

Components for industrial automation



CKD combines and integrates advanced technologies to build world-class systems that deliver exceptional productivity.

CKD

Our vast experience and comprehensive capabilities can solve problems in many fields and enhance the convenience of modern life. We will continue to work hard to embed our emerging technologies in factory automation and to meet the ever more sophisticated needs of our customers as their industries advanced into the future.



CKD is a global provider of quality products based on cutting-edge manufacturing techniques.

CKD has developed production systems to swiftly supply both domestic and overseas markets with quality products. The production plants also have their production systems geared to efficiently produce quality products while considering environmental friendliness.

Production System



ISO9001-certified
"Creating products" with superior quality.
JQA-0535 ISO9001
Automatic Machinery Division Production Headquarters



All of our divisions, from sales to manufacturing, have ISO14001 certification.
JQA-EM1149

Head Plant (Komaki City)

Main plant producing automatic machinery and FA systems



Kasugai Plant

Producing fluid control components for semiconductor manufacturing



Yokkaichi Plant

Meeting the needs of pneumatic components for inside and outside the country



Inuyama Plant

Producing high-function and high-performance and high-performance cylinders



CKD (CHINA) CORPORATION

Strategic supply base of global products



ISO 9001
No.31993



ISO14001
No.E2773



CKD THAI CORPORATION LTD.

Overseas production base to cover the ASEAN area



ISO 9001
No.17194



ISO14001
No.E528



CKD KOREA CORPORATION

Korean production base mainly for semiconductor-related components



M-CKD PRECISION SDN. BHD.

Malaysian base providing quick and reliable response for customers



PT CKD MANUFACTURING INDONESIA

Indonesian production base meeting the needs of the Indonesian market



ACTUATOR



PNEUMATIC VALVES



PNEUMATIC AUXILIARY COMPONENTS



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)



PNEUMATIC FILTER, REGULATOR, LUBRICATOR (F. R. L. UNITS)



RELATED PNEUMATIC PRODUCTS



DIRECT DRIVE MOTOR/INDEX



GENERAL PURPOSE VALVES



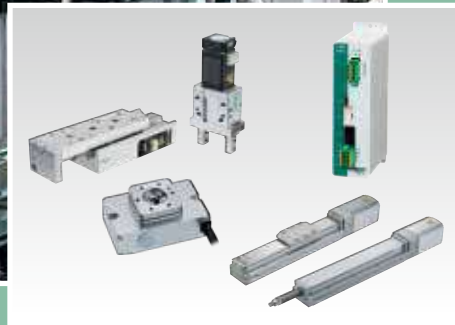
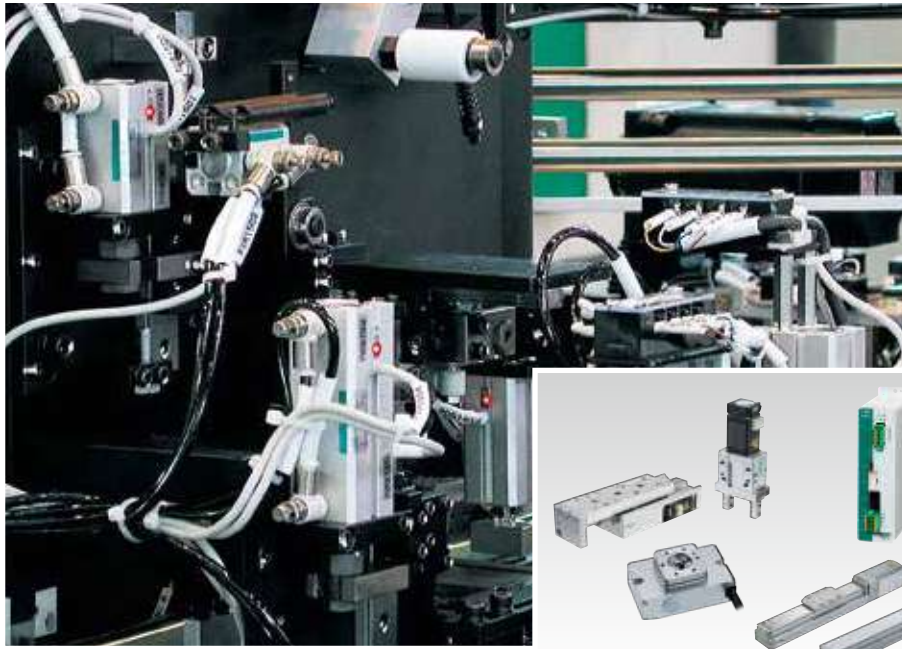
HIGH PURITY CHEMICAL GAS/ LIQUID CONTROL SYSTEMS

FP W P4 P7

SERIES BY INDUSTRY



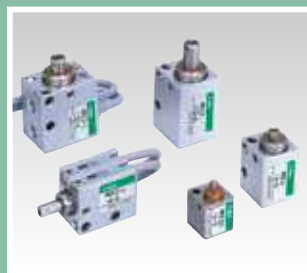
ACTUATORS



Satisfying the demand for automation with electric actuators and a variety of pneumatic cylinders from miniature to large bore sizes.



● Electric actuator



● Compact direct mounting cylinder



● Guided cylinder



● Super rodless cylinder



PNEUMATIC VALVES



CKD is meeting increasingly diverse market requirements by the continual application of our compressed air technologies.



● Compact pneumatic valves (Reduced wiring valve)



● Pneumatic valves (Reduced wiring valve)



● Pneumatic valves (Plug-in manifold)



RELATED PNEUMATIC PRODUCTS



Leave it to CKD "Clean Air System" to deliver total quality control for your compressed air.



● Refrigeration air dryers



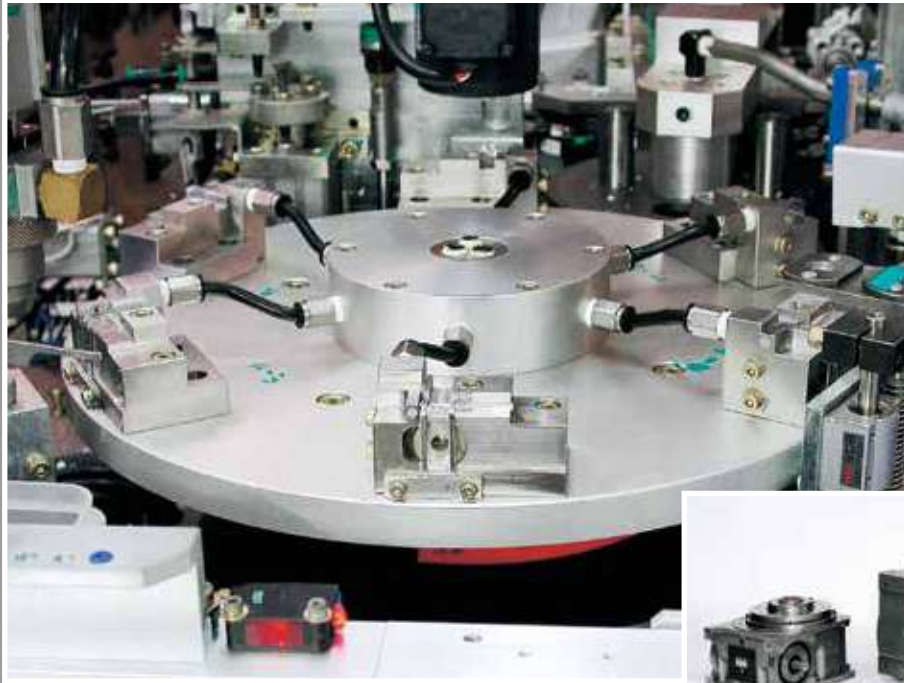
● F.R.L. combination



● SELVACS (vacuum system equipment)



● Speed controllers



In every type of drive system for processing, assembly, machining, CKD's labor saving machines provide robust performance at manufacturing sites everywhere.



● ABSODEX (DD actuator)



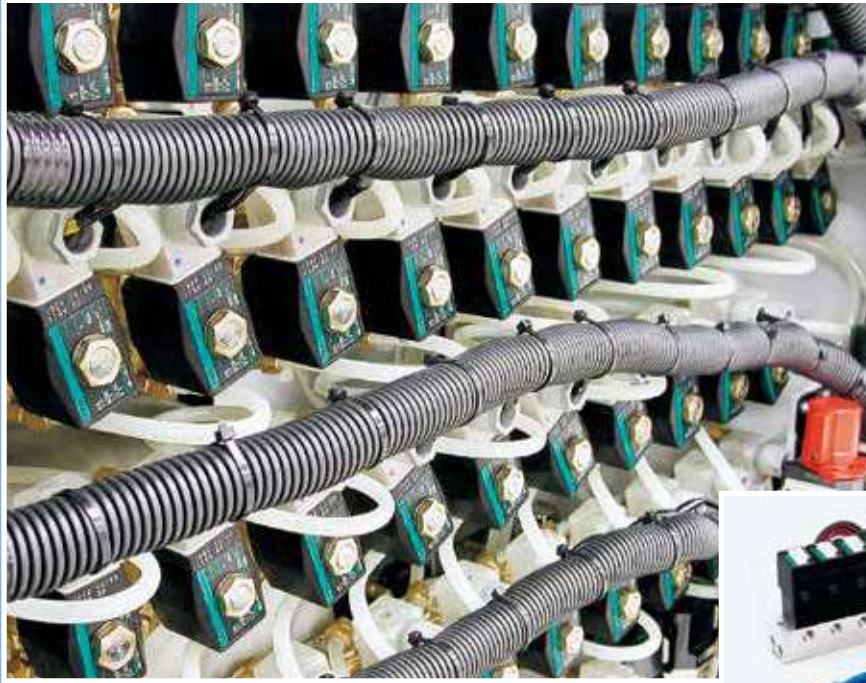
● Roller gear cam units



● Swivel P&P unit
● Linear P&P unit Arm A, Table B



GENERAL PURPOSE VALVES



Superb quality and product variety represent CKD's philosophy for fluid control devices.



● Pilot operated solenoid valves



● General purpose valves



● Cylinder valves



HIGH PURITY CHEMICAL GAS/ LIQUID CONTROL SYSTEMS



To control high purity fluids in semiconductor and liquid crystal fabrication, CKD's fluid control devices meet your toughest requirements in a super clean environment.



● Air operated valve for chemical liquids



● Valve for process gases



● Integrated gas supply systems



● Air operated valves for high vacuum

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Cutting-edge technologies friendly to humans and the environment contribute to comforts in a variety of fields.



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ACTUATORS

Succession and evolution,

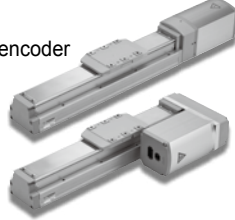
Stepper motor drive, a new product that is compact and highly rigid

Catalog CC-1422A



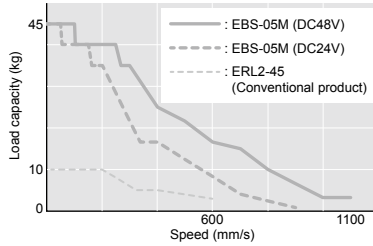
Slider EBS-M Series

- Ball screw drive, 3 sizes
- Equipped as standard with a battery-less absolute encoder
- Replaceable motor unit
- Motor mounting: 4 directions
- Max. load capacity: 80 kg (horizontal)
- Max. stroke: 1,100 mm
- Max. speed: 1,100 mm/s

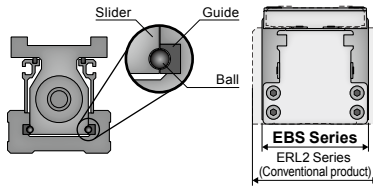


Significantly improved basic performance with new controller

- Max. load capacity: 45 kg (compared with conventional models 4.5x)
- Max. speed: 1,100 mm/s (1.8x)



Wide guide that is integrated with the body
Achieves both compactness and high rigidity simultaneously



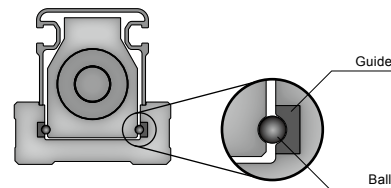
		ERL2-60 (conventional product)	EBS-05
Body width		64 mm	54 mm
Static allowable moment	MP	25.7 N·m	103 N·m
	MY	25.7 N·m	103 N·m
	MR	58 N·m	144 N·m

Rod with built-in guide EBR-M Series

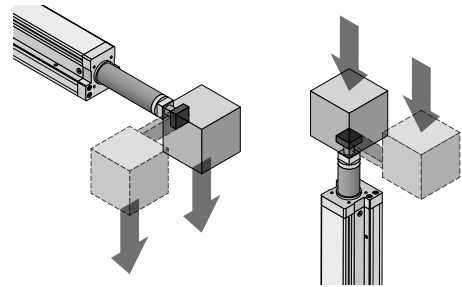
- Ball screw drive, 3 sizes
- Equipped as standard with a battery-less absolute encoder
- Replaceable motor unit
- Motor mounting: 4 directions
- Max. load capacity: 80 kg (horizontal)
- Max. stroke: 700 mm
- Max. speed: 900 mm/s



Rod with built-in guide



Supports offset workpieces



Stepper motor drive A new product that is compatible with pneumatic equipment and has the same capacity

Catalog CC-1444A

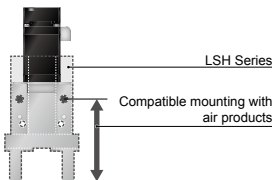


2-Finger Gripper FLSH Series

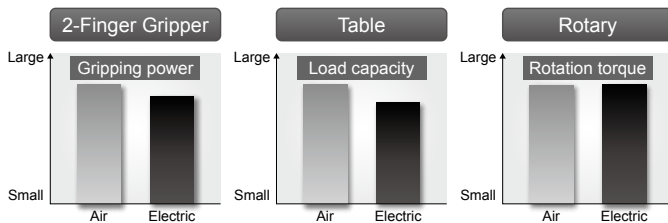
- Sliding screw drive
- 3 sizes
- Manual finger position adjustment
- Self-locking mechanism



Dimensions are compatible with the Air Hand LSH Series



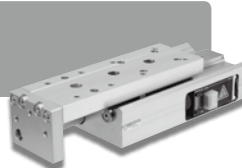
Capacity equal to that of air components



*At air pressure of 0.45 MPa. Comparison with the same size.

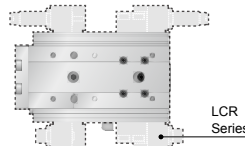
Table FLCR Series

- Ball screw + Belt drive
- 3 sizes
- Built-in motor saves space



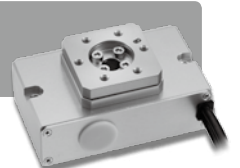
Dimensional compatibility with the Air type LCR Series

No shock absorber required, conserves space



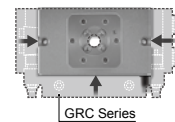
Rotary FGRC Series

- Worm gear + Belt drive
- 3 sizes
- Manual table position adjustment
- Self-locking mechanism



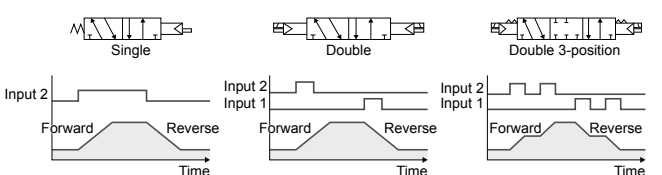
Conserves more space than the Air type GRC Series

No shock absorber required, compact body



Ease of use equivalent to air components

Single solenoid valve Double solenoid valve Three-position solenoid valve



wider possibilities and new options

"One controller" connects everything

Catalog CC-1422A

Catalog CC-1444A

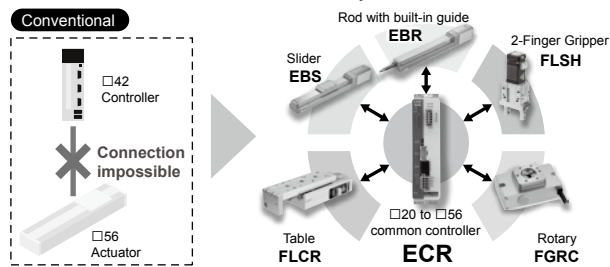


ACTUATORS

Controller ECR Series

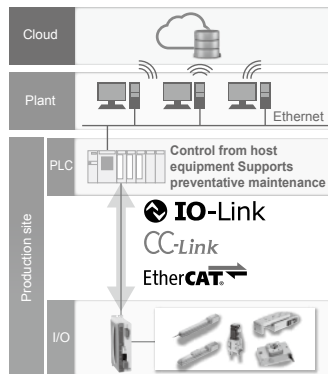
Reduced initial work hours and stock

- "One controller" that connects to any actuator
- Equipped with an automatic recognition function that reads actuator information
- With a common controller, work hours for selection and ordering can be reduced as well as inventory



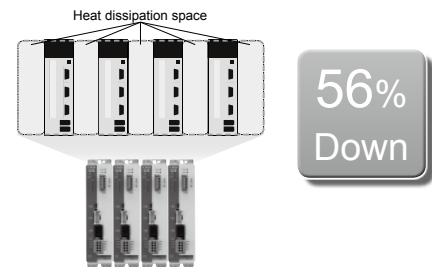
Supports IoT

- Our product is compatible with all types of industrial networks
- This allows control from host equipment over Ethernet, and also enables preventative maintenance



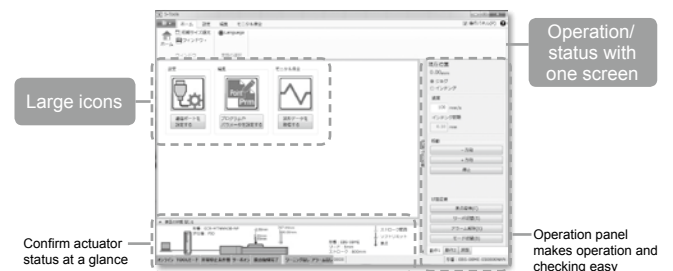
Reduced controller footprint

- Compact, allowing adjacent installation
- The optimized design eliminates the need for heat dissipation space at the sides
- This allows controllers to be installed next to one another



Reduces adjustment time

- Easy setup with "S-Tools" software
Inherits the operational feel of the popular AX-Tools software for ABSODEX. S-Tools can be downloaded from our website.



Stepper motor drive

Catalog CC-1219A

ERL2/ESD2 Series

- Slider/rod types available
- Motor mounting 4 directions
- Ultra-easy teaching
- Three types of controllers (63-point and 7-point positioning, pulse train)

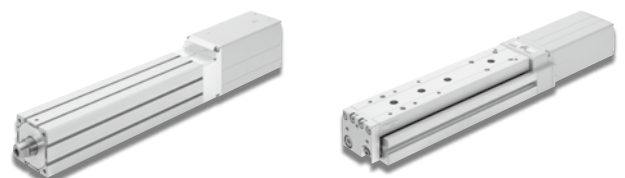


Stepper motor drive Built-in controller

Catalog CC-1002A

ESSD/ELCR Series

- Built-in controller
- Table/rod types available





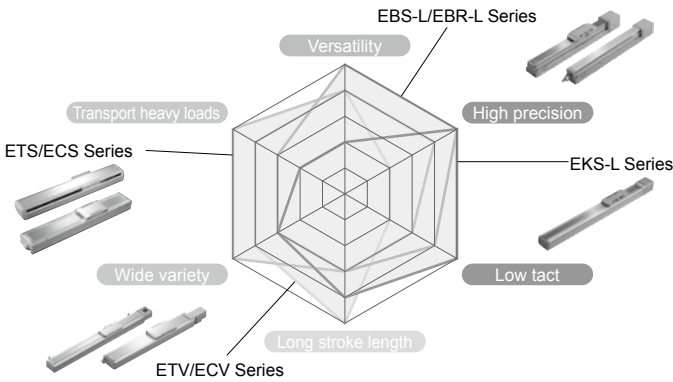
ACTUATORS

Wide motorless variations

Supported Motor Manufacturers List

	EBS-L EBR-L	ETS/ECS ETV/ECV	EKS-L
Mitsubishi Electric Corporation	●	●	●
Delta Electronics Co., Ltd.	●	●	●
Sanyo Denki Co., Ltd.	●	●	●
YASKAWA Electric Corporation	●	●	●
Keyence Corporation	●	●	●
Panasonic Corporation	●	●	●
OMRON Corporation	●	●	●
Fuji Electric Co., Ltd.	●	●	●
FANUC CORPORATION	●	●	●
DENSO WAVE Incorporated		● ^{*1}	
Bosch Rexroth AG	●	●	●
Rockwell Automation, Inc.	●	●	●
SIEMENS AG	●	●	●

* Refer to the catalog of each model for details about supported models and capacity.
 *1 Only compatible with metal stopper specifications (ETS-X).



EBS-M/EBR-M Series Motorless

Catalog CB-055A

Slider EBS-L Series

- Ball screw drive, 3 sizes
- Servo motor: Supports 50 to 200 W
- Max. load capacity: 50 kg (horizontal)
- Max. stroke: 1,100 mm
- Max. speed: 1,000 mm/s



Rod with built-in guide EBR-L Series

- Ball screw drive, 3 sizes
- Servo motor: Supports 50 to 200 W
- Max. load capacity: 50 kg (horizontal)
- Max. stroke: 700 mm
- Max. speed: 1,000 mm/s

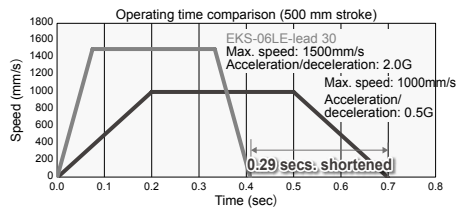


High-precision and high-tact motorless

EKS-L Series

- Ball screw drive, 5 sizes
- Outer rail with iron base used
- Servo motor: Supports 50 to 750 W
- Max. load capacity: 118.5 kg (horizontal)
- Max. stroke: 1,500 mm
- Max. speed: 2,500 mm/s

- Supports further increased equipment speeds
- Maximum acceleration/deceleration: 2 G



Wide motorless variations

ETS/ECS Series

- Ball screw drive, 8 sizes
- Servo motor: Supports 50 to 750 W
- Max. load capacity: 150 kg (horizontal)
- Max. stroke: 1,500 mm
- Max. speed: 2,000 mm/s
- ECS: Full cover low dust specification



Motorless with long stroke length

ETV/ECV Series

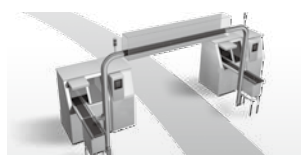
- Belt drive, 6 sizes
- Servo motor: Supports 100 to 750 W
- Max. load capacity: 85 kg (horizontal)
- Max. stroke: 3,500 mm
- Max. speed: 2,000 mm/s
- ECV: Full cover low dust specification



Electric shuttle mover

ESM Series

- Three-dimensional transport P&P system
- Belt drive
- Motors from various manufacturers can be mounted (motorless type)



Transport between three-dimensional devices



Long stroke with a max. length of 20 m



Electric actuator with servo motor drive

Flexible space and time at high speed

Catalog CC-1436A



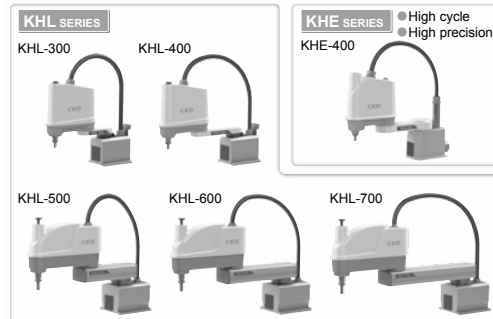
Horizontal articulated (SCARA) robot Standard KHL / High-precision KHE Series

- Compact with high operating performance
- Ideal for light press-fitting and screw tightening
- Easy-to-use PC software
- Can be connected to image processing systems from various manufacturers
- Compatible with all types of networks

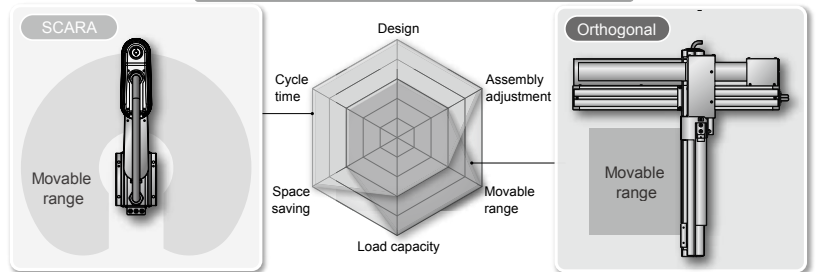
Ethernet / **PROFI BUS** / **DeviceNet**

CC-Link / **EtherNet/IP**

EtherCAT / **PROFI NET**



SCARA orthogonal benefit comparison

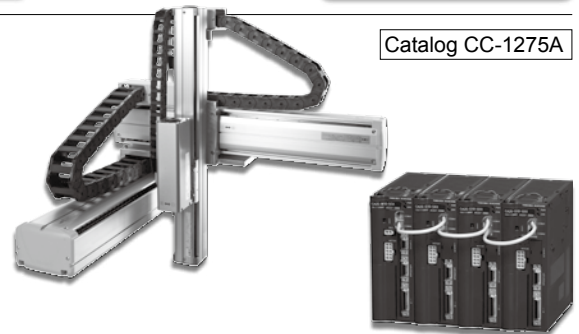


Combination method using one to four axes

Electric actuator **KBX Series**

- All models feature an absolute system
- Servo motor: 50 to 750 W
- Ball screw drive, 6 sizes, Max. stroke: 1,700 mm, Max. load capacity: 250 kg
- Belt drive, 4 sizes, Max. stroke: 4,450 mm, Max. load capacity: 200 kg
- Easy-to-use PC software
- I/O (NPN, PNP), **CC-Link**, **DeviceNet**
- Abundant variations can be constructed by combining standard modules

Catalog CC-1275A



<p>2 axes XY type</p>	<p>2 axes XZ type</p>	<p>2 axes YZ type</p>	<p>3 axes XYZ type</p>	<p>4 axes XYZR type</p> <p>It can even trace complex 3D shapes quickly and accurately</p>
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Pioneering. A new way to select linear models.

Catalog CC-1457A



Electric actuator **EKS-M Series / Driver NXD Series**

- Servo motor: 100 to 750 W
- 5 sizes
- Max. speed: 2,500 mm/s
- Max. stroke: 1,500 mm
- Max. load capacity: 118.5 kg

Shortened tact time

- Acceleration/deceleration: 2 G supported

Smaller equipment footprint

- Iron body that is highly resistant to load and moment



Compatible with all types of networks

- Four types of interfaces are available
- Adjust in real time while monitoring the waveform

- Setting tool "DES" with extensive functionality



CC-Link
EtherCAT
MECHATROLINK
Parallel I/O (NPN)



ACTUATORS

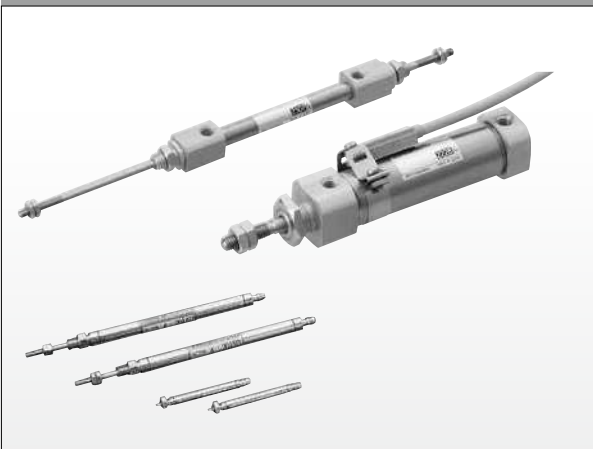
Standard

Pencil shaped cylinders

SCP*3 Series

- Lightweight and downsizing
- The following types are provided: double acting, single acting/push, pull, low speed, and heat resistance
- Space saving with compact standard switch T Series
- Copper and PTFE free as standard
- 5 bore sizes from $\varnothing 2.5$ to $\varnothing 16$

Bore size $\varnothing 2.5$ to $\varnothing 16$



Pneumatic Cylinders | CB-029SA

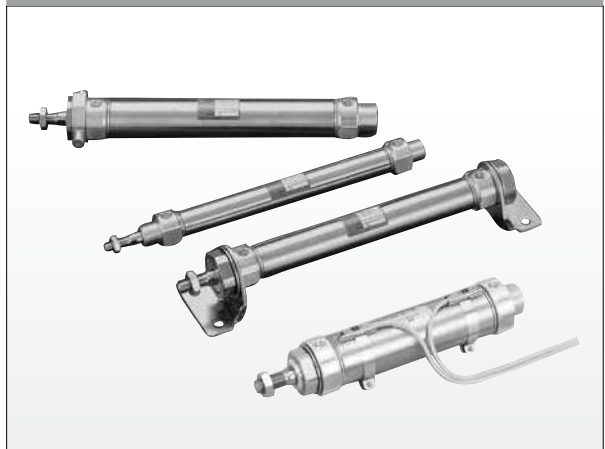
Standard

Medium bore size cylinders

CMK2 Series

- No lubrication, highly corrosion resistant, long life
- Diverse variation including double acting, single acting/push, pull, low speed, and heat resistance
- A variety of options, including bellows and rod material change
- Cylinder switch can be mounted as it is onto the standard cylinder
- 4 bore sizes: $\varnothing 20$, $\varnothing 25$, $\varnothing 32$, $\varnothing 40$
- Stainless steel material used for exterior

Bore size $\varnothing 20$ to $\varnothing 40$



Pneumatic Cylinders | CB-029SA

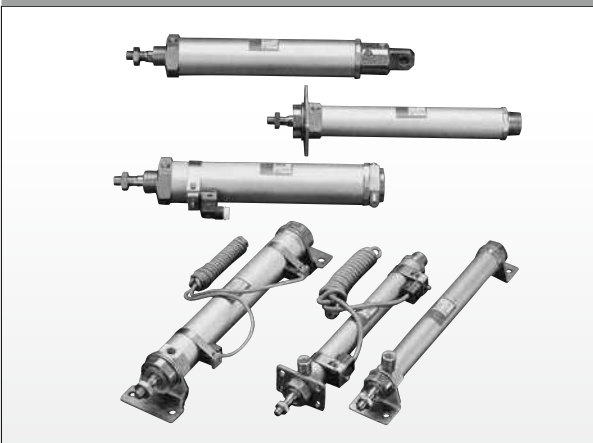
Standard

Medium bore size cylinders

CMA2 Series

- No lubrication, long life
- 2 variations: double acting and direct mounting types
- A variety of options, including bellows and rod material change
- Cylinder switch can be mounted as it is onto the standard cylinder
- 3 bore sizes: $\varnothing 20$, $\varnothing 30$, $\varnothing 40$

Bore size $\varnothing 20$ to $\varnothing 40$



Pneumatic Cylinders | CB-029SA

Standard

Round shaped cylinders

SCM Series

- The total length dimensions are short.
- Easy mounting
- Simple design
- Band method that allows cylinder switch to be desirably mounted or moved
- 8 bore sizes from $\varnothing 20$ to $\varnothing 100$

Bore size $\varnothing 20$ to $\varnothing 100$



Pneumatic Cylinders | CB-029SA

Standard

Tie rod air cylinders

SCG Series

- Global environment-friendly cylinder
- Port and needle on the same side, achieving easy mounting and adjustment
- The sizes of heavy duty scraper, coolant proof, and anti-spatter adherence are the same as the standard for easier installation
- A wide range of cylinder switch types
- 6 bore sizes from $\varnothing 32$ to $\varnothing 100$

Bore size $\varnothing 32$ to $\varnothing 100$ 

Pneumatic Cylinders I CB-029SA

Standard

Medium bore size cylinders

SCA2 Series

- No lubrication and highly reliable, with a wide range of series variations
- Lighter weight, higher corrosion resistance and shock resistance
- A wide range of cylinder switch types
- Cylinder switch can be mounted as it is onto the standard cylinder
- 5 bore sizes from $\varnothing 40$ to $\varnothing 100$

Bore size $\varnothing 40$ to $\varnothing 100$ 

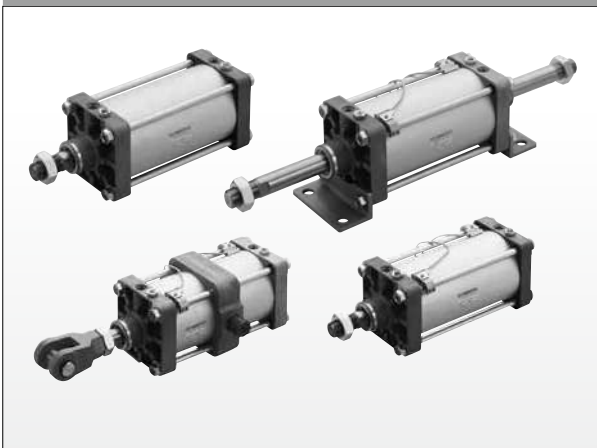
Pneumatic Cylinders I CB-029SA

Standard

Large bore size cylinders

SCS2 Series

- Select between no lubrication and lubrication
- A wide range of series variations, including high reliability, double rod, two-stage, low hydraulic, and heat resistant
- A wide range of cylinder switch types
- 6 bore sizes from $\varnothing 125$ to $\varnothing 250$

Bore size $\varnothing 125$ to $\varnothing 250$ 

Pneumatic Cylinders I CB-029SA

With valve

Compact cylinders with valves

CKV2 Series

- High corrosion resistance and long life by the use of stainless steel tubes
- Easy operation with piping, wiring, speed adjustment, and manual override all on the top
- Common exhaust available
- Easy speed adjustment
- 2 variations: double acting and rotation-stop type

Bore size $\varnothing 20$ to $\varnothing 40$ 

Pneumatic Cylinders I CB-029SA



With valve

Cylinder with valves

CAV2/COV*2 Series

- Cylinder/solenoid valves integrated
- Select between lubrication and no lubrication
- For solenoid valves, single and double types are available.
- Standard and short overall length types are available.
- A wide range of cylinder switch types

Bore size \varnothing 50 to \varnothing 100



Pneumatic Cylinders | CB-029SA

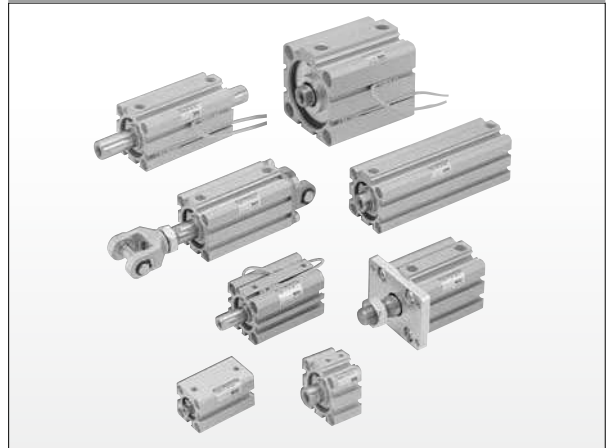
Space saving structure

Compact cylinders

SSD2 Series

- Cylinder switch grooves provided on four surfaces
- A variety of stroke settings enables ideal model selection according to the design.
- Option with rubber cushion of the same size
- A wide range of cylinder switch types
- 15 bore sizes from \varnothing 12 to \varnothing 200

Bore size \varnothing 12 to \varnothing 200



Pneumatic Cylinders | CB-029SA

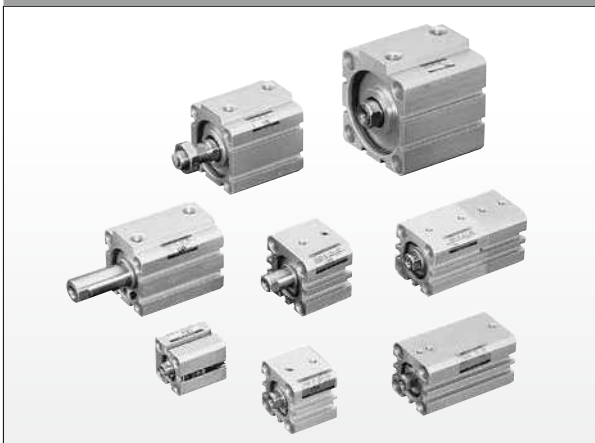
Space saving structure

Compact cylinder

SSD Series

- Space saving and downsizing of total length dimensions
- Miniature cylinder switch is neatly integrated into the body.
- Can be mounted directly with hexagon socket head cap screw.
- A wide range of cylinder switch types
- 13 bore sizes from \varnothing 12 to \varnothing 160

Bore size \varnothing 12 to \varnothing 160



Pneumatic Cylinders | CB-029SA

Space saving structure

Guided super compact cylinder

SST Series

- The SSD2 series is equipped with a guide rod, improving the lateral load resistance and rotation performances.
- Equipped with user-friendly plate
- Cylinder switch grooves provided on four surfaces
- 10 bore sizes from \varnothing 12 to \varnothing 100

Bore size \varnothing 12 to \varnothing 100



Pneumatic Cylinders | CB-029SA

Space saving structure

Compact direct mounting cylinders

MDV Series

- Rod metal rim is threaded for direct installation.
- Total length dimension and outside dimension are minimized to reduce installation space.
- Miniature switch equipped

Bore size $\varnothing 6, \varnothing 10$



Compact direct mounting cylinder MDV Series CC-905A

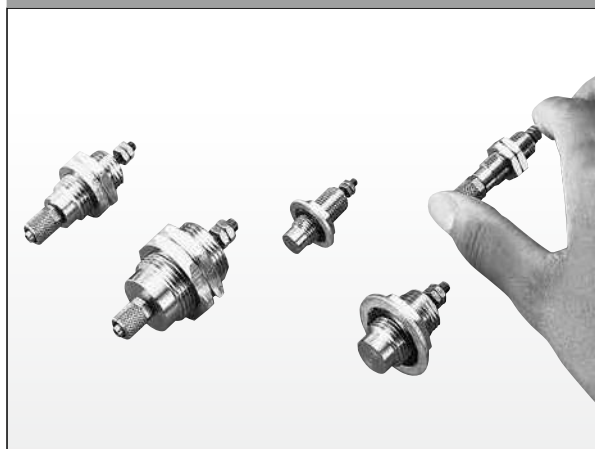
Space saving structure

Cartridge cylinders

CAT Series

- Miniature single acting cylinder with the thumb size of total length
- Full-thread exterior for easy mounting onto a panel
- 3 bore sizes: $\varnothing 6, \varnothing 10, \text{ and } \varnothing 15$

Bore size $\varnothing 6 \text{ to } \varnothing 15$



Pneumatic Cylinders I CB-029SA

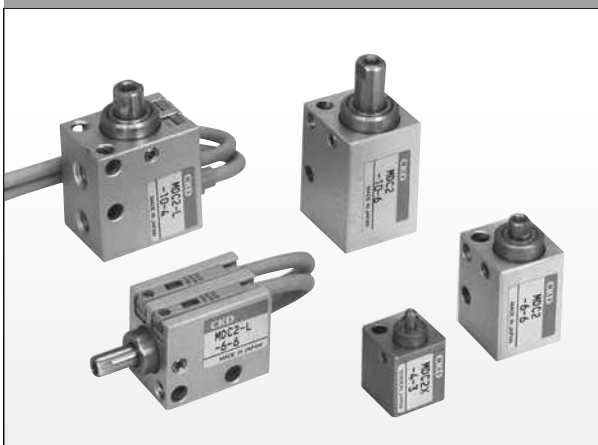
Space saving structure

Compact direct mounting cylinders

MDC2 Series

- Square body for direct mounting
- Minimized total length dimension and outside dimension for smaller installation space
- Spigot provided in the rod metal section. Easy centering
- Select between double acting and single acting depending on the use
- Miniature reed/proximity switch can be mounted.

Bore size $\varnothing 4 \text{ to } \varnothing 10$



Pneumatic Cylinders I CB-029SA

Space saving structure

Small cylinders with suction pads

MVC Series

- Workpiece suction portion and vacuum path are provided on the guide rod as standard.
- Guide rod for rotation-stop is provided as standard.
- Socket type suction pad ($\varnothing 2 \text{ to } \varnothing 10$) can be mounted on the rod end.
- Square body allows it to be mounted directly from 2 directions.
- Miniature cylinder switch is integrated into the body groove.

Bore size $\varnothing 6, \varnothing 10$



Pneumatic Cylinders I CB-029SA



ACTUATORS

Space saving structure

Compact cylinders

SMG Series

- Space saving and lightweight with integration of mount block (33% lighter and 23% less space compared with conventional models)
- Direct mounting from 5 surfaces freely as standard
- Improved maintainability with new mounting method
- Addition of rotation-stop type (M), fine speed (F), and clean-room specifications (P7*/P5*)

Bore size $\phi 6$ to $\phi 32$



Pneumatic Cylinders I CB-029SA

Space saving structure

Small compact cylinders

MSD/MSDG Series

- Axial direction length reduced. Mounting space reduced
- Design with long service life 4 times greater than conventional models
- Oil-impregnated copper alloy bearing for rod bearing section to increase abrasion resistance
- Select between body side surface and bottom surface for piping
- Can be mounted directly from 3 directions

Bore size $\phi 6$ to $\phi 16$



Pneumatic Cylinders I CB-029SA

Space saving structure

Flat compact cylinders

FC* Series

- Rectangle flat cylinder with 50% reduction in dimension in the cylinder width direction
- Easy mounting in narrow spaces
- Has rotation-stop function as standard for flat type
- A wide range of cylinder switch types
- 5 bore sizes from $\phi 25$ to $\phi 63$

Bore size $\phi 25$ to $\phi 63$



Pneumatic Cylinders I CB-029SA

With brake

Free position flat cylinders with position locking

UFCD Series

- Can be locked at any position as long as the piston rod remains still
- Easy to remove even with workpiece clamped as the cylinder moves freely in the reverse lock direction
- Space saving/simple design
- No need to provide a separate rotation-stop mechanism because the cylinder body has a rotation-stop function due to the oval piston structure
- 5 bore sizes from $\phi 25$ to $\phi 63$

Bore size $\phi 25$ to $\phi 63$



Pneumatic Cylinders II CB-030SA

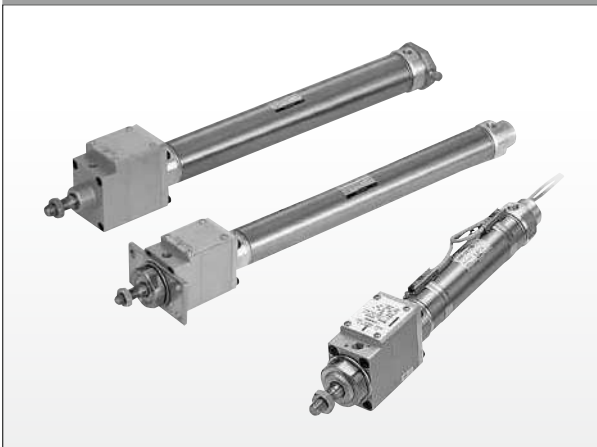
With brake

Brake cylinders

ULKP/ULK Series

- Use of newly developed swash plate providing surface contact, significantly raising rod holding force
- Easy brake release. Simply return the brake plate to the original angle
- Stopping accuracy ± 1 mm or less (300 mm/s without load)
- A wide range of cylinder switch types
- 5 bore sizes: $\varnothing 16$, $\varnothing 20$, $\varnothing 25$, $\varnothing 32$, $\varnothing 40$

Bore size $\varnothing 16$ to $\varnothing 40$



Pneumatic Cylinders II CB-030SA

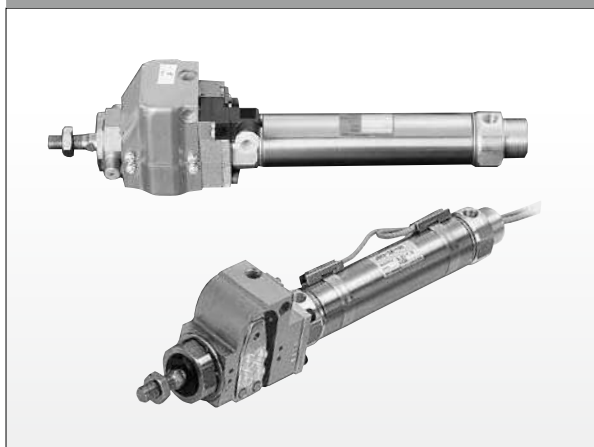
With brake

Brake cylinders

JSK2/JSM2 Series

- No lubrication cylinder equipped with unique mechanical brake
- In the case of pressure drop or power off, the rod is immediately locked to ensure safety.
- Stopping accuracy ± 1 mm or less (300 mm/s without load)
- A wide range of cylinder switch types
- 4 bore sizes for JSK2: $\varnothing 20$, $\varnothing 25$, $\varnothing 32$, $\varnothing 40$. 3 bore sizes for JSM2: $\varnothing 20$, $\varnothing 30$, $\varnothing 40$.

Bore size $\varnothing 20$ to $\varnothing 40$



Pneumatic Cylinders II CB-030SA

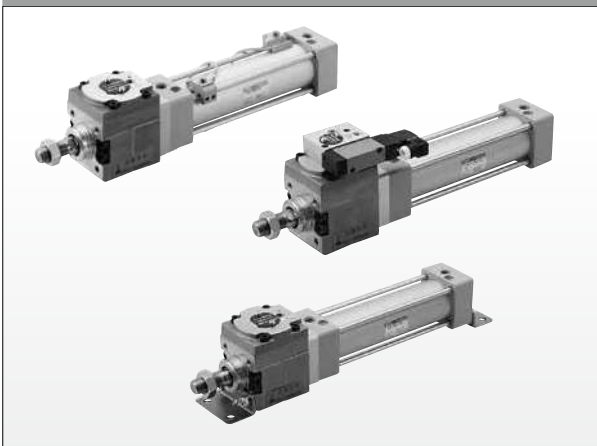
With brake

Tie rod cylinders with brake

JSG Series

- Use of the same brake mechanism as that of the highly reputed JSC3 Series
- Strong rod holding force equivalent to twice the thrust due to unique locking mechanism
- Compact and reliable brake section
- A wide range of cylinder switch types
- 5 bore sizes from $\varnothing 40$ to $\varnothing 100$

Bore size $\varnothing 40$ to $\varnothing 100$



Pneumatic Cylinders II CB-030SA

With brake

Brake cylinders

JSC3 Series

- Highly reliable medium bore size cylinder equipped with unique mechanical brake
- In the case of pressure drop or power off, the rod is immediately locked to ensure safety.
- Stopping accuracy ± 1 mm or less (300 mm/s without load)
- A wide range of cylinder switch types
- 5 bore sizes from $\varnothing 40$ to $\varnothing 100$

Bore size $\varnothing 40$ to $\varnothing 100$



Pneumatic Cylinders II CB-030SA



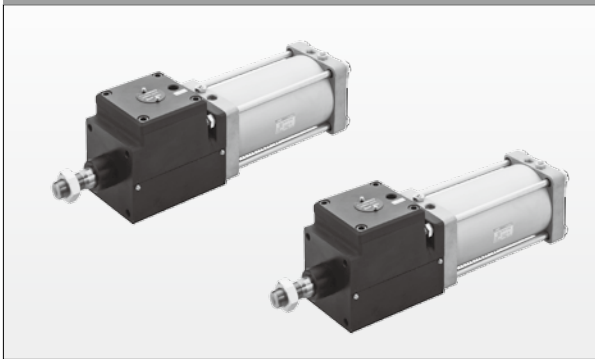
With brake

Brake cylinders

JSC4 Series

- Compact switch equipped
Smaller T switch than the conventional. Saves space by eliminating protrusions when mounted.
- Magnet provided as standard [LN, LH]
Now all models (LN, LH) can handle additionally mounted switches.
- Port and needle on the same surface
The air supply/exhaust ports and cushion needle are positioned on the same surface. Easier installation and adjustment of the cylinder.
- Dimensional compatibility [except LH]
Dimensional compatibility with the conventional model (JSC3) facilitates maintenance. (* The piping port positions are different.)

Bore size $\varnothing 125$ to $\varnothing 180$



Pneumatic Cylinders II CB-030SA

With brake

Position locking compact cylinders

USSD Series

- Compact cylinder with free position locking mechanism as standard
- Can be locked at any position in the stroke including the end of the stroke.
- Select between forward lock and backward lock
- The rod moves freely in the lock's reverse direction.
- Easy lock release. Simply return the lock plate to the original angle

Bore size $\varnothing 20$ to $\varnothing 100$



Pneumatic Cylinders II CB-030SA

With brake

Free position locking medium bore size cylinders

USC Series

- Medium bore size cylinder with free position locking mechanism as standard
- Can be locked at any position in the stroke including the end of the stroke.
- Select between forward lock and backward lock
- Easy lock release. Simply return the lock plate to the original angle

Bore size $\varnothing 40$ to $\varnothing 100$



Pneumatic Cylinders II CB-030SA

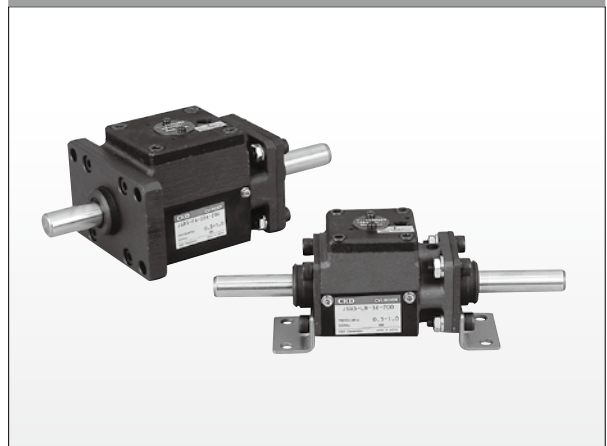
With brake

Brake units

JSB3 Series

- New independent series of the brake section of brake cylinder
- Powerful holding force of 980 N to 19608 N provided according to $\varnothing 16$ to $\varnothing 45$ rod diameter
- Stopping accuracy ± 1 mm or less (300 mm/s without load)

Rod diameter $\varnothing 16$ to $\varnothing 45$



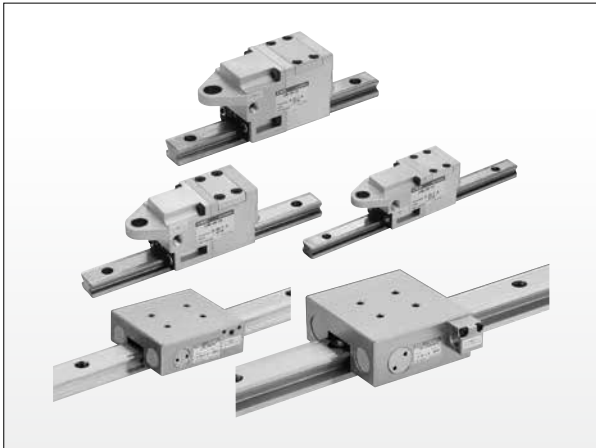
Pneumatic Cylinders II CB-030SA

With brake

Linear guide locks

LML/LMB Series

- Compact but powerful holding force.
- Very little backlash when locked
- Unit available for holding when stopped, stopping in emergencies, or position locking
- Unlocked by air supply (Manual release is also available)
- Dust-proofing handled by a scraper provided as standard in front of and behind the lock unit



Pneumatic Cylinders II CB-030SA

Combined functions

Guided cylinders

STM Series

- Rigid and lateral load resisting cylinder with excellent rod non-rotating accuracy
- Super compact space saving type in guided cylinders
- Supports rear piping and side mounting
- Two types: metal bush bearing and ball bearing

Bore size $\varnothing 6, \varnothing 10$



Pneumatic Cylinders II CB-030SA

Combined functions

Guided cylinders

STG Series

- Environment compatible products
- Lighter weight, resource saving
- Piping in two directions: front and side, Mounting on 3 surfaces: front, side, and bottom
- 10 bore sizes from $\varnothing 12$ to $\varnothing 100$

Bore size $\varnothing 12$ to $\varnothing 100$



Pneumatic Cylinders II CB-030SA

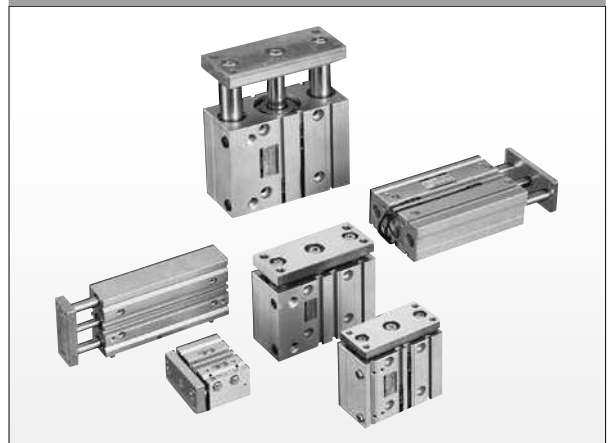
Combined functions

Guided cylinders

STS/L Series

- Max. stroke length of 400 mm $\varnothing 20$ to $\varnothing 80$
- Increases equipment accuracy when embedded
Two guide rods with metal bush bearing or ball bearing
- Sleek design No protrusion, Space saving
- Can be used with heavy loads Has two guide rods
- End plate material options

Bore size $\varnothing 8$ to $\varnothing 100$



Pneumatic Cylinders II CB-030SA



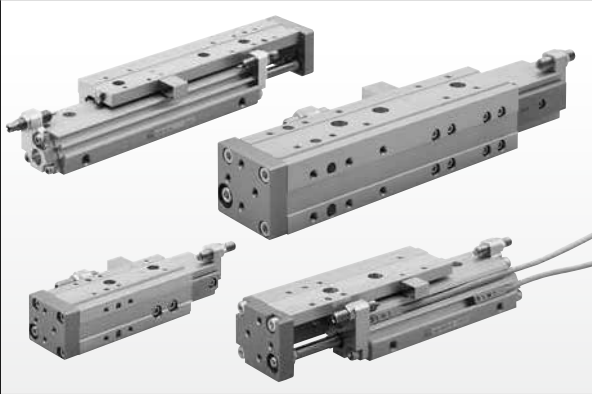
Combined functions

Linear slide cylinders

LCW Series

- Specs most used by customers are provided as standard
3 bore sizes (ø12, 16, 20) and 3 stroke types (30, 50, 75)
Stroke length adjustment function provided as standard
- Inherits the DNA of LCR, achieving high rigidity and light weight
- 3-surface mounting
Use of an innovative L-shaped table, greatly improving flexibility in design
- Piping and wiring direction on the same surface
Neat wiring and piping, improving workability and visibility
- Compact, space saving
Reduction of axial direction by 27% and area ratio by 20%.

Bore size ø12, ø16, ø20



Pneumatic Cylinders II CB-030SA

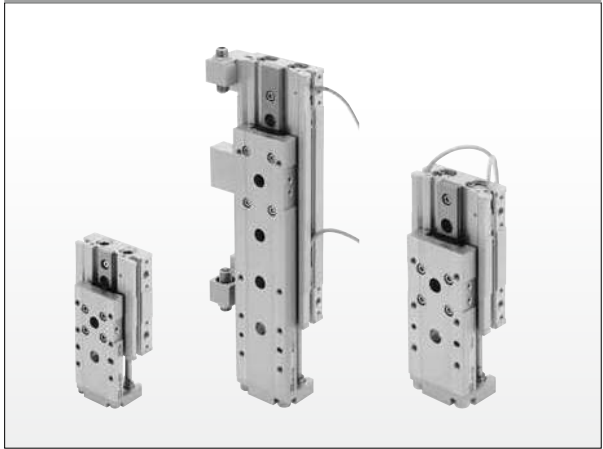
Combined functions

Linear slide cylinders Standard models

LCR Series

- Up to 10% lighter compared with previous models by using an aluminum table
- The highly rigid linear guide and slide table improve rigidity, surpassing the conventional models in rigidity
- More flexible designs with laterally symmetrical stoppers, multi-side piping, and positioning hole availability

Bore size ø6 to ø25



Pneumatic Cylinders II CB-030SA

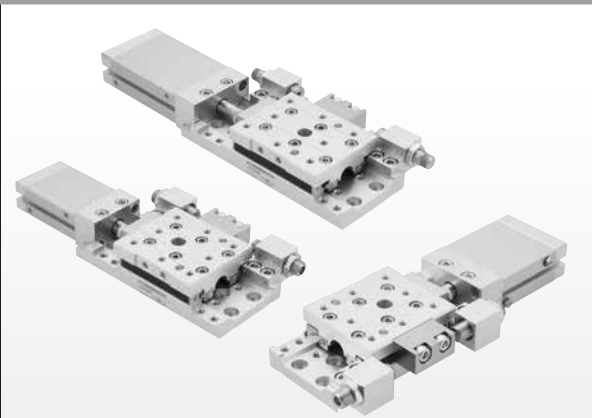
Combined functions

Linear slide cylinders Thin/Lightweight/High rigidity

LCX Series

- Low-profile design
About 50% thinner than the conventional model. The thickness has been reduced from 60 mm to 34 mm, which is ideal for saving space.
- Efficient, energy-saving
50% lighter than the conventional model, enabling the movable part to be reduced in weight
- High precision/high rigidity
Uses a separated linear guide.
- Components can be combined as desired. Select from various options such as position locking, long stroke length and type with positioning hole.

Bore size ø25, ø32



Pneumatic Cylinders II CB-030SA

Combined functions

Linear slide cylinder Ultra-high rigidity models

LCG Series

- Use of the widest guide in the industry, achieving the industry's first ultra-high rigidity
- Up to 10% lighter compared with previous models by using an aluminum table
- The highly rigid linear guide and slide table improve rigidity, surpassing the conventional models in rigidity
- More flexible designs with laterally symmetrical stoppers, multi-side piping, and positioning hole availability

Bore size ø6 to ø25



Pneumatic Cylinders II CB-030SA

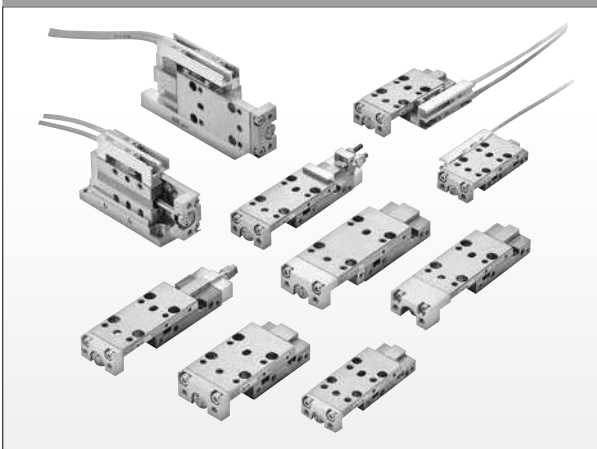
Combined functions

Linear slide cylinder Miniature models

LCM Series

- High precision positioning
- The compact body can fit in a narrow, small space, allowing for more flexible piping.
- A workpiece can be directly mounted on the top and side.
- The cylinder body and slide table are corrosion-resistant stainless steel.
- Uses linear guide with contact at four points. Withstands load from all directions.

Bore size $\varnothing 4.5$ to $\varnothing 8$



Pneumatic Cylinders II CB-030SA

Combined functions

Twin rod cylinder

STR2 Series

- High level of non-rotating accuracy
- Bearing options
Two types are available: metal bush bearing and ball bearing.
- Space saving
Switch fits neatly into cylinder body.
- Ultra-compact type is available.
Miniature $\varnothing 6$ bore size has been added.
- Piping ports can be installed on either side.

Bore size $\varnothing 6$ to $\varnothing 32$



Pneumatic Cylinders II CB-030SA

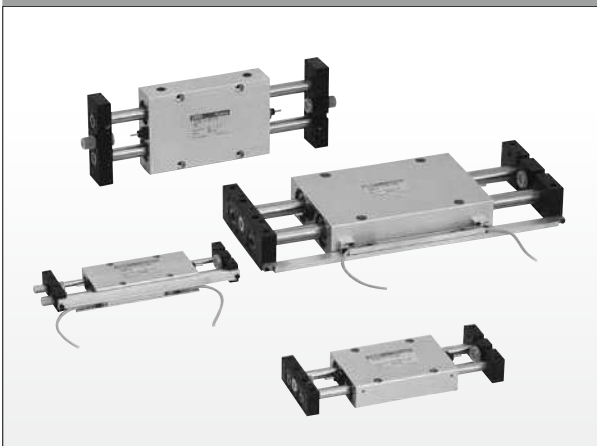
Combined functions

Unit cylinder

UCA2 Series

- Ideal for simple robots
Modular design enables simple robots for assembling and conveying.
- Two fixing methods
Two fixing methods are available: body fixing and end plate fixing.
- High position accuracy
The double rod has excellent track position accuracy.

Bore size $\varnothing 10$ to $\varnothing 32$



Pneumatic Cylinders II CB-030SA

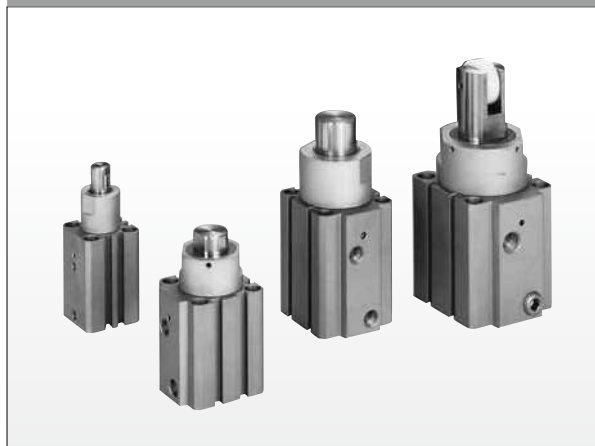
Combined functions

Stopper cylinders

STK Series

- Design for high load
Uses 1-rank thicker rod than the normal rod diameter.
- Direct mounting
Can be mounted directly with hexagon socket head cap screw.
- Space saving/square shape
- 3 types of actuation
Double acting, single acting pull, or double acting/spring integrated are available depending on the usage.
- Nozzle shape options
Round rod, chamfered, and roller are available.

Bore size $\varnothing 20$ to $\varnothing 50$



Pneumatic Cylinders I CB-029SA



ACTUATORS

Combined functions

Stopper cylinders

STA2 Series

- Adjustable shock absorber is adopted to support various loads.
- Select either resin or steel for roller material
- Select either double acting or double acting spring integrated for actuation

Bore size $\varnothing 50$



Stopper cylinder STA2 Series CC-1005A

High speed

High speed cylinders

HCA Series

- High-speed drive with a new packing
- Speed: 3,000 mm/s. Meets a wide range of conditions
- Smooth shock absorption even at 3,000 mm/s
- 8 bore sizes from $\varnothing 20$ to $\varnothing 100$

Bore size $\varnothing 20$ to $\varnothing 100$



Pneumatic Cylinders II CB-030SA

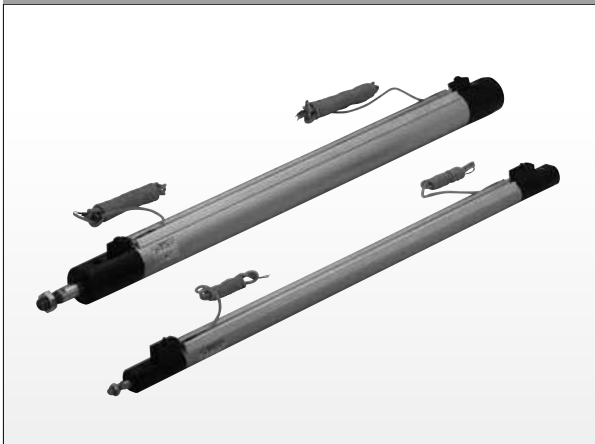
High speed

High energy absorption cylinders

HCM Series

- New cushion mechanism enables the stroke end to smoothly stop.
- Speed: 2,000 mm/s. Meets a wide range of conditions. Easy adjustment mechanism
- Five times higher impact absorption than conventional cylinder
- Floating method provided for cushion packing. Pop-out prevention at the start
- 6 bore sizes from $\varnothing 20$ to $\varnothing 63$

Bore size $\varnothing 20$ to $\varnothing 63$



Pneumatic Cylinders II CB-030SA

Rodless

Rodless cylinders

SRL3 Series

- Thin design achieving very low table with flat piston
- Piston is flat, with a structure allowing it to receive load. Highly load-resistant, with rotation-stop mechanism also provided.
- High-speed use is available with high-speed packing
- Select between common port (one-side piping) and standard port
- A wide range of variations including guided, position locking type, and dust cover type
- 10 bore sizes from $\varnothing 12$ to $\varnothing 100$

Bore size $\varnothing 12$ to $\varnothing 100$



Pneumatic Cylinders I CB-029SA

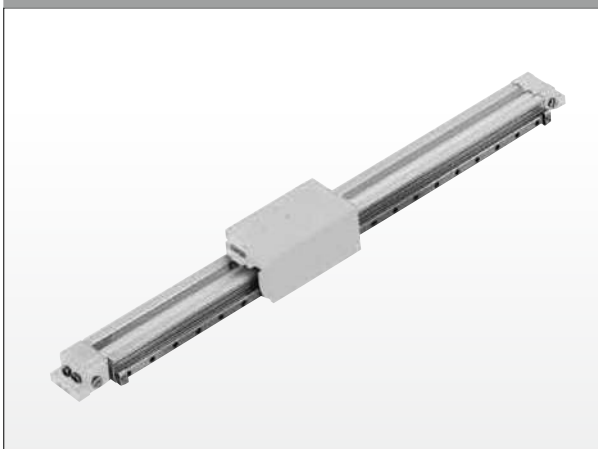
Rodless

High precision guided rodless cylinders

SRG3 Series

- Rodless cylinder with 1-axis high precision guide integrated
- 4 bore sizes from $\varnothing 12$ to $\varnothing 25$
- High-speed use is available with high-speed packing
- Select between common port (one-side piping) and standard port
- A wide range of cylinder switch types

Bore size $\varnothing 12$ to $\varnothing 25$



Pneumatic Cylinders I CB-029SA

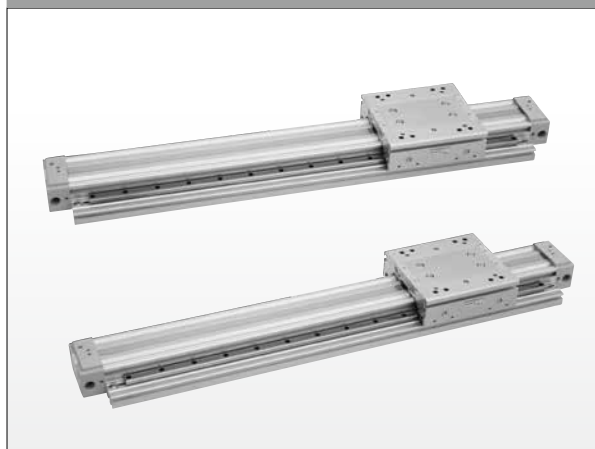
Rodless

High precision guided rodless cylinders

SRM3 Series

- Rodless cylinder with 2-axis high precision guide integrated
- A tube can be directly fixed to top or bottom surface. The bottom surface is equipped with T groove.
- Select between common port (one-side piping) and standard port
- A wide range of cylinder switch types
- 4 bore sizes: $\varnothing 25$, $\varnothing 32$, $\varnothing 40$, and $\varnothing 63$

Bore size $\varnothing 25$ to $\varnothing 63$



Pneumatic Cylinders I CB-029SA

Rodless

Rodless cylinders with brake

SRT3 Series

- Rodless cylinder with newly developed surface-contact swash plate integrated
- Easy brake release. Simply return the brake plate to the original angle
- Stopping accuracy ± 1 mm or less (300 mm/s without load)
- A wide range of cylinder switch types
- 8 bore sizes from $\varnothing 12$ to $\varnothing 63$

Bore size $\varnothing 12$ to $\varnothing 63$



Pneumatic Cylinders I CB-029SA

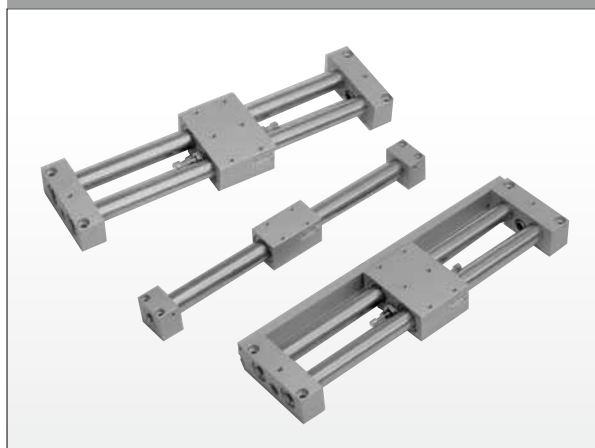
Rodless

Magnet rodless cylinders

MRL2 Series

- A thin design with a low slide table. Direct mounting
- Two types of pistons are available: single (1 piston) and twin (2 pistons).
- For piping, axial direction or side surface can be selected.
- Twin (2 pistons) type has twice the cylinder thrust.
- Proximity cylinder switch can be mounted.
- 6 bore sizes from $\varnothing 6$ to $\varnothing 32$

Bore size $\varnothing 6$ to $\varnothing 32$



Pneumatic Cylinders I CB-029SA



ACTUATORS

Rodless

Magnet rodless cylinders with high precision guides

MRG2 Series

- High precision and high rigidity with linear guide
- A thin design with a low slide table. Direct mounting
- Single surface common piping is possible
- 2 surfaces for workpiece mounting
- A wide range of cylinder switch types
- Bore sizes: $\varnothing 10$, $\varnothing 16$, and $\varnothing 25$

Bore size $\varnothing 10$ to $\varnothing 25$



Pneumatic Cylinders I CB-029SA

Rodless

Shuttle mover

SM-25 Series

- Combination of units enables flexible three-dimensional transport.
- Use of O-ring for the connection part of each unit achieves no air leakage and simple structure for easy assembly.

Bore size $\varnothing 25$



Pneumatic Cylinders I CB-029SA

Special

Clamp cylinders

CAC4 Series

- Cylinder dedicated for clamp
- A variety of switches can be mounted including reed, proximity, 2-color display, and strong magnetic field.
- 4 bore sizes: $\varnothing 40$, $\varnothing 50$, $\varnothing 63$, and $\varnothing 80$
- Two types of switch mounting methods are available: band method, which enables flexible adjustment of rotation and travel of the switch, and tie rod method.

Bore size $\varnothing 40$ to $\varnothing 80$



Pneumatic Cylinders II CB-030SA

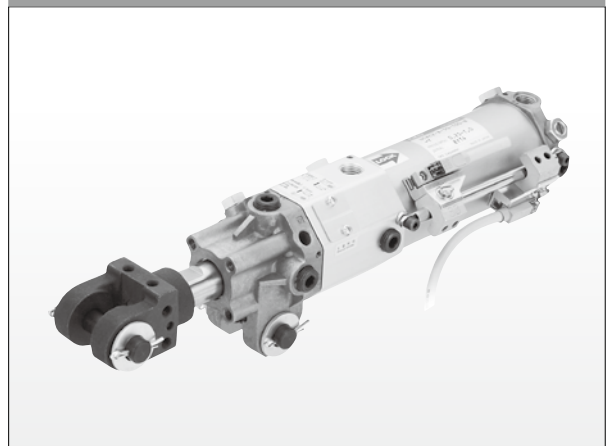
Special

Position locking clamp cylinders

UCAC2 Series

- Clamp cylinder with free position locking mechanism as standard
- Can be locked at any position.
- Select between forward lock and backward lock
- The rod moves freely in the lock's reverse direction.
- Easy lock release. Simply return the lock plate to the original angle
- Two types of switch mounting methods are available: band method, which enables flexible adjustment of rotation and travel of the switch, and tie rod method.

Bore size $\varnothing 50$, $\varnothing 63$



Pneumatic Cylinders II CB-030SA

Special

Lightweight clamp cylinders/lightweight position locking clamp cylinders

CAC-N32/40 Series

- For the cylinder main unit, highly reliable, lightweight CMK2 Series is used.
- A variety of switches can be mounted including reed, proximity, 2-color display, and strong magnetic field.

UCAC-N32/40 Series

- CAC-N Series with free position locking mechanism
- Can be locked at any position when the cylinder is stationary.
- Lock reverse direction is free

Bore size $\phi 32, \phi 40$ 

Pneumatic Cylinders II CB-030SA

Special

Rotary clamp cylinders

RCS Series

RCC2 Series

- Space saving/square shape
- Two guide grooves are provided on all bore sizes to improve the abrasion resistance of the grooves.
- 6 bore sizes from $\phi 16$ to $\phi 63$

Bore size $\phi 16$ to $\phi 63$ 

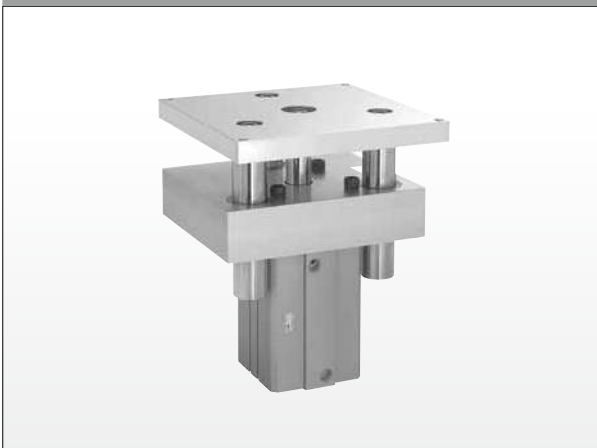
Pneumatic Cylinders II CB-030SA

Special

Lifter cylinder

LFC-KL Series

- Allowable eccentric load and allowable torque improved
- Rubber air cushion to effectively reduce the impact noise and collision acceleration at stroke end is equipped as standard
- Improved usability with a larger table surface
CKD direct drive actuator ABSODEX Series can be mounted.

Bore size $\phi 100$ 

Lifter cylinder LFC-KL Series CC-902A

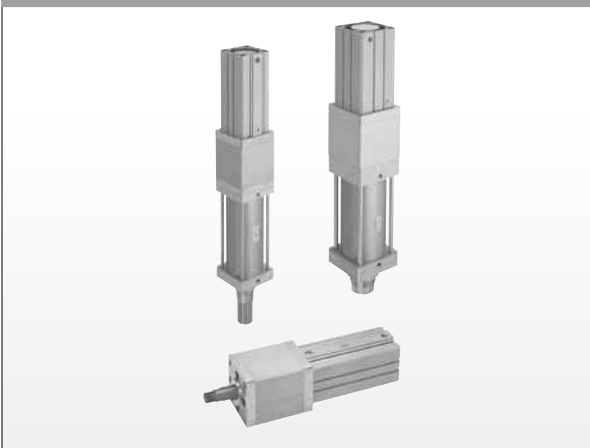
Special

Mechanical power cylinders

MCP Series

- 2 t or 5 t high thrust power at your desired position with a pneumatic source alone
- An environmentally considerate cylinder using a pneumatic circuit that does not allow waste oil to occur
- Both the travel and booster cylinders have almost the same bore size for saving space
- Flexible mounting direction

Effective thrust: 2 t, 5 t



Mechanical power cylinder MCP Series CC-958A



ACTUATORS

Special

Balancer units

BBS Series

- Up to 5 kg of load balance for a load maximum of 200 kg, raising workpieces with less force
- Brake as standard equipment. Safety mechanisms preventing a workpiece from falling even if air is shut off
- Auto recognition of the change in weight of each workpiece, holding ideal balance (BBS-A)
- All air method available with no electricity required. Available in explosion-proof conditions

Bore size $\varnothing 50$ to $\varnothing 100$



Balancer unit BBS Series CC-960A

Related products

Ultra low sliding balance cylinder

BBS Series

- Balance cylinder that prevents operator stress
- Has position locking mechanism for safety concerns (BBS-OU)
- Special packing and treatment for low sliding
- Compatible with lateral load as well (BBS-OS/OU-B)



Ultra low sliding balance cylinder BBS Series CC-1212A

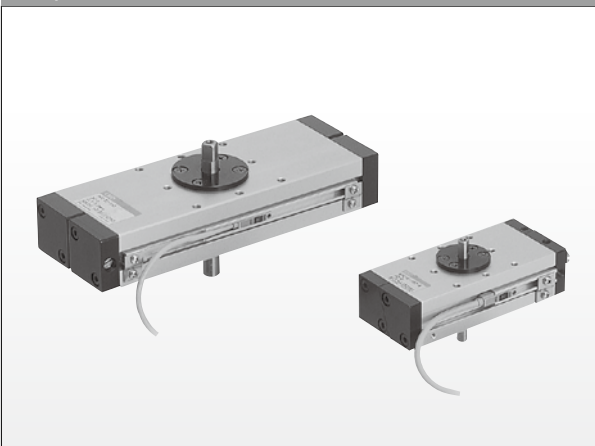
Oscillation/rotation drive

Rotary actuators (Rack and pinion)

RRC Series

- Rotary actuator of rack and pinion type
- Adjustable angle type is also available.
- Torque: 0.7, 3.1, 5.6 N·m, Angle: 90° - 270°

Torque size 0.7 to 5.6 N·m



Pneumatic Cylinders II CB-030SA

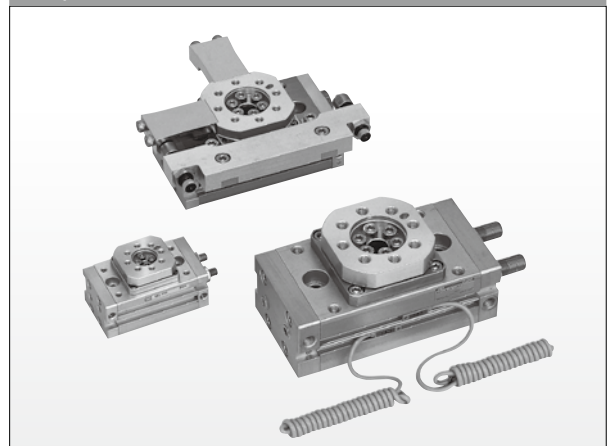
Oscillation/rotation drive

High precision rotary actuators

GRC Series

- Table type rotary actuator of rack and pinion type
- Standard and high accuracy type are available with the same dimensions.
- 90° and 180° specifications are available.
- Select from among 3 surfaces for piping port leadout directions.
- 6 torque sizes: 0.5, 1, 2, 3, 5.2, 8.1 N·m

Torque size 0.5 to 8.0 N·m



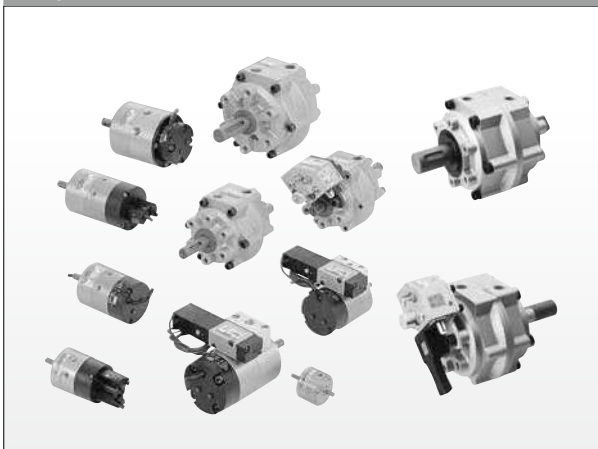
Pneumatic Cylinders II CB-030SA

Rotary actuators (vane)

RV3* Series

- Compact, lightweight, and excellent durability
- The oscillating origin can be selected from 45° or 90°, increasing the options for equipment installation.
- A wide range of variations in types including with valve, angle variable type, and low hydraulic
- Switch provided
- Torque: 0.12 - 206 N·m

Torque size 0.12 to 206 N·m

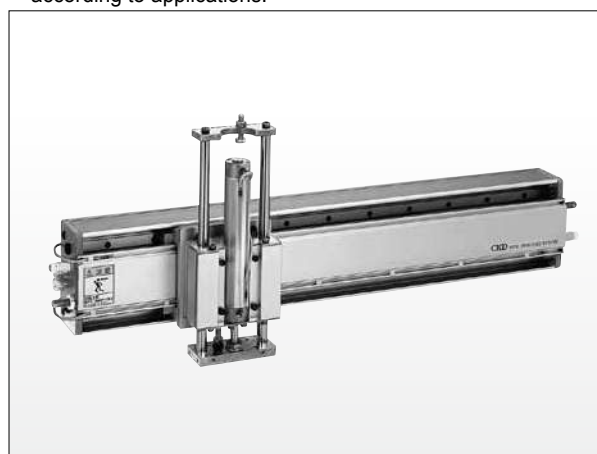


Pneumatic Cylinders II CB-030SA

New handling system

NHS Series

- Just like model kits!
Flexible combination of transport systems to match applications
- High rigidity/high precision
X-axis module uses rodless cylinder for the drive system, equipped with a built-in linear guide.
- Compact and easy to assemble
Integrated air ports for piping enable easy assembly even in narrow spaces.
- Reduced design and assembling processes
X and Z axes and attachments are appropriately selected according to applications.

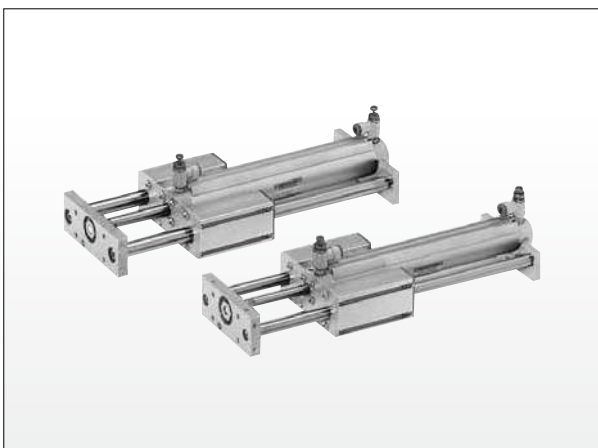


Pneumatic Cylinders II CB-030SA

Hybrid robot

HR Series

- Thin types with high rigidity.
- Ball bearing is used for the bearing section.
- Position detection switch, shock absorber and speed controller are provided as standard.

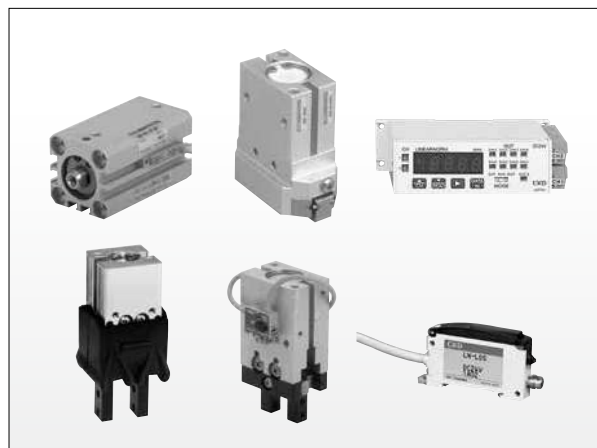


Pneumatic Cylinders II CB-030SA

Cylinder/hand with length measuring sensors

LN-A, BHA/BHG/BHE-LN Series


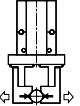

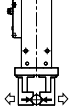

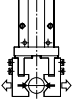

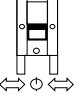

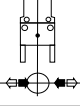

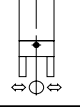

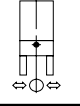

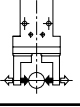

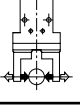

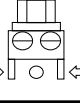

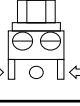

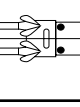




- This is the next dimension of pneumatic components, with length measuring sensor incorporated compact cylinders and hand devices that enable actuator function, length measurement and prehension detection at the same time.
- The analog output type enables linear voltage output in the specified stroke range, achieving the measurement of a workpiece at the same time as the actuator work.
- Since workpiece intermediate gripping can be detected, a variety of workpiece transport needs are met, such as detecting differently shaped workpieces and abnormal gripping detection.
























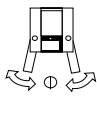

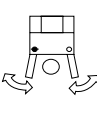

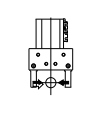

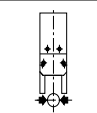

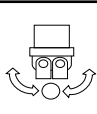

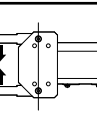

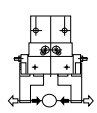
Pneumatic Cylinders II CB-030SA



■ Hands (parallel hands)

Product name	Model No.	Finger movement	Bore size (mm)	Gripping power* (N)	Stroke length (mm)
<ul style="list-style-type: none"> ● Linear Slide Hand (HP Series) 	LSH-HP1 LSHL-HP1		ø6 to ø32	3.3 to 158	4 to 22
<ul style="list-style-type: none"> ● Length measurement function Linear Slide Hand (HP Series) 	LSHM-HP2		ø10 to ø25	11 to 65	4 to 14
<ul style="list-style-type: none"> ● Linear Slide Hand (Standard) 	LSH		ø10 to ø25	11 to 65	4 to 14
<ul style="list-style-type: none"> ● Feather hand (Mini-parallel hand) 	FH100		ø10 to ø25	6 to 30	8 to 20
<ul style="list-style-type: none"> ● Ultra-compact cross roller parallel hand 	BSA2		ø6	3.5	4
<ul style="list-style-type: none"> ● Compact cross roller parallel hand 	BHA		ø12 to ø25	15 to 80	5 to 15
<ul style="list-style-type: none"> ● Compact cross roller parallel hand with rubber cover 	BHG		ø12 to ø25	15 to 80	5 to 15
<ul style="list-style-type: none"> ● Linear guide hand 	LHA		ø6 to ø32	5.5 to 145	4 to 20
<ul style="list-style-type: none"> ● Linear guide hand with rubber cover 	LHAG		ø12 to ø32	18 to 145	5 to 20
<ul style="list-style-type: none"> ● Parallel hand 	HAP-1C		ø15	18	8
<ul style="list-style-type: none"> ● Parallel hand 	HAP		ø20 to ø40	20 to 100	16 to 41
<ul style="list-style-type: none"> ● Cross roller parallel hand 	HKP		ø32 to ø80	160 to 1480	24 to 60
<ul style="list-style-type: none"> ● Lateral parallel hand 	HCP		ø12 to ø32	12 to 75	20 to 40
<ul style="list-style-type: none"> ● Long stroke length parallel hand 	HGP		ø25	17	56

*Gripping force is the value with an air pressure of 0.5 MPa on the closed side.

	Product name	Model No.	Finger movement	Bore size (mm)	Gripping power* (N)	Stroke length (mm)
Thin parallel hand	<ul style="list-style-type: none"> ● Long stroke length thin hand  	HLF2		ø8 × 2 to ø20 × 2	20 to 135	12 to 96
	<ul style="list-style-type: none"> ● Thin parallel hand 	HLA/HLB		ø12 to ø20	21 to 70	13 to 25
	<ul style="list-style-type: none"> ● Thin parallel hand with rubber cover 	HLAG/HLBG		ø12 to ø20	21 to 70	13 to 25
	<ul style="list-style-type: none"> ● Thin long stroke length parallel hand 	HLC		ø8 × 2 to ø30 × 2	18 to 310	20 to 140
	<ul style="list-style-type: none"> ● Ultra thin parallel hand 	HLD		ø8 × 4 to ø20 × 4	35 to 250	12 to 30
Wide parallel hand	<ul style="list-style-type: none"> ● Compact wide parallel hand 	HMF		ø12 × 2 to ø40 × 2	32 to 430	20 to 200
	<ul style="list-style-type: none"> ● Compact wide parallel hand with coolant proof specifications  	HMF-G		ø16 × 2 to ø25 × 2	66 to 170	30 to 120
	<ul style="list-style-type: none"> ● Large wide parallel hand with linear guide 	HMF-B		ø25 × 2 to ø40 × 2	120 to 310	100 to 200
	<ul style="list-style-type: none"> ● Wide parallel hand 	HFP		ø16 × 2 to ø40 × 2	20 to 255	20 to 60
Fulcrum hand	<ul style="list-style-type: none"> ● Feather hand (Mini-fulcrum hand) 	FH500		ø10 to ø20	2 to 15	Opening angle 20°
	<ul style="list-style-type: none"> ● Fulcrum hand 	HBL		ø15 to ø40	10 to 125	Opening angle 20°
	<ul style="list-style-type: none"> ● Toggle hand 	HJL		ø32 to ø63	250 to 1800	Opening angle 28°
	<ul style="list-style-type: none"> ● 180 degree open/close thin wide angle hand 	HMD		ø12 to ø25	16 to 120	Opening angle 184°
	<ul style="list-style-type: none"> ● 180 degree open/close wide angle hand 	HDL		ø25 to ø40	10 to 50	Opening angle 180°
	<ul style="list-style-type: none"> ● 180 degree open/close high gripping wide angle hand 	HJD		ø32 to ø63	200 to 1250	Opening angle 184°
Centering hand	<ul style="list-style-type: none"> ● Centering hand 	BHE		ø12 to ø32	15 to 125	7 to 22

*Gripping force is the value with an air pressure of 0.5 MPa on the closed side.



■ Chucks

Product name	Model No.	Finger movement	Bore size (mm)	Gripping power* (N)	Stroke length (mm)
● Powerful chuck	CKL2		ø16 to ø100	17 to 680	5 to 40
● Powerful chuck with rubber cover	CKLG2		ø20 to ø100	28 to 680	5 to 23
● Position locking powerful chuck	CKL2-HC		ø32 to ø80	75 to 510	8 to 20
● High gripping power powerful chuck	CKH2		ø50 to ø100	290 to 1250	6 to 12
● Bi-directional powerful chuck (Parallel hand)	CKLB2		ø20 to ø100	35 to 1050	5 to 23
● 3-way jaw bearing chuck	CKG		ø16 to ø50	13 to 160	6 to 16
● 3-way jaw long stroke chuck	CK		ø25/ø44	15 to 65	20 to 40
● Trivalent thin chuck	CKA		ø16 to ø100	4 to 600	6 to 38
● Thin chuck	CKS		ø8 x 3 to ø32 x 3	17 to 320	10 to 32
● Thin chuck (Hollow type)	CKS-F		ø16 x 3 to ø50 x 3	75 to 800	16 to 50
● Hollow chuck	CKF		ø30 to ø80	12 to 112	5 to 16
● Ultra long stroke chuck	CKJ		ø12 x 6 to ø50 x 6	86 to 1550	40 to 130

*Gripping force is the value with an air pressure of 0.5 MPa on the closed side.

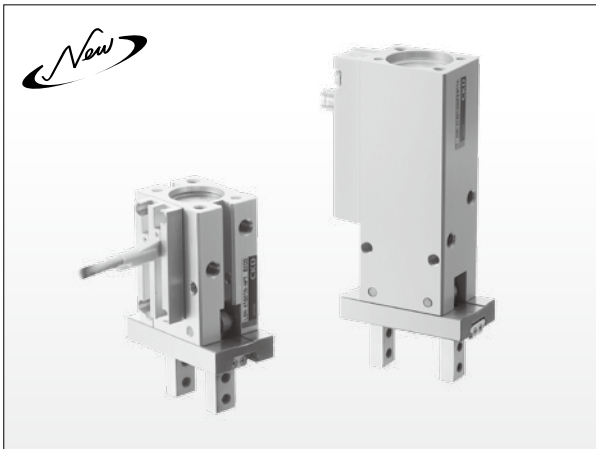
Linear guide hand

LSH-HP1 Series

- Increased linear guide performance
- Increased flexibility in design
- Long service life
- Reduced processes on site

LSH-HP2 Series

- High precision: Repeatability ± 0.02 mm, linearity FS $\pm 0.5\%$
- A displacement sensor is built into the body, achieving a high-precision integrated structure
- Environmental resistance: IP65 equivalent amplifier and rubber cover

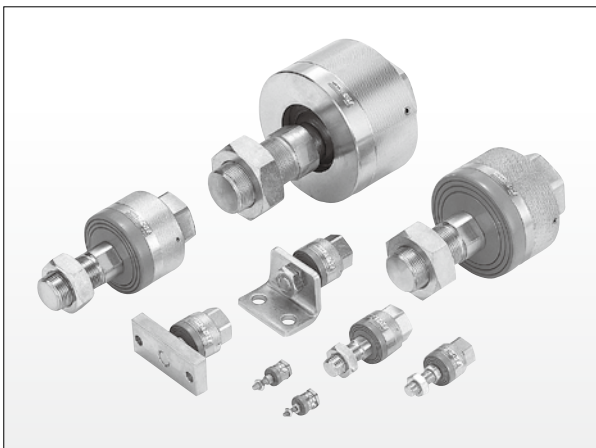


Linear guide hand LSH-HP Series CC-1419A

Floating fitting

FJ Series

- This fitting eliminates misalignment and parallelism defects during cylinder mounting, and realizes smooth rod actuation.
- 3 types are available: basic shape, flange, and foot.
- 18 screw sizes from M3 to M45



Pneumatic Cylinders II CB-030SA

Shock absorber

SKL Series

- Shorter operating time for high tact
- Improvement of durability
- Direct stop
- External stopper not required

NCK Series

- Optimum for impact absorption of thrust and low speed energy
- Simple design and compact size
- Slit orifice for linear stop
- Easy installation without adjuster due to wide suction range
- A wide range of selection of max. absorbed energy between 1 J and 200 J

SCK Series

- Optimal capacity adjustment due to adjuster
- Use of the detent mechanism prevents the adjuster from moving during use.
- Usable in a wide temperature range between -10°C and $+80^{\circ}\text{C}$
- Wider range of selection: 17 types
- A wide range of selection of max. absorbed energy between 0.049 J and 588 J

FCK Series

- 3 speeds: low speed (1 m/s), medium speed (2 m/s), and high speed (3 m/s)
- 3 types of orifice: single hole, porous irregular, and porous
- Usable in a wide temperature range between 5°C and 70°C
- Optimal capacity adjustment due to adjuster
- A wide range of selection of max. absorbed energy between 1.5 J and 720 J

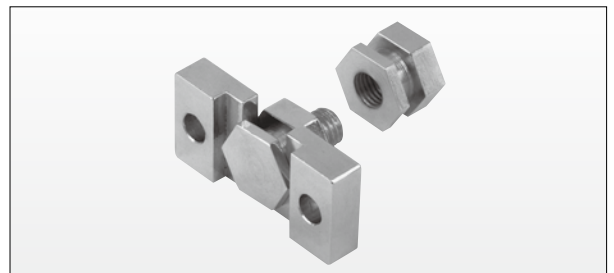


Pneumatic Cylinders II CB-030SA
Shock absorber SKL Series CC-1236A

Simplified floating fitting

FK Series

- Simplified floating fitting that can easily eliminate misalignment and parallelism defects during cylinder mounting
- 2 types of threads: 8 types of male threads and 13 types of female thread



Pneumatic Cylinders II CB-030SA



ACTUATORS

Related products

Magnet suction hands

MHC2 Series

- Secure suction of oil adhered steel plate or steel plate with punch holes
- Three suction forces: 50, 100 and 200 N
- No air consumption when held with suction, energy saving as compared to general vacuum pads
- Equipped as standard with suction workpiece anti-slip rubber



Magnet suction hand MHC2 Series CC-1209A

Related products

Flexible support

FSB Series

- Molds itself to the shape of any workpiece for holding
- Changeover is easy even with different workpiece shapes.
- Also usable as a robot hand



Flexible support FSB Series CC-1210A

Related products

Free position lock unit

FPL Series

- Just press on the mating surface for parallel adjustment.
- Proprietary locking mechanism holds the angle.
- Dedicated jig is no longer required.
- Holds workpiece up to $\pm 20^\circ$ range.



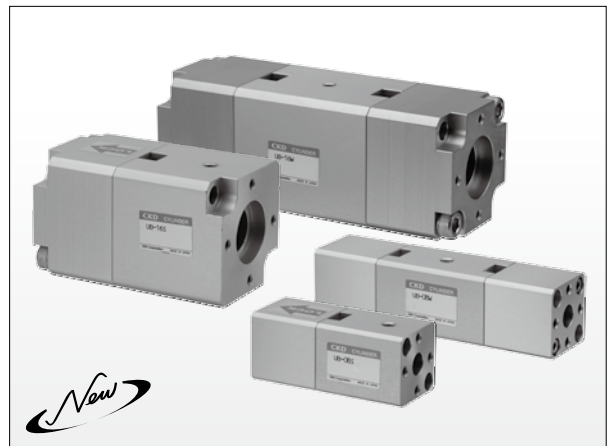
Free position lock unit FPL Series CC-1211A

Related products

Lock unit

UB Series

- Lightweight, slim
- While locked, neither electrical nor pneumatic power is needed
- As conventional gas purging is no longer necessary, it contributes to energy saving
- Manual release is possible even without air when embedding or during maintenance
- Uses uni-direction locking, bi-direction locking

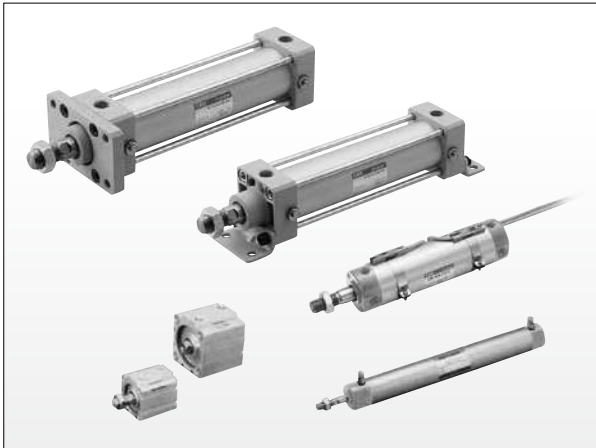


Lock unit UB Series CC-1364A

Low friction cylinders

U Series

- Newly developed special sliding packing adopted
- Smooth following due to pressure fluctuation from low pressures to high pressures
- Stable and smooth operation even at the low speed of 10 mm/s
- Various models and sizes are available.
- A variety of switches can be mounted including reed, proximity, and 2-color display.

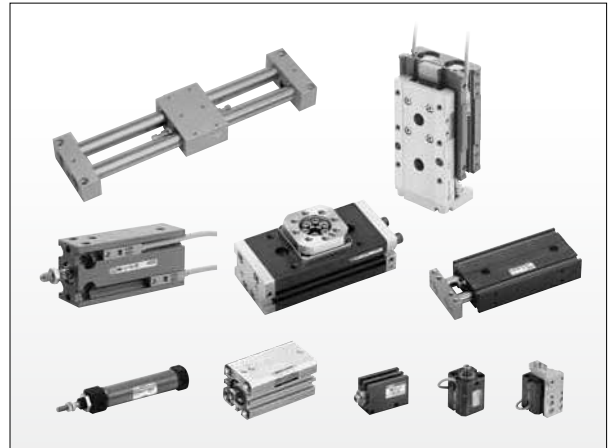


Pneumatic Cylinders CB-029SA

Fine speed cylinders

F Series

- Realizes smooth operation without stick-slip at the ultra low speed of up to 1 mm/s.
- Smooth operation/stop at the timing of startup and end of stroke
- 10 types of models and bore sizes from $\phi 6$ to $\phi 100$
- A variety of switches can be mounted including reed, proximity, and 2-color display.

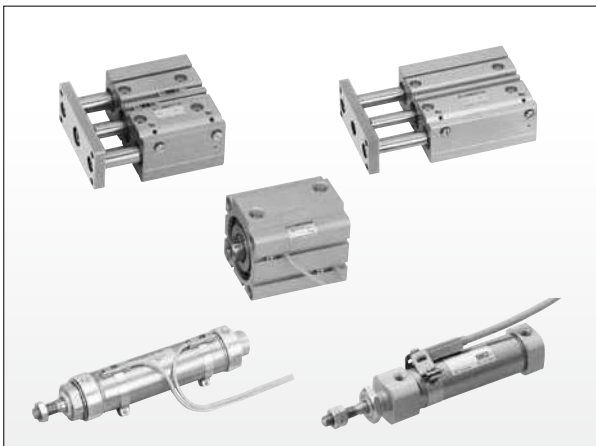


Fine Speed Cylinders CC-1374A

Cylinders with rubber-air cushions

*C Series

- Reduction in the collision noise level
- Reduction in collision acceleration
- No need for adjustment by cushion needle or other items
- Same dimension as standard for all models

Pneumatic Cylinders CB-029SA
CB-030SA

Air bearing actuators

LBC Series

- Air static pressure type soft actuator based on non-contact air bearing mechanism with zero sliding resistance
- Clean environment-friendly
- Due to allowable minimum load control of 0.01 N, soft touch on a workpiece is possible.
- Optimal load for workpieces
- Compact and space saving
- Combination with an electro pneumatic regulator enables high precision linear control of load.



Air bearing actuator LBC Series CC-652A



ACTUATORS

Assistive device

PowerArm (Assistive device)

PAW Series

Human assist developed for workers in production sites

Assistive device based on the concept of "for working people" that contributes to improved work environments and to ensuring safety. The assistive device uses pneumatic pressure as a motive force to lift up from beneath, and you can freely combine them according to your application and location. With its compact and light operation feel, its global design suited to its CE marking, and its ability to mount safety mechanisms, it is used by customers in a variety of business sectors, beginning with automobiles and foodstuffs.

* Only the shaft body conforms with the European Safety Standards CE marking.



Catalog No. CC-1418A

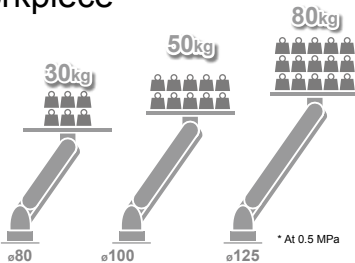


* ChO Monodzukuri Innovative parts and Components Award

<Received the 2019 Good Design Award>

Variation

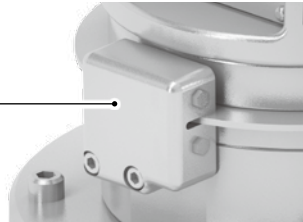
Arm variations tailored to the workpiece



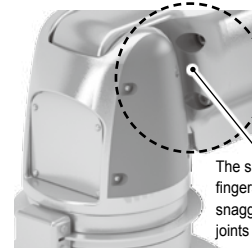
Safety

Holds position when motor power (air, electric power) is down

Rotation lock (Normally closed)



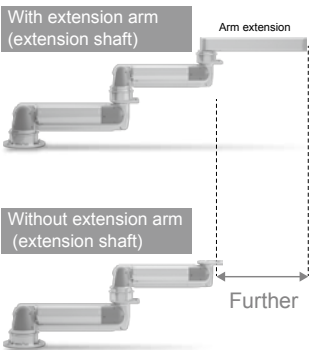
Snag prevention



* The European Safety Standards CE marking applies only to the PowerArm body.

Wide

Achieving a wider range of movement

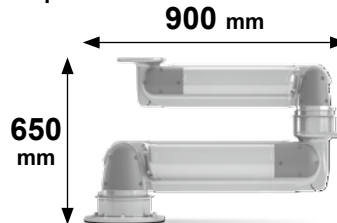


Simple

Pneumatic pressure control in a simple assistive device

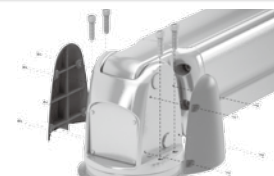
Compact

Compact

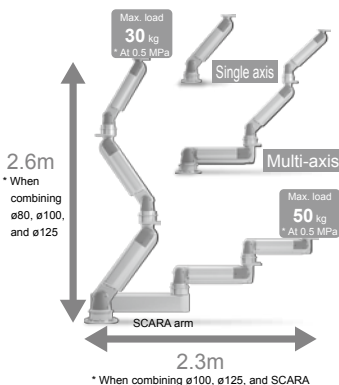


Flexible

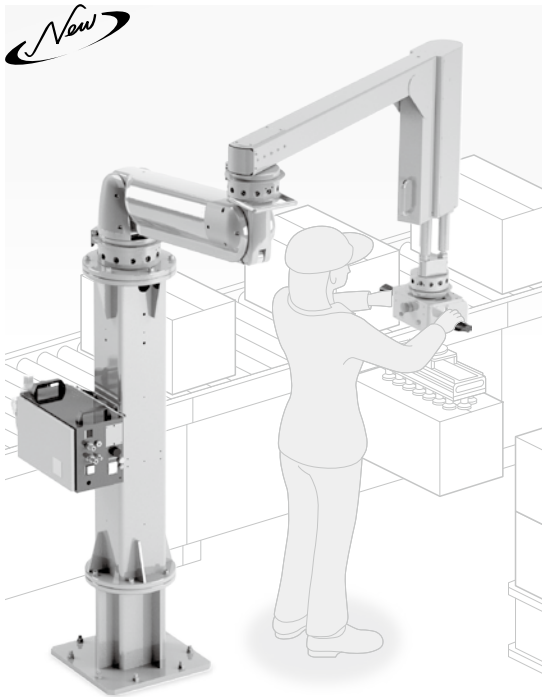
Customers can easily combine arms



Wide movable range suited to the usage method



Palletizing specifications PAW-A achieves space-saving in stacking/unstacking operations



Wide

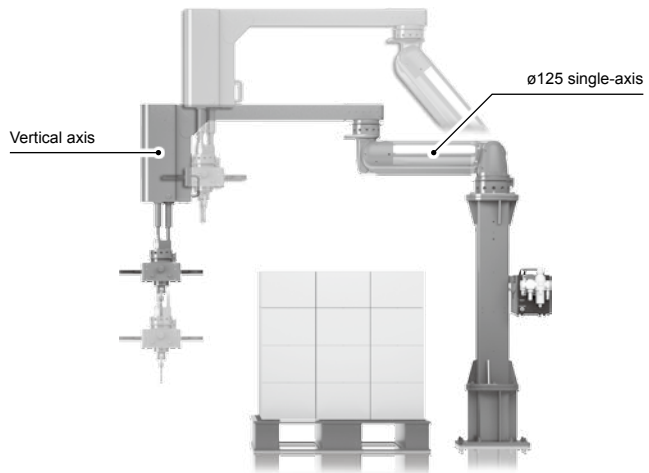
Wide movable range

A combined function $\varnothing 125$ single axis + vertical axis enables an even wider range of motion.

Specialized

Specializing in stacking/unstacking operations

The conventional PowerArm space-saving/compact/light touch characteristics are brought into the palletizing process for even more ease of use by being mounted on the vertical axis.



Compact

Space-saving storage

Can be folded away for storage.



Storage status

Variation

Simple combinations possible

In operations where there are few up-and-down strokes, the vertical axis and SCARA arm can be used in combination.

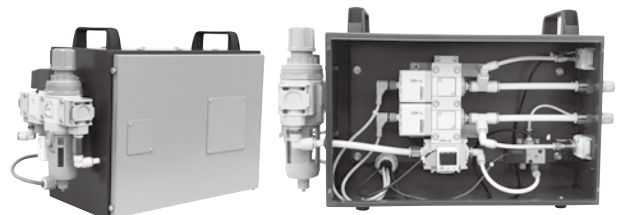


Compatible as an assistive system

In addition to the assistive components as single units, we address requests including attachments, controllers, and movable type dollies. Contact CKD for details.

Controller design and manufacture

We propose ideal air circuits for various assistive devices. Easy transport is possible with the ideal control method for your transported items.



Example of controller interior.
Let us go over your needs with you.

Compatible with FP Series for secure food manufacturing processes*

For food products
NSF H1
Grease used



This logo represents CKD's stance to provide you with safe components for supporting your food manufacturing processes.

Introduction to PowerArm on the Web

We have prepared a PowerArm introductory site.

* Depending on your smartphone environment, it may not be displayed correctly.



* Contact CKD for details.



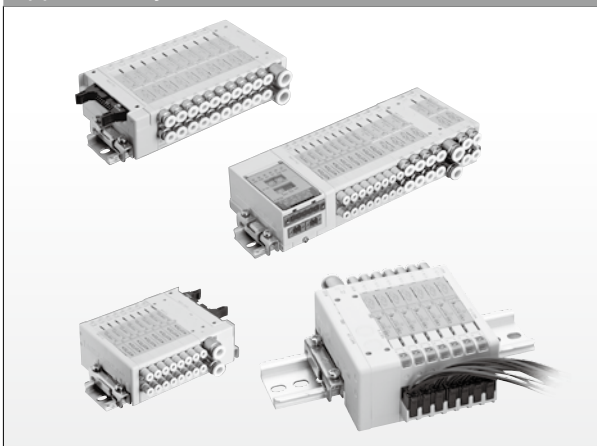
Small pilot operated 3, 4-port valve

Compact pneumatic valves (Reduced wiring valve)

MN³₄E00/MN³₄E0 Series

- Environmental conservation
Lighter weight and reduced material usage by downsizing/saving energy.
We were among the earliest to reduce chemical substances affecting the environment, including using lead-free solder and materials compatible with JIG-101A level A.
- Compact/space saving
Introducing MN³₄E00 Series of 7 mm valve block width and 7 mm pitch manifold in addition to the MN³₄E0 Series of 10 mm valve block width.
Use the compact 7 mm pitch manifold to downsize the system and increase density.
- Energy saving
MN³₄E0 Series: 0.6 W
MN³₄E00 Series: 0.4 W
With energy saving (Option E), it further reduces power consumption.
- ø3 push-in fitting is available
Along with reduction of piping volume and ensuring flow rate, it supports ø3 tubes, as well as ø1.8 tubes and contributes to the space saving of tube piping.
- Variety
 - A wide range of electrical connections and options
A wide range of electrical connections such as serial transmission corresponding to various connectors and networks are available.
Easy pluggable regulator blocks are also available.
- High performance
 - 12 ms responsivity for balancing ports A and B. (Our data value with N3E0 two 3-port valves integrated)
 - Cumbersome wiring work is not required
With connector, wiring is completed at the same time as assembling.
The regularity of the connector pin array remains undisturbed by electrical connections from both the left and right wiring blocks or by an increase or decrease in the valves.
- Safety
 - Prevents malfunctions
Exhaust check valve, manual override cover to prevent misoperation and air supply filter to prevent entry of foreign matter are provided as standard.
Pursuing safety to prevent valve malfunction.

Applicable cylinder bore size: to ø32



Pneumatic Valves CB-023SA

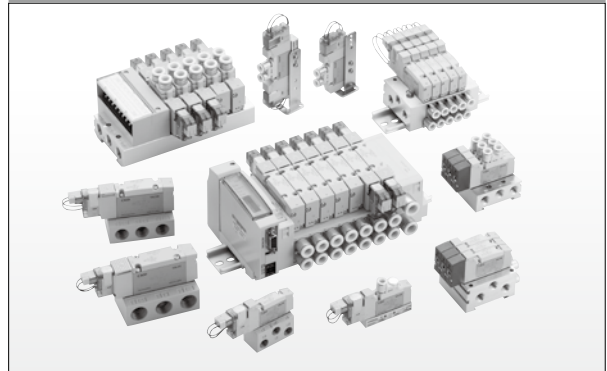
Small/medium pilot operated 3, 4, 5-port valve

Metal or resin base pneumatic valves

4G^{AD1}_{BE2}³R/M4G^{AD1}_{BE2}³R/MN4G^{AD1}_{BE2}³R Series

- Compatible with up to ø100 cylinder drive with a valve width of 10 mm, 15 mm, or 18 mm
NEW 3, 4, 5-port reduced wiring valve equipped with safety function
- Meticulous response enhances safety.
The manual override equipped with a protective cover as standard, and the built-in exhaust check valve, as well as the air supply port with a filter as standard
- Enhanced reliability
More than 100 million operations, responsivity of 12 ms ±2 ms, and low wattage of 0.35 W
- Enhanced usability
Top and side wiring connector, reduced wiring rotating connector, and manual override without tools
- A wide range of variations
Single item, metal base manifold, block manifold, individual wiring/reduced wiring
- A wide range of serial communication

Applicable cylinder bore size: to ø100



Pneumatic Valves CB-023SA

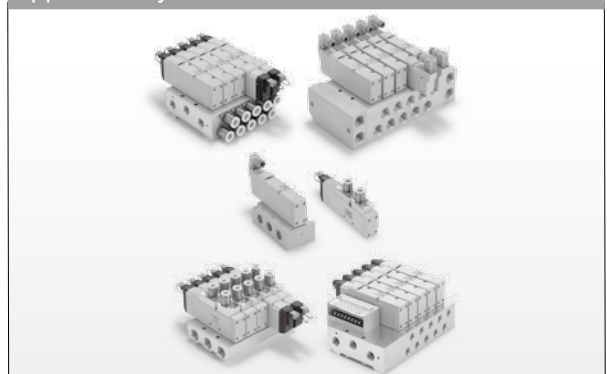
Large pilot operated 5-port valve

Metal or resin base pneumatic valves

4G^A_B4 Series

- Pilot operated 5-port valve for large flow rate (metal base)
The properties of the 4GA1/2/3 Series have been passed on to enhance 4G Series.
- Enhanced operability
Manual override without tools, top and side wiring connector, port P/R outlet from front surface, and a variety of electrical connections
- Enhanced reliability
Service life is further extended by improvements in structure of sliding section, packing, etc. Also, a filter is installed in the air supply port to prevent entry of foreign matter.
- Enhanced safety
The protective cover prevents misoperation of manual devices due to external force, etc.

Applicable cylinder bore size: to ø160



Pilot operated 5-port valve 4GA4/4GB4 Series CC-863A

Medium pilot operated 3, 5-port valve

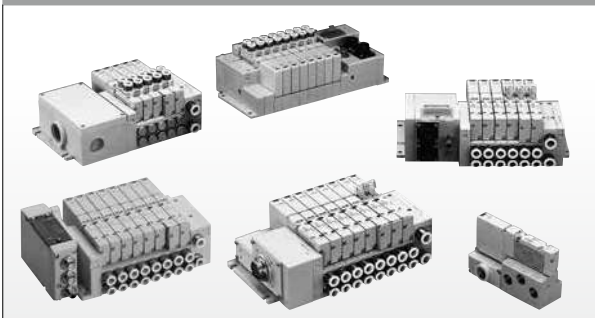
Plug-in type block manifolds

W4G2 Series

"4G²/MN4G² Series" is more friendly to the "environment" and "people".

- Improved environmental friendliness
 - Environment-friendly halogen-free lead wires have been adopted for internal wiring.
 - Material names are shown on the major resin parts.
- Improved environmental friendliness
 - Degree of protection IP65
- A variety of serial transmissions
- Enhanced usability
 - The adopted plug-in method enables easy replacement of valves.
 - Connector interface is adopted between the manifold blocks, eliminating wiring work for expansion (DC specifications).
- Compatible with up to ø80 cylinder drive with the valve width of 15 mm
 - NEW 3, 5-port reduced wiring valve equipped with safety function

Applicable cylinder bore size: to ø80



Pneumatic Valves CB-023SA

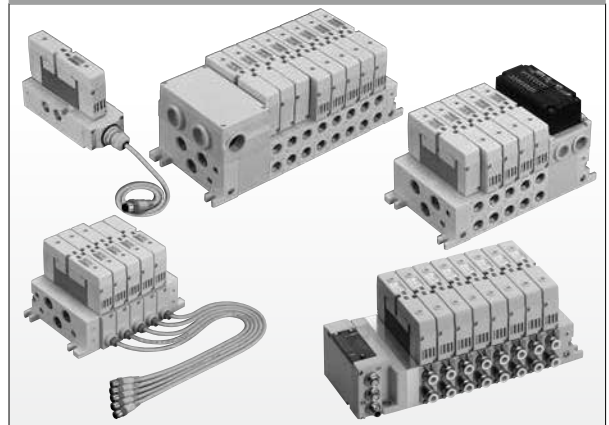
Large pilot operated 5-port valve

Plug-in type block manifolds

W4G4 Series

- Compatible with up to ø125 cylinder drive with the valve width of 25 mm
 - Performance increase in installation area, workability, life, power consumption, etc.
- A wide range of electrical connections and options
 - Serial transmission, I/O cable connector, spacer regulator, connector, etc.
- Improved safety and reliability
 - Manual button with a rubber cover attached, preventing intake of foreign matter leading to misoperation
- Degree of protection of IP65 or equivalent

Applicable cylinder bore size: to ø125



Pneumatic Valves CB-023SA

Pneumatic valves

Small pilot operated 3, 4-port valve

Pneumatic valves (reduced wiring valve)

MN4S0 Series

- Effective use of space by eliminating dead space
 - One-sided solenoid 3, 4-port reduced wiring manifold valve
- This contributes to equipment space saving.
 - 40 mm-high flat top, block manifolds
 - Manifold pitch 11 mm
- Compatible with up to ø40 cylinder drive
 - C (dm²/ (S·bar)) : 0.57 to 0.80 *1
- Helps save energy with low wattage
 - Power consumption 0.6 W
- Two 3-port valves integrated

Applicable cylinder bore size: to ø40



Pneumatic Valves CB-023SA

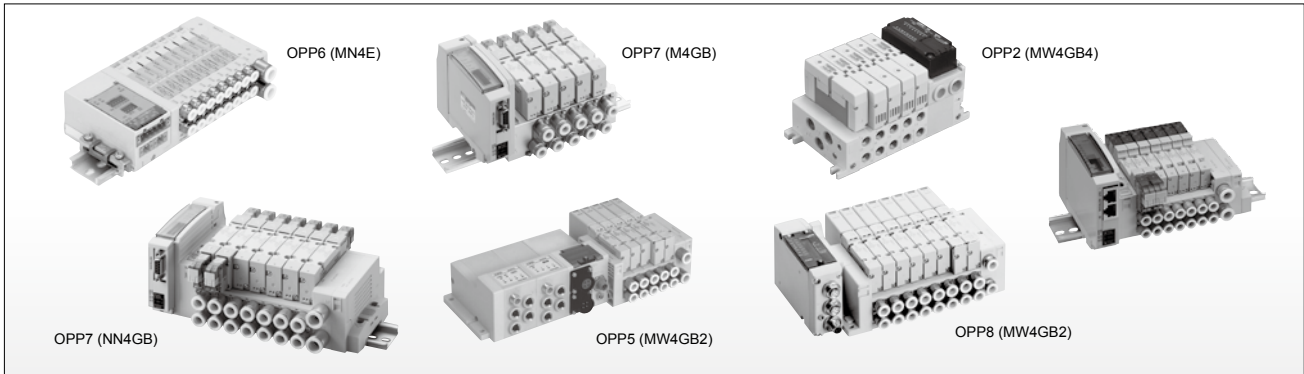
*1 Effective cross-sectional area S can be obtained by S=5C.



Network compatible solenoid valves

OPP* Series

● A solenoid valve slave unit is created on the network of various manufacturers.



Pneumatic Valves CB-023SA

PLC manufacturer	Communication system	Wiring block model No.	Slave unit series	Incorporated valve
CC-Link Partner Association Mitsubishi Electric	CC-Link (ver1.10)	T6G1	OPP2 Series	MW4G4
		T6G1	OPP3 Series	MN4S0, MN4E, MN4G, M4G
		T7G1	OPP4 Series	MN4G
		T8G1/2/7	OPP5 Series	MW4G2 *1
		T7G1/2	OPP6 Series	MN4E0, MN4E00
		T8G1/2	OPP7 Series	M4G, MN4G
		T8GP1/2		
CC-Link IE Field Basic	T8EB 1/2	OPP7 Series	M4G, MN4G	
	T7EB 1/2	OPP8 Series	MW4G	
ODVA TAG JAPAN OMRON Corporation	DeviceNet	T6D1	OPP2 Series	MW4G4
		T7D1	OPP4 Series	MN4G
		T8D1/2/7	OPP5 Series	MW4G2 *1
		T7D1/2	OPP6 Series	MN4E0, MN4E00
		T7DP1/2	OPP7 Series	M4G, MN4G
	EtherNet/IP	T8EN1/2	OPP7 Series	M4G, MN4G
		T8ENP1/2	OPP8 Series	MW4G2, MW4G4
		T7EN1/2		
T7ENP1/2				
Japan Profibus Association SIEMENS Corporation	PROFIBUS-DP	T8P1/2	OPP7 Series	M4G, MN4G
		T8PP1/2		
	PROFINET	T8EP 1/2	OPP7 Series	M4G, MN4G
		T7EP 1/2	OPP8 Series	MW4G
EtherCAT Technology Group (ETG) OMRON Corporation Beckhoff Automation	EtherCAT	T8EC1/2	OPP7 Series	M4G, MN4G
		T8ECP1/2		
		T7EC1/2	OPP8 Series	MW4G MN4E0, MN4E00
		T7ECP1/2		
		T7EC1/2		
T7ECT1/2				
Ontec	SAVENET	T7L1	OPP4 Series	MN4G

* Contact CKD for information on compatibility with other networks.

I/O block		
Product name	Model No.	Supported slave units
Input block	W4G-IN	T8C1/T8C6 T8D1/T8D2/T8D7
Output block	W4G-OUT	T8G1/T8G2/T8G7 T8M6/T8MA

I/O block is compatible with *1.

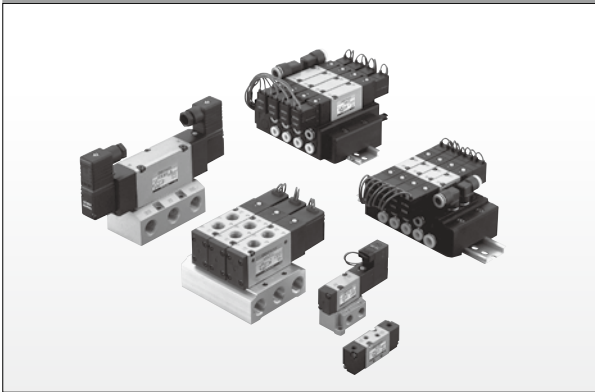
General purpose pilot operated 3, 4, 5-port valve

Pneumatic valves

4K_B^A/M4K_B^A/MN4K_B^A Series

- Compact 3, 4, and 5-port valves with a broad lineup of valve widths of 15 mm, 18 mm, 23 mm, and 29 mm
- Compatible with up to $\varnothing 160$ cylinder drive
C (dm³/ (S-bar)) : 0.60 to 13 *1
- Helps save energy with low wattage
Power consumption 1.8 W
- 2 types of piping specifications
Body piping/base side piping
- 2 types of manifolds
Metal base manifold/block manifold

Applicable cylinder bore size: to $\varnothing 160$



Pneumatic Valves CB-023SA

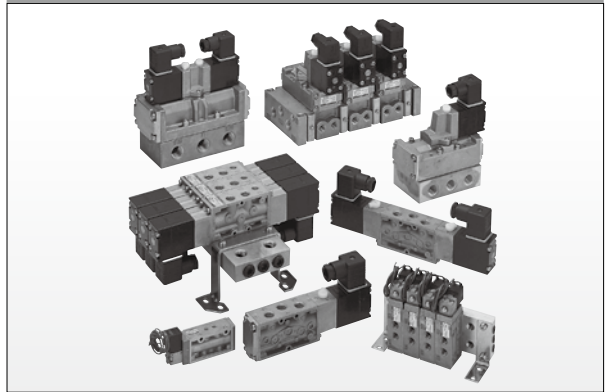
General purpose pilot operated 5-port valve

Pneumatic valves

4F/M4F Series

- Available for a variety of fields
5-port valve
- Compatible with up to $\varnothing 250$ cylinder drive
4F0 to 6 : C (dm³/ (S-bar)) : 0.61 to 18 *1
4F7 : Effective cross-sectional area: 160 mm²
- The soft spool method with proven performance
Compatible with long term use, low frequency use, and high environmental resistance (rough air)
- A wide range of variations
Single valve, manifold
- Outdoor options

Applicable cylinder bore size: to $\varnothing 250$



Pneumatic Valves CB-023SA
4F2/3 Series outdoor specification options CC-1070A

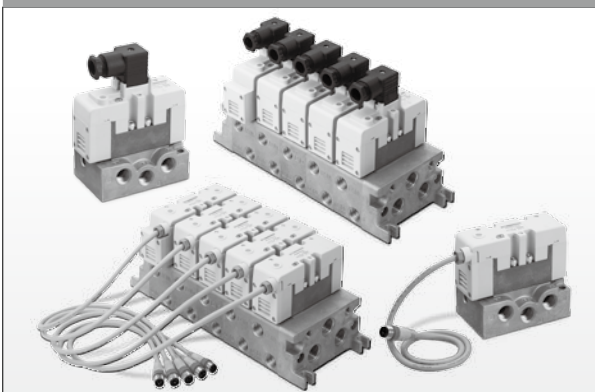
ISO compliant valve pilot operated 5-port valve

ISO valves

PV5G/PV5/GMF Series

- Compact body size
- Improvement of operability
With a design for easy pressing and better visibility, operability has improved in adjustment and maintenance when installing.
- Uses 2-color display lamp
- Improvement of reliability and safety
Manual button with a rubber cover attached, preventing intake of foreign matter leading to misoperation
- Simple, easy piping
Increase in work efficiency without the valve body protruding from the base

Applicable cylinder bore size: to $\varnothing 160$



ISO compliant valve PV5G/PV5/GMF Series CC-824A

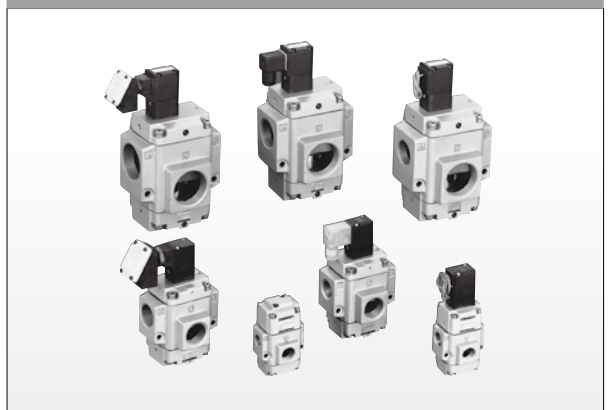
Pilot operated air driven poppet valve

Large flow rate 3-port valves

NP NAP NVP Series

- 3-port pneumatic pressure/low vacuum valve for large flow rate
Select from 2 types according to the use.
- Internal pilot : NP Series
- External pilot : NAP/NVP Series
- Compact and lightweight design
- Large flow rate design
10A/25A : C (dm³/ (S-bar)) : 15 to 18
20A to 50A : Effective cross-sectional area: 195 to 660 mm²

Port size: Rc3/8 to Rc2



Pneumatic Valves CB-023SA

*1 Effective cross-sectional area S can be obtained by S=5C.



Miniature direct acting 3-port valve

Small pneumatic valves

3MA0/3MB0 Series

- Contributes to equipment downsizing.
Valve width of 10 mm, space-saving miniature direct acting poppet 3-port valve
- Compatible with up to $\varnothing 16$ cylinder drive
0.1 to 0.15 mm²
- Helps save energy with low wattage
Power consumption 0.6 W
- A variety of electrical connections
Lead wires, C-connectors connectors, and D-connectors connectors
- A wide range of variations
Single valve, manifold

Applicable cylinder bore size: to $\varnothing 16$



Pneumatic Valves CB-023SA

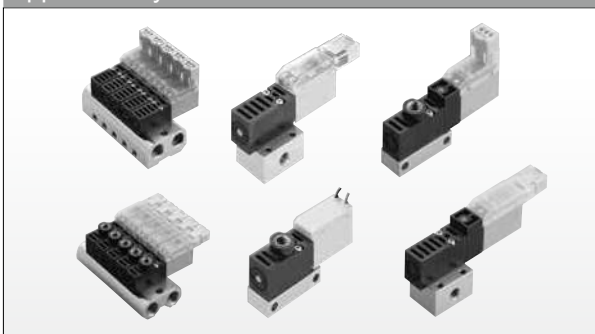
Small direct acting 3-port valve

Direct acting 3-port valves

3QRA1/3QRB1 Series

- Lightweight
19 g Best-in-class lightness, contributing to equipment optimization
- Compact
Solenoid valve body width of 10 mm. This contributes to equipment space saving.
- Large flow rate
Compact, lightweight, and large flow rate with the effective cross-sectional area of 2.0 m (C value 0.4)
- Responsivity
High-speed vacuum achievement/burst at 4 ms \pm 1 ms (ON)/ 1.5 ms \pm 1 ms (OFF)
- Long service life
More than 100 million operations under strict durability test conditions, contributing to long life of the equipment
- Conformity
Conformity with the standards of RoHS, low ozone, and rechargeable battery manufacturing process
- The operation state can be retained at the time of power failure (Self-holding)
- Does not require continuous energization, which reduces electric power consumption and heat generation (Self-holding)

Applicable cylinder bore size: to $\varnothing 25$



Pneumatic Valves CB-023SA

Miniature pilot operated 5-port valve

Small pneumatic valves

4SA0/4SB0 Series

- Contributes to space saving and reducing equipment weight.
Miniature 5-port valve with a valve width of 10 mm
- Compatible with up to $\varnothing 25$ cylinder drive
C (dm³/ (S·bar)) : 0.3 *1
- Helps save energy with low wattage
Power consumption 0.6 W
- A variety of electrical connections
Lead wires, C-connectors connectors, and D-connectors connectors
- Compatible with reduced wiring for PLC control
Flat cable/D sub-connector

Applicable cylinder bore size: to $\varnothing 25$



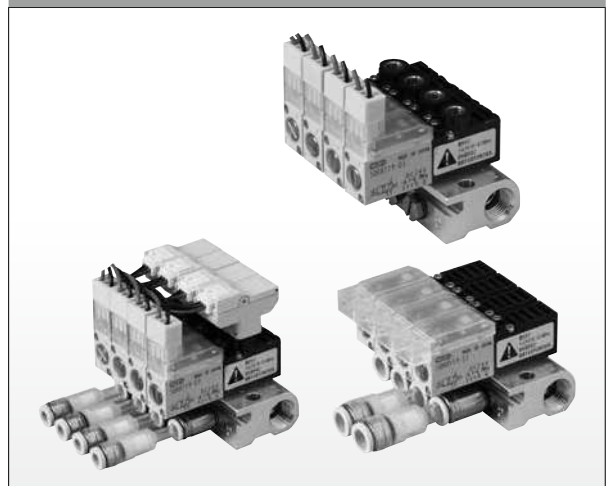
Pneumatic Valves CB-023SA

Small direct acting 3-port valve Vacuum suction unit

3QR negative pressure switching units

MV3QRA1/MV3QRB1 Series

- Ideal for suction transport of small articles
Making use of large flow rate and high responsivity of 3QR, high speed for suction transport process without positive pressure is stabilized.
- Footprint minimized
With minimum and ideal functions focused on, thin and lightweight manifolds are achieved without using a valve for vacuum burst.
- A vacuum pressure sensor can be mounted on the unit depending on the application.
- Push-in vacuum filter with excellent maintainability can be equipped



3QR negative pressure switching unit MV3QRA1/MV3QRB1 Series CC-1178A

*1 Effective cross-sectional area S can be obtained by $S \approx 5C$.

Solenoid valve manifold with two 3-port valves mounted

Solenoid valves manifold with two 3-port valves mounted

MN3Q Series

- Compact
Low height (34 mm) of the manifold enables installation to a narrow space
- Installation
Select mounting method: DIN rail mounting or direct mounting
- Piping
The take-out position of the supply/exhaust port can be selected, increasing flexibility of piping.

Applicable cylinder bore size: to $\varnothing 16$



Solenoid valve manifold with two 3-port valves mounted MN3Q Series CC-1066A

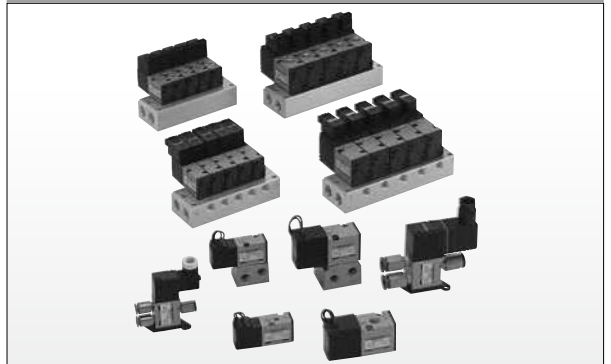
Small direct acting balance poppet 3-port valve

Pneumatic valves

3PA/3PB Series

- A variety of uses under low pressure/vacuum
Equipped with valve widths of 15 mm and 22 mm small direct acting balance poppet 3-port valve
- Compatible with up to $\varnothing 40$ cylinder drive
C (dm³/ (S·bar)) : 0.33 to 1.1 *1
- Helps save energy with low wattage
Power consumption 1.8 W
- A variety of electrical connections
Lead wires, terminal box, C-connectors connectors, and D-connectors connectors
- A wide range of variations
Single valve, manifold

Applicable cylinder bore size: to $\varnothing 40$



Pneumatic Valves CB-023SA

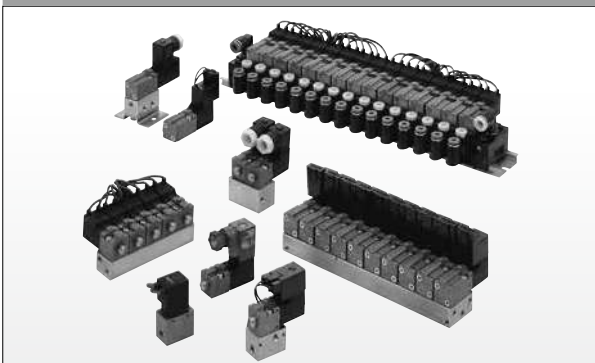
Pilot operated poppet 3-port valve

Miniature pneumatic valves

P/M/B Series

- Block manifolds are used, facilitating assembly, piping, and maintenance.
Small 2, 3, 5-port valve with a valve width of 15 mm
- Compatible with up to $\varnothing 16$ cylinder drive
C (dm³/ (S·bar)) : 0.15 *1
- Helps save energy with low wattage
Power consumption 1.8 W
- A variety of electrical connections
Lead wires, terminal box, C-connectors connectors, and D-connectors connectors
- A wide range of variations
Single valve, metal base manifold, block manifold

Applicable cylinder bore size: to $\varnothing 16$



Pneumatic Valves CB-023SA

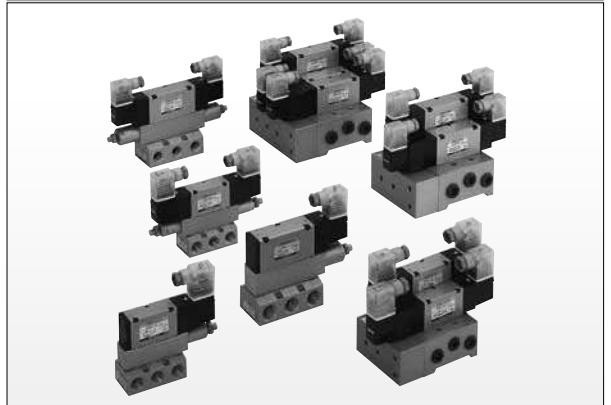
Shock absorbing valve

Shock absorbing valves

SKH Series

- Bound phenomenon is suppressed at the end of the cylinder stroke.
- Compatible with up to $\varnothing 125$ cylinder drive.
C (dm³/ (S·bar)) : 4.3 to 16.3 *1
- A wide range of variations
Variable speed unit, deceleration unit, one sided deceleration unit

Applicable cylinder bore size: to $\varnothing 125$



Pneumatic Valves CB-023SA



PNEUMATIC VALVES

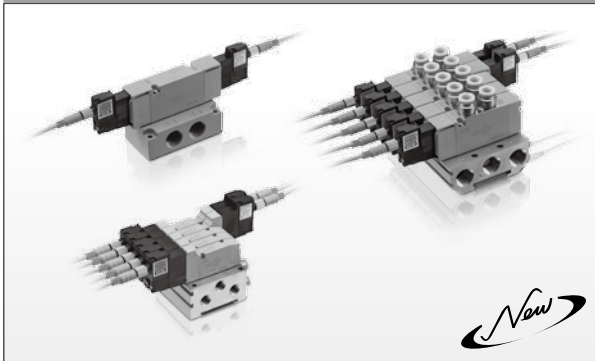
Explosion-proof 3/5-port valve

Intrinsically safe explosion-proof pilot operated 3/5-port valve

4G**0EJ Series

- Explosion-proof performance: Ex ib II C T4 Gb (Certification country: Japan)
Usable in Class 1 Danger Zone (Class 1 Zone), Class 2 Danger Zone (Class 2 Zone)
- Space saving/lightweight
Realizes 10 mm smallest in explosion-proof class width
In addition to discrete unit, manifold available, and ideal for narrow explosion-proof areas
- Wide-ranging series lineup
Valve width: In four widths, 10 mm, 16 mm, 20 mm, and 24 mm
- High durability with 50 million or more operations
Prevents unexplained stoppages, and provides stable facilities operations
- Degree of protection IP67

Applicable cylinder bore size: to $\phi 160$



Intrinsically safe explosion-proof pilot operated 3, 5-port valve 4G**0EJ Series CC-1445A

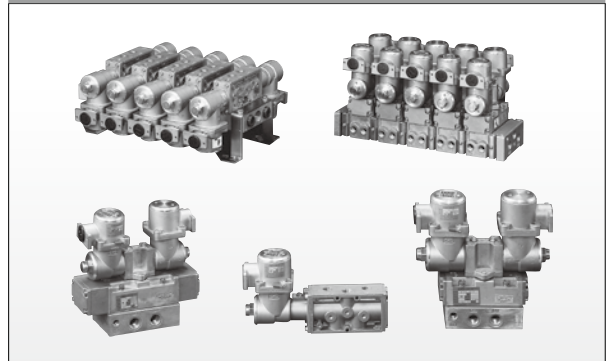
Explosion-proof 5-port valve

Pilot operated pressure-resistant explosion-proof 5-port valve

4F**0E Series

- Explosion-proof performance d2G4
Pressure and explosion-proof construction/flame-proof grade 2/ignitability G4
- NAMUR standards options
- Compatible with up to $\phi 250$ cylinder drive
4F3 to 6 : C (dm²/ (S·bar)) : 3.9 to 18 *1
4F7 : Effective cross-sectional area: 160 mm²
- Easy wiring
Pilot solenoid valve can be manually rotated 360°, and wire inlet can be changed by 90°. Wide wiring box
- A wide range of variations
Single valve, manifold block, and manual knob with lock mechanism as standard equipment

Applicable cylinder bore size: to $\phi 250$



Pneumatic Valves CB-023SA
Solenoid valve compliant with NAMUR standards CC-1325A

*1 Effective cross-sectional area S can be obtained by $S \approx 5C$.

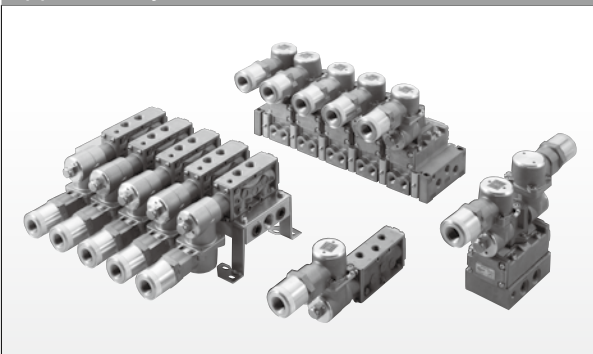
Explosion-proof 5-port valve

Pilot operated pressure-resistant explosion-proof 5-port valve (International explosion-proof valve)

4F**0EX Series

- Compliant with international explosion-proof guidelines
Explosion-proof performance Ex d IIB T4
Pressure and explosion-proof construction d/Cable IIB/
Temperature characteristics T4
Test model qualification No. : TC20523
- NAMUR standards options
- Compatible with outdoor use
Degree of protection IP65 (dust-proof/jet-proof)
- Selectable cable diameter range expanded
Line-up of $\phi 7.5$ to $\phi 13.5$

Applicable cylinder bore size: to $\phi 250$



Pilot operated explosion-proof 5-port valve 4F**0EX Series CC-1159A
Solenoid valve compliant with NAMUR standards CC-1325A

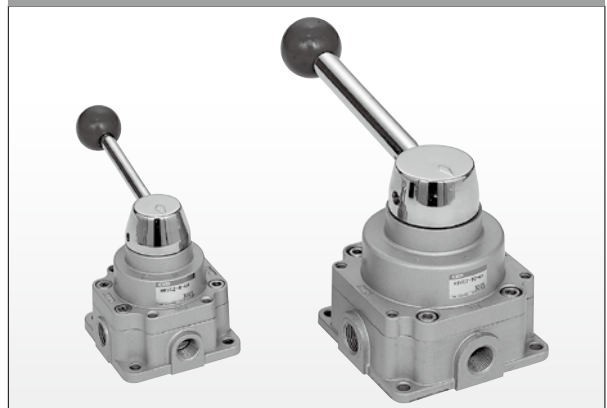
Manual override switching 4-port valve

Manual selector valves

HMV/HSV Series

- Simple ease of operation with lower sliding
Detent embedded rotary system, sliding lever system
- Compatible with up to $\phi 160$ cylinder drive
C (dm²/ (S·bar)) : 1.6 to 10.2 *1
- Port size
Rc1/4 to Rc3/4
- A wide range of variations
Miniature, standard

Applicable cylinder bore size: to $\phi 160$



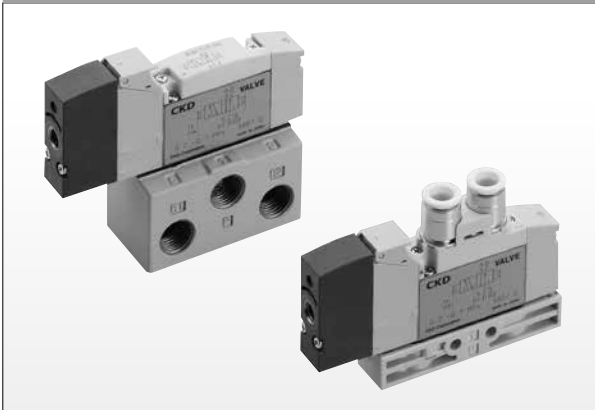
Pneumatic Valves CB-023SA

Pneumatic valves

4G₆ 1 to 3R Series

- Compatible with up to $\varnothing 100$ cylinder drive
C (dm³/ (S·bar)) : 0.66 to 4.5 *1
- Equipped with safety function for improved reliability/ usability.

Applicable cylinder bore size: to $\varnothing 100$



Pneumatic Valves CB-023SA

*1 Effective cross-sectional area S can be obtained by $S=5C$.

Pneumatic valves

4K₆ Series

- Compatible with up to $\varnothing 160$ cylinder drive
C (dm³/ (S·bar)) : 0.60 to 13 *1
- Compact with a broad lineup of valve widths of 15 mm, 18 mm, 23 mm, and 29 mm

Applicable cylinder bore size: to $\varnothing 160$



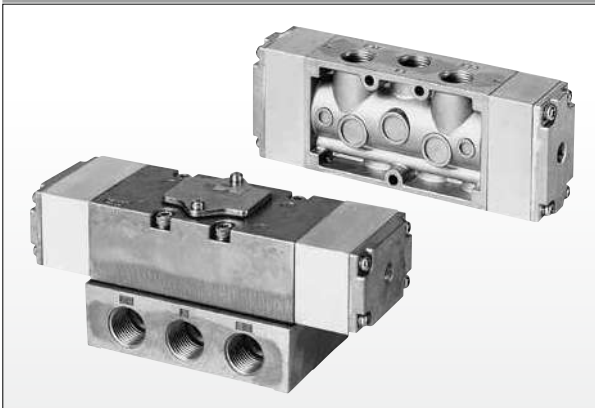
Pneumatic Valves CB-023SA

Pneumatic valves

4F Series

- Compatible with up to $\varnothing 250$ cylinder drive
4F0 to 6 : C (dm³/ (S·bar)) : 0.61 to 18 *1
4F7 : Effective cross-sectional area: 160 mm²
- Excellent total performance for a variety of fields
- High environmental resistance (rough air)

Applicable cylinder bore size: to $\varnothing 250$



Pneumatic Valves CB-023SA

*1 Effective cross-sectional area S can be obtained by $S=5C$.

4GR unit valve

- Unit valve with three functions (valve, speed controller, silencer) integrated
 - Reduction in device selection, purchase procedure, and assembling processes
 - Reduction in installation area due to unitized system (reduced by 66%*)
 - Lighter weight due to unitized system (weight reduced by 61%*)
- * Compared with valve 4GE210R + speed controller SC1-6 + silencer SLW-6A assembly
- Reduction in operation speed adjustment processes using the speed controller with 10-level scale.



4G unit valve CC-1134A



PNEUMATIC AUXILIARY COMPONENTS

Speed controllers

Needle valves with adjusting dials

DVL Series

- Linear flow characteristics
- Use for visual inspection of flow rate management
- Use as a speed controller
- Oil prohibited available
- Unrestricted mounting



Needle valve with adjusting dial DVL Series CC-860A

Speed controllers

Speed controllers with adjusting dials

DSC Series

- Flow characteristics in proportion to dial indicator value
- Equalized speed setting
- Push locking method is adopted
- Prevents adjustment errors
- Reduces man-hours
- Compact inline type added



< Received the 2016 Good Design Award >

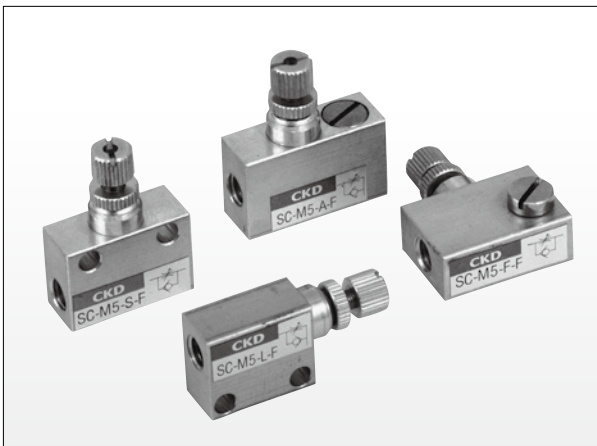
Speed controller with adjusting dial DSC Series CC-1021A

Speed controllers

Miniature speed controllers

SC Series

- Four-type series including straight, elbow, flat, and adjustable
- Lineup of low speed and fine speed types



Pneumatic, vacuum and auxiliary components CB-024SA

Speed controllers

Miniature meter-in meter-out speed controllers

SCD Series

- Flow rate control for both air supply and exhaust available
- Lineup of fine speed types that enable fine adjustment of flow rate



Pneumatic, vacuum and auxiliary components CB-024SA

Speed controllers with direct piping

SC3R, SC3W, SC3U Series

- Lineup of L-shape rotation and universal that allow 360-degree piping
- Great variety of series



Pneumatic, vacuum and auxiliary components CB-024SA

Speed controllers - Stainless steel, corrosion resistance

SC3P Series

- Speed control valve with anti-corrosive stainless steel body
- Ozone-resistant material is used for check packing to prevent degradation as standard.
- All substances which adversely affect the global environment have been eliminated from the materials



Pneumatic, vacuum and auxiliary components CB-024SA

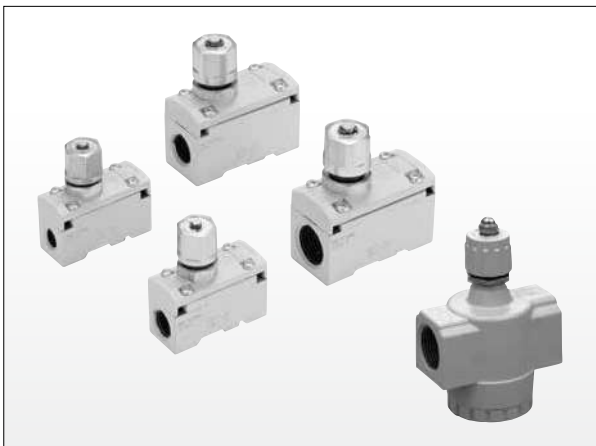
Speed controllers - medium/large bore sizes

SC1 Series (Medium bore size)

- Enabled disassembly while being piped
- Two-way installation to the bottom and side
- Sizes from Rc1/8 to 1/2

SC Series (Large bore size)

- Sizes from Rc3/4 to 2

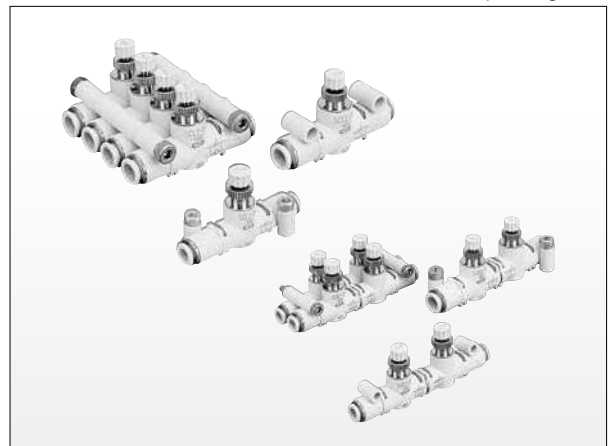


Pneumatic, vacuum and auxiliary components CB-024SA

Inline speed controllers

SCL2, SCD2 Series

- Line speed controller convenient for remote or centralized control
- 360-degree rotary mounting hole enables flexible installation without brackets
- Meter-in and meter-out integrated also available, which effectively prevents popping out and stabilizes speed
- Compact, but has a large flow rate of one class higher
- Fine speed for fine adjustment in a low speed available optionally
- Ozone-resistant materials used as standard for packing



Pneumatic, vacuum and auxiliary components CB-024SA



PNEUMATIC AUXILIARY COMPONENTS

Silencers

Metering valves with silencers

SMW2 Series

- Compact, lightweight, and high flow rate
Reducing 50% of the volume and 80% of the weight compared with CKD's SMW Series, this series achieved a maximum effective cross-sectional area in this class.
- Noise reduction effect of 23 dB(A) or higher
P. P sintered element with high noise reduction effect integrated into the body to maintain low noise level.
- Uses a push-lock needle
Knob with push lock mechanism enables easy and secure locking.
- Environmental friendly design
By using plastic material only, sorting at disposal is eliminated.



Pneumatic, vacuum and auxiliary components CB-024SA

Silencers

Silencers

SL, SLW, SLM Series

- Excellent noise reduction effect
- Flame-resistant resin used for the body (SLW Series)



Pneumatic, vacuum and auxiliary components CB-024SA

Auxiliary valves

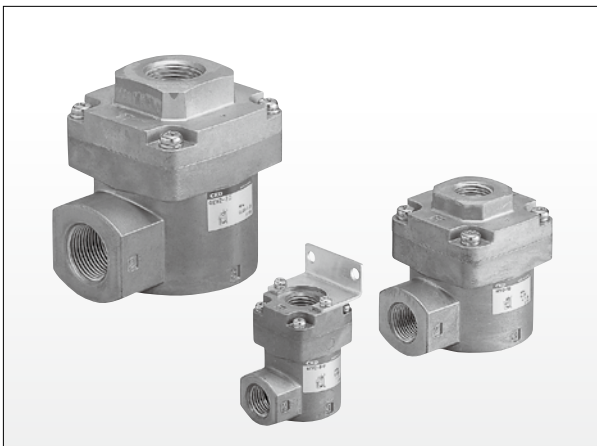
Quick manual valve/shuttle valve

QEV2 Series

- Wide variety of pipe size from Rc1/8 to 1
- Large effective cross-sectional area
- Mounting bracket available (small bore)

SHV2 Series

- Low cracking pressure
- Large effective cross-sectional area
- Flexibility in mounting direction
- Mounting bracket available (small bore)



Pneumatic, vacuum and auxiliary components CB-024SA

Auxiliary valves

Quick exhaust valve inline type

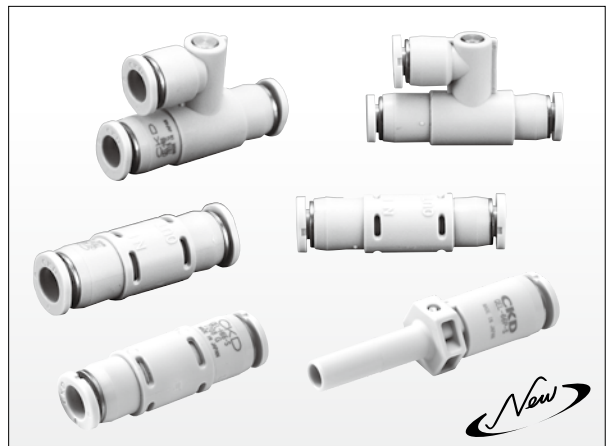
QEL Series

< inline >

- Small/space saving
- Ozone-resistant materials are used as standard to prevent degradation of the valving element
- All substances which adversely affect the global environment have been eliminated from the materials

< Plug >

- The elegant design is compact and saves space
- Uses the compact actuator high-speed drive, to be effective as a target for condensation due to likely adiabatic expansion
- The plug shape allows easy mounting near the actuator



Pneumatic, vacuum and auxiliary components CB-024SA

Compact check valves with push-in fittings

CHL Series

- Small/space saving inline
- $\varnothing 4$ and $\varnothing 6$ push-in fitting are integrated to downsize pipe length and increase workability
- Flame-resistant resin materials are used for resin parts



Pneumatic, vacuum and auxiliary components CB-024SA

Check valves

CHV2 Series

- Full variety of piping bore size from Rc1/8 to Rc11/2
- 34% smaller and 25% lighter compared with our conventional products
- Fluoro rubber specifications and oil-prohibited specifications available as options
- Mounting plate available for small bore size types



Pneumatic, vacuum and auxiliary components CB-024SA

Block valves

FPV Series

- Compact valves ideal for cylinder position locking and braking
- 34% smaller and 25% lighter compared with our conventional products
- Cylinder can be directly mounted with wide variety of bore sizes from M5 to R1/2
- White body that matches the equipment
- Products with speed controller also available (custom order)
- Products with manual button for residual pressure exhaust also available (custom order)

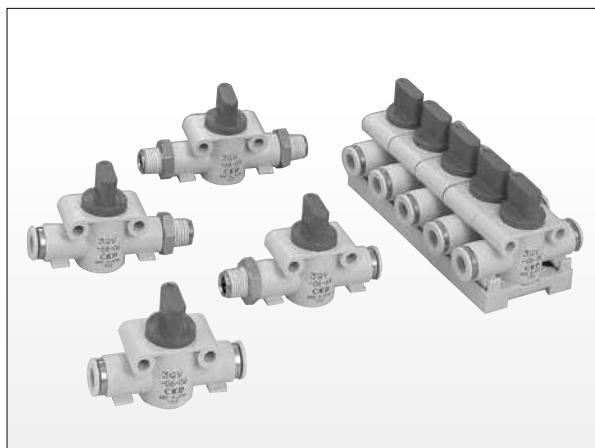


Pneumatic, vacuum and auxiliary components CB-024SA

Quick valves

2QV/3QV Series

- Straight flow path and large effective cross-sectional area
- Flame-resistant resin used as standard (UL94 Standards V-0 equivalent)
- Manifold enabled by optional bracket
- 2-port and 3-port valves are available.



Pneumatic, vacuum and auxiliary components CB-024SA



PNEUMATIC AUXILIARY COMPONENTS

Auxiliary valves

Threshold sensor

PWS Series

- Detect exhaust pressure near stroke ends with a high accuracy
- Electric or pneumatic output signal selectable



Pneumatic, vacuum and auxiliary components CB-024SA

Fittings/tubes

Rotary fittings

RJF Series

- Built-in bearing for high rigidity/low sliding resistance
- Can be selected from 4/6/8/12/16 circuits
- Space saving types available for 12 and 16 circuits
- Port size Rc1/8 is available as well as M5 (4/6/8 circuits)



Pneumatic, vacuum and auxiliary components CB-024SA

Fittings/tubes

Miniature fittings

F Series

- Unique structure with guide for easy insertion and disconnection prevention
- Common for soft nylon and urethane tubes



Pneumatic, vacuum and auxiliary components CB-024SA

Fittings/tubes

Fittings

GW, GWJ Series

- Full flow up to the bore size
- Flame-resistant resin used as standard for the white body, which blends in with any work environment
- V-shaped packing is used for the seal between the tube and fitting. The tube can be inserted with a light push and still obtain a secure seal
- Wide variety of applicable port O.D. from $\varnothing 3.2$ to $\varnothing 12$



Pneumatic, vacuum and auxiliary components CB-024SA

Fittings, stainless steel series

ZW/ZSP Series

- Compact size saves space
- Smooth connection and disconnection of tubes
- Secure seal for anti-leakage
- Flame-resistant resin incorporated in white body and push ring
- Stainless steel incorporated as standard for all metal parts

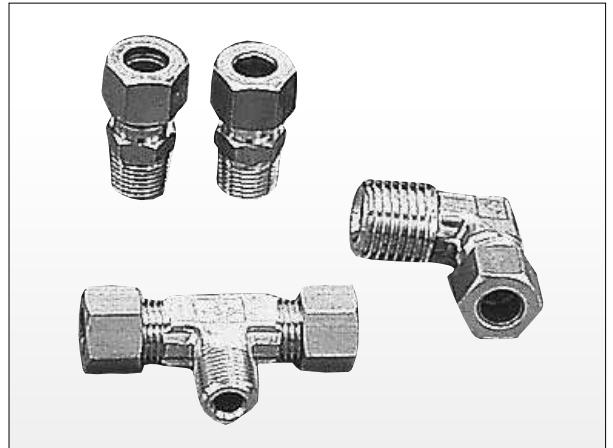


Pneumatic, vacuum and auxiliary components CB-024SA

Tightening fittings

MJ. JL Series (by Aoi Co., Ltd.)

- Reliable double-chuck fitting
- Use for copper tubes and other tubes
- Full flow up to the bore size



Pneumatic, vacuum and auxiliary components CB-024SA

Tubes

F. U. NU. KX. SR Series

(F (white not included), U, KX, and SR are manufactured by Aoi Co., Ltd.)

- Tubes can be selected according to purpose or application



Pneumatic, vacuum and auxiliary components CB-024SA

Fiber tubes

- Extremely fine tubes are as fine and flexible as lead wire
- O.D. $\phi 1.8$ and min. bending radius 4 mm
- Volume resistance ratio approx. $1 \times 10^8 \Omega \cdot \text{cm}$ or less
- Ideal for piping of fine speed cylinders
- A variety of tube colors and fittings available



Pneumatic, vacuum and auxiliary components CB-024SA



PNEUMATIC AUXILIARY COMPONENTS

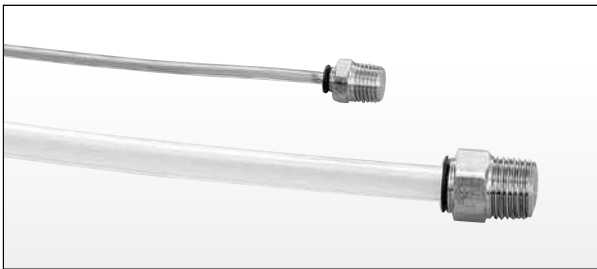
Fittings/tubes

Antistatic tubes

UP ** -F1 Series (ø8 to 12)

UP ** -F2 Series (ø3.2 to ø6)

- Resistant to static electricity and dust build-up
Volume resistance ratio for black color: 10^4 to $10^8 \Omega \cdot \text{cm}$
For other colors: 10^8 to $10^{12} \Omega \cdot \text{cm}$
Fully antistatic and prevent accumulation of static electricity and dust
- Flexible piping (ø3.2, ø4, ø6)
These antistatic tubes are highly bendable and flexible in mounting, enabling easy piping in narrow spaces.
(To use them with the push-in fitting, optional insert ring is necessary.)
- Variety of colors
Available in black, white, transparent, transparent blue, transparent green, transparent red (-F2). Choose the color suitable for your purpose.
- Diverse lineup
Six diameters are available: ø3.2, ø4, ø6, ø8, ø10, and ø12.



Pneumatic, vacuum and auxiliary components CB-024SA

Air blow nozzle

Air blow nozzles

BN * Series

- Wide variation
Line of various models to match industries and applications.
- Energy saving
Employs a special structure that sucks in the surrounding air and amplifies it. Blows air strongly even with little air consumption.
- Uniformity
Employs a special structure that injects air to a more uniformly directed spot. Achieves stable quality of workpieces.
- Low noise
In addition to a work environment-friendly silent design that reduces turbulence, there are also flat types and round types for the appropriate situations.



Air Blow Nozzle BN* Series CC-1347A



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)

Refrigeration air dryers

Xeroaqua dryer GX Series

GX3200D/GX5200D Series

- High quality and high reliability
Operating ambient temperature up to 45°C. (40°C in conventional models). Uses stainless steel heat exchanger compatible with oil-free air.
- Energy saving
Low energy consumption design that reduces air loss at drain discharge. The compact design reduces power consumption.
- Thin and compact body
- Easy maintenance
- Causes of abnormal stops are determined by the flashing pattern of the alarm lamp.



Xeroaqua dryer GX Series CC-1156A

Desiccant air dryers

Heatless dryer

HD/SHD Series

- Energy-saving control reduces purge rate by up to 96%
- Variable exhaust greatly reduces noise level by approx. 35 dB(A) (compared with conventional models)
- Electronic control system enables 1/3 energy consumption of the body (compared with conventional models)
- Digital display of pressure dew point assures reliable performance check
- Multi-tower structure significantly reduces installation area (1/3 to 1/2 compared with conventional models)
- Equipped with inlet/outlet filters as standard

Processing air flow rate (HD) 75 to 1235 l/min (ANR)
(SHD) 2.5 to 24 m^3/min (ANR)



Pneumatic, vacuum and auxiliary components CB-024SA

Refrigeration air dryers

Xeroaqua dryer GT Series

GT9000(D)/GT9000W(D)/GT9000WV Series

- Uses stainless steel heat exchanger that supports oil-free air
- Energy saving
[Air cooling types GT9300 to 9450, water cooling types GT9300W to 9450W]
Operation with 50% energy-saving by limiting the numbers of unit
[Water cooling GT9000WV Series]
Dew point temperature setting is available. Operation with 60% energy-saving at the maximum by inverter control.
Continuous operation available even when highly loaded

Applicable air compressor (GT9000(D), W(D)) 75 to 450 kW
(GT9000WV) 710 kW/960 kW



Pneumatic, vacuum and auxiliary components CB-024SA
Large refrigeration air dryer Xeroaqua dryer GX/GT Series CC-1335A

High polymer membrane air dryers

Super dryer

SD/SU/SDM Series

- Eco-friendly freon-free dryer
- With no movable parts, long-term clean dry air supply is possible
- Lighter, more compact, and easily built into equipment
- Using no electricity, there is no noise or effects thereof
- Ultra low dew point of max. -60°C
- Compatible with 75 kW grade large flow rate compressors

Processing air flow rate (SD/SU) 35 to 890 l/min (ANR)
(SDM) 1.36 to 12.4 m^3/min (ANR)



Pneumatic, vacuum and auxiliary components CB-024SA



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)

Air filters (medium)

Medium main line filters

AF2 Series

- Pleated structure of the element achieves low pressure loss
- Pop-up indicator enables differential pressure checking from all directions
- A simplified modular connection
- Piping adapter also available (made-to-order product)

Processing air flow rate 3.7 to 25.8 m³/min (ANR)



Pneumatic, vacuum and auxiliary components CB-024SA

Air filters (medium)

Medium main line filters

AF4000 Series

- High performance main line filter with stainless steel housing for clean environments, which is ideal for oil-free air lines
- With residual pressure release function
- A band method adopted for tightening the housing does not require tools for element replacement
- Time management of element replacement by indication of blinking lamp

Processing air flow rate 3.7 to 18.8 m³/min (ANR)



Pneumatic, vacuum and auxiliary components CB-024SA

Air filters (large)

Large main line filters

AF3000 Series

- Low pressure loss element is used to contribute to energy saving
- Differential pressure gauge provided as standard
- Plumbing is easy with the stand provided as standard
- Easy maintenance
Easy replacement of element by removing top of flange and rotating.
- Diverse lineup for wide application

Processing air flow rate 16 to 256 m³/min (ANR)



Pneumatic, vacuum and auxiliary components CB-024SA

Air filters (large)

Large main line filters

AF5000 Series

- Stainless steel vessel incorporated for all models. (SUS304)
- Long-life low pressure loss element is used to contribute to energy saving
- Equipped with forced discharger auto-drain
Equipped on P and S types as standard
- Remote control possible
Element replacement time is informed by differential pressure switch outputting alarm signal.
- Simple element replacement
Remove the top flange, and just turn the screw on the element.

Processing air flow rate 16 to 256 m³/min (ANR)



Pneumatic, vacuum and auxiliary components CB-024SA

Automatic drains

DT Series

- Snap-action mechanism enabling 15 times more durability (compared with our products)
- Compact & lightweight
- Upward piping and side piping available
- Manual cock provided as standard
- NO/NC both available

Compatible compressor 0.75 to 75 kW

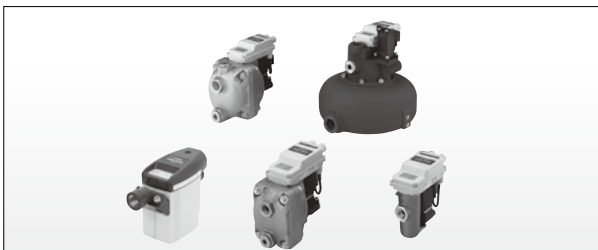


Pneumatic, vacuum and auxiliary components CB-024SA

Automatic drains

DB Series

- Prevents wasteful discharge of compressed air (energy saving)
Drain level sensor to control open/close of solenoid valve
- Abnormal discharge is notified by alarm output
- Discharge made sure by adopting diaphragm valve with large bore size
- Manual discharge also available with TEST button
- IP65



Pneumatic, vacuum and auxiliary components CB-024SA

Portable Air Supply Unit

ASU-S Series

- Easy to carry
It is shaped like a carry case, making it easy for anyone to carry it around
- Supplies clean air
Compressed air is cooled with the after-cooler. Supplies drain, and clean air that has been filtered of foreign matter
- Continuous use possible
Heat resistance around the pump is increased, preventing temperature rise from long periods of use



Portable Air Supply Unit CC-1363A

Nitrogen gas extraction unit

NS Series

- Install anywhere
Design and piping are done easily by providing system components
With no power supply required, it is usable even in explosion-proof atmospheres, different voltage areas, etc.
- Low cost
Running cost is only the cost of electricity for the compressor
Troublesome cylinder management of remaining gases or replacement work is not required.
- Easy maintenance
Component replacement is possible without disassembling the piping.
Not subject to High Pressure Gas Safety Act



Nitrogen gas extraction unit CC-1355A

Oxygen concentration monitor

PNA Series

- Inline, Pressure-resistant structure can be used under pressure up to 1.0 MPa
- A modular structure that can be connected to the Nitrogen Extraction Unit NSU Space saving piping is possible
- As conventional gas purging is no longer necessary, it contributes to energy saving
- Because the protective structure is IP65 equivalent, there are no worries even when wet with water
- Uses material compatible with the Food Sanitation Act, to enable safe and secure use even in food manufacturing processes











Pneumatic, Vacuum and Auxiliary Components CB-024SA



PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

[Combination]

Series	Combination/application						Model No.
	F	R	L	W		M	
	Filter	Regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter	
● F.R.L. combination P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 	F1000-W	R1000-W	L1000-W				C1000-W
	F2000-W	R2000-W	L3000-W				C2000-W
	F3000-W	R2000-W	L3000-W				C2500-W
	F3000-W	R3000-W	L3000-W				C3000-W
	F4000-W	R4000-W	L4000-W				C4000-W
	F6000-W	R6000-W	L8000-W				C6500-W
	F8000-W	R8000-W	L8000-W				C8000-W
● W.L. combination P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 			L1000-W	W1000-W			C1010-W
			L3000-W	W2000-W			C2010-W
			L3000-W	W3000-W			C3010-W
			L4000-W	W4000-W			C4010-W
			L8000-W	W8000-W			C8010-W
● F.R. combination P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 	F1000-W	R1000-W					C1020-W
	F2000-W	R2000-W					C2020-W
	F3000-W	R2000-W					C2520-W
	F3000-W	R3000-W					C3020-W
	F4000-W	R4000-W					C4020-W
	F6000-W	R6000-W					C6020-W
	F8000-W	R8000-W					C8020-W
● F.M.R. combination P1 = 0.7 MPa 	F1000-W	R1000-W				M1000-W	C1030-W
	F2000-W	R2000-W				M2000-W	C2030-W
	F3000-W	R2000-W				M3000-W	C2530-W
	F3000-W	R3000-W				M3000-W	C3030-W
	F4000-W	R4000-W				M4000-W	C4030-W
	F6000-W	R6000-W				M6000-W	C6030-W
	F8000-W	R8000-W				M8000-W	C8030-W
● W.M. combination P2 = 0.7 MPa 				W1000-W		M1000-W	C1040-W
				W2000-W		M2000-W	C2040-W
				W3000-W		M3000-W	C3040-W
				W4000-W		M4000-W	C4040-W
				W8000-W		M8000-W	C8040-W
● R.M. combination P2 = 0.7 MPa 		R1000-W				M1000-W	C1050-W
		R2000-W				M2000-W	C2050-W
		R2000-W				M3000-W	C2550-W
		R3000-W				M3000-W	C3050-W
		R4000-W				M4000-W	C4050-W
		R6000-W				M6000-W	C6050-W
		R8000-W				M8000-W	C8050-W
● F.M. combination P1 = 0.7 MPa 	F1000-W					M1000-W	C1060-W
	F2000-W					M2000-W	C2060-W
	F3000-W					M3000-W	C3060-W
	F4000-W					M4000-W	C4060-W
	F6000-W					M6000-W	C6060-W
	F8000-W					M8000-W	C8060-W
● F.F.M. combination P1 = 0.7 MPa 	F3000-W (5 μm) F3000-W (0.3 μm)					M3000-W	C3070-W
	F4000-W (5 μm) F4000-W (0.3 μm)					M4000-W	C4070-W
	F6000-W (5 μm) F6000-W (0.3 μm)					M6000-W	C6070-W
	F8000-W (5 μm) F8000-W (0.3 μm)					M8000-W	C8070-W

Modular design (Rotary actuator F.R.L.-)

* P1 = primary pressure P2 = secondary pressure ΔP2 = differential pressure


	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.45/0.63
				●	●									1.2/1.7
					●	●								1.2/1.7
					●	●								1.28/1.75
					●	●	●	●*						1.43/2.4/3.0
								●	●					4.5/5.0
								●	●					7.0/7.5
				●	●									0.45/0.63
					●	●								1.2/1.7
					●	●								1.28/1.75
					●	●	●	●*						1.43/2.4/3.0
								●	●					7/7.5
				●	●									0.77/1.1
					●	●								1.75/2.5
					●	●								1.75/2.5
					●	●								2.0/2.6
					●	●	●	●*						2.5/4.4/5.0
								●	●					7/7.7
								●	●					10
				●	●									0.15
					●	●								0.25
					●	●								0.36
					●	●								0.36
					●	●	●	●*						0.825
								●	●					1.27
								●	●					2.6
				●	●									0.15
					●	●								0.25
					●	●								0.36
					●	●	●	●*						0.825
								●	●					2.6
				●	●									0.15
					●	●								0.25
					●	●								0.36
					●	●	●	●*						0.825
								●	●					1.27
								●	●					2.6
				●	●									0.15
					●	●								0.25
					●	●	●	●*						0.36
					●	●	●	●*						0.825
								●	●					1.27
								●	●					2.6
					●	●								0.225
					●	●	●	●*						0.5
								●	●					0.8
								●	●					1.1

*: Piping adaptor is mounted.









PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)


[Combination]

Series name	Compatible product(s)	Model No.
Separate type ● F.R.L. kit P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 	Set (with accessory)	K60570

[Filter/regulators]

Series	Compatible product(s)						Model No.			
	F	R	L	W Rotary actuator		M				
	Filter	Regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter				
Modular design (Rotary actuator F.R.L.)	● Filter/regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 				●			WB500 (small) W1000-W W2000-W W3000-W W4000-W W8000-W		
		● Filter/regulator Flame-resistant Series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 				●			W3000-G4 W4000-G4 W8000-G4	
			● Filter/regulator Outdoor Series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 				●			WW4000 WW8000
				● Reverse filter/regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 					●	
		● Reverse filter/regulator Flame-resistant Series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 						●		W3100-G4 W4100-G4 W8100-G4

Series	Compatible product(s)						Model No.
	F	R	L	W Rotary actuator		M	
	Filter	Regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter	
Compact ● Compact filter/regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 	Push-in fitting and mounting bracket integrated						WB500

Series	Compatible product(s)						Model No.
	F	R	L	W Rotary actuator		M	
	Filter	Regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter	
Separate type ● 7000 Series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 	Filter and regulator integrated, filtration rating 5 μm						B7019-*C

* P1 = primary pressure P2 = secondary pressure $\Delta P2$ = differential pressure

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.2/0.3

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
	●	●												0.08/0.18
				●	●									0.83/1.15
					●	●	●							1.5/2.0
					●	●								2.15/2.43
					●	●	●							2.5/4.35/4.75
								●	●					10
					●	●								2.15/2.43
					●	●	●							2.5/4.35/4.75
								●	●					10
					●	●	●							2.5/4.35/4.75
								●	●					10
				●	●									0.83/1.15
					●	●								1.5/2.0
					●	●								2.15/2.43
					●	●	●							2.5/4.35/4.75
								●	●					10.0
					●	●								2.15/2.43
					●	●	●							2.5/4.35/4.75
								●	●					10.0











	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
	●	●												0.08/0.18

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.5/0.9



PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

[Filters]

	Series	Compatible product(s)						Model No.	
		F	R	L	W Regulator	M			
		Filter	Regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter		
Modular design	<ul style="list-style-type: none"> ● Filter P1 = 0.7 MPa ΔP = 0.02 MPa 							<ul style="list-style-type: none"> F1000-W F2000-W F3000-W F4000-W F6000-W F8000-W 	
	<ul style="list-style-type: none"> ● Filter/flame-resistant series P1 = 0.7 MPa ΔP = 0.02 MPa 							<ul style="list-style-type: none"> F3000-G4 F4000-G4 F8000-G4 	
	<ul style="list-style-type: none"> ● Filter/outdoor series P1 = 0.7 MPa ΔP = 0.02 MPa 							<ul style="list-style-type: none"> FW4000 FW8000 	
	<ul style="list-style-type: none"> ● Filter/medium pressure series P1 = 1.3 MPa ΔP = 0.02 MPa 							<ul style="list-style-type: none"> FM3000-W FM4000-W FM6000-W FM8000-W 	
	Clean-room	<ul style="list-style-type: none"> ● Inline type clean filter P1 = 0.7 MPa ΔP = 0.03 MPa 							<ul style="list-style-type: none"> FCS500 FCS1000
	Separate type	<ul style="list-style-type: none"> ● Air filter P1 = 0.7 MPa ΔP2 = 0.02 MPa 	Wide variation Filtration rating 5 μm						<ul style="list-style-type: none"> A1019-*C 1138-*E 1126-*E
		<ul style="list-style-type: none"> ● Heavy duty air filter P1 = 0.7 MPa ΔP2 = 0.002 MPa 	High moisture removal Filtration rating 5 μm						<ul style="list-style-type: none"> A1338 1326
		<ul style="list-style-type: none"> ● Submicron air filter P1 = 0.7 MPa ΔP2 = 0.01 MPa 	Tar removing Filtration rating 0.3 μm						<ul style="list-style-type: none"> 1138-*C-EY A1338-*C-Y 1126-*C-EY 1326-*C-Y
		<ul style="list-style-type: none"> ● Micro alescer micro naught P1 = 0.7 MPa ΔP2 = 0.01 MPa 	Oil removing Oil removing ratio 0.1 PPMW/W						<ul style="list-style-type: none"> 1219-2C 1238-6C 1226-8C 1126J-*C
		<ul style="list-style-type: none"> ● Micro alescer/odor naught P1 = 0.7 MPa ΔP2 = 0.01 MPa 	For deodorizing						<ul style="list-style-type: none"> 1238-6C-X 1226-8C-X 1226J-*C-X

* P1 = primary pressure P2 = secondary pressure ΔP2 = differential pressure

Port size													Max. flow rate m ³ /min (Reference)
ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
			●	●									0.46/0.61
				●	●								1.3/1.7
				●	●								1.23/1.5
				●	●	●							1.32/2.14/3.0
							●	●					5.6/6.2
							●	●					6.4/6.8
				●	●								1.23/1.5
				●	●	●							5.6/6.2
							●	●					6.4/6.8
				●	●	●							1.32/2.14/3.0
							●	●					6.4/6.8
				●	●	●							1.6/2.0
				●	●								1.9/2.8/3.8
							●	●					6.7/8.1
							●	●					8.1/9.0

Port size														Max. flow rate m ³ /min (Reference)
ø4	ø6	ø8	ø10	ø12	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
●	●	●			●	●								0.05 (ø4, ø6, 1/8) / 0.08 (ø8, 1/4)
		●	●	●		●	●							0.3 to 0.4

Port size													Max. flow rate m ³ /min (Reference)
ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
			●	●									0.55/0.7
							●	●					5.5/7.0
									●	●	●		18/21/25
							●	●					1.55
									●	●	●		5.8
							●	●					1.55
							●	●					1.55
									●	●	●		4.9
									●	●	●		4.9
					●								0.056
							●						1.27
								●					2.49
										●	●		4.8
							●						1.27
								●					2.49
										●	●		4.8



PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

[Oil mist filters]

Series	Compatible product(s)						Model No.				
	F	R	L	W Rotary actuator		M					
	Filter	Regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter					
Modular design	<ul style="list-style-type: none"> ● Oil mist filter (S type) P1 = 0.7 MPa ΔP = 0.01 MPa ● Filtration: 0.3 μm ● Secondary side oil concentration 0.5 mg/m³ 						●	M1000-W*-S M2000-W*-S M3000-W*-S M4000-W*-S M6000-W*-S M8000-W*-S			
		<ul style="list-style-type: none"> ● Oil mist filter (M type) P1 = 0.7 MPa ΔP = 0.01 MPa ● Filtration: 0.01 μm ● Secondary side oil concentration 0.01 mg/m³ 						●	M1000-W M2000-W M3000-W M4000-W M6000-W M8000-W		
			<ul style="list-style-type: none"> ● Oil mist filter (X type) P1 = 0.7 MPa ΔP = 0.01 MPa ● Nominal filtration rating: By way of active carbon suction ● Secondary side oil concentration 0.003 mg/m³ 						●	M1000-W*-X M2000-W*-X M3000-W*-X M4000-W*-X M6000-W*-X M8000-W*-X	
				<ul style="list-style-type: none"> ● High-performance oil mist filter P1 = 0.7 MPa ΔP = 0.01 MPa ● Filtration: 0.01 μm ● Secondary side oil concentration 0.001 mg/m³ 						●	MX1000-W MX3000-W MX4000-W MX6000-W MX8000-W
					<ul style="list-style-type: none"> ● Oil mist filter outdoor (S type) P1 = 0.7 MPa ΔP = 0.01 MPa ● Filtration: 0.3 μm ● Secondary side oil concentration 0.5 mg/m³ 						●
	<ul style="list-style-type: none"> ● Oil mist filter outdoor (M type) P1 = 0.7 MPa ΔP = 0.01 MPa ● Filtration: 0.01 μm ● Secondary side oil concentration 0.01 mg/m³ 									●	MW4000-M MW8000-M
		<ul style="list-style-type: none"> ● Oil mist filter medium pressure (S type) P1 = 1.4 MPa ΔP = 0.01 MPa ● Filtration: 0.3 μm ● Secondary side oil concentration 0.5 mg/m³ 							●	MM3000-W*-S MM4000-W*-S MM6000-W*-S MM8000-W*-S	
	<ul style="list-style-type: none"> ● Oil mist filter medium pressure (M type) P1 = 1.4 MPa ΔP = 0.01 MPa ● Filtration: 0.01 μm ● Secondary side oil concentration 0.01 mg/m³ 							●	MM3000-W MM4000-W MM6000-W MM8000-W		
			<ul style="list-style-type: none"> ● Oil mist filter medium pressure (X type) P1 = 1.4 MPa ΔP = 0.01 MPa ● Filtration rating: suction by activated charcoal ● Secondary side oil concentration 0.003 mg/m³ 						●	MM3000-W*-X MM4000-W*-X MM6000-W*-X MM8000-W*-X	

Pneumatic, vacuum and auxiliary components CB-024SA















* P1 = primary pressure P2 = secondary pressure Δ P2 = differential pressure

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.15
					●	●								0.25
					●	●								0.45
					●	●	●							1
								●	●					1.4
								●	●					2.9
				●	●									0.15
					●	●								0.25
					●	●								0.36
					●	●	●							0.825
								●	●					1.27
								●	●					2.6
				●	●									0.15
					●	●								0.25
					●	●								0.45
					●	●	●							1.0
								●	●					1.4
								●	●					2.9
				●	●									0.075
					●	●								0.18
					●	●	●							0.37
								●	●					0.67
								●	●					1.48
					●	●	●							0.825
								●	●					2.6
					●	●	●							1
								●	●					2.9
					●	●								0.61
					●	●	●							1.37
								●	●					1.92
								●	●					3.98
					●	●								0.49
					●	●	●							1.13
								●	●					1.74
								●	●					3.56
					●	●	●							0.61
					●	●	●							1.37
								●	●					1.92
								●	●					3.98



PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

[Regulators]

Series	Compatible product(s)							Model No.	
	F	R		L	W Regulator		M		
	Filter	Regulator	Reverse/regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter		
Modular design	<ul style="list-style-type: none"> ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						R1000-W
									R2000-W
									R3000-W
									R4000-W
									R6000-W
									R8000-W
	<ul style="list-style-type: none"> ● Regulator/flame-resistant series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						R3000-G4
									R4000-G4
									R8000-G4
	<ul style="list-style-type: none"> ● Regulator for outdoor series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RW4000
									RW8000
	<ul style="list-style-type: none"> ● Regulator oil-prohibition series P1 = 0.7 MPa P2 = 0.5 MPa 		●						RN3000
								RN4000	
								RN8000	
<ul style="list-style-type: none"> ● Regulator medium pressure series P1 = 1.6 MPa P2 = 0.5 MPa 		●						RM3000-W	
								RM4000-W	
<ul style="list-style-type: none"> ● Reverse regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 			●					R1100-W	
								R2100-W	
								R3100-W	
								R4100-W	
								R6100-W	
								R8100-W	
Compact	<ul style="list-style-type: none"> ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RA050, RA060 (manifold)
									RA800
									RB500
<ul style="list-style-type: none"> ● Block manifolds Regulator 		●						MNRB500A	
								MNRB500B	
Precision	<ul style="list-style-type: none"> ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RJB500
	<ul style="list-style-type: none"> ● Block manifolds Regulator 		●						MNRJB500A
									MNRJB500B
	<ul style="list-style-type: none"> ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RP2000
<ul style="list-style-type: none"> ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RPE1000	
Clean-room	<ul style="list-style-type: none"> ● Clean regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RC2000
	<ul style="list-style-type: none"> ● Clean regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						2619






* P1 = primary pressure P2 = secondary pressure ΔP2 = differential pressure

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.77/1.35
					●	●								1.75/2.5
					●	●								2.0/2.6
					●	●	●							2.5/4.4/5.0
								●	●					7/7.7
								●	●					14.0/11.0
					●	●								2.0/2.6
					●	●	●							2.5/4.4/5.0
								●	●					14.0/11.0
					●	●	●							2.5/4.4/5.0
								●	●					14.0/11.0
					●	●								1.6/2.6
					●	●	●							2.4/3.0/3.0
								●	●					4.5/6
					●	●								2.0
					●	●	●							3.0
				●	●									0.77/1.35
					●	●								1.75/2.5
					●	●								2.0/2.6
					●	●	●							2.5/4.4/5.0
								●	●					7/7.7
								●	●					14.0/11.0
				●	●									0.1
				●	●									0.35
	●	●												0.1/0.2
	●	●	●											0.1/0.2
	●	●												0.1/0.2
	●	●												0.06/0.08
	●	●	●											0.06/0.08
	●	●												0.06/0.08
					●	●								
					●									
					●	●	●							0.8
				●	●									0.18/0.18






PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

[Regulators]

Series name	Compatible product(s)	Model No.	
Separate type	<ul style="list-style-type: none"> ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa $\Delta P2 = 0.1$ MPa 	Extensive models	B2019-*C
			2215-*C
	<ul style="list-style-type: none"> ● Reverse regulator P1 = 0.7 MPa P2 = 0.5 MPa $\Delta P2 = 0.1$ MPa 	Check valve integrated, no by-pass circuit required	2419-*C
			2415-*C
	<ul style="list-style-type: none"> ● Dial air regulator P1 = 0.7 MPa P2 = 0.5 MPa 	With setting dial	2302-*C
			2303-*C
			2304-*C
	<ul style="list-style-type: none"> ● Remote dial air regulator P1 = 0.7 MPa P2 = 0.5 MPa 	For remote control	2302-*C-R
			2303-*C-R
			2304-*C-R
<ul style="list-style-type: none"> ● Relief valve Set pressure 0.7 MPa Rising pressure 0.08 MPa 	For maintaining the set pressure	B6061-*C	


[Lubricators]

Series	Compatible product(s)							Model No.
	F	R		L	W Regulator		M	
	Filter	Regulator	Reverse/regulator	Lubricator	Filter/regulator	Reverse Filter/regulator	Oil mist filter	
Modular design	<ul style="list-style-type: none"> ● Lubricator P1 = 0.5 MPa $\Delta P = 0.3$ MPa 				●			L1000-W
								L3000-W
								L4000-W
								L8000-W

Series name	Compatible product(s)	Model No.
Separate type	<ul style="list-style-type: none"> ● Lubricator econo-mist P1 = 0.5 MPa $\Delta P = 0.03$ MPa 	Supplying fine oil mist
		A3019-*C
		3003E-*C
<ul style="list-style-type: none"> ● Lubricator auto-fill 	Automatic supply	3004E-*C
		3003E-*C-V

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[Drain separator]

Series name	Compatible product(s)	Model No.
<ul style="list-style-type: none"> ● Drain separator 	Lightweight compact drain separator	FX1004
		FX1011
		FX1037

* P1 = primary pressure P2 = secondary pressure ΔP2 = differential pressure

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.5
								●	●	●				14
				●	●									0.5
								●	●	●				14
					●	●	●	●						3.0
								●	●	●				10.0
											●	●		30.0
					●	●	●	●						3.0
								●	●	●				10.0/30.0
											●	●		30
				●	●									0.15

* P1 = primary pressure ΔP2 = differential pressure

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.55/0.7
					●	●								1.1/2.25
					●	●	●							1/1.7/2.7
								●	●					6.3/10.0

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.1/0.4
								●	●					3.5/4.0
										●	●	●		15/20
								●	●					3.5/4.0

	Port size												Max. processing flow rate L/min (ANR)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
					●	●								550
					●	●	●							1800
								●	●					6100



PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

[Other related products]

Series name	Compatible product(s)	Model No.	
<ul style="list-style-type: none"> ● Clean exhaust filter 	Provide direct exhaust within a clean room	FAC10	
		FAC100	
		FAC200	
		FAC300	
<ul style="list-style-type: none"> ● Inline filter 	Compact, lightweight and space saving inline	FSL100	
		FSL200	
		FSL500	
<ul style="list-style-type: none"> ● Exhaust cleaner 	For exhaust, improving the environment	FA331-10A	
		FA431-15A	
		FA531-20A	
		FA631-25A	
		FA731-40A	
<ul style="list-style-type: none"> ● Drain discharger 	Automatic drain Heavy duty drain Tank drain	DT3000-W/4000-W	
		DB1000/3000	
		5100-4C	
		6119-2C	
<ul style="list-style-type: none"> ● Moisture indicator (P1 = 0.7 MPa) ● Air pressure switch 	For dew point monitor of desiccant dryer Setting accuracy within ± 0.02 MPa	APE-8T	
		APE-8N	
		APE-8F	
		P4000-W	
		P*100-W	
		APS-W	
<ul style="list-style-type: none"> ● Shut-off valve 	Preventing accidents due to residual pressure in pneumatic lines	V1000-W	
		V3000-W	
<ul style="list-style-type: none"> ● Shut-off valve with locking hole (OSHA compliant) 	Preventing accidents due to residual pressure in pneumatic lines	V3010-W	
		V6010-W	
<ul style="list-style-type: none"> ● Residual pressure exhaust valve with spool position detection 	Preventing accidents due to residual pressure in pneumatic lines. Certified for safety standard ISO 13849-1 Uses a spool valve with main valve position monitoring function.	SNS	
<ul style="list-style-type: none"> ● Quick valve 	2-port valves and 3-port valves are available	2QV	
		3QV	
<ul style="list-style-type: none"> ● Slow start valve 	Ensuring safety when starting and stopping	V3301-W	
		V3321-W	
<ul style="list-style-type: none"> ● Pressure gauge 	Low-profile pressure gauge ideal for embedding in devices	G401	
	Pressure gauge with safety marker	G40D/50D	
	Pressure gauge with limit mark	G45D/G41D	
	General-use pressure gauge	D49D/50D	
	Pressure gauge for panel mounting	G53D	
	Pressure gauge with switch	G52D	
	Miniature pressure gauge	G29D	
	Compact round pressure gauge	G39D	
<ul style="list-style-type: none"> ● Differential pressure gauge 	Air filter life measuring	GA400-8-P02	



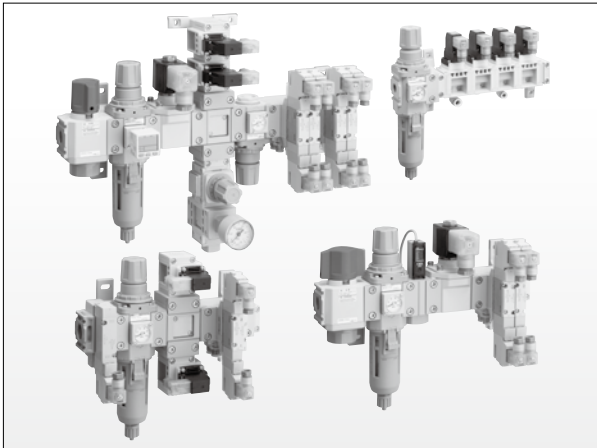
PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

F.R.L Units

Air units

CXU Series

- Piping is not necessary. No complicated work required
 - Saving space by removing pipes and tubes
 - No screw-in parts, no external leakage
- Flexible combination
 - Vertical and horizontal piping can be changed flexibly. Direct connection of solenoid valve is possible
 - Modular connection enables flexible exchange and expansion of pneumatic components



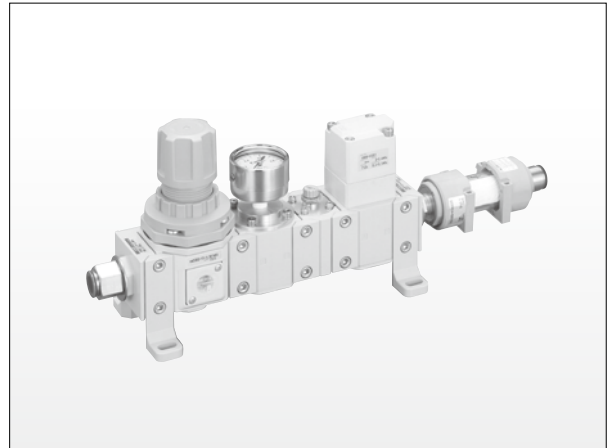
Air unit CXU Series CC-901A

Clean filter

Clean air units

CAU30 Series

- Whole clean blow system in one unit
- High rigidity aluminum body with transparent filter adopted
- Compact and space-saving unit that requires no piping
- Completely oil-prohibited specifications
- 2-system type available



Clean air unit CAU30 Series CC-872A

Regulators

Regulators for water

WR1/WR2 Series

- Easy-to-use compact regulator for water
- Specially designed knob shape for easy pressure adjustment
- A single push can lock the pressure adjustment knob
- Mesh filter supplied as standard



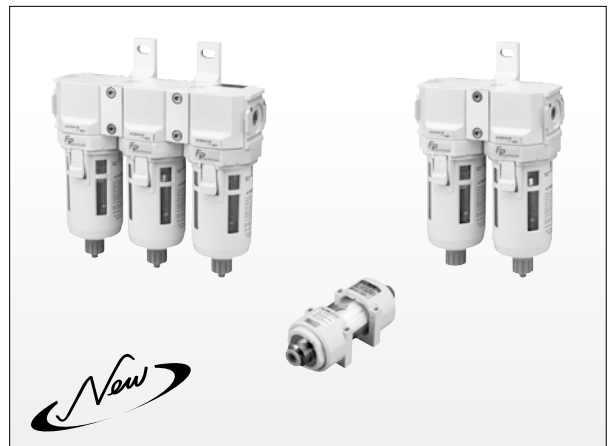
Pneumatic, vacuum and auxiliary components CB-024SA

Anti-bacterial/Bacteria removing filter

Anti-bacterial/Bacteria removing filters

SFC/SFS Series

- Anti-bacterial activity value (≥ 4)
- Bacteria trapping performance 99.999999% (\geq LRV 8)
- Resin and rubber materials compatible with the Food Sanitation Act are used for fluid passage section
- Resin and rubber materials compatible with FDA are used for fluid passage section
- NSF H1 grease for foodstuffs is used
- Antibacterial material are used for exterior
- Equipped with maintenance label to inform of maintenance period as standard
- Odor removal filter newly added to lineup



Anti-bacterial/Bacteria removing filter SFC/SFS Series CC-1311A

Electro pneumatic regulator

Components for pressure control on which input and output are proportional.

- High precision/quick response system that enables continuous air pressure control according to the usage. These fluid control components are ideal for push pressure controller and tension controller
- Perfect for automatization
Flexible continuous operation is made available with more advanced electronic control.
- EVS2 Series
Compact, lightweight, and energy saving.
- Low pressure electro pneumatic regulator EVL Series
Flexible and high precision proportional control from 0 kPa to 50 kPa.



Pneumatic, vacuum and auxiliary components CB-024SA

Thin electro pneumatic regulator

MEVT Series

Manifold thin electro pneumatic regulator compatible with PC control and reduced wiring. Ideal for pressure control and fine speed cylinder control, etc., in semiconductor fields and precise processing fields, etc.

- 14 mm thin and 80 g lightweight
- Network-compatible
- 2-color display of the operational status
- Easy piping and wiring work
- 2 installation directions
- High precision, high responsivity
- Eco-friendly product

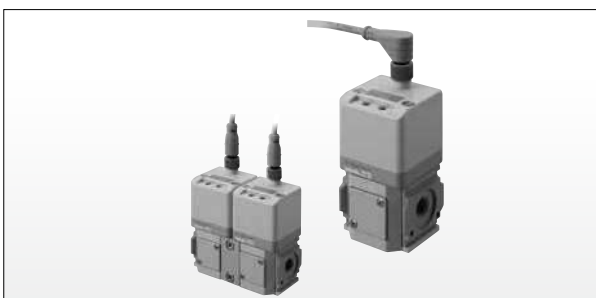


Pneumatic, vacuum and auxiliary components CB-024SA

High precision electro pneumatic regulators

EVR Series

- High precision pressure control
 - Hysteresis: 0.3% F.S., linearity: $\pm 0.5\%$ F.S., resolution: 0.1% F.S., repeatability: 0.2% F.S.
- Improved temperature stability and durability
 - Zero point fluctuation: 0.06% F.S., span fluctuation: 0.06% F.S., durability: 3 times longer (compared with conventional models)
- New functions introduced
 - Residual pressure 0 when the input signal is 0% F.S. Pressure control pattern selectable.
- Easy operation
 - Two buttons enables operations for zero point adjustment, span point adjustment, and pressure control.
- Compatibility and installation
 - Compatible mounting with the conventional product (EV2500).
 - Two types of connectors are available. (Straight and L type, 1 m and 3 m each)



Electro pneumatic regulator EVR Series CC-1174A

Digital electro pneumatic regulators

EVD Series

- Superior usability and installability
 - Digital display allows confirmation of control status at a glance
 - Parallel input is equipped as standard
 - Compact design
 - D-sub connector enables 2-way connection
 - Enabling module connection
- Higher functionality with built-in microcomputer
 - Error display function ● Zero/span adjustment function
 - Direct memory function ● Switch output function
- High precision/high response pressure control is possible
- Eco-friendly design
 - Lead-free and vinyl chloride-free ● Material indication
 - Automatic power off function employed for energy saving
 - IO-Link compatible















Pneumatic, vacuum and auxiliary components CB-024SA



[Vacuum system equipment SELVACS]

● Ejector system compatible

Model	Series	
Ejector single unit	<p>VSY Series Single unit with vacuum burst function</p> <ul style="list-style-type: none"> ● Ejector and vacuum burst function are integrated. ● Compact and lightweight, it can be used at the end of vacuum piping. 	
	<p>VSH Series Single unit solenoid valve direct mounting</p> <ul style="list-style-type: none"> ● Supply port sizes from M5 to R1/4, to which solenoid valve can be directly mounted. ● A wide range of nozzle diameter variations from ø0.5 to ø2.0. 	
	<p>VSU Series Tubular single unit</p> <ul style="list-style-type: none"> ● Installable in the middle of piping since the vacuum port and supply port form a straight line. ● Dedicated bracket is available. 	
	<p>VSB Series Square single unit</p> <ul style="list-style-type: none"> ● Square silencer built in, enabling body mounting and fixing. ● Option for mechanical vacuum switch can be selected. 	
	<p>VSC Series Pad direct mounting single unit</p> <ul style="list-style-type: none"> ● Vacuum port sizes from M5 to R3/8, to which vacuum pads can be directly mounted. ● A wide range of nozzle diameter variations from ø0.5 to ø2.0. 	
Ejector unit	<p>VSG Series 20 mm width dedicated single unit</p> <ul style="list-style-type: none"> ● Comprehensive single unit dedicated width that emphasizes basic performance. ● Valve, vacuum pressure switch and vacuum filter are unitized and made selectable according to the application. 	
	<p>VSK/VSKM Series 16 mm width comprehensive unit</p> <ul style="list-style-type: none"> ● Modularization of each unit enables optimal unit selection. ● Built-in check valve and air timer burst are selectable options. 	
	<p>VSJ/VSJM Series 20 mm width comprehensive unit</p> <ul style="list-style-type: none"> ● Flow rate and pressure of burst air can be controlled. ● Vacuum burst circuit relief function realizes shortening of vacuum burst time. 	
	<p>VSN/VSNM Series 10.3 mm width small unit</p> <ul style="list-style-type: none"> ● Compact and lightweight vacuum unit. ● Achieves fast and stable response. 	
	<p>VSX/VSXM Series 10.5 mm width comprehensive unit</p> <ul style="list-style-type: none"> ● Compact and thin vacuum unit. ● Two installation types available: direct fixing or DIN rail mount. 	
	<p>VSQ Series 31.5 mm width dedicated single unit</p> <ul style="list-style-type: none"> ● Large vacuum unit ideal for controlling large flow rates. ● Standardized three types of nozzle: single, double and twin. 	
	<p>VSZM Series 11 mm pitch manifold dedicated unit</p> <ul style="list-style-type: none"> ● Manifold dedicated reduced wiring vacuum unit. ● Power consumption of the valve reduced to 0.55 W, effectively saving energy. ● A wide range of applications are supported by wide variations of the vacuum pressure switch. 	





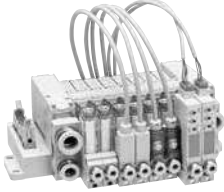
● Standard equipment ○ Option

	Model No.	Piping method			Components							Nozzle diameter \varnothing (1/10 mm)							
		Single unit	Manifold		Vacuum generating valve	Vacuum break valve	Vacuum pressure switch	Vacuum filter	Silencer	Check valve	04	05	06	07	10	12	15	20	
			Individual wiring	Reduced wiring															
	VSY	●						○	○			○		○					
	VSH	●							○			○		○	○	○	○	○	
	VSU	●							○			○		○					
	VSB	●						○	●			○		○	○	○			
	VSC	●							○			○		○	○	○	○	○	
	VSG	●			○	○	○	●	●			○		○	○				
	VSK	●			○	○	○	●	○	○			○		○	○			
	VSKM		●																
	VSJ	●			●	●	○	●	○				○		○	○			
	VSJM		●																
	VSN	●			●	●	○		○			○		○					
	VSNM		●																
	VSX	●			●	●	○	●	○				○		○				
	VSXM		●																
	VSQ	●			●	●	○	●	○				○		○	○	○	○	
	VSZM			●	●	●	○	●	○				○		○				



[Vacuum system equipment SELVACS]

- Vacuum pump system compatible

Model	Series	
Vacuum pump system compatible Vacuum switching unit	VSJP/VSJPM Series 20 mm width comprehensive unit <ul style="list-style-type: none"> ● Flow rate and pressure of burst air can be controlled. ● Vacuum burst circuit relief function realizes shortening of vacuum burst time. ● Standardized self-holding type of solenoid valve for vacuum. 	
	VSNP/VSNPM Series 10.3 mm width small unit <ul style="list-style-type: none"> ● Compact and lightweight vacuum unit. ● Achieves fast and stable response. 	
	VSXP/VXPM Series 10.5 mm width comprehensive unit <ul style="list-style-type: none"> ● Compact and thin vacuum unit. ● Two installation types available: direct fixing or DIN rail mount. ● Vacuum 3-port valve (option) enables high cycles. 	
	VSQP Series 31.5 mm width dedicated single unit <ul style="list-style-type: none"> ● Large vacuum unit ideal for controlling large flow rates. ● Solenoid valve for vacuum with standardized normally open/normally closed. 	
	VSZPM Series 11 mm pitch manifold dedicated unit <ul style="list-style-type: none"> ● Manifold dedicated reduced wiring vacuum unit. ● Power consumption of the valve reduced to 0.55 W, effectively saving air. ● A wide range of applications are supported by wide variations of the vacuum switch. 	

●: Standard equipment ○: Option

Model No.	Piping method			Components						Nozzle diameter ϕ (1/10 mm)					
	Single unit	Manifold		Valve for vacuum	Burst valve	Vacuum switch	Vacuum filter	Silencer	Check valve	05	07	10	12	15	20
		Individual wiring	Reduced wiring												
VSJP	●			●	●	○	●			Effective cross-sectional area of vacuum valve 3.5 mm ² ($\phi 4$), 5 mm ² ($\phi 6$)					
VSJPM		●													
VSNP	●			●	●	●				Effective cross-sectional area of vacuum valve 0.4 mm ²					
VSNPM		●													
VSXP	●			●	●	○	●			Effective cross-sectional area of vacuum valve 2-way valve specification: 3.5 mm ² ($\phi 4$), 4.5 mm ² ($\phi 6$) 3-way valve specification: 3.0 mm ² ($\phi 4$), 3.6 mm ² ($\phi 6$)					
VSXPM		●													
VSQP	●			●	●	○	●			Effective cross-sectional area of vacuum valve 16.5 mm ²					
VSZPM			●	●	●	○	●			Effective cross-sectional area of vacuum valve 4.5 mm ²					
















RELATED PNEUMATIC PRODUCTS

[Vacuum system equipment SELVACS]

● Suction pad

Pad shape - pad size/pad material/option list

Pad shape		Pad shape code	Pad sizes																
			0.7	1	1.5	2	3	3.5	4	5	6	8	10	15	20	25	30	35	40
Standard	Standard 	R	-	●	-	●	●	-	●	-	●	●	●	●	●	●	-	●	●
	Deep 	A	-	-	-	-	-	-	-	-	-	-	●	●	●	●	-	●	●
	Compact 	RM	●	●	●	●	●	-	●	-	-	-	-	-	-	-	-	-	-
Sponge 		S	-	-	-	-	-	-	-	-	-	-	●	●	●	●	●	-	●
Bellows 		B	-	-	-	-	-	-	-	-	●	●	●	●	●	●	-	●	●
Multi-stage bellows 		W	-	-	-	-	-	-	-	-	-	●	-	●	-	●	-	●	●
Oval 		E	-	-	-	2 × 4	-	3.5 × 7	4 × 10 4 × 20 4 × 30	5 × 10 5 × 20 5 × 30	6 × 10 6 × 20 6 × 30	8 × 20 8 × 30	-	-	-	-	-	-	
Soft 		L	-	-	-	-	-	-	●	-	●	●	●	●	-	●	-	●	-
Soft bellows 		LB	-	-	-	-	-	-	-	-	●	●	●	●	-	-	-	-	-
Anti-slip 		K	-	-	-	-	-	-	-	-	-	●	-	●	-	●	-	●	●
Type for thin object 		P	-	-	-	-	-	-	-	-	-	●	●	●	-	-	-	-	-
Flat 		F	-	-	-	-	-	-	-	-	-	●	●	●	●	-	-	-	-
Suction mark prevention 		Q	-	-	-	-	-	-	-	-	-	●	-	●	-	●	-	-	-

■ indicates a new additional variation.








Pad shape - holder shape list







Holder shape / Pad shape	VSP-A	VSP-B	VSP-C	VSP-D	VSP-E	VSP-F	VSP-HC	VSP-HD	VSP-HDW	VSP-HE	VSP-HEW	VSP-AE	VSP-BE
	VSP-MA	VSP-MB	VSP-MC	VSP-MD	VSP-ME								
Standard	●	●	●	●	●	●	-	-	-	-	-	-	-
Sponge	●	●	●	●	-	●	-	-	-	-	-	-	-
Bellows	●	●	●	●	-	●	-	-	-	-	-	-	-
Multi-stage bellows	●	●	●	●	-	●	-	-	-	-	-	-	-
Oval	●	●	●	●	-	●	-	-	-	-	-	●	●
Soft	●	●	●	●	-	●	●	●	●	●	●	-	-
Soft bellows	●	●	●	●	-	●	●	●	●	●	●	-	-
Anti-slip	●	●	●	●	●	●	-	-	-	-	-	-	-
For thin object	●	●	●	●	-	●	-	-	-	-	-	-	-
Flat	●	●	●	●	-	●	-	-	-	-	-	-	-
Suction mark prevention	●	●	●	●	-	●	-	-	-	-	-	-	-

■ indicates a new additional variation.

	60	70	80	100	150	200	Pad materials															Option			
							Nitrile rubber	Silicone rubber	Urethane rubber	Fluoro rubber	Chloroprene rubber	Fluorosilicone rubber	HNBR	EPDM	Static dissipative silicone rubber	Conductive rubber (low resistance)	Conductive NBR (low resistance)	NBR compatible with the Food Sanitation Act	Oil resistance NBR	PEEK	POM	Conductive PEEK	Free holder (Swinging)	Position locking valve	Resin attachment
							N	S	U	F	Blank	FS	HN	EP	SE	E	NE	G	NH	K	M	KE			
	●	-	●	●	●	●	●	●	●	-	-	-	-	●	●	●	●	-	-	-	-	●	●	-	
	●	-	●	●	-	-	●	●	●	-	-	-	-	-	●	●	-	-	-	-	-	●	●	-	
	-	-	-	-	-	-	●	●	●	●	-	-	●	●	●	●	●	-	-	-	-	●	●	-	
	-	●	-	●	-	-	-	●	-	●	-	-	-	-	-	-	-	-	-	-	-	●	●	-	
	●	-	●	●	-	-	●	●	●	●	-	-	●	●	-	●	-	-	-	-	-	●	●	● For installation parts	
	-	-	-	-	-	-	●	●	●	●	-	-	●	-	●	●	-	-	-	-	-	-	●	-	
	-	-	-	-	-	-	●	●	●	●	-	-	●	●	-	●	-	-	-	-	-	●	●	-	
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●	-	

Holder shapes


Code	Standard	VSP-A	VSP-B	VSP-C	VSP-D	VSP-E	VSP-F	VSP-HC
	Compact	VSP-MA	VSP-MB	VSP-MC	VSP-MD	VSP-ME	-	-
Shape		Fixed Vacuum outlet top 	Fixed Vacuum outlet side 	Buffer Vacuum outlet top 	Buffer Vacuum outlet side 	Direct mounting, fixed 	Direct mounting, buffer 	Buffer Vacuum outlet top 

Code	Standard	VSP-HD	VSP-HE	VSP-AE	VSP-BE	VSP-HDW	VSP-HEW
Shape		Buffer Vacuum outlet side 	Direct mounting, fixed Vacuum outlet side 	Screw fixing Vacuum outlet top 	Screw fixing Vacuum outlet side 	Buffer Vacuum outlet Both sides 	Direct mounting, fixed Vacuum outlet Both sides 




[Vacuum system equipment SELVACS]


● Position locking valve

Series	Model No.	Port size		Remarks
		Vacuum generator side	Workpiece side	
VSECV Series <ul style="list-style-type: none"> ● Even if the workpiece comes off, vacuum is maintained for workpieces in other circuits. ● Compatible with SELVACS suction pad series. 	VSECV-M3	M3		
	VSECV-M4	M4		
	VSECV-M5	M5		
	VSECV-M6	M6		
	VSECV-6A	R(c) 1/8		

● Compact vacuum regulator

Series	Model No.	Port size		Remarks
		ø6	ø8	
VSRVV Series <ul style="list-style-type: none"> ● Both source pressure and terminals can be controlled. ● Vacuum pressure switch with digital display or pressure gauge for vacuum can also be selected. 	VSRVV-*A*	○	○	Elbow (output: male thread)
	VSRVV-*B*	○	○	Elbow (supply: male thread)
	VSRVV-*U*	○	○	Union




● Vacuum burst unit

Series	Model No.	Port size		Remarks
		Vacuum generator side	Workpiece side	
VSLF Series <ul style="list-style-type: none"> ● Controls the vacuum burst air while maintaining the vacuum characteristics of the vacuum ejector. ● Vacuum burst circuit relief function realizes shortening of vacuum burst time. 	VSLF-44	ø4	ø 4	
	VSLF-66	ø6	ø 6	
	VSLF-46A	ø4	R1/8	
	VSLF-66A	ø6	R1/8	


Vacuum system equipment SELVACS CC-796A

● Vacuum filters


● Standard equipment ○ Optional selection

Series	Model No.	Port size						Remarks
		M5	ø4	ø6	ø8	ø10	ø12	
VSFB Series Large capacity union <ul style="list-style-type: none"> ● Dust and water droplets are removed by cyclone effect and element. ● Dust scattering is prevented because the entire dust case can be detached with one touch. 	VSFB-66			●				Filtration area: 20 cm ²
	VSFB-88				●			Filtration area: 20 cm ²
	VSFB-1010					●		Filtration area: 20 cm ²
	VSFB-1212						●	Filtration area: 20 cm ²
VSFU Series Compact union <ul style="list-style-type: none"> ● Replacement and cleaning of element requires no tools. ● Inline that can be easily installed in the middle of piping. 	VSFU-1S	○	○	○				Filtration area: 2.8 cm ²
	VSFU-1L	○	○	○				Filtration area: 4.7 cm ²
	VSFU-2	○	○	○				Filtration area: 7.5 cm ²
	VSFU-3			○	○	○		Filtration area: 12.5 cm ²
VSFJ Series Compact socket <ul style="list-style-type: none"> ● Ideal for single ejector without built-in vacuum filter. 	VSFJ-44		●					Filtration area: 0.8 cm ²
	VSFJ-66			●				Filtration area: 1.1 cm ²


● Inline filters

Series	Model No.	Port size				Remarks
		ø4	ø6	ø8	ø10	
FSL Series <ul style="list-style-type: none"> ● Compact, lightweight and space saving inline. ● Use either positive or negative pressure. ● Easy maintenance. 	FSL100	●	●			Filtration area: 4.7 cm ²
	FSL200	●	●			Filtration area: 7.5 cm ²
	FSL500		●	●	●	

● Vacuum pressure switch

Series	Model No.	Port size					Remarks
		M5	ø4	ø6	ø8	Direct mount	
VSUS Series <ul style="list-style-type: none"> ● 2-point output and analog output are available. ● Three types of pipe connection are available: push-in fitting, M5 female thread and direct mount. 	VSUS-NW	○	○	○	○	○	NPN: 2-point output
	VSUS-NA	○	○	○	○	○	NPN: Analog output
	VSUS-PW	○	○	○	○	○	PNP: 2-point output
	VSUS-PA	○	○	○	○	○	PNP: Analog output

● Air tweezers

Series	Model No.	Pad diameter				Rubber Material	Holder shape
		ø2	ø4	ø6	ø8		
VST Series <ul style="list-style-type: none"> ● Built-in suction pad and ejector in pen type body. ● Ideal for assembling small parts. ● Package type is also available. 	VAT-A*N	○	○	○	○	Nitrile rubber	Without valve
	VAT-A*S	○	○	○	○	Silicone rubber	Without valve
	VAT-B*N	○	○	○	○	Nitrile rubber	Integrated valve
	VAT-B*S	○	○	○	○	Silicone rubber	Integrated valve



RELATED PNEUMATIC PRODUCTS

Vacuum components

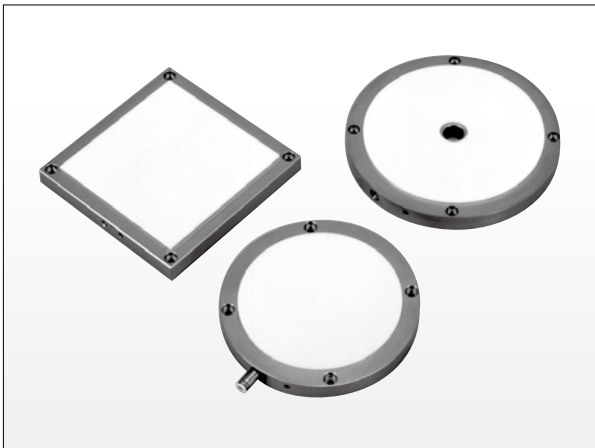
Precise suction plates

PVP Series

Vacuum suction plate using porous fluorine resin for workpiece contact area

High precision machining of the suction surface enables high suction force and high precision workpiece holding.

- High precision
Suction surface flatness: 2 μm , parallelism with mounting surface: 5 μm
- Soft Suction surface of Shore D60 hardness
- Sureness: Large suction force of 40% porosity
- Light
For porous materials, apparent specific gravity 1.3, base (Al) specific gravity 2.7



Pneumatic, vacuum and auxiliary components CB-024SA

Vacuum components

Vacuum regulators

VRA2000 Series

- 50×90 compact size
- Large flow rate of 180 l/min
- High repetitive pressure accuracy ± 4 kPa



Pneumatic, vacuum and auxiliary components CB-024SA

Vacuum components

Vacuum filters

VFA1000, VFA3000, VFA4000 Series

- Using the product for long periods does not increase pressure loss
- More than 80% of the moisture is removed with the louver's centrifugal separation effect
- If contaminated with dust, the element is simply washed for reuse



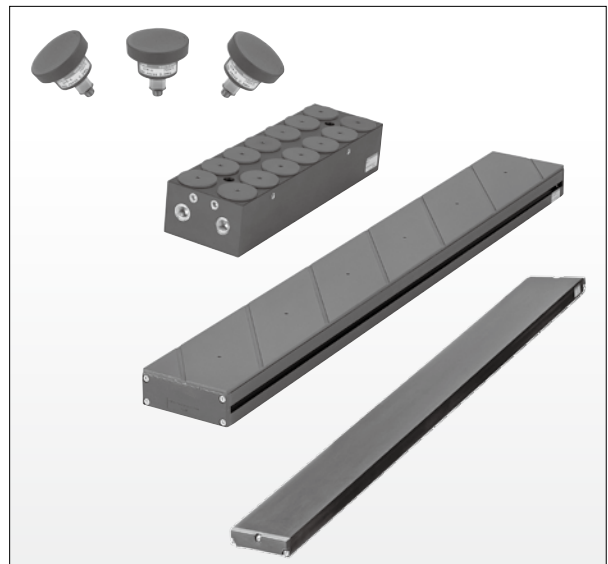
Pneumatic, vacuum and auxiliary components CB-024SA

Vacuum components

Glass float modules

GFM Series

- By adopting a new porous material, stable floating is achieved
- New antistatic material suppresses static electricity
- Achieves class 10 level



Glass float module GFM Series CC-883A

Electronic pressure switches (pressure switch)

This product precisely detects the level of pneumatic/vacuum pressure, and displays the result on a digital display

- **PPX Series**
Enables simultaneous confirmation of the current and set pressure values with dual displays, a 3-color display, setting details copy function, 3 mode settings
IO-Link compatible
- **PPG Series**
Degree of protection IP65
2-color display
With pressure unit change function
- **PPE Series**
Compact pressure SW that allows piping connection.
- **PSW Series**
High reliability and long durability pressure switch with semiconductor pressure sensor.



Pneumatic, vacuum and auxiliary components CB-024SA
Electronic pressure sensor with digital display PPG-D Series CC-1345A

Digital gap switches

GPS3 Series

- High precision 2-point output
- This single unit allows finish surface roughness and material surface roughness setting within the detection range scale from 0.03 mm and 0.4 mm. Short-range types are newly added. (Detection range scale: 0.02 mm to 0.15 mm)
- High maintainability
- IO-Link communication compatible (option)

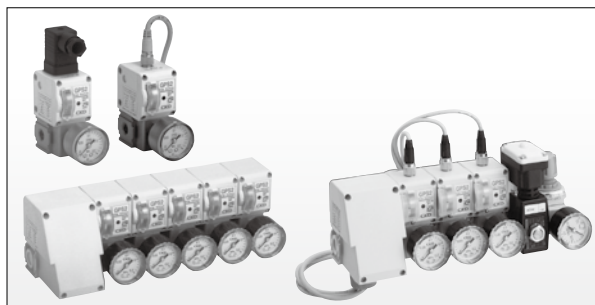


Digital gap switch GPS3 Series CC-1291A

Contact confirmation switches (gap switch)

GPS2 Series

- Air bridge circuit prevents the effect of fluctuations in the supply pressure
- Sensitivity easily adjustable with the scale on the sensitivity adjustment dial
- Non-contact measurement that does not damage products

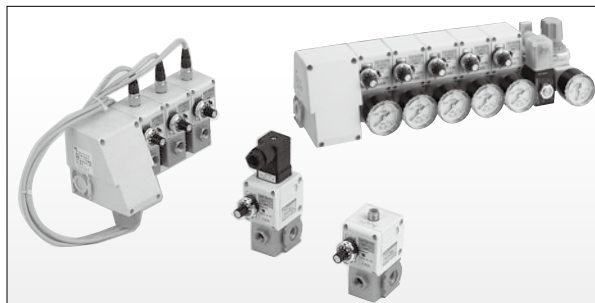


Pneumatic, vacuum and auxiliary components CB-024SA

Close contact confirmation switches

HPS Series

- Highly accurate variable adjustment with the precise linear needle
- Can be used with low pressure and air consumption is reduced
- Lock mechanism with dial scale allows easy position adjustment with no deviation

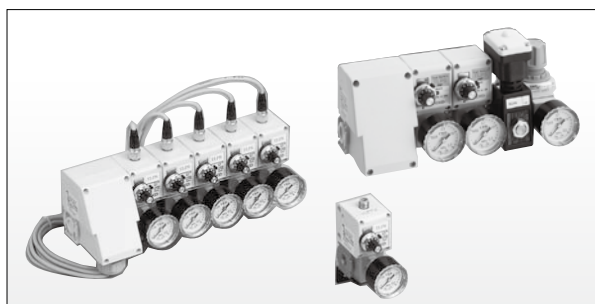


Pneumatic, vacuum and auxiliary components CB-024SA

Cutting tool breakage detection switches

TLPS Series

- Non-contact detection enables detection while the tool is rotating, and shortens tact time compared to conventional methods
- Self-cleaning by the air nozzle enables use even in environments where coolant or swarf scatter
- $\varnothing 0.3$ small-diameter drill
Chips are detected even on 1 mm drill tip.



Pneumatic, vacuum and auxiliary components CB-024SA



RELATED PNEUMATIC PRODUCTS

Sensors

PEL systems

Switching element, detection nozzle, PL switch, SEPEL switch

- All models are compact size. Space saving, high precision and quick response
- Non-contact detection does not damage the workpiece and enables detection of almost any object
- Various applications such as presence confirmation and position/dimension confirmation



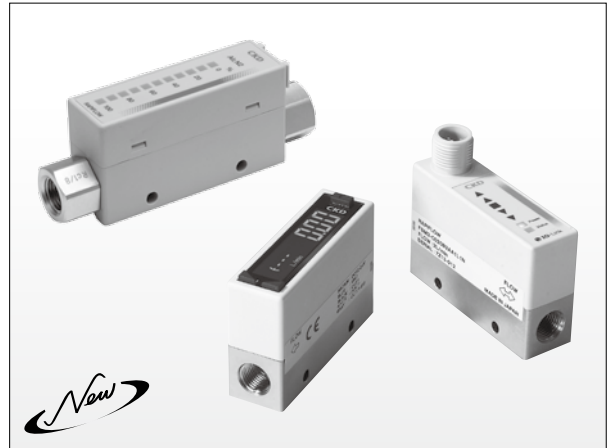
Pneumatic, Vacuum and Auxiliary Components CB-024SA

Sensors

Compact flow rate sensors (RAPIFLOW)

FSM3 Series

- IO-Link compatible
- Five types of gases can be measured with just one unit
- Reduction of pressure loss
- High precision/high-speed response
- Bi-directional fluid measurement
- Rotatable LCD display
- Variety of fitting variations



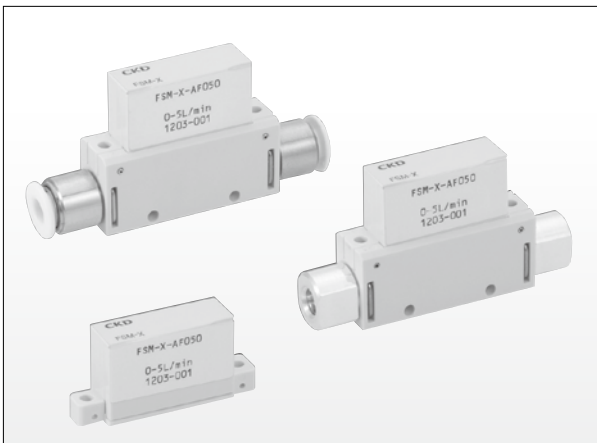
Compact flow rate sensor RAPIFLOW FSM2 Series CC-886A

Sensors

Miniature flow rate switches (RAPIFLOW)

FSM-X Series

- Miniature and lightweight
Space saving with separate sensor head. Realized weight of 4 g and ultra-thin 8 mm
- Bi-direction flow rate measurement available
In addition to the bi-directional flow rate detection, a uni-directional type has been introduced. The bi-directional allows for confirmation of suction/release
- Broad flow rate range
Bi-directional flow; $\pm 0.5, \pm 1, \pm 5, \pm 10$ L/min
Uni-directional flow; 0.5, 1, 5, 10 L/min, 8 types lineup
Miniature size yet available for large flow rate (10 L/min)



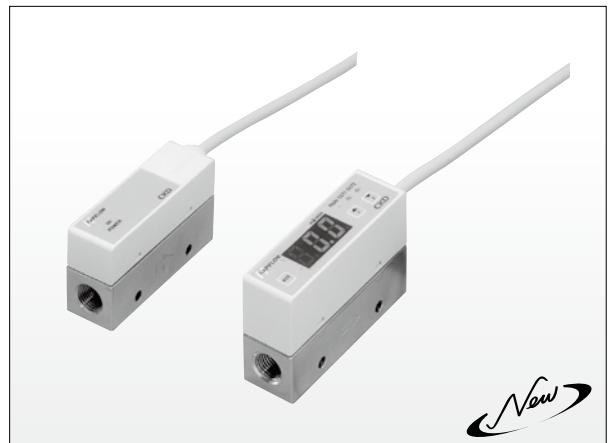
Miniature flow rate switch RAPIFLOW FSM-X Series CC-1000A

Sensors

Compact flow rate sensors (RAPIFLOW) Ultra-low flow type

FSM-H Series

- Fine flow rate
- High speed detection of fine flow rate of 1 ml/min or less
- Optimum for leakage inspections/pinhole inspections
- Flow rate range: 5, 10, 50, 100 ml/min

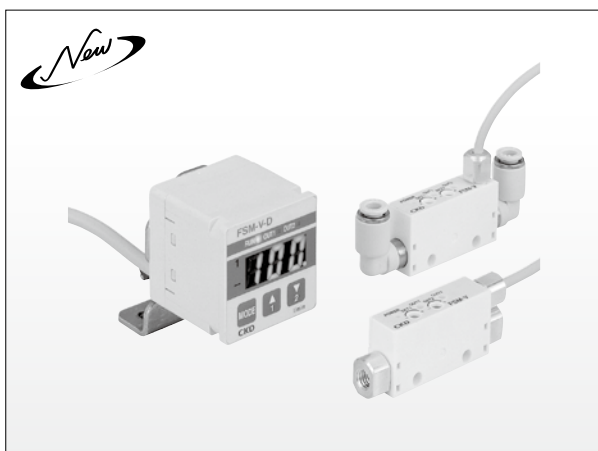


Compact flow rate sensor RAPIFLOW FSM Series CC-687A

Ultra-compact flow rate sensors (RAPIFLOW) Analog/switch output type

FSM-V Series

- Ultra-compact (Main body: $\varnothing 33 \times \varnothing 10 \times \varnothing 17$)
Mounting is possible even in the slightest intervals
- Ultra-high speed response (sensor unit: 5 ms or less)
- Analog output/switch output types are available
- Uses flow rate proportional analog output (linearity $\pm 5\%$ F.S.)
- Wide variation
Flow rate range: 6 types, Piping fittings: 4 types, Output format: 3 types, Lead wiring: 2 types

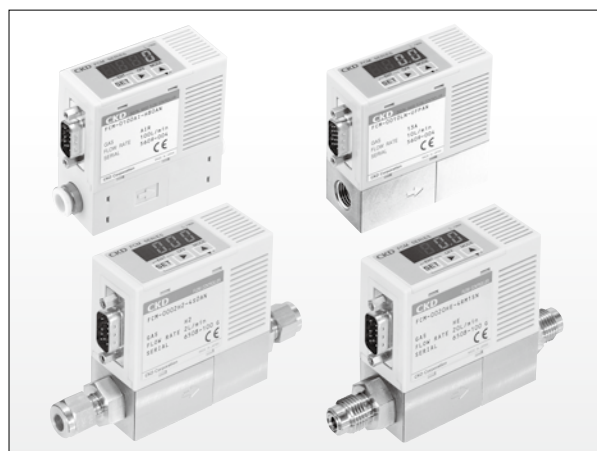


Electric Actuator ETS Series CC-1165A

Compact flow rate controllers (RAPIFLOW)

FCM Series

- Compact, high speed and high precision
- Compatible with various fluids
- High speed controlling at 0.5 seconds
- Equipped digital display makes control status visible at a glance
- Multiple models realized with built-in microcomputer
- IO-Link compatible

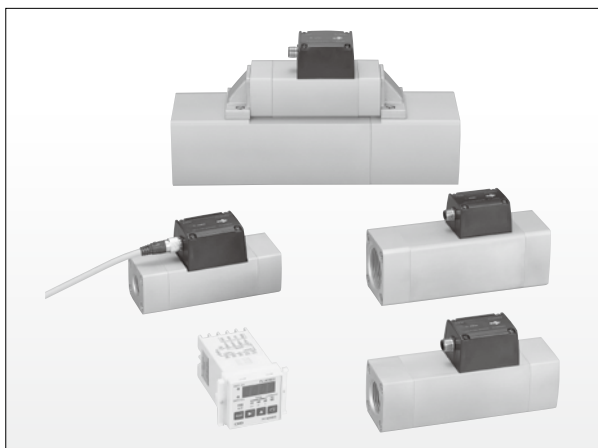


Pneumatic, Vacuum and Auxiliary Components CB-024SA

Pneumatic flow rate sensors (FLUEREX)

PFD and PFK Series (display separated)

- A wide range of output variations
- Digital direct-reading, correction not needed
- High precision of total accuracy $\pm 4\%$ F.S.
- Uses portable and convenient kit



Pneumatic, Vacuum and Auxiliary Components CB-024SA

Multi-monitors

MD Series

- Compatible with any flow rate and pressure regardless of the sensor
- Analog output proportional to the displayed value available
- Easy-to-read 3-color display
- Locking function to prevent misoperation
- Saves power with the energy saving mode function
- Scaling function enables conversion of displayed values of sensor input into any unit



Multi-monitor MD Series CC-1290A



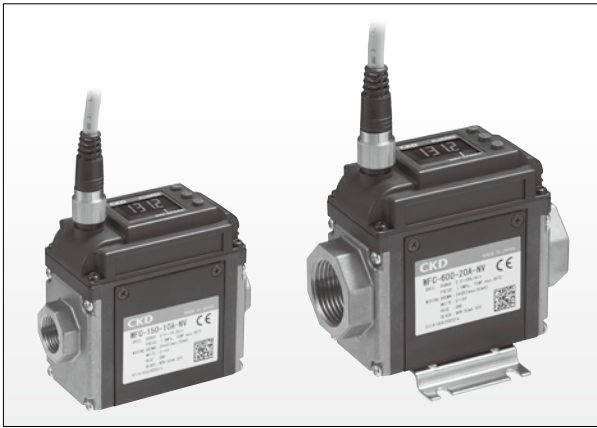
RELATED PNEUMATIC PRODUCTS

Flow rate sensor for water

Capacitance electromagnetic flow sensor

WFC Series

- The Flo-Thru structure allows even water of poor quality to be used
- The capacitance structure eliminates detection failures caused by foreign matter deposited onto the electrode
- Ensures elbow piping repeatability
- No stabilized power supply and anti-noise ferrite core are required
- Allows zero point adjustment by external input
- With 180° invertible display
- Reverse flow detection function equipped
- IO-Link compatible



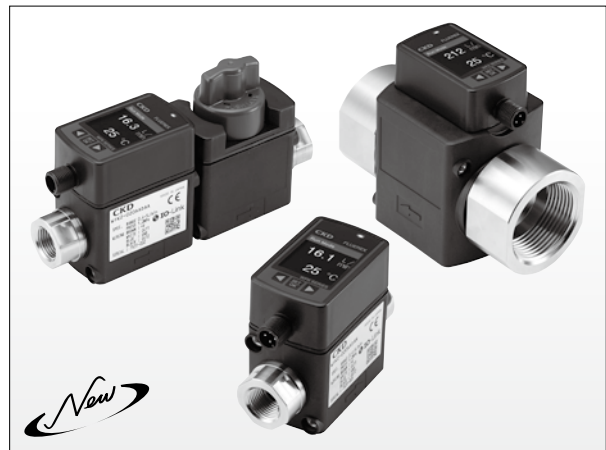
Capacitance type electromagnetic flow sensor WFC Series CC-1230A

Flow rate sensor for water

Karman's vortex FLUEREX

WFK2 Series

- IO-Link compatible
- Compatible with a wide range of flow rates (0.4 to 250 L/min)
- All models equipped as standard with water temperature measuring function
- Manual valve available as an option for easy flow rate adjustment
- Handles water up to 95°C
- The LCD display can be rotated 90° in each direction without moving the body
- Displays the setting value or temperature, etc., simultaneously with an easy-to-read 2-screen color liquid crystal
- ATEX compatibility



Pneumatic, Vacuum and Auxiliary Components CB-024SA

MEMO



DIRECT DRIVE MOTOR/INDEX

Ideal for electronic indexing



ABSODEX

Three points for ease of selection

Selection is possible from the industry minimum size to high torque models to suit the application

Diverse lineup

- AX6000M Series**
 - Max. torque: 1.2 to 3.0 N-m, 2 sizes
 - Compact
 - Smallest in industry (April 2014, CKD research)
- AX4000T Series**
 - Max. torque: 9 to 1,000 N-m
 - 8 sizes
 - Large hollow bore
- AX2000T Series**
 - Max. torque: 6 to 18 N-m, 3 sizes
 - Small diameter/high-speed rotation
- AX7000X Series**
 - Max. torque: 22 to 45 N-m
 - 2 sizes
 - High precision
- AX8000T Series**
 - Made to order product
 - Max. torque: 45 to 70 N-m, 2 sizes
 - Waterproof specification
- AX1000T Series**
 - Max. torque: 22 to 210 N-m, 5 sizes
 - High precision

Support for various types of FA fieldbuses

Various interfaces

CC-Link^{*1} DeviceNet^{™*1}

PROFIBUS^{®*2} EtherCAT^{®*2}

EtherNet/IP^{™*2} Parallel I/O (NPN, PNP)

Compatible with global standards

International standard compliance *2

*1. Only AX1000T, AX2000T, AX4000T, AX8000T, AX7000X are compatible
 *2. Only AX1000T, AX2000T, AX4000T are compliant

A driver that features numerous convenient functions in use

TH type / TS type / XS type

- A common controller can be used for output torque (75 N-m or less / 150 N-m or more)
- Equipped with LED that displays alarm details *1
- Separate main power and control power
- Monitoring of position information, etc., using serial communication

MU type

- For AX6000M
- Compact

Examples of applications

Flexible indexing table

Indexing numbers can be changed!

Arm pick & place

Oscillation angle can be changed!

Intelligent conveyor

Feed pitch can be changed!

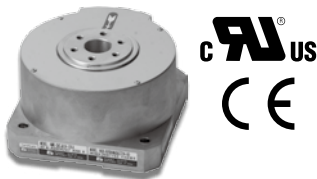
Best-in-industry high performance direct drive motor



Compatible with various high-end processing stages

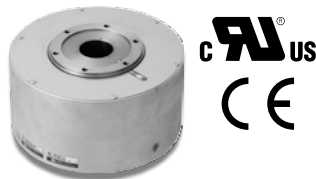
Standard ND-s Series

- Rated torque: 3.4 to 500 N·m
- 15 sizes
- Table drive, rotary drive



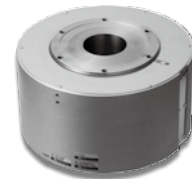
High speed rotating type ND-s HS Series

- Rated torque: 8 to 24 N·m
- 4 sizes
- High-speed pick & place drive



High rigidity/high precision type DD-s Series

- Rated torque: 10 to 2000 N·m
- 11 sizes
- High precision roll drive + gantry synchronous drive



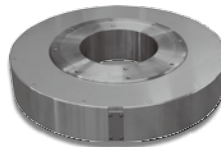
High response type HD-s Series

- Rated torque: 27 to 68 N·m
- 3 sizes
- High-speed index drive



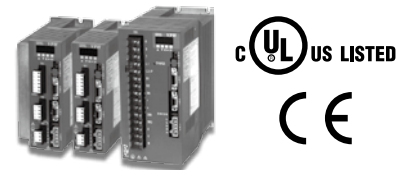
Large hollow diameter type FD-s Series

- Rated torque 17 to 600 N·m
- 8 sizes
- Large inertia load rotation drive



High performance Servo driver VPH Series

- Developed exclusively for direct drive
- Maximizes motor performance
- Output capacity 100 W to 7 kW
- System support tool full of functions



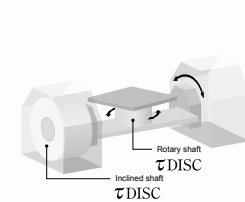
Various interfaces

Also compatible with motion networks

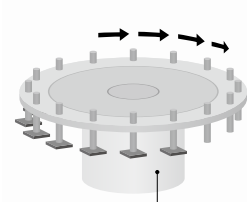


Parallel I/O (NPN)

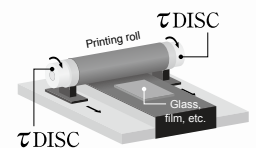
Examples of applications



Laser finishing machine



High-speed indexing device



Roll coater device

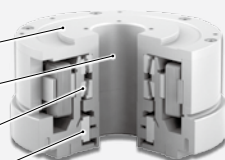
Pioneering. A new way to rotate. Catalog CC-1458A

ABSODEX NX4 Series / Driver NXD Series

- Max. torque: 22 to 300 N·m
- 5 sizes

Ideal for assembly and transport

- Easy installation and centering
- Convenient hollow bore
- High-rigidity bearings
- Built-in absolute resolver

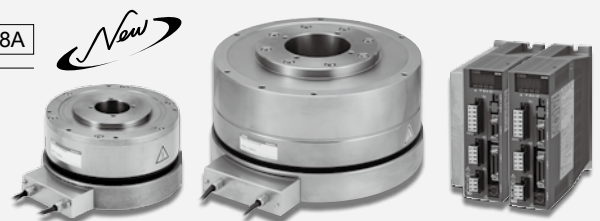


Compatible with all types of networks

- Five types of interfaces are available

Adjust in real time while monitoring the waveform

- Setting tool "NX-Tools" with extensive functionality



Parallel I/O (NPN)



Three characteristics of the cam unit

Synchronized motion of multiple axes

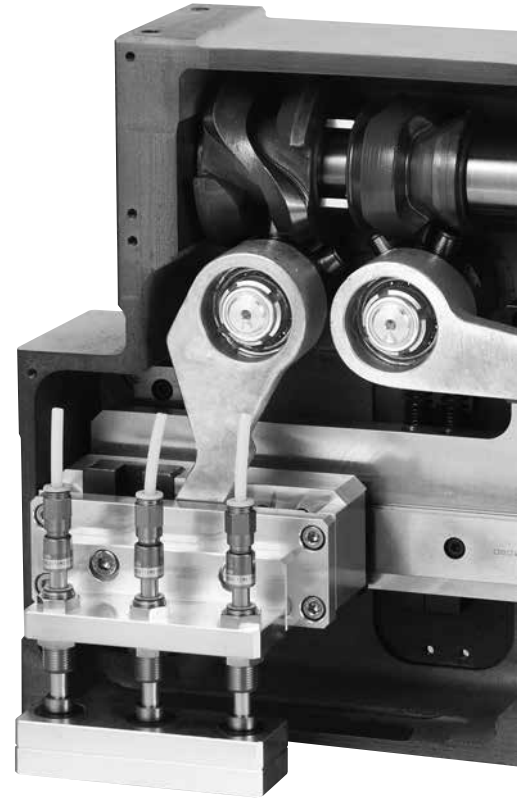
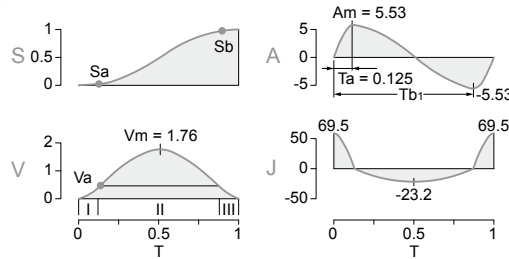
■ Synchronization characteristics

- Multiple cam units can be operated with one drive

High-speed and high frequency output shaft swivel and stop are possible

■ Motion characteristics

- Realizes a smooth motion curve thanks to the cam



High-precision repeated motion is possible using uniform rotation speed

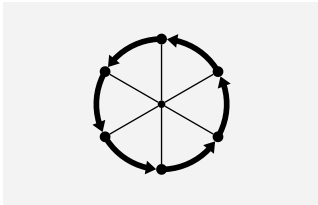
■ Repeat characteristics

- By applying uniform rotation speed to the input shaft, motion sequences can be repeated with superb accuracy

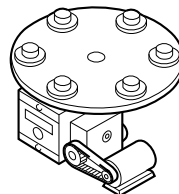
Three cam unit motions

Continuous swivel and stop at the specified angle with the output shaft as center point

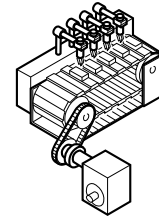
■ Index



Examples of applications



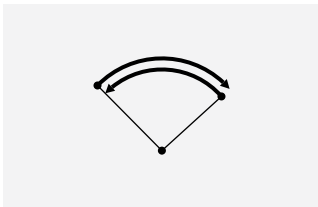
Indexing table



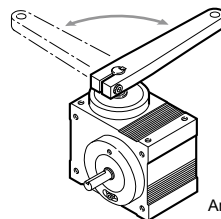
Conveyor pitch feed

Repeated reciprocal swivel at the specified angle with the output shaft as center point

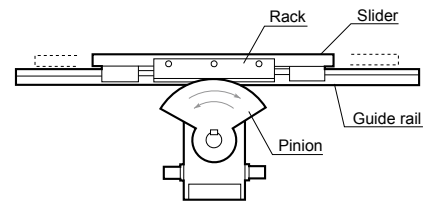
■ Oscillations



Examples of applications



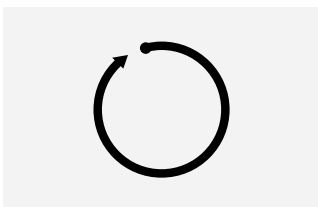
Arm transport



Slider forward reciprocation

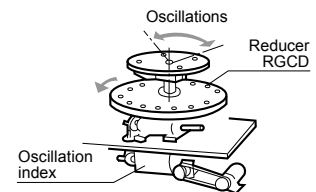
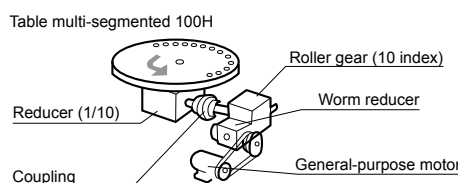
Speed reducing mechanism with a reduction ratio that corresponds to the indexing No.

■ Reducer



Examples of applications

Continuously rotating precision speed reducer with no backlash



mechanical motion/control (clockwork)

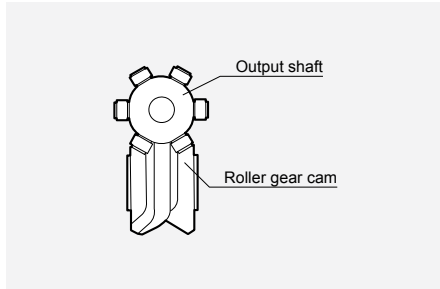
Wide variation



Ideal for indexing table drives

Roller gear cam units

- Compact/high-speed/high output/high precision/high rigidity



Compact

RGIS 025, 032



Standard

RGIS 040 to 250



Wide angle

RGIL 063 to 250



Table

RGIT 063 to 250



Basic

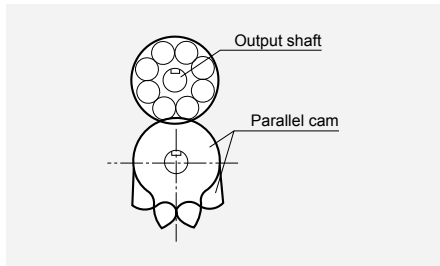
RGIB 250



Ideal for conveyor drive

Parallel cam units

- Input shaft/output shaft are parallel



Parallel cam unit

PCIS 040 to 250



Ideal for indexing table drives

Pick & place

- Realizes tact time of max. 0.1 sec cycles (high speed)
- High precision/high rigidity
- Compact/thin/space saving

Swivel pick & place unit

Standard

PPIX/PPOX 050 to 180



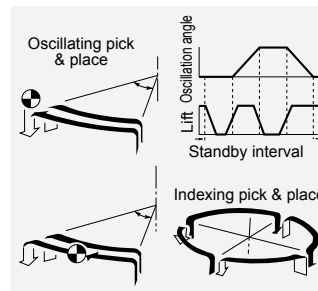
High speed

PPOH/PPIH 040 to 080



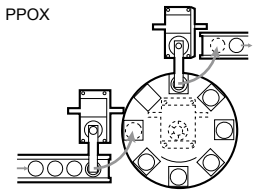
Compact/high-speed/high-precision

PPIM 063 to 110



Examples of applications

PPOX



Forward motion pick & place unit

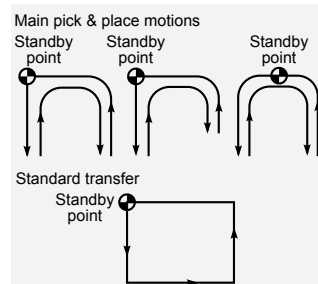
Arm A type

PPLX 040 to 080



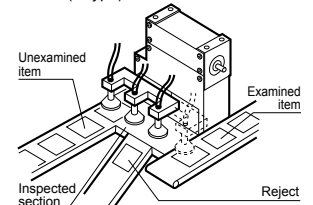
Table B type

PPLX 040 to 080



Examples of applications

PPLX (B type)





GENERAL PURPOSE VALVES

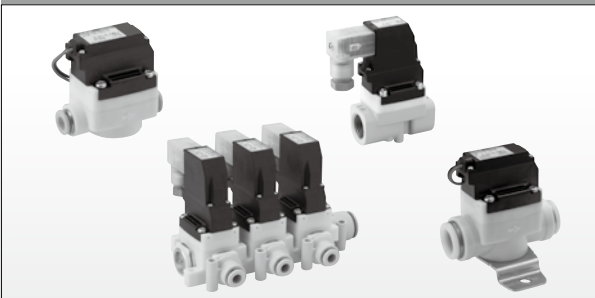
Pilot operated 2-port solenoid valve for compressed air

Compact air blow valves

EXA Series

- Achieves large flow rate and low power consumption
Employs a pilot actuator with a low power consumption (0.6 W) 3-way valve, enabling a large flow rate and low power consumption. (PC direct drive available)
- Compact and lightweight
Optimizes materials used to achieve light weight. Also reduces volume by a maximum of 30% and weight by approximately 70% compared with conventional CKD models
- Easy piping connection
Connection is made easy with push-in fitting.
The aluminum body supports metal piping.
- Oil-prohibited specifications (options)
Ideal for an environment not suited to oil
- Manifold
Achieves a variety of pipe layouts to contribute to saving space.

Port size: push-in fitting $\phi 6$ to $\phi 12$, screw-in connection Rc1/4, 3/8



Fluid control valves CB-03-1SA

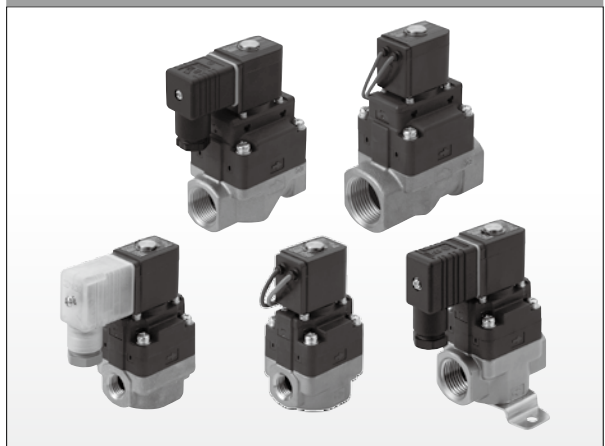
Compact pilot operated solenoid valve for water

Compact pilot operated solenoid valves for water

FWD Series

- Low power consumption
- Compact and lightweight
Optimizes materials used to achieve light weight.
- Large flow rate
More than 1.3x compared with conventional models
- Sealant
Fluoro rubber available as option.

Port size: Rc1/4 to Rc1



Fluid control valves CB-03-1SA

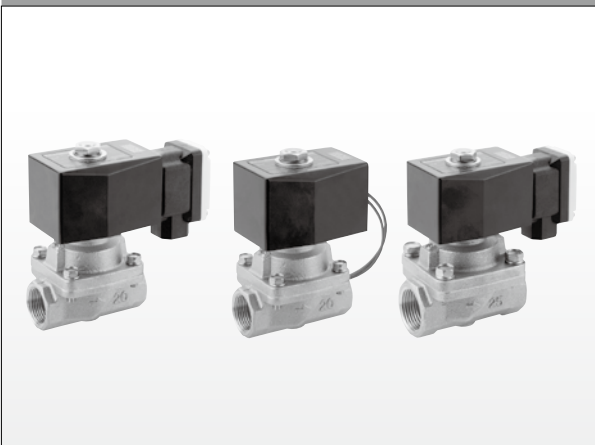
Pilot kick solenoid valve for steams

Pilot kick solenoid valves for steams

SPK Series

- Durability count 1 million times. This is a substantial increase
- Low power consumption (1/2 compared with CKD's conventional models) contributes to energy saving
- Improved exterior sealing performance by adopting square ring seal made from PTFE that is resistant to high-temperature steam
- Improved maintenance performance by employing HP terminal box with high maintainability for terminal box options
- Contaminant and scale resistant using the conventional proven special-structured piston ring

Port size: Rc1/2 to Rc1



Fluid control valves CB-03-1SA

Compact direct acting 2, 3-port solenoid valves

Compact direct acting 2, 3-port solenoid valves

HNB/HNG USB/USG Series

- Compact direct acting 2, 3-port solenoid valves that save space
Contributes to equipment space saving.
- Multi-fluid control available
The solenoid valves are suitable for controlling multiple types of fluid including air, water, and low vacuum.
- Compact, but with a long service life
The special structure of the movable part improves abrasion resistance. (HN Series)

Port sizes: M5, M6, Rc1/8, for barbed fitting



Fluid control valves CB-03-1SA

Dedicated fluid control direct acting 2, 3-port solenoid valves

Special purpose valves for compressed air

FAB/FAG GFAB/GFAG Series

- Easy to use all-port body
- A wide range of series and variations
Five types with coil width 18 to 40 mm are available. Series variation with different port sizes, orifice sizes, and working pressure.
- Low wattage design
- Improved reliability
The special structure adopted in the movable part prevents abrasion and significantly elongates the service life.
- Light-weight aluminum die-casting body

Port size: M5, Rc1/8 to Rc1/2



Fluid control valves CB-03-1SA

Dedicated fluid control direct acting 2, 3-port solenoid valves

Special purpose valves for dry air

FGB/FGG GFGB/GFGB Series

- Easy to use all-port body
- A wide range of series and variations
Four types with coil width 22 to 40 mm are available. Series variation with different port sizes, orifice sizes, and working pressure.
- Low wattage design
- Improved reliability
The special structure adopted in the movable part prevents abrasion and significantly elongates the service life, even when ultra dry fluid is used.
- Light-weight aluminum die-casting body

Port size: Rc1/8 to Rc1/2



Fluid control valves CB-03-1SA

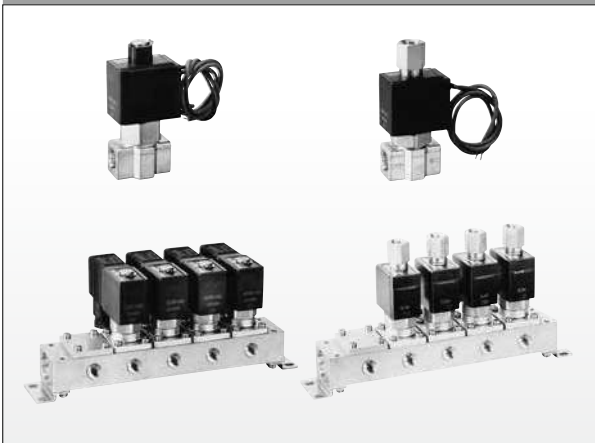
Dedicated fluid control direct acting 2, 3-port solenoid valves

Special purpose valves for water

FWB/FWG GFWB/GFWG Series

- A wide range of series and variations
Four types with coil width 22 to 40 mm are available. Series variation with different port sizes, orifice sizes, and working pressure.
- Low wattage design
- Improved reliability
Improved corrosion resistance with the adoption of a special magnetic substance.

Port size: Rc1/8 to Rc1/2



Fluid control valves CB-03-1SA

Dedicated fluid control direct acting 2, 3-port solenoid valves

Special purpose valves for medium vacuum

FVB GFVB Series

2-port solenoid valve for medium vacuum controlling (1.33×10^{-2} Pa(abs))

- A wide range of series and variations
Four types with coil width 22 to 40 mm are available. Series variation with different port sizes, orifice sizes, and working pressure.
- Low wattage design
- Achieved low leakage
The leakage is 1.33×10^{-6} Pa·m³/sec He or less.

Port size: Rc1/8 to Rc1/2



Fluid control valves CB-03-1SA



GENERAL PURPOSE VALVES

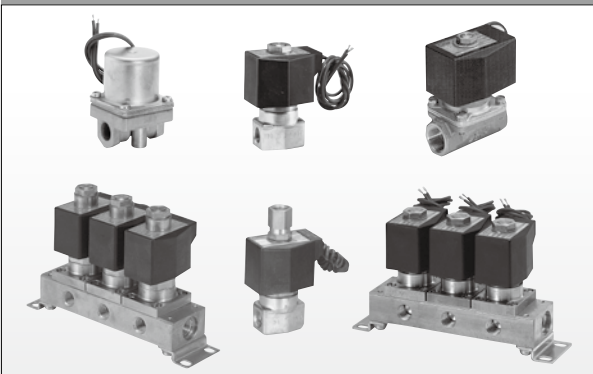
Multi-type fluid control direct acting 2, 3-port solenoid valves

Direct acting general purpose valves

AB/AG GAB/GAG Series

- Multi-type fluid control 2, 3-port solenoid valve
The solenoid valves are suitable for controlling multiple types of fluid including air, water, gas, oil, and vacuum.
- A wide variety of options and variations
Varieties of options including wetted parts material and coil housing are available.
- A wide range of series and variations
A widely varied series of different 2-port valves and 3-port valves, port sizes, orifice sizes, and working pressure.
- DC low wattage series
Power consumption 7 W. Saves energy substantially compared with 11 W of conventional models.

Port size: Rc1/8 to Rc1



Fluid control valves CB-03-1SA

Multi-type fluid control direct acting 2, 3-port solenoid valves

Pilot/pilot kick operated general purpose valves

AP/AD APK/ADK Series

- Multi-fluid control 2-port solenoid valve
The solenoid valves are suitable for controlling multiple types of fluid including air, water, gas, oil, and vacuum.
- A wide variety of options and variations
Varieties of options including wetted parts material and coil housing are available.
- A wide range of series and variations
A widely varied series including piston, diaphragm, different port sizes, orifice sizes, and working pressure.
- DC low wattage series
Power consumption 7 W. Saves energy substantially compared with 11 W of conventional models.

Port size: Rc1/4 to Rc2, 32 to 50 flange



Fluid control valves CB-03-1SA

Multi-type fluid control direct acting 2, 3-port solenoid valves

Explosion-proof general purpose valves

AB41EX/E AG4*EX/E AP*EX/E AD*EX/E ADK*EX/E Series

- Solenoid valve for multi-fluid control in dangerous zones
Explosion-proof structure: Ex d IIB T4, Ex d IIB T2, d2G4, d2G2
- Multi-type fluid control 2, 3-port solenoid valve
The solenoid valves are suitable for controlling multiple types of fluid including air, water, gas, oil, and steam.
- A wide variety of options and variations
Varieties of options including wetted parts material and wire inlet are available. Lineup of products compliant with international explosion-proof guidelines.
- A wide range of series and variations
A widely varied series from direct acting Rc1/4 (port size) to pilot diaphragm piston valve large 50 flange.

Port size: Rc1/4 to Rc2, 32 to 50 flange



Fluid control valves CB-03-1SA

Coolant check valve

Check valves

CCH Series

- Foreign matter proof internal structure and large flow rate structure
- FKM sealant for high reliability
- Internal sealing with O-ring + metal touch
- High working pressure up to 7.0 MPa can be used
- Wetted metal material using stainless steel
Higher corrosion resistance and wider applications.

CCN Series (Nozzle type)

- Improved workability
- Compact and space saving
- Long service life
- Corrosion-resistant material
- Resistant to foreign matter
- Injection direction adjustment function
- Ample connection variations

Port size: Rc3/8 to Rc3/4



Check valve CCH Series CC-1317A
Check valve (nozzle) CCN Series CC-1440A

Coolant valve/Modular coolant valves

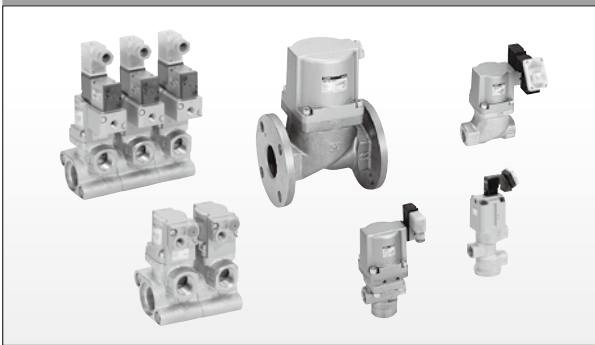
CVE2/CVSE2 CVE3/CVSE3 Series

- For coolant control
This valve is for cutting oil/coolant control of machine tools that incorporate a metal seal to prevent the entry of cutting chips, abrasive grains and foreign matter, and ensures high reliability.
- Using highly corrosion-resistant material
- Wide variation
Air operated, solenoid valve equipped, and signal retrieval with switch are available.

GCVE2/GCVSE2 Series

- Enabling module connection (5 stations max.)
- Compact
- Port thread with no piping interference (embedded connection)
- A single unit can also be used as a branch valve
- Easy expansion after installation

Port size: Rc3/8 to Rc2, 32 to 80 flange



Fluid control valves CB-03-1SA
Modular coolant valve GCVE2 Series (air operated), GCVSE2 Series (with solenoid valve) CC-933A

Weir diaphragm valves

SWD/MWD Series

- Pursuit for highly aseptic conditions (sterility)
Adopts a sealing structure to eliminate gaps between diaphragm and body. A flow path with high efficiency of washing has been achieved by thorough analysis work.
- Space and energy saving
Air consumption can be reduced significantly by the downsized actuator with highly-efficient diaphragm that operates at a low pilot pressure.

Port size: Ferrule connection 8 A to 40 A



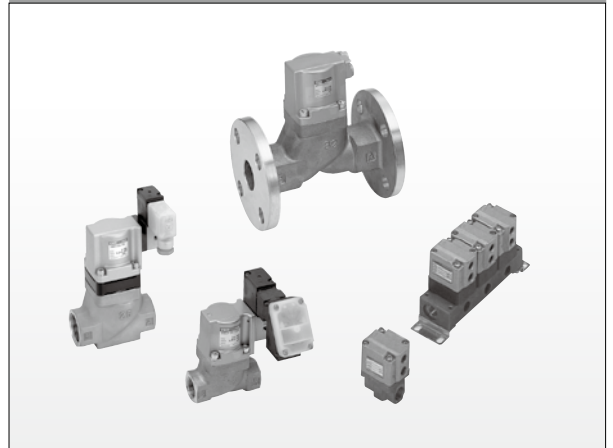
Fluid Control Valves CB-03-1SA
Weir type diaphragm valve SWD/MWD Series CC-1096A

Cylinder valves

SAB/SVB NAB/GNAB Series

- Multi-fluid control 2-port valve
In addition to air, water, gas, low vacuum and steam, high viscosity fluids and powder mixed fluids are also supported.
- Wide variation
A wide range of variations from Rc1/4 to 80 flange are available for various bore sizes.
- A model with switch equipped with operation detector sensor also available

Port size: Rc1/4 to Rc2, 32 to 80 flange



Fluid Control Valves CB-03-1SA

Diaphragm cylinder valves

LAD Series

- Particle reduced
By using only resin for the wetted parts and assembling in a special environment, particles can be reduced significantly.
- Port thread employed
Free selection of pipes to be connected to fit the usage.
- Flow path to reduce pressure loss
The flow path design substantially reduces pressure loss and increases effective cross-sectional area, as well as contributes to energy saving.

Port size: Rc3/8 to Rc1



Fluid Control Valves CB-03-1SA



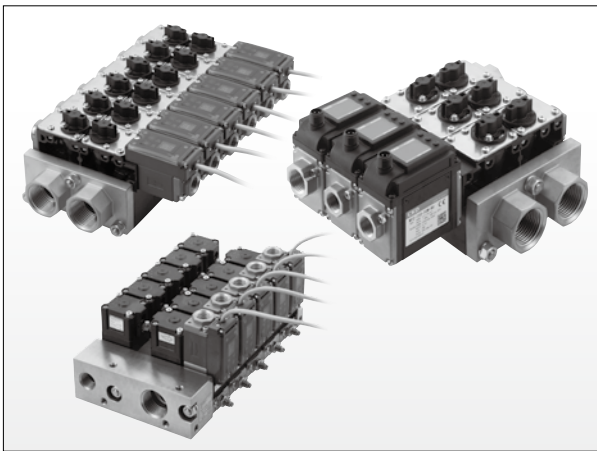
GENERAL PURPOSE VALVES

Cooling water control units

Integrated units for water control

WXU Series

- Space saving without piping
The unitized design without piping has greatly reduced the installation space compared with the discrete type. 80% smaller footprint than conventional models (two fluid control)
- High quality
With no piping screw-in between equipments, eliminates external leakage. No entry of foreign substance during installation.
- Reduced work processes
Significantly reduces pipe designs, pipework, and part material orders.



Integrated unit for water control WXU Series CC-1116A

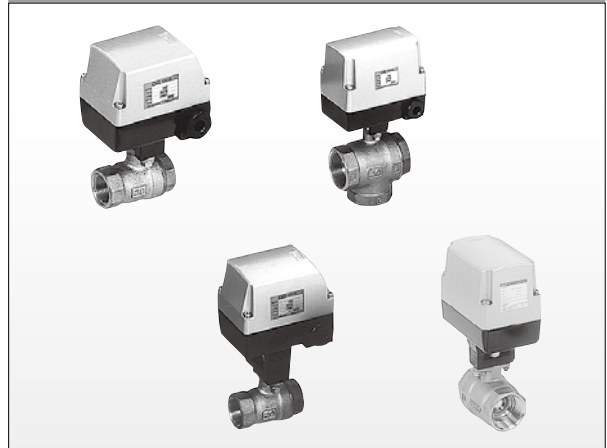
Motor-driven ball valves

Motor valves

MXB/MXG Series

- Multi-fluid control 2, 3-port valve
Supports various fluid including air, water, hot water, oil, and steam.
- Forward and reverse rotation (except for some series)
- Low pressure loss/large flow rate
- Motorized proportional control valves are also available

Port size: Rc3/8 to Rc2



Fluid control valves CB-03-1SA

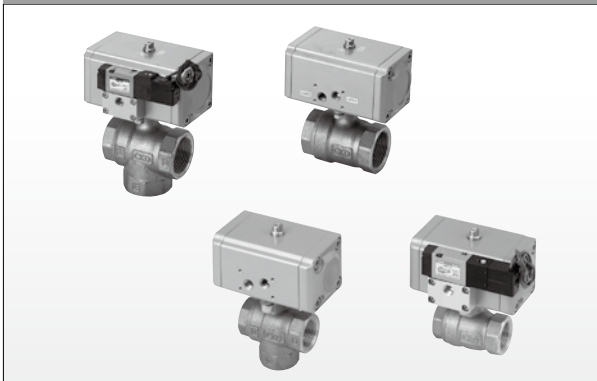
External pilot operated air drive ball valves

Compact rotary valves

CHB/CHG/CHBF CSB/CSBF Series

- Multi-fluid control 2, 3-port valve
Supports various fluid including air, water, hot water, oil, and steam.
- New structure for guaranteed actuation
An air operated double piston rack and pinion method, conventionally unheard of, has been incorporated. It is highly reliable and ensures precise operation.
- Compatible with pilot operated valve
- A design resistant to foreign material and scale
This valve operates both forward and in reverse, enabling foreign matter to be easily removed even if it enters the valve.
- Low pressure loss/large flow rate

Port size: Rc3/8 to Rc2



Fluid control valves CB-03-1SA

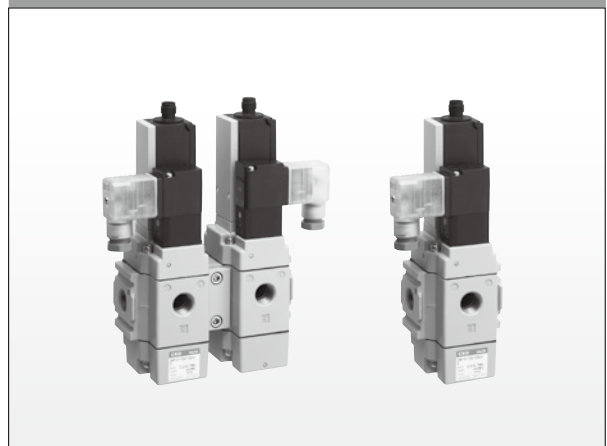
With spool position detection

3-port solenoid valves

SNP Series

- Serves as a shut-off valve for pneumatic systems
- Signal output of valve open/close available with the limit switch
- Two modules connected to create a double breaker circuit can be configured compactly
- Can be modular-integrated into the F.R.L. unit

Port size: Rc3/8 to Rc3/4



Fluid control valves CB-03-1SA

Large flow rate 3-port valves

NP NAP NVP Series

- 3-port pneumatic/low vacuum large flow rate valve
Selectable from two types according to the application.
- Internal pilot NP Series
- External pilot NAP/NVP Series
- Compact & lightweight design
- Large flow rate
10 A/25 A: C (dm³/ (S-bar)) : 15 to 18
20 A to 50 A: Effective cross-sectional area: 195 to 660 mm²

Port size: Rc3/8 to Rc2



Fluid control valves CB-03-1SA

Metal-free solenoid valves

MR10/MR16/MAB1/MAG1 MEB2/MEG2 MYB1/MYG1/MYB2/MYG2 MYB3/MYG3 MJB3 EMB21, 41, 51 HMTB1/HMTG1 MKB3 Series

- Solenoid valve for water, pure water, and chemical liquids
- Compact and lightweight
Designed to reduce the size and weight to address compatibility changes from intensive care medicine to portable care medicine.
- Maintenance-free
Designed for long service life to improve the reliability of equipments.
- Wider variation
A wide variety of models compatible with various reagents and testing fluids are available.
- Lower noise
The valves operate very quietly in consideration of environmental conservation of the site.

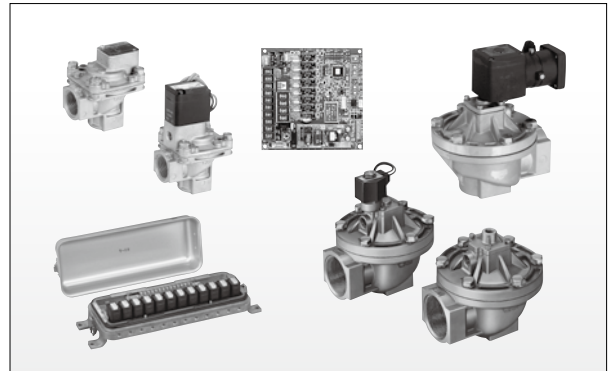


Fluid control valves CB-03-1SA

Large port size dust collector control components

PD3/PDV3 PD2/PDV2 PJVB PDVE4 OMC2 Series

- Fluid control components for large flow rate air for brushing, dusting, and blowing off
A large volume of air can be injected instantly.
- Ideal for dust removal of bag filter dust collector, and behavior control of ceramics, medicine, agricultural chemicals, fertilizer, chemical raw materials, building materials, and foods
- Compact and high-function controller with built-in microcomputer OMC Series
Double-striking control for valves and intermission time setting can also be made easily.
- Control box manifold solenoid valve PJVB Series
Common wiring enables easier work and saves space.
- Pressure and explosion-proof structure d2G4 compatible PDVE4 Series



Fluid control valves CB-03-1SA

High corrosion-resistant solenoid valves

UMB1/UMG1 HB11, 21, 31, 41 Series

- Control solenoid valve for water and pure water that employs high corrosion-resistant stainless steel
- Reduces internal residues
Minimizes contamination and alteration of fluid by reducing internal residues.
- Supports most advanced industries
Can be used with ion-exchanged water and semiconductor cleaning agent. (HB Series)



Fluid control valves CB-03-1SA



GENERAL PURPOSE VALVES

Components for Life Science

Metal-free pinch valve

HYN Series

- 2, 3-port solenoid valve (pinch valve)
A solenoid valve with an innovative structure that can be used in three ways.
(NC, NO, 3-port valve)
- Push-in tube attachment/detachment
Easy replacement and cleaning of tubes.
- With manual mechanism
- Low noise
Reduces the metallic noise of solenoid valve operations and keeps the environment quiet.
- Low wattage design



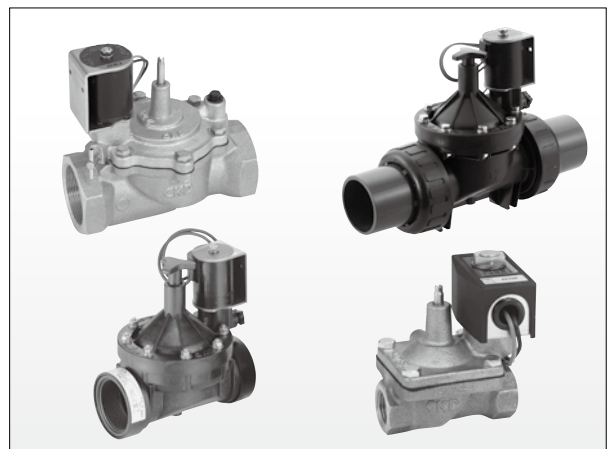
Fluid control valves CB-03-1SA

Automatic watering system components

Automatic watering valves

RSV-K GSV GSV2 RSV-W Series

- Watering valve for urban greenery, golf courses, playground, protected horticulture, farmlands, etc.
- Union fitting connection (GSV2)
- A structure to reduce water hammer
- A wide variety of options and variations
Equipped with a self-cleaning filter for pilot flow path protection, flow rate adjustment function, manual operation function, latch coil, etc. Port size: Select from 15 A to 100 flange.
- Approved by JWWA (RSV-W Series)
- Use in combination with the automatic watering controller supplied by CKD.



Fluid control valves CB-03-1SA

Automatic watering system components

Automatic watering controllers

RSC-S5 RSC-G RSC-1WP RSC-2WP RS-6 Series

- Automatic watering controller for urban greenery, golf courses, grounds, protected horticulture, and farmlands, etc.
- Supports a variety of usage programs
Capable of supporting watering on specific days of the week, intermittent watering, and sensor detected watering, etc.
- Wide variation
Available selections of solar powered systems, commercial power supply powered systems, and alkaline battery powered systems.
- Measures against lightning-induced failures
- Use in combination with an automatic watering valve supplied by CKD

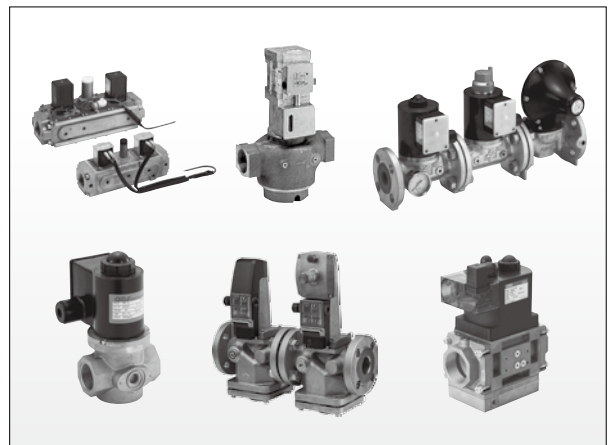


Fluid control valves CB-03-1SA

Gas combustion systems

Direct acting valve for gas, combination valves

- Wide variation
- Made in Japan
- High performance/long service life
- V Series is ideal for the heavy-use and high durability requirements of industrial furnaces
- Low price models also available



Gas combustion systems G-2



Component for chemical liquids

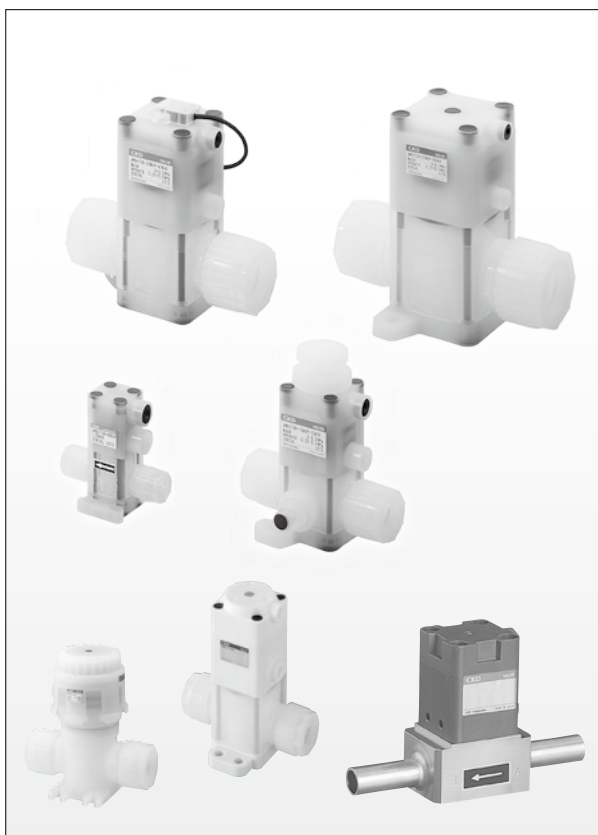
Air operated valves for chemical liquids

AMD/AMG/GAMD

AMD*1H/AMD*1M Series

Air operated valves to control the ON/OFF of the liquid flow for equipment in which clean chemical liquid for semiconductor or LCD production (including pure water) pass through

- A variety of high functionality and high quality system products essential for ultrahigh-purity process control
- Part 3R Series, all-in-one models compatible with various specifications
 - Sizes 1/4", 3/8", 1/2", 3/4", and 1"
 - Supports a variety of chemical liquids
 - Specified pressure = 0.5 MPa
 - Working fluid temperature 120°C
 - Provides indicator as standard, and sensor as an option (except for 1/4")
 - Manifold and cutting compatible
- High pressure series products up to 0.7 MPa are available for liquid supply, and water hammer compatible series products are also available
- This series eliminated metal parts to ensure safety use in a line using strong acids (hydrochloric acid, hydrofluoric acid, and nitric acid)
- Variation of connection fitting
- For solvent or static electricity compatibility, SUS body types are also available from small to large sizes
- For liquid drainage, PP and PVC material large bore size types are also available
- Other custom order specifications to suit various controlling usage are also available



Wet Fine System/high purity chemical liquid system CB-031A
Air operated valve for chemical liquids AMD Part3R Series CC-1177A

Component for chemical liquids

Manual valves for chemical liquids

MMD/GMMD/TMD

MMD*0H/MMD*0M Series

Manual valves for equipment in which clean chemical liquid for semiconductor or LCD production (including pure water) pass through

- A variety of high quality system products essential for ultrahigh-purity process control
- A series of manual valves for chemical liquids with varied sizes from small to large, that adopted PFA molded body
- High pressure series products up to 0.7 MPa are available for liquid supply
- Supports a wide variety of pressure/temperature/fluid conditions
- High reliability with mechanisms such as over-tightening prevention mechanism and malfunction prevention lock ring
- For solvent or static electricity compatibility, SUS body types are also available from small to large sizes
- Manifold also available for liquid supply system (PTFE body only)
- Select between manual knob open/close and manual push-in



Wet Fine System/high purity chemical liquid system CB-031A



Component for chemical liquids

Drip prevention valves for chemical liquids

AMS*2 AMDS*0 Series

Valves for fine adjustment of nozzle head in the resist coating process

- Suction rate of the nozzle head finely adjustable
- Speed controller enables easy fine adjustment of the suction speed
- Internal structure to prevent air accumulation within flow paths
- A type integrated with air operated valve also available



Wet Fine System/high purity chemical liquid system CB-031A

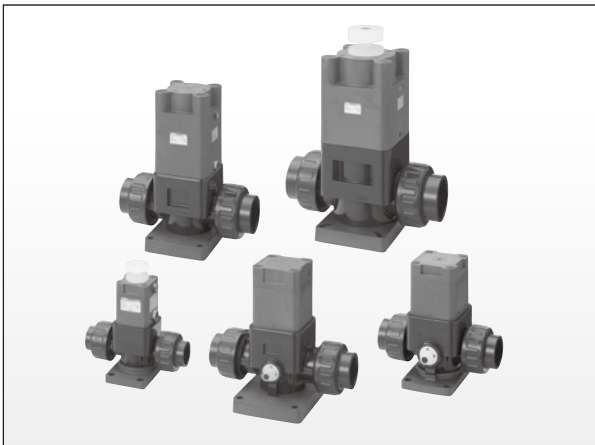
Component for chemical liquids

Low water hammer valves

AMD*1L

Low water hammer valves designed to minimize vibration, which support higher accuracy and longer service life for usage in equipment and facilities where clean pure water is used for LCD or solar cell production

- Water hammer reduction function is provided in all series as standard
- A variety of series products (union fitting 15 A to 50 A)
- Polyvinyl chloride union fitting
- Abundant options (With flow rate adjustment, with bypass, and with flow rate adjustment & bypass)
- Not subject to the Export Trade Control Order



Low water hammer valve AMD*1L Series CC-816A

Component for chemical liquids

Fine regulators

PYM10/PMM20/PMP202/402 Series

Regulators to control the pressure of chemical liquids for equipment in which clean chemical liquid for semiconductor or LCD production (including pure water) is used

- Filter integrated resistant to foreign matter
- Excellent flow rate and pressure characteristics, easy installation
- High corrosion resistance
Fluorine resin (PFA/PTFE) and SUS316 are used for wetted parts to increase corrosion resistance
- Superior pressure and flow characteristics
Fluorine resin diaphragm is adopted to obtain superior pressure and flow characteristics compared to metal diaphragm
- Built-in filter to keep fluid safe from foreign matters
- Panel mounting for easier installation, and bottom mounting also available
- Pilot regulator
Regulators are designed to enable stable pressure adjustment using the pilot air control



Wet Fine System/high purity chemical liquid system CB-031A

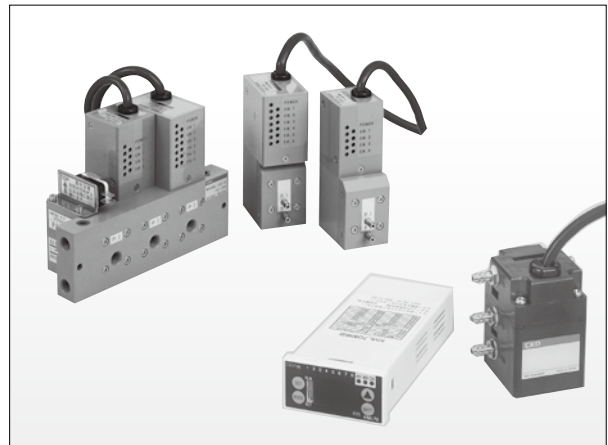
Component for chemical liquids

Fine level switches

KML50/MKML, KML60/ MXKML/KML703 Series

This surface level switch detects surface level of various corrosive fluids such as pure water, acids, alkalines, and solvents in high precision and outputs electric signals

- Combinations of three level switches of 1 to 8-point types efficiently and safely detect surface level (KML50, KML60)
- The provided display enables 8-point surface detection using a single detection tube (KML70)
- No need to set the flow rate to be detected
The integrated flow rate adjustment fixed orifice enables detection without installing exterior restriction and setting flow rate



Wet Fine System/high purity chemical liquid system CB-031A

Air operated valves for chemical liquids

LMD Series

- Six orifice sizes available
 - $\phi 4$, 6.3, 8, 10, 16, and 20
 - Nine port sizes available: 1/4", 3/8", 1/2", 3/4", 1", $\phi 6$, $\phi 10$, $\phi 12$, and $\phi 25$
- New flare fitting employed
- Mounting method
 - 2-Point fixing bracket employed to address the compatibility with AMD Series
 - Bracket shape, the same as AMD Part3, that requires less installation space
- Various options available
 - With flow rate adjustment, with indicator, fluorine resin coated metal parts



Air operated valve for chemical liquids LMD Series CC-1103A

Flow rate adjusting valves

FMD Series

MNV Series

Valves to control the flow of chemical liquids for equipment in which clean chemical liquid for semiconductor or LCD production (including pure water) is used

- Manual and motorized available for flow rate adjustment method
- Designed to support highly corrosive fluid (FMD)
- High temperature supported (MNV)
- Two types of orifices available depending on the flow rate (FMD orifice size: $\phi 1.6$, $\phi 3.5$)

Wet Fine System/high purity chemical liquid system CB-031A
Electric needle valve MNV Series CC-1260A

Air operated valves for process gases

AGD**R Series

LGD** Series

Air operated valves used to control ON/OFF of gas in equipment in which clean process gas for semiconductor or LCD production pass through

- High functionality and high quality essential for ultrahigh-purity process gas control
- Zero particle generation is achieved with optimal seal structure and improved surface roughness (0.001 piece / cycle or less)
- Electrolytic polishing employed as standard for higher internal surface roughness
- Optional compatible products
 - Block valve, branch valve, valve with switch, etc.

Dry Fine System/high purity gas control system components CB-035A
Valve for process gas LGD Series CC-1171A

Manual valves for process gases

OGD*0R/MGD*0R/LGD*0 Series

Manual valves used for equipment in which clean process gas for semiconductor or LCD production pass through

- High functionality and high quality essential for ultrahigh-purity process gas control
- Select between manual knob open/close and manual push-in
- Zero particle generation is achieved with optimal seal structure and improved surface roughness
- Electrolytic polishing employed as standard for higher internal surface roughness

Dry Fine System/high purity gas control system components CB-035A
Valve for process gas LGD Series CC-1171A



HIGH PURITY CHEMICAL GASES/ LIQUID CONTROL SYSTEMS

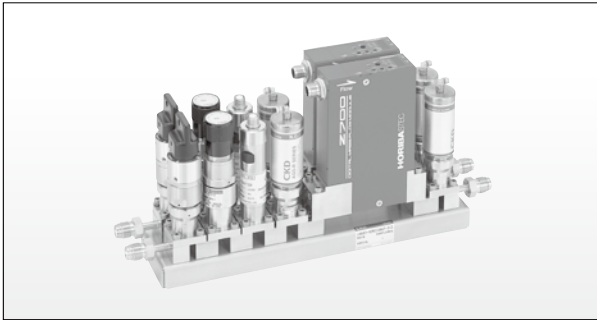
Equipment for process gases

Integrated gas supply system

IAGD Series

Integrated gas supply system used to collectively control gas in equipment in which clean process gas for semiconductor or LCD production pass through

- Largely reduced internal volume (by 50%) compared with conventional piping types
- Improved replaceability
Replaceability substantially improved (2x or above) due to reduced internal volume and dead volume
- Easy maintenance
Maintainability significantly improved due to one-directional work and bolt mounting
- Greatly downsized
60% smaller footprint than conventional models
- Improved corrosion resistance
Realized by eliminating welding area



Dry Fine System/high purity gas control system components CB-035A

Equipment for process gases

Air operated valves for process gas

AGD11R-HD / AGD**R-HDF / AGD21R-A

Air operated valves used to control ON/OFF of gas in equipment in which clean process gas for semiconductor or LCD production pass through

- High performance and high quality essential for ultrahigh-purity process gas control
- High durability (10 million times guaranteed)
- High temperature supported (AGD21R-A, AGD**R-HDF)
- Integrated type available



High temperature, high durability gas valve AGD21R-A Series CC-1111A
High durability gas valve AGD11R-HD Series CC-1201A
High temperature/High durability gas valve AGD**R-HDF Series CC-1297A

Equipment for process gases

Regulator for process gas

PGM Series

PGM series are regulators ideal for applications of ultrahigh-purity gas pressure control in semiconductor manufacturing lines

- Reduced particles
- Smaller pressure drop
- Stable control even at a fine flow rate
- Great installability and operability
- Cleanness level compatible with ultrahigh-purity gas
- Improved internal sealing performance



Dry Fine System/high purity gas control system components CB-035A

High vacuum components

Air operated valves for high vacuum

AVB / AVP / MVB / MVP Series (NW16 to 160) (1/4) (NW16 to 50) (NW25 to 50)

Air operated valves used to control ON/OFF of vacuum exhaust in dry process equipment for semiconductor or LCD production

- Original molded bellows employed to achieve long service life
- Body material selectable between aluminum and SUS depending on the application
- Vacuum pump can be connected to either of the ports
- Operation confirmation switch mountable
- Two-stage: AVB*47 Series added (NW25 to 63)
- Manual vale: MVB*17 Series added (NW16 to 50)



Valve for high vacuum AVB*7, MVB*17 Series CC-1028A

Air operated valves for high vacuum

AVB*17/AVB*47 High temperature specifications

All advantages of AVB**7 Series being maintained, high temperature specifications added

- AVB*17 NC high temperature specifications: NW16 to 63
- AVB*47 Two-stage high temperature specifications: NW25 to 63
- Supported fluid temperature 150°C
- Operation confirmation switch mountable



Valve for high vacuum AVB**7, MVB*17 Series CC-1028A

Solenoid valves for high vacuum

HVB112, HVB212/312/412/512, HVB612/712 Series

Solenoid valves for high vacuum to support various needs including liquid crystal or cathode ray tube production, food dryer, and electron microscopes

- Varieties of series with orifice sizes from $\phi 1.0$ to $\phi 15$
- From N₂ pressurization to vacuum, available at the maximum differential pressure of 1.0 MPa (Note that this may differ according to the model)
- Ideal for high vacuum control without air source (Pay attention to particles, service life, etc.)



Dry Fine System/high purity gas control system components CB-035A

Vacuum pressure proportional control system

VEC Series

A system to control wide range of pressure from high vacuum to low vacuum

- Vacuum pressure control available from high vacuum (13.3 Pa) to low vacuum (approx. 93 kPa)
- Gradually reducing the atmospheric pressure prevents particles from flying
- Equipped with vacuum pressure control as well as shutoff function
- By all-in-one designed functions, piping of vacuum circuit system is made simpler and space can be saved



Custom order product

Vacuum pressure control valves

IABV Series

Pressure control function is added, based on a highly reliable vacuum valve

- Full close operation available
- Easy maintenance
- Slow exhaust control available
- RoHS compliant



Vacuum pressure control valves IABV Series CC-1323A

SERIES BY INDUSTRY

[FP Series for food management processes]

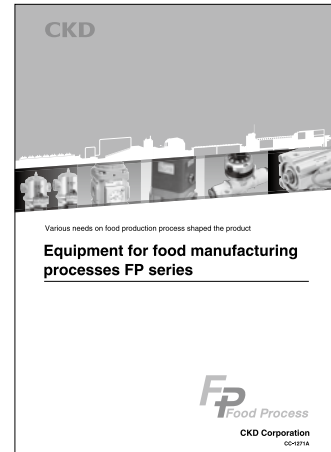
Accomplishes multiple needs in food processing

Support for the entire food processing process based on advanced engineering technologies in packaging machines, air pressure/liquid control, and motors

An extensive lineup of everything from air filters to actuators allows for secure and safe use in food processing



This logo is a representation of CKD's position toward making safe machinery that supports food processing.



Catalog No. CC-1271A

FP1 Eliminates possible contamination by lubricants
Food-grade (NSF H1) lubricants are used.

FP2 Safe materials
In addition to FP1, materials compliant with the Food Sanitation Act are used for resin and rubber materials.
*Food Sanitation Act "Standards and criteria for food and food additives, etc. (Public Notice of the Ministry of Health, Labour and Welfare No. 370 of 1959)"

FP3 For pursuit of greater reliability and safety
In addition to FP2, this series is specifically considered for food processing.



FP1

Prevents food contamination by lubricants. Food-grade (NSF H1) lubricants are used.



EBS Series

4G Series

SSD2 Series



STG-M Series

BHA Series

W1*00 to 8*00 Series



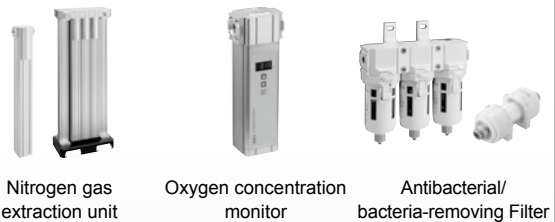
GW Series

SC3W Series

Nitrogen gas extraction unit

FP2

Materials compliant with the Food Sanitation Act are used.



Nitrogen gas extraction unit

Oxygen concentration monitor

Antibacterial/bacteria-removing Filter



AB31/41 Series

ADK11-Z Series

LAD Series



NAD Series

CHB/CHG Series

MYB3 Series

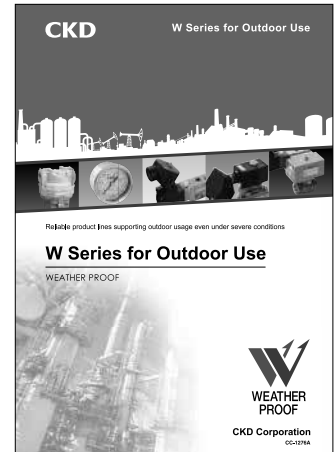
*Other compatible models are also available. Contact CKD for details.

SERIES BY INDUSTRY

[Outdoor use W Series]



This logo indicates CKD products guaranteed with outdoor use.



Catalog No. CC-1276A

Lineup of reliable products that firmly support outdoor facilities under harsh environments

CKD's Outdoor Series is guaranteed for long-term outdoor use, even in harsh environments.

Durability guaranteed for outdoor use

- Combined cycle test (JIS H8502: 1999) cleared 960 hours.
- Promoted durability (Sunshine weather meter test) cleared 1,000 hours.
- Ozone exposure test (JIS D0205: 1987) cleared 400 hours.

Warranty period for up to 3 years

Gives you long-term peace of mind (option*1)

To support use in plants and overseas, the warranty will be either 3 years from the date of delivery or 1 year from initial use, whichever comes first.

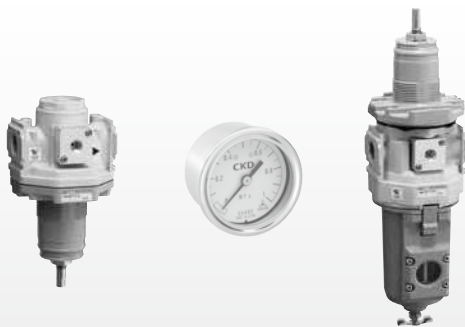
Targeted models: FW, RW, LW, MW, WW Series

(with inspection certificate, inspection guidelines, traceability system diagram)

*1: Options for F.R.L. unit. (except for GW49D)

F.R.L. Units

FW Series, RW Series, LW Series, MW Series, WW Series, BW Series, GW Series



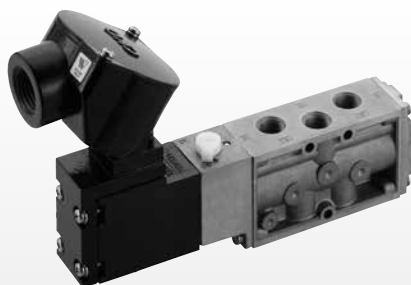
Pneumatic auxiliary components

SL-W Series, SC1-W Series



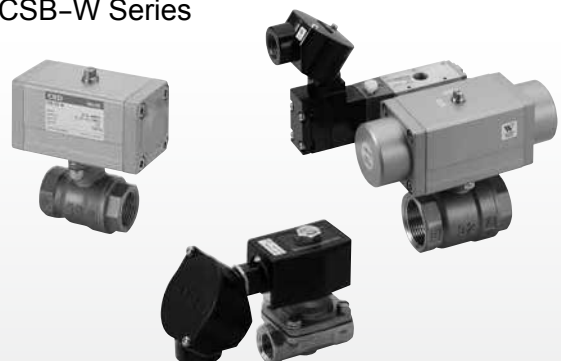
Pneumatic valve

4F Series



Fluid Control Valves

ADK11-W Series, CHB/G-W Series, CSB-W Series



Custom order product [Cylinder] SCA2 Series/SCS2 Series

[Large main line filter/Air dryer] AF Series/GT Series

SERIES BY INDUSTRY

[Components for rechargeable battery production P4* Series]

CKD responds to the needs of rechargeable battery manufacturing, with products conforming to production safety in the rechargeable battery manufacturing process, from electrode manufacturing to packaging.



Component material limitation

Limited use of inappropriate material and surface treatment in the rechargeable battery manufacturing process. Product failure of rechargeable batteries is reduced.



Limited copper material



Limited zinc material



Limited nickel-based material



Limited zinc plating



Limited electrolytic nickel plating



Long service life even in dusty environments

Strong dust-proof mechanisms such as scraper/rod packing are used. Suppresses dust entry into the cylinder.



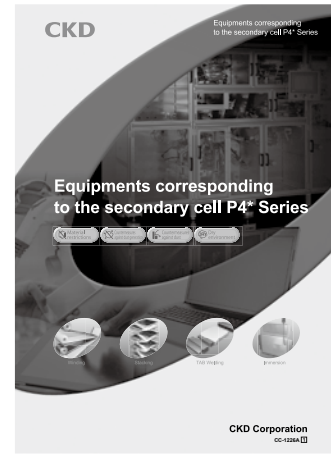
Suppresses dust generation of metal wear powder

Equipped with a local exhaust function (vacuum treatment port). Prevents contamination to the electrodes or cell by not leaking the metal wear powder outside.



Long service life even in ultra-dry environments

Ultra-dry environment compatible grease is used. Retains the smooth operation of the sliding part for long periods, even in dry environments.



Catalog No. CC-1226A

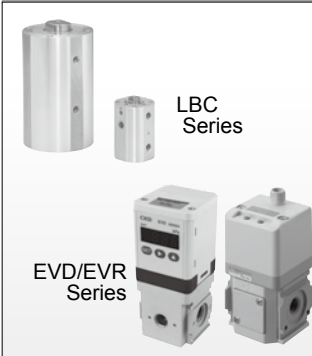
Dry air supply



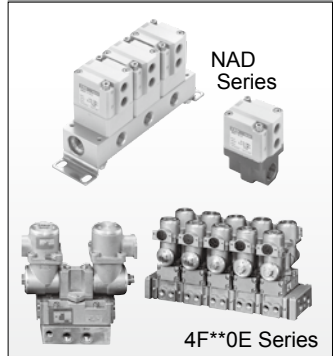
Fluid supply



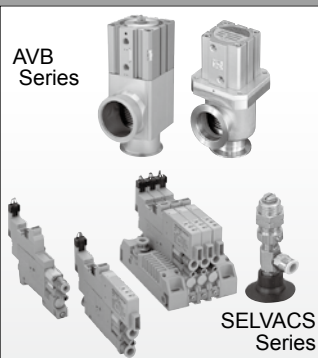
Tension control



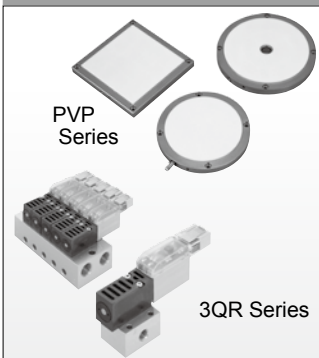
Explosion-proof environment



Vacuum control



Suction transport



Electrolyte/pouring-related



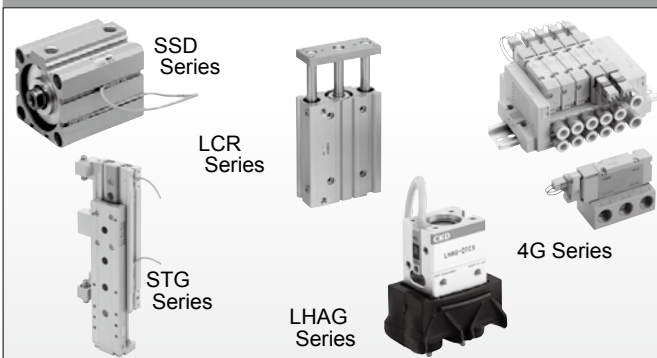
Air blow-related



Labor-saving



Assembling/inspection process



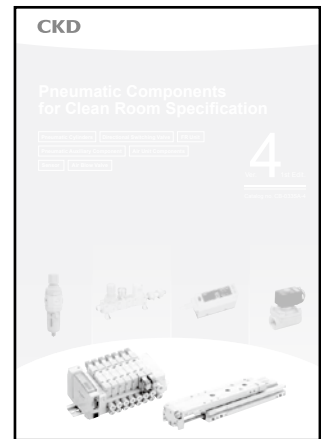
SERIES BY INDUSTRY

[Devices for clean room series]

Usable in clean rooms

CKD devices for clean room system

The CKD devices for clean room system has been developed to be used inside clean rooms. All these components are produced in the production system representing our unique clean ideas. This series offers models applicable to various factors, including the cleanliness level, installation position, environment, processes, and others.



Catalog No. CB-033SA



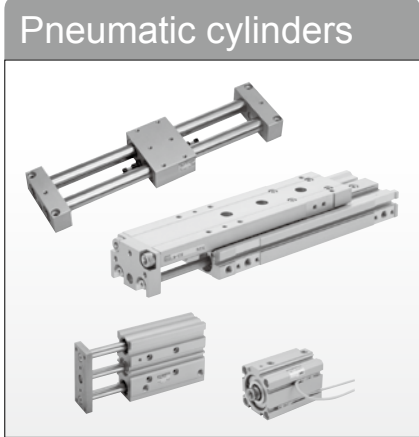
Semiconductor manufacturing process



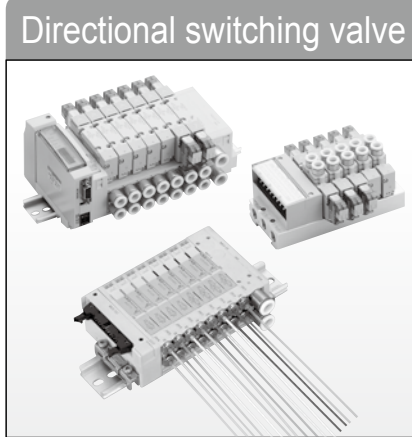
Liquid crystal manufacturing process



PDP manufacturing process



Pneumatic cylinders



Directional switching valve



F/R Unit



Pneumatic auxiliary components

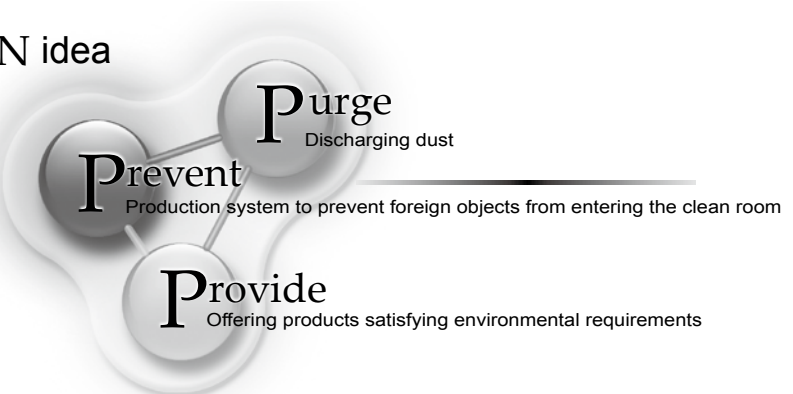


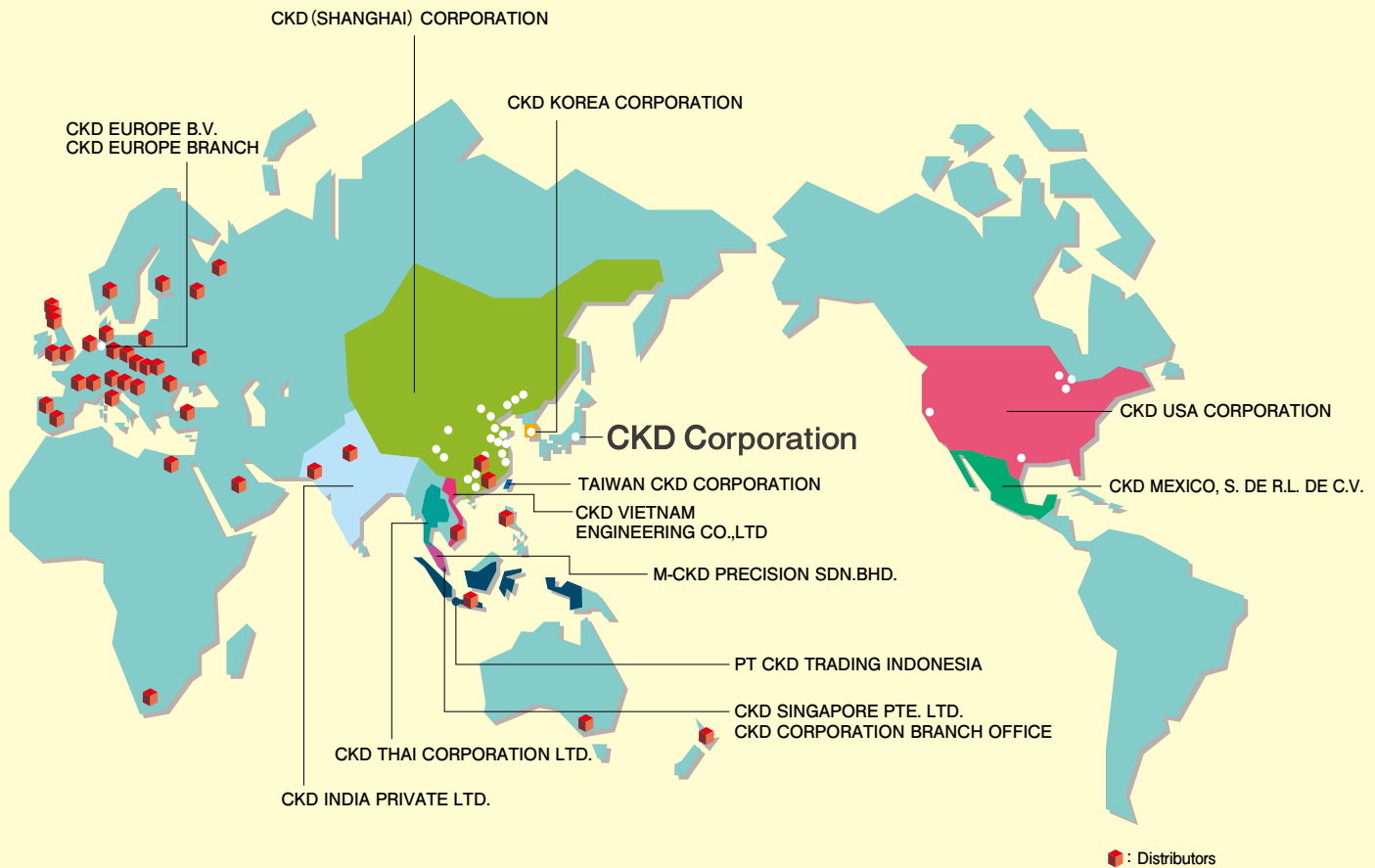
Sensors



Valve for air blow

CKD CLEAN idea





CKD Corporation

Website <https://www.ckd.co.jp/>

ASIA

喜關理(上海)機器有限公司

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