

Medical Industry Products Catalogue





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.



SMC

Technical Development

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.

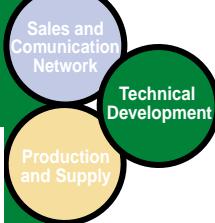
Sales and Communication Network

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.

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.

Production and Supply

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.



Technical Development

To give a global engineering network, technical centers have been established in the United States 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.



Isolation Liquid 2/3 Port Valve Series LVM



Isolation Liquid 2/3 Port Valve Series LVE



2/3 Port Solenoid Valve Series VDW



3 Port Solenoid Valve Series SY100



3 Port Solenoid Valve Series VQ100



Ultra Compact Valve



Proportional Valve Series PVQ



Electric Actuator Series LJ, LG, LX



Electric Gripper



Digital Pressure Switch Series ISE/ZSE



Compact Electro-Pneumatic Regulator Series ITV



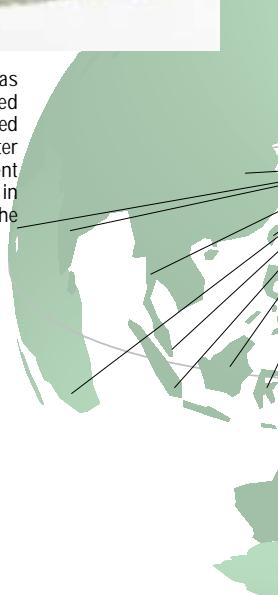
Membrane Air Dryer Heatless Air Dryer Series IDG/D



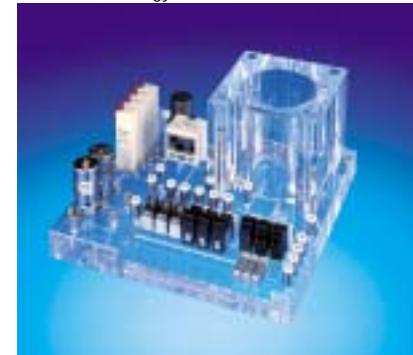
JTC The Tsukuba Technical Center has expanded, and has a new twin-tower building from where it will oversee worldwide technical development.



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.



Custom Engineered Plastic Manifold & Valve Technology





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.



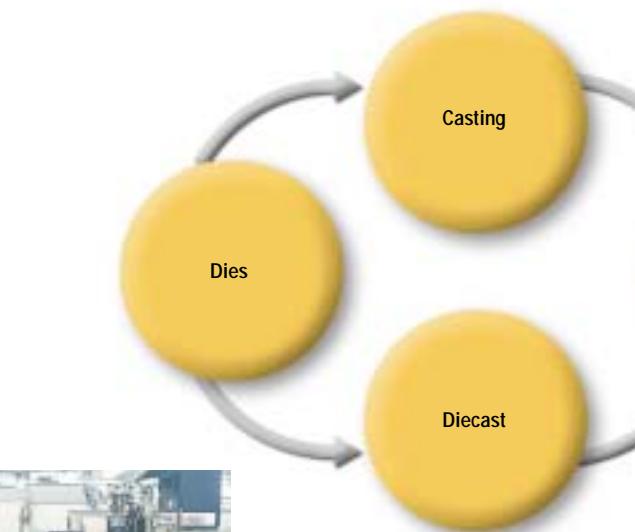


Production and Supply

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 this result, SMC can secure high quality, low cost and a short lead time of its product.

SMC's integrated production system





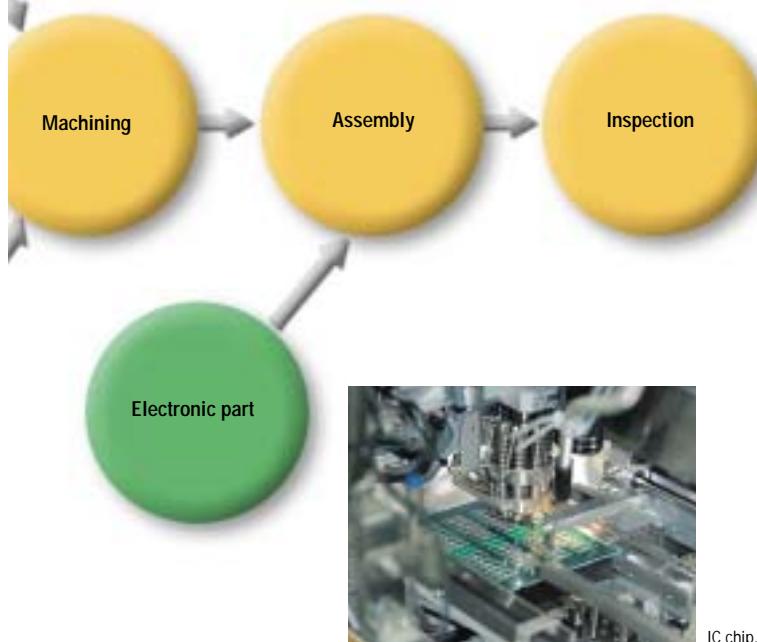
Loader, supplying work for part machining



Piston rod machining line



Coil winding

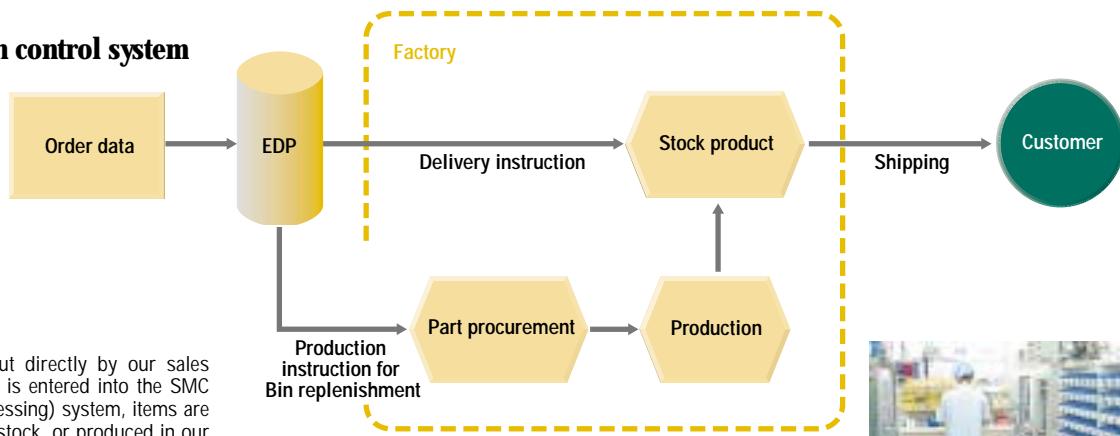


Assembly and inspection of temperature controller



IC chip, being mounted on printed board

SMC's production control system



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.



Bin control shelf



Production and Supply

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.

■ Production Facilities (Japan)



Soka Factory #1,
New Building
(to be built in January 2001)

Soka Area (13 Factories/Saitama Prf.)

Soka #1 Factory & #2 Factory
Total Land Area: 24,945m²
Floor Space: 19,531m²



■ Overseas Local Production Facilities



Canada SMC Pneumatics(Canada)Ltd.



U.S.A SMC Pneumatics, Inc. (Indianapolis)



U.S.A SMC Pneumatics, Inc.(Los Angeles)

Key Production Facilities Overview

Facility Details:

- 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
- Tohno Factory (Iwate Prf.)**
Total Land Area: 60,638m²
Floor Space: 10,622m²
- Yamatsuri Factory (Fukushima Prf.)**
Total Land Area: 124,227m²
Floor Space: 17,204m²
- U.K SMC Pneumatics (U.K) Ltd.**
- South Korea SMC Pneumatics Korea Co.,Ltd.**
- Germany SMC Pneumatik GmbH**
- Australia SMC Pneumatics (Australia) Pty.Ltd.**
- SMC (China) Co., Ltd.**
Total Land Area: 82,939m²
Floor Space: 23,893m²
- SMC Manufacturing (Singapore) Pte. Ltd.**
Total Land Area: 23,961m²
Floor Space: 13,766m²

Overseas Key Production Facilities

Overseas Local Production Factories

Region	Facility Name	Total Land Area	Floor Space
North/South America	SMC Corporation (Mexico), S.A.DE C.V.		
Argentina	SMC Argentina S.A.		
Chile	SMC Pneumatics (Chile) S.A.		
Europe/Africa	SMC Pneumatique S.A.		
Spain,Portugal	SMC Espana, S.A.		
Austria	SMC Pneumatics GmbH (Austria)		
Switzerland	SMC Pneumatik AG		
Sweden	SMC Pneumatics Sweden AB		
Ireland	SMC Pneumatics (Ireland) Ltd.		
Asia/Oceania	SMC Pneumatics (S.E.A.)Pte.Ltd.		
Malaysia	SMC Pneumatics (S.E.A.)Sdn.Bhd.		
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.		



Sales and Communication Network

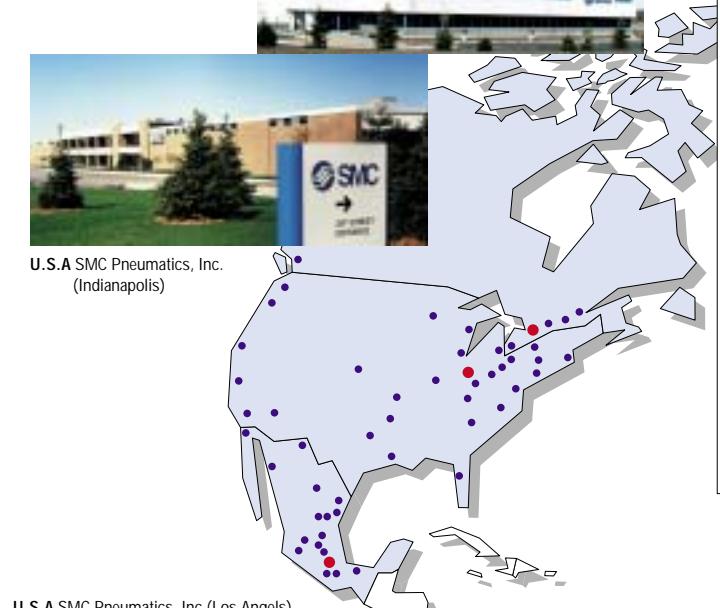
Our goal of 20% global market share has been achieved, with local subsidiaries in 39 countries across the world.

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 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.

Canada SMC Pneumatics (Cnada) Ltd.



U.S.A SMC Pneumatics, Inc.
(Indianapolis)



U.S.A SMC Pneumatics, Inc.(Los Angeles)



Mexico SMC Corporation (Mexico), S.A.DE C.V.

North/South America

U.S.A	SMC Pneumatics, Inc.
Canada	SMC Pneumatics(Canada)Ltd.
Mexico	SMC Corporation (Mexico), S.A.DE C.V.
Argentina	SMC Argentina S.A.
Brazil	SMC Pneumaticos Do Brasil Ltda.
Venezuela	SMC NEUMATICA VENEZUELA S.A.
Chile	SMC Pneumatics(CHILE) S.A.
Bolivia	SMC Pneumatics Bolivia S.R.L.
Uruguay	BACO S.A.(Distributor)
Colombia	Airmatic Ltda.(Distributor)
Peru	IMPECO Automatización Industrial S.A.(Distributor)

.K SMC Pneumatics (U.K) Ltd.



Germany SMC Pneumatik GmbH



China SMC (China) Co.,Ltd.



Italy SMC Italia S.p.A



France SMC Pneumatique S.A.



South Korea SMC Pneumatics Korea Co.,Ltd.

Spain SMC España, S.A.



Taiwan SMC Pneumatics (Taiwan)Co.,Ltd.



Singapore SMC Pneumatics (S.E.A.)Pte.Ltd.

Europa/Africa

Germany	SMC Pneumatik GmbH
U.K	SMC Pneumatics (U.K) Ltd.
Italy	SMC Italia S.p.A
Romania	SMC Romania S.r.l
France	SMC Pneumatique S.A.
Spain,Portugal	SMC Espana, S.A.
Austria	SMC Pneumatics GmbH (Austria)
Czech	SMC Czech s.r.o.
Slovakia	SMC Slovakia s.r.o
Hungary	SMC Hungary kft.
Slovenia	SMC Slovenia d.o.o.
Switzerland	SMC Pneumatik AG
Ireland	SMC Pneumatics (Ireland) Ltd.
Sweden	SMC Pneumatics Sweden AB
Denmark	SMC Pneumatik A/S
Norway	SMC Pneumatics Norway AS
Russia	SMC Pneumatik LLC
Poland	SMC Industrial Automation Polska Sp.z.o.o
Netherlands,Belgium	SMC Pneumatics B.V.(Associated company)
Finland	SMC Pneumatiikka OY (Associated company)
Greece	S. Parianopoulos S.A. (Distributor)
Turkey	Entek Phomatik San.ve Tic Ltd.Sti. (Distributor)
South Africa,Namibia	Hyflo Southern Africa(Pty.)Ltd. (Distributor)
Egypt	Saadani Trading & Ind. Services(Distributor)

Asia/Oceania

Singapore	SMC Pneumatics (S.E.A.)Pte.Ltd.
Malaysia	SMC Pneumatics (S.E.A.)Sdn.Bhd.
Taiwan	SMC Pneumatics (Taiwan)Co.,Ltd.
Hong Kong	SMC Pneumatics (Hong Kong) Ltd.
Thailand	SMC Thailand Ltd.
Philippines	SMC Pneumatics (Philippines).Inc.
China	SMC (China) Co.,Ltd.
South Korea	SMC Pneumatics Korea Co.,Ltd.
India	SMC Pneumatics (India) Pvt Ltd.
Indonesia	P.T.Riyadi Putera makmur (Distributor)
Pakistan	Jubilee Corporation (Distributor)
Saudi Arabia	Assaggaff Trading Est. (Distributor)
Israel	BACCARA GEVA (Distributor)
Australia	SMC Pneumatics (Australia) Pty.Ltd.
New Zealand	SMC Pneumatics (New Zealand) Ltd.
Japan	SMC CORPORATION



SMC Pneumatics (Australia) Pty. Ltd.

- Head office
- Branch office

9,100 basic models, and 530,000 variations. A wide range of variations to accommodate diverse applications.

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.

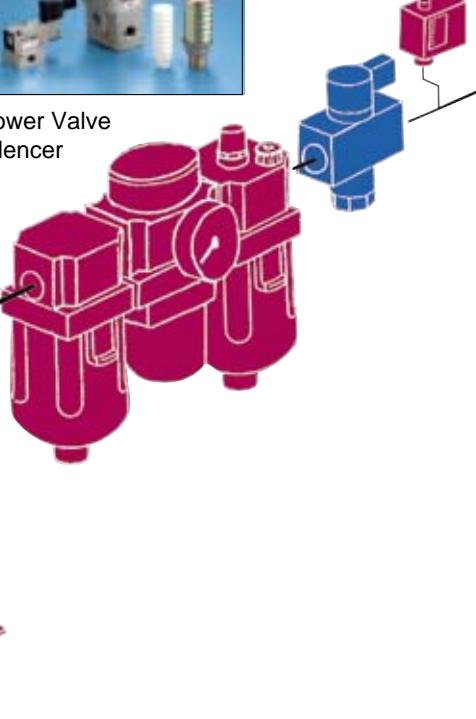
1

Solenoid Valve**All Air System**

4/5 Port Air Operated Valve
3 Port Air Operated Valve
All Air System Equipment

Process Valve

2/3 Port Solenoid Valve

Power Valve/SilencerPower Valve
Silencer

4

Air Line Equipment

Fittings and Tubing

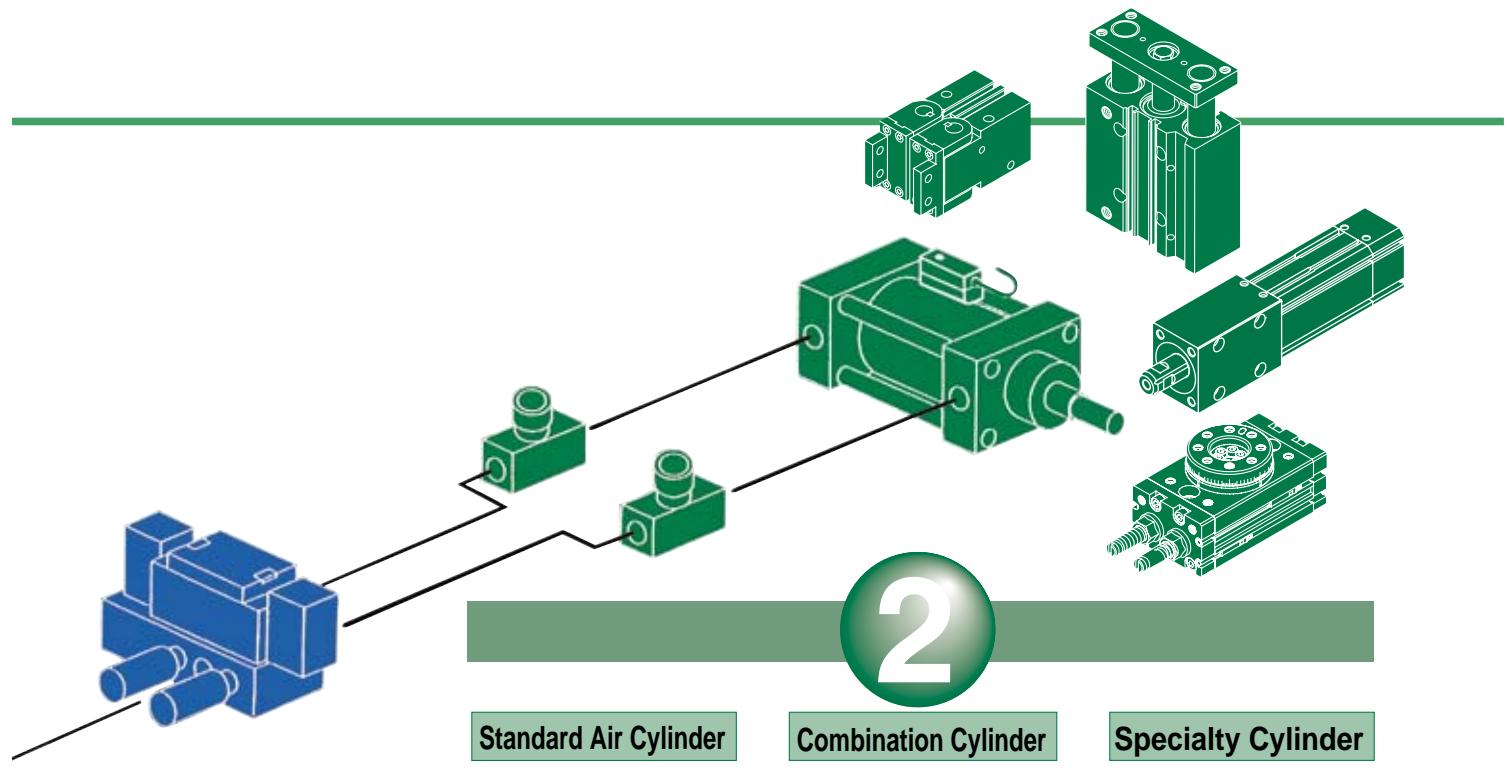
Modular Style FRL Combination
Air Filter
Pressure Control Equipment
Pressure Gauge Guide
Lubrication Equipment

Detection Switch

Pressure Switch
Flow Switch

Air Preparation Equipment

Aftercooler
Air Dryer
Filter



2

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

3

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

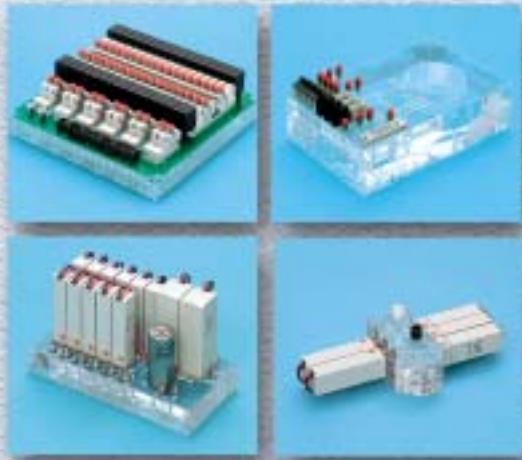
Flow Control Equipment



Speed Controller
Metering Valve with Silencer
Quick Exhaust Valve
Speed Exhaust Controller
Check Valve
Safety Speed Control Valve

Composite Valve Manifold for Air, Gas and Liquid

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)

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

Note) Contact SMC for details

Conventional system



Custom machined/Bonded plastic manifold

Series LVM

Isolation liquid valve
with custom connection

Series VDW

Liquid valve

Series PVQ

Proportional valve

Series SY100

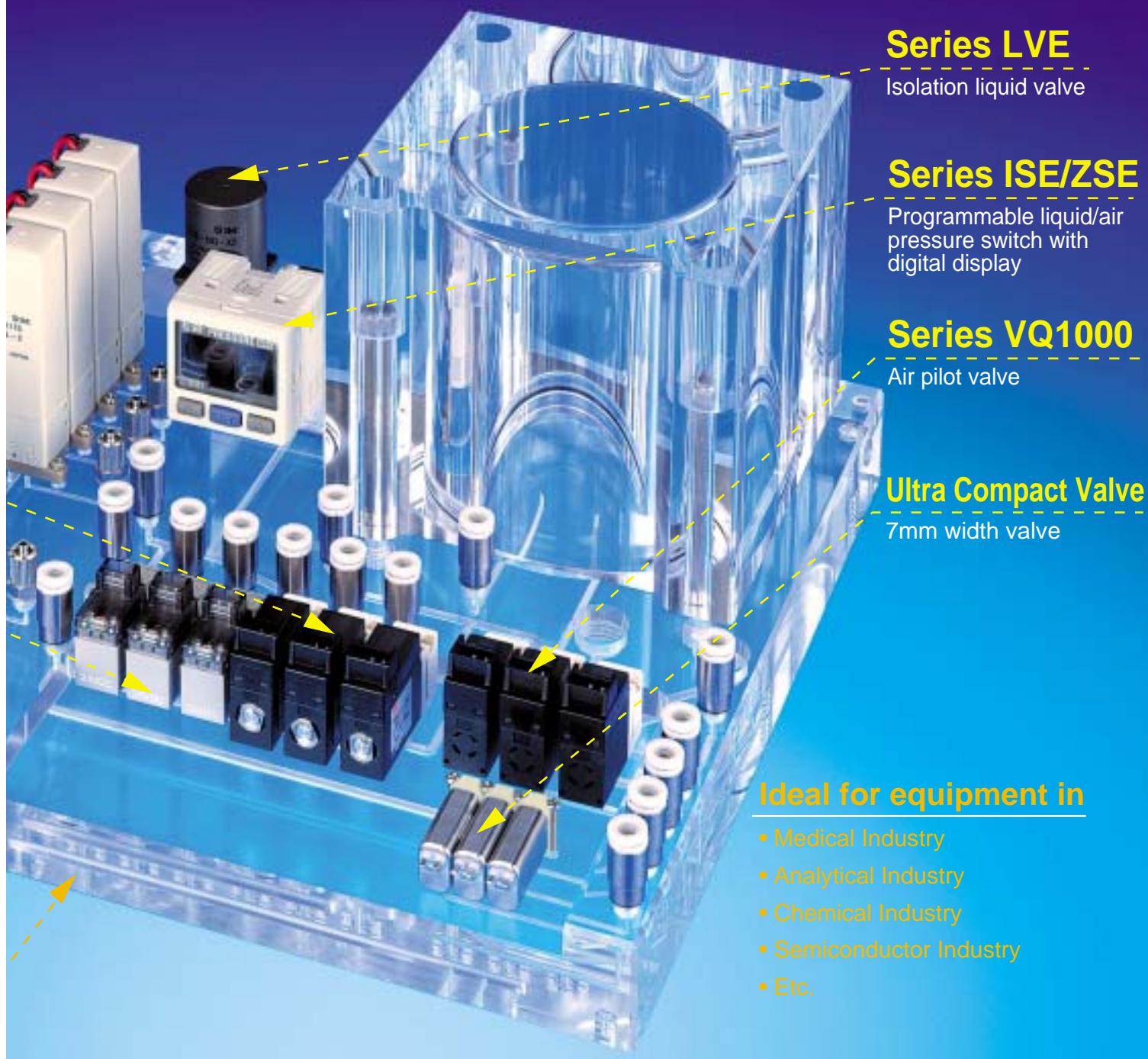
Air pilot valve

Installation of valves on
plastic manifold



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!



Series LVE

Isolation liquid valve

Series ISE/ZSE

Programmable liquid/air pressure switch with digital display

Series VQ1000

Air pilot valve

Ultra Compact Valve

7mm width valve

Ideal for equipment in

- Medical Industry
- Analytical Industry
- Chemical Industry
- Semiconductor Industry
- Etc.

Tested and Packed to Customers Specifications

Quality Assurance

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.



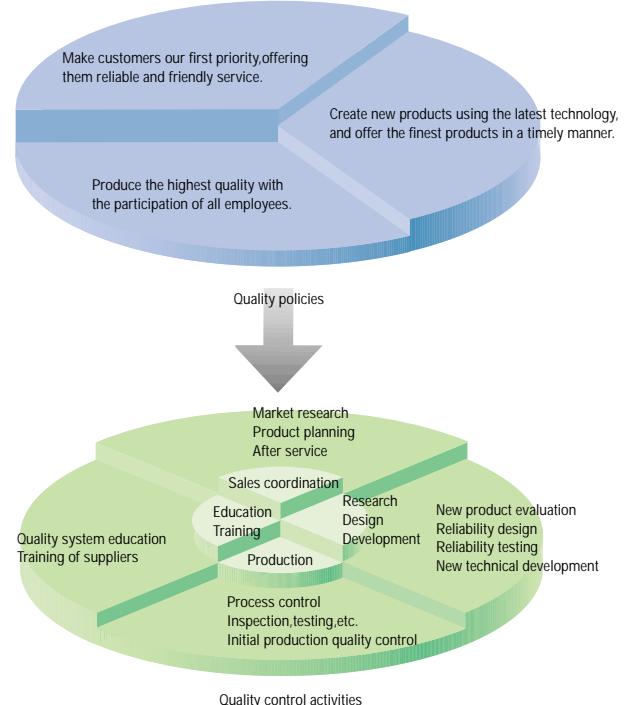
ISO14001

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.



SMC's quality control system



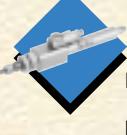
ISO certification obtained

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 ejectors(miniature type)

Related Facilities Included in the Registration

Tsukuba Technical Centre
(design,development)
Soka Factory No.1 (includes distribution
center&Matsubara factory)
Soka factory No.2 (manufacturing)
Tsukuba factory No.1 (manufacturing)
Tsukuba factory No.2 (manufacturing)
Kamaiishi factory (manufacturing)
Yamatsuri factory (manufacturing)
Tono 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/ISO14001]
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/ISO14001]
SMC US [ISO 9001]

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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

	2 Port		3 Port	
	LVM10	LVM20	LVM100	LVM200
Effective area mm ² (Cv)	0.72(0.04)	1.8(0.1)	0.63(0.035)	1.8(0.1)
Orifice size	ø1.5	ø2	ø1.4	ø2
Port size	M5	M6	M5	M6
Applicable tube	-	-	ø4 x ø2.5	ø6 x ø4
N.C. (Normally closed)	O	O	O	O
N.O. (Normally open)	-	-	O	O

O : Available

Specifications 2 Port

	2 Port	
	LVM10	LVM20
Valves specifications	Type	2 port direct operated diaphragm type
	Fluid	Air and Liquid
	Max. operating pressure	0.25 MPa
	Orifice size	ø1.5 ø2
	Effective area (Cv)	0.72 (0.04) 1.8(0.1)
	Valve leakage	0
	Fluid and ambient temperature	0 to 50°C
	Mounting	Free
Solenoid specifications	Coil rated voltage	24VDC
	Allowable voltage	± 10% of rated voltage
	Coil insurance	Class B
	Power consumption	Inrush: 2.5W; Holding: 1W
Material	Body	PEEK
	Diaphragm	EPDM

Consult SMC representative for additional material, voltage specifications and options.



Specifications 3 Port

	3 Port	
	LVM100	LVM200
Valves specifications	Type	3 port direct operated diaphragm type
	Fluid	Air and Liquid
	Max. operating pressure	0.25 MPa
	Orifice size	ø1.4 ø2
	Effective area (Cv)	0.63 (0.035) 1.8(0.1)
	Valve leakage	0
	Fluid and ambient temperature	0 to 50°C
	Mounting	Free
Solenoid specifications	Coil rated voltage	24VDC
	Allowable voltage	± 10% of rated voltage
	Coil insurance	Class B
	Power consumption	1.5W
Material	Body	PEEK
	Diaphragm	EPDM

High Purity Chemical Valve Series LV□

Air/Manually Operated



Integral Fitting Valves/LVC

Prevents Micro-Bubbles

Diaphragm (PTFE)

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

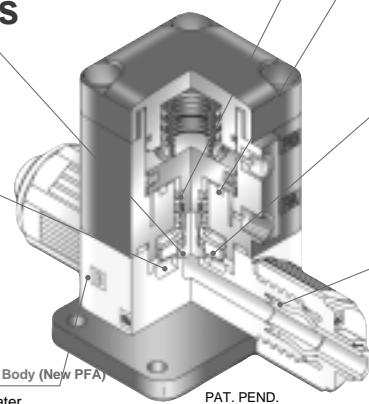
Minimal dead space

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.

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.



Outstanding corrosion resistance

Body (New PFA)

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

Low particle generation

Piston bumper

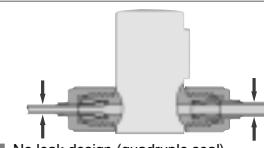
A bumper absorbs piston momentum to minimize impact-induced particles.

Back-pressure resistance and long life

Buffer

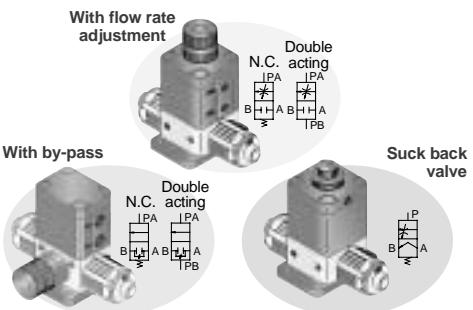
The diaphragm is supported by a buffer that minimizes deformation, which gives it long life and resistance to back-pressure.

Different tubing sizes can be selected



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

● Numerous variations



- N.C./N.O. with same configuration/Double acting
- Compatible with 100°C fluid temperature

Manual Operation-Series LVH

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



For shut off

For air bleeding



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



Medical Chemicals
Analytical Instruments Food processing
IC manufacturing Cleaning equipment

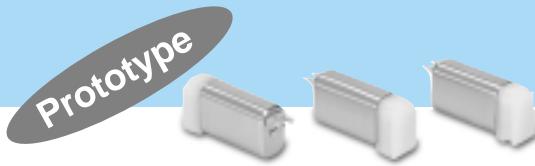


Integral Fittings-Series LVC

- Main applications and fields

IC manufacturing lines Chemicals
Analytical Instruments Medical equipment
Pharmaceutical manufacturing Cleaning 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

Rated voltage	3VDC, 5VDC, 12VDC, 24VDC
Life	100 million cycles
Response time	under 10 m/sec

Note) Prototype. Contact SMC for details.

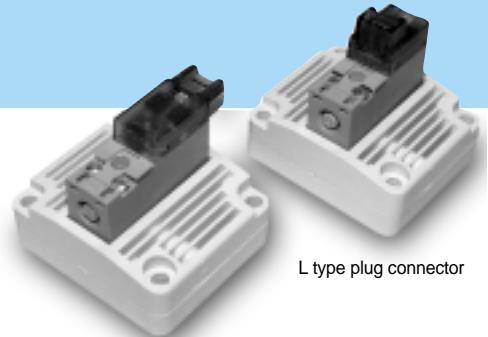
2 Port Oxygen concentrator valve

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, fluorine 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.



L type plug connector

M type plug connector



Manifold assembly
(Side ported type)

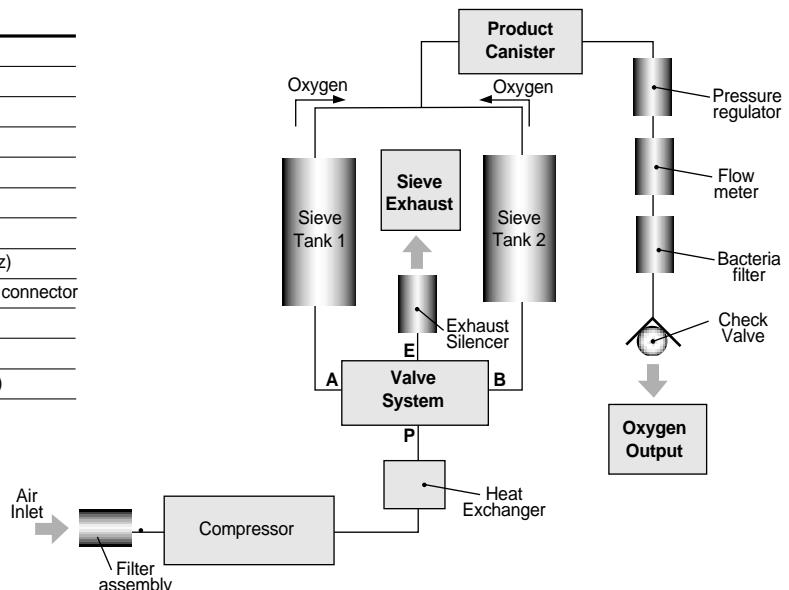


Manifold assembly
(Top ported type)

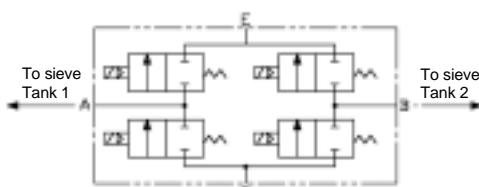
Valve Specifications

Fluid	Air
Operating pressure range MPa (psi)	0.04~0.3 (6~43)
Effective area mm ² (Cv)	Max. 23.4 (1.3)
Response time (ms)	Less than 30
Fluid and ambient temperature (°C)	Max. 50
Max. operating frequency (Hz)	5
Lubrication	Not required
Impact/Vibration m/s ²	150/30 (8.3 - 2000Hz)
Electrical Entry	Grommet, L and M type plug connector
Coil rated voltage VDC	24, 12, 6, 5, 3
Allowable voltage	-10 to +10%
Power consumption (W)	0.5 (with light: 0.55)

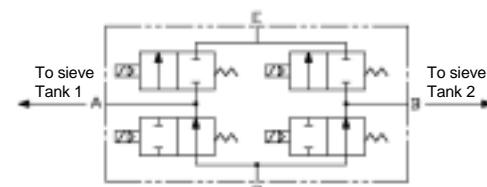
Oxygen concentrator system



Valve System circuit



Valve system circuit: N.C. supply and exhaust



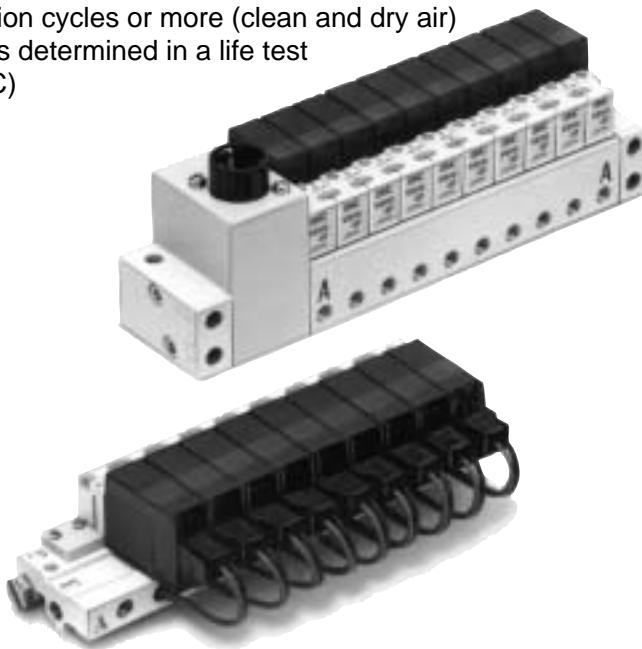
Valve system circuit: N.O. supply and N.C. exhaust

3 Port Solenoid Valve for Air Series VQ100

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

ON: 3.5ms, OFF: 2ms, Dispersion accuracy $\pm 1\text{ms}$
(With indicator light and surge voltage suppressor;
supply pressure 0.5MPa)

200million cycles or more (clean and dry air)
(Factors determined in a life test
by SMC)



Compact with large flow capacity.

Body width: 9.8mm,
N/min: 19.63 (Standard, high pressure style)
N/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.

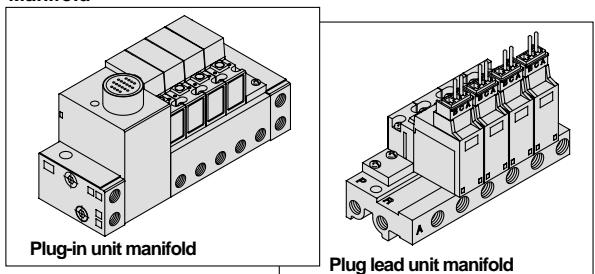


Copper-free specifications

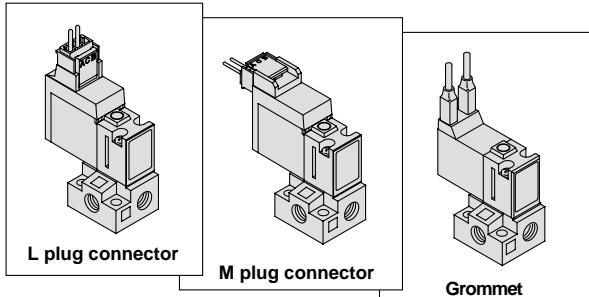
The fluid contacting section is copper-free and the standard style can be used as it is.

A wide variation of wiring

Manifold



Single unit



3 Port Solenoid Valve for Air Series SY100

**Low power consumption: 0.5W (Standard, Without light)
(Current draw: 21mA at 24V DC)**

*Large flow capacity style:0.75W (Current draw: 31mA at 24V DC)



**Body width: 10mm
7.85 N/min (Standard style)
11.78 N/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

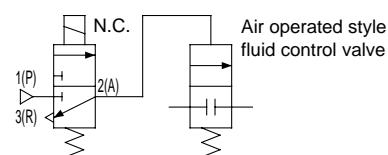
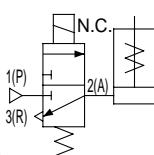
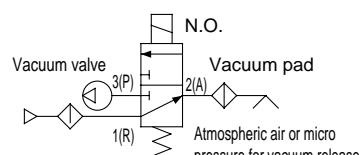
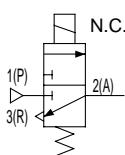
No copper used for sections in contact with fluids.

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.)

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



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)**

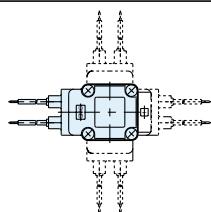
Built-in surge voltage suppressor

Built-in rectifying circuit (AC)

- Noise prevention
- Burn-out prevention

Electrical entry directions

Electrical entry is possible from four directions



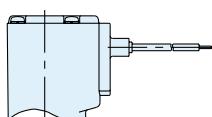
* When shipped from the factory, the electrical entry is on the IN port side.

A variety of wiring variations

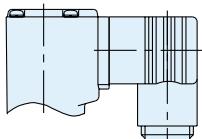
Grommet, DIN connector,
Conduit, Conduit terminal

Wiring specifications (Class B coil)

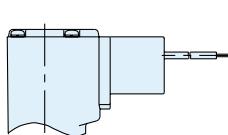
Wiring variations



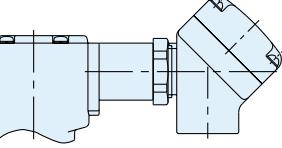
Grommet



DIN connector



Conduit



Conduit terminal

Miniaturised coil Size and weight reduced

New compact coil reduces the size and weight of the valve

Volume : -13% } Compared to previous series
Weight : -25% } (Class 2)

Flame resistance UL94 V-0 standard

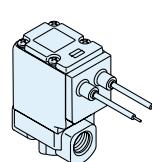
Special construction reduces operating resistance

Bottom mounting threads

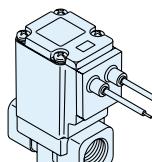
Mounting bracket also available

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

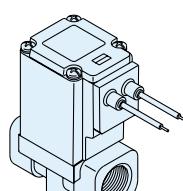
Three compact sizes available



VCA20
Class 2



VCA30
Class 3



VCA40
Class 4

Compact Direct Operated 2/3 Port Solenoid Valve

Series **VDW**

For **Water and Air**



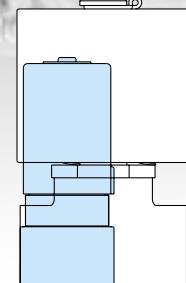
- **Compact (compared to series VX)**

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.

Clip type

Improved corrosion resistance
Special material introduced

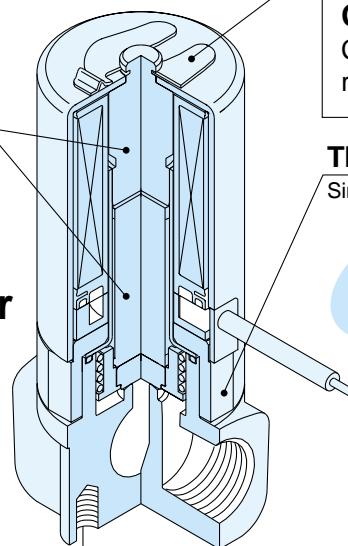
**High flow rate: Cv factor
0.03 to 0.44 (2 port)**

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

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

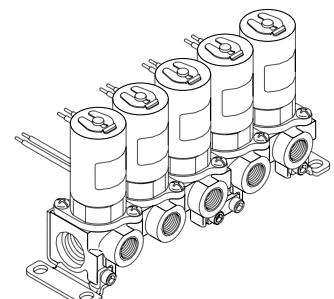
Threaded assembly
Simplifies maintenance

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



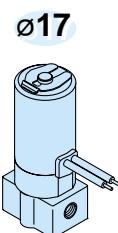
Bottom mounting threads

Mounting bracket also available

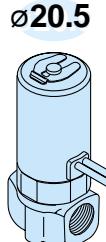


Series of compact designs

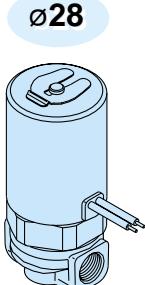
2 port



VDW10

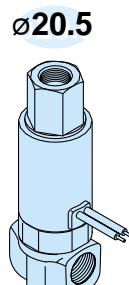


VDW20

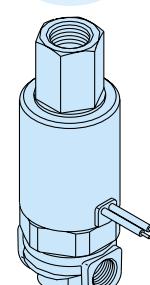


VDW30

3 port



VDW200



VDW300

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.

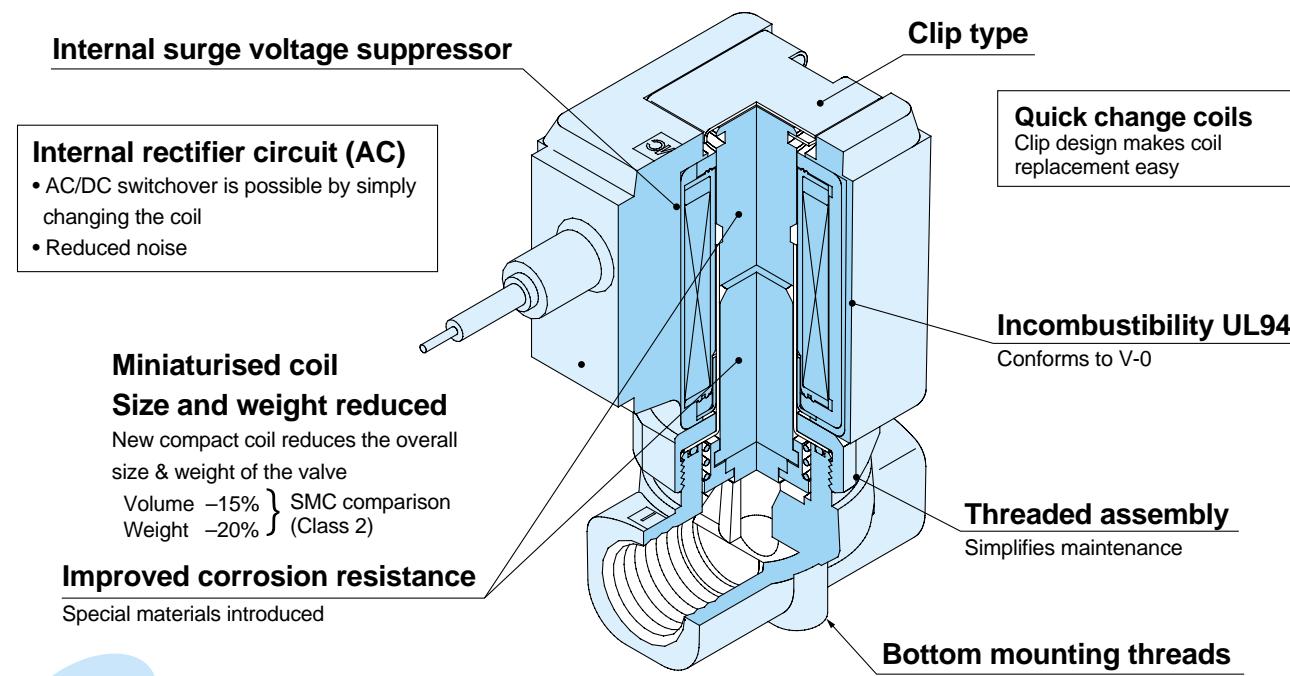
Service life, durability and corrosion resistance have been increased.

Large flow rate:
Cv factor 0.16 to 2.1

Smaller size: Single valve –15% reduction in volume (Class 2)

Manifold length – Reduced by 18%

(Class 3 : 7 stations) (SMC comparison)

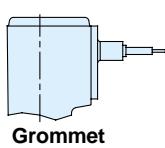


A variety of wiring options

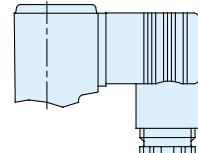
Grommet, DIN connector, Conduit, Conduit terminal

Wiring specifications

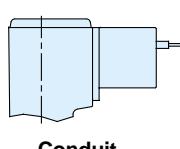
Wiring variations



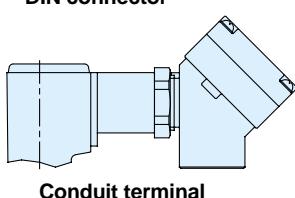
Grommet



DIN connector



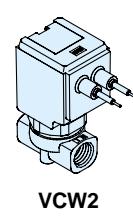
Conduit



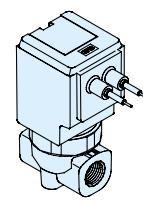
Conduit terminal

Enclosure:
Splash-proof (equivalent to IP65)

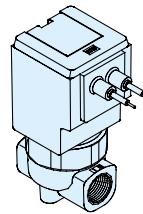
3 sizes available



VCW2
Class 2



VCW3
Class 3



VCW4
Class 4

Multi-purpose Valve

Series VCB

Direct Operated 2 Port Solenoid Valve for Heated Water

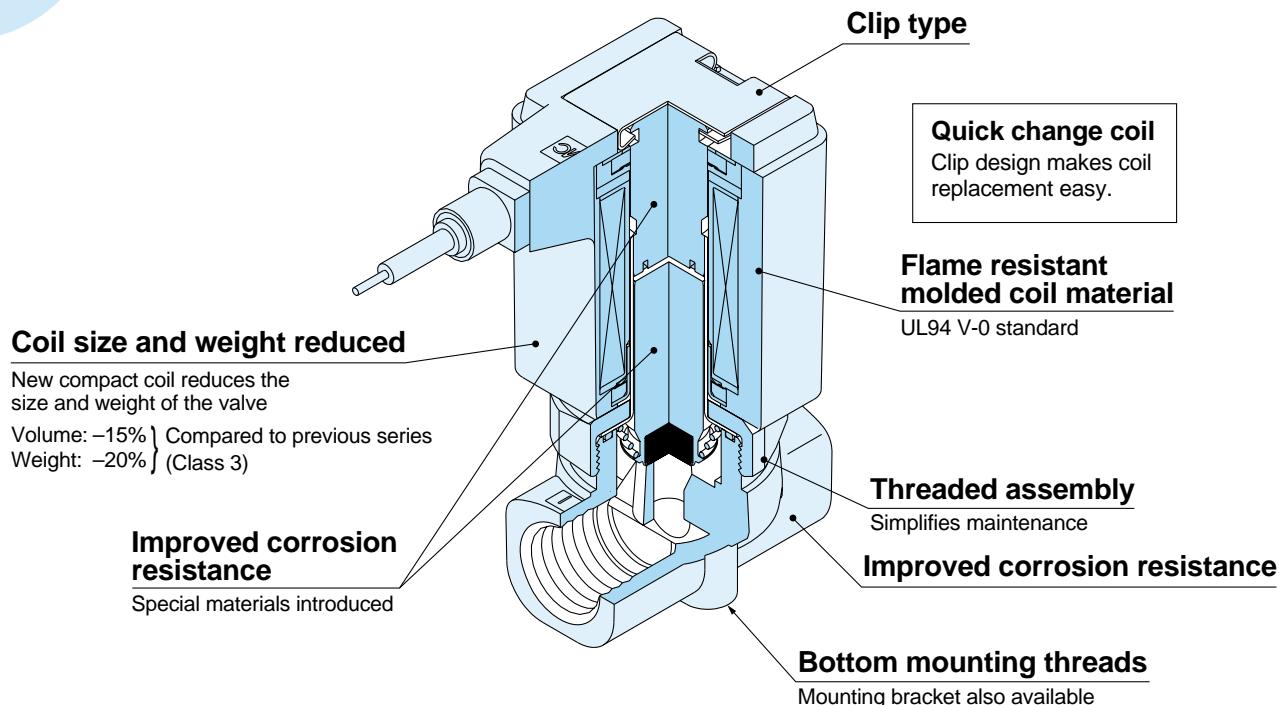


Improved durability (Nearly twice the life of the previous series)

Use of special magnetic material reduces the operating resistance of moving parts. Longevity, wear resistance and corrosion resistance improved.

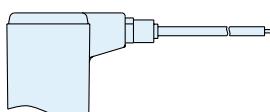
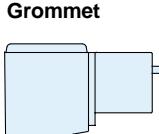
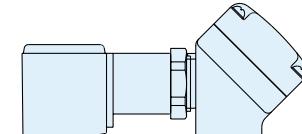
High flow rate: Cv factor 0.16 to 2.1

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

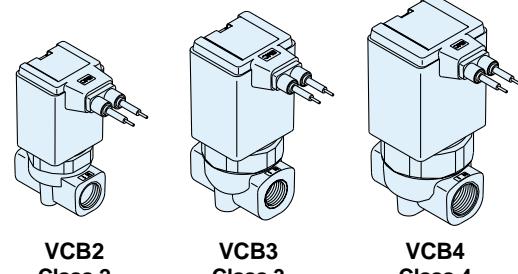


Enclosure: Dust-proof & splash-proof (IP65 equivalent)

Wiring specifications (Class H coil)

Wiring variations	Three compact sizes available
 Grommet	 

Three compact sizes available



VCB2
Class 2

VCB3
Class 3

VCB4
Class 4

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.

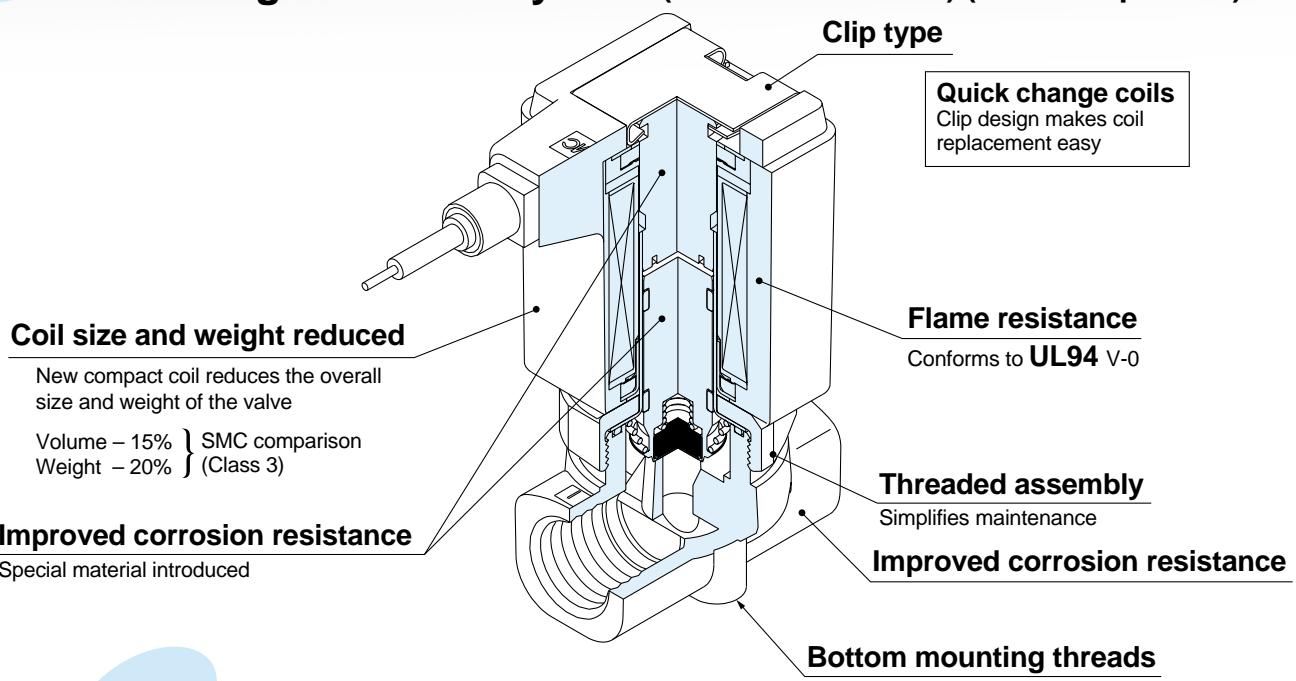
Service life, durability and corrosion resistance have been increased.

High flow rate:
Cv factor 0.16 to 2.1

Smaller size:

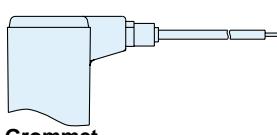
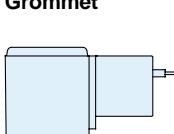
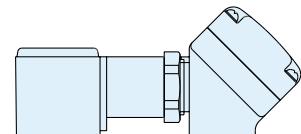
Single valve volume reduced by 15% (Class 3)

Manifold length reduced by 18% (Class 3: 5 stations) (SMC comparison)



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

Wiring specifications (Class H coil)

Wiring variations	3 compact sizes available
 Grommet	  Conduit Conduit terminal

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

(Except IDG1, IDG3, IDG3H, IDG5, IDG5H, IDG30, IDG30H, IDG30L, IDG50, IDG50H, IDG50L)



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)
IDG75L, IDG100L

Outlet air atmospheric pressure dew point -60°C
(IDG60S, IDG75S, IDG100S)

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

IDG1

Flexible piping is possible

Low flow rate type tube configuration

Outlet air flow rate: 10 l/min (ANR)



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.



Dehumidification principle

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

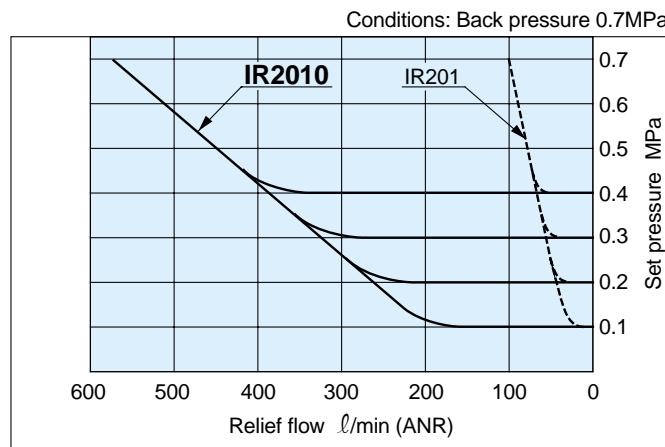
Precision Regulator

Series IR1000/2000/3000

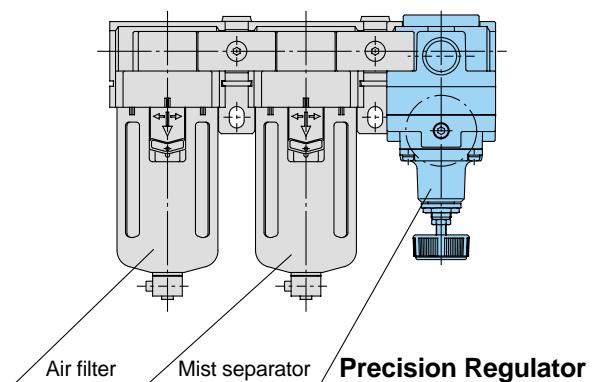
**Small size: Series IR1000,
Large size: Series IR3000 newly released**

- 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)



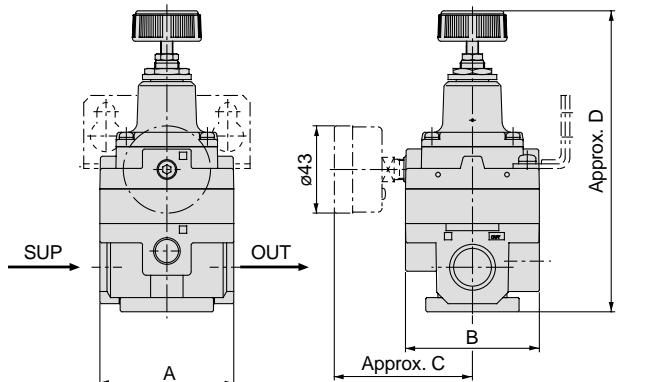
- Modular body introduced: Can be combined with AF (air filter) and AFM (mist separator)



Series Variations

Model		IR1000	IR2000	IR3000
Maximum set pressure	0.2MPa	●	●	●
	0.4MPa	●	●	●
	0.8MPa	●	●	●
Port size	Rc(PT) 1/8	●		
	Rc(PT) 1/4		●	●
	Rc(PT) 3/8			●
	Rc(PT) 1/2			●
Accessories	Bracket	●	●	●
	Pressure gauge	●	●	●
Air operated type			●	●

Dimensions



Order Made Specifications

Symbol	Specifications/Content
10—	Clean room specifications
20—	Copper-free specifications
80—	Ozone resistant specifications
—T	For high temperature
—L	For low temperature
—X1	Non-grease specifications
IRM□□	Manifold (except series IR2120, IR3000)

Model	A	B	C	D
IR1000	35	35	43	90
IR3000	66	66	68	148

Precision Clean Regulator Series SRP

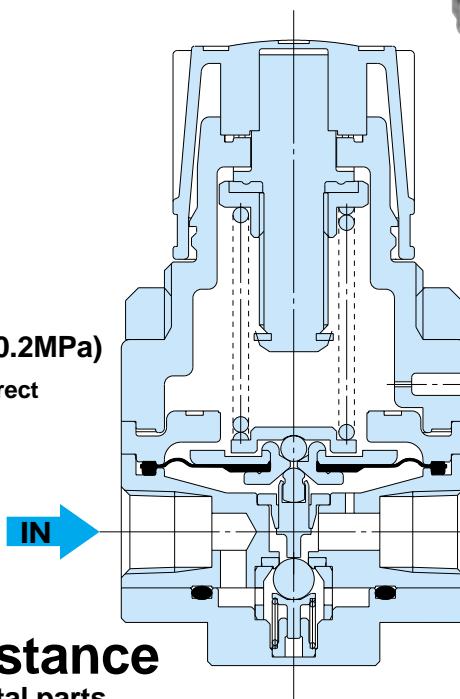
High precision,
low flow consumption
stainless steel regulator



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.

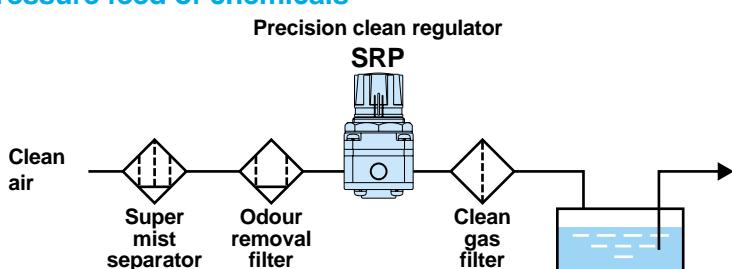
Precision
Setting sensitivity: 0.3%F.S.
Repeatability: 1%F.S.

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

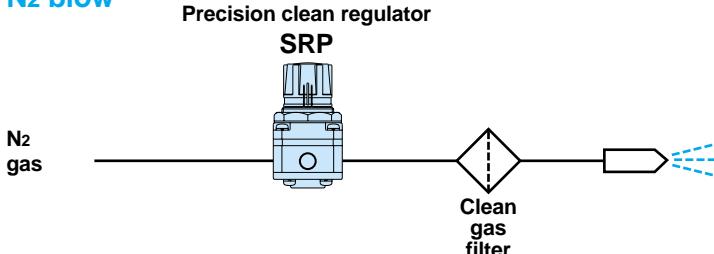
**Consistent clean
room production**
Cleaned, assembled, inspected, and
sealed in double packaging in a Class
10,000 environment

Applications

Pressure feed of chemicals



N₂ blow



Manufacturing process

Parts assembly

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

Class 10,000

Pressure Control Equipment

Regulator

Series AR

Regulator

Series	Application/Characteristics	Port size	Set pressure (MPa)	
Miniature regulator ARJ1020F	Direct operated relieving style Back flow function	M5	0.1 to 0.7	
Miniature regulator ARJ210	Direct operated relieving style	M5 to 1/8	0.2 to 0.7	
Miniature regulator ARJ310	Direct operated relieving style	M5 to 1/8	0.2 to 0.7	
Regulator AR1000-6000	Direct operated relieving style Modular style	M5 1/8 to 1	0.05 to 0.7 0.05 to 0.85	
Regulator with integral pressure gauge AR2001-4001	Built-in pressure gauge Space saving	1/8 to 1/2	0.05 to 0.85	
Pilot operated regulator AR425-925 AR435-935	Internal pilot Relieving style	1/4 to 2	0.05 to 0.85 0.02 to 0.2	
Regulator manifold ARM1000/2000	Manifold (Common IN/Individual IN) Direct operated relieving style Back flow function	1/8 to 1/4	0.08 to 0.7	
Regulator manifold ARM2500/3000	Manifold (Common IN/Individual IN) Modular style	1/4 , 3/8	0.05 to 0.85	
Direct operated precision regulator ARP3000	Setting sensitivity: 0.001MPa Direct operated relieving style	1/4	0.005 to 0.3	
Regulator with check valve AR1000/AR2060-6060	Built-in check valve (with back flow function) Direct operated relieving style	M5 to 1	0.05 to 0.7	
Regulator with residual pressure exhaust mechanism AR2550-4050	Exhaust of residual pressure for safety purpose Direct operated relieving style	1/4 to 3/4	0.05 to 0.85	
Regulator for 2MPa ARX20	Piston type regulator	1/8 , 1/4	0.05 to 0.85	

Air Fittings & Tubing

General purpose fitting Series

One-touch Mini Series KJ

Applicable tube Metric size

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 Fittings Manifold Series KM

Applicable tube Metric size

Possible to use in vacuum to -101.3kPa

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

Nylon
Soft nylon
Polyurethane

Applicable tube O.D. (mm)

Ø3.2 Ø4 Ø6 Ø8 Ø10 Ø12 Ø16

W/ sealant
Electroless nickel plated



Nylon
Soft nylon
Polyurethane

M3
M5
1/8
Unions
M5
M6
1/8
1/4
3/8
1/2
Unions

W/ sealant
Electroless nickel plated



Nylon
Soft nylon
Polyurethane

M5
M6
1/8
1/4
3/8
1/2

W/ sealant
Electroless nickel plated



Nylon
Soft nylon
Polyurethane

1/4
3/8
Ø8
Ø10
Ø12

W/ sealant
Electroless nickel plated



Nylon
Soft nylon
Polyurethane

1/8
1/4
3/8
1/2
Unions

W/ sealant
Electroless nickel plated



Nylon
Soft nylon
Polyurethane

M3
M5
1/8

W/ sealant
Electroless nickel plated



Nylon
Soft nylon
Soft copper (C1220T-0)

1/8
1/4
3/8
1/2
Unions

W/ sealant
Electroless nickel plated

Fitting Series For Special Environments

General Purpose Fitting Series

**One-touch In/Out connection
For use in corrosive environments
Stainless series**

One-touch Fittings Series KG

Applicable tube Metric size

**One-touch In/Out connection
For use in corrosive environments
Stainless steel (SUS316)**

Miniature Fittings Series MS

Applicable tube Metric size



Applicable tube material
Nylon
Soft nylon
Polyurethane

Applicable tube O.D. (mm)
ø3.2 ø4 ø6 ø8 ø10 ø12 ø16
M5
1/8
1/4
3/8
1/2
Unions

W/ sealant
Electroless nickel plated
Spatter proof



Applicable tube material
Nylon
Soft nylon
Polyurethane

M5

Applicable tube O.D. (mm)
ø3.2 ø4 ø6 ø8 ø10 ø12 ø16
M5
1/8
1/4
3/8
1/2
Unions

W/ sealant
Electroless nickel plated
Spatter proof

**One-touch In/Out connection
With quick disconnect and air lock**

Self-seal Fittings Series KC

Applicable tube Metric size



Applicable tube material
Nylon
Soft nylon
Polyurethane

Applicable tube O.D. (mm)
ø3.2 ø4 ø6 ø8 ø10 ø12 ø16
M5
1/8
1/4
3/8
1/2
Unions

W/ sealant
Electroless nickel plated

Multi tube, One-touch In/Out connection

Multi-connector Series DM

Applicable tube Metric size



Applicable tube material
Nylon
Soft nylon
Polyurethane

6 tubes
12 tubes

Rectangular Multi-connector Series KDM

Applicable tube Metric size



Applicable tube material
Nylon
Soft nylon
Polyurethane

10 tubes
20 tubes

Centralized distribution of supply air

Piping Module Series KB

Applicable tube Metric size



Applicable tube material

S Couplers Series KK/KK13



Applicable tube material

General Purpose Fitting Series

**One-touch In/Out connection
With quick disconnect and air lock**

Self-seal Fittings Series KC

Applicable tube Metric size



Applicable tube material

Applicable tube O.D. (mm)

W/ sealant
Electroless nickel plated

Multi tube, One-touch In/Out connection

Multi-connector Series DM

Applicable tube Metric size



Applicable tube material

6 tubes
12 tubes

Rectangular Multi-connector Series KDM

Applicable tube Metric size



Applicable tube material

10 tubes
20 tubes

Centralized distribution of supply air

Piping Module Series KB

Applicable tube Metric size



Applicable tube material

S Couplers Series KK/KK13



Applicable tube material

**One-touch In/Out connection
For use in corrosive environments
Stainless series**

One-touch Fittings Series KG

Applicable tube Metric size



Applicable tube material

Applicable tube O.D. (mm)

W/ sealant
Electroless nickel plated
Spatter proof

**One-touch In/Out connection
For use in corrosive environments
Stainless steel (SUS316)**

Miniature Fittings Series MS

Applicable tube Metric size



Applicable tube material

M5

Air Fittings & Tubing

Inch-size One-touch Fittings

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

One-touch Mini Series KJ

Applicable area — U.S.A. etc.



Applicable tube material

Nylon
Soft nylon
Polyurethane

Applicable tube O.D. (inch)

$\varnothing\frac{1}{8}$ $\varnothing\frac{5}{32}$ $\varnothing\frac{3}{16}$ $\varnothing\frac{1}{4}$ $\varnothing\frac{5}{16}$ $\varnothing\frac{3}{8}$ $\varnothing\frac{1}{2}$

UNF 10-32

$\frac{1}{16}$

$\frac{1}{8}$

Unions

W/ sealant
Electroless nickel plated

One-touch Fittings Series KQ2

Applicable area — U.S.A. etc.



Nylon
Soft nylon
Polyurethane

UNF 10-32

$\frac{1}{16}$

$\frac{1}{8}$

$\frac{1}{4}$

$\frac{3}{8}$

$\frac{1}{2}$

Unions

One-touch Fittings Series KQ2

Applicable area — Australia, Japan, etc.



Nylon
Soft nylon
Polyurethane

M5

$\frac{1}{8}$

$\frac{1}{4}$

$\frac{3}{8}$

$\frac{1}{2}$

Unions

Rotary One-touch Fittings Series KS (Standard)

Applicable tube Inch size
Applicable thread — UNF, NPT



Nylon
Soft nylon
Polyurethane

UNF 10-32

$\frac{1}{8}$

$\frac{1}{4}$

$\frac{3}{8}$

One-touch Fittings Manifold Series KM

Applicable tube Inch size
Applicable thread — NPT



Nylon
Soft nylon
Polyurethane

$\frac{1}{4}$

$\frac{3}{8}$

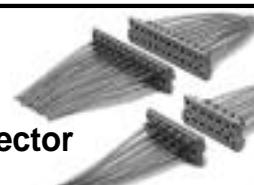
$\frac{5}{16}$

$\frac{3}{8}$

$\frac{1}{2}$

Rectangular Multi-connector Series KDM

Applicable tube Inch size



Nylon
Soft nylon
Polyurethane

10 tubes

20 tubes

High Purity Series

Tubing

General tubing
1.5MPa max. at 20°C

Nylon Tubing Series T



Color	Tube O.D.				
	Metric sizes (mm)			Inch sizes (inch)	
Ø4 ($\frac{5}{32}$)	Ø6 ($\frac{3}{16}$)	Ø8 ($\frac{5}{16}$)	Ø10 ($\frac{1}{2}$)	Ø12 ($\frac{1}{2}$)	Ø16 ($\frac{1}{2}$)
Black	●	●	●	●	●
White	●	●	●	●	●
Red	●	●	●	●	●
Blue	●	●	●	●	●
Yellow	●	●	●	●	●
Green	●	●	●	●	●

Slightly flexible
1.0MPa max. at 20°C

Soft Nylon Tubing Series TS



Color	Tube O.D.				
	Metric sizes (mm)			Inch sizes (inch)	
Ø4 ($\frac{5}{32}$)	Ø6 ($\frac{3}{16}$)	Ø8 ($\frac{5}{16}$)	Ø10 ($\frac{1}{2}$)	Ø12 ($\frac{1}{2}$)	Ø16 ($\frac{1}{2}$)
Black	●	●	●	●	●
White	●	●	●	●	●
Red	●	●	●	●	●
Blue	●	●	●	●	●
Yellow	●	●	●	●	●
Green	●	●	●	●	●

Flexible
0.8MPa max. at 20°C

Polyurethane Tubing Series TU



Color	Tube O.D.				
	Metric sizes (mm)			Inch sizes (inch)	
Ø4 ($\frac{5}{32}$)	Ø6 ($\frac{3}{16}$)	Ø8 ($\frac{5}{16}$)	Ø10 ($\frac{1}{2}$)	Ø12 ($\frac{1}{2}$)	Ø16 ($\frac{1}{2}$)
Black	●	●	●	●	●
White	●	●	●	●	●
Red	●	●	●	●	●
Blue	●	●	●	●	●
Yellow	●	●	●	●	●
Green	●	●	●	●	●
Clear	●	●	●	●	●
Orange	●	●	●	●	●

Extremely flexible
0.6MPa max. at 20°C

Soft Polyurethane Tubing Series TUS

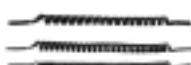


Color	Tube O.D.				
	Metric sizes (mm)			Inch sizes (inch)	
Ø4 ($\frac{5}{32}$)	Ø6 ($\frac{3}{16}$)	Ø8 ($\frac{5}{16}$)	Ø10 ($\frac{1}{2}$)	Ø12 ($\frac{1}{2}$)	Ø16 ($\frac{1}{2}$)
Black	●	●	●	●	●
White	●	●	●	●	●
Red	●	●	●	●	●
Blue	●	●	●	●	●
Yellow	●	●	●	●	●
Green	●	●	●	●	●
Opaque	●	●	●	●	●
Yellow brown	●	●	●	●	●

Hard Polyurethane Tubing Series TUH

For flexibility and moving applications

Polyurethane Coil Tubing Series TCU



1 tube	Tube O.D.				
	Metric sizes (mm)			Inch sizes (inch)	
Ø4 ($\frac{5}{32}$)	Ø6 ($\frac{3}{16}$)	Ø8 ($\frac{5}{16}$)	Ø10 ($\frac{1}{2}$)	Ø12 ($\frac{1}{2}$)	Ø16 ($\frac{1}{2}$)
2 tubes	●	●	●	●	●
3 tubes	●	●	●	●	●

For flexible multi-tube applications

Polyurethane Flat Tubing Series TFU



2 tubes	Tube O.D.				
	Metric sizes (mm)			Inch sizes (inch)	
Ø4 ($\frac{5}{32}$)	Ø6 ($\frac{3}{16}$)	Ø8 ($\frac{5}{16}$)	Ø10 ($\frac{1}{2}$)	Ø12 ($\frac{1}{2}$)	Ø16 ($\frac{1}{2}$)
3 tubes	●	●	●	●	●

High Purity Fluoroelastomer Fitting Series LQ



Clean Room

Clean One-Touch Fittings Series KP/KPQ/KPG



High Purity Fluoropolymer Tubing Series TL/TIL



Clean One-Touch Tubing Series TPH/TPS



Air filter/Modular Style

Series AF

Air Filter Series AF	Model	Port size	Filtration μm	Accessories
	AF1000	M5 x 0.8	5	Bracket Float style auto drain Pressure differential auto-drain
	AF2000	1/8, 1/4		
	AF3000	1/4, 3/8		
	AF4000	1/4, 3/8, 1/2		
	AF4000-06	3/4		
	AF5000	3/4, 1		
	AF6000	1		
Mist Separator Series AFM	AFM2000	1/8, 1/4	0.3	Bracket Float style auto drain Pressure differential auto-drain
	AFM3000	1/4, 3/8		
	AFM4000	1/4, 3/8, 1/2		
	AFM4000-06	3/4		
Micro Mist Separator Series AFD	AFD2000	1/8, 1/4	0.01	Bracket Float style auto drain Pressure differential auto-drain
	AFD3000	1/4, 3/8		
	AFD4000	1/4, 3/8, 1/2		
	AFD4000-06	3/4		
Large Flow Air Filter Series AF	Model	Port size	Filtration μm	Accessories
	AF800	1 1/4, 1 1/2	5	Float style auto drain
	AF900	2		

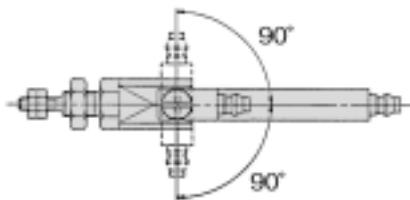
Pin Cylinder Series CJ

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 $\pm 90^\circ$.)



Ø4

Variations

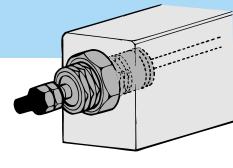
Series	Action	Bore size (mm)	Standard stroke (mm)
Series CJ1	Double acting	4	5, 10, 15, 20
	Single acting	2.5 4	5, 10 5, 10, 15, 20

Miniature Cylinder Series CJP

Double Acting/Single Acting Spring Return

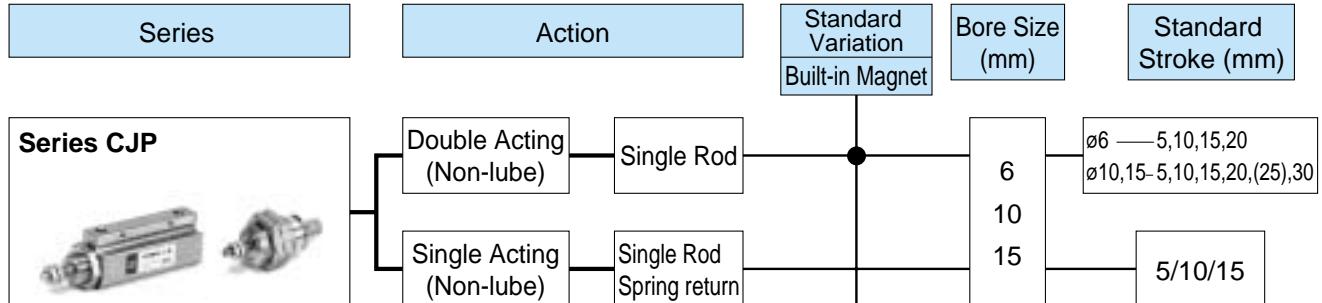


Panel Mounting Style



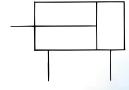
Plug Mounting Style

Variations. Series CJP



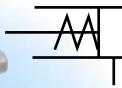
Symbol

Double acting/Single rod



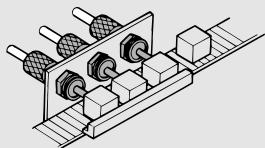
Symbol

Single acting/Spring Return

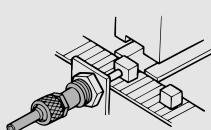


Application Examples

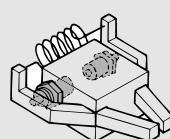
Clamper



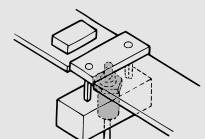
Ejector



Gripper



Stopper



Free-mount Cylinder

Series CUJ

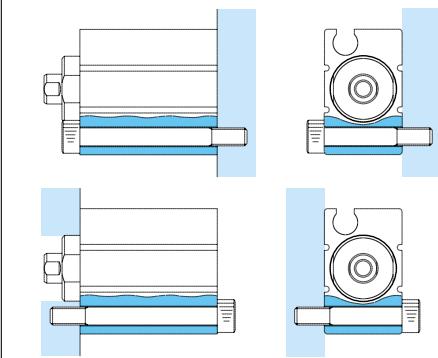
$\varnothing 4, \varnothing 6, \varnothing 8, \varnothing 10$

Concentrates wiring and piping on one surface

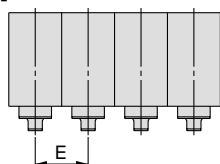
Allows more efficient installation, since four surfaces are free for mounting.



Free-mount design allows installation from four directions.



Fine pitch mounting is possible.

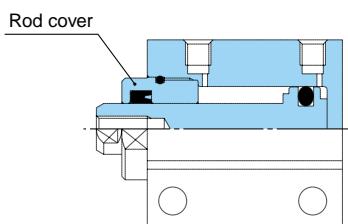


Pitch dimensions (without magnet) (mm)

Bore Size	E
4	10
6	13
8	13
10	13.5

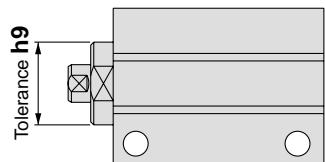
Easy seal replacement

Seals can be replaced easily by removing rod cover.

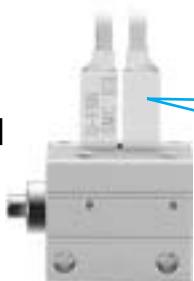


With front boss (h9)

Centering can be done easily.



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



Solid state switch
Model D-F8

Clean room series Series 10-, 11-CUJ



Series Variations

Series	Bore size (mm)	Action	Stroke (mm)						Clean room series	Auto switch	Rod end configuration
			4	6	8	10	15	20			
CUJ	4	Double acting	●	●	●	●	●	●	Clean room series	Nil	Male thread Without thread
		Single acting (spring return)	●	●	●	●	●	●			
	6	Double acting	●	●	●	●	●	●	Clean room series	Solid state switch D-F8□ D-F9□	Female thread Male thread
		Single acting (spring return)	●	●	●	●	●	●			
	8	Double acting	●	●	●	●	●	●	Clean room series	Solid state switch D-F8□ D-F9□	Female thread Male thread
		Single acting (spring return)	●	●	●	●	●	●			
	10	Double acting	●	●	●	●	●	●	Clean room series	Solid state switch D-F8□ D-F9□	Female thread Male thread
		Single acting (spring return)	●	●	●	●	●	●			

Two types of guide and three types of feed screw

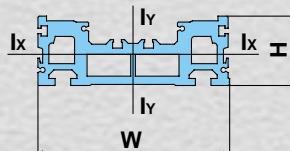
Single Axis Electric Actuator

Series LJ1



● High rigidity

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



High

Positioning accuracy

Low

Slider guide	5 to 20kg
High rigidity direct acting guide	10 to 60kg

Slide screw	±0.1mm
Rolled ball screw	±0.05mm
Ground ball screw	±0.02mm

LJ1H
High rigidity direct acting guide + Ground ball screw

LJ1H
High rigidity direct acting guide + Rolled ball screw

LJ1S
Slider guide + Slide screw

Low Work load/Allowable moment High

Model	Sectional secondary moment		W	H
	Ix	Iy		
Linear guide	LJ1H10□□	7	48	70 24.7
	LJ1H20□□	40	374	122 44.8
	LJ1H30□□	84	836	151 55
Slider guide	LJ1S10□□	15	52	70 36
	LJ1S20□□	60	402	122 56.3
	LJ1S30□□	177	1000	151 73.3

● Low noise (slide screw type)

Slide screw + Slider guide: 47dB (LJ1S)

Slide screw + Linear guide: 53dB (LJ1H)

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

Low Profile Electric Actuator

Series LG1

● Series with coupling available

Mounting of a non-standard motor is possible.

Low profile: **55mm** (35mm less than LJ1H20)



Reduced length (62mm shorter than LJ1H20 with coupling and 300mm stroke)



Controller
Series LC1



Teaching box



Regenerative absorption unit
Series LC7R



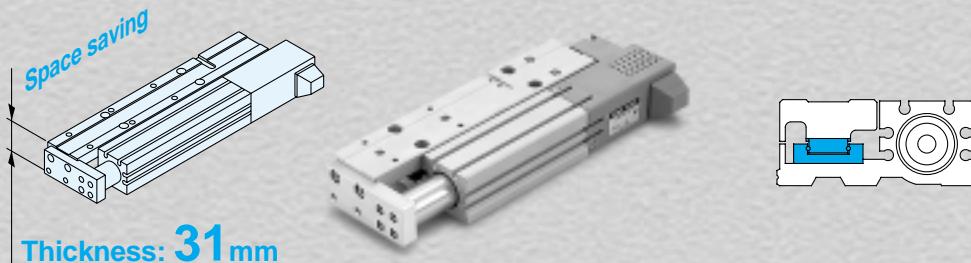
Short stroke type with three guide variations

Short Stroke Electric Actuators

Series LX

Low profile slide table type with stepper motor

Series LXF



Guide rod type with stepper motor

Series LXP



High rigidity slide table type with stepper motor

Series LXS



AC servomotor specification/Order made

CE marking
available as standard

- Series LXF
- Series LXP
- Series LXS



Driver
Series LC6D



Positioning driver
Series LC6C



Teaching box



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



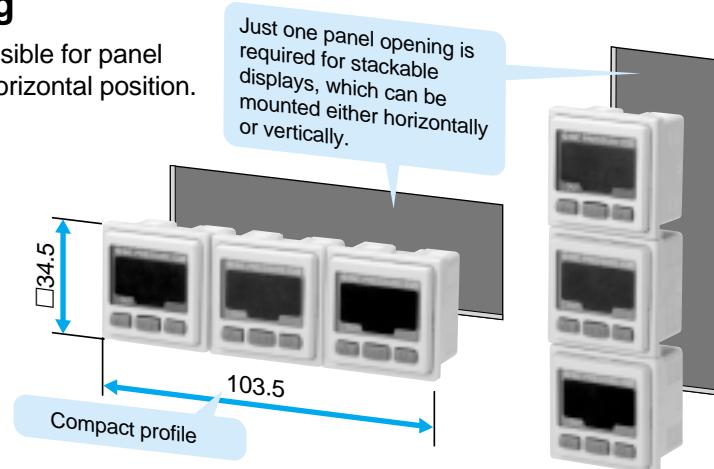
■ Two colour indication

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

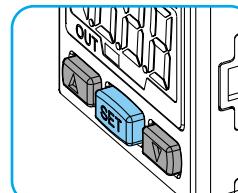
Current output: 4 to 20mA

■ One-touch connector

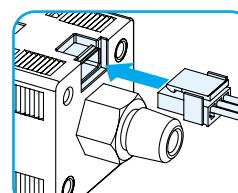
A one-touch connector is used for electrical entry.

Lead wire can be separated from the body.

More user-friendly controls



Raised rubber button controls are clearly set apart, simple to operate, soft to the touch.



Plug-type connectors take the burden out of wiring work and maintenance.

Specifications

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

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 -10kPa, SET pressure of -80kPa, and initial flow rate setting of 0 l/min(ANR).

IRV 1000

60
l/min (ANR) Note)

IRV 2000

100
l/min (ANR) Note)

IRV 3000

150
l/min (ANR) Note)



Compact

35mm

Light weight

120g

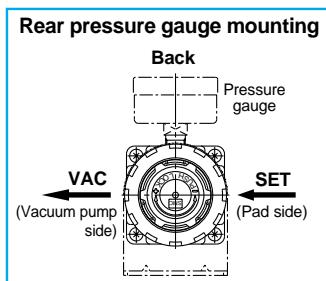
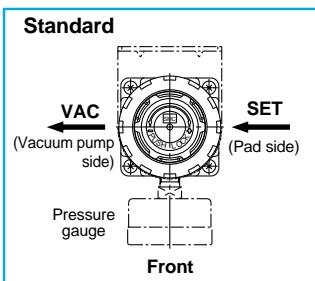
50mm

66mm

270g

700g

■ Pressure gauge can be mounted from the front or rear

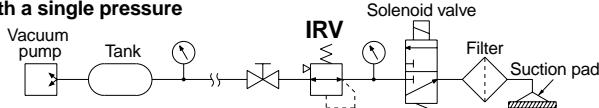


■ Panel mounting capability is standard

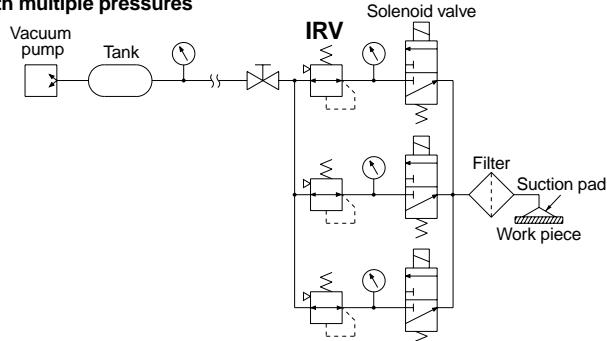
Applications

Lifting of work pieces

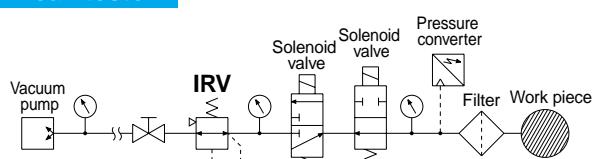
With a single pressure



With multiple pressures



Leak tester



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

Model	Port size	Recommended air flow (l/min (ANR))	Weight (kg)
ZFA 100	1/8	50	0.14
ZFA 200	1/4	200	0.19

Series ZFA



Specifications

Fluid	Air/Nitrogen
Operating pressure range	Negative pressure
Proof pressure	0.5MPa
Operating temperature range	5 to 60°C
Filtration	30µm
Element proof pressure differential	0.15MPa

Model

	Model	Port size (Applicable tube O.D.) IN side, OUT side	Recommended	Weight g
			air flow l/min (ANR)	
Metric size	ZFB100-04	ø4	10	22
	ZFB100-06	ø6	20	22
	ZFB200-06	ø6	30	30
	ZFB200-08	ø8	50	30
	ZFB300-08	ø8	75	39
	ZFB300-10	ø10	75	39
Inch size (2)	ZFB101-05	ø ³ / ₁₆ "	20	22
	ZFB101-07	ø ¹ / ₄ "	20	22
	ZFB201-07	ø ¹ / ₄ "	30	30
	ZFB301-11	ø ³ / ₈ "	75	40
	ZFB401-13	ø ¹ / ₂ "	100	62

Series ZFB



Specifications

Fluid	Air/Nitrogen
Operating pressure	Negative pressure
Proof pressure	0.5MPa
Operating and ambient range	0 to 60°C (Non-freezing)
Filtration	30µm
Element proof pressure differential	0.15MPa
Applicable tube material (1)	Nylon/Soft Nylon/Polyurethane

Model/Specifications

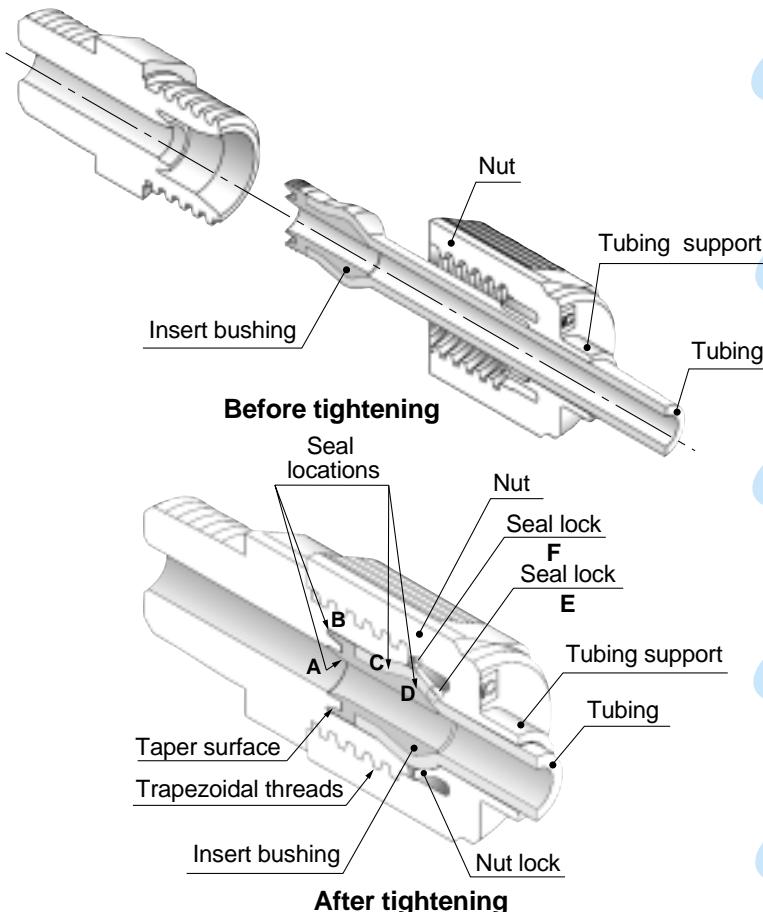
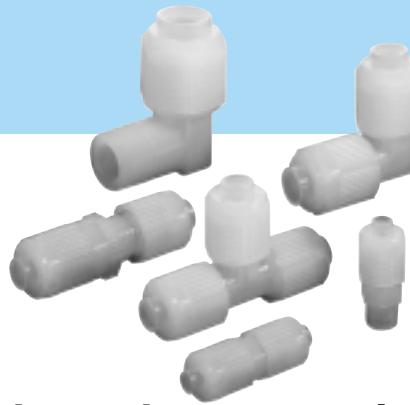
Model	ZFC100		ZFC200	
Applicable tube size mm	ø4	ø6	ø6	ø8
Flow rate N l/min [ANR]	10	20	30	50
Operating pressure range	-100 to 0kPa			
Withstand pressure	0.5MPa			
Filtration degree	10µm			
Element differential pressure resistance	0.15MPa			

Series ZFC



High Purity Fluoropolymer Fittings & Tubing

Fittings Series LQ Tubing Series TL/TIL



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

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.

New High Purity PFA Fluoropolymer Tubing

Series	Tube O.D.
TL	ø4 ø6 ø8 ø10 ø12 ø19
TIL	1/8" 3/16" 1/4" 3/8" 1/2" 3/4" 1"

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

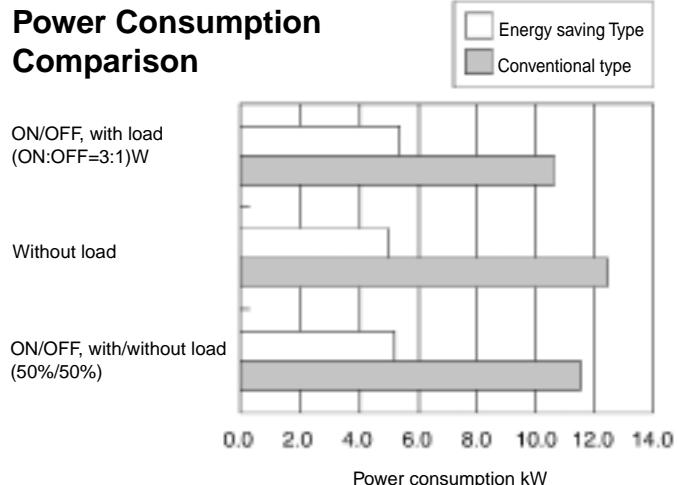
Features

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

Specifications

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

Power Consumption Comparison



Power Consumption Comparison

Conditions	Power consumption kW		Reduction rate
	Conventional type	Energy saving type	
ON/OFF, with load (ON:OFF=3:1)	10.6	5.4	△49.1%
Without load	12.4	5.0	△9.7%
ON/OFF, with/without load (50%/50%)	11.5	5.2	△54.8%

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

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

Thermo-Con Series

Thermo-electric (No-freon) Temperature Controller

Features

- Series expanded from small through medium sizes

Specifications

Model	Cooling capacity*	Temperature setting range	Control accuracy	Power supply
HEC105W	H110W			AC200V, 3A
HEC205W	230W			AC200V, 5A
HEC405W	350W	1060	0.03	AC200V, 4A
HEC605W	600W			AC200V, 5A
HEC1005W Prototype	1005W			AC200V, 10A

- 40% energy savings realized

Energy savings of 40% compared to previous models has been attained through the development of a new heat exchanger system.

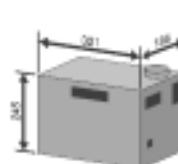
- Compatible with Fluorinert® and Galden® liquid.

(HEC405W, 605W)

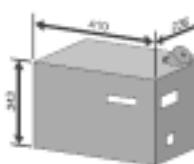
Available for heat exchange fluids such as Fluorinert® and Galden® liquid.

- Satisfies CE and SEMI standards.

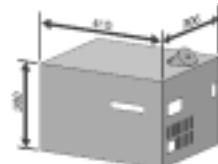
International safety standards can also be obtained.



HEC105W•205W



HEC405W



HEC605W

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.

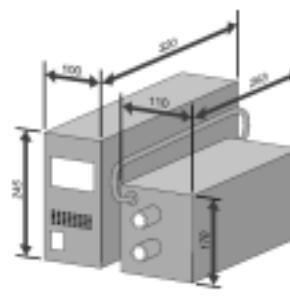
- Prevents metal contamination.

Prevents metal contamination by using a plastic heat exchanger containing almost no metals.

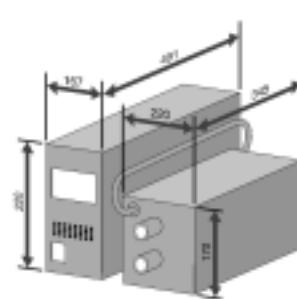
- Deposition of fluororesin film.

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.



240W type



450W type

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