP-4042		**2**–10 VDC (Modular)				No	No		
MEP-4813	80/9	Tri-State, 24 VAC				10K ohm	No		
MEP-4821		Tri-State, 24 VAC				No	SPDT		
MEP-4801		Tri-State, 24 VAC				No	No		
MEP-4822		0–10 VDC				0–5, 0–10 VDC	SPDT		
MEP-4802		0–10 VDC				0–5, 0–10 VDC	No		
MEP-4842		**2**–10 VDC (Modular)				No	No		

*MEP-4002V and MEP-4003V have the quick-mount option. See the ***MEP-400x "V" Models Valve Cross-Reference on page 177***.
**Functionally like the MEP-4001, the MEP-4003 and MEP-4003V do not have the larger green top enclosure.

10 and 50 in-lbs. Torque Models (MEP-5000/5200/5300 Series)



Model	Minimum Torque (in-lbs./Nm)	Control Signal	Power Supply	Motor Timing to 90° (@ 60 Hz)	Fail-Safe	Feedback	Auxiliary Switch	Damper Shaft Diameter	Weight (lb./kg)
MEP-5061	50/5.7	Tri-State, 24 VAC	24 VAC	5 minutes	No	Optional CME-2003	Optional CME-1002/1004	1/2" Round or 3/8" Round with shaft adapter	2.0/0.9
MEP-5071		Tri-State, 24 VAC		90 seconds		Optional CME-2003			2.0/0.9
MEP-5223	10/1.1*	Tri-State, 24 VAC		15 sec. @ 45°		No			2.0/0.9
MEP-5233		Tri-State, 24 VAC		15 seconds		No			2.0/0.9
MEP-5372	50/5.7	2–10 VDC, 4–20 mA	24 VAC/VDC	45 to 60 seconds	Yes (Capacitor)	1–5 VDC			2.5/1.1
MEP-5373		Tri-State, 24 VAC/VDC		45 to 60 seconds		No			2.5/1.1
MEP-5374		Tri-State, 24 VAC/VDC		45 to 60 seconds		10K ohm			2.5/1.1

*NOTE: The much faster rotation speed in the MEP-5223/5233s means less torque than in the rest of the MEP-5xxx series.

62 in-lbs. Torque Models (MEP-425 Series)

Model	Minimum Torque (in-lbs./Nm)	Control Signal	Power Supply	Motor Timing to 90°	Fail-Safe	Feedback	Auxiliary Switch	Damper Shaft Diameter	Weight (lb./kg)
MEP-425100	62/7	2 Position, 24 VAC/VDC	24 VAC/VDC	90 seconds	Yes (Spring Return)	No	No	1/4" to 3/4" Round or 1/4" to 1/2" Square	2.9/1.3
MEP-425300		2 Position, 120 VAC	120 VAC			No	No		
MEP-425500		Tri-State, 24 VAC/VDC	24 VAC/VDC			No	No		
MEP-425502		Tri-State, 24 VAC/VDC	24 VAC/VDC			No	2 SPDT		
MEP-425600		0–10 VDC	24 VAC/VDC			0–10 VDC	No		
MEP-425602		0–10 VDC	24 VAC/VDC			0–10 VDC	2 SPDT		

160 in-lbs. Torque Models (MEP-455 Series)

Model	Minimum Torque (in-lbs./Nm)	Control Signal	Power Supply	Motor Timing to 90°	Fail-Safe	Feedback	Auxiliary Switch	Damper Shaft Diameter	Weight (lb./kg)
MEP-455100	160/18	2 Position, 24 VAC/ VDC	24 VAC/VDC	90 seconds	Yes (Spring Return)	No	No	1/4" to 3/4" Round or 1/4" to 1/2" Square	4.85/2.2
MEP-455300		2 Position, 120 VAC	120 VAC			No	No		
MEP-455600		0–10 VDC	24 VAC/VDC			0–10 VDC	No		
MEP-455602		0–10 VDC	24 VAC/VDC			0–10 VDC	2 SPDT		

120/180/320 in-lbs. Torque Models (MEP-7200/7500/7800 Series)

Model	Minimum Torque (in-lbs./Nm)	Control Signal	Power Supply	Motor Timing to 90°	Fail-Safe	Feedback	Auxiliary Switch	Damper Shaft Diameter	Weight (lb./ kg)
MEP-7x01	MEP-72xx: 120/13.5; MEP-75xx: 180/20 MEP-78xx: 320/36	Tri-State, 24 VAC/VDC	24 VAC/VDC	MEP-72xx: 75 to 90 seconds, load dependent; MEP-75xx/ MEP-78xx: 90 to 115 seconds, load dependent	No	No	Optional CME-7001/7002	3/8" to 1.05" Round or 5/16" to 5/8" Square	MEP-72xx: 5.0/2.3; MEP-75xx/ MEP-78xx: 5.4/2.5
MEP-7x02		0–10 VDC or 4–20 mA				0–5 or 0–10 VDC			
MEP-7x03		Tri-State, 24 VAC/VDC				10K ohm pot.			
MEP-7x51		Tri-State, 24 VAC/VDC			Yes (Capacitor)	No			
MEP-7x52		0–10 VDC or 4–20 mA				0–5 or 0–10 VDC			
MEP-7x53		Tri-State, 24 VAC/VDC				10K ohm pot.			

Actuator Sizing for Dampers Guide

Please refer to the damper torque ratings supplied by the damper manufacturer. If damper ratings are unavailable, this chart provides general guidelines for actuator selection.

Damper Type	Up to 1000 FPM	1000 to 2500 FPM	2500 to 3000 FPM
Opposed blades without seals	3 in-lb / sq.-ft	4.5 in-lb / sq.-ft	6 in-lb / sq.-ft
Parallel blades without seals	4 in-lb / sq.-ft	6 in-lb / sq.-ft	8 in-lb / sq.-ft
Opposed blades with seals	5 in-lb / sq.-ft	7.5 in-lb / sq.-ft	10 in-lb / sq.-ft
Parallel blades with seals	7 in-lb / sq.-ft	10.5 in-lb / sq.-ft	14 in-lb / sq.-ft

MEP-400x "V" Models Valve Cross-Reference

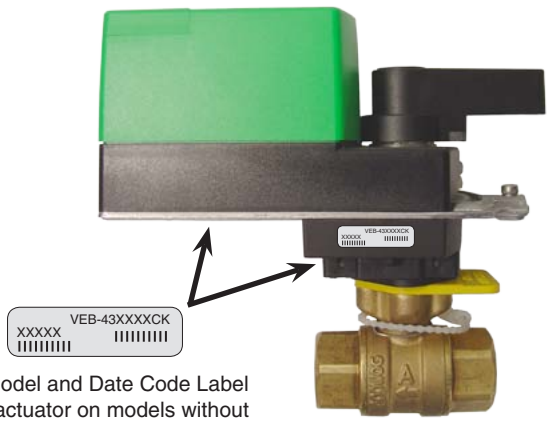
MEP-4002**V**/4003**V** actuators have brackets with a patent-pending, **quick-mounting** mechanism that mounts directly on VFB-43...BC and VFB-46...BC series valve bodies (or VFB-43...BX and VFB-46...BX series with the HPO-5074 kit).

NOTE: These "V" actuators were installed in VEB-43...CF, VEB-43...CK, VEB-46...CF, and VEB-46...CK valves starting in mid-June 2011 (date codes 11166 and later). Replacement actuators for valves before this date code would be MEP-4002/4003.

See the HPO-5074 installation guide and the VEB-43 and VEB-46 series data sheets for additional information.

With the HPO-5074 kit, MEP-4002**V**/4003**V** actuators can be mounted on the KMC and other valve bodies listed in the table below.

MEP-4002V Actuator Installed on VEB-43 Series Valve Body with HPO-5074 Quick-Mount Adapter Kit



Valve Model and Date Code Label (below actuator on models without "V" actuators or on the side of the valve on models with "V" Actuators)

Typical Application	3-Way H/C Water	2-Way H/C Water	2-Way PIC-V H/C Water	2-Way Steam (to 30 psi)
KMC Valve Body	VFB-46__BX, *VFB-46__BC**	VFB-43__BX, *VFB-43__BC**	N/A	VFB-4303_SX
KMC Valve	VEB-46___B__	VEB-43___B__		VEB-4303_SDL
Valve Solutions (VSI)	UR3 Series	UR2 Series	SPV Series	75 Series
Griswold	UR3 Series	UR2 Series	SPV Series	N/A
Delta Control Products	ST Series	ST Series	ATI Series	
Honeywell	VBN3 Series	VBN2 Series	N/A	
Siemens	599 Series	599 Series		
*VFB-4___**BC** valve bodies come with the HPO-5074 already installed.				

Valve (Three-Way) Application Guide

KMC Controls supplies a variety of three-way valves. Although globe valves should be used in either only mixing applications or only diverting applications (depending on design), KMC ball and butterfly valves may be used in mixing and diverting applications. The mixing and diverting valves are dependent merely on how connections are made to them (see the illustration).

Diverting Only

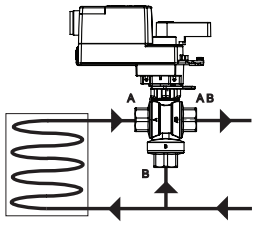
VCZ-44
VEZ-44

Mixing Only

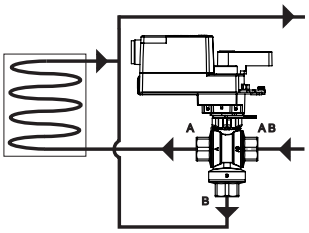
(No current models)

Mixing and Diverting

VCB-46
VEB-46
VEB-56
VEF-56



Ball Valve (VEB-46) Mixing Application



Ball Valve (VEB-46) Diverting Application

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.

Valve Sizing Guide

The most important piece of information when selecting or sizing a valve is the Valve Flow Coefficient (Cv). The Cv is defined as the flow rate in gallons of 60° F water that will pass through a specific valve in one minute with a one psid pressure drop.

Cv for **Liquids**:

$$Cv = \frac{G \times Q}{\sqrt{Dp}}$$

Cv = Valve Flow Coefficient
Dp = Pressure drop through the valve (Inlet Pressure – Outlet Pressure)
G = Specific gravity of liquid (water = 1.0)
Q = Flow in U.S. gallons per minute

Cv for **Steam**:

$$Cv = \frac{Q}{3\sqrt{Dp \times Pa}}$$

Cv = Valve Flow Coefficient
Dp = Pressure drop through the valve (Inlet Pressure – Outlet Pressure)
Pa = Valve outlet absolute pressure (psid), which is equal to the gauge pressure plus 14.7 psid.
Q = Flow in pounds per hour

NOTE: Maximum flow through a steam valve occurs when Dp = 53% of the inlet absolute pressure. A further increase in Dp will not increase the steam flow rate.

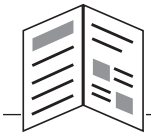
After calculating the Cv, choose a valve that has the closest Cv rating to your application. You may use a valve with a smaller Cv rating as long as the value is less than 10% smaller.

Valve Effective Cv with Increased Pipe Size

VEB-46 Series Effective Cv

Valve Size			Connected Pipe Line Size								
	Ends	Cv	0.5"	0.75"	1"	1.25"	1.5"	2"	2.5"	3"	4"
	1/2"	0.33	--	0.3	0.3						
	1/2"	0.59	--	0.6	0.6						
	1/2"	1.0	--	1.0	1.0						
	1/2"	2.4	--	2.3	2.3						
	1/2"	4.3	--	4.0	3.8	--					
	1/2"	8.0	--	7.9	5.7	--					
	3/4"	0.40	--	--	0.4	0.40	0.4				
	3/4"	0.66		--	0.66	0.66	0.66				
	3/4"	1.3		--	1.3	1.30	1.3				
	3/4"	2.4		--	2.4	2.39	2.38				
	3/4"	3.8		--	3.8	3.74	3.7				
	3/4"	12.6		--	11.7	10.86	10.4				
	1"	0.40		--	--	0.40	0.40	0.40	0.40	0.40	
	1"	0.65		--	--	0.65	0.65	0.65	0.65	0.65	
	1"	1.3		--	--	1.3	1.3	1.3	1.3	1.3	
	1"	2.3		--	--	2.3	2.3	2.3	2.3	2.3	
	1"	3.5			--	3.5	3.5	3.5	3.5	3.5	
	1"	4.5			--	4.5	4.5	4.5	4.4	4.4	
	1"	8.6			--	8.5	8.4	8.3	8.2	8.2	
	1"	10.0			--	9.9	9.7	9.6	9.5	9.4	
	1"	14.9			--	14.6	14.1	13.5	13.3	13.1	
	1"	22.3			--	21.2	19.9	18.4	17.7	17.3	
	1"	30.8			--	28.0	25.2	22.3	21.1	20.5	
	1-1/4"	4.1				--	4.0	4.0	4.0	4.0	4.0
	1-1/4"	7.7				--	7.7	7.6	7.6	7.6	7.6
	1-1/4"	8.7				--	8.6	8.6	8.5	8.5	8.5
	1-1/4"	12.7				--	12.6	12.4	12.3	12.2	12.2
	1-1/4"	19.4				--	19.2	18.5	18.1	17.9	17.6
	1-1/4"	34.1				--	32.9	29.9	28.3	27.4	26.5
	1-1/2"	4.0					--	4.0	4.0	4.0	4.0
	1-1/2"	8.3					--	8.2	8.2	8.2	8.2
	1-1/2"	13.4					--	13.3	13.2	13.2	13.1
	1-1/2"	23.5					--	23.1	22.7	22.4	22.1
	1-1/2"	32.0					--	31.0	30.0	29.3	28.6
	1-1/2"	61.1					--	54.9	49.7	46.9	44.1
	2"	23.9						--	23.8	23.7	23.5
	2"	38.2						--	37.8	37.3	36.6
	2"	56.7						--	55.5	54.0	52.0
	2"	108.5						--	100.7	92.3	83.3

SEE ALSO: The interactive *Valve Selection Tool* in the Products and Solutions section of the *KMC web site*.



VEB-43 Series Effective Cv

Valve Size			Connected Pipe Line Size									
	Ends	Cv	0.5"	0.75"	1"	1.25"	1.5"	2"	2.5"	3"	4"	5"
	1/2"	0.38	--	0.38	0.38	0.38						
	1/2"	0.68	--	0.68	0.68	0.68						
	1/2"	1.3	--	1.29	1.28	1.28						
	1/2"	2.6	--	2.5	2.5	2.4						
	1/2"	4.7	--	4.3	4.1	3.9						
	1/2"	8.0	--	6.5	5.7	5.4						
	1/2"	11.7	--	7.9	6.7	6.2						
	3/4"	0.63		--	0.63	0.63	0.63					
	3/4"	1.2		--	1.2	1.2	1.2					
	3/4"	2.5		--	2.5	2.5	2.5					
	3/4"	4.3		--	4.3	4.2	4.2					
	3/4"	10.1		--	9.6	9.1	8.8					
	3/4"	14.7		--	7.1	6.5	6.2					
	3/4"	28.6		--	21.1	17.1	15.4					
	1"	4.4			--	4.4	4.4	4.4	4.4	4.3		
	1"	9			--	8.9	8.8	8.7	8.6	8.6		
	1"	15.3			--	14.9	14.4	13.8	13.5	13.4		
	1"	26.1			--	24.4	22.4	20.3	19.4	18.9		
	1"	28.4			--	26.2	23.8	21.4	20.3	19.7		
	1"	43.9			--	36.8	31.0	26.1	24.2	23.2		
	1"	54.2			--	42.3	34.1	27.9	25.6	24.5		
	1-1/4"	4.4				--	4.4	4.4	4.4	4.4	4.4	
	1-1/4"	8.3				--	8.3	8.2	8.2	8.2	8.1	
	1-1/4"	14.9				--	14.8	14.5	14.3	14.2	14.0	
	1-1/4"	36.5				--	35.0	31.5	29.6	28.6	27.6	
	1-1/4"	41.1				--	39.0	34.3	31.9	30.7	29.4	
	1-1/4"	102.3				--	79.1	53.3	45.5	42.0	39.0	
	1-1/2"	22.8					--	22.4	22.0	21.8	21.5	21.3
	1-1/2"	41.3					--	39.2	37.2	36.0	34.7	34.1
	1-1/2"	73.9					--	63.7	55.9	52.0	48.3	46.7
	1-1/2"	171.7					--	101.2	76.6	67.2	59.8	56.8
	2"	41.7						--	41.2	40.6	39.7	39.2
	2"	57						--	55.8	54.2	52.2	51.2
	2"	71.1						--	68.8	65.9	62.4	60.6
	2"	100						--	93.8	86.9	79.2	75.7
	2"	108						--	100.3	92.0	83.0	79.0
	2"	210						--	165.9	134.6	110.5	101.5
	2"	266						--	189.7	146.4	116.7	106.3
	2-1/2"	45							--	43.6	42.5	42.0
	2-1/2"	55							--	52.5	50.6	49.7
	2-1/2"	72							--	66.6	63.0	61.2
	2-1/2"	101							--	87.5	79.7	76.2
	2-1/2"	162							--	119.0	101.3	94.3
	2-1/2"	202							--	132.4	109.3	100.6
	3"	49								--	45.8	45.1
	3"	63								--	56.7	55.4
	3"	82								--	69.3	67.0
	3"	124								--	89.7	84.7
	3"	145								--	96.8	90.6

KMC CONTROLS

Valve Schedule

Model #	Location	Tag/ID	Body Style	Fail Position	Service	Size	Flow Rate	Required Cv	Valve Cv	Required Pressure Differential	Actual Pressure Differential	Power	Control Signal

Useful Formulas and Conversions

Air Flow: $V = 4004\sqrt{P_V}$

Where:

V = Airfow (feet per minute)
P_V = P_T – P_S (inches of water)

P_V = Velocity Pressure
P_S = Static Presure
P_T = Total Pressure

Area of a Square = Horizontal x Vertical

Area of a Circle = 3.14 x radius^2

Equivalent Diameter of a Duct = $\sqrt{\frac{4\ (\text{Horizontal x Vertical})}{3.14}}$

NOTE: See also the Valve Sizing Guide section.

English		Metric	English		Metric
1 inch	=	2.54 centimeters	1 scim	=	0.273 mL/s
1 inch	=	25.4 millimeters	1 scfm	=	471.74 ml/s
1 foot	=	30.48 centimeters	1 scfh	=	7.86 mL/s
1 foot	=	304.8 millimeters	1 fpm	=	00508 m/s
1 sq. inch	=	645.16 sq. mm	1 Cv	=	0.859 kvs
1 inch wg	=	248.84 Pa	˚F	=	(1.8 x ˚C) + 32
1 BAR	=	100 kpa	1 in-lb.	=	0.113 Nm
1 psig	=	6.89 kPa	1 lb	=	0.45359 kg
			1 ounce	=	0.02835 kg

Replace		With
1 scfm	=	1728 scim
1 scfh	=	28.8 scim
1 cfm	=	472 mL/s
1 cfh	=	7.87 mL/s

Competitor Cross-Reference

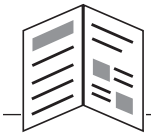
The KMC CCC-1002 receiver controller can replace these single/dual-input receiver/controllers:

- Honeywell RP908A and RP908B
- Johnson T-9000 and T-5801/5802
- Siemens 185 and 195 series
- Barber-Colman (TAC) RKS-1001/2001/3002/4002
- Robertshaw P341 and 2341

NOTE: External restrictor HFO-0022 might be required if replacing a receiver/controller using internal restrictors.

Pneumatic VAV Reset Volume Controllers Replacement Cross-Reference						
KMC Controls	**Robertshaw/ Invensys**	**Staefa/UPC**	**Titus**	**Honeywell**	**Johnson Controls**	**Barber-Colman/ Invensys**
CSC-2001	R77-21, R77-L21	VCV2100-201, -251 VCV2200-251	Titus I			
CSC-2002	R77-22, R77-L22					
CSC-2003	R77-23, R77-L23, R77-23DA					
CSC-2004	R77-24, R77-L24, R77-24RA					
CSC-2007	R77-25					
CSC-2008	R77-26					
CSC-2009	R77-27					
CSC-2010	R77-28					
CSC-3011 ("universal controller")	R77 and R78 series (all models)	VCV2500-101* VCV2500-201* VCV2500-301* VCV2500-401* VCV2100 (all models) VCV2200 (all models)	Titus I, Titus II, Titus IIA, Titus III	CP980C, D, E, F**	P-3800-1,* P-3800-2*	PPR-9100, HYUR-2700 series
CSC-3025 ("universal controller for Trane units")		VCV2500-101 VCV2500-201 VCV2500-301 VCV2500-401 (on Trane VAV units)			P-3800-1, P-3800-2 (on Trane VAV units)	

*On Trane VAV terminal units, use CSC-3025 instead.
**For Honeywell CP980 Velocitrol controllers, the existing inlet sensor must also be replaced with a KMC SSS-1000 sensor.
See the CSC-2000 and CSC-3000 series data sheets or section in this catalog for more information.
After replacing a controller, adjustment/calibration will be necessary—**refer to the CSC-2000 or CSC-3000 series controller's installation and/or application guides available as downloads from the KMC web site**.



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory

***NOTE: The valves marked with an asterisk no longer have KMC direct replacements. For those valves, see the cross-referenced section in this catalog for the nearest equivalent. VCZ valves may also need a compression/threaded adapter.**

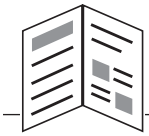
0xxxxx

033-202	Siemens	PE Switch	CCE-1001
033-204	Siemens	PE Switch	CCE-1001
033-205	Siemens	PE Switch	CCE-1001
033-206	Siemens	PE Switch	CCE-1001
033-207	Siemens	PE Switch	CCE-1001
033-208	Siemens	PE Switch	CCE-1002
033-209	Siemens	PE Switch	CCE-1002
033-210	Siemens	PE Switch	CCE-1002
033-2103	Siemens	PE Switch	CCE-1001
033-211	Siemens	PE Switch	CCE-1001
033-212	Siemens	PE Switch	CCE-1001
033-213	Siemens	PE Switch	CCE-1001
033-214	Siemens	PE Switch	CCE-1001
085-0024	Siemens	Pneu. Receiver-Controller	CCC-1002

1xxxxx

134-1106	Siemens	High Temp. Limit Thermostat	CTE-6001
134-1452	Siemens	PE Switch	CCE-1001
134-1454	Siemens	PE Switch	CCE-1002
134-1455	Siemens	PE Switch	CCE-1001
134-1456	Siemens	PE Switch	CCE-1001
134-1459	Siemens	PE Switch	CCE-1002
134-1460	Siemens	PE Switch	CCE-1001
134-1510	Siemens	Low Temp. Limit Thermostat	CTE-3006
134-1511	Siemens	Low Temp. Limit Thermostat	CTE-3007
134-1514	Siemens	Low Temp. Limit Thermostat	CTE-3006
141-0518	Siemens	Diff. Static Press. Air Flow Switch	CSE-1103
141-0530	Siemens	High Temp. Limit Thermostat	CTE-6001
141-0531	Siemens	High Temp. Limit Thermostat	CTE-6001
141-0564	Siemens	Low Temp. Thermostat	CTE-3006
141-0565	Siemens	Low Temp. Thermostat	CTE-3007
171A10204	Siemens	Electric Ball Valve	VEB-4302DBCF
171A10205	Siemens	Electric Ball Valve	VEB-4302FBCF
171A10206	Siemens	Electric Ball Valve	VEB-4302HBCF
171A10207	Siemens	Electric Ball Valve	VEB-4302KBCF
171A10208	Siemens	Electric Ball Valve	VEB-4302MBCF
171A10209	Siemens	Electric Ball Valve	VEB-4303KBCF
171A10211	Siemens	Electric Ball Valve	VEB-4304JBCF
171A10213	Siemens	Electric Ball Valve	VEB-4304MBCF
171A10215	Siemens	Electric Ball Valve	VEB-4305FBCF
171A10216	Siemens	Electric Ball Valve	VEB-4305LBCF
171B10218	Siemens	Electric Ball Valve	VEB-4306DBCF
171B10219	Siemens	Electric Ball Valve	VEB-4306JBCF
171B10220	Siemens	Electric Ball Valve	VEB-4306GBCF
171B10222	Siemens	Electric Ball Valve	VEB-4308DBCF
171B10223	Siemens	Electric Ball Valve	VEB-4308MBCF
171C10204	Siemens	Electric Ball Valve	VEB-4302DBCK (**0**–10 VDC)
171C10205	Siemens	Electric Ball Valve	VEB-4302FBCK (**0**–10 VDC)
171C10206	Siemens	Electric Ball Valve	VEB-4302FBCK (**0**–10 VDC)
171C10207	Siemens	Electric Ball Valve	VEB-4302KBCK (**0**–10 VDC)
171C10208	Siemens	Electric Ball Valve	VEB-4302MBCK (**0**–10 VDC)
171C10209	Siemens	Electric Ball Valve	VEB-4303KBCK (**0**–10 VDC)
171C10211	Siemens	Electric Ball Valve	VEB-4304JBCK (**0**–10 VDC)
171C10213	Siemens	Electric Ball Valve	VEB-4304MBCK (**0**–10 VDC)
171C10215	Siemens	Electric Ball Valve	VEB-4305FBCK (**0**–10 VDC)
171C10216	Siemens	Electric Ball Valve	VEB-4305LBCK (**0**–10 VDC)
171D10218	Siemens	Electric Ball Valve	VEB-4306DBCK (**0**–10 VDC)
171D10219	Siemens	Electric Ball Valve	VEB-4306JBCK (**0**–10 VDC)

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
171D10222		Siemens	Electric Ball Valve	VEB-4308DBCK (**0**–10 VDC)	
171D10223		Siemens	Electric Ball Valve	VEB-4308MBCK (**0**–10 VDC)	
171F10204		Siemens	Electric Ball Valve	VEB-4302DBDH	
171F10205		Siemens	Electric Ball Valve	VEB-4302FBDH	
171F10206		Siemens	Electric Ball Valve	VEB-4302HBDH	
171F10207		Siemens	Electric Ball Valve	VEB-4302KBDH	
171F10208		Siemens	Electric Ball Valve	VEB-4302MBDH	
171F10209		Siemens	Electric Ball Valve	VEB-4303LBDH	
171F10211		Siemens	Electric Ball Valve	VEB-4304JBDH	
171F10213		Siemens	Electric Ball Valve	VEB-4304MBDH	
171F10215		Siemens	Electric Ball Valve	VEB-4305FBDH	
171F10216		Siemens	Electric Ball Valve	VEB-4305LBDH	
171F10218		Siemens	Electric Ball Valve	VEB-4306DBDH	
171F10222		Siemens	Electric Ball Valve	VEB-4308DBDH	
171F10223		Siemens	Electric Ball Valve	VEB-4308MBDH	
171G10204		Siemens	Electric Ball Valve	VEB-4302DBDL	
171G10205		Siemens	Electric Ball Valve	VEB-4302FBDL	
171G10206		Siemens	Electric Ball Valve	VEB-4302HBDL	
171G10207		Siemens	Electric Ball Valve	VEB-4302KBDL	
171G10208		Siemens	Electric Ball Valve	VEB-4302MBDL	
171G10209		Siemens	Electric Ball Valve	VEB-4303LBDL	
171G10213		Siemens	Electric Ball Valve	VEB-4304MBDL	
171G10215		Siemens	Electric Ball Valve	VEB-4305FBDL	
171G10216		Siemens	Electric Ball Valve	VEB-4305LBDL	
171G10218		Siemens	Electric Ball Valve	VEB-4306DBDL	
171G10219		Siemens	Electric Ball Valve	VEB-4306JBDL	
171G10222		Siemens	Electric Ball Valve	VEB-4308DBDL	
171G10223		Siemens	Electric Ball Valve	VEB-4308MBDL	
180-400		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-401		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-402		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-403		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-430		Siemens	Pneumatic Room Thermostat	CTC-1622	
180-431		Siemens	Pneumatic Room Thermostat	CTC-1622	
180-432		Siemens	Pneumatic Room Thermostat	CTC-1622	
180-433		Siemens	Pneumatic Room Thermostat	CTC-1622	
180-884		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-885		Siemens	Pneumatic Room Thermostat	CTC-1622	
180-900		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-901		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-902		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-903		Siemens	Pneumatic Room Thermostat	CTC-1621	
180-924		Siemens	Pneumatic Room Thermostat	CTC-1611	
180-925		Siemens	Pneumatic Room Thermostat	CTC-1611	
180-926		Siemens	Pneumatic Room Thermostat	CTC-1611	
180-927		Siemens	Pneumatic Room Thermostat	CTC-1611	
180-932		Siemens	Pneumatic Room Thermostat	CTC-1622	
180-933		Siemens	Pneumatic Room Thermostat	CTC-1622	
180-942		Siemens	Pneumatic Room Thermostat	CTC-1612	
185-0001		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0002		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0003		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0004		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0005		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0006		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0007		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0008		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0009		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0010		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0011		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0012		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0013		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0014		Siemens	Pneumatic Receiver-Controller	CCC-1002	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
185-0015		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0016		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0017		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0018		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0023		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0025		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0031		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0032		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0033		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0034		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0035		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0036		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0037		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0038		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0067		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0068		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0069		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0070		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0071		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0072		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0073		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0074		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0075		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0076		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0093		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0123		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0124		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0125		Siemens	Pneumatic Receiver-Controller	CCC-1002	
185-0126		Siemens	Pneumatic Receiver-Controller	CCC-1002	
192-200		Siemens	Pneumatic Room Thermostat	CTC-1611	
192-201		Siemens	Pneumatic Room Thermostat	CTC-1612	
192-202		Siemens	Pneumatic Room Thermostat	CTC-1621	
192-203		Siemens	Pneumatic Room Thermostat	CTC-1622	
192-220		Siemens	Pneumatic Room Thermostat	CTC-1611	
192-221		Siemens	Pneumatic Room Thermostat	CTC-1612	
192-222		Siemens	Pneumatic Room Thermostat	CTC-1621	
192-223		Siemens	Pneumatic Room Thermostat	CTC-1622	
192-840		Siemens	Pneumatic Room Thermostat	CTC-1621-103	
192-841		Siemens	Pneumatic Room Thermostat	CTC-1622-103	
195-0003		Siemens	Pneumatic Receiver-Controller	CCC-1002	
195-0011		Siemens	Pneumatic Receiver-Controller	CCC-1002	
195-1000		Siemens	Pneumatic Receiver-Controller	CCC-1002	
195-2000		Siemens	Pneumatic Receiver-Controller	CCC-1002	

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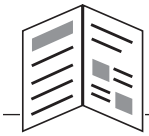
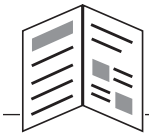
20-907		Invensys	Relief Valve	HAO-1070	
21-104		Invensys	6x6 Actuator Diaphragm	VTD-9426	
21-111		Invensys	Ball Joint	VTD-0801	
21-125		Invensys	Clevis Pin	VTD-1100	
21-197		Invensys	Crankarm	VTD-1403	
21-198		Invensys	Crankarm	VTD-1404	
21-602		Invensys	Clevis	VTD-1007	
21-603		Invensys	Cotter Pin	VTD-1205	
21-806		Invensys	Crankarm	VTD-1415	
21-807		Invensys	Ball Joint	VTD-0804	
21-808		Invensys	Pushrod	VTD-1630	
21-813		Invensys	Crankarm	VTD-1414	
21-814		Invensys	Ball Joint	VTD-0803	
21-817		Invensys	3x3 Feedback Spring; 5 #	VTD-2250	
21-818		Invensys	3x3 Feedback Spring; 10 #	VTD-2260	
21-819		Invensys	4x4 Feedback Spring; 5#	VTD-2251	
21-820		Invensys	4x4 Feedback Spring; 10#	VTD-2261	
21-822		Invensys	Pushrod	VTD-1611	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
21-827		Invensys	2x2 Mounting Bracket	VTD-0903	
21-829		Invensys	3x3 Or 4x4 Mounting Bracket	VTD-0902	
21-838		Invensys	6x6 Feedback Spring; 5#	VTD-2252	
21-839		Invensys	6x6 Feedback Spring; 10#	VTD-2262	
21-840		Invensys	2x2 Actuator Diaphragm	VTD-9422	
21-841		Invensys	3x3 Actuator Diaphragm	VTD-9423	
21-842		Invensys	4x4 Actuator Diaphragm	VTD-9424	
21-975		Invensys	2x2 Replacement Spring; 3-12#	VTD-4202	
21-976		Invensys	2x2 Replacement Spring; 5-10#	VTD-4203	
21-977		Invensys	2x2 Replacement Spring; 8-13#	VTD-4205	
21-978		Invensys	2x2 Replacement Spring; 10-15#	VTD-4206	
21-979		Invensys	2x2 Replacement Spring; 4-8#	VTD-4208	
21-980		Invensys	3x3 Replacement Spring; 3-12#	VTD-4302	
21-981		Invensys	3x3 Replacement Spring; 5-10#	VTD-4303	
21-982		Invensys	3x3 Replacement Spring; 8-13#	VTD-4305	
21-983		Invensys	3x3 Replacement Spring; 10-15#	VTD-4306	
21-984		Invensys	3x3 Replacement Spring; 4-8#	VTD-4308	
21-985		Invensys	4x4 Replacement Spring; 3-12#	VTD-4402	
21-986		Invensys	4x4 Replacement Spring; 5-10#	VTD-4403	
21-987		Invensys	4x4 Replacement Spring; 8-13#	VTD-4405	
21-988		Invensys	4x4 Replacement Spring; 10-15#	VTD-4406	
21-989		Invensys	4x4 Replacement Spring; 4-8#	VTD-4408	
2211-012		Invensys	Pneumatic Room Thermostat	CTC-1611	
2211-013		Invensys	Pneumatic Room Thermostat	CTC-1612	
2211-411		Invensys	Pneumatic Room Thermostat	CTC-1611	
2211-412		Invensys	Pneumatic Room Thermostat	CTC-1612	
2211-512		Invensys	Pneumatic Room Thermostat	CTC-1611	
2211-513		Invensys	Pneumatic Room Thermostat	CTC-1612	
2212-012		Invensys	Pneumatic Room Thermostat	CTC-1621	
2212-118		Invensys	Pneumatic Room Thermostat	CTC-1621	
2212-119		Invensys	Pneumatic Room Thermostat	CTC-1622	
2212-128		Invensys	Pneumatic Room Thermostat	CTC-1621	
2212-129		Invensys	Pneumatic Room Thermostat	CTC-1622	
2212-301		Invensys	Pneumatic Room Thermostat	CTC-1621	
2212-302		Invensys	Pneumatic Room Thermostat	CTC-1621	
2212-418		Invensys	Pneumatic Room Thermostat	CTC-1621	
2212-518		Invensys	Pneumatic Room Thermostat	CTC-1621	
2214-112		Invensys	Pneumatic Room Thermostat	CTC-1611	
2282-410		Invensys	High Temp Limit Thermostat	CTE-6001	
2341-001		Invensys	Pneumatic Receiver-Controller	CCC-1002	
2341-501		Invensys	Pneumatic Receiver-Controller	CCC-1002	
2341-502		Invensys	Pneumatic Receiver-Controller	CCC-1002	
2353-502		Invensys	Switching Relay	RCC-1109	
2354-501		Invensys	Switching Relay	RCC-1109	
2354-501		Invensys	Switching Relay	RCC-1109	
2360-501		Invensys	Reverse-Acting Relay	RCC-1504	
2364-202		Invensys	PE Switch	CCE-1001	
2364-211		Invensys	PE Switch	CCE-1001	
2372-351		Invensys	Low Pressure Selector	RCC-1106	
2372-352		Invensys	High Pressure Selector	RCC-1108	
2372-501		Invensys	Low Pressure Selector	RCC-1106	
2372-502		Invensys	High Pressure Selector	RCC-1108	
2373-501		Invensys	High/Low Signal Selector Relay	RCC-1111	
2374-410		Invensys	Diff. Static Press. Air Flow Switch	CSE-1103	
243-0001		Siemens	Switching Relay	RCC-1109	
243-0015		Siemens	High/Low Signal Selector Relay	RCC-1111	
243-0018		Siemens	High Pressure Selector	RCC-1108	
243-0019		Siemens	High/Low Signal Selector Relay	RCC-1111	
243-0020		Siemens	Low Pressure Selector	RCC-1106	
243-0024		Siemens	Reverse-Acting Relay	RCC-1504	
2472-010		Invensys	Pneumatic Damper Actuator	MCP-1020-2308	
2472-020		Invensys	Pneumatic Damper Actuator	MCP-1020-8308	
2472-030		Invensys	Pneumatic Damper Actuator	MCP-1020-3308	



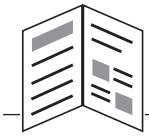
Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
2472-040		Invensys	Pneumatic Damper Actuator	MCP-1020-5308	
2472-050		Invensys	Pneumatic Damper Actuator	MCP-1020-6308	
2472-110		Invensys	Pneumatic Damper Actuator	MCP-1020-2311	
2472-120		Invensys	Pneumatic Damper Actuator	MCP-1020-8311	
2472-130		Invensys	Pneumatic Damper Actuator	MCP-1020-3311	
2472-140		Invensys	Pneumatic Damper Actuator	MCP-1020-5311	
2472-150		Invensys	Pneumatic Damper Actuator	MCP-1020-6311	
2473-010		Invensys	Pneumatic Damper Actuator	MCP-1030-2108	
2473-020		Invensys	Pneumatic Damper Actuator	MCP-1030-8108	
2473-030		Invensys	Pneumatic Damper Actuator	MCP-1030-3108	
2473-040		Invensys	Pneumatic Damper Actuator	MCP-1030-5108	
2473-050		Invensys	Pneumatic Damper Actuator	MCP-1030-6108	
2473-060		Invensys	Pneumatic Damper Actuator	MCP-1030-1108	
2473-110		Invensys	Pneumatic Damper Actuator	MCP-1030-2111	
2473-120		Invensys	Pneumatic Damper Actuator	MCP-1030-8111	
2473-130		Invensys	Pneumatic Damper Actuator	MCP-1030-3111	
2473-140		Invensys	Pneumatic Damper Actuator	MCP-1030-5111	
2473-150		Invensys	Pneumatic Damper Actuator	MCP-1030-6111	
2473-160		Invensys	Pneumatic Damper Actuator	MCP-1030-1520	
2473-210		Invensys	Pneumatic Damper Actuator	MCP-1130-2520	
2473-220		Invensys	Pneumatic Damper Actuator	MCP-1130-8520	
2473-230		Invensys	Pneumatic Damper Actuator	MCP-1130-3520	
2473-240		Invensys	Pneumatic Damper Actuator	MCP-1130-5520	
2473-250		Invensys	Pneumatic Damper Actuator	MCP-1130-6520	
2473-260		Invensys	Pneumatic Damper Actuator	MCP-1130-1520	
2474-010		Invensys	Pneumatic Damper Actuator	MCP-1040-2208	
2474-020		Invensys	Pneumatic Damper Actuator	MCP-1040-8208	
2474-030		Invensys	Pneumatic Damper Actuator	MCP-1040-3208	
2474-040		Invensys	Pneumatic Damper Actuator	MCP-1040-5208	
2474-050		Invensys	Pneumatic Damper Actuator	MCP-1040-6208	
2474-060		Invensys	Pneumatic Damper Actuator	MCP-1040-1208	
2474-110		Invensys	Pneumatic Damper Actuator	MCP-1040-2211	
2474-120		Invensys	Pneumatic Damper Actuator	MCP-1040-8211	
2474-130		Invensys	Pneumatic Damper Actuator	MCP-1040-3211	
2474-140		Invensys	Pneumatic Damper Actuator	MCP-1040-5211	
2474-150		Invensys	Pneumatic Damper Actuator	MCP-1040-6211	
2474-160		Invensys	Pneumatic Damper Actuator	MCP-1040-1211	
2474-210		Invensys	Pneumatic Damper Actuator	MCP-1140-2520	
2474-220		Invensys	Pneumatic Damper Actuator	MCP-1140-8520	
2474-230		Invensys	Pneumatic Damper Actuator	MCP-1140-3520	
2474-240		Invensys	Pneumatic Damper Actuator	MCP-1140-5520	
2474-250		Invensys	Pneumatic Damper Actuator	MCP-1140-6520	
2474-260		Invensys	Pneumatic Damper Actuator	MCP-1140-1520	
2492-020		Invensys	Pneumatic Damper Actuator	MCP-8031-8095	
2492-030		Invensys	Pneumatic Damper Actuator	MCP-8031-3095	
2492-040		Invensys	Pneumatic Damper Actuator	MCP-8031-5095	
2492-120		Invensys	Pneumatic Damper Actuator	MCP-8031-8111	
2492-130		Invensys	Pneumatic Damper Actuator	MCP-8031-3111	
2492-140		Invensys	Pneumatic Damper Actuator	MCP-8031-5111	
251-0001		Siemens	PE Switch	CCE-1001	
2510-002		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
251-0002		Siemens	PE Switch	CCE-1001	
2510-003		Invensys	Pneumatic Valve	See VCB-42 Series nearest equivalent	
251-0003		Siemens	PE Switch	CCE-1001	
2510-004		Invensys	Pneumatic Valve	See VCB-42 Series nearest equivalent	
251-0004		Siemens	PE Switch	CCE-1001	
2510-006		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-007		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-008		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
251-0008		Siemens	PE Switch	CCE-1002	
2510-010		Invensys	Pneumatic Valve	See VCB-42 Series nearest equivalent	
2510-011		Invensys	Pneumatic Valve	See VCB-42 Series nearest equivalent	
2510-012		Invensys	Pneumatic Valve	See VCB-42 Series nearest equivalent	
2510-014		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
2510-015		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-016		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-018		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-019		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-020		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-022		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-023		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-024		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-026		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-027		Invensys	Pneumatic Valve	See VCB-42 Series nearest equivalent	
2510-028		Invensys	Pneumatic Valve	See VCB-42 Series nearest equivalent	
2510-030		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-031		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-032		Invensys	Pneumatic Valve	See VCB-41 Series nearest equivalent	
2510-034		Invensys	Pneumatic Valve	*VCP-51701271—see VCP-5170 cross-reference	
2510-035		Invensys	Pneumatic Valve	*VCP-51701272—see VCP-5170 cross-reference	
2510-036		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2510-038		Invensys	Pneumatic Valve	*VCP-52701271—see VCP-5270 cross-reference	
2510-039		Invensys	Pneumatic Valve	*VCP-52701272—see VCP-5270 cross-reference	
2510-040		Invensys	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
2510-042		Invensys	Pneumatic Valve	*VCP-51701271—see VCP-5170 cross-reference	
2510-043		Invensys	Pneumatic Valve	*VCP-51701272—see VCP-5170 cross-reference	
2510-044		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2510-046		Invensys	Pneumatic Valve	*VCP-52701271—see VCP-5270 cross-reference	
2510-047		Invensys	Pneumatic Valve	*VCP-52701272—see VCP-52170 cross-reference	
2510-048		Invensys	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
2510-050		Invensys	Pneumatic Valve	*VCP-51701711—see VCP-5170 cross-reference	
2510-051		Invensys	Pneumatic Valve	*VCP-51701712—see VCP-5170 cross-reference	
2510-052		Invensys	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
2510-058		Invensys	Pneumatic Valve	*VCP-51711271—see VCP-5170 cross-reference	
2510-059		Invensys	Pneumatic Valve	*VCP-51711272—see VCP-5170 cross-reference	
2510-060		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2510-062		Invensys	Pneumatic Valve	*VCP-52711271—see VCP-5270 cross-reference	
2510-063		Invensys	Pneumatic Valve	*VCP-52711272—see VCP-5270 cross-reference	
2510-064		Invensys	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
2510-066		Invensys	Pneumatic Valve	*VCP-51711271—see VCP-5170 cross-reference	
2510-067		Invensys	Pneumatic Valve	*VCP-51711272—see VCP-5170 cross-reference	
2510-068		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2510-070		Invensys	Pneumatic Valve	*VCP-52711271—see VCP-5270 cross-reference	
2510-071		Invensys	Pneumatic Valve	*VCP-52711272—see VCP-5270 cross-reference	
2510-072		Invensys	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
2510-074		Invensys	Pneumatic Valve	*VCP-51711711—see VCP-5170 cross-reference	
2510-075		Invensys	Pneumatic Valve	*VCP-51711712—see VCP-5170 cross-reference	
2510-076		Invensys	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
2510-082		Invensys	Pneumatic Valve	*VCP-51721271—see VCP-5170 cross-reference	
2510-083		Invensys	Pneumatic Valve	*VCP-51721272—see VCP-5170 cross-reference	
2510-084		Invensys	Pneumatic Valve	*VCP-51721270—see VCP-5170 cross-reference	
2510-086		Invensys	Pneumatic Valve	*VCP-52721271—see VCP-5270 cross-reference	
2510-087		Invensys	Pneumatic Valve	*VCP-52721272—see VCP-5270 cross-reference	
2510-088		Invensys	Pneumatic Valve	*VCP-52721270—see VCP-5270 cross-reference	
2510-090		Invensys	Pneumatic Valve	*VCP-51721271—see VCP-5170 cross-reference	
2510-091		Invensys	Pneumatic Valve	*VCP-51721272—see VCP-5170 cross-reference	
2510-092		Invensys	Pneumatic Valve	*VCP-51721270—see VCP-5170 cross-reference	
2510-094		Invensys	Pneumatic Valve	*VCP-52721271—see VCP-5270 cross-reference	
2510-095		Invensys	Pneumatic Valve	*VCP-52721272—see VCP-5270 cross-reference	
2510-096		Invensys	Pneumatic Valve	*VCP-52721270—see VCP-5270 cross-reference	
2510-098		Invensys	Pneumatic Valve	*VCP-51721711—see VCP-5170 cross-reference	
2510-099		Invensys	Pneumatic Valve	*VCP-51721712—see VCP-5170 cross-reference	
2510-100		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2510-202		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-203		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-204		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-206		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-207		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-208		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	



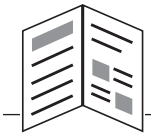
Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
2510-210		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-211		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-212		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-214		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-215		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-216		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-218		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-219		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-220		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-222		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-223		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-224		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-226		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-227		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-228		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2510-230		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-231		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2510-232		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-321		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-322		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-323		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-324		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-329		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-330		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-331		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-332		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-333		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-334		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-335		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-336		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-337		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-338		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-339		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-340		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-341		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-342		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-343		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-344		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-613		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-614		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-615		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-616		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-617		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-618		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-620		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2545-629		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2545-630		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2545-631		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2545-632		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2545-633		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2545-634		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2545-635		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2545-636		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2545-637		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2545-638		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2545-639		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2545-640		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2546-321		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-322		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-323		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-324		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-329		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-330		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-331		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
2546-332		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-333		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-334		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-335		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-336		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-338		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-339		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-340		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-341		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-342		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-343		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2546-613		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-614		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-615		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-616		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-617		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2546-629		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2546-630		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2546-631		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2546-632		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
2546-633		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2546-634		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2546-635		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2546-636		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
2546-637		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2546-638		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2546-639		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2546-640		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
2547-309		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-310		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-311		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-312		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-321		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-322		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-323		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-324		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-329		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-330		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-331		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-332		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-333		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-334		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-335		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-336		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-337		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-338		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-339		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-340		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-341		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-342		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-343		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-344		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-637		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-638		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-639		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-640		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-641		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-642		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-643		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2547-644		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-309		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-310		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-311		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-312		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-321		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	



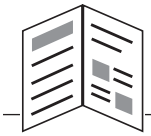
Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
2548-322		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-323		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-324		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-329		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-330		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-331		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-332		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-333		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-334		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-335		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-336		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-337		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-338		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-339		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-340		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-341		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-342		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-343		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-344		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-637		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-638		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-639		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-640		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2548-641		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-642		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-643		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2548-644		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2552-301		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-302		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-303		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-304		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-305		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-311		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2552-312		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-313		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-314		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-315		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-316		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2552-319		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-320		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-321		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-321		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-322		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-323		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-324		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-325		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-326		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-327		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-328		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-329		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-330		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-331		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-332		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-333		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-601		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-602		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-603		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-604		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-606		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-607		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-608		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-609		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-610		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2552-621		Invensys	Pneumatic Valve	*VCP-53621271—see VCP-5360 cross-reference	
2552-622		Invensys	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
2552-623		Invensys	Pneumatic Valve	*VCP-53621272—see VCP-5360 cross-reference	
2552-624		Invensys	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
2552-625		Invensys	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
2552-626		Invensys	Pneumatic Valve	*VCP-53631271—see VCP-5360 cross-reference	
2552-627		Invensys	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
2552-628		Invensys	Pneumatic Valve	*VCP-53631712+E1020—see VCP-5360 cross-reference	
2552-629		Invensys	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
2552-630		Invensys	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
2566-002		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-004		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-006		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-008		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-010		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-012		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-014		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-016		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-018		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-020		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-022		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-023		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-025		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-027		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-028		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-030		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-032		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2566-033		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
2567-013		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-015		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-016		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-017		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-019		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-020		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-021		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-023		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-024		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-025		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-027		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-028		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-029		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-031		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-032		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-033		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-035		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2567-036		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
2568-013		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-014		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-015		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-018		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-019		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-020		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-023		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-024		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-025		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-028		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-029		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-030		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-033		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-034		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-035		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-038		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-039		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
2568-040		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03056		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03110		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
268-03112		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03113		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03114		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03115		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03115		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03116		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03128		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
268-03162		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03163		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03164		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03166		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03167		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03168		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03170		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
268-03182		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
268-03188		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
268-03200		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
268-03202		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
268-03203		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
268-03204		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
268-03205		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
268-03206		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
271-03002		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03004		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03005		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03006		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03007		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03008		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03110		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03112		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03113		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03114		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03115		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03116		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03128		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03130		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03131		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03132		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03133		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03134		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
271-03146		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03148		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03149		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03150		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03151		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03152		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03200		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03202		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03203		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03204		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03205		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
271-03206		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
273-03164		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
273-03166		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
273-03167		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
273-03168		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
273-03200		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
273-03202		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
273-03203		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
273-03204		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03002		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03004		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03005		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03006		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
274-03007		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03008		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03110		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03112		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03113		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03114		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03115		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03116		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03146		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03148		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03149		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03150		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03151		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03152		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03166		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03167		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03168		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03169		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03170		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03184		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03185		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03186		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03187		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03188		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
274-03200		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03202		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03204		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03205		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
274-03206		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
276-03184		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
276-03185		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
276-03186		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
276-03187		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
276-03188		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
277-03110		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03112		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03113		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03114		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03115		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03116		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03128		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03130		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03131		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03132		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03133		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03134		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03166		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03167		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03168		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03169		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03170		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
277-03184		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03185		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03186		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03187		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03188		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
277-03200		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
277-03202		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
277-03203		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
277-03204		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
277-03205		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
277-03206		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
277-05980		Siemens	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
277-05981		Siemens	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
277-05990		Siemens	Pneumatic Valve	*VCP-52701270—see VCP-5170 cross-reference	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
277-05991		Siemens	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
277-06160		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5270 cross-reference	
277-06161		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5270 cross-reference	
279-05980		Siemens	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
279-05981		Siemens	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
279-05990		Siemens	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
279-05991		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
279-06160		Siemens	Pneumatic Valve	*VCP-53621710—see VCP-5360 cross-reference	
279-06161		Siemens	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
281-05963		Siemens	Pneumatic Valve	*VCP-51733720—see VCP-5170 cross-reference	
281-05964		Siemens	Pneumatic Valve	*VCP-51743720—see VCP-5170 cross-reference	
281-05982		Siemens	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
281-05984		Siemens	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
281-05992		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
281-06162		Siemens	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
281-06163		Siemens	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
281-06164		Siemens	Pneumatic Valve	*VCP-53661710—see VCP-5360 cross-reference	
283-03110		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03112		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03113		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03114		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03115		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03116		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03128		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03130		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03131		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03132		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03134		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03166		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03167		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03168		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03169		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03170		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
283-03184		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03185		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03186		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03187		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03188		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
283-03200		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
283-03202		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
283-03203		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
283-03204		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
283-03205		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
283-03206		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
283-05980		Siemens	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
283-05981		Siemens	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
283-05990		Siemens	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
283-05991		Siemens	Pneumatic Valve	*VCP-52711272—see VCP-5270 cross-reference	
283-06160		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
283-06161		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
285-05980		Siemens	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
285-05981		Siemens	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
285-05990		Siemens	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
285-05991		Siemens	Pneumatic Valve	*VCP-52711710—see VCP-5270 cross-reference	
285-06160		Siemens	Pneumatic Valve	*VCP-53621710—see VCP-5360 cross-reference	
285-06161		Siemens	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
287-05973		Siemens	Pneumatic Valve	*VCP-52733710—see VCP-5270 cross-reference	
287-05974		Siemens	Pneumatic Valve	*VCP-52743710—see VCP-5270 cross-reference	
287-05982		Siemens	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
287-05983		Siemens	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
287-05984		Siemens	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
287-05992		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
287-05993		Siemens	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
287-05994		Siemens	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
287-06162		Siemens	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
287-06163		Siemens	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
287-06164		Siemens	Pneumatic Valve	*VCP-53661710—see VCP-5360 cross-reference	
295-05920		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
295-05921		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
295-05960		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
295-05961		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
295-05980		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
295-05981		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
295-06160		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
295-06161		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
295-06175		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
295-06176		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
296-05920		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05920		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05921		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05921		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05960		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05960		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05961		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05961		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05980		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-05981		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
296-06160		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
296-06161		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
296-06175		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
296-06176		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
297-05922		Siemens	Electric Valve	*VEP-58722A45 / VEB-5316DSFK (**0**–10 VDC)	
297-05962		Siemens	Electric Valve	*VEP-58723A45 / VEB-5316DSFK (**0**–10 VDC)	
297-05982		Siemens	Electric Valve	*VEP-58721A45 / VEB-5316DSFK (**0**–10 VDC)	
297-06162		Siemens	Electric Valve	*VEP-53641A45 / VEB-5616DSFK (**0**–10 VDC)	
297-06177		Siemens	Electric Valve	*VEP-53642A45 / VEB-5616DSFK (**0**–10 VDC)	
29803002		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
29803004		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
29803005		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
29803006		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
29803007		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
29803008		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
29803200		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
29803202		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
29803203		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
29803204		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
29803205		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
29803206		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
298-2071		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
298-2073		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
298-2178		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
298-2184		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	

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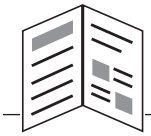
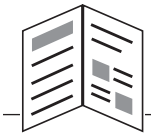
331-0200		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-0220		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-0240		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-0520		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-0540		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-1000		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-1040		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2570		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2604		Siemens	Pneumatic Damper Actuator	MCP-5140-5208	
331-2605		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2609		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2628		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2631		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2632		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
331-2637		Siemens	Pneumatic Damper Actuator	MCP-5140-5208	
331-2640		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2642		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2643		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2647		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2653		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2662		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2668		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2669		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2672		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2674		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2681		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2682		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2683		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2684		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2685		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2687		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2688		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2689		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2691		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2692		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2693		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2694		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2696		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2697		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2703		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2706		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2707		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2740		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2741		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2743		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2747		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-2749		Siemens	Pneumatic Damper Actuator	MCP-1040-3208	
331-2754		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2756		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2758		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2762		Siemens	Pneumatic Damper Actuator	MCP-1040-2208	
331-2767		Siemens	Pneumatic Damper Actuator	MCP-8031-5095	
331-2774		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2775		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2776		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2777		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2778		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2779		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2780		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2781		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2782		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2784		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2785		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2786		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-2788		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2789		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-2790		Siemens	Pneumatic Damper Actuator	MCP-5140-5208	
331-2792		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2793		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2794		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2797		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2798		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2799		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2801		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2802		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2812		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2814		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2827		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-2830		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
331-2833		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-2834		Siemens	Pneumatic Damper Actuator	MCP-5160-9114	
331-2845		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2846		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2847		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2848		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2855		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-2860		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2861		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-2863		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-2866		Siemens	Pneumatic Damper Actuator	MCP-8031-8195	
331-2870		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2872		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2873		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-2874		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-2875		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-2878		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2879		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2880		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-2881		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-2891		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-2892		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-2893		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-2894		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-2895		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-2896		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-2904		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2905		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2906		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2907		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2911		Siemens	Pneumatic Damper Actuator	MCP-1040-8208	
331-2915		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2916		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-2917		Siemens	Pneumatic Damper Actuator	MCP-1040-3208	
331-2918		Siemens	Pneumatic Damper Actuator	MCP-1040-2208	
331-2920		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2922		Siemens	Pneumatic Damper Actuator	MCP-5140-5208	
331-2925		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2929		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2931		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-2932		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2934		Siemens	Pneumatic Damper Actuator	MCP-1040-3208	
331-2937		Siemens	Pneumatic Damper Actuator	MCP-5140-5208	
331-2938		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-2939		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2947		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-2961		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2963		Siemens	Pneumatic Damper Actuator	MCP-5140-5208	
331-2966		Siemens	Pneumatic Damper Actuator	MCP-1040-5208	
331-2966		Siemens	Pneumatic Damper Actuator	MCP-1040-5211	
331-2968		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-2973		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-3000		Siemens	Pneumatic Damper Actuator	MCP-5140-8520	
331-3001		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-3002		Siemens	Pneumatic Damper Actuator	MCP-5140-3520	
331-3003		Siemens	Pneumatic Damper Actuator	MCP-5140-5520	
331-3011		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-3012		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-3013		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
331-3020		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-3021		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-3022		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-3033		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-3035		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-3036		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
331-3037		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-3038		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-3041		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-3042		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-3043		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-3044		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-3046		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-3047		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-3048		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-3049		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-3050		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-3051		Siemens	Pneumatic Damper Actuator	MCP-8031-8195	
331-3052		Siemens	Pneumatic Damper Actuator	MCP-8031-5095	
331-3053		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-3054		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-3055		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-3690		Siemens	Pneumatic Damper Actuator	MCP-5140-2520	
331-4310		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-4311		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-4312		Siemens	Pneumatic Damper Actuator	MCP-1130-8520	
331-4313		Siemens	Pneumatic Damper Actuator	MCP-1030-8108	
331-4314		Siemens	Pneumatic Damper Actuator	MCP-8031-8101	
331-4510		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-4511		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-4512		Siemens	Pneumatic Damper Actuator	MCP-1130-3520	
331-4513		Siemens	Pneumatic Damper Actuator	MCP-1030-3108	
331-4514		Siemens	Pneumatic Damper Actuator	MCP-8031-3101	
331-4810		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-4811		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-4812		Siemens	Pneumatic Damper Actuator	MCP-1130-5520	
331-4813		Siemens	Pneumatic Damper Actuator	MCP-1030-5108	
331-4813		Siemens	Pneumatic Damper Actuator	MCP-1030-5111	
331-4814		Siemens	Pneumatic Damper Actuator	MCP-8031-5101	
332-2781		Siemens	Pneumatic Damper Actuator	MCP-5140-1520	
332-2785		Siemens	Pneumatic Damper Actuator	MCP-5140-1520	
332-2799		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
332-2926		Siemens	Pneumatic Damper Actuator	MCP-5140-1520	
332-2973		Siemens	Pneumatic Damper Actuator	MCP-5140-1520	
332-3003		Siemens	Pneumatic Damper Actuator	MCP-5140-1520	
332-3011		Siemens	Pneumatic Damper Actuator	MCP-5160-9111	
332-4811		Siemens	Pneumatic Damper Actuator	MCP-1130-1520	
339-0122		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
339-0123		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
339-0124		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
339-0125		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
339-0127		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
339-0128		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
339-0129		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
339-0130		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	

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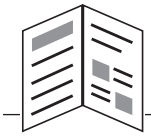
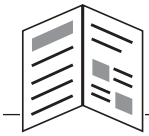
515-0190		Siemens	Relief Valve	HAO-1070
545-113		Siemens	Elec. Pneumatic Transducer	XEC-3004
545-208		Siemens	Elec.-Pressure Transducer	XEC-3002
589-2104		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent
591-1620		Siemens	Pneumatic Valve	*VCP-51733720—see VCP-5170 cross-reference
591-162B		Siemens	Pneumatic Valve	*VCP-51733720—see VCP-5170 cross-reference
591-1640		Siemens	Pneumatic Valve	*VCP-51743720—see VCP-5170 cross-reference
591-164B		Siemens	Pneumatic Valve	*VCP-51743720—see VCP-5170 cross-reference
591-1760		Siemens	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference
591-176B		Siemens	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference
591-1780		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
591-178B		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
591-1800		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
591-180B		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
591-1820		Siemens	Pneumatic Valve	*VCP-52733710—see VCP-5270 cross-reference	
591-182B		Siemens	Pneumatic Valve	*VCP-52733710—see VCP-5270 cross-reference	
591-1840		Siemens	Pneumatic Valve	*VCP-52743710—see VCP-5270 cross-reference	
591-184B		Siemens	Pneumatic Valve	*VCP-52743710—see VCP-5270 cross-reference	
591-4260		Siemens	Pneumatic Valve	*VCP-53621710—see VCP-5360 cross-reference	
591-426A		Siemens	Pneumatic Valve	*VCP-53621710—see VCP-5360 cross-reference	
591-4280		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
591-428B		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
591-4300		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
591-430B		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
591-6030		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-603C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6040		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-604C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6050		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-605C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6060		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	591-606C
Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent			
591-6070		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-607C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6080		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-608C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6120		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-612C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6130		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-613C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6140		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-614C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6150		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-615C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6160		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-616C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6170		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-617C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6210		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-621C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6220		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6220		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-622C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-622C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6230		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-623C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6240		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-624C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6250		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-625C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6300		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-630C		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-6310		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6310		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-631C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-631C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6320		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-632C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6330		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-633C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6340		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-634C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6350		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-635C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6430		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-643C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	



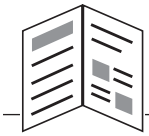
Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
591-6440		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-644D		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6450		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-645C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6460		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-646C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6470		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-647C		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-6540		Siemens	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
591-654C		Siemens	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
591-6550		Siemens	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
591-655C		Siemens	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
591-6560		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
591-656C		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
591-6600		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-660E		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6610		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-661E		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6620		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-662D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6630		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-663D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6640		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-664D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6650		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-665D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6660		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-666E		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6670		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-667E		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6680		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-668D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6690		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-669D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6700		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-670D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6710		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-671D		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-6720		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
591-672B		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
591-6730		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
591-673B		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
591-6740		Siemens	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
591-674B		Siemens	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
591-6750		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
591-675B		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
591-6760		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
591-676B		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
591-6770		Siemens	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
591-677B		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
591-7250		Siemens	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
591-7260		Siemens	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
591-7260		Siemens	Pneumatic Valve	*VCP-53661710—see VCP-5360 cross-reference	
591-7850		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7851		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7852		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7853		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7854		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7855		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7856		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7857		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7858		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7859		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7860		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7861		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
591-7862		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7863		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7864		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7865		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7866		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7867		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7870		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7871		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7872		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7873		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7874		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-7875		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7876		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7877		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7878		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7879		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-7891		Siemens	Pneumatic Valve	*VCP-51733720—see VCP-5170 cross-reference	
591-7892		Siemens	Pneumatic Valve	*VCP-51743720—see VCP-5170 cross-reference	
591-7893		Siemens	Pneumatic Valve	*VCP-52733710—see VCP-5270 cross-reference	
591-7894		Siemens	Pneumatic Valve	*VCP-52743710—see VCP-5270 cross-reference	
591-8019		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
591-8020		Siemens	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
591-8021		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
591-8022		Siemens	Pneumatic Valve	*VCP-51733720—see VCP-5170 cross-reference	
591-8023		Siemens	Pneumatic Valve	*VCP-52733710—see VCP-5270 cross-reference	
591-8024		Siemens	Pneumatic Valve	*VCP-51743720—see VCP-5170 cross-reference	
591-8028		Siemens	Pneumatic Valve	*VCP-53621710—see VCP-5360 cross-reference	
591-8029		Siemens	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
591-8030		Siemens	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
591-8071		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-8072		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-8073		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-8074		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-8075		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-8076		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-8077		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
591-8078		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-8079		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-8080		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-8081		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-8082		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
591-8330		Siemens	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
591-8331		Siemens	Pneumatic Valve	*VCP-52701270—see VCP-5170 cross-reference	
591-8332		Siemens	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
591-8336		Siemens	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
591-8337		Siemens	Pneumatic Valve	*VCP-52701710—see VCP-5170 cross-reference	
591-8338		Siemens	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
591-8339		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5170 cross-reference	
591-8340		Siemens	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
591-8341		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
592-6600		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
592-6610		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
592-6620		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
592-6630		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
592-6640		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
592-6720		Siemens	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
592-6730		Siemens	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
592-7870		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-7871		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-7872		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-7873		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-7874		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-7875		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-7876		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-7877		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
592-7878		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-7879		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-8020		Siemens	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
592-8028		Siemens	Pneumatic Valve	*VCP-53621710—see VCP-5360 cross-reference	
592-8029		Siemens	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
592-8030		Siemens	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
592-8071		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-8072		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-8073		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-8074		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-8075		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-8076		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-8077		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
592-8078		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-8079		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-8080		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-8082		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
592-8330		Siemens	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
592-8331		Siemens	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
592-8332		Siemens	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
592-8336		Siemens	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
592-8337		Siemens	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
592-8338		Siemens	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
592-8339		Siemens	Pneumatic Valve	*VCP-52711710—see VCP-5270 cross-reference	
592-8340		Siemens	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
592-8341		Siemens	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
593-8342		Siemens	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
593-8344		Siemens	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
593-8360		Siemens	Pneumatic Valve	*VCP-51733720—see VCP-5170 cross-reference	
593-8362		Siemens	Pneumatic Valve	*VCP-51743720—see VCP-5170 cross-reference	
593-8412		Siemens	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
593-8413		Siemens	Pneumatic Valve	*VCP-53661710—see VCP-5360 cross-reference	
594-8342		Siemens	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
594-8343		Siemens	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
594-8344		Siemens	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
594-8345		Siemens	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
594-8361		Siemens	Pneumatic Valve	*VCP-52733710—see VCP-5270 cross-reference	
594-8363		Siemens	Pneumatic Valve	*VCP-52743710—see VCP-5270 cross-reference	
594-8412		Siemens	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
594-8413		Siemens	Pneumatic Valve	*VCP-53661710—see VCP-5360 cross-reference	
598-0001		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0002		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0003		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0004		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0005		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0006		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0007		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0009		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-0011		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0012		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0014		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0015		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0017		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0018		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0020		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0021		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0023		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0024		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0025		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0026		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0028		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0029		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0031		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0032		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0034		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
598-0035		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0037		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0038		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0040		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0041		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0043		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-0044		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0045		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0046		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0047		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0048		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0049		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0050		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0051		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0052		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0053		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0054		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-0055		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-0056		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-0057		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-0058		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-0059		Siemens	Electric Valve	*VEP-53641A45 / VEB-5616DSFK (**0**–10 VDC)	
598-0060		Siemens	Electric Valve	*VEP-53641A45 / VEB-5616DSFK (**0**–10 VDC)	
598-2004		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2005		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2007		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2008		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2010		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2011		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2013		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2014		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2016		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2017		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2018		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2019		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2020		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2021		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2022		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2023		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2024		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2025		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2026		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2027		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2028		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2029		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2030		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2031		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2032		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2033		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2034		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2035		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2054		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2055		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2056		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2057		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2058		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2059		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2060		Siemens	Electric Valve	*VEP-58722A45 / VEB-5316DSFK (**0**–10 VDC)	
598-2061		Siemens	Electric Valve	*VEP-58722A45 / VEB-5316DSFK (**0**–10 VDC)	
598-2062		Siemens	Electric Valve	*VEP-58722A45 / VEB-5316DSFK (**0**–10 VDC)	
598-2063		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2064		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2065		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2066		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2067		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	

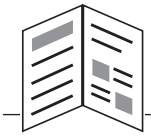


Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
598-2068		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2069		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2070		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2072		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2074		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2075		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2076		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2077		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2078		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2079		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2080		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2081		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2082		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2084		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2085		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2086		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2087		Siemens	Electric Valve	*See VEB-53 Series nearest equivalent	
598-2088		Siemens	Electric Valve	*VEB-5316DSFK (**0**–10 VDC)	
598-2089		Siemens	Electric Valve	*VEB-5316DSFK (**0**–10 VDC)	
598-2090		Siemens	Electric Valve	*VEB-5316DSFK (**0**–10 VDC)	
598-2092		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2093		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2095		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2096		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2098		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2099		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2101		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2102		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2103		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2105		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2106		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2107		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2108		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2109		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2110		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2111		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2112		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2113		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2168		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-2169		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2170		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2171		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2172		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2173		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2174		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2175		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2176		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2177		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2179		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-2180		Siemens	Electric Valve	*VEB-4610EBCK (**0**–10 VDC)	
598-2181		Siemens	Electric Valve	*VEB-4610EBDL	
598-2182		Siemens	Electric Valve	*VEB-4610FBCK (**0**–10 VDC)	
598-2183		Siemens	Electric Valve	*VEB-4610FBDL	
598-2185		Siemens	Electric Valve	*VEB-5616DSFK (**0**–10 VDC)	
598-2186		Siemens	Electric Valve	*VEB-4610EBCK (**0**–10 VDC)	
598-2187		Siemens	Electric Valve	*VEB-4610EBDL	
598-2188		Siemens	Electric Valve	*VEB-4610FBCK (**0**–10 VDC)	
598-2189		Siemens	Electric Valve	*VEB-4610FBDL	
598-2190		Siemens	Electric Valve	*VEB-5616DSFK (**0**–10 VDC)	
598-2191		Siemens	Electric Valve	*VEB-5616DSFK (**0**–10 VDC)	
598-5001		Siemens	Electric Valve	*VEB-4310DBCK (**0**–10 VDC)	
598-5002		Siemens	Electric Valve	*VEB-4310DBDL	
598-5003		Siemens	Electric Valve	*VEB-4310DBDL	
598-5004		Siemens	Electric Valve	*VEB-4312DBCK (**0**–10 VDC)	
598-5005		Siemens	Electric Valve	*VEB-4312DBDL	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
598-5006		Siemens	Electric Valve	*VEB-4312DBDL	
598-5007		Siemens	Electric Valve	*VEB-5316DSFK (**0**–10 VDC)	
598-5008		Siemens	Electric Valve	*VEB-5316DSFK (**0**–10 VDC)	
598-5009		Siemens	Electric Valve	*VEB-5316DSFK (**0**–10 VDC)	
598-5010		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5011		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5012		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5014		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5015		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5017		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5018		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5020		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5021		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5023		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5024		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5025		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5026		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5028		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5029		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5031		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5032		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5034		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5035		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5037		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5038		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5040		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5041		Siemens	Electric Valve	*See VEB-43 Series nearest equivalent	
598-5043		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5044		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5045		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5046		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5047		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5048		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5049		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5050		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5052		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5053		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5054		Siemens	Electric Valve	*See VEB-46 Series nearest equivalent	
598-5055		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-5056		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-5057		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-5058		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-5059		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	
598-5060		Siemens	Electric Valve	*See VEB-56 Series nearest equivalent	

6xxxxx

656-0002		Siemens	Pneumatic Valve	*See VCZ-41 Series nearest equivalent	
656-0004		Siemens	Pneumatic Valve	*See VCZ-41 Series nearest equivalent	
656-0009		Siemens	Pneumatic Valve	*See VCZ-44 Series nearest equivalent	
656-0010		Siemens	Pneumatic Valve	*See VCZ-44 Series nearest equivalent	
656-0011		Siemens	Pneumatic Valve	*See VCZ-44 Series nearest equivalent	
656-0012		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-524		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-525		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-526		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-527		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-656A		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-657A		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
657-658A		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-730A		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
657-758		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-7580		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-759		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-7590		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
657-760		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-7600		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-761		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-7610		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-768		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
657-7680		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
657-769		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-7690		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-770		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-7700		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-771		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
657-7710		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
657-8203		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-8204		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-8205		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-8206		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
657-8224		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
657-8225		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
657-8226		Siemens	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
658-0013		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
658-0026		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
658-0027		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
658-0033		Siemens	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
658-0100		Siemens	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
8xxxxx					
832-0450		Siemens	Pneumatic Room Thermostat	CTC-1621	
832-0460		Siemens	Pneumatic Room Thermostat	CTC-1621	
832-0490		Siemens	Pneumatic Room Thermostat	CTC-1621	
832-0500		Siemens	Pneumatic Room Themostat	CTC-1621	
832-1010		Siemens	Pneumatic Room Themostat	CTC-1621	
832-1020		Siemens	Pneumatic Room Themostat	CTC-1621	
832-1030		Siemens	Pneumatic Room Themostat	CTC-1621	
832-1070		Siemens	Pneumatic Room Themostat	CTC-1621	
832-1090		Siemens	Pneumatic Room Themostat	CTC-1621	
832-1100		Siemens	Pneumatic Room Themostat	CTC-1621	
832-1110		Siemens	Pneumatic Room Themostat	CTC-1621	
Axxxxx					
A11A-1		Johnson	Low Temp. Thermostat	CTE-3007	
A11B-1		Johnson	Low Temp. Thermostat	CTE-3006	
A1H250/1		Staefa/UPC	Electric Damper Actuator	MEP-7503	CME-7002
A25AN-1		Johnson	High Temp. Limit Thermostat	CTE-6001	
AF24-SR US		Belimo	Electric Damper Actuator	MEP-7052	
AFR24-3 US		Belimo	Electric Damper Actuator	MEP-7551	
AK-40613		Invensys	Reverse-Acting Relay	RCC-1504	
AK-50613		Invensys	Reverse-Acting Relay	RCC-1504	
AL242		Invensys	Reverse-Acting Relay	RCC-1504	
AL-282		Invensys	High Pressure Selector	RCC-1108	
AM24		Belimo	Electric Damper Actuator	MEP-7501	
AM24-S US		Belimo	Electric Damper Actuator	MEP-7502	CME-7002
AM24-SR		Belimo	Electric Damper Actuator	MEP-7502	
AS1D30		Staefa/UPC	Electric Damper Actuator	MEP-7801	
ASU1D30		Staefa/UPC	Electric Damper Actuator	MEP-7802	
Bxxxxx					
B209B	LR24	Belimo	Electric Ball Valve	*VEP-45A2B926 / VEB-4302DBCF	
B210B	LF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B211B	LR24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B212B	LF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B213B	LR24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
B214B	LF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B215B	LR24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B217B	AF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B218B	LR24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B219B	NF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B222B	LR24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B223B	NF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B224B	LR24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B229B	NF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B230B	LR24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B231B	NF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B232B	AM24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B238B	NF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B239B	NM24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B240B	NF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B248B	AM24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B249B	AF24-SR	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	
B250B	AM24	Belimo	Electric Ball Valve	*See VEB-43 Series nearest equivalent	

Cxxxxx

C-208-2		Johnson	Reverse-Acting Relay	RCC-1504	
C-2220		Johnson	High/Low Signal Selector Relay	RCC-1111	
C-5226		Johnson	High Pressure Selector	RCC-1108	
C-522603		Johnson	Low Pressure Selector	RCC-1106	
C-5226-3		Johnson	Low Pressure Selector	RCC-1106	
C-5226-4		Johnson	High Pressure Selector	RCC-1108	
CEP-1000 Series		KMC	Electronic VAV Controllers	CEP-4000 Series	Replace REE Relays
CEP-3000 Series		KMC	Electronic VAV Controllers	CEP-4000 Series	Replace REE Relays
CLEAFS405		Honeywell	Diff. Static Press. Air Flow Switch	CSE-1103	

Dxxxxx

D-3062		Johnson	Pneumatic Damper Actuator	MCP-1020-5311	
D-3062-1		Johnson	Pneumatic Damper Actuator	MCP-1030-8108	
D-3062-2		Johnson	Pneumatic Damper Actuator	MCP-1030-3108	
D-3062-3		Johnson	Pneumatic Damper Actuator	MCP-1030-5108	
D-3073-1		Johnson	Pneumatic Damper Actuator	MCP-1130-1520	
D-3073-2		Johnson	Pneumatic Damper Actuator	MCP-1130-5520	
D-3073-3		Johnson	Pneumatic Damper Actuator	MCP-1130-3520	
D-3153-1		Johnson	Pneumatic Damper Actuator	MCP-5160-9111	
D-3153-2		Johnson	Pneumatic Damper Actuator	MCP-5160-9111	
D-3153-4		Johnson	Pneumatic Damper Actuator	MCP-5160-9111	
D-3153-41		Johnson	Pneumatic Damper Actuator	MCP-5160-9111	
D-3153-5		Johnson	Pneumatic Damper Actuator	MCP-5160-9111	
D-3153-6		Johnson	Pneumatic Damper Actuator	MCP-5160-9111	
D-3153-7		Johnson	Pneumatic Damper Actuator	MCP-5160-9111	
D-3703-4		Johnson	Pneumatic Damper Actuator	MCP-1130-1520	
D-3703-5		Johnson	Pneumatic Damper Actuator	MCP-1130-5520	
D-3703-6		Johnson	Pneumatic Damper Actuator	MCP-1130-3520	
D-3703-7		Johnson	Pneumatic Damper Actuator	MCP-8031-8195	
D-4073-1		Johnson	Pneumatic Damper Actuator	MCP-1030-5111	
DG05-2-03 SS	DMS24-140	Delta	Electric Valve	*See VEB-43 Series nearest equivalent	
DG05-3-03	DMS24-140	Delta	Electric Valve	*See VEB-46 Series nearest equivalent	
DG1-2-10 SS	DMS24-140	Delta	Electric Valve	*See VEB-43 Series nearest equivalent	
DG125-3-16	DMS24-140	Delta	Electric Valve	*See VEB-46 Series nearest equivalent	
DG1-3-10	DMS24-140	Delta	Electric Valve	*See VEB-46 Series nearest equivalent	
DG150-3-25	DMS24-140	Delta	Electric Valve	*See VEB-46 Series nearest equivalent	
DG2-2-40	DMS24-140	Delta	Electric Valve	*See VEB-43 Series nearest equivalent	
DG2-3-40	DMS24-140	Delta	Electric Valve	*See VEB-46 Series nearest equivalent	
DG75-3-07	DMS24-140	Delta	Electric Valve	*See VEB-46 Series nearest equivalent	

Exxxxx

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
EDA-2040-11		Johnson	Electric Damper Actuator	MEP-4001	
EDA-2040-12		Johnson	Electric Damper Actuator	MEP-4001	
EDA-2040-21		Johnson	Electric Damper Actuator	MEP-4001	
EDA-2040-22		Johnson	Electric Damper Actuator	MEP-4001	
EDA-2040-23		Johnson	Electric Damper Actuator	MEP-4022 (w/ 1 internal aux. switch)	
EDA-2040-24		Johnson	Electric Damper Actuator	MEP-4022 (w/ 1 internal aux. switch)	
EM402-102		Staefa/UPC	Electric Damper Actuator	MEP-4001	
EMT402-102		Staefa/UPC	Electric Damper Actuator	MEP-4001	
EMT402-302		Staefa/UPC	Electric Damper Actuator	MEP-4001	
EP-8000-2		Johnson	Elec.-Pressure Transducer	XEC-3002	

Gxxxxx

G340	AF24-SR US	Belimo	Electric Valve	*See VEB-46 Series nearest equivalent	
G350	AF24-SR US	Belimo	Electric Valve	*See VEB-46 Series nearest equivalent	
GBB161.1U/P		Siemens	Electric Damper Actuator	MEP-7502	
GBB166.1U/P		Siemens	Electric Damper Actuator	MEP-7502	CME-7002
GBB171.1U/P		Siemens	Electric Damper Actuator	MEP-7501	
GBB175.1U/P		Siemens	Electric Damper Actuator	MEP-7503	CME-7002
GCA131.1U/P		Siemens	Electric Damper Actuator	MEP-7551	
GCA135.1U/P		Siemens	Electric Damper Actuator	MEP-7553	CME-7002
GCA151.1U/P		Siemens	Electric Damper Actuator	MEP-7502	
GCA156.1U/P		Siemens	Electric Damper Actuator	MEP-7502	CME-7002
GCA161.1U/P		Siemens	Electric Damper Actuator	MEP-7553	
GCA166.1U/P		Siemens	Electric Damper Actuator	MEP-7052	CME-7002
GDE131.1U/P		Siemens	Electric Damper Actuator	MEP-4001	
GDE132.1P		Siemens	Electric Damper Actuator	MEP-4013	
GDE136.1U/P		Siemens	Electric Damper Actuator	MEP-4021 (w/ 1 internal aux. switch)	
GDE161.1P		Siemens	Electric Damper Actuator	MEP-4002	
GDE166.1P		Siemens	Electric Damper Actuator	MEP-4022 (w/ 1 internal aux. switch)	
GEB131.1P		Siemens	Electric Damper Actuator	MEP-7501	
GEB161.1P		Siemens	Electric Damper Actuator	MEP-7502	
GEB166.1U		Siemens	Electric Damper Actuator	MEP-7502	CME-7002
GIB151.1U/P		Siemens	Electric Damper Actuator	MEP-7802	
GIB156.1U/P		Siemens	Electric Damper Actuator	MEP-7802	CME-7002
GIB161.1U/P		Siemens	Electric Damper Actuator	MEP-7802	
GIB166.1U/P		Siemens	Electric Damper Actuator	MEP-7802	CME-7002
GIB171.1U/P		Siemens	Electric Damper Actuator	MEP-7801	
GIB175.1U/P		Siemens	Electric Damper Actuator	MEP-7803	CME-7002
GLB131.1P		Siemens	Electric Damper Actuator	MEP-7201	
GLB132.1P		Siemens	Electric Damper Actuator	MEP-7203	
GLB161.1P		Siemens	Electric Damper Actuator	MEP-7202	
GM24 US		Belimo	Electric Damper Actuator	MEP-7801	CME-7002
GM24-SR US		Belimo	Electric Damper Actuator	MEP-7802	CME-7002
GMA131.1P		Siemens	Electric Damper Actuator	MEP-5373	
GMA161.1P		Siemens	Electric Damper Actuator	MEP-5372	
GMA166.1P		Siemens	Electric Damper Actuator	MEP-5372	CME-1004

Kxxxxx

K-312		Invensys	Relief Valve	HAO-1070	

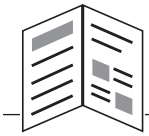
Lxxxxx

L480B		Honeywell	Low Temp. Thermostat	CTE-3006	
L480G		Honeywell	Low Temp. Thermostat	CTE-3007	
LF24-3		Belimo	Electric Damper Actuator	MEP-5373	
LF24-SR US		Belimo	Electric Damper Actuator	MEP-5372	
LF24-SR-S US		Belimo	Electric Damper Actuator	MEP-5372	CME-1002
LM24 US		Belimo	Electric Damper Actuator	MEP-4001	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
LM24-10P US		Belimo	Electric Damper Actuator	MEP-4013	
LM24-S US		Belimo	Electric Damper Actuator	MEP-4022	
LM24SR T.1 US		Belimo	Electric Damper Actuator	MEP-4002	
LM24SR US		Belimo	Electric Damper Actuator	MEP-4022	

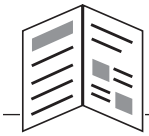
Mxxxxx

M301		Staefa/UPC	Pneumatic Actuator	MCP-1030/1130 Series	
M302		Staefa/UPC	Pneumatic Actuator	MCP-1020 Series	
M502 Series		Invensys	Pneumatic Actuator	MCP-1020 Series	
M503 Series		Invensys	Pneumatic Actuator	MCP-1030/1130 Series	
M504 Series		Invensys	Pneumatic Actuator	MCP-1040/1140 Series	
M506 Series		Invensys	Pneumatic Actuator	MCP-1160 Series	
M552 Series		Invensys	Pneumatic Actuator	MCP-1020 Series	
M553 Series		Invensys	Pneumatic Actuator	MCP-1030/1130 Series	
M554 Series		Invensys	Pneumatic Actuator	MCP-1040/1140 Series	
M556-14		Invensys	Pneumatic Damper Actuator	MCP-1160-1111	
M556-51		Invensys	Pneumatic Damper Actuator	MCP-1160-5111	
M556-5101		Invensys	Pneumatic Damper Actuator	MCP-1160-5101	
M572-2308		Invensys	Pneumatic Damper Actuator	MCP-1020-2308	
M572-2311		Invensys	Pneumatic Damper Actuator	MCP-1020-2311	
M572-2312		Invensys	Pneumatic Damper Actuator	MCP-1020-2312	
M572-3308		Invensys	Pneumatic Damper Actuator	MCP-1020-3308	
M572-3311		Invensys	Pneumatic Damper Actuator	MCP-1020-3311	
M572-3312		Invensys	Pneumatic Damper Actuator	MCP-1020-3312	
M572-5308		Invensys	Pneumatic Damper Actuator	MCP-1020-5308	
M572-5311		Invensys	Pneumatic Damper Actuator	MCP-1020-5311	
M572-5312		Invensys	Pneumatic Damper Actuator	MCP-1020-5312	
M572-6308		Invensys	Pneumatic Damper Actuator	MCP-1020-6308	
M572-6311		Invensys	Pneumatic Damper Actuator	MCP-1020-6311	
M572-6312		Invensys	Pneumatic Damper Actuator	MCP-1020-6312	
M572-8308		Invensys	Pneumatic Damper Actuator	MCP-1020-8308	
M572-8311		Invensys	Pneumatic Damper Actuator	MCP-1020-8311	
M572-8312		Invensys	Pneumatic Damper Actuator	MCP-1020-8312	
M573-1108		Invensys	Pneumatic Damper Actuator	MCP-1030-1108	
M573-1111		Invensys	Pneumatic Damper Actuator	MCP-1030-1111	
M573-1112		Invensys	Pneumatic Damper Actuator	MCP-1030-1112	
M573-1520		Invensys	Pneumatic Damper Actuator	MCP-1130-1520	
M573-1520		Invensys	Pneumatic Damper Actuator	MCP-1130-1520	
M573-2108		Invensys	Pneumatic Damper Actuator	MCP-1030-2108	
M573-2111		Invensys	Pneumatic Damper Actuator	MCP-1030-2111	
M573-2112		Invensys	Pneumatic Damper Actuator	MCP-1030-2112	
M573-2520		Invensys	Pneumatic Damper Actuator	MCP-1130-2520	
M573-3108		Invensys	Pneumatic Damper Actuator	MCP-1030-3108	
M573-3111		Invensys	Pneumatic Damper Actuator	MCP-1030-3111	
M573-3112		Invensys	Pneumatic Damper Actuator	MCP-1030-3112	
M573-3520		Invensys	Pneumatic Damper Actuator	MCP-1130-3520	
M573-5108		Invensys	Pneumatic Damper Actuator	MCP-1030-5108	
M573-5111		Invensys	Pneumatic Damper Actuator	MCP-1030-5111	
M573-5112		Invensys	Pneumatic Damper Actuator	MCP-1030-5112	
M573-5520		Invensys	Pneumatic Damper Actuator	MCP-1130-5520	
M573-6108		Invensys	Pneumatic Damper Actuator	MCP-1030-6108	
M573-6111		Invensys	Pneumatic Damper Actuator	MCP-1030-6111	
M573-6112		Invensys	Pneumatic Damper Actuator	MCP-1030-6112	
M573-6520		Invensys	Pneumatic Damper Actuator	MCP-1130-6520	
M573-8108		Invensys	Pneumatic Damper Actuator	MCP-1030-8108	
M573-8111		Invensys	Pneumatic Damper Actuator	MCP-1030-8111	
M573-8112		Invensys	Pneumatic Damper Actuator	MCP-1030-8112	
M573-8520		Invensys	Pneumatic Damper Actuator	MCP-1130-8520	
M574-1108		Invensys	Pneumatic Damper Actuator	MCP-1040-1108	
M574-1111		Invensys	Pneumatic Damper Actuator	MCP-1040-1111	
M574-1112		Invensys	Pneumatic Damper Actuator	MCP-1040-1112	
M574-1520		Invensys	Pneumatic Damper Actuator	MCP-1140-1520	
M574-2208		Invensys	Pneumatic Damper Actuator	MCP-1040-2208	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
M574-2211		Invensys	Pneumatic Damper Actuator	MCP-1040-2211	
M574-2212		Invensys	Pneumatic Damper Actuator	MCP-1040-2212	
M574-2520		Invensys	Pneumatic Damper Actuator	MCP-1040-2520	
M574-3208		Invensys	Pneumatic Damper Actuator	MCP-1040-3211	
M574-3211		Invensys	Pneumatic Damper Actuator	MCP-1040-3211	
M574-3212		Invensys	Pneumatic Damper Actuator	MCP-1040-3212	
M574-3520		Invensys	Pneumatic Damper Actuator	MCP-1140-3520	
M574-5208		Invensys	Pneumatic Damper Actuator	MCP-1040-5208	
M574-5211		Invensys	Pneumatic Damper Actuator	MCP-1040-5211	
M574-5212		Invensys	Pneumatic Damper Actuator	MCP-1040-5212	
M574-5520		Invensys	Pneumatic Damper Actuator	MCP-1140-5520	
M574-6208		Invensys	Pneumatic Damper Actuator	MCP-1040-6208	
M574-6211		Invensys	Pneumatic Damper Actuator	MCP-1040-6211	
M574-6212		Invensys	Pneumatic Damper Actuator	MCP-1040-6212	
M574-6520		Invensys	Pneumatic Damper Actuator	MCP-1140-6520	
M574-8208		Invensys	Pneumatic Damper Actuator	MCP-1040-8208	
M574-8211		Invensys	Pneumatic Damper Actuator	MCP-1040-8211	
M574-8212		Invensys	Pneumatic Damper Actuator	MCP-1040-8212	
M574-8520		Invensys	Pneumatic Damper Actuator	MCP-1140-8520	
M593-3095		Invensys	Pneumatic Damper Actuator	MCP-8031-3101	
M593-5095		Invensys	Pneumatic Damper Actuator	MCP-8031-5101	
M593-8095		Invensys	Pneumatic Damper Actuator	MCP-8031-8101	
M594-2208		Invensys	Pneumatic Damper Actuator	MCP-5140-2208	
M594-2211		Invensys	Pneumatic Damper Actuator	MCP-5140-2211	
M594-2212		Invensys	Pneumatic Damper Actuator	MCP-5140-2212	
M594-2520		Invensys	Pneumatic Damper Actuator	MCP-5140-2520	
M594-3208		Invensys	Pneumatic Damper Actuator	MCP-5140-3208	
M594-3211		Invensys	Pneumatic Damper Actuator	MCP-5140-3211	
M594-3212		Invensys	Pneumatic Damper Actuator	MCP-5140-3212	
M594-3520		Invensys	Pneumatic Damper Actuator	MCP-5140-3520	
M594-5208		Invensys	Pneumatic Damper Actuator	MCP-5140-5208	
M594-5211		Invensys	Pneumatic Damper Actuator	MCP-5140-5211	
M594-5212		Invensys	Pneumatic Damper Actuator	MCP-5140-5212	
M594-5520		Invensys	Pneumatic Damper Actuator	MCP-5140-5520	
M594-6208		Invensys	Pneumatic Damper Actuator	MCP-5140-6208	
M594-6211		Invensys	Pneumatic Damper Actuator	MCP-5140-6211	
M594-6212		Invensys	Pneumatic Damper Actuator	MCP-5140-6212	
M594-6520		Invensys	Pneumatic Damper Actuator	MCP-5140-6520	
M594-8208		Invensys	Pneumatic Damper Actuator	MCP-5140-8208	
M594-8211		Invensys	Pneumatic Damper Actuator	MCP-5140-8211	
M594-8212		Invensys	Pneumatic Damper Actuator	MCP-5140-8212	
M594-8520		Invensys	Pneumatic Damper Actuator	MCP-5140-8520	
M594-9108		Invensys	Pneumatic Damper Actuator	MCP-5140-9108	
M594-9111		Invensys	Pneumatic Damper Actuator	MCP-5140-9111	
M594-9112		Invensys	Pneumatic Damper Actuator	MCP-5140-9112	
M594-9520		Invensys	Pneumatic Damper Actuator	MCP-5140-9520	
M693-3095		Invensys	Pneumatic Damper Actuator	MCP-8031-3101	
M693-5095		Invensys	Pneumatic Damper Actuator	MCP-8031-5101	
M693-8095		Invensys	Pneumatic Damper Actuator	MCP-8031-8101	
M9104-AGA-2		Johnson	Electric Damper Actuator	MEP-4001	
M9104-AGC-2		Johnson	Electric Damper Actuator	MEP-4001	CME-1004
M9104-GGA-2		Johnson	Electric Damper Actuator	MEP-4002	
M9104-GGC-2		Johnson	Electric Damper Actuator	MEP-4022 (w/ 1 internal aux. switch)	
M9108-AGA-2		Johnson	Electric Damper Actuator	MEP-7201	
M9108-AGE-2		Johnson	Electric Damper Actuator	MEP-7203	
M9108-GGA-2		Johnson	Electric Damper Actuator	MEP-7202	
M9116-AGA-2		Johnson	Electric Damper Actuator	MEP-7501	
M9116-AGC-2		Johnson	Electric Damper Actuator	MEP-7503	CME-7002
M9116-GGA-2		Johnson	Electric Damper Actuator	MEP-7502	
M9116-GGC-2		Johnson	Electric Damper Actuator	MEP-7502	CME-7002
M9124-AGA-2		Johnson	Electric Damper Actuator	MEP-7801	
M9124-AGE-2		Johnson	Electric Damper Actuator	MEP-7803	CME-7002
M9124-GGA-2		Johnson	Electric Damper Actuator	MEP-7802	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
M9124-GGC-2		Johnson	Electric Damper Actuator	MEP-7802	CME-7002
M9206-GGA-2		Johnson	Electric Damper Actuator	MEP-5372	
M9206-GGC-2		Johnson	Electric Damper Actuator	MEP-5372	CME-1004
M9216-AGA-2		Johnson	Electric Damper Actuator	MEP-7551	
M9216-AGC-2		Johnson	Electric Damper Actuator	MEP-7553	CME-7002
M9216-AGE-2		Johnson	Electric Damper Actuator	MEP-7553	CME-7002
M9216-HGA-2		Johnson	Electric Damper Actuator	MEP-7553	
M9216-HGC-2		Johnson	Electric Damper Actuator	MEP-7553	
MF1233		Invensys	Electric Damper Actuator	MEP-5071	
MF1233-002		Invensys	Electric Damper Actuator	MEP-5071	CME-1004
MF-6233		Invensys	Electric Damper Actuator	MEP-5061	
MF-6633		Invensys	Electric Damper Actuator	MEP-7501	
MK-4401		Invensys	Pneumatic Damper Actuator	MCP-5140-8520	
MK-4411		Invensys	Pneumatic Damper Actuator	MCP-5140-2520	
MK-4421		Invensys	Pneumatic Damper Actuator	MCP-5160-9114	
MK-573-31		Invensys	Pneumatic Damper Actuator	MCP-1030-3111	
MK-573-38		Invensys	Pneumatic Damper Actuator	MCP-1030-3108	
MK-573-51		Invensys	Pneumatic Damper Actuator	MCP-1030-5111	
MK-573-58		Invensys	Pneumatic Damper Actuator	MCP-1030-5108	
MK-574-31		Invensys	Pneumatic Damper Actuator	MCP-1040-3211	
MK-574-38		Invensys	Pneumatic Damper Actuator	MCP-1040-3208	
MK-574-51		Invensys	Pneumatic Damper Actuator	MCP-1040-5211	
MK-574-58		Invensys	Pneumatic Damper Actuator	MCP-1040-5208	
MK-693-35		Invensys	Pneumatic Damper Actuator	MCP-8031-3095	
MK-693-55		Invensys	Pneumatic Damper Actuator	MCP-8031-5095	
MK-693-85		Invensys	Pneumatic Damper Actuator	MCP-8031-8095	
ML6161A1001		Honeywell	Electric Damper Actuator	MEP-4013	
ML6161A2009		Honeywell	Electric Damper Actuator	MEP-4013	
ML6161B2024		Honeywell	Electric Damper Actuator	MEP-4001	
ML6161C2007		Honeywell	Electric Damper Actuator	MEP-4013	
ML6161D1008		Honeywell	Electric Damper Actuator	MEP-4001	
ML6161D2006		Honeywell	Electric Damper Actuator	MEP-4001	
ML6174A2002		Honeywell	Electric Damper Actuator	MEP-7203	
ML6174B2019		Honeywell	Electric Damper Actuator	MEP-7201	
ML6174C2000		Honeywell	Electric Damper Actuator	MEP-7203	
ML6174D2009		Honeywell	Electric Damper Actuator	MEP-7201	
ML6184A1003		Honeywell	Electric Damper Actuator	MEP-7501	
ML6184D1000		Honeywell	Electric Damper Actuator	MEP-7501	
ML6184F1008		Honeywell	Electric Damper Actuator	MEP-7503	CME-7002
ML6185A1000		Honeywell	Electric Damper Actuator	MEP-5373	
ML6194A1002		Honeywell	Electric Damper Actuator	MEP-7801	
ML6195A1009		Honeywell	Electric Damper Actuator	MEP-7551	
ML6295C1005		Honeywell	Electric Damper Actuator	MEP-7553	CME-7002
ML6464A1008		Honeywell	Electric Damper Actuator	MEP-7501	
ML6464A1008		Honeywell	Electric Damper Actuator	MEP-7503	CME-7002
ML7161A1000		Honeywell	Electric Damper Actuator	MEP-4001	
ML7161A2008		Honeywell	Electric Damper Actuator	MEP-4002	
ML7174A2001		Honeywell	Electric Damper Actuator	MEP-7202	
ML7284A1018		Honeywell	Electric Damper Actuator	MEP-7502	
ML7284D1015		Honeywell	Electric Damper Actuator	MEP-7502	
ML7284F1013		Honeywell	Electric Damper Actuator	MEP-7502	CME-7002
ML7285A1007		Honeywell	Electric Damper Actuator	MEP-5372	
ML7285C1005		Honeywell	Electric Damper Actuator	MEP-5372	CME-1004
ML7294A1009		Honeywell	Electric Damper Actuator	MEP-7802	
ML7294C1007		Honeywell	Electric Damper Actuator	MEP-7802	CME-7002
ML7295A1006		Honeywell	Electric Damper Actuator	MEP-7052	
ML7295A1014		Honeywell	Electric Damper Actuator	MEP-7502	
ML7295C1004		Honeywell	Electric Damper Actuator	MEP-7052	CME-7002
ML7295C1012		Honeywell	Electric Damper Actuator	MEP-7502	CME-7002
ML7474A1007		Honeywell	Electric Damper Actuator	MEP-7502	
ML7474A1007		Honeywell	Electric Damper Actuator	MEP-7502	CME-7002
ML7475A1004		Honeywell	Electric Damper Actuator	MEP-7553	
ML9264A1000		Honeywell	Electric Damper Actuator	MEP-7803	CME-7002



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
MP909D		Honeywell	Pneumatic Damper Actuator	MCP-1020-5311	
MP909D1201		Honeywell	Pneumatic Damper Actuator	MCP-1130-8520	
MP909D1201		Honeywell	Pneumatic Damper Actuator	MCP-8031-8101	
MP909D1219		Honeywell	Pneumatic Damper Actuator	MCP-1130-5520	
MP909D1219		Honeywell	Pneumatic Damper Actuator	MCP-8031-5101	
MP909D1227		Honeywell	Pneumatic Damper Actuator	MCP-1130-3520	
MP909D1227		Honeywell	Pneumatic Damper Actuator	MCP-8031-3101	
MP909D1300		Honeywell	Pneumatic Damper Actuator	MCP-8031-8195	
MP909D1318		Honeywell	Pneumatic Damper Actuator	MCP-8031-5095	
MP909D1334		Honeywell	Pneumatic Damper Actuator	MCP-1030-3108	
MP909D1359		Honeywell	Pneumatic Damper Actuator	MCP-8031-8195	
MP909D1441		Honeywell	Pneumatic Damper Actuator	MCP-1130-3520	
MP909D1441		Honeywell	Pneumatic Damper Actuator	MCP-8031-3101	
MP909E		Honeywell	Pneumatic Damper Actuator	MCP-1030-5111	
MP909E1083		Honeywell	Pneumatic Damper Actuator	MCP-8031-8195	
MP909E1158		Honeywell	Pneumatic Damper Actuator	MCP-1130-5520	
MP909E1174		Honeywell	Pneumatic Damper Actuator	MCP-8031-5095	
MP909E1372		Honeywell	Pneumatic Damper Actuator	MCP-1130-8520	
MP909E1380		Honeywell	Pneumatic Damper Actuator	MCP-1130-5520	
MP909E1398		Honeywell	Pneumatic Damper Actuator	MCP-1130-5520	
MP918A1024		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918A1057		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918A1081		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1006		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1014		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1022		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1030		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1063		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1071		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1089		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1097		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1105		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1113		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MP918B1196		Honeywell	Pneumatic Damper Actuator	MCP-5160-9111	
MS-6633		Invensys	Electric Damper Actuator	MEP-7502	

Nxxxxx

N100-4017		Invensys	PE Switch	CCE-1001	
N1-51		Invensys	Differential Pressure Pick up	SSS-1002	
N1-52		Invensys	Differential Pressure Pick up	SSS-1003	
N1-53		Invensys	Differential Pressure Pick up	SSS-1004	
N4-14		Invensys	Relief Valve	HAO-1070	
N800-0203		Invensys	Pneumatic Damper Actuator	MCP-0203	
N800-0205		Invensys	Pneumatic Damper Actuator	MCP-0205	
N800-0302		Invensys	Pneumatic Damper Actuator	MCP-0302	
N800-0303		Invensys	Pneumatic Damper Actuator	MCP-0303	
N800-0305		Invensys	Pneumatic Damper Actuator	MCP-0305	
N800-0306		Invensys	Pneumatic Damper Actuator	MCP-0306	
N800-0308		Invensys	Pneumatic Damper Actuator	MCP-0308	
N800-0352		Invensys	Pneumatic Damper Actuator	MCP-0352	
N800-0353		Invensys	Pneumatic Damper Actuator	MCP-0353	
N800-0355		Invensys	Pneumatic Damper Actuator	MCP-0355	
N800-0356		Invensys	Pneumatic Damper Actuator	MCP-0356	
N800-0358		Invensys	Pneumatic Damper Actuator	MCP-0358	
N800-0403		Invensys	Pneumatic Damper Actuator	MCP-0403	
N800-0405		Invensys	Pneumatic Damper Actuator	MCP-0405	
N800-0406		Invensys	Pneumatic Damper Actuator	MCP-0406	
N800-0408		Invensys	Pneumatic Damper Actuator	MCP-0408	
N800-0453		Invensys	Pneumatic Damper Actuator	MCP-0453	
N800-0455		Invensys	Pneumatic Damper Actuator	MCP-0455	
N800-0456		Invensys	Pneumatic Damper Actuator	MCP-0456	
N800-0458		Invensys	Pneumatic Damper Actuator	MCP-0458	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
N800-0801		Invensys	Ball Joint	VTD-0801	
N800-0803		Invensys	Ball Joint	VTD-0803	
N800-0804		Invensys	Ball Joint	VTD-0804	
N800-0902		Invensys	3x3 Or 4x4 Mounting Bracket	VTD-0902	
N800-0903		Invensys	2x2mounting Bracket	VTD-0903	
N800-1100		Invensys	Clevis Pin	VTD-1100	
N800-1107		Invensys	Clevis	VTD-1007	
N800-1205		Invensys	Cotter Pin	VTD-1205	
N800-1403		Invensys	Crankarm	VTD-1403	
N800-1404		Invensys	Crankarm	VTD-1404	
N800-1414		Invensys	Crankarm	VTD-1414	
N800-1415		Invensys	Crankarm	VTD-1415	
N800-1612		Invensys	Pushrod	VTD-1611	
N800-1630		Invensys	Pushrod	VTD-1630	
N800-2151		Invensys	4x4 Feedback Spring; 5#	VTD-2251	
N800-2250		Invensys	3x3 Feedback Spring; 5 #	VTD-2250	
N800-2252		Invensys	4x4 Feedback Spring; 10#	VTD-2261	
N800-2252		Invensys	6x6 Feedback Spring; 5#	VTD-2252	
N8002260		Invensys	3x3 Feedback Spring; 10 #	VTD-2260	
N800-2262		Invensys	6x6 Feedback Spring; 10#	VTD-2262	
N800-4202		Invensys	2x2 Replacement Spring; 3-12#	VTD-4202	
N800-4203		Invensys	2x2 Replacement Spring; 5-10#	VTD-4203	
N800-4205		Invensys	2x2 Replacement Spring; 8-13#	VTD-4205	
N800-4206		Invensys	2x2 Replacement Spring; 10-15#	VTD-4206	
N800-4208		Invensys	2x2 Replacement Spring; 4-8#	VTD-4208	
N800-4302		Invensys	3x3 Replacement Spring; 3-12#	VTD-4302	
N800-4303		Invensys	3x3 Replacement Spring; 5-10#	VTD-4303	
N800-4305		Invensys	3x3 Replacement Spring; 8-13#	VTD-4305	
N800-4306		Invensys	3x3 Replacement Spring; 10-15#	VTD-4306	
N800-4308		Invensys	3x3 Replacement Spring; 4-8#	VTD-4308	
N800-4402		Invensys	4x4 Replacement Spring; 3-12#	VTD-4402	
N800-4403		Invensys	4x4 Replacement Spring; 5-10#	VTD-4403	
N800-4405		Invensys	4x4 Replacement Spring; 8-13#	VTD-4405	
N800-4406		Invensys	4x4 Replacement Spring; 10-15#	VTD-4406	
N800-4408		Invensys	4x4 Replacement Spring; 4-8#	VTD-4408	
N800-9422		Invensys	2x2 Actuator Diaphragm	VTD-9422	
N800-9423		Invensys	3x3 Actuator Diaphragm	VTD-9423	
N800-9424		Invensys	4x4 Actuator Diaphragm	VTD-9424	
N800-9426		Invensys	6x6 Actuator Diaphragm	VTD-9426	
NF24-SR US		Belimo	Electric Damper Actuator	MEP-5372	
NM24 SR		Belimo	Electric Damper Actuator	MEP-4022 (w/ 1 internal aux. switch)	
NM24 US		Belimo	Electric Damper Actuator	MEP-5061	CME-1004

Pxxxxx

P10BC-7		Johnson	PE Switch	CCE-1001	
P10FC-4		Johnson	PE Switch	CCE-1002	
P340		Invensys	Pneumatic Receiver-Controller	CCC-1002	
P341		Invensys	Pneumatic Receiver-Controller	CCC-1002	
P3800-1		Johnson	Multi-Function VAV Controller	CSC-3011-10	
P3800-2		Johnson	Multi-Function VAV Controller	CSC-3011-10	
P541		Invensys	Pneumatic Receiver-Controller	CCC-1002	
P541-RA		Invensys	Pneumatic Receiver-Controller	CCC-1002	
P643A1007		Honeywell	PE Switch	CCE-1001	
P6581012		Honeywell	PE Switch	CCE-1001	
P658A		Honeywell	PE Switch	CCE-1001	
P658A1005		Honeywell	PE Switch	CCE-1001	
P658A1013		Honeywell	PE Switch	CCE-1001	
P658A1021		Honeywell	PE Switch	CCE-1001	
P658B		Honeywell	PE Switch	CCE-1001	
P658B1004		Honeywell	PE Switch	CCE-1001	
P658B1020		Honeywell	PE Switch	CCE-1001	
P658C1003		Honeywell	PE Switch	CCE-1001	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
PC-110		Invensys	PE Switch	CCE-1001	
PT973A2209		Honeywell	Pneumatic Room Thermostat	CTC-1611	

Rxxxxx

R-2090-6		Johnson	Reverse-Acting Relay	RCC-1504	
R-3030-1		Johnson	Reverse-Acting Relay	RCC-1504	
R404-101		Invensys	Switching Relay	RCC-1109	
R404-201		Invensys	Switching Relay	RCC-1109	
R415		Invensys	Reverse-Acting Relay	RCC-1504	
R416		Invensys	Reverse-Acting Relay	RCC-1504	
R416-1		Invensys	Reverse-Acting Relay	RCC-1504	
R416-2		Invensys	Reverse-Acting Relay	RCC-1504	
R432-11		Invensys	Low Pressure Selector	RCC-1106	
R432-2		Invensys	High Pressure Selector	RCC-1108	
R436		Invensys	Diff. Static Pressure Air Flow Switch	CSE-1103	
R471-1		Invensys	PE Switch	CCE-1001	
R503-2		Invensys	Switching Relay	RCC-1109	
R504-1		Invensys	Switching Relay	RCC-1109	
R504-2		Invensys	Switching Relay	RCC-1109	
R516		Invensys	Reverse-Acting Relay	RCC-1504	
R532-H		Invensys	High Pressure Selector	RCC-1108	
R532-L		Invensys	Low Pressure Selector	RCC-1106	
R533		Invensys	High/Low Signal Selector Relay	RCC-1111	
R77-21		Invensys	DA/NO VAV Controller W/Dials	CSC-2001	
R77-22		Invensys	RA/NC VAV Controller W/Dials	CSC-2002	
R77-23		Invensys	DA/NO VAV Controller	CSC-2003	
R77-24		Invensys	RA/NC VAV Controller	CSC-2004	
REC-790 Series		Invensys	Electric Actuator	CEP-4000 Series	Replace REE Relays
REE-1001		KMC	Electronic Relay Module	REE-4001	Replace Controller
REE-1002		KMC	Electronic Relay Module	REE-4002	Replace Controller
REE-1006		KMC	Electronic Relay Module	REE-4106	Replace Controller
REM-700-100		Invensys	Electric Actuator	MEP-1501	
REM-700-200		Invensys	Electric Actuator	MEP-1502	
REM-700-300		Invensys	Electric Actuator	MEP-1503	
REM-700-400		Invensys	Electric Actuator	MEP-1504	
RER-703		Invensys	Electronic Relay Module	REE-4001	
RER-713		Invensys	Electronic Relay Module	REE-4002	
RER-723		Invensys	Electronic Relay Module	REE-1005	Replace Controller
RES-051		Invensys	Air Velocity Sensor	SSE-1001	
RES-052		Invensys	Air Velocity Sensor	SSE-1002	
RES-151		Invensys	Air Velocity Sensor	SSE-2001	
RES-152		Invensys	Air Velocity Sensor	SSE-2002	
RET-120		Invensys	Electronic Thermostat	CTE-1004	
RET-180		Invensys	Electronic Thermostat	CTE-1001	
RET-185		Invensys	Electronic Thermostat	CTE-1001	Replace Controller
RET-190		Invensys	Electronic Thermostat	CTE-1002	
RET-195		Invensys	Electronic Thermostat	CTE-1002	Replace Controller
RET-320		Invensys	Electronic Thermostat	CTE-1003	
RET-321		Invensys	Electronic Thermostat	CTE-1005	
RET-322		Invensys	Electronic Thermostat	CTE-1008	
RET-325		Invensys	Electronic Thermostat	CTE-1003	Replace Controller
RK-503-2		Invensys	Switching Relay	RCC-1109	
RK-504-1		Invensys	Switching Relay	RCC-1109	
RK-504-2		Invensys	Switching Relay	RCC-1109	
RK-516		Invensys	Reverse-Acting Relay	RCC-1504	
RK-532-H		Invensys	High Pressure Selector	RCC-1108	
RK-532-L		Invensys	Low Pressure Selector	RCC-1504	

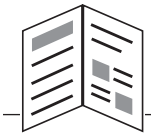
Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
RK-533		Invensys	High/Low Signal Selector Relay	RCC-1111	
RKS-1001		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RKS-2001		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RKS-3001		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RKS-3002		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RKS-4001		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RKS-4002		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RKS-5001		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RKSR-4000		Invensys	Pneumatic Receiver-Controller	CCC-1002	
RO49A2		Honeywell	Switching Relay	RCC-1109	
RO95B		Honeywell	Reverse-Acting Relay	RCC-1504	
RP2360-151		Invensys	Reverse-Acting Relay	RCC-1504	
RP470A1003		Honeywell	Low Pressure Selector	RCC-1106	
RP470A1004		Honeywell	High Pressure Selector	RCC-1108	
RP670A1001		Honeywell	Switching Relay	RCC-1109	
RP670A1019		Honeywell	Switching Relay	RCC-1109	
RP670A1027		Honeywell	Switching Relay	RCC-1109	
RP670A1035		Honeywell	Switching Relay	RCC-1109	
RP670B1009		Honeywell	Switching Relay	RCC-1109	
RP670B1017		Honeywell	Switching Relay	RCC-1110	
RP751B		Honeywell	Elec. Pneumatic Transducer	XEC-3002	
RP751B		Honeywell	Elec. Pneumatic Transducer	XEC-3004	
RP904B		Honeywell	Reverse-Acting Relay	RCC-1504	
RP908A		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908A1005		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908A1013		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908A1021		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908A1039		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908B		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908B1003		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908B1029		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP908B1037		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP913A1008		Honeywell	High/Low Signal Selector Relay	RCC-1111	
RP920A		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920A1025		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920A1033		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920A1041		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920A1058		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920B		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920B1023		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920B1031		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920B1049		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP920B1056		Honeywell	Pneumatic Receiver-Controller	CCC-1002	
RP95B		Honeywell	Reverse-Acting Relay	RCC-1504	
RP972A1006		Honeywell	Reverse-Acting Relay	RCC-1504	
RP972A1030		Honeywell	Reverse-Acting Relay	RCC-1504	

Sxxxxx

SM24-S US		Belimo	Electric Damper Actuator	MEP-7503	CME-7002
SQB61.1		Siemens	Electric Damper Actuator	MEP-7553	
SQR65.1		Siemens	Electric Damper Actuator	MEP-7502	
SQR65.1		Siemens	Electric Damper Actuator	MEP-7502	CME-7002
SQR85.1		Siemens	Electric Damper Actuator	MEP-7501	
SQR85.1		Siemens	Electric Damper Actuator	MEP-7503	CME-7002

Txxxxx

T12-2011		Invensys	Pneumatic Room Thermostat	CTC-1611	
T-12-301		Invensys	Pneumatic Room Thermostat	CTC-1611	
T-12-3011		Invensys	Pneumatic Room Thermostat	CTC-1611	
T-12-3081		Invensys	Pneumatic Room Thermostat	CTC-1611	
T-13-301		Invensys	Pneumatic Room Thermostat	CTC-1612	
T-13-3011		Invensys	Pneumatic Room Thermostat	CTC-1612	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
T-13-3081		Invensys	Pneumatic Room Thermostat	CTC-1612	
T15-101		Invensys	Pneumatic Room Thermostat	CTC-1621	
T16-101		Invensys	Pneumatic Room Thermostat	CTC-1622	
T18-101		Invensys	Pneumatic Room Thermostat	CTC-1621	
T18-201		Invensys	Pneumatic Room Thermostat	CTC-1621	
T-18-301		Invensys	Pneumatic Room Thermostat	CTC-1621	
T-18-3011		Invensys	Pneumatic Room Thermostat	CTC-1621	
T-18-305		Invensys	Pneumatic Room Thermostat	CTC-1621	
T-18-306		Invensys	Pneumatic Room Thermostat	CTC-1621	
T-18-3081		Invensys	Pneumatic Room Thermostat	CTC-1621	
T-18-3091		Invensys	Pneumatic Room Thermostat	CTC-1621	
T19-101		Invensys	Pneumatic Room Thermostat	CTC-1622	
T19-201		Invensys	Pneumatic Room Thermostat	CTC-1622	
T19-301		Invensys	Pneumatic Room Thermostat	CTC-1622	
T19-3011		Invensys	Pneumatic Room Thermostat	CTC-1622	
T301		Invensys	High Temperature Limit Thermostat	CTE-6001	
T-4002-201		Johnson	Pneumatic Room Thermostat	CTC-1621	
T-4002-202		Johnson	Pneumatic Room Thermostat	CTC-1622	
T-4002-203		Johnson	Pneumatic Room Thermostat	CTC-1621	
T-4002-204		Johnson	Pneumatic Room Thermostat	CTC-1622	
T-4002-301		Johnson	Pneumatic Room Thermostat	CTC-1621-103	
T-4002-302		Johnson	Pneumatic Room Thermostat	CTC-1622-103	
T-4004.A		Johnson	Pneumatic Room Thermostat	CTC-1611	
T-4004-207		Johnson	Pneumatic Room Thermostat	CTC-1612	
T-4054-1		Johnson	Pneumatic Room Thermostat	CTC-1504-10	
T-4054-2		Johnson	Pneumatic Room Thermostat	CTC-1505-10	
T-4100-1		Johnson	Pneumatic Room Thermostat	CTC-1611	
T-4100-2		Johnson	Pneumatic Room Thermostat	CTC-1612	
T-4100-3		Johnson	Pneumatic Room Thermostat	CTC-1611	
T-4100-4		Johnson	Pneumatic Room Thermostat	CTC-1612	
T-4100-6001		Johnson	Pneumatic Room Thermostat	CTC-1611	
T-4100-6002		Johnson	Pneumatic Room Thermostat	CTC-1612	
T-4100-6003		Johnson	Pneumatic Room Thermostat	CTC-1611	
T-4100-6004		Johnson	Pneumatic Room Thermostat	CTC-1612	
T-4600-1		Johnson	Pneumatic Room Thermostat	CTC-1004-10	
T-4600-3		Johnson	Pneumatic Room Thermostat	CTC-1004-11	
T-4600-5		Johnson	Pneumatic Room Thermostat	CTC-1006-10	
T-4600-6		Johnson	Pneumatic Room Thermostat	CTC-1006-11	
T-4600-6001		Johnson	Pneumatic Room Thermostat	CTC-1004-10	
T-4600-6003		Johnson	Pneumatic Room Thermostat	CTC-1004-11	
T-4600-6005		Johnson	Pneumatic Room Thermostat	CTC-1006-10	
T-4600-6006		Johnson	Pneumatic Room Thermostat	CTC-1006-11	
T5800-1		Johnson	Pneumatic Receiver-Controller	CCC-1002	
T5800-3		Johnson	Pneumatic Receiver-Controller	CCC-1002	
TA-3434		Invensys	High Temp. Limit Thermostat	CTE-6001	
TC-5131		Invensys	Low Temp. Thermostat	CTE-3006	
TC5141		Invensys	Low Temp. Thermostat	CTE-3007	
TDIAP502730		Honeywell	Diff. Static Press. Air Flow Switch	CSE-1103	
TK-1001		Invensys	Pneumatic Room Thermostat	CTC-1621	
TK-1001-116		Invensys	Pneumatic Room Thermostat	CTC-1621	
TK-1001-600		Invensys	Pneumatic Room Thermostat	CTC-1621	
TK-1002		Invensys	Pneumatic Room Thermostat	CTC-1621	
TK-1101		Invensys	Pneumatic Room Thermostat	CTC-1622	
TK-1101-116		Invensys	Pneumatic Room Thermostat	CTC-1622	
TK-1101-600		Invensys	Pneumatic Room Thermostat	CTC-1622	
TK-1102		Invensys	Pneumatic Room Thermostat	CTC-1622	
TK-12		Invensys	Pneumatic Room Thermostat	CTC-1611	
TK-12-1		Invensys	Pneumatic Room Thermostat	CTC-1611	
TK-13		Invensys	Pneumatic Room Thermostat	CTC-1612	
TK-18		Invensys	Pneumatic Room Thermostat	CTC-1621	
TK-19		Invensys	Pneumatic Room Thermostat	CTC-1622	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
TK-19-1		Invensys	Pneumatic Room Thermostat	CTC-1622	
TK-5001		Invensys	Pneumatic Room Thermostat	CTC-1611	
TK-5001-116		Invensys	Pneumatic Room Thermostat	CTC-1611	
TK-5002		Invensys	Pneumatic Room Thermostat	CTC-1611	
TK-50501		Invensys	Pneumatic Room Thermostat	CTC-1004-10	
TK-50511		Invensys	Pneumatic Room Thermostat	CTC-1006-10	
TK-5101		Invensys	Pneumatic Room Thermostat	CTC-1612	
TK-5101-116		Invensys	Pneumatic Room Thermostat	CTC-1612	
TK-5102		Invensys	Pneumatic Room Thermostat	CTC-1612	
TK-51501		Invensys	Pneumatic Room Thermostat	CTC-1003-10	
TK-51511		Invensys	Pneumatic Room Thermostat	CTC-1005-10	
TKR-1001		Invensys	Pneumatic Room Thermostat	CTC-1621	
TKR-1001-116		Invensys	Pneumatic Room Thermostat	CTC-1621	
TKR-1101		Invensys	Pneumatic Room Thermostat	CTC-1622	
TKR-1101-116		Invensys	Pneumatic Room Thermostat	CTC-1622	
TKR-12		Invensys	Pneumatic Room Thermostat	CTC-1611	
TKR-13		Invensys	Pneumatic Room Thermostat	CTC-1612	
TKR-13-1		Invensys	Pneumatic Room Thermostat	CTC-1612	
TKR-18		Invensys	Pneumatic Room Thermostat	CTC-1621	
TKR-18-91		Invensys	Pneumatic Room Thermostat	CTC-1621	
TKR-19		Invensys	Pneumatic Room Thermostat	CTC-1622	
TKR-19-91		Invensys	Pneumatic Room Thermostat	CTC-1622	
TKR-5001		Invensys	Pneumatic Room Thermostat	CTC-1611	
TKR-5001-116		Invensys	Pneumatic Room Thermostat	CTC-1611	
TKR-5101		Invensys	Pneumatic Room Thermostat	CTC-1612	
TKR-5101-116		Invensys	Pneumatic Room Thermostat	CTC-1612	
TO900A		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TO901A		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TO901B		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TO91A		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TO931B		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TO93A		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TO93C		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP900A		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP901B		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP901C		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP910A		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP910B		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP923A		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP923B		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP931B		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP932B		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP93A		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP9702008		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970A		Honeywell	Pneumatic Room Thermostat	CTC-1621-103	
TP970A1002		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A1004		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A1012		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A1038		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A1053		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A1061		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2004		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2012		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2020		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2038		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2053		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2087		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2095		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2129		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2145		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2190		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970A2242		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970A2267		Honeywell	Pneumatic Room Thermostat	CTC-1621	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
TP970A2275		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP970B		Honeywell	Pneumatic Room Thermostat	CTC-1622-103	
TP970B1002		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B1028		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B1036		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B1044		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2002		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2010		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2028		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2036		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2069		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2077		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2166		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2182		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970B2208		Honeywell	Pneumatic Room Thermostat	CTC-1622	
TP970C1000		Honeywell	Pneumatic Room Thermostat	CTC-1003-10	
TP970C2000		Honeywell	Pneumatic Room Thermostat	CTC-1621	
TP971A1045		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973A1068		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973A1076		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973A1092		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973A2068		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973A2076		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973A2092		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973A2215		Honeywell	Pneumatic Room Thermostat	CTC-1611	
TP973B1006		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP973B1066		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP973B2066		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP973B2171		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP973B2189		Honeywell	Pneumatic Room Thermostat	CTC-1612	
TP978A1006		Honeywell	Pneumatic Room Thermostat	CTC-1003-10	

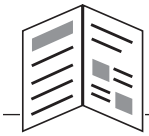
Vxxxxx

V1000-25404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-25407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-25419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-25604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-25607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-25619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-30404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-30407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-30419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-30604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-30607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-30619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-35404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-35407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-35419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-35604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-35607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-35619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-40404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-40407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-40419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent
V1000-40604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-40607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-40619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent
V1000-45404		Invensys	Pneumatic Valve	*VCP-51701271—see VCP-5170 cross-reference
V1000-45407		Invensys	Pneumatic Valve	*VCP-51701272—see VCP-5170 cross-reference
V1000-45419		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference
V1000-45604		Invensys	Pneumatic Valve	*VCP-52701271—see VCP-5270 cross-reference
V1000-45607		Invensys	Pneumatic Valve	*VCP-52701272—see VCP-5270 cross-reference
V1000-45619		Invensys	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V1000-51404		Invensys	Pneumatic Valve	*VCP-51711271—see VCP-5170 cross-reference	
V1000-51407		Invensys	Pneumatic Valve	*VCP-51711272—see VCP-5170 cross-reference	
V1000-51419		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V1000-51604		Invensys	Pneumatic Valve	*VCP-52711271—see VCP-5270 cross-reference	
V1000-51607		Invensys	Pneumatic Valve	*VCP-52711272—see VCP-5270 cross-reference	
V1000-51619		Invensys	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
V1000-55404		Invensys	Pneumatic Valve	*VCP-51721271—see VCP-5170 cross-reference	
V1000-55407		Invensys	Pneumatic Valve	*VCP-51721272—see VCP-5170 cross-reference	
V1000-55419		Invensys	Pneumatic Valve	*VCP-51721270—see VCP-5170 cross-reference	
V1000-55604		Invensys	Pneumatic Valve	*VCP-52721271—see VCP-5270 cross-reference	
V1000-55607		Invensys	Pneumatic Valve	*VCP-52721272—see VCP-5270 cross-reference	
V1000-55619		Invensys	Pneumatic Valve	*VCP-52721270—see VCP-5270 cross-reference	
V1002-25404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-25407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-25419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-25604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-25607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-25619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-30404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-30407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-30419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-30604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-30607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-30619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-35404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-35407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-35419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-35604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-35607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-35619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-40404		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-40407		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-40419		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V1002-40604		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-40607		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-40619		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V1002-45404		Invensys	Pneumatic Valve	*VCP-51701271—see VCP-5170 cross-reference	
V1002-45407		Invensys	Pneumatic Valve	*VCP-51701272—see VCP-5170 cross-reference	
V1002-45419		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V1002-45503		Invensys	Pneumatic Valve	*VCP-51701711—see VCP-5170 cross-reference	
V1002-45517		Invensys	Pneumatic Valve	*VCP-51701712—see VCP-5170 cross-reference	
V1002-45519		Invensys	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
V1002-45604		Invensys	Pneumatic Valve	*VCP-52701271—see VCP-5270 cross-reference	
V1002-45607		Invensys	Pneumatic Valve	*VCP-52701272—see VCP-5270 cross-reference	
V1002-45619		Invensys	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V1002-51404		Invensys	Pneumatic Valve	*VCP-51711271—see VCP-5170 cross-reference	
V1002-51407		Invensys	Pneumatic Valve	*VCP-51711272—see VCP-5170 cross-reference	
V1002-51419		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V1002-51503		Invensys	Pneumatic Valve	*VCP-51711711—see VCP-5170 cross-reference	
V1002-51517		Invensys	Pneumatic Valve	*VCP-51711712—see VCP-5170 cross-reference	
V1002-51519		Invensys	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
V1002-51604		Invensys	Pneumatic Valve	*VCP-52711271—see VCP-5270 cross-reference	
V1002-51607		Invensys	Pneumatic Valve	*VCP-52711272—see VCP-5270 cross-reference	
V1002-51619		Invensys	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
V1002-55404		Invensys	Pneumatic Valve	*VCP-51721271—see VCP-5170 cross-reference	
V1002-55407		Invensys	Pneumatic Valve	*VCP-51721272—see VCP-5170 cross-reference	
V1002-55419		Invensys	Pneumatic Valve	*VCP-51721270—see VCP-5170 cross-reference	
V1002-55503		Invensys	Pneumatic Valve	*VCP-51721711—see VCP-5170 cross-reference	
V1002-55517		Invensys	Pneumatic Valve	*VCP-51721712—see VCP-5170 cross-reference	
V1002-55519		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V1002-55604		Invensys	Pneumatic Valve	*VCP-52721271—see VCP-5270 cross-reference	
V1002-55607		Invensys	Pneumatic Valve	*VCP-52721272—see VCP-5270 cross-reference	
V1002-55619		Invensys	Pneumatic Valve	*VCP-52721270—see VCP-5270 cross-reference	
V-3754-1022		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V-3754-1023		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-3974-1004		Johnson	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V-4324-1005		Johnson	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V-4324-1007		Johnson	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1163	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1163	MP953C1018	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1163	MP953C1026	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1163	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1163	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1163	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1163	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1163	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1164	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1164	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1164	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1221	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1221	MP953C1018	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1221	MP953C1026	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1221	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1221	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1221	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1221	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1221	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1221	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1221	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1221	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1288	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1288	MP953C1018	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1288	MP953C1026	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1288	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1288	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1288	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1288	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1288	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1288	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1288	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1288	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1395	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953C1018	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953C1026	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1395	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1395	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A1395	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1395	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1395	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A1460	MP953C1067	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953C1075	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953C1083	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953D1107	Honeywell	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V5011A1460	MP953D1131	Honeywell	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V5011A1460	MP953E1277	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V5011A1460	MP953E1285	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953E1293	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953E1368	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953E1376	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953E1384	Honeywell	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V5011A1460	MP953F1093	Honeywell	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V5011A1460	MP953F1101	Honeywell	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V5011A1460	MP953F1119	Honeywell	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V5011A1528	MP953C1067	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953C1075	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953C1083	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953D1107	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011A1528	MP953D1131	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011A1528	MP953E1277	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953E1285	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953E1293	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953E1368	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953E1376	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1528	MP953F1093	Honeywell	Pneumatic Valve	*VCP-52711710—see VCP-5270 cross-reference	
V5011A1528	MP953F1119	Honeywell	Pneumatic Valve	*VCP-52711710—see VCP-5270 cross-reference	
V5011A1767	MP953C1067	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953C1075	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953C1083	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953D1107	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011A1767	MP953D1131	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011A1767	MP953E1277	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953E1285	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953E1293	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953E1368	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953E1376	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953E1384	Honeywell	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V5011A1767	MP953F1093	Honeywell	Pneumatic Valve	*VCP-52711270—see VCP-5270 cross-reference	
V5011A1767	MP953F1101	Honeywell	Pneumatic Valve	*VCP-52711271—see VCP-5270 cross-reference	
V5011A1767	MP953F1119	Honeywell	Pneumatic Valve	*VCP-52711272—see VCP-5270 cross-reference	
V5011A1858	MP953C1471	Honeywell	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V5011A1858	MP953C1489	Honeywell	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V5011A1858	MP953E1392	Honeywell	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V5011A1858	MP953E1400	Honeywell	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V5011A1858	MP953E1418	Honeywell	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V5011A1882	MP953C1471	Honeywell	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
V5011A1882	MP953C1489	Honeywell	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
V5011A1882	MP953E1392	Honeywell	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
V5011A1882	MP953E1400	Honeywell	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
V5011A1882	MP953E1418	Honeywell	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
V5011A1916	MP953C1471	Honeywell	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
V5011A1916	MP953C1489	Honeywell	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
V5011A1916	MP953E1392	Honeywell	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
V5011A1916	MP953E1400	Honeywell	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
V5011A1916	MP953E1418	Honeywell	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
V5011A346	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953C1018	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953C1026	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A346	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A346	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	

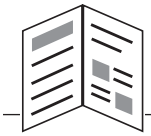


Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V5011A346	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V5011A346	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A346	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011A346	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5011B1013	MP953C1471	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011B1013	MP953C1489	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011B1013	MP953E1392	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011B1013	MP953E1400	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011B1013	MP953E1418	Honeywell	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V5011B1047	MP953C1489	Honeywell	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
V5011B1047	MP953E1392	Honeywell	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
V5011B1047	MP953E1400	Honeywell	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
V5011B1047	MP953E1418	Honeywell	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
V5011B1070	MP953C1471	Honeywell	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
V5011B1070	MP953C1489	Honeywell	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
V5011B1070	MP953E1392	Honeywell	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
V5011B1070	MP953E1400	Honeywell	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
V5011B1070	MP953E1418	Honeywell	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
V5011F1101	MP953F1101	Honeywell	Pneumatic Valve	*VCP-52711710—see VCP-5270 cross-reference	
V5011V1047	MP953C1471	Honeywell	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
V5013A1005	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1005	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5013A1021	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1021	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5013A1039	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V5013A1039	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1039	MP953F1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1047	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1054	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013A1062	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013B1003	MP953C1067	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953C1075	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953C1083	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V5013B1003	MP953D1107	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953D1131	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1277	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1285	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1293	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1301	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1319	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1327	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1367	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1376	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953E1384	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953F1093	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953F1101	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1003	MP953F1119	Honeywell	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V5013B1011	MP953C1067	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953C1075	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953C1083	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953D1107	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953D1131	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1277	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1285	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1293	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1301	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1319	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1327	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1368	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1376	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953E1384	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953F1093	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953F1101	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1011	MP953F1119	Honeywell	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V5013B1029	MP953C1471	Honeywell	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
V5013B1029	MP953C1489	Honeywell	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
V5013B1029	MP953E1392	Honeywell	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
V5013B1029	MP953E1400	Honeywell	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
V5013B1029	MP953E1418	Honeywell	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
V5013B1045	MP953C1489	Honeywell	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
V5013B1045	MP953E1392	Honeywell	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
V5013B1045	MP953E1400	Honeywell	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
V5013B1045	MP953E1418	Honeywell	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
V5013F1079	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1079	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5013F1087	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V5013F1087	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1087	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V5013F1095	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953E1384	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1095	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1103	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953E13843	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1111	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953C1000	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953C1067	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953C1075	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953C1083	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953D1107	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953D1131	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1277	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1285	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1293	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1301	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1319	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1327	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1368	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E1376	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953E13843	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953F1093	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013F1129	MP953F1101	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	



Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V5013F1129	MP953F1119	Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V5013N1030	ML6425A3022	Honeywell	Electric Valve	*See VEB-46 Series nearest equivalent	
V5013N1055	ML6425A3022	Honeywell	Electric Valve	*See VEB-46 Series nearest equivalent	
V5013N1063	ML6425A3022	Honeywell	Electric Valve	*See VEB-46 Series nearest equivalent	
V5013N1071	ML6425A3022	Honeywell	Electric Valve	*See VEB-46 Series nearest equivalent	
V5013N1089	ML6425A3022	Honeywell	Electric Valve	*See VEB-46 Series nearest equivalent	
V5013N1097	ML6425A3022	Honeywell	Electric Valve	*See VEB-46 Series nearest equivalent	
V-5252-10		Johnson	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V-5252-11		Johnson	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V-5252-12		Johnson	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
V-5252-13		Johnson	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
V-5252-14		Johnson	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V-5252-15		Johnson	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V-5252-16		Johnson	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
V-5252-17		Johnson	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
V-5252-18		Johnson	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
V-5252-19		Johnson	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
V-5252-20		Johnson	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
V-5252-4		Johnson	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V-5252-5		Johnson	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V-5252-6		Johnson	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
V-5252-7		Johnson	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
V-5252-8		Johnson	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
V-5252-9		Johnson	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
V-5254-1		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-5254-2		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-5254-3		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-5254-4		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-5254-6		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-5354-5		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-5462-11		Johnson	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V-5462-12		Johnson	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V-5462-15		Johnson	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
V-5462-16		Johnson	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
V-5462-17		Johnson	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
V-5462-18		Johnson	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
V-5462-6		Johnson	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V-5462-7		Johnson	Pneumatic Valve	*VCP-52701270—see VCP-5270 cross-reference	
V-5462-8		Johnson	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
V-5462-9		Johnson	Pneumatic Valve	*VCP-52711710—see VCP-5270 cross-reference	
V-5464-1		Johnson	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V-5464-2		Johnson	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V-5464-3		Johnson	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V-5464-4		Johnson	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V-5842-10		Johnson	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
V-5842-13		Johnson	Pneumatic Valve	*VCP-53641710—see VCP-5360 cross-reference	
V-5842-14		Johnson	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
V-5842-15		Johnson	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
V-5842-16		Johnson	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
V-5842-17		Johnson	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
V-5842-18		Johnson	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V-5842-7		Johnson	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V-5842-8		Johnson	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
V-5842-9		Johnson	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
V-5844-1		Johnson	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V-5844-2		Johnson	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V-5844-3		Johnson	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V-5844-4		Johnson	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V-5844-5		Johnson	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V-5844-6		Johnson	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V-592-6650		Johnson	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6135		Johnson	Switching Relay	RCC-1109	
V6600-04302		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-04307		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
V6600-04319		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-15302		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-15307		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-15319		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-25302		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-25307		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-25319		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-30302		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-30307		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-30319		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-35302		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-35307		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-35319		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-40302		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-40307		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6600-40319		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
V6700-06302		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-06307		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-06319		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-16302		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-16307		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-16319		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-25302		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-25307		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-25319		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-30302		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-30307		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-30319		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-35302		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-35307		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-35319		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-40302		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-40307		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6700-40319		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
V6800-06307		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-06308		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-06319		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-16307		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-16308		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-16319		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-25307		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-25308		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-25319		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-30307		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-30308		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-30319		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-35307		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-35308		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-35319		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-40307		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-40308		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V6800-40319		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-7216-4503		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-7216-4505		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-7216-4507		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
V-7216-4571		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VCV-2100		Staefa/UPC	VAV Controller	CSC-3011-10	
VCV-2200		Staefa/UPC	VAV Controller	CSC-3011-10	
VCV-2500		Staefa/UPC	VAV Controller	CSC-3011-10	
VK4-8392-304-4-3		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9213-301-4-6		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9213-301-4-8		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9213-301-4-9		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	

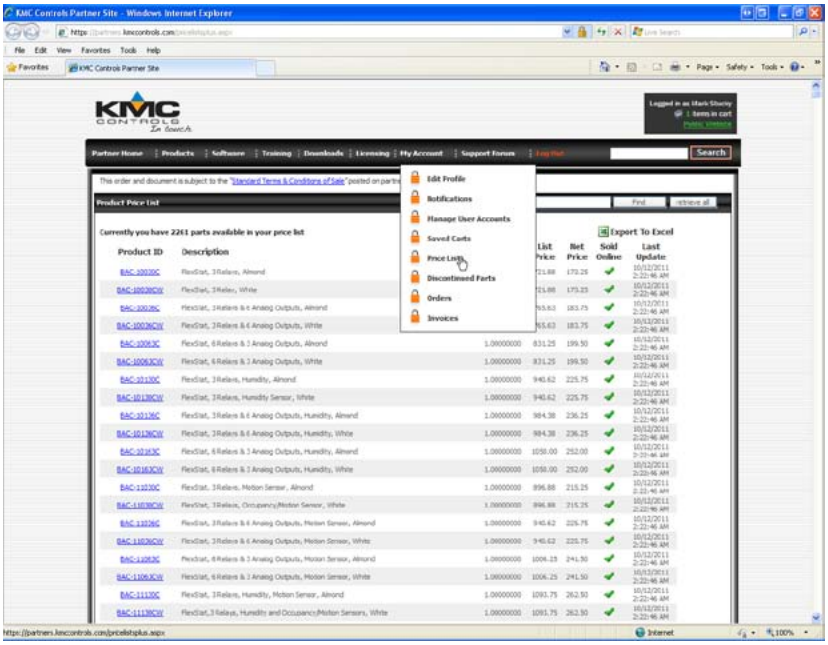
Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
VK4-9213-371-4-10		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9213-371-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9213-372-4-10		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9213-372-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9213-373-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9213-373-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9213-601-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9213-601-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9213-601-5-12		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
VK4-9213-601-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK4-9213-801-5-12		Invensys	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
VK4-9213-801-5-13		Invensys	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
VK4-9213-811-5-16		Invensys	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
VK4-9223-301-4-6		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9223-301-4-8		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9223-301-4-9		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9223-373-4-10		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9223-373-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9223-603-4-10		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9223-603-5-12		Invensys	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
VK4-9223-603-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK4-9223-803-5-12		Invensys	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
VK4-9223-813-5-15		Invensys	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
VK4-9223-913-5-16		Invensys	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
VK4-9273-301-4-3		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9273-301-4-8		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9273-301-4-9		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9273-371-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9273-371-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9273-601-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9273-601-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9283-303-4-3		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9283-303-4-6		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9283-303-4-8		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9283-303-4-9		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9283-371-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9283-373-4-11		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9283-603-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK4-9283-603-4-11		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK4-9313-302-4-2		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-302-4-6		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-302-4-8		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-302-4-9		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-303-4-2		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-303-4-6		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-303-4-8		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-303-4-9		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-601-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK4-9313-602-4-10		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-602-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-602-5-12		Invensys	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
VK4-9313-602-5-13		Invensys	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
VK4-9313-603-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-603-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK4-9313-603-5-12		Invensys	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
VK4-9313-603-5-13		Invensys	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
VK4-9313-801-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK4-9313-802-5-12		Invensys	Pneumatic Valve	*VCP-53621270—see VCP-5360 cross-reference	
VK4-9313-802-5-13		Invensys	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
VK4-9313-812-5-15		Invensys	Pneumatic Valve	*VCP-53651710—see VCP-5360 cross-reference	
VK4-9313-812-5-16		Invensys	Pneumatic Valve	*VCP-53661710—see VCP-5360 cross-reference	
VK4-9323-601-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK4-9323-603-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK4-9323-801-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9212-201-4-2		Invensys	Pneumatic Valve	*See VCZ-41 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
VK-9212-201-4-3		Invensys	Pneumatic Valve	*See VCZ-41 Series nearest equivalent	
VK-9213-301-4-2		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-301-4-3		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-301-4-6		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-301-4-8		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-301-4-9		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-371-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-601-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-601-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-601-5-12		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
VK-9213-601-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK-9213-602-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-602-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9213-602-5-12		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
VK-9213-602-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK-9213-603-5-12		Invensys	Pneumatic Valve	*VCP-51701270—see VCP-5170 cross-reference	
VK-9213-801-5-12		Invensys	Pneumatic Valve	*VCP-51701710—see VCP-5170 cross-reference	
VK-9213-801-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK-9213-801-5-13		Invensys	Pneumatic Valve	*VCP-51711710—see VCP-5170 cross-reference	
VK-9213-801-5-13		Invensys	Pneumatic Valve	*VCP-53631270—see VCP-5360 cross-reference	
VK-9213-801-5-13		Invensys	Pneumatic Valve	*VCP-53631710—see VCP-5360 cross-reference	
VK-9213-811-5-15		Invensys	Pneumatic Valve	*VCP-51731710—see VCP-5170 cross-reference	
VK-9213-811-5-16		Invensys	Pneumatic Valve	*VCP-51741710—see VCP-5170 cross-reference	
VK-9222-203-4-3		Invensys	Pneumatic Valve	*See VCZ-42 Series nearest equivalent	
VK-9223-301-4-6		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9223-301-4-8		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9223-301-4-9		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9223-371-4-11		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9223-601-4-10		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9223-601-5-12		Invensys	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
VK-9223-601-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK-9223-602-4-10		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9223-602-5-12		Invensys	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
VK-9223-602-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK-9223-603-4-10		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9223-603-5-12		Invensys	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
VK-9223-603-5-13		Invensys	Pneumatic Valve	*VCP-51711270—see VCP-5170 cross-reference	
VK-9223-801-5-13		Invensys	Pneumatic Valve	*VCP-52721710—see VCP-5270 cross-reference	
VK-9223-803-5-12		Invensys	Pneumatic Valve	*VCP-52701710—see VCP-5270 cross-reference	
VK-9223-813-5-15		Invensys	Pneumatic Valve	*VCP-52731710—see VCP-5270 cross-reference	
VK-9223-813-5-16		Invensys	Pneumatic Valve	*VCP-52741710—see VCP-5270 cross-reference	
VK-9253-301-4-3		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-301-4-3		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-301-4-6		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-301-4-8		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-301-4-9		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-371-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-371-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-601-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-601-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-602-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-602-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-603-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9273-603-4-11		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9283-301-4-3		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9283-371-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9283-601-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9283-601-4-11		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9283-602-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9283-602-4-11		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9283-603-4-10		Invensys	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VK-9283-603-4-11		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9312-201-4-2		Invensys	Pneumatic Valve	*See VCZ-44 Series nearest equivalent	
VK-9312-201-4-2		Invensys	Pneumatic Valve	*See VCZ-44 Series nearest equivalent	
VK-9312-203-4-2		Invensys	Pneumatic Valve	*See VCZ-44 Series nearest equivalent	

Original Part No.	Actuator Accessory	MFG	Description	KMC Part No.	Accessory/Notes
VK-9313-301-4-2		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-301-4-6		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9313-301-4-8		Invensys	Pneumatic Valve	*See VCB-42 Series nearest equivalent	
VK-9313-301-4-9		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-601-4-10		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-601-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-601-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9313-602-4-10		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-602-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-602-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9313-603-4-10		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-603-4-11		Invensys	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VK-9313-603-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9313-801-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9313-812-5-16		Invensys	Pneumatic Valve	*VCP-53661710—see VCP-5360 cross-reference	
VK-9323-601-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9323-602-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9323-603-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VK-9323-801-5-14		Invensys	Pneumatic Valve	*VCP-51721710—see VCP-5170 cross-reference	
VP526A1068		Honeywell	Pneumatic Valve	*See VCZ-41 Series nearest equivalent	
VP526A1076		Honeywell	Pneumatic Valve	*See VCZ-44 Series nearest equivalent	
VP526A1084		Honeywell	Pneumatic Valve	*See VCZ-41 Series nearest equivalent	
VTM-TM019-313		Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VTM-TM019-323		Honeywell	Pneumatic Valve	*See VCB-46 Series nearest equivalent	
VTM-TN007-312		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VTM-TN007-322		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VTM-TN019-312		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	
VTM-TN019-322		Johnson	Pneumatic Valve	*See VCB-41 Series nearest equivalent	

***NOTE: The valves marked with an asterisk no longer have KMC direct replacements. For those valves, see the cross-referenced section in this catalog for the nearest equivalent. VCZ valves may also need a compression/threaded adapter.**

Price List



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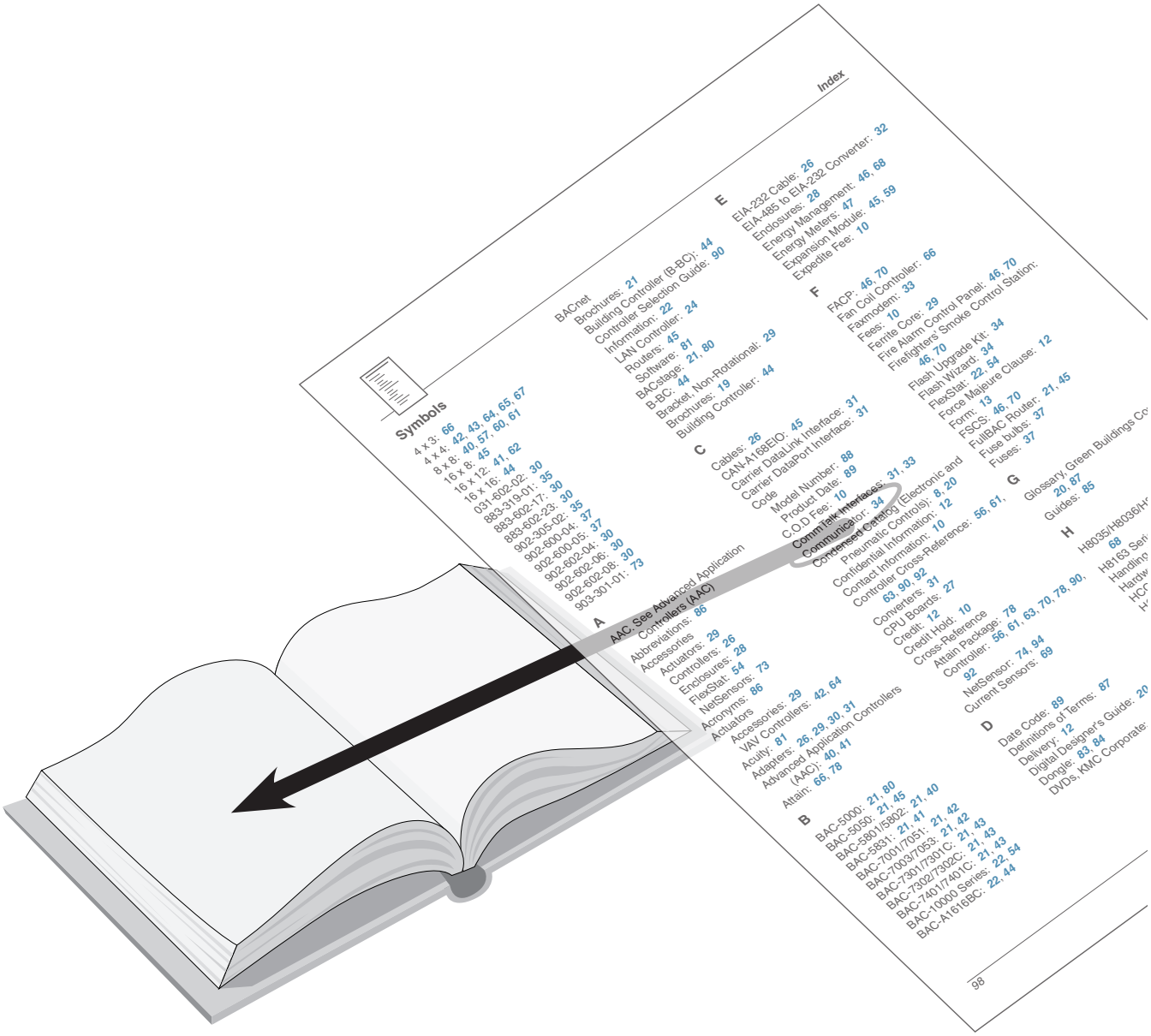
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