SMC is pursuing customer satisfaction worldwide and supporting automation, through the most advanced pneumatic technology.

The 21st century — with the revolution in global IT, business methods are undergoing great changes. In these quickly developing ever changing times, customer satisfaction can only be achieved by a clear understanding of our customers’ goals and objectives. Therefore, SMC has built an organization that listens carefully to our customers and responds quickly and specifically to their needs. SMC has established a widespread global network of locations in all major countries of the America’s, Europe and Asia showing our active commitment to the world market. SMC supports this global network with a stable supply chain of global products, a high level of technical service and a solid communication network to meet our customers’ needs and expectations.
By establishing a strong base in each country and region with a large experienced sales force, SMC provides the best possible service in the industry. Maintaining close communication with our customers throughout the world keeps our engineering teams and our products at the leading edge of industry.

Local subsidiaries have been established in 39 countries worldwide, with over 230 sales offices. Our sales force of over 3,900 maintains close communication with customers.

Our engineering staff now exceed 1,000 and are located in Technical centres in Japan, United States and Europe. Quick, clear and detailed responses to customer requests are communicated through our sales group, and our engineers are constantly on the alert for new trends leading to world class new products.

Technical Development

Our product line offers 9,100 basic models with over 530,000 variations. Global production facilities provide a stable supply of products to customers in all markets.

The vast array of products satisfies nearly every application. Fast delivery of these high quality products at competitive costs is accomplished through our unique production system, and by maximizing our local production capabilities, a stable supply of product is guaranteed.
The Tsukuba Technical Centre has expanded into its newly completed twin-tower building. It will be transformed into a fully equipped facility. At the center of SMC’s research and development division, a staff of 1,000 is engaged in research and development activities for the entire world.

To give a global engineering network, technical centers have been established in the United State and Europe, together with Japan.

Following the basic concept of developing products from the customer’s standpoint, SMC is dedicating a large staff and large financial resources to research and development. This is undertaken to promote research on basic technology with future potential and to produce products that are adapted to the needs of the marketplace in a timely manner. To provide positive and speedy response to the problems presented by customers throughout the world, technical centers have been established in the United States and Europe, creating a powerful global engineering network with Japan as its nucleus. All of the technical centers share information and maintain close contact in order to quickly respond to requirements locally, and to offer the same high quality of technical service throughout the world.
The ETC has been established in the existing SMC UK site in Milton Keynes. Here, approximately 100 experienced engineers from SMC European subsidiaries are scheduled to be gathered to handle projects from their respective countries. This has enabled improved communication, faster and more accurate information, and a higher level of customer satisfaction.

ATC (American Technical Centre) U. S. A.
The ATC has been established to meet the project requirements of customers in North America. The ATC has approximately 100 engineers available for customer support.

ETC (European Technical Centre) U. K.
The ETC has been established in the existing SMC UK site in Milton Keynes. Here, approximately 100 experienced engineers from SMC European subsidiaries are scheduled to be gathered to handle projects from their respective countries. This has enabled improved communication, faster and more accurate information, and a higher level of customer satisfaction.
SMC’s unique production system achieves high quality, low cost and short lead times.

SMC products reflect a market trend towards greater diversification with a vast array of 9,100 basic models and over 530,000 variations. This is made possible by an integrated production system that includes casting, machining, surface treatment, coating, assembly and inspection, all performed in SMC’s factories. Furthermore, we use a unique production control system in which instructions for all production operations are performed automatically based on information from orders received. As a result, SMC can secure high quality, low cost and a short lead time of its product.
Customer orders are input directly by our sales personnel. Once the order is entered into the SMC EDP (Electronic Data Processing) system, items are automatically drawn from stock, or produced in our manufacturing facilities. This is accomplished by the use of bin management systems.
A global production network supports a stable and continuous supply of high quality products.

SMC delivers products for world markets from five key factory locations in Japan, in the Tsukuba district of Ibaragi prefecture and the Soka district of Saitama prefecture, as well as from other key locations in China and Singapore. Additionally, to respond quickly and increase flexibility to the demands of the local market, overseas production facilities have been established in SMC subsidiaries around the world.
Tsukuba Factory (Ibaragi Prf.)
Total Land Area: 57,191m²
Floor Space: 45,456m²

Kamaishi Factory (Iwate Prf.)
Total Land Area: 55,647m²
Floor Space: 23,022m²

Tokio Factory (Iwate Prf.)
Total Land Area: 60,638m²
Floor Space: 10,622m²

Yamasita Factory (Fukushima Prf.)
Total Land Area: 124,227m²
Floor Space: 17,204m²

Overseas Key Production Facilities

U.K. SMC Pneumatics (U.K) Ltd.
Total Land Area: 82,903m²
Floor Space: 23,880m²

Overseas Local Production Factories

North/South America
- Mexico: SMC Corporation (Mexico), S.A.DE C.V.
- Argentina: SMC Argentina S.A.
- Chile: SMC Pneumatics (Chile) S.A.

Europa/Africa
- France: SMC Pneumatique S.A.
- Spain/Portugal: SMC España, S.A.
- Austria: SMC Pneumatics GmbH (Austria)
- Switzerland: SMC Pneumatik AG
- Sweden: SMC Pneumatics Sweden AB
- Ireland: SMC Pneumatics (Ireland) Ltd.

Asia/Oceania
- Singapore: SMC Pneumatics (S.E.A.) Pte Ltd.
- Taiwan: SMC Pneumatics (Taiwan) Co Ltd.
- Hong Kong: SMC Pneumatics (Hong Kong) Ltd.
- Thailand: SMC Thailand Ltd.
- Philippines: SMC Pneumatics (Philippines) Inc.
- India: SMC Pneumatics (India) Pvt Ltd.
- New Zealand: SMC Pneumatics (New Zealand) Ltd.
Our goal of 20% global market share has been achieved, with local subsidiaries in 39 countries across the world.

Taking its first step in Australia in 1967, SMC continued to move quickly into the international marketplace, and has steadily established local subsidiaries in the major countries around the world. The current total has reached 230 locations in 39 countries. With the expansion of its international network, SMC has earned a solid reputation as a reliable international brand, and has exceeded the goal of “20% global market share”. We will continue to view the world as a single market and further develop our sales organization with even greater energy to provide "customer satisfaction" by responding accurately to individual demands of different customers in countries and regions around the world.
Customers’ needs, today, are in state of transition, from standardization to diversification. As a general supplier of pneumatic components, SMC provides the ideal products for multiple applications and complete systems. Therefore, a broad range of pneumatic variations is offered for each system component. Approximately 9,100 basic models are offered with over 530,000 variations. This complete array of products results in SMC pneumatic systems that are capable of specifically meeting infinitely diverse requirements.
Standard Air Cylinder
- Air Cylinder
- Compact (Space-saving) Design

Combination Cylinder
- Fine Lock Cylinder
- End Lock Cylinder
- Valve Mounted Cylinder
- Slide Unit
- Guide Cylinder
- Air Slide Table
- Rodless Cylinder

Specialty Cylinder
- Rotary Clamp Cylinder
- Stroke Reading Cylinder
- Hy-rodless Cylinder
- Sine Rodless Cylinder
- High Power Cylinder
- Precision Cylinder
- Air-hydro Unit

Related Products
- Shock Absorber
- Floating Joint
- Auto Switch
- Made to Order

Rotary Actuator
- Vane Style
- Rack Pinion Style
- Rotary Cylinder

Air Gripper
- Parallel Style
- Angular Style
- Rotary Gripper

Vacuum Equipment
- Vacuum Unit
- Vacuum Ejector
- Air Suction Filter
- Vacuum Pad
- Free Mount Cylinder with Vacuum Pad
- Vacuum System
- Related Equipment

Flow Control Equipment
- Speed Controller
- Metering Valve with Silencer
- Quick Exhaust Valve
- Speed Exhaust Controller
- Check Valve
- Safety Speed Control Valve
Custom Engineered Plastic Manifold & Valve Technology

- Reduced Space
- Reduced Weight
- Reduced Installation Time and Error
- Reduced Cost of Ownership

Main specifications of Plastic Manifold (Note)

<table>
<thead>
<tr>
<th>Material</th>
<th>Acrylic, PEEK, Polycarbonate, Polyetherimide, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air, Gas and Liquid</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>-100kPa to 0.7MPa (30 inHg to 100psi)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0 to 40°C (32 to 104°F)</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-5 to 50°C (23 to 122°F)</td>
</tr>
</tbody>
</table>

Note) Contact SMC for details

Series LVM
Isolation liquid valve with custom connection

Series VDW
Liquid valve

Series PVQ
Proportional valve

Series SY100
Air pilot valve

Installation of valves on plastic manifold

Custom machined/Bonded plastic manifold
SMC offers you the benefit of single Source Supply of plastic manifolds and Valves!!

- The widest selection of valves to suit the customers’s exact specifications!
- The best in-house design resource enables integrated and compact manifold design!
- The best Before/After-sales services through world-wide network!

Tested and Packed to Customers Specifications
Reliable product quality in the global market

To enable our customers throughout the world to use our products with even greater confidence, SMC has obtained certification for international standards "ISO9001" and "ISO14001", and have created a complete structure for quality assurance and environmental controls. SMC products continue to meet its customers’ expectations while also consider the company’s contribution within society.

ISO9001  Quality management system

This is an international standard for quality control and quality assurance. SMC has obtained a large number of certifications in Japan and overseas, providing assurance to our customers throughout the world.

ISO14001  Environmental management system

This is an international standard related to environmental management systems and environmental inspections. While promoting environmentally friendly automation technology, SMC is also making diligent efforts to preserve the environment.

ISO certification obtained

Applicable Products and Services
Design, development and manufacture of the following products:
- Miniature 3, 4 and 5 port solenoid valves for pneumatics
- Standard compact cylinders for pneumatics
- Standard miniature cylinders for pneumatics
- Modular type pressure control valves for pneumatics
- Pneumatic fittings
- Electro-pneumatic positioners for pneumatics
- Miniature rotary actuators for pneumatics
- Solid state auto switches
- Constant temperature circulation equipment for semiconductors
- Vacuum suction/miniature type

Related Facilities Included in the Registration
- Tsukuba Technical Centre (design development)
- Tsukuba Factory No.1 (includes distribution center & Matsubara factory)
- Tsukuba Factory No.2 (manufacturing)
- Tsukuba Factory No.3 (manufacturing)
- Kamishi Factory (manufacturing)
- Yamato Factory (manufacturing)
- Tone Factory (manufacturing)
- SMC Australia [ISO 9001]
- SMC China [ISO 9002]
- SMC Germany [ISO 9001]
- SMC Hong Kong [ISO 9002]
- SMC India [ISO 9002]
- SMC Italy [ISO 9002]
- SMC Italy (Sud) [ISO 9001/ISO 14001]
- SMC Korea [ISO 9002]
- SMC New Zealand [ISO 9001]
- SMC Singapore [ISO 9002]
- SMC Spain [ISO 9002]
- SMC Sweden [ISO 9002]
- SMC Switzerland [ISO 9002]
- SMC Taiwan [ISO 9002]
- SMC UK [ISO 9001/ISO 14001]
- SMC US [ISO 9001]
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## Valves

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<th>Page</th>
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<td>High Purity Chemical Valve / Series LV</td>
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<td>Ultra Compact Valve, 3 Port Solenoid Valve</td>
<td>19</td>
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<tr>
<td>2 Port Oxygen Concentrator Valve / Series DXT474</td>
<td>20</td>
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<td>3 Port Solenoid Valve for Air / Series VQ100</td>
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<tr>
<td>3 Port Solenoid Valve for Air / Series SY100</td>
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<td>2 Port Valve for Air / Series VCA</td>
<td>23</td>
</tr>
<tr>
<td>2/3 Port Valve for Water and Air / Series VDW</td>
<td>24</td>
</tr>
<tr>
<td>2 Port Valve for Water / Series VCW</td>
<td>25</td>
</tr>
<tr>
<td>2 Port Valve for Heated Water / Series VCB</td>
<td>26</td>
</tr>
<tr>
<td>2 Port Valve for Steam / Series VCS</td>
<td>27</td>
</tr>
</tbody>
</table>

## Actuators

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<tr>
<th>Type / Series</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>Miniature Cylinder / Series CJP</td>
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<td>Mini Free-Mount Cylinder / Series CUJ</td>
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<tr>
<td>Electric Actuator / Series LG, LJ, LX</td>
<td>41</td>
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</tbody>
</table>

## Vacuum/Instrumentation

<table>
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<tr>
<th>Type / Series</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Digital Pressure Switch / Series ZSE / ISE</td>
<td>43</td>
</tr>
<tr>
<td>Vacuum Regulator / Series IRV</td>
<td>44</td>
</tr>
<tr>
<td>Air Suction Filter / Series ZF</td>
<td>45</td>
</tr>
</tbody>
</table>

## Liquid Equipment

<table>
<thead>
<tr>
<th>Type / Series</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>High Purity Fluoropolymer Fittings &amp; Tubing / Series LQ, TL / TIL</td>
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## Air preparation

<table>
<thead>
<tr>
<th>Type / Series</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Membrane Air Dryer / Series IDG</td>
<td>29</td>
</tr>
<tr>
<td>Precision Regulator / Series IR</td>
<td>30</td>
</tr>
<tr>
<td>Precision Clean Regulator / Series SRP</td>
<td>31</td>
</tr>
<tr>
<td>Pressure Regulator / Series AR</td>
<td>32</td>
</tr>
<tr>
<td>Fittings &amp; Tubing</td>
<td>33</td>
</tr>
<tr>
<td>Air Filter / Series AF</td>
<td>37</td>
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</table>

## Temperature Control Equipment

<table>
<thead>
<tr>
<th>Type</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermo Chiller, Thermocon, Chemical thermocon</td>
<td>47</td>
</tr>
</tbody>
</table>
Gas and Chemical liquid valve for medical equipment

**Series LVM**

Isolation Liquid 2/3 Port valve

**Liquids and gases compatible with wetted materials**

- **No liquid pooling**
  - Inclined flow passage, low dead volume
- **Non leakage**
- **Long life**
- **High speed**
  - Response time is minimized down to 10ms or less.
- **Low noise construction**
  - The specialized damper is provided on armature assembly for restraining the noise when energized, the noise level is minimized down to 50 dB or less.
- **Compact**
- **Oil free**
  - The media contact of this version is oil free construction which is needed for medical equipment.
- **Seals**
  - Body(plate) material : PEEK
  - Diaphragm material : EPDM

### Variations

<table>
<thead>
<tr>
<th></th>
<th>2 Port</th>
<th>3 Port</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LVM10</td>
<td>LVM20</td>
</tr>
<tr>
<td></td>
<td>LVM100</td>
<td>LVM200</td>
</tr>
<tr>
<td>Effective area mm² (Cv)</td>
<td>0.72(0.04)</td>
<td>1.8(0.1)</td>
</tr>
<tr>
<td>Orifice size</td>
<td>ø1.5</td>
<td>ø2</td>
</tr>
<tr>
<td>Port size</td>
<td>M5</td>
<td>M6</td>
</tr>
<tr>
<td>Applicable tube</td>
<td>-</td>
<td>ø4 x ø2.5</td>
</tr>
<tr>
<td>N.C. (Normally closed)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>N.O. (Normally open)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Specifications 2 Port

<table>
<thead>
<tr>
<th></th>
<th>2 Port</th>
<th>3 Port</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LVM10</td>
<td>LVM20</td>
</tr>
<tr>
<td></td>
<td>LVM100</td>
<td>LVM200</td>
</tr>
<tr>
<td>Type</td>
<td>2 port direct operated diaphragm type</td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air and Liquid</td>
<td></td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>0.25 MPa</td>
<td></td>
</tr>
<tr>
<td>Orifice size</td>
<td>ø1.5</td>
<td></td>
</tr>
<tr>
<td>Effective area (Cv)</td>
<td>0.72 (0.04)</td>
<td></td>
</tr>
<tr>
<td>Valve leakage</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Fluid and ambient temperature</td>
<td>0 to 50°C</td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>coils rated voltage</td>
<td>24VDC</td>
<td></td>
</tr>
<tr>
<td>Allowable voltage</td>
<td>± 10% of rated voltage</td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>Inrush: 2.5W, Holding: 1W</td>
<td></td>
</tr>
<tr>
<td>Body</td>
<td>PEEK</td>
<td></td>
</tr>
<tr>
<td>Diaphragm</td>
<td>EPDM</td>
<td></td>
</tr>
</tbody>
</table>

### Specifications 3 Port

<table>
<thead>
<tr>
<th></th>
<th>2 Port</th>
<th>3 Port</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LVM10</td>
<td>LVM20</td>
</tr>
<tr>
<td></td>
<td>LVM100</td>
<td>LVM200</td>
</tr>
<tr>
<td>Type</td>
<td>3 port direct operated diaphragm type</td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air and Liquid</td>
<td></td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>0.25 MPa</td>
<td></td>
</tr>
<tr>
<td>Orifice size</td>
<td>ø1.4</td>
<td></td>
</tr>
<tr>
<td>Effective area (Cv)</td>
<td>0.63 (0.035)</td>
<td></td>
</tr>
<tr>
<td>Valve leakage</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Fluid and ambient temperature</td>
<td>0 to 50°C</td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>Coils rated voltage</td>
<td>24VDC</td>
<td></td>
</tr>
<tr>
<td>Allowable voltage</td>
<td>± 10% of rated voltage</td>
<td></td>
</tr>
<tr>
<td>Coils insulation</td>
<td>Class B</td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>1.9W</td>
<td></td>
</tr>
<tr>
<td>Body</td>
<td>PEEK</td>
<td></td>
</tr>
<tr>
<td>Diaphragm</td>
<td>EPDM</td>
<td></td>
</tr>
</tbody>
</table>

Consult SMC representative for additional material, voltage specifications and options.
High Purity Chemical Valve

Series LV

Air/Manually Operated

Integral Fitting Valves/LVC

Low particle generation

Piston bumper

A bumper absorbs piston momentum to minimize impact-induced particles.

Back-pressure resistance and long life

Buffer

The diaphragm is supported by a buffer that minimizes deformation, which gives it long life and resistance to back-pressure.

Different tubing sizes can be selected

Hyper fitting

- No leak design (quadruple seal)
- Eliminates problems due to over tightening (special locking mechanism)
- High flexural strength (tube supports)

Numerous variations

Manual Operation-Series LVH

- Locking and non-locking types available
- Integral fitting type/Threaded type
- Manifolds • Main applications and fields

Threaded Ports-Series LVA

- Three types of body material: SUS/PPS/PFA
  The ideal body material can be selected based on the application.
- Manifolds • Main applications and fields

Integral Fitting Valves-Series LVC

- Main applications and fields

Prevents Micro-Bubbles

Diaphragm (PTFE)

Special diaphragm construction insures gentle opening and closing that prevents the formation of micro-bubbles.

Minimal dead space

In addition to a body designed for smooth flow with minimal internal dead space, integral fittings eliminate the possibility of residual liquid in pipe threads.

Outstanding corrosion resistance

Body (New PFA)

Compatible with chemicals such as acids, bases and ultrapure water.

Stable Sealing Surface

Guide ring

A unique guide ring on the piston rod eliminates lateral motion of the poppet, greatly increasing seal life and reducing particle formation.

PA

PA

PB

BA

For shut off

For air bleeding

N.C.

Double acting

N.O.

Suck back valve

With flow rate adjustment

With by-pass

N.C.

Double acting

N.O.

Different tubing sizes can be selected

Hyper fitting

N.C./N.O. with same configuration/Double acting

Compatible with 100∞C fluid temperature

Medical

Analytical Instruments

IC manufacturing

Cleaning equipment

Chemicals

Food processing

Pharmaceutical manufacturing

Cleaning equipment

Analytical Instruments

Medical equipment
Ultra Compact Valve
3 port Solenoid Valve

Size
7mm width (7W x 11H x 21.8L)

Low Power Consumption
0.3W - 0.3MPa (Cv 0.011)
0.5W - 0.5MPa (Cv 0.011)

Low noise
38 dB

<table>
<thead>
<tr>
<th></th>
<th>3VDC, 5VDC, 12VDC, 24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>100 million cycles</td>
</tr>
<tr>
<td>Life</td>
<td>under 10 m/sec</td>
</tr>
</tbody>
</table>

Note) Prototype. Contact SMC for details.
2 Port Oxygen concentrator valve

Series DXT474

Diaphragm Valve

The DXT474 diaphragm was developed as an operating valve for an oxygen concentrator application for the medical industry, but it can be a valuable solution for applications that require a low pressure 2 port valve that has a high reliability and life.

- There are no sliding parts in the valve (ex: spool, pistons, etc.), so the valve is able to function continuously and reliably at low pressure.
- The sealing function is performed by diaphragm. Therefore, the valve is non-lubricated for applications that are sensitive to lubrication.
- Except for the SY100 pilot valve, flourine rubber seals (Viton) are used to aid in protection against ozone.
- SY 100 used for pilot valve to provide low power consumption.
- Simple structure allows for compactness (12 mm height without pilot valve) and high flow (max. Cv 1.3).
- Normally open and normally closed type valves are available.
- Air operated type valves available for applications where two or more valves are to be shifted by one pilot valve.
- Manifold mounted to aid in many types of manifold interfaces and flow requirements. Currently, two type of manifold designs are available (side ported and top ported type) for oxygen concentrator.
- Pilot exhaust is routed to main system exhaust to reduce noise.

Valve Specifications

<table>
<thead>
<tr>
<th></th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range MPa (psi)</td>
<td>0.04<del>0.3 (6</del>43)</td>
</tr>
<tr>
<td>Effective area mm² (Cv)</td>
<td>Max. 23.4 (1.3)</td>
</tr>
<tr>
<td>Response time (ms)</td>
<td>Less than 30</td>
</tr>
<tr>
<td>Fluid and ambient temperature (°C)</td>
<td>Max. 50</td>
</tr>
<tr>
<td>Max. operating frequency (Hz)</td>
<td>5</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Impact/Vibration m/s²</td>
<td>150/30 (8.3 - 2000Hz)</td>
</tr>
<tr>
<td>Electrical Entry</td>
<td>Grommet, L and M type plug connector</td>
</tr>
<tr>
<td>Coil rated voltage VDC</td>
<td>24, 12, 5, 3</td>
</tr>
<tr>
<td>Allowable voltage</td>
<td>-10 to +10%</td>
</tr>
<tr>
<td>Power consumption (W)</td>
<td>0.5 (with light: 0.55)</td>
</tr>
</tbody>
</table>

Valve System circuit

Oxygen concentrator system
Unprecedented high speed, stable response, and extra-long service life.

ON: 3.5ms, OFF: 2ms, Dispersion accuracy ±1ms
(With indicator light and surge voltage suppressor; supply pressure 0.5MPa)
200 million cycles or more (clean and dry air)
(Factors determined in a life test by SMC)

Compact with large flow capacity.

Body width: 9.8mm,
Nl/min: 19.63 (Standard, high pressure style)
Nl/min: 39.26 (Option, large flow style)

Options

- External non-leak
- Latching style
- Negative COM specifications
- AC voltage
- Normally open
- Vacuum (1)

Note 1) Consult SMC for vacuum specifications.

Copper-free specifications

The fluid contacting section is copper-free and the standard style can be used as it is.

A wide variation of wiring

Manifold

Plug-in unit manifold
Plug lead unit manifold

Single unit

L plug connector
M plug connector
Grommet
3 Port Solenoid Valve for Air

**Series SY100**

- **Low power consumption**: 0.5W (Standard, Without light)
  (Current draw: 21mA at 24V DC)
- **Body width**: 10mm
  7.85 NL/min (Standard style)
  11.78 NL/min (Large flow capacity style)
- **Exceedingly long life**: 100 million cycles (By SMC life test data)
- **Vacuum Applications Possible**
  Can be used up to -100kPa
- **Copper free**
  No copper used for sections in contact with fluids.
- **Bright colour tone and "state of the art" design**
  A bright grey concept has been adopted for this product to complement the surrounding operational environment.

**SY100/ Application example** (Pneumatic symbols shown are typical examples.)

1. Valve for blow off
2. Valve for vacuum
3. Operation for single acting cylinder
4. Operation for air operated style fluid control valve

![Pneumatic symbols](image)
Multi-purpose Valve

Series VCA

Direct Operated 2 Port Solenoid Valve for Air

Improved durability (Nearly twice the life of the previous series)
Operating resistance of moving parts reduced for improved longevity and wear resistance.

High flow rate: Cv factor 0.33 to 2.11

Compact: Single valve volume reduced 13% (Class 2)
Weight reduced 25% (Class 2)
Manifold length reduced 22% (Class 1: 5 stations)
(Compared to previous series)

Built-in surge voltage suppressor

Built-in rectifying circuit (AC)
- Noise prevention
- Burn-out prevention

Electrical entry directions

Electrical entry is possible from four directions

- When shipped from the factory, the electrical entry is on the IN port side.

A variety of wiring variations
Grommet, DIN connector, Conduit, Conduit terminal

Wiring specifications (Class B coil)

<table>
<thead>
<tr>
<th>Wiring variations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet</td>
</tr>
<tr>
<td>DIN connector</td>
</tr>
<tr>
<td>Conduit</td>
</tr>
<tr>
<td>Conduit terminal</td>
</tr>
</tbody>
</table>

Enclosure: Dust-proof & splash-proof (IP65 equivalent)

Three compact sizes available

- VCA20 Class 2
- VCA30 Class 3
- VCA40 Class 4
Compact Direct Operated
2/3 Port Solenoid Valve

Series VDW
For Water and Air

- **Compact** (compared to series VX)
  - Single valve volume: Reduced 75% (VDW20)
  - Manifold length: Reduced 18% (VDW30, 7 stations)

- **Light weight** (compared to series VX)
  - 100g: Reduced approx. 50% (for orifice size equivalent to ø2)

**Improved durability** (nearly twice the life of the previous series)
The use of a unique magnetic material reduces the operating resistance of moving parts, while improving service life, wear and corrosion resistance.

- **High flow rate**: Cv factor 0.03 to 0.44 (2 port)

- **Universal porting**: VDW200/300 (3 port)

- **Compact** (compared to series VX)
  - Single valve volume: Reduced 75% (VDW20)
  - Manifold length: Reduced 18% (VDW30, 7 stations)

- **Light weight** (compared to series VX)
  - 100g: Reduced approx. 50% (for orifice size equivalent to ø2)

**Improved durability** (nearly twice the life of the previous series)
The use of a unique magnetic material reduces the operating resistance of moving parts, while improving service life, wear and corrosion resistance.

- **High flow rate**: Cv factor 0.03 to 0.44 (2 port)

- **Universal porting**: VDW200/300 (3 port)

**Threaded assembly**
Simplifies maintenance

**Brass/Stainless steel manifolds added to series** (2 port)

**Improved corrosion resistance**
Special material introduced

**Improved durability**
(nearly twice the life of the previous series)
The use of a unique magnetic material reduces the operating resistance of moving parts, while improving service life, wear and corrosion resistance.

**Quick change coils**
Clip design makes coil replacement easy (2 port)

**Bottom mounting threads**
Mounting bracket also available

**Series of compact designs**

<table>
<thead>
<tr>
<th>2 port</th>
<th>3 port</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø17</td>
<td>ø20.5</td>
</tr>
<tr>
<td>VDW10</td>
<td>VDW200</td>
</tr>
<tr>
<td>ø28</td>
<td>ø28</td>
</tr>
<tr>
<td>VDW20</td>
<td>VDW200</td>
</tr>
<tr>
<td></td>
<td>VDW30</td>
</tr>
<tr>
<td></td>
<td>VDW300</td>
</tr>
</tbody>
</table>
Multi-purpose Valve
Series VCW
Direct Operated 2 Port Solenoid Valve for Water

Improved durability
(SMC comparison: Twice the life of previous series)
The internal wear of moving parts has been reduced through the use of a unique magnetic material. Service life, durability and corrosion resistance have been increased.

Smaller size: Single valve –15% reduction in volume (Class 2)
Manifold length – Reduced by 18%
(Class 3 : 7 stations) (SMC comparison)

Large flow rate:
Cv factor 0.16 to 2.1

Internal surge voltage suppressor

Minimised coil
Size and weight reduced
New compact coil reduces the overall size & weight of the valve
Volume –15% (SMC comparison)
Weight –20% (Class 2)

Improved corrosion resistance
Special materials introduced

A variety of wiring options
Grommet, DIN connector, Conduit, Conduit terminal

Wiring specifications

<table>
<thead>
<tr>
<th>Wiring variations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet</td>
</tr>
<tr>
<td>DIN connector</td>
</tr>
<tr>
<td>Conduit</td>
</tr>
<tr>
<td>Conduit terminal</td>
</tr>
</tbody>
</table>

3 sizes available

<table>
<thead>
<tr>
<th>Size</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCW2</td>
<td>2</td>
</tr>
<tr>
<td>VCW3</td>
<td>3</td>
</tr>
<tr>
<td>VCW4</td>
<td>4</td>
</tr>
</tbody>
</table>
Multi-purpose Valve
Series VCB

Direct Operated 2 Port Solenoid Valve for Heated Water

Improved durability (Nearly twice the life of the previous series)
Use of special magnetic material reduces the operating resistance of moving parts. Longevity, wear resistance and corrosion resistance improved.

High flow rate: Cv factor 0.16 to 2.1

Compact: Single valve volume reduced 15% (Class 3)

Enclosure: Dust-proof & splash-proof (IP65 equivalent)

Wiring specifications (Class H coil)

<table>
<thead>
<tr>
<th>Wiring variations</th>
<th>Three compact sizes available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet</td>
<td>VCB2 Class 2</td>
</tr>
<tr>
<td>Conduit</td>
<td>VCB3 Class 3</td>
</tr>
<tr>
<td>Conduit terminal</td>
<td>VCB4 Class 4</td>
</tr>
</tbody>
</table>

Improved corrosion resistance
Special materials introduced

Quick change coil
Clip design makes coil replacement easy.

Flame resistant molded coil material
UL94 V-0 standard

Threaded assembly
Simplifies maintenance

Bottom mounting threads
Mounting bracket also available

Coil size and weight reduced
New compact coil reduces the size and weight of the valve
Volume: –15% Compared to previous series
Weight: –20% (Class 3)

Improved corrosion resistance
Special materials introduced

Series VCB
Multi-purpose Valve
Multi-purpose Valve

Series **VCS**
Direct Operated 2 Port Solenoid Valve for Steam

**Improved durability**
(nearly twice the life of the previous series)
The internal resistance of moving parts has been reduced through the use of a unique magnetic material.
Service life, durability and corrosion resistance have been increased.

**High flow rate:**
Cv factor 0.16 to 2.1

**Smaller size:**
Single valve volume reduced by 15% (Class 3)
Manifold length reduced by 18% (Class 3: 5 stations) (SMC comparison)

**Improved durability**

**Coil size and weight reduced**
New compact coil reduces the overall size and weight of the valve
Volume – 15%  SMC comparison
Weight – 20%  (Class 3)

**Improved corrosion resistance**
Special material introduced

**Enclosure:** Dust-tight and splash proof
(equivalent to IP65)

**Wiring specifications (Class H coil)**

<table>
<thead>
<tr>
<th>Wiring variations</th>
<th>3 compact sizes available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet</td>
<td>VCS2 Class 2</td>
</tr>
<tr>
<td>Conduit</td>
<td>VCS3 Class 3</td>
</tr>
<tr>
<td>Conduit terminal</td>
<td>VCS4 Class 4</td>
</tr>
</tbody>
</table>
Membrane Air Dryer

Series IDG

**NEW specifications for 25 l/min (ANR) and -60°C outlet air atmospheric pressure dew point added to series IDG!**

Dew point indicator confirms air drying at a glance
(except IDG1)
(optional on IDG3, IDG5, IDG3H, IDG5H)

- **Compact**
- **Lightweight**
- **Space saving**

Also available with fittings for purge air discharge
When purge air discharge is undesirable in the area around the membrane air dryer, it can be discharged to atmosphere via tubing (optional).

Discharged air noise reduced with built-in silencer
(Exception IDG1, IDG3, IDG3H, IDG5, IDG5H, IDG30, IDG30H, IDG50, IDG50H, IDG50L)

**IDG1**
Flexible piping is possible
Low flow rate type tube configuration
Outlet air flow rate: 10 l/min (ANR)

**Environmentally friendly (non-freon)**

**Power supply not required**
A power supply is completely unnecessary.
Wiring labour is not required and there is no need to consider electrical standards, etc.

**No vibration or heat discharge**
There are no mechanical moving parts as in the case of refrigeration equipment.

**Compatible with low dew points**
Outlet air atmospheric pressure dew point –40°C (IDG30L, IDG50L, IDG60L)
Outlet air atmospheric pressure dew point –60°C (IDG60S, IDG75S, IDG100S)

**Applications**
- Machine tools (air bearings, lasers, etc.)
- Precision measuring equipment (3-D measuring machines)
- Semiconductor manufacturing equipment
- Semiconductor inspection equipment
- Dental equipment
- Chemical analysis equipment
- Ozonizers, Hydrogen gas generating equipment
- Packaging machines, Paper making machines, Food processing machines
- Printed circuit board IC mounting machines
- Fine particle drying, Transfer equipment
- Electrostatic and high grade coating
- Drying and cleaning of precision parts
- Condensation prevention in control panels
- General pneumatic equipment and pneumatic tools

**Dehumidification principle**

The membrane air dryer uses hollow fibres composed of a macro molecular membrane through which moisture passes easily, but is difficult for air (oxygen and nitrogen) to pass through.

When humid, compressed air is supplied to the inside of the hollow fibres, only moisture permeates the membrane and moves to the outside due to the pressure difference between the moisture inside and outside of the fibres. The compressed air becomes dry air and continues out of the dryer. Part of the dry air from the outlet side is passed through a very small orifice to reduce the pressure and purge the outside of the hollow fibres. The moisture which permeated to the outside of the hollow fibres is discharged to the atmosphere by this purge air. In this way, the partial pressure outside of the hollow fibres remains low and dehumidification is continuously performed.

**Unit style**
Integrated pre-filter and regulator

**M type**
- Mist separator + Micro mist separator + IDG
- Micro mist separator with pre-filter + IDG

**V type**
- Mist separator + Micro mist separator + IDG + Regulator
- Micro mist separator with pre-filter + IDG + Regulator
Precision Regulator

Series **IR1000/2000/3000**

Small size: Series IR1000, Large size: Series IR3000 newly released

- Smallest size in series
  - IR1000: Width 35mm, Weight 140g
- Expanded regulating pressure range
  - Conventional 0.7MPa → 0.8MPa
- Relief flow increased by 5 times
  (Compared to SMC IR201, 401)

Conditions: Back pressure 0.7MPa

<table>
<thead>
<tr>
<th>Model</th>
<th>IR1000</th>
<th>IR2000</th>
<th>IR3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum set pressure</td>
<td>0.2MPa</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>0.4MPa</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>0.8MPa</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Port size</td>
<td>Rc(PT) 1/8</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rc(PT) 1/4</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Rc(PT) 3/8</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Rc(PT) 1/2</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Accessories</td>
<td>Bracket</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Pressure gauge</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Air operated type</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Modular body introduced:
Can be combined with AF (air filter) and AFM (mist separator)

Series Variations

Order Made Specifications

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Specifications/Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 —</td>
<td>Clean room specifications</td>
</tr>
<tr>
<td>20 —</td>
<td>Copper-free specifications</td>
</tr>
<tr>
<td>80 —</td>
<td>Ozone resistant specifications</td>
</tr>
<tr>
<td>—T</td>
<td>For high temperature</td>
</tr>
<tr>
<td>—L</td>
<td>For low temperature</td>
</tr>
<tr>
<td>—X1</td>
<td>Non-grease specifications</td>
</tr>
<tr>
<td>IRM0</td>
<td>Manifold (except series IR2120, IR3000)</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1000</td>
<td>35</td>
<td>35</td>
<td>43</td>
<td>90</td>
</tr>
<tr>
<td>IR3000</td>
<td>66</td>
<td>66</td>
<td>68</td>
<td>148</td>
</tr>
</tbody>
</table>
**Precision Clean Regulator**

**Series SRP**

High precision, low flow consumption stainless steel regulator

**Achieves flow consumption "under a litre"**

Bleed volume

0.5 l/min (ANR) or less
(downstream pressure at 0.2MPa)

* Approx. 1/4 of the ARP3000 direct operated precision regulator

**Excellent corrosion resistance**

SUS316 is used for all metal parts in contact with the fluid.

**Pressure feed of chemicals**

- **Clean air**
  - Super mist separator
  - Odour removal filter
  - Clean gas filter

- **N₂ blow**
  - Clean gas filter

**Applications**

- **Degrease cleaning**
- **Assembly**
- **Inspection**
- **Interior purge**
- **Packaging**

Class 10,000

**Precision**

- Setting sensitivity: 0.3%F.S.
- Repeatability: 1%F.S.

**Oil free**

- Parts composition with no use of oils.
- HFC1416 ultrasonic cleaning of all fluid-contact parts.

**Consistent clean room production**

- Cleaned, assembled, inspected, and sealed in double packaging in a Class 10,000 environment

**Manufacturing process**

- Parts assembly
  - Degrease cleaning
  - Assembly
  - Inspection
  - Interior purge
  - Packaging

Class 10,000
# Pressure Control Equipment

## Regulator Series AR

### Table of Application/Characteristics and Port Sizes

<table>
<thead>
<tr>
<th>Series</th>
<th>Application/Characteristics</th>
<th>Port size</th>
<th>Set pressure (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miniature regulator ARJ1020F</td>
<td>Direct operated relieving style</td>
<td>M5</td>
<td>0.1 to 0.7</td>
</tr>
<tr>
<td>Miniature regulator ARJ210</td>
<td>Direct operated relieving style</td>
<td>M5 to 1/8</td>
<td>0.2 to 0.7</td>
</tr>
<tr>
<td>Miniature regulator ARJ310</td>
<td>Direct operated relieving style</td>
<td>M5 to 1/8</td>
<td>0.2 to 0.7</td>
</tr>
<tr>
<td>Regulator AR1000-6000</td>
<td>Direct operated relieving style</td>
<td>1/8 to 1</td>
<td>0.05 to 0.85</td>
</tr>
<tr>
<td>Regulator with integral pressure gauge AR2001-4001</td>
<td>Built-in pressure gauge</td>
<td>1/8 to 1/2</td>
<td>0.05 to 0.85</td>
</tr>
<tr>
<td>Pilot operated regulator AR425-925, AR435-935</td>
<td>Internal pilot</td>
<td>1/4 to 2</td>
<td>0.05 to 0.85</td>
</tr>
<tr>
<td>Regulator manifold ARM1000/2000</td>
<td>Manifold (Common IN/Individual IN)</td>
<td>1/8 to 1/4</td>
<td>0.08 to 0.7</td>
</tr>
<tr>
<td>Regulator manifold ARM2500/3000</td>
<td>Manifold (Common IN/Individual IN)</td>
<td>1/4, 3/8</td>
<td>0.05 to 0.85</td>
</tr>
<tr>
<td>Direct operated precision regulator ARP3000</td>
<td>Setting sensitivity: 0.001MPa</td>
<td>1/4</td>
<td>0.005 to 0.3</td>
</tr>
<tr>
<td>Regulator with check valve AR1000/AR2060-6060</td>
<td>Built-in check valve (with back flow function)</td>
<td>M5 to 1</td>
<td>0.05 to 0.7</td>
</tr>
<tr>
<td>Regulator with residual pressure exhaust mechanism AR2550-4050</td>
<td>Exhaust of residual pressure for safety purpose</td>
<td>1/4 to 3/4</td>
<td>0.05 to 0.85</td>
</tr>
<tr>
<td>Regulator for 2MPa ARX20</td>
<td>Piston type regulator</td>
<td>1/8, 1/4</td>
<td>0.05 to 0.85</td>
</tr>
</tbody>
</table>
# Air Fittings & Tubing

### General purpose fitting Series

- **One-touch Mini**
  - **Series KJ**
  - Applicable tube Metric size
  - Electroless nickel plated

- **One-touch In/Out connection**
  - Possible to use in vacuum to ~100kPa

- **One-touch Fittings**
  - **Series KQ2**
  - Applicable tube Metric size

- **Rotary One-touch Fittings**
  - **Series KS (Standard)**
  - **Series KX (High speed)**
    - Applicable tube Metric size

- **One-touch In/Out connection**
  - For compact and concentrated tubing applications

- **One-touch Fittings Manifold**
  - **Series KM**
  - Applicable tube Metric size

- **Insert Fittings**
  - **Series KF**
  - Applicable tube Metric size

- **Tubing connection/disconnection without use of tools**

- **Miniature Fittings**
  - **Series M**
  - Applicable tube Metric size

- **Self-align Fittings**
  - **Series H, DL, L, LL**
  - Applicable tube Metric size

### Applicable tube material

<table>
<thead>
<tr>
<th>Applicable tube O.D. (mm)</th>
<th>M3</th>
<th>M5</th>
<th>ø6</th>
<th>ø8</th>
<th>ø10</th>
<th>ø12</th>
<th>ø16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft nylon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyurethane</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Possible to use in vacuum

- 1.3 x 10^-2 Pa
- –101.3 kPa

### Possible to use in vacuum to ~101.3 kPa

- 1.3 x 10^-2 Pa
- –101.3 kPa

### One-touch In/Out connection

- For compact and concentrated tubing applications

### Low-torque rotation

- Rotary One-touch Fittings

### Miniature Fittings Series M

- Self-align Fittings
  - Series H, DL, L, LL
  - Applicable tube Metric size
**General Purpose Fitting Series**

**Self-seal Fittings**
Series KC
Applicable tube Metric size

**Multi-connector**
Series DM
Applicable tube Metric size

**Rectangular Multi-connector**
Series KDM
Applicable tube Metric size

**Piping Module**
Series KB
Applicable tube Metric size

**S Couplers**
Series KK/KK13

**Fitting Series For Special Environments**

**One-touch Fittings**
Series KG
Applicable tube Metric size

**Miniature Fittings**
Series MS
Applicable tube Metric size
**Air Fittings & Tubing**

### Inch-size One-touch Fittings

#### One-touch Mini
**Series KJ**
Applicable area —— U.S.A. etc.

#### One-touch Fittings
**Series KQ2**
Applicable area —— Australia, Japan, etc.

#### Rotary One-touch Fittings
**Series KS (Standard)**
Applicable tube Inch size
Applicable thread —— UNF, NPT

#### One-touch Fittings
**Manifold Series KM**
Applicable tube Inch size
Applicable thread —— NPT

#### Rectangular Multi-connector
**Series KDM**
Applicable tube Inch size

---

**Applicable tube O.D. (inch)**

- UNF 10-32
- 1/16
- 3/32
- 1/8
- 5/32
- 1/4
- 3/16
- 1/2

---

<table>
<thead>
<tr>
<th>Applicable tube material</th>
<th>1/8</th>
<th>3/32</th>
<th>1/16</th>
<th>5/32</th>
<th>1/4</th>
<th>3/16</th>
<th>1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft nylon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyurethane</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electroless nickel plated</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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**Inch-size One-touch tubing**
- UNF, NPT thread connection
- Possible to use in vacuum to –100kPa

---

**Rectangular Multi-connector**
- Multi-tube connector
- Applicable area —— Australia, Japan, etc.
**Tubing**

**General tubing**
1.5MPa max. at 20˚C

**Nylon Tubing**
Series T

**Slightly flexible**
1.0MPa max. at 20˚C

**Soft Nylon Tubing**
Series TS

**Flexible**
0.6MPa max. at 20˚C

**Polyurethane Tubing**
Series TU

**Extremely flexible**
0.6MPa max. at 20˚C

**Soft Polyurethane Tubing**
Series TUS

**Hard Polyurethane Tubing**
Series TUH

For flexibility and moving applications

**Polyurethane Coil Tubing**
Series TCU

For flexible multi-tube applications

**Polyurethane Flat Tubing**
Series TFU

**High Purity Fluororesin**

**Fitting**
Series LQ

**High Purity Fluoropolymer**

**Tubing**
Series TL/TIL

**Clean One-Touch Fittings**
Series KP/KPQ/KPG

**Clean One-Touch Tubing**
Series TPH/TPS
# Air filter/Modular Style

## Series AF

### Air Filter

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Filtration μm</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF1000</td>
<td>M5 x 0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF2000</td>
<td>1/8, 1/4</td>
<td>5</td>
<td>Bracket</td>
</tr>
<tr>
<td>AF3000</td>
<td>1/4, 3/8</td>
<td></td>
<td>Float style auto drain</td>
</tr>
<tr>
<td>AF4000</td>
<td>1/4, 3/8, 1/2</td>
<td></td>
<td>Pressure differential auto-drain</td>
</tr>
<tr>
<td>AF4000-06</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF5000</td>
<td>3/4, 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF6000</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mist Separator

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Filtration μm</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFM2000</td>
<td>1/8, 1/4</td>
<td>0.3</td>
<td>Bracket</td>
</tr>
<tr>
<td>AFM3000</td>
<td>1/4, 3/8</td>
<td></td>
<td>Float style auto drain</td>
</tr>
<tr>
<td>AFM4000</td>
<td>1/4, 3/8, 1/2</td>
<td></td>
<td>Pressure differential auto-drain</td>
</tr>
<tr>
<td>AFM4000-06</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Micro Mist Separator

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Filtration μm</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFD2000</td>
<td>1/8, 1/4</td>
<td>0.01</td>
<td>Bracket</td>
</tr>
<tr>
<td>AFD3000</td>
<td>1/4, 3/8</td>
<td></td>
<td>Float style auto drain</td>
</tr>
<tr>
<td>AFD4000</td>
<td>1/4, 3/8, 1/2</td>
<td></td>
<td>Pressure differential auto-drain</td>
</tr>
<tr>
<td>AFD4000-06</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Large Flow Air Filter

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Filtration μm</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF800</td>
<td>1 1/4, 1 1/2</td>
<td>5</td>
<td>Float style auto drain</td>
</tr>
<tr>
<td>AF900</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pin Cylinder

Series CJ
Double Acting/Single Acting Spring Return

The fitting on the rod cover side has been provided with a variable piping direction.
(The piping direction of the fitting on the rod cover side can move freely within a range of ±90°.)

Variations

<table>
<thead>
<tr>
<th>Series</th>
<th>Action</th>
<th>Bore size (mm)</th>
<th>Standard stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series CJ1</td>
<td>Double acting</td>
<td>4</td>
<td>5, 10, 15, 20</td>
</tr>
<tr>
<td></td>
<td>Single rod</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single acting</td>
<td>2.5, 4</td>
<td>5, 10, 15, 20</td>
</tr>
<tr>
<td></td>
<td>Single rod - Spring return</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Miniature Cylinder

Series **CJP**

Double Acting/Single Acting Spring Return

**Variations. Series CJP**

<table>
<thead>
<tr>
<th>Series CJP</th>
<th>Action</th>
<th>Standard Variation</th>
<th>Bore Size (mm)</th>
<th>Standard Stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Double Acting (Non-lube)</td>
<td>Standard</td>
<td>ø6</td>
<td>5,10,15,20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rod</td>
<td>ø10,15</td>
<td>5,10,15,20,(25),30</td>
</tr>
<tr>
<td></td>
<td>Single Acting (Non-lube)</td>
<td>Single Rod</td>
<td>15</td>
<td>5/10/15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spring return</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Application Examples**

- **Clamper**
- **Ejector**
- **Gripper**
- **Stopper**
Free-mount Cylinder

Series **CUJ** ø4, ø6, ø8, ø10

Concentrates wiring and piping on one surface
Allows more efficient installation, since four surfaces are free for mounting.

Free-mount design allows installation from four directions.

Fine pitch mounting is possible.

<table>
<thead>
<tr>
<th>Bore Size</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>13.5</td>
</tr>
</tbody>
</table>

Easy seal replacement
Seals can be replaced easily by removing rod cover.

With front boss (h9)
Centering can be done easily.

Two auto switches can be installed even for 4mm strokes.

Clean room series
Series 10-, 11-CUJ

**Series Variations**

<table>
<thead>
<tr>
<th>Series</th>
<th>Bore size (mm)</th>
<th>Action</th>
<th>Stroke (mm)</th>
<th>Clean room series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 5 6 8 10 15 20</td>
<td></td>
</tr>
<tr>
<td>CUJ</td>
<td>4</td>
<td>Double acting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Double acting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Double acting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Double acting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Auto switch
- Nil
- Male thread (Without thread)
- Solid state switch
- Female thread
- Male thread

Rod end configuration
- Without thread
- Male thread

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<table>
<thead>
<tr>
<th>Series</th>
<th>Bore size (mm)</th>
<th>Action</th>
<th>Stroke (mm)</th>
<th>Clean room series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 5 6 8 10 15 20</td>
<td></td>
</tr>
<tr>
<td>CUJ</td>
<td>4</td>
<td>Double acting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Double acting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Double acting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Double acting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single acting (spring return)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Auto switch
- Nil
- Male thread (Without thread)
- Solid state switch
- Female thread
- Male thread

Rod end configuration
- Without thread
- Male thread
Two types of guide and three types of feed screw

**High rigidity**
High rigidity achieved by the use of a hollow box type aluminum construction

<table>
<thead>
<tr>
<th>Model</th>
<th>Sectional secondary moment</th>
<th>W</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear guide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LJ1H10</td>
<td>7</td>
<td>48</td>
<td>70</td>
</tr>
<tr>
<td>LJ1H20</td>
<td>40</td>
<td>374</td>
<td>122</td>
</tr>
<tr>
<td>LJ1H30</td>
<td>84</td>
<td>836</td>
<td>151</td>
</tr>
<tr>
<td>Slider guide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LJ1S10</td>
<td>15</td>
<td>52</td>
<td>70</td>
</tr>
<tr>
<td>LJ1S20</td>
<td>60</td>
<td>402</td>
<td>122</td>
</tr>
<tr>
<td>LJ1S30</td>
<td>177</td>
<td>1000</td>
<td>151</td>
</tr>
</tbody>
</table>

- **Low noise (slide screw type)**
  Slide screw + Slider guide: 47 dB (LJ1S)
  Slide screw + Linear guide: 53 dB (LJ1H)

**Low profile/non-coupling type with reduced height and length**

**Low Profile Electric Actuator**
**Series LG1**

- **Low profile:** 55 mm (35mm less than LJ1H20)
- **Reduced length:** (62mm shorter than LJ1H20 with coupling and 300mm stroke)

- **Series with coupling available**
  Mounting of a non-standard motor is possible.
Short stroke type with three guide variations

**Series LX**

**Series LX F**
Low profile slide table type with stepper motor

- Space saving
- Thickness: 31 mm

**Series LX P**
Guide rod type with stepper motor

- Use as lifter

**Series LX S**
High rigidity slide table type with stepper motor

- High moment load

**AC servomotor specification/Order made**

- Series LX F
- Series LX P
- Series LX S

**CE marking** available as standard

**Driver**
- Series LC6D

**Positioning driver**
- Series LC6C

**Teaching box**
2-Color Display Type
High-Precision Digital Pressure Switch
Series ZSE30/ISE30

- **Two colour indication**
  The following display methods are available in the initial setting mode.
  1. One or two colour indication can be selected (one colour can be used).
  2. Green to Red or Red to Green indication can be selected.

- **Tight mounting**
  Tight mounting is possible for panel mount in vertical or horizontal position.

- **Setting/Display resolution: 1/1000**
  Compound pressure: 0.2kPa
  Positive pressure: 0.001Mpa

- **Fine adjustment function for display values**
  When multiple switches of the same model are used, switch unit based display dispersions can be adjusted.

- **Two types of analogue output**
  Voltage output: 1 to 5V
  Current output: 4 to 20mA

- **One-touch connector**
  A one-touch connector is used for electrical entry.
  Lead wire can be separated from the body.

---

### Specifications

<table>
<thead>
<tr>
<th></th>
<th>ZSE30F (Compound pressure)</th>
<th>ISE30 (Positive pressure)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated pressure range</strong></td>
<td>-100~100kPa</td>
<td>0~1MPa</td>
</tr>
<tr>
<td><strong>Set pressure range</strong></td>
<td>-101~101kPa</td>
<td>-0.1~1MPa</td>
</tr>
<tr>
<td><strong>Set pressure resolution</strong></td>
<td>0.2kPa</td>
<td>0.001MPa</td>
</tr>
<tr>
<td><strong>Applicable fluid</strong></td>
<td>Air, Non-corrosive/Non flammable gas</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply voltage</strong></td>
<td>12~24VDC (With mis-wiring protection)</td>
<td></td>
</tr>
<tr>
<td><strong>Current consumption</strong></td>
<td>35mA or less (At current output:60mA or less)</td>
<td></td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>Switch output: NPN or PNP (Open collector output 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voltage output: 1~5V±2.5% F.S.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Current output: 4~20mA±2.5% F.S. or less</td>
<td></td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>±0.2% F.S. ±2digit or less</td>
<td>±0.2% F.S. ±1digit or less</td>
</tr>
<tr>
<td><strong>response time</strong></td>
<td>2.5ms or less (With anti-chattering function:20ms, 160ms and 640ms selection)</td>
<td></td>
</tr>
<tr>
<td><strong>Hysteresis</strong></td>
<td>Hysteresis mode and window comparator mode selection</td>
<td></td>
</tr>
<tr>
<td><strong>Port size</strong></td>
<td>R1/8 (with M5 female)</td>
<td></td>
</tr>
<tr>
<td><strong>Enclosure</strong></td>
<td>IP40</td>
<td></td>
</tr>
</tbody>
</table>
Vacuum Regulator

Series IRV

- **3 sizes** offered in the series
  - Variations have been expanded to three sizes from only one in the previous series T203.
  - Selection is possible to accommodate the applicable flow rate.
  - Note) Flow rate corresponds to VAC pressure of –101kPa, SET pressure of –80kPa, and initial flow rate setting of 0 l/min (ANR).

- **Compact**
  - □ 35 mm

- **Light weight**
  - 120 g

Pressure gauge can be mounted from the front or rear

- **Standard**
- **Rear pressure gauge mounting**

Applications

**Lifting of work pieces**

- **With a single pressure**
  - Vacuum pump
  - Tank
  - Solenoid valve
  - IRV
  - Filter
  - Suction pad
  - Work piece

- **With multiple pressures**

**Leak tester**

- Vacuum pump
- IRV
- Solenoid valve
- Pressure converter
- Filter
- Work piece

Panel mounting capability is standard

- □ 66 mm
- □ 50 mm
- □ 35 mm

Note) Panel mounting capability is standard.
## Air Suction Filter

Prevents vacuum equipment trouble due to airborne contaminants.

- Space saving
- Installation and removal are easy with One-touch fittings
- Cartridge type with replaceable element

### Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Recommended air flow (l/min ANR)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFA 100</td>
<td>½</td>
<td>50</td>
<td>0.14</td>
</tr>
<tr>
<td>ZFA 200</td>
<td>1/4</td>
<td>200</td>
<td>0.19</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Metric size</th>
<th>Inch size (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air/Nitrogen</td>
<td></td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>Negative pressure</td>
<td></td>
</tr>
<tr>
<td>Proof pressure</td>
<td>0.5MPa</td>
<td></td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>5 to 60°C</td>
<td></td>
</tr>
<tr>
<td>Filtration</td>
<td>30µm</td>
<td></td>
</tr>
<tr>
<td>Element proof pressure differential</td>
<td>0.15MPa</td>
<td></td>
</tr>
</tbody>
</table>

### Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size (Applicable tube O.D.)</th>
<th>Recommended air flow (l/min ANR)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFB100-04</td>
<td>ø4</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>ZFB100-06</td>
<td>ø6</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>ZFB200-06</td>
<td>ø6</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>ZFB300-08</td>
<td>ø8</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>ZFB300-10</td>
<td>ø10</td>
<td>75</td>
<td>39</td>
</tr>
<tr>
<td>ZFB101-05</td>
<td>ø3/16&quot;</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>ZFB101-07</td>
<td>ø1/4&quot;</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>ZFB201-07</td>
<td>ø1/4&quot;</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>ZFB301-11</td>
<td>ø3/8&quot;</td>
<td>75</td>
<td>40</td>
</tr>
<tr>
<td>ZFB401-13</td>
<td>ø1/2&quot;</td>
<td>100</td>
<td>62</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Air/Nitrogen</th>
<th>Negative pressure</th>
<th>0.5MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure range</td>
<td>0 to 60°C</td>
<td>(Non-freezing)</td>
<td></td>
</tr>
<tr>
<td>Proof pressure</td>
<td>0.5MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating and ambient range</td>
<td>0 to 60°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtration</td>
<td>30µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element proof pressure differential</td>
<td>0.15MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable tube material (1)</td>
<td>Nylon/Soft Nylon/Polyurethane</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Model/Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>ZFC100</th>
<th>ZFC200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable tube size mm</td>
<td>ø4</td>
<td>ø6</td>
</tr>
<tr>
<td>Flow rate Nl/min [ANR]</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>-100 to 0kPa</td>
<td></td>
</tr>
<tr>
<td>Withstand pressure</td>
<td>0.5MPa</td>
<td></td>
</tr>
<tr>
<td>Filtration degree</td>
<td>10µm</td>
<td></td>
</tr>
<tr>
<td>Element differential pressure resistance</td>
<td>0.15MPa</td>
<td></td>
</tr>
</tbody>
</table>
High Purity Fluoropolymer Fittings & Tubing

Fittings Series LQ
Tubing Series TL/TIL

Quadruple seal construction
Our new high-performance quadruple seal construction (PAT. PEND.), as well as our precision insertion tooling provide maximum leak protection in your process circuitry.

High conductivity and swept flow path
Our quadruple seal construction allows minimal dead space for impurities and contaminants.

Excellent heat resistance
The use of a nut with locking mechanism and trapezoidal screw threads maximizes seal performance even when subjected to heat cycles, maintaining integrity up to 200°C.

Compression nut design resists side loading
Tube support resists crimping and deformation of tubing.

Tube diameters can be changed quickly and easily
If chemistries or flow requirements are changed during process, our face seal design allows for quick change of tubing, and/or tube diameters, using the same fitting body.

Easy tightening of nuts
Tightening to the end surface makes a positioning gauge unnecessary for easy work operations.

Clean specifications
From parts cleaning to assembly and packaging, all processes are controlled for cleanliness, and the use of NEW PFA virtually eliminates particle generation and TOC (total organic carbon) allowing confident use for the most demanding applications.

Outstanding corrosion resistance
Compatible with chemicals such as acids, bases and ultrapure water.

Numerous variations
Compatible with maximum fluid temperatures up to 200°C

<table>
<thead>
<tr>
<th>Series</th>
<th>Tube O.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL</td>
<td>Ø4, Ø6, Ø8, Ø10, Ø12, Ø19</td>
</tr>
</tbody>
</table>

High Purity PFA Fluoropolymer Tubing
Temperature Control Equipment

Thermo chiller, Thermocon, Chemical thermocon

Temperature control equipment for a wide range of pre-process and post-process uses

Refrigerated type energy saving thermo-chiller

Features

- An energy saving type thermo-chiller is added to the conventional series INR-499.
- A variety of single/double modular configurations is possible.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Single (1 channel), Dual (2 channel)</td>
</tr>
<tr>
<td>Temperature control range</td>
<td>-30 to +90°C</td>
</tr>
<tr>
<td>Cooling</td>
<td>1, 2, 3, 4kW</td>
</tr>
<tr>
<td>Cooling</td>
<td>Water cooled refrigeration</td>
</tr>
<tr>
<td>Recirculating</td>
<td>Completely fluoridated liquid</td>
</tr>
<tr>
<td>Pump</td>
<td>35l/minhead at 15m</td>
</tr>
<tr>
<td>Refrigerant</td>
<td>HFC404A</td>
</tr>
<tr>
<td>External communication</td>
<td>Temperature setting, Operation/stop monitor, Temperature monitor, Alarm monitor, Circulating fluid monitor, etc. (RS232C, RS485, DeviceNet)</td>
</tr>
<tr>
<td>External signal input/output</td>
<td>Contact for operation, stop, and trouble signals</td>
</tr>
<tr>
<td>Protective</td>
<td>Refrigerator overheating, Pump motor overheating, Excess/insufficient circulating fluid, Circulating fluid temperature, etc.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Three phase AC200/200-280V±10% (50/60Hz)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>700 (450) W x 845D x 1705H (   ): in case single type</td>
</tr>
<tr>
<td>Safety</td>
<td>EMI S2, EU EMC directive conformity</td>
</tr>
<tr>
<td>Other</td>
<td>Circulating fluid gauge, Back flow prevention of circulating fluid, etc.</td>
</tr>
</tbody>
</table>

Power Consumption Comparison

- ON/OFF, with load (ON:OFF=3:1) kW

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Power consumption kW</th>
<th>Reduction rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional type</td>
<td>Energy saving type</td>
<td></td>
</tr>
<tr>
<td>ON/OFF, with load (ON:OFF=3:1)</td>
<td>10.6</td>
<td>5.4</td>
</tr>
<tr>
<td>Without load</td>
<td>12.4</td>
<td>5.0</td>
</tr>
<tr>
<td>ON/OFF, with/without load (50%/50%)</td>
<td>11.5</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Conventional type: INR-499
Water cooling type thermo chiller

Features

- A water cooling type thermo-chiller that does not require a refrigerator for temperature set range of 30°C or more.
- A large cooling capacity of 100kW.

Standard external communication function (RS232C, 485, DeviceNet)

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Single (1 channel), Dual (2 channel)</td>
</tr>
<tr>
<td>Temperature control range</td>
<td>+30 (Coolant water temperature +10°C) to +80°C</td>
</tr>
<tr>
<td>Cooling capacity</td>
<td>to 100kW</td>
</tr>
<tr>
<td>Cooling system</td>
<td>Water cooled type</td>
</tr>
<tr>
<td>Recirculating fluid</td>
<td>Completely fluoridated liquid, DI water ethyleneglycol</td>
</tr>
<tr>
<td>Pump capacity</td>
<td>to 100l/min head at 40m</td>
</tr>
<tr>
<td>External communication</td>
<td>Temperature setting, Operation/stop monitor, Temperature monitor, Alarm monitor, Circulating fluid monitor, etc. (RS232C, RS485, DeviceNet)</td>
</tr>
<tr>
<td>External signal input/output</td>
<td>Contact for operation, stop, and trouble signals</td>
</tr>
<tr>
<td>Protective device</td>
<td>Pump motor overheating, Excess/Insufficient circulating fluid, Circulating fluid temperature, etc.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Three phase AC200/200-280V±10% (50/60Hz)</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>500W x 765D x 1705H</td>
</tr>
<tr>
<td>Safety</td>
<td>EMI S2, EU EMC directive conformity</td>
</tr>
<tr>
<td>Other</td>
<td>Circulating fluid gauge, Back flow prevention of circulating fluid, etc.</td>
</tr>
</tbody>
</table>

Chemical Thermo-Con

Features

- Direct temperature control of chemicals for cleaning equipment, etc.
- Unique seal construction prevents liquid leakage. Employs a unique double seal construction without O-rings allowing use with almost all liquids.
- Prevents metal contamination. Prevents metal contamination by using a plastic heat exchanger containing almost no metals.
- Deposition of fluororesin film. Fluororesin film changed from conventional adhesive application to a unique deposition method, facilitating longer life and high temperature operation.

A type with cooling capacity of 450W added.

Thermo-Con Series

Thermo-electric (No-freon) Temperature Controller

Features

- Series expanded from small through medium sizes

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Cooling capacity*</th>
<th>Temperature setting range</th>
<th>Control accuracy</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEC105W</td>
<td>H110W</td>
<td>1060</td>
<td>0.03</td>
<td>AC200V, 3A</td>
</tr>
<tr>
<td>HEC205W</td>
<td>230W</td>
<td></td>
<td></td>
<td>AC200V, 5A</td>
</tr>
<tr>
<td>HEC405W</td>
<td>350W</td>
<td></td>
<td></td>
<td>AC200V, 4A</td>
</tr>
<tr>
<td>HEC605W</td>
<td>600W</td>
<td></td>
<td></td>
<td>AC200V, 5A</td>
</tr>
<tr>
<td>HEC1005W</td>
<td>1005W</td>
<td></td>
<td></td>
<td>AC200V, 10A</td>
</tr>
</tbody>
</table>

- 40% energy savings realized

Energy savings of 40% compared to previous models has been attained through the development of a new heat exchange system.
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SMC Pneumatik GmbH (Austria), Girastrasse 8, A-2100/Kärnten Phone: 02262-62280, Fax: 02262-62285

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