

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



INDEX/DIRECT DRIVE ACTUATORS



GENERAL PURPOSE VALVES



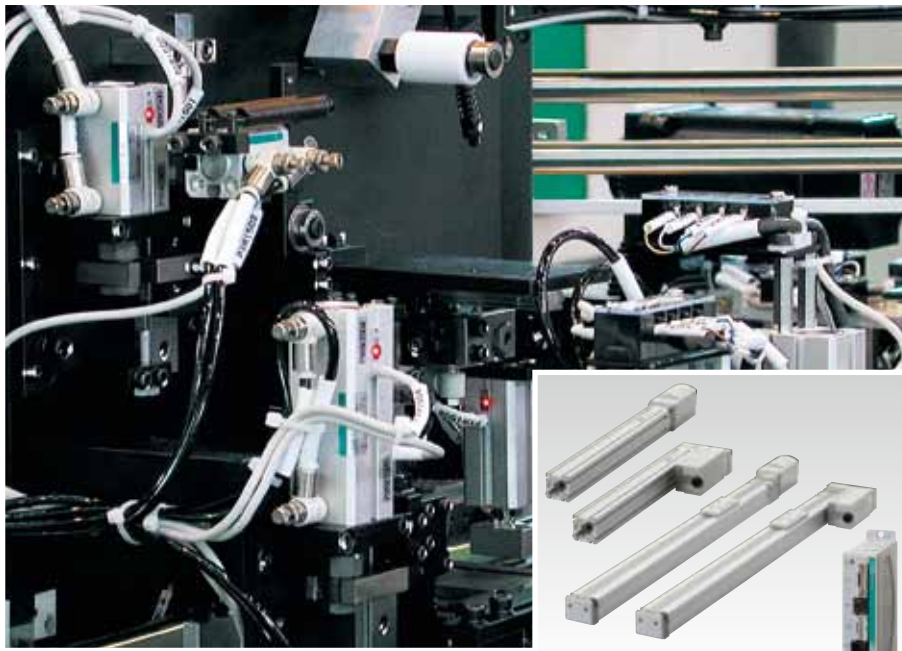
HIGH PURITY CHEMICAL GAS/ LIQUID CONTROL SYSTEMS

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



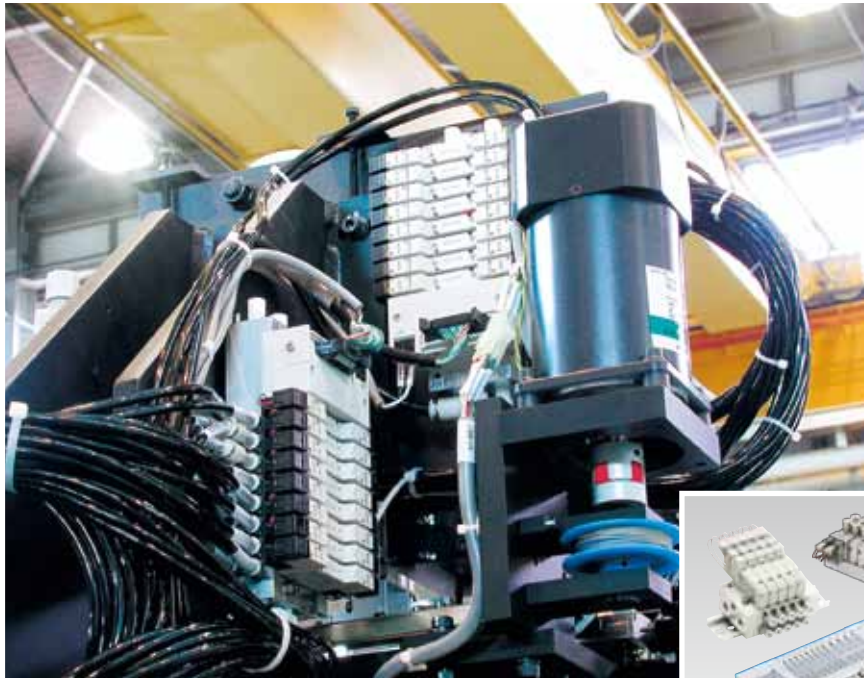
● Guided cylinder



● 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



INDEX/DIRECT DRIVE ACTUATORS



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)



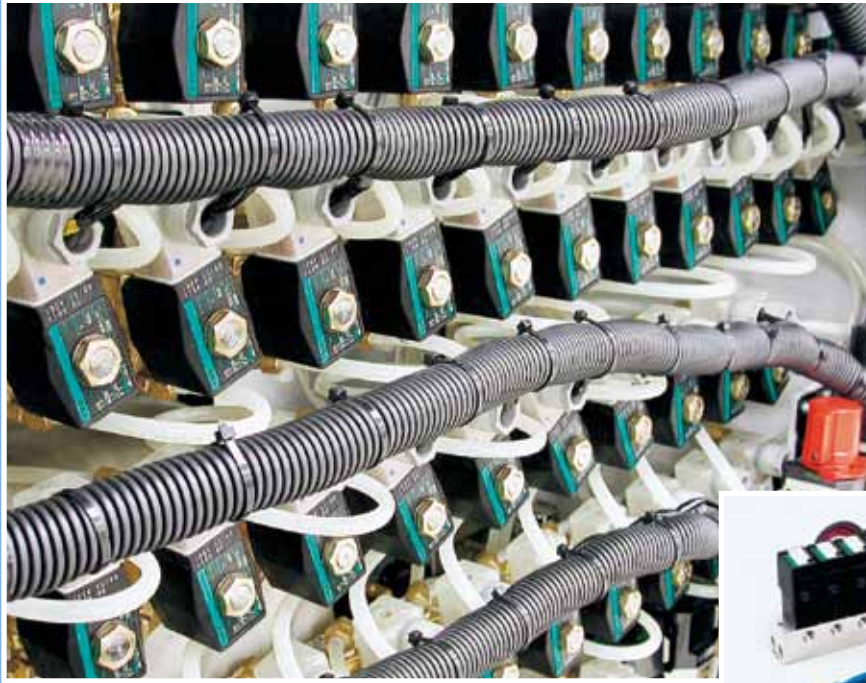
● Roller gear cam units



● 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



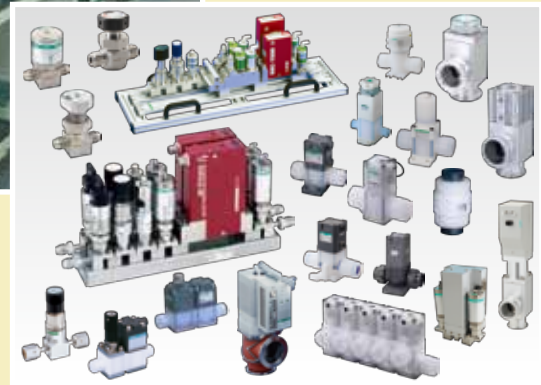
● General purpose valves



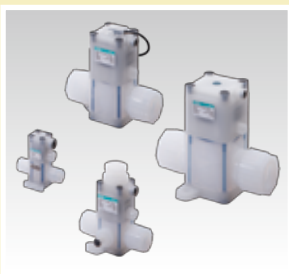
● Cylinder valves



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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GENERAL PURPOSE VALVES

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ACTUATORS

Electric actuator

Electric actuator Motorless

Customers can mount motors they are familiar with

Diverse lineup to match applications

ETS Series

- Ball screw drive
- 8 Size
- Load capacity: 5 - 150 kg (Horizontal)
- Stroke: 1500 mm (Longest)



Devices with full cover and suction port based on ETS

ECS Series

- Ball screw drive (Low dust specifications)
- 7 Size
- Load capacity: 5 - 150 kg (Horizontal)
- Stroke: 1500 mm (Longest)



Belt drive based on the ETS

ETV Series

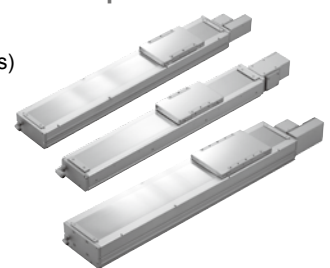
- Belt drive
- 6 Size
- Load capacity: 3 - 85 kg (Horizontal)
- Stroke: 3500 mm (Longest)



Devices with full cover and suction port based on ETV

ECV Series

- Belt drive (Low dust specifications)
- 6 Size
- Load capacity: 3 - 85 kg (Horizontal)
- Stroke: 3500 mm (Longest)



Freely set the motor mounting direction

Can be connected to a variety of field networks

	General purpose	SSCNET	CC-Link	MECHATORO LINK-II	MECHATORO LINK-III	DeviceNet	EtherCAT
Mitsubishi Electric Corporation	○	○	○				
Delta Electronics Co., Ltd.	○						
Sanyo Denki Co., Ltd.	○						○
YASKAWA Electric Corporation	○			○	○	○	
Keyence Corporation	○			○			
Panasonic Corporation	○						
OMRON Corporation	○			○			○

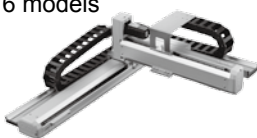
This product does not have a motor mounted.
The user must prepare, mount, and adjust the motor and driver.
* Different mounting direction needs to be selected for the ETV Series.

14 models in four types are also available.
Flexible for a variety of uses

ETS Multi Axis Series

A type (X-Y axes)

- Max. load capacity: 50 kg
- 6 models



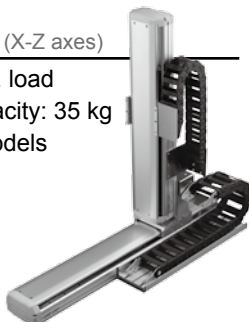
G type (With X-Y axes support guide)

- Max. load capacity: 50 kg
- 2 models



P type (X-Z axes)

- Max. load capacity: 35 kg
- 3 models



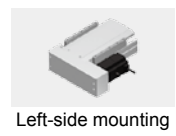
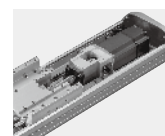
F type (Y-Z axes)

- Max. load capacity: 22 kg
- 3 models



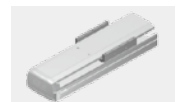
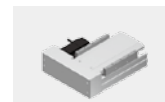
ETS/ECS Series

Brackets are available. You can select the manufacturer and mounting direction.* Option



External direct mounting

Left-side mounting



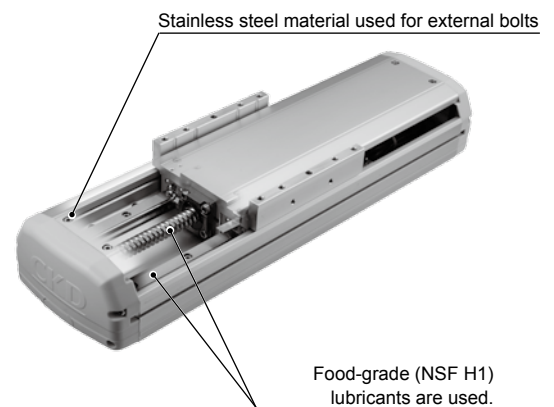
Right-side mounting

Bottom-side mounting

Built-in

Food-grade (NSF H1) lubricants are used for flow paths and sliding portions.

ETS/ETV/ECS/ECV FP1 Series



* Materials and dimensions are the same as standard products.

Electric Actuator ETS Series CC-1165A
ECS Series CC-1217A
ETV Series CC-1216A
ECV Series CC-1257A

Stepping motor drives

More variations and improved function

ERL2/ESD2 Series

- 4 motor mounting directions (straight, right, left, bottom)
- 3 controller types (63-point and 7-point positioning, pulse train input method)
- Extremely easy teaching
- High maximum pushing force
- Long-term maintenance-free



Easy operation with the handy terminal



Retained easy-to-use air pressure components

ESSD/ELCR Series

- Space saving with built-in controller
- Capable of being designed like a pneumatic cylinder
- Easy teaching
- Two types: table and rod



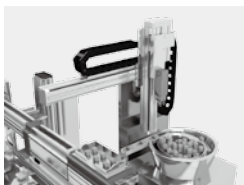
Electric Actuator ERL2/ESD2 Series CC-1219A
Electric Actuator ESSD/ELCR Series CC-1002A

Servo motor drives

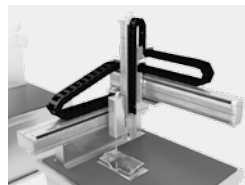
Ideal for palletizing and sealing

KBX Series (50 to 750 W)

- From single axis to a combination of up to 4 axes
- Max. speed of 1,200 mm/s (ball screw drive), 2,000 mm/s (timing belt drive)
- All models are absolute types



Palletizing



Sealing



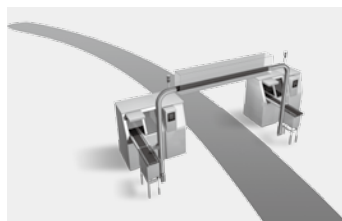
Electric Actuator KBX Series CC-1275A

Electric shuttle mover

Change the transport, change the worksite

ESM Series

- Three-dimensional transport P&P system
- Belt drive
- Long stroke length of up to 20 m
- Various companies' motor can be mounted (Motorless)



Transport between devices for the next process (Air piping available at the end)



Electric shuttle mover ESM Series CC-1259A



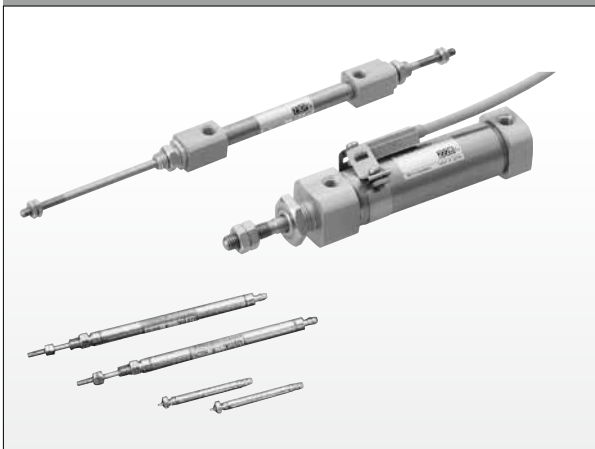
Standard

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 $\phi 2.5$ to $\phi 16$

Bore size $\phi 2.5$ to $\phi 16$



Pneumatic Cylinders | CB-029SA

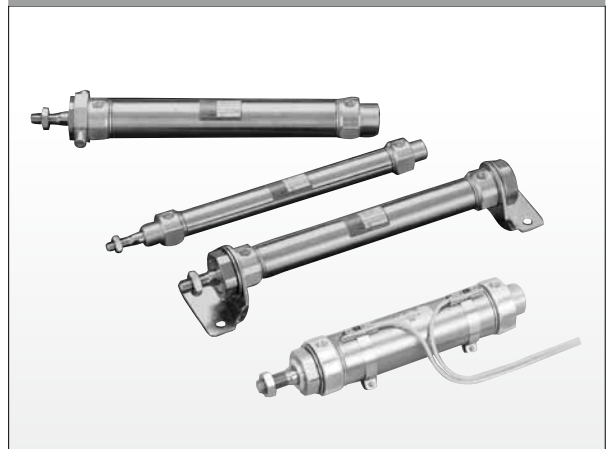
Standard

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: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$
- Stainless steel material used for exterior

Bore size $\phi 20$ to $\phi 40$



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: $\phi 20$, $\phi 30$, $\phi 40$

Bore size $\phi 20$ to $\phi 40$



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 $\phi 20$ to $\phi 100$

Bore size $\phi 20$ to $\phi 100$



Pneumatic Cylinders | CB-029SA

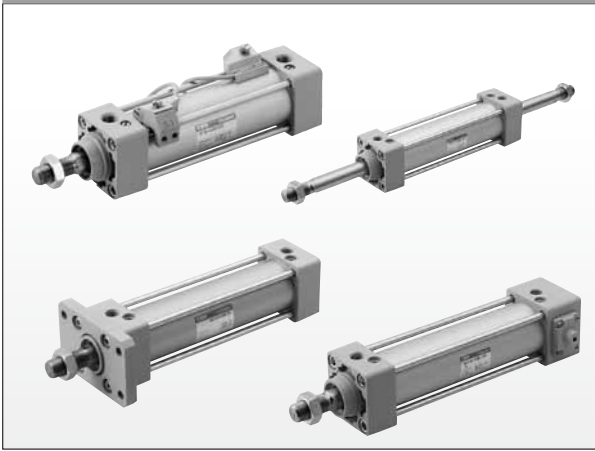
Standard

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 $\phi 32$ to $\phi 100$

Bore size $\phi 32$ to $\phi 100$



Pneumatic Cylinders I CB-029SA

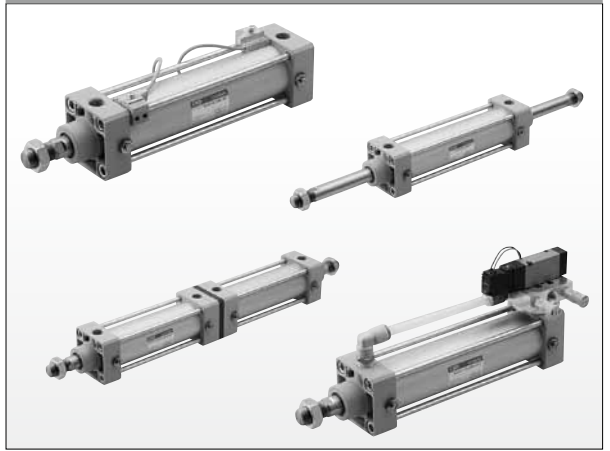
Standard

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 $\phi 40$ to $\phi 100$

Bore size $\phi 40$ to $\phi 100$



Pneumatic Cylinders I CB-029SA

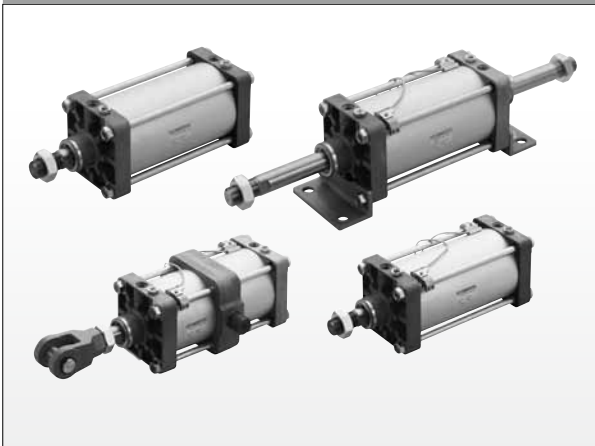
Standard

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 $\phi 125$ to $\phi 250$

Bore size $\phi 125$ to $\phi 250$



Pneumatic Cylinders I CB-029SA

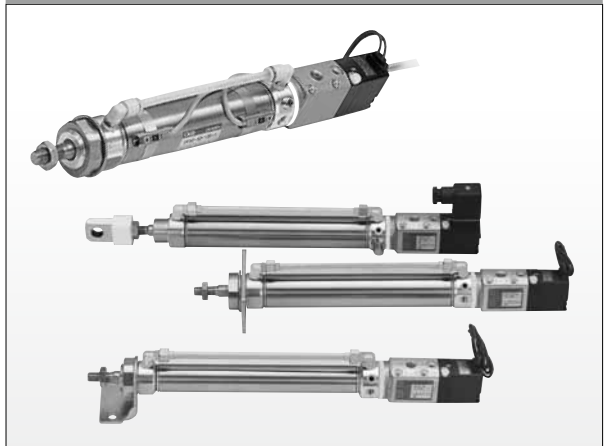
With valve

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 $\phi 20$ to $\phi 40$



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 ϕ 50 to ϕ 100



Pneumatic Cylinders | CB-029SA

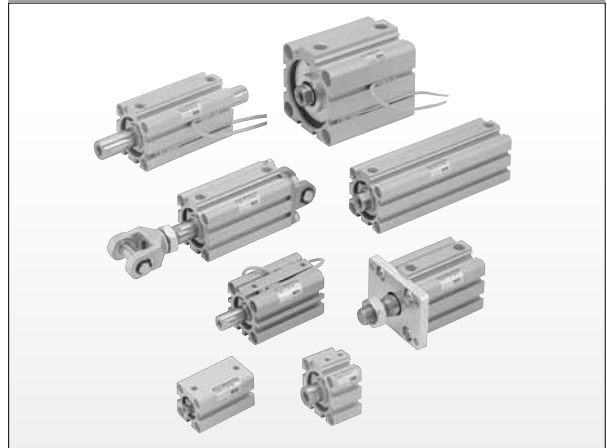
Space saving structure

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 ϕ 12 to ϕ 200

Bore size ϕ 12 to ϕ 200



Pneumatic Cylinders | CB-029SA

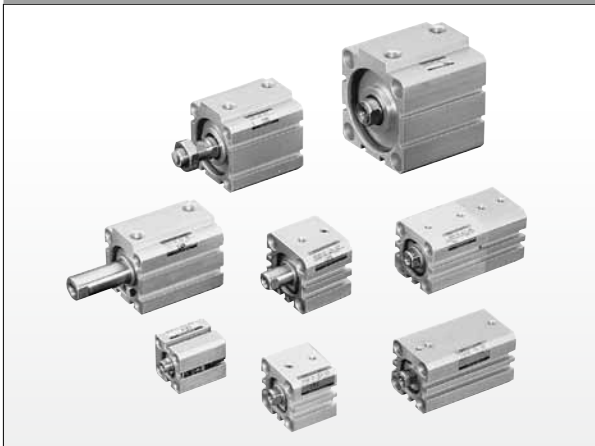
Space saving structure

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 ϕ 12 to ϕ 160

Bore size ϕ 12 to ϕ 160



Pneumatic Cylinders | CB-029SA

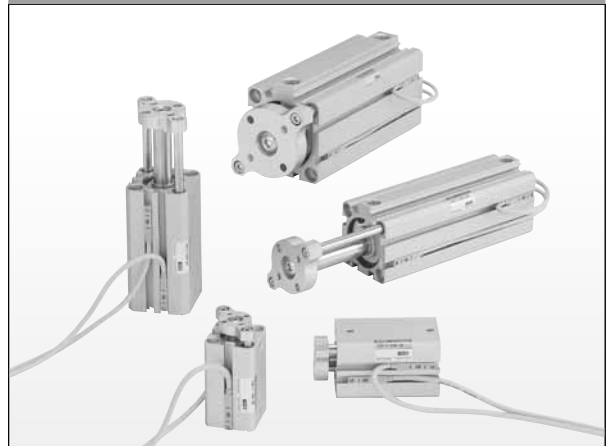
Space saving structure

Guided super compact cylinder

SSG 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 ϕ 12 to ϕ 100

Bore size ϕ 12 to ϕ 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 $\phi 6, \phi 10$



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: $\phi 6, \phi 10,$ and $\phi 15$

Bore size $\phi 6$ to $\phi 15$



Pneumatic Cylinders I CB-029SA

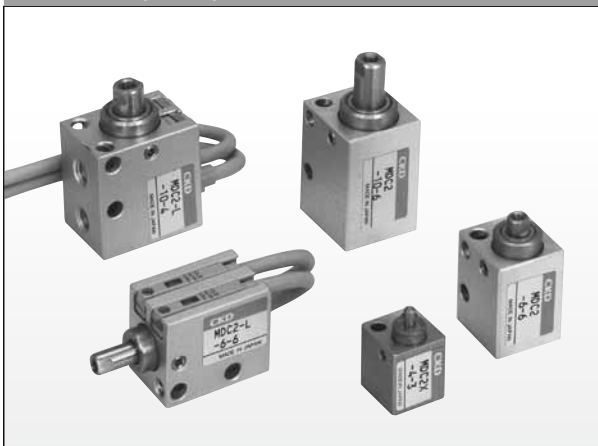
Space saving structure

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 $\phi 4$ to $\phi 10$



Pneumatic Cylinders I CB-029SA

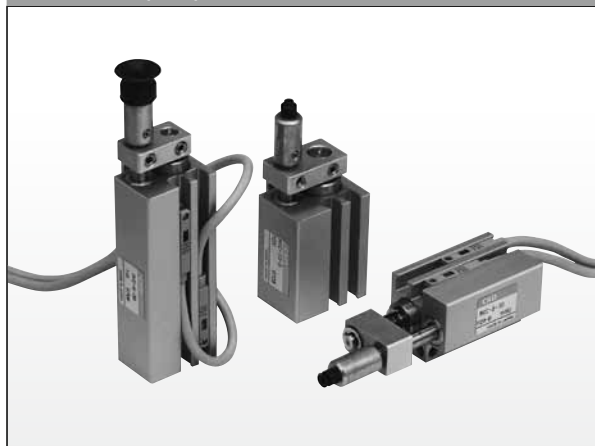
Space saving structure

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 ($\phi 2$ to $\phi 10$) 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 $\phi 6, \phi 10$



Pneumatic Cylinders I CB-029SA



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 | 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 | 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 | 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: $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$

Bore size $\phi 16$ to $\phi 40$



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: $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$. 3 bore sizes for JSM2: $\phi 20$, $\phi 30$, $\phi 40$.

Bore size $\phi 20$ to $\phi 40$



Pneumatic Cylinders II CB-030SA

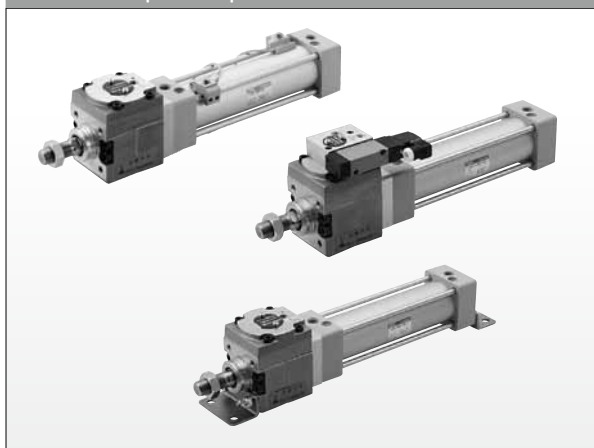
With brake

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 $\phi 40$ to $\phi 100$

Bore size $\phi 40$ to $\phi 100$



Pneumatic Cylinders II CB-030SA



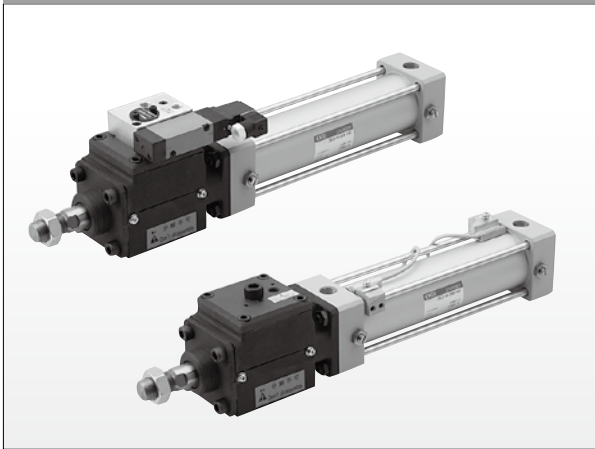
With brake

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 $\phi 40$ to $\phi 100$

Bore size $\phi 40$ to $\phi 100$



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 $\phi 125$ to $\phi 180$



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 $\phi 20$ to $\phi 100$



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 $\phi 40$ to $\phi 100$



Pneumatic Cylinders II CB-030SA

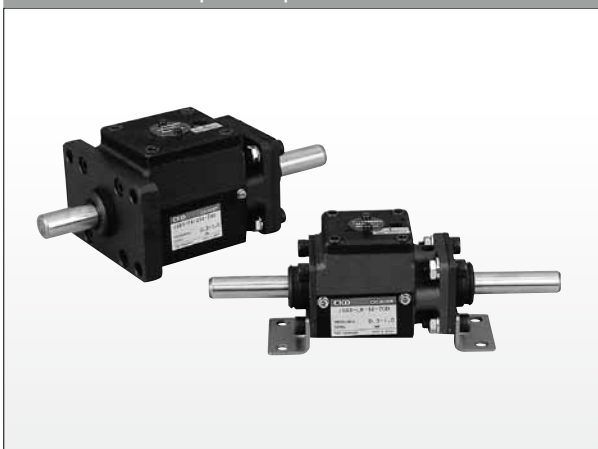
With brake

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 $\phi 16$ to $\phi 45$ rod diameter
- Stopping accuracy ± 1 mm or less (300 mm/s without load)

Rod diameter $\phi 16$ to $\phi 45$



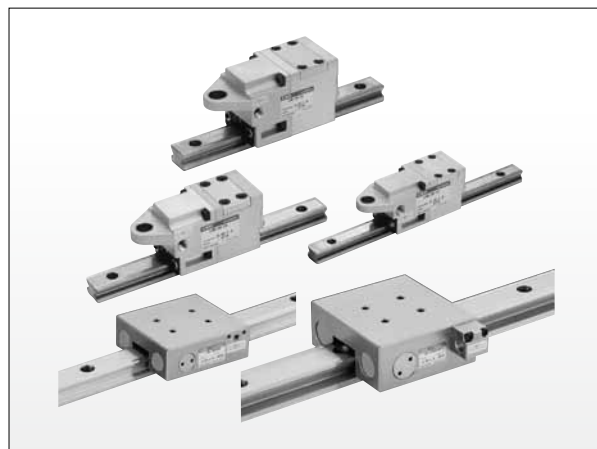
Pneumatic Cylinders II CB-030SA

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 $\phi 6$, $\phi 10$



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 $\phi 12$ to $\phi 100$

Bore size $\phi 12$ to $\phi 100$



Pneumatic Cylinders II CB-030SA



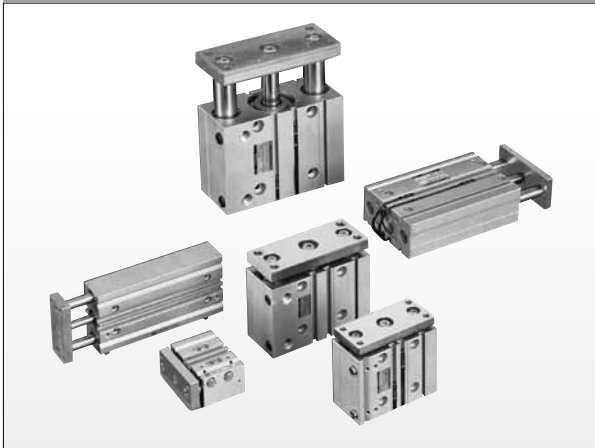
Combined functions

Guided cylinders

STS/L Series

- Max. stroke length of 400 mm $\phi 20$ to $\phi 80$
- 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 $\phi 8$ to $\phi 100$



Pneumatic Cylinders II CB-030SA

Combined functions

Linear slide cylinders

LCW Series

- Specs most used by customers are provided as standard
3 bore sizes ($\phi 12$, 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 $\phi 12$, $\phi 16$, $\phi 20$



Pneumatic Cylinders II CB-030SA

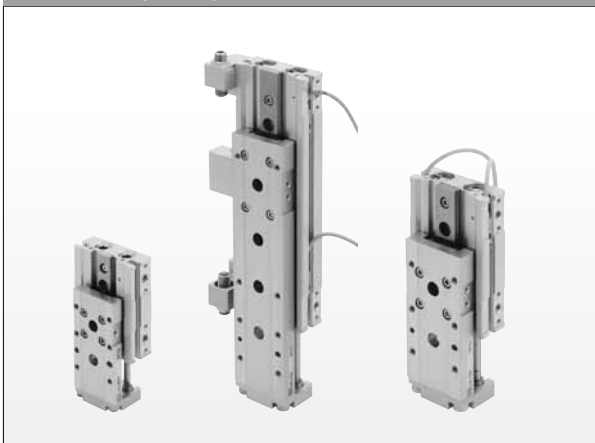
Combined functions

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 $\phi 6$ to $\phi 25$



Pneumatic Cylinders II CB-030SA

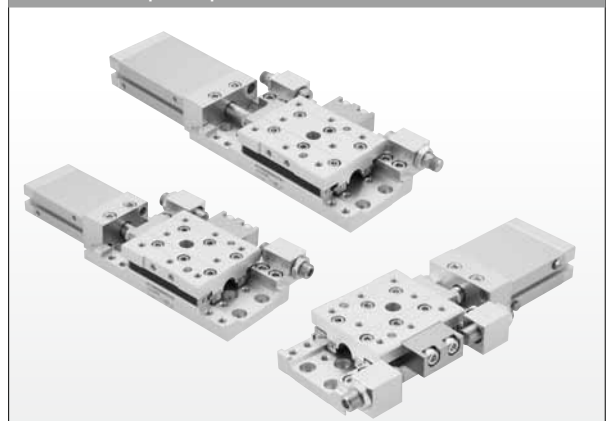
Combined functions

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 $\phi 25$, $\phi 32$



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 $\phi 6$ to $\phi 25$



Pneumatic Cylinders II CB-030SA

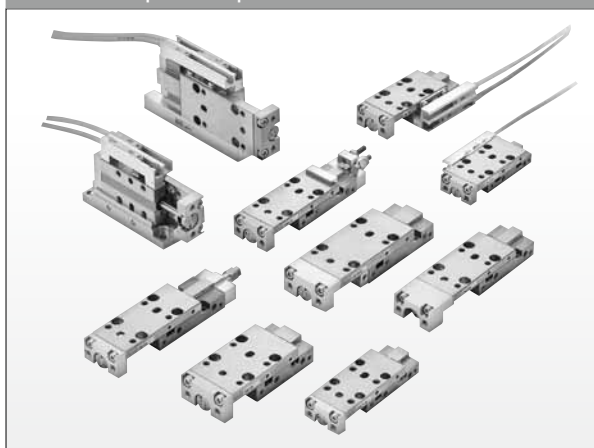
Combined functions

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 $\phi 4.5$ to $\phi 8$



Pneumatic Cylinders II CB-030SA

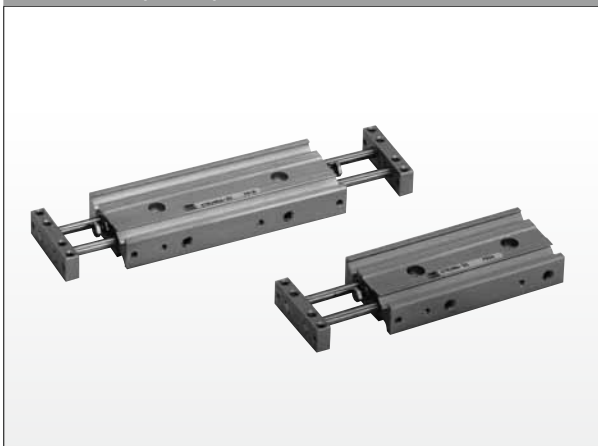
Combined functions

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 $\phi 6$ bore size has been added.
- Piping ports can be installed on either side.

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



Pneumatic Cylinders II CB-030SA

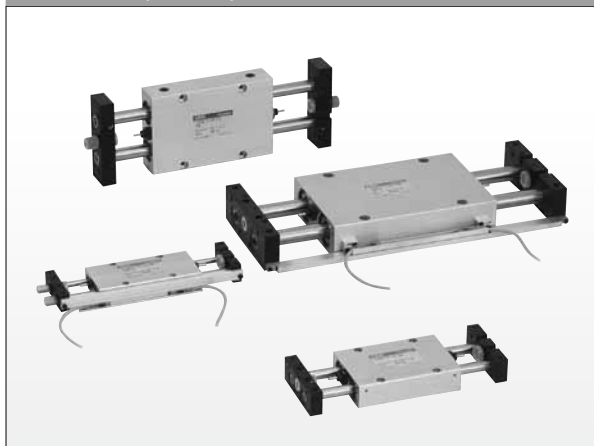
Combined functions

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 $\phi 10$ to $\phi 32$



Pneumatic Cylinders II CB-030SA



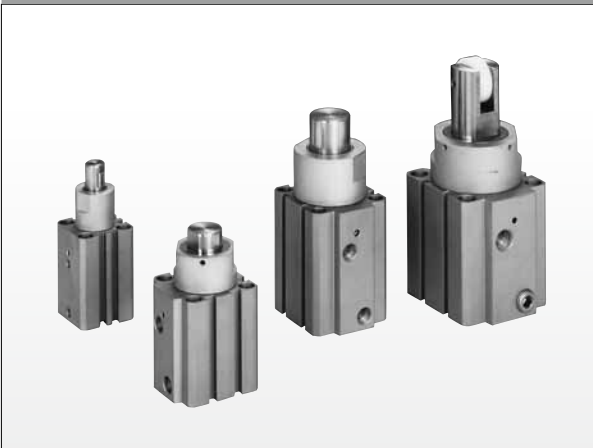
Combined functions

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 $\phi 20$ to $\phi 50$



Pneumatic Cylinders I CB-029SA

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 $\phi 50$



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 $\phi 20$ to $\phi 100$

Bore size $\phi 20$ to $\phi 100$



Pneumatic Cylinders II CB-030SA

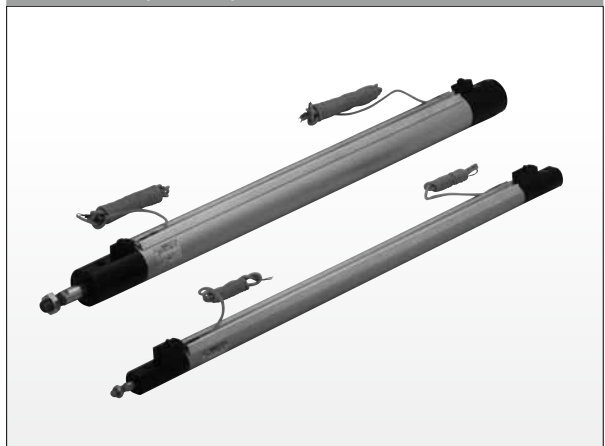
High speed

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 $\phi 20$ to $\phi 63$

Bore size $\phi 20$ to $\phi 63$



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 $\phi 12$ to $\phi 100$

Bore size $\phi 12$ to $\phi 100$



Pneumatic Cylinders I CB-029SA

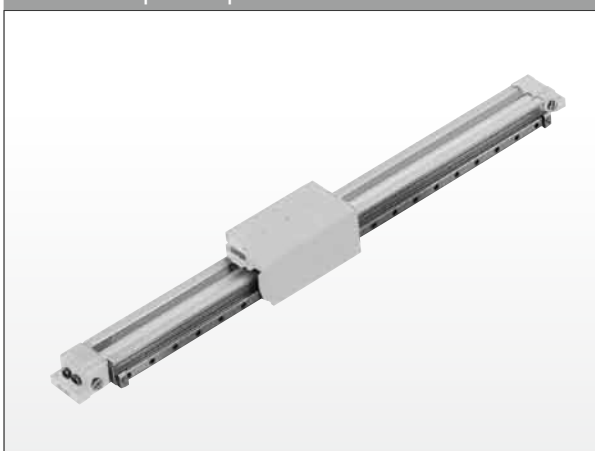
Rodless

High precision guided rodless cylinders

SRG3 Series

- Rodless cylinder with 1-axis high precision guide integrated
- 4 bore sizes from $\phi 12$ to $\phi 25$
- 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 $\phi 12$ to $\phi 25$



Pneumatic Cylinders I CB-029SA

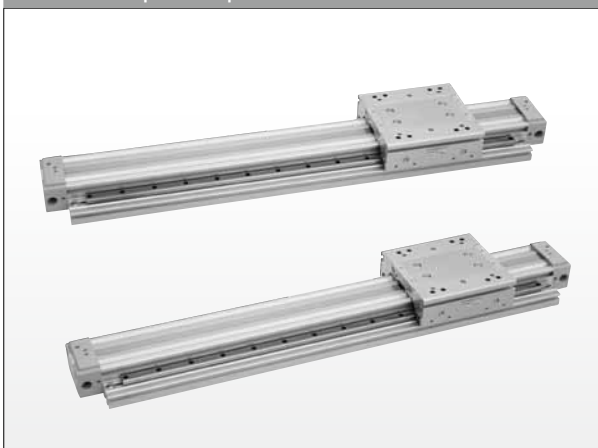
Rodless

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: $\phi 25$, $\phi 32$, $\phi 40$, and $\phi 63$

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



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 $\phi 12$ to $\phi 63$

Bore size $\phi 12$ to $\phi 63$



Pneumatic Cylinders I CB-029SA



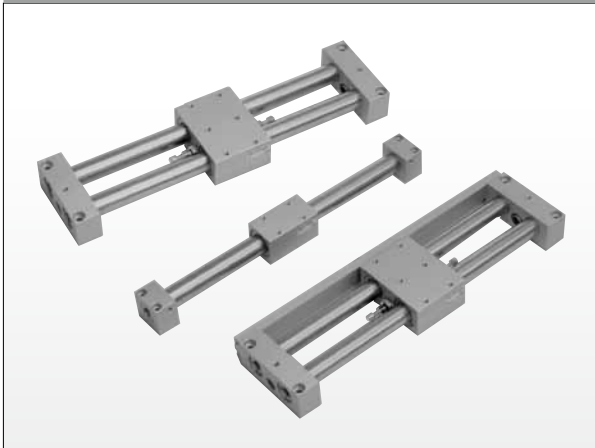
Rodless

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 $\phi 6$ to $\phi 32$

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



Pneumatic Cylinders | CB-029SA

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: $\phi 10$, $\phi 16$, and $\phi 25$

Bore size $\phi 10$ to $\phi 25$



Pneumatic Cylinders | 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 $\phi 25$



Pneumatic Cylinders | 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: $\phi 40$, $\phi 50$, $\phi 63$, and $\phi 80$
- 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 $\phi 40$ to $\phi 80$ 

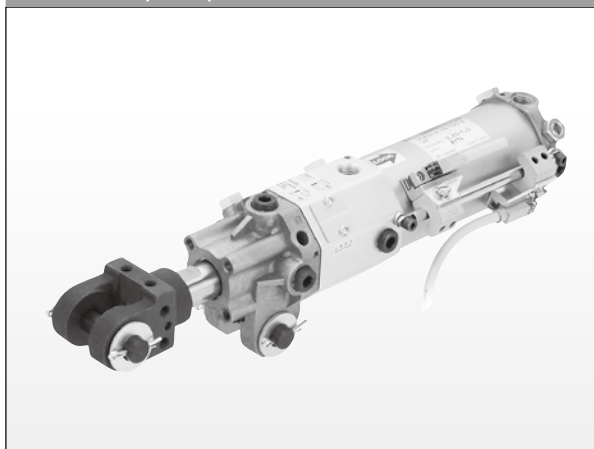
Pneumatic Cylinders II CB-030SA

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 $\phi 50$, $\phi 63$ 

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



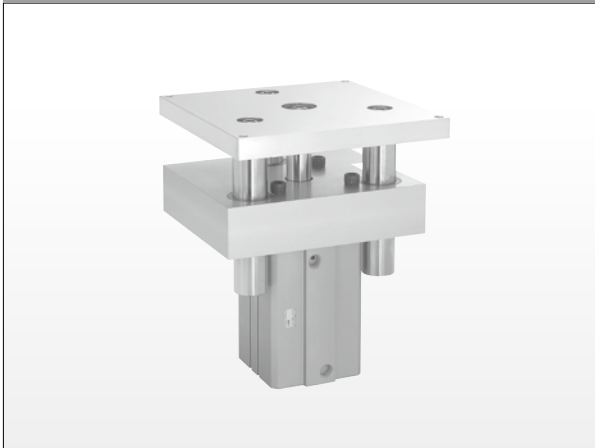
Special

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

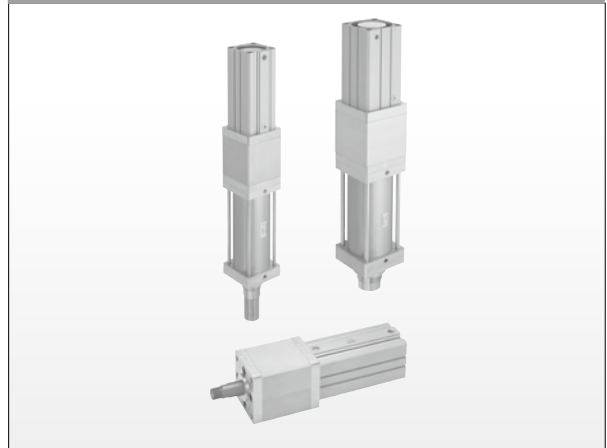
Special

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

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 $\phi 50$ to $\phi 100$



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

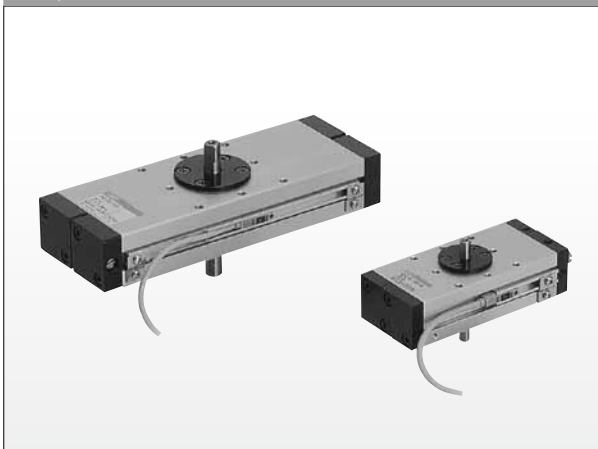
Oscillation/rotation drive

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

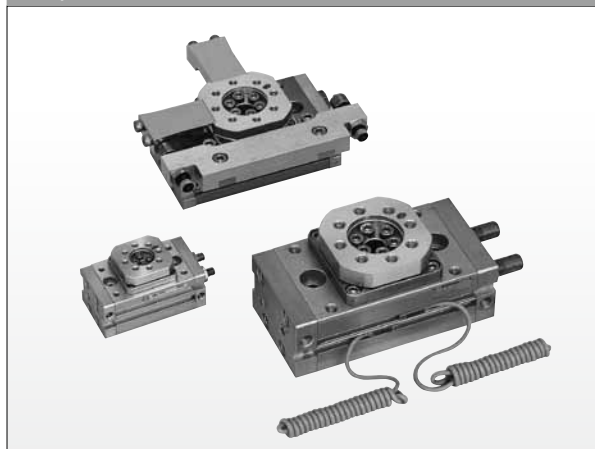
Oscillation/rotation drive

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

Oscillation/rotation drive

Fine speed fan rotary actuators

SFR/SFRT Series

- Original seal structure realizes the industry's smallest air leak.
- Operation is possible with various speeds ranging from low to high speeds.
- Table type (SFRT) and shaft type (SFR) are available.
- Compact, lightweight and high torque
- Multi-surface installation for all places

Torque size 0.35 to 2.71 N·m



Fine speed fan rotary actuator Shaft SFR/Table type SFRT Series CC-984A

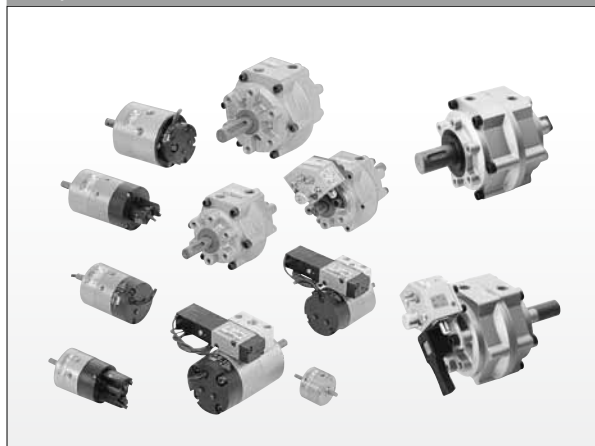
Oscillation/rotation drive

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

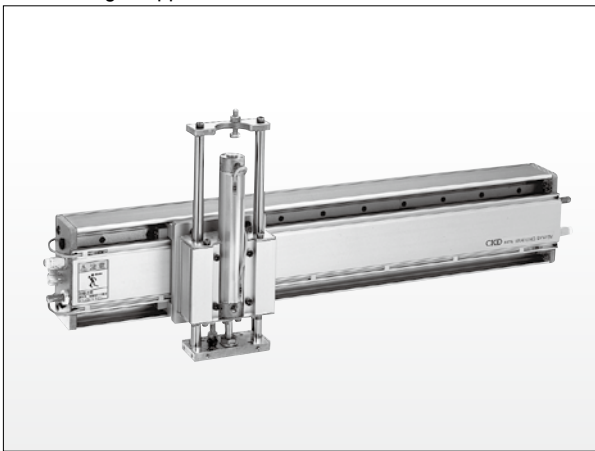


Modular unit

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.



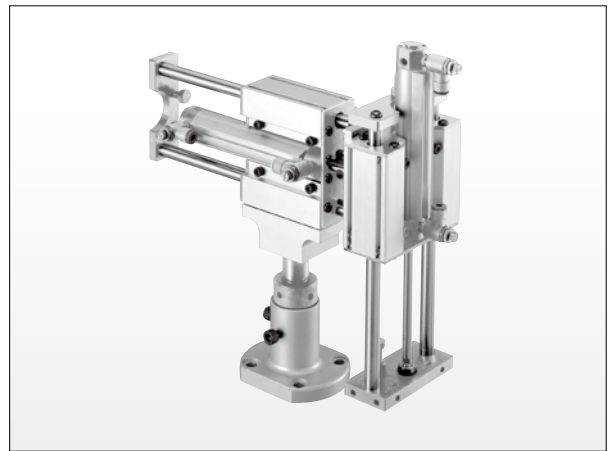
Pneumatic Cylinders II CB-030SA

Modular unit

Hybrid robot

HR Series

- R-axis and Z-axis of the HRL-1 Series are 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.



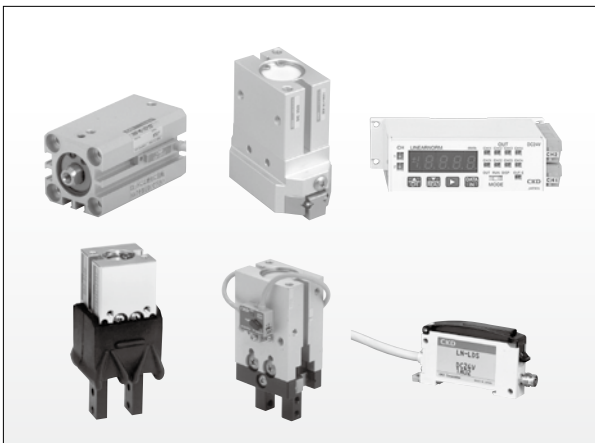
Pneumatic Cylinders II CB-030SA

Length measuring function

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.



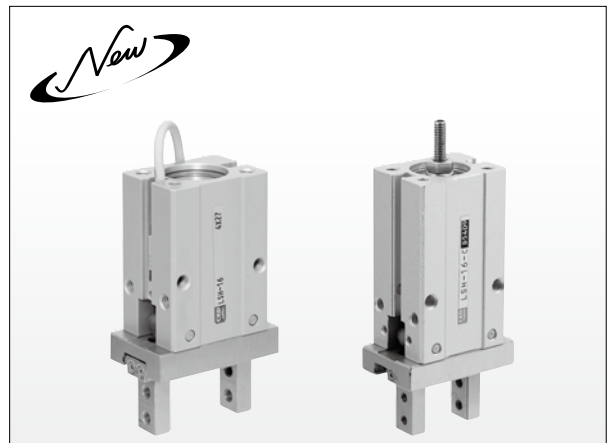
Pneumatic Cylinders II CB-030SA

Related products

Linear slide hands

LSH Series

- High rigidity/high precision
High rigidity/high precision with linear guide
- Increased flexibility in design
Can be mounted on three directions: Axial direction (upward) mounting, horizontal mounting, and vertical mounting.
- Shock absorbing mechanism integrated
Unique shock absorbing mechanism (custom order), gripping the workpiece gently even at high speeds. Suppresses impact to approximately 1/30



Linear slide hand LSH Series CC-1221A

Hands/chucks

- Wide range of models, variations, and options.
- Selection is available to match a variety of applications.
- A wide range of cylinder switches



Pneumatic Cylinders II CB-030SA

Linear guide hand (long stroke length)

LHA-**-L1 Series

- Stroke is twice that of the conventional model LHA Series, enabling shared use for a variety of workpiece sizes
- Body is thin, enabling multiple arrays.
- Uses an integrated linear guide with high rigidity, high precision, and long life.



Linear guide hand LHA-**-L1 Series CC-1150A

Low-profile long stroke hand

HLF Series

- Use of double piston method for high gripping power
- Long stroke length for shared use for a variety of workpiece sizes
- Thinner and lighter weight than the conventional model HLC Series
- Four-direction mounting available



Low-profile long stroke hand HLF Series CC-1152A

High gripping power hand/High gripping power chuck

HHC, HHD/CKT, CKU Series

- High gripping power and long claw for large workpieces
- Long stroke length for shared use for a variety of sizes of workpieces
- Downsizing/material optimization
- High gripping power: 8333 N (theoretical value at 0.5 MPa)

High gripping power hand HHC/HHD Series CC-1153A
High gripping power chuck CKT/CKU Series CC-1153A



Related products

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°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

Related products

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



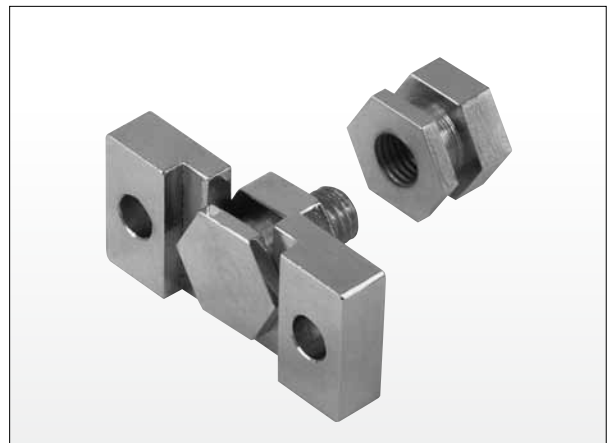
Pneumatic Cylinders II CB-030SA

Related products

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

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

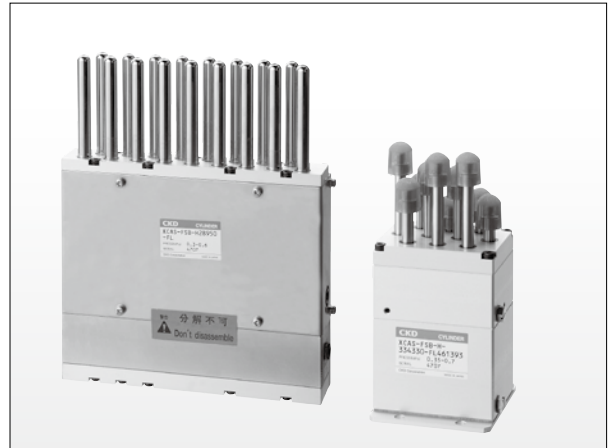


Magnet suction hand MHC2 Series CC-1209A

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

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

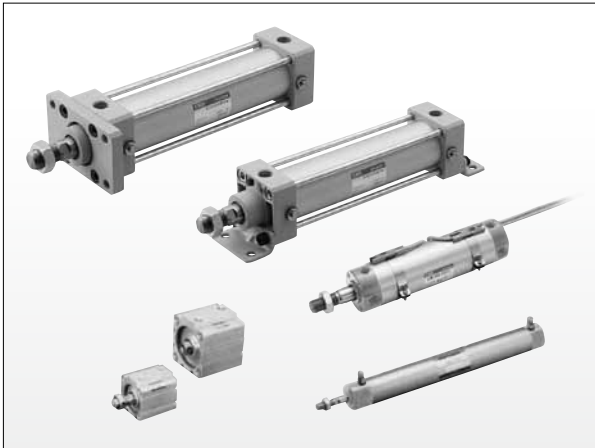


High-function type

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.

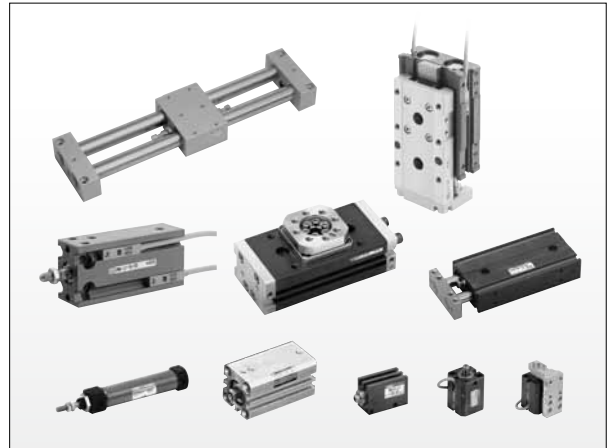


High-function type

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.

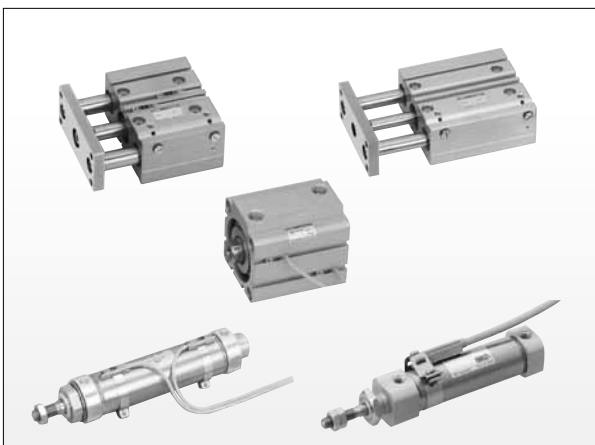


High-function type

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



High-function type

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.



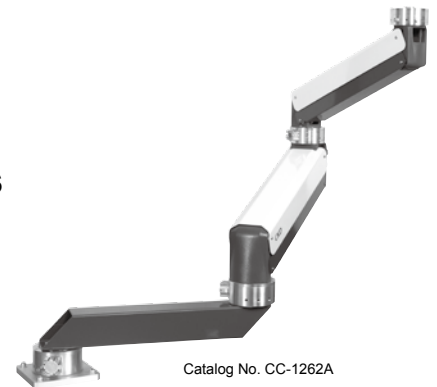
Air bearing actuator LBC Series CC-652A

PowerArm (Auxiliary mechanism)

PFB2 Series

Human assist developed for workers in production sites

Back pain is an occupational hazard which accounts for 60% of work-related injuries. Heavy items are transported on a regular basis, but burden on workers have been reduced with self-supporting auxiliary devices or suit-type auxiliary devices using power assist, balancer or other mechanisms. With "All for "working people"" as our slogan, CKD offers new mechanisms as human assist devices using pneumatic pressure.

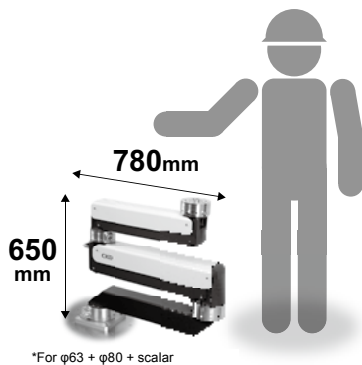


Catalog No. CC-1262A

Compact

Compact

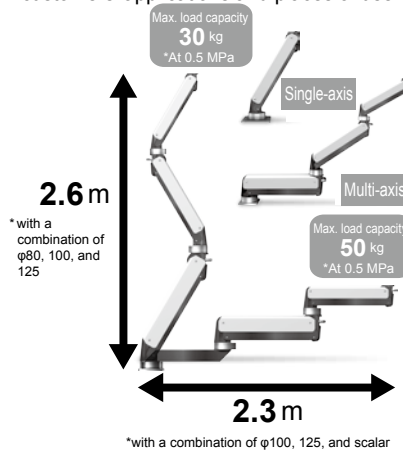
Multi-axis specification enables fold away for more compact storage than the arm or belt types.



Wide

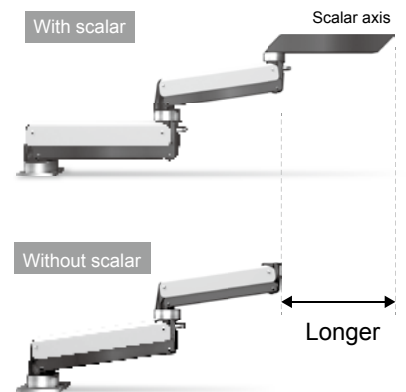
Wide movable range according to application

Flexible combinations of single-axis and multi-axis specifications are available to match customers' applications and places of use.



For wider movable range

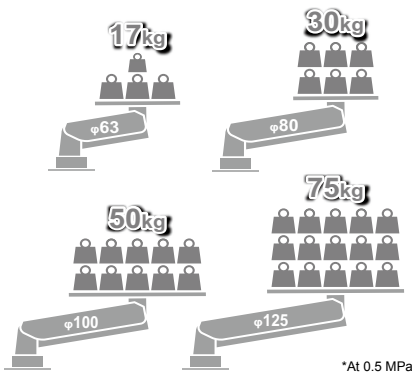
Using a scalar axis in the multi-axis specifications enables wider movable range.



Variation

Arm variation in accordance with workpiece

Select from 4 types of arms based on the workpiece load.



Light & Strong

Lightweight, but highly rigid

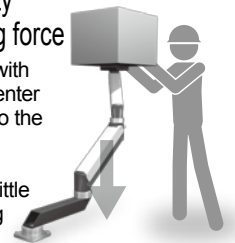
Use of a pneumatic cylinder as part of the main body. Increase in bending and torsional rigidity with compact and lightweight design.



Easy

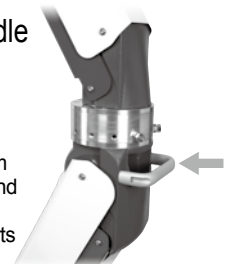
High operability Light operating force

Easy operation with the position of center of gravity close to the operator. Movable part is lightweight with little inertia, achieving high operability.



Operating handle

An operating handle is provided for the joint parts. Increases the operability of the arm and enables easy and safe arm operation without movable parts being touched.





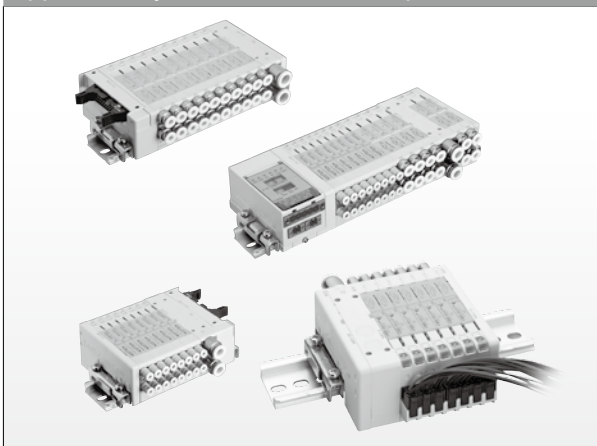
Small pilot operated 3, 4-port valve

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 MN3/4E00 Series of 7 mm valve block width and 7 mm pitch manifold in addition to the MN3/4E0 Series of 10 mm valve block width.
Use the compact 7 mm pitch manifold to downsize the system and increase density.
- Energy saving
MN3/4E0 Series: 0.6 W
MN3/4E00 Series: 0.4 W
With energy saving (Option E), it further reduces power consumption.
- $\phi 3$ push-in fitting is available
Along with reduction of piping volume and ensuring flow rate, it supports $\phi 3$ tubes, as well as $\phi 1.8$ 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 $\phi 32$



Pneumatic Valves CB-023SA

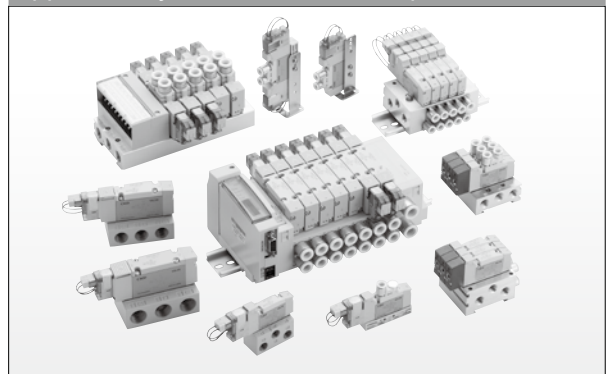
Small/medium pilot operated 3, 4, 5-port valve

Metal or resin base pneumatic valves

4G^{AD1}_{BE2}¹R/M4G^{AD1}_{BE2}¹R/MN4G^{AD1}_{BE2}¹R Series

- Compatible with up to $\phi 100$ 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 \pm 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 $\phi 100$



Pneumatic Valves CB-023SA

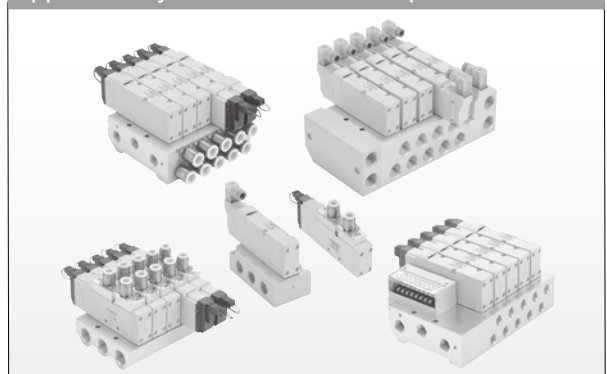
Large pilot operated 5-port valve

Metal or resin base pneumatic valves

4G^A₄ 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 $\phi 160$



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

Medium pilot operated 3, 5-port valve

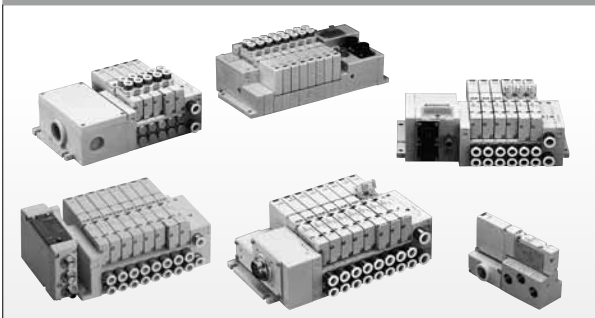
Plug-in type block manifolds

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 $\phi 80$ 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 $\phi 80$



Pneumatic Valves CB-023SA

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 $\phi 40$ 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 $\phi 40$



Pneumatic Valves CB-023SA

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

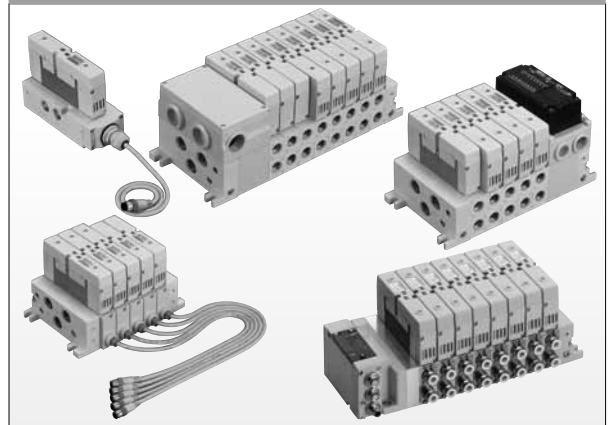
Large pilot operated 5-port valve

Plug-in type block manifolds

W4G4 Series

- Compatible with up to $\phi 125$ 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 $\phi 125$

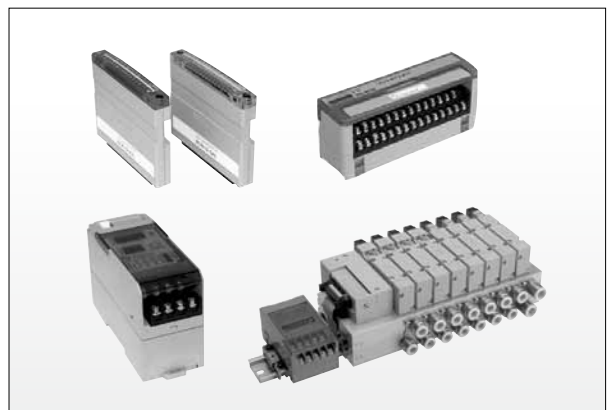


Pneumatic Valves CB-023SA

Network system

UNIWIRES[®] System W Series (H function compatible)

- Can be connected to PLC of various manufacturers
 - UNIWIRES system is a unique transmission system not restricted by the type of PLC. The I/O unit of the PLC of various manufacturers can be connected to via the UNI connector, enabling control without PLC programs changed. From the PLC's point of view, reduced wiring is achieved without the UNIWIRES system taken into consideration.
- Compatible with 256 points as basic specifications (For a slave unit for valve, 128 points)
- In all continuous points ON is possible at input terminal (Resistance of a heat-generating element is distributed).
- Configuration with STW/PTW (with H function) allows up to 50 units to be connected.
- Mixed operation with conventional UNIWIRES[®] system H Series



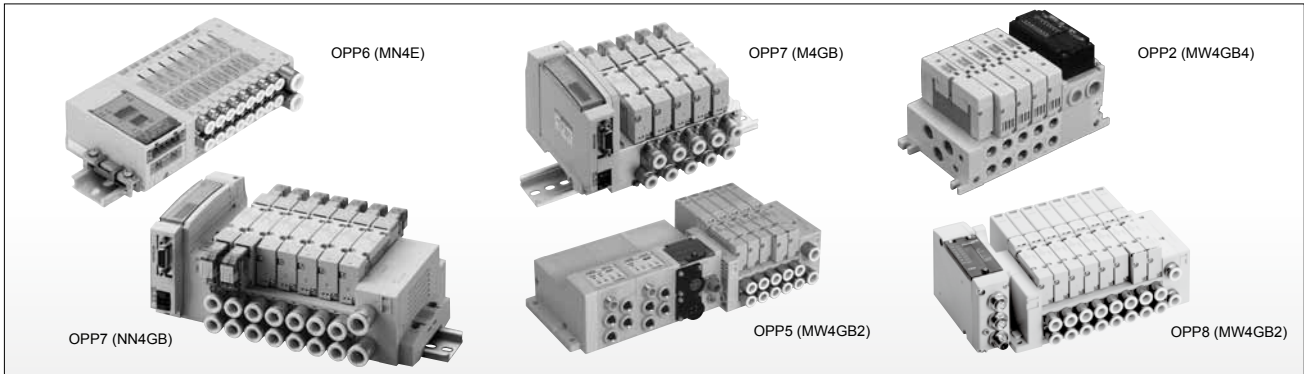
Pneumatic Valves CB-023SA



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, MN4TB, M4TB, LMF0
		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				
ODVA OMRON Corporation	DeviceNet	T6D1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
		T7D1	OPP4 Series	MN4G
		T8D1/2/7	OPP5 Series	MW4G2 *1
		T7D1/2	OPP6 Series	MN4E0, MN4E00
		T7DP1/2	OPP7 Series	M4G, MN4G
OMRON Corporation	CompoBus/S	T6C0/1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
		T6C0/1	OPP3 Series	MN4S0, MN4E, MN4G, M4G
		T7C0/1	OPP4 Series	MN4G
		T8C1/6	OPP5 Series	MW4G2 *1
Japan Profibus Association SIEMENS Corporation	PROFIBUS-DP	T8P1/2	OPP7 Series	M4G, MN4G
		T8PP1/2		
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				
ODVA TAG JAPAN	EtherNet/IP	T8EN1/2	OPP7 Series	M4G, MN4G
		T8ENP1/2	OPP8 Series	MW4G2, MW4G4
		T7EN1/2		
		T7ENP1/2		
CKD, KURODA Pneumatics Ltd.	UNIWIRESYSTEM	T6A0/1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
			OPP3 Series	MN4S0, MN4E, MN4G, M4G
	UNIWIRESYSTEM H	T6J0/1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
			OPP3 Series	MN4S0, MN4E, MN4G, M4G
SUNX	S-LINK	T6E0/1	OPP3 Series	MN4S0, MN4E, MN4G, M4G
		T7E0/1	OPP4 Series	MN4G
	S-LINK V	T7N1/2	OPP6 Series	MN4E0, MN4E00
Ontec	SAVENET	T7L1	OPP4 Series	MN4G
Japan AS-i Association	AS-i	T8MA/6	OPP5 Series	MW4G2 *1

* 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.

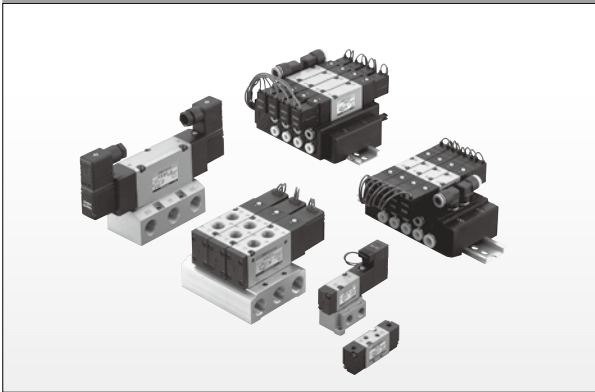
General purpose pilot operated 3, 4, 5-port valve

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 $\phi 160$ 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 $\phi 160$



Pneumatic Valves CB-023SA

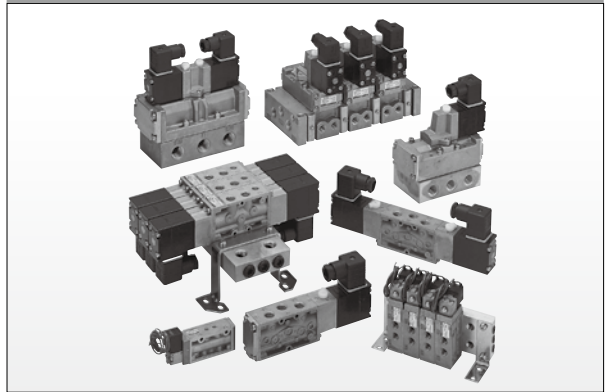
General purpose pilot operated 5-port valve

Pneumatic valves

4F/M4F Series

- Available for a variety of fields
5-port valve
- Compatible with up to $\phi 250$ 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 $\phi 250$



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

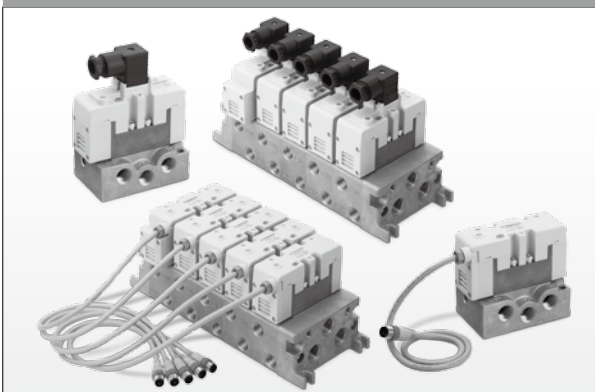
ISO compliant valve pilot operated 5-port valve

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 $\phi 160$



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

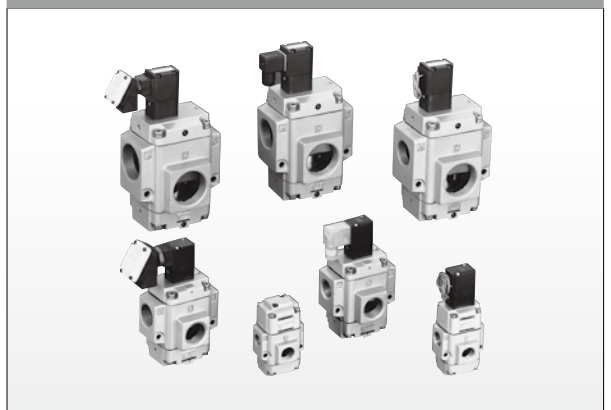
Pilot operated air driven poppet valve

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.



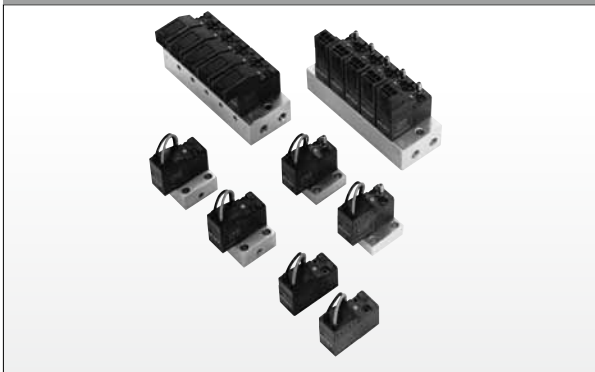
Miniature direct acting 3-port valve

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 $\phi 16$ 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 $\phi 16$



Pneumatic Valves CB-023SA

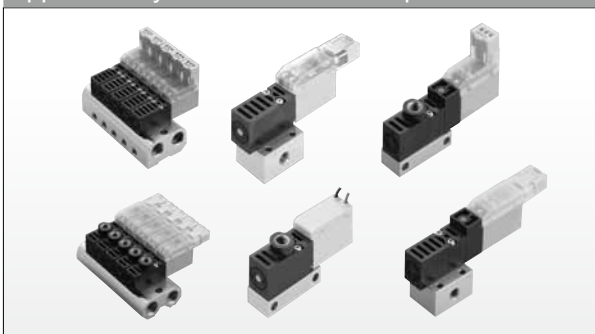
Small direct acting 3-port valve

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 $\phi 25$



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 $\phi 25$ 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 $\phi 25$



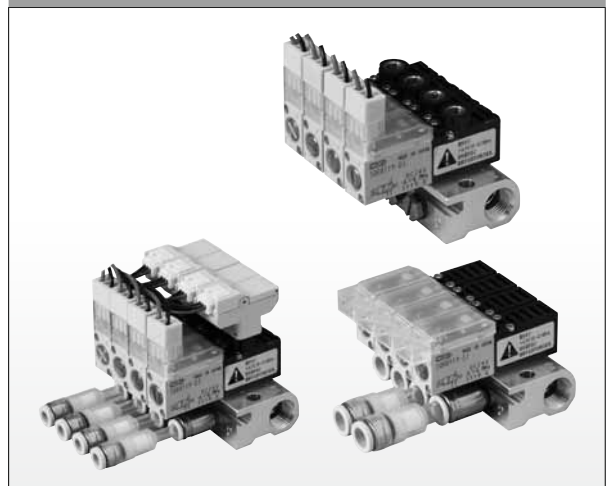
Pneumatic Valves CB-023SA

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 $S=5C$.

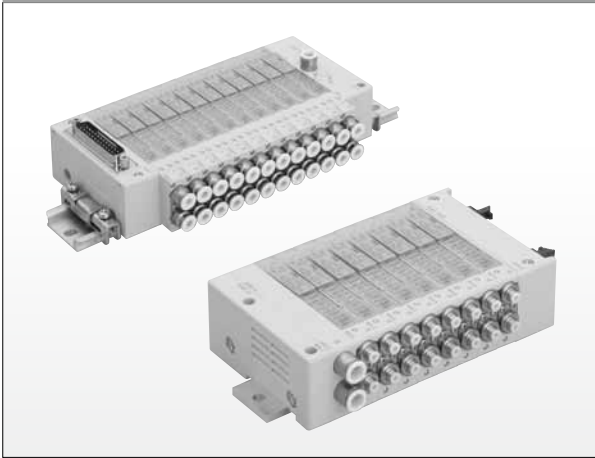
Solenoid valve manifold with two 3-port valves mounted

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 $\phi 16$



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

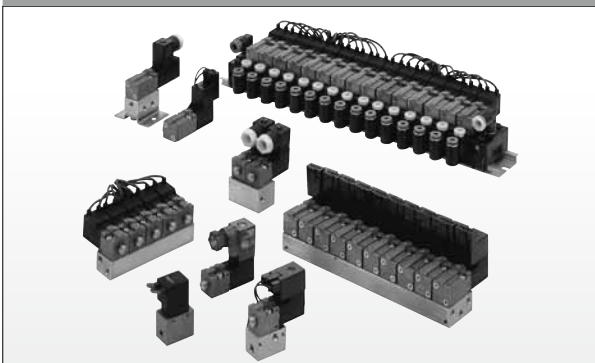
Pilot operated poppet 3-port valve

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 $\phi 16$ 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 $\phi 16$



Pneumatic Valves CB-023SA

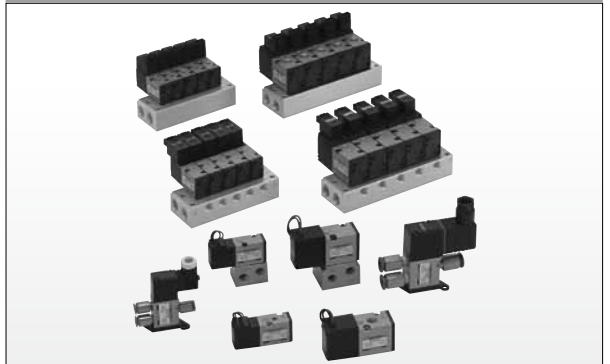
Small direct acting balance poppet 3-port valve

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 $\phi 40$ 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 $\phi 40$



Pneumatic Valves CB-023SA

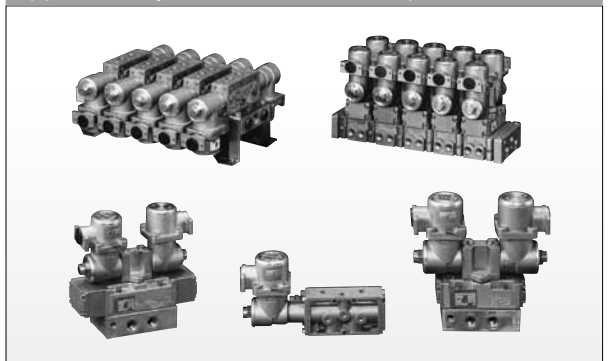
Explosion-proof 5-port valve

Pneumatic explosion-proof 5-port valves

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 (dm³/ (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 $S \approx 5C$.



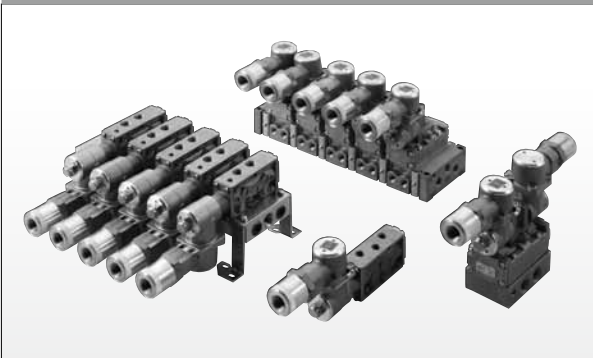
Explosion-proof 5-port valve

Pilot operated explosion-proof 5-port valves

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

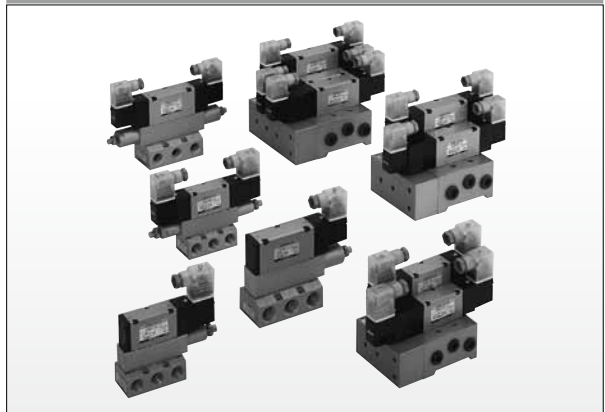
Shock absorbing valve

Shock absorbing valves

SKH Series

- Bound phenomenon is suppressed at the end of the cylinder stroke.
- Compatible with up to $\phi 125$ 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 $\phi 125$



Pneumatic Valves CB-023SA

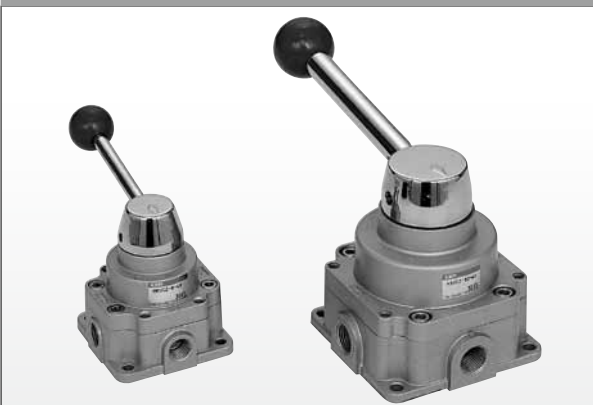
Manual override switching 4-port valve

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 (dm³/ (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 $\phi 160$



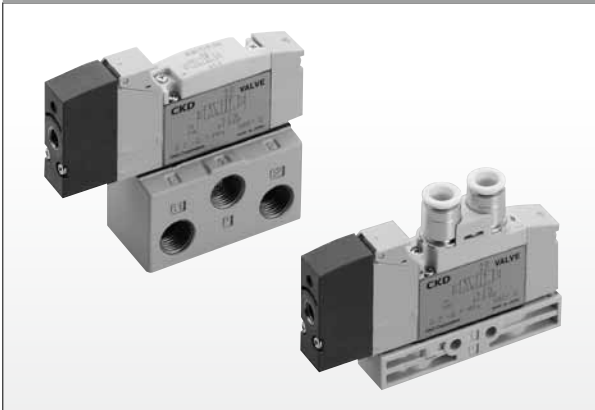
Pneumatic Valves CB-023SA

Pneumatic valves

4G₆ 1 to 3R Series

- Compatible with up to $\phi 100$ 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 $\phi 100$



Pneumatic Valves CB-023SA

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

Pneumatic valves

4K₆ Series

- Compatible with up to $\phi 160$ 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 $\phi 160$



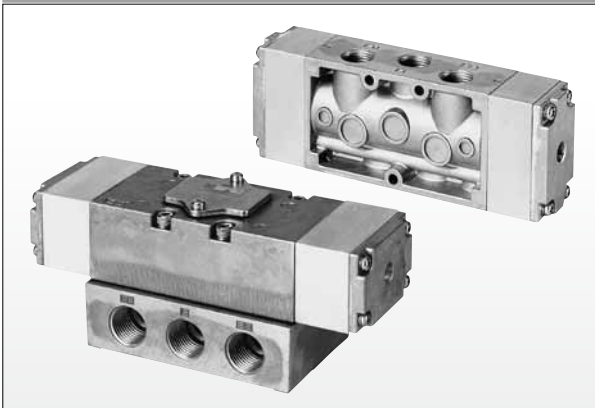
Pneumatic Valves CB-023SA

Pneumatic valves

4F Series

- Compatible with up to $\phi 250$ 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 $\phi 250$

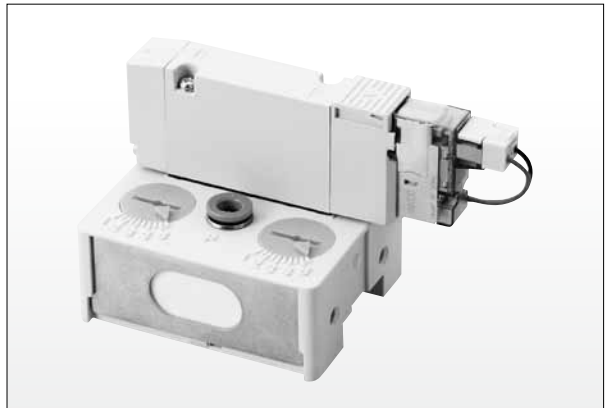


Pneumatic Valves CB-023SA

*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
- Five types of port size from M5 to R1/2



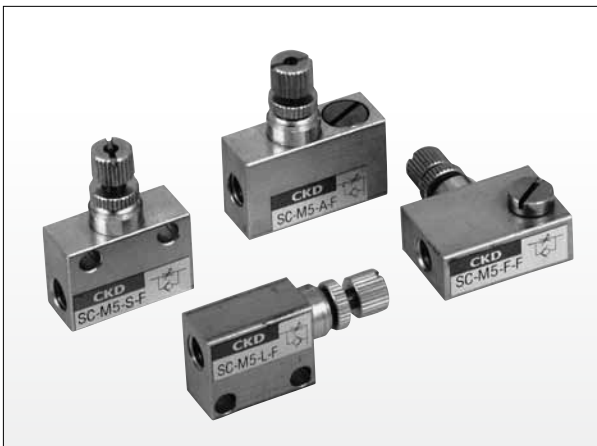
Speed controller with adjusting dial DSC Series CC-1021A

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

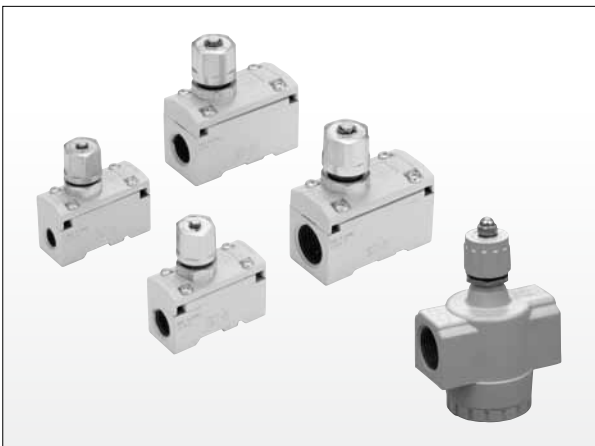
Speed controllers - medium/large bore sizes

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

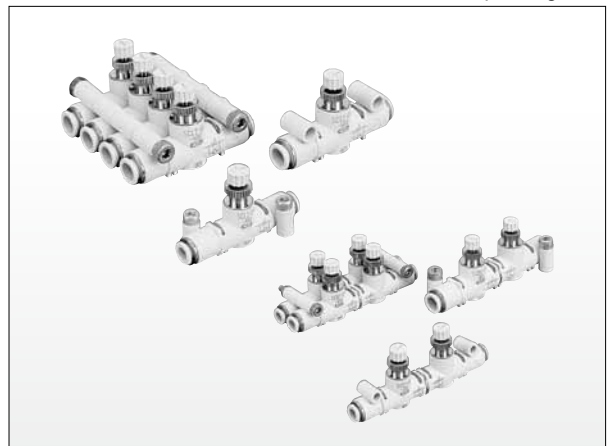


Pneumatic, vacuum and auxiliary components CB-024SA

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



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

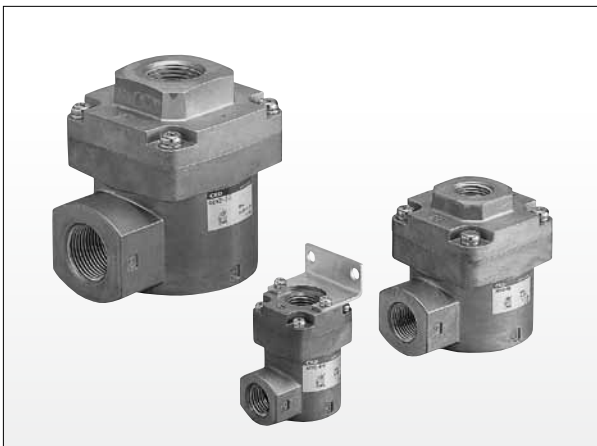
Quick manual valve/shuttle valve

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)



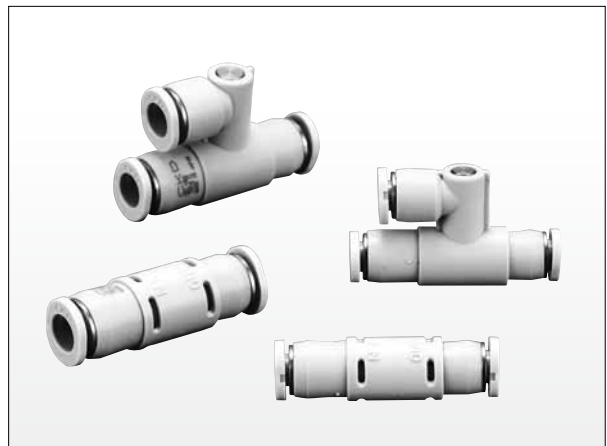
Pneumatic, vacuum and auxiliary components CB-024SA

Auxiliary valves

Quick exhaust valve inline type

QEL Series

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



Pneumatic, vacuum and auxiliary components CB-024SA

Compact check valves with push-in fittings

CHL Series

- Small/space saving inline
- $\phi 4$ and 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)

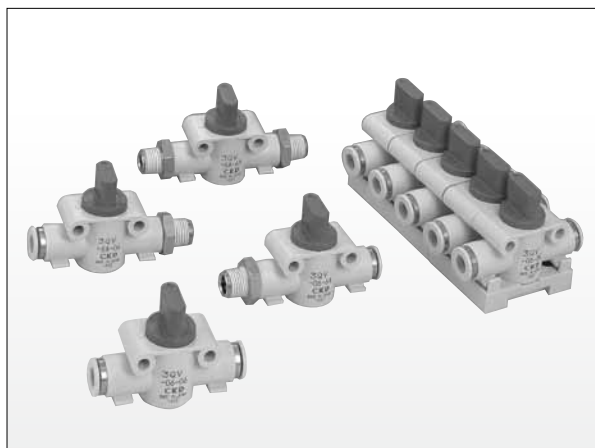


Pneumatic, vacuum and auxiliary components CB-024SA

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 $\phi 3.2$ to $\phi 12$



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

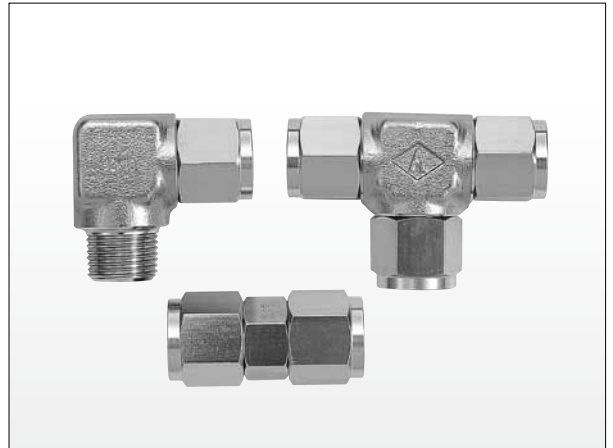


Pneumatic, vacuum and auxiliary components CB-024SA

Tightening fittings (stainless steel) series

ZJ Series

- Easy-to-fit mechanism (integrated nut and sleeve) has improved work efficiency
- Original sleeve eliminates tubing torsion during piping
- Sleeve need not be replaced even when used repeatedly
- Smooth inner bore surface
- Ample size variations fit various tubing
- Oil can be cleaned off

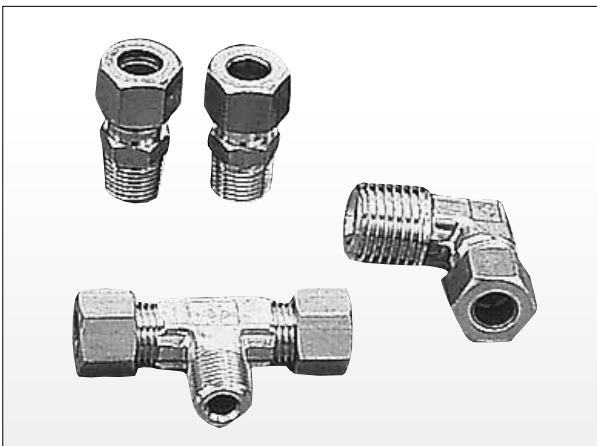


Pneumatic, vacuum and auxiliary components CB-024SA

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

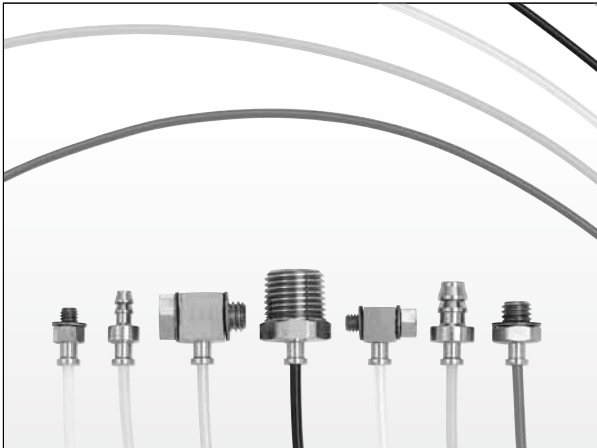


PNEUMATIC AUXILIARY COMPONENTS

Fittings/tubes

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

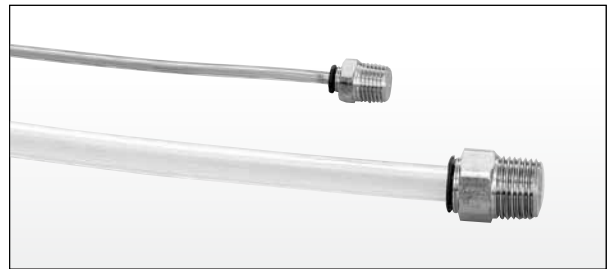
Fittings/tubes

Antistatic tubes

UP ** -F1 Series ($\phi 8$ to $\phi 12$)

UP ** -F2 Series ($\phi 3.2$ to $\phi 6$)

- 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 ($\phi 3.2$, $\phi 4$, $\phi 6$)
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: $\phi 3.2$, $\phi 4$, $\phi 6$, $\phi 8$, $\phi 10$, and $\phi 12$.



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

AF2000 Series

- Lower pressure loss, longer life and a more compact size have been realized by adopting new materials and new structure
- The filters can be connected with the module kit, enabling space-saving installation
- A differential pressure indicator required for checking the service life and reliable automatic drain are provided as standard
- Easy element replacement

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

Drain separator

FX Series

- Lightweight compact drain separator
- Separation efficiency 99%
- Compatible compressor 0.75 kW to 37 kW











Drain separator FX Series CC-1136A



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)	
	φ4	φ6	φ8	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
					●	●								0.36
					●	●	●	●*						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 					●	W1100-W W2100-W W3100-W W4100-W W8100-W
	● 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)	
	$\varphi 4$	$\varphi 6$	$\varphi 8$	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)	
	$\varphi 4$	$\varphi 6$	$\varphi 8$	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)	
	$\varphi 4$	$\varphi 6$	$\varphi 8$	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)	
	$\varphi 4$	$\varphi 6$	$\varphi 8$	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 Δ P2 = differential pressure

Port size													Max. flow rate m ³ /min (Reference)
φ 4	φ 6	φ 8	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)
φ 4	φ 6	φ 8	φ 10	φ 12	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
●	●	●			●	●								0.05 (φ 4, φ 6, 1/8) / 0.08 (φ 8, 1/4)
		●	●	●		●	●							0.3 to 0.4

Port size													Max. flow rate m ³ /min (Reference)
φ 4	φ 6	φ 8	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 						●	MW4000-S MW8000-S
	<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 ΔP2 = differential pressure

	Port size												Max. flow rate m ³ /min (Reference)	
	φ4	φ6	φ8	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 ● Regulator/flame-resistant series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa ● Regulator for outdoor series P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa ● Regulator oil-prohibition series P1 = 0.7 MPa P2 = 0.5 MPa ● Regulator medium pressure series P1 = 1.6 MPa P2 = 0.5 MPa ● Reverse 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
			●						R3000-G4
									R4000-G4
									R8000-G4
			●						RW4000
								RW8000	
		●						RN3000	
								RN4000	
								RN8000	
		●						RM3000-W	
								RM4000-W	
			●					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 ● Block manifolds Regulator 		●						RA050, RA060 (manifold)	
								RA800	
									RB500
		●						MNRB500A	
								MNRB500B	
Precision <ul style="list-style-type: none"> ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa ● Block manifolds Regulator ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa ● Regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RJB500	
			●						MNRJB500A
									MNRJB500B
			●						RP2000
		●						RPE1000	
Clean-room <ul style="list-style-type: none"> ● Clean regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa ● Clean regulator P1 = 0.7 MPa P2 = 0.5 MPa ΔP2 = 0.1 MPa 		●						RC2000	
			●						2619






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

	Port size												Max. flow rate m ³ /min (Reference)	
	φ4	φ6	φ8	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.								
			Compatible product(s)								
			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		
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		
									3004E-*C		
	<ul style="list-style-type: none"> ● Lubricator auto-fill 	Automatic supply							3003E-*C-V		

Pneumatic, vacuum and auxiliary components CB-024SA

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

	Port size												Max. flow rate m ³ /min (Reference)	
	φ4	φ6	φ8	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





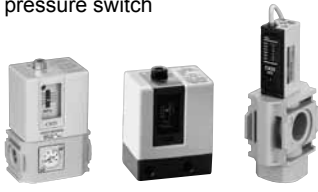





	Port size												Max. flow rate m ³ /min (Reference)	
	φ4	φ6	φ8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.55/0.7
					●	●								1.1/2.25
					●	●	●							1/1.7/2.7
								●	●					6.3/10.0

	Port size												Max. flow rate m ³ /min (Reference)	
	φ4	φ6	φ8	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



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	
<ul style="list-style-type: none"> ● Moisture indicator (P1 = 0.7 MPa) 	For dew point monitor of desiccant dryer	6119-2C	
<ul style="list-style-type: none"> ● Air pressure switch 	Setting accuracy within ± 0.02 MPa	APE-8T	
		APE-8N	
		APE-8F	
		P4000-W	
		P*100-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"> ● 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	



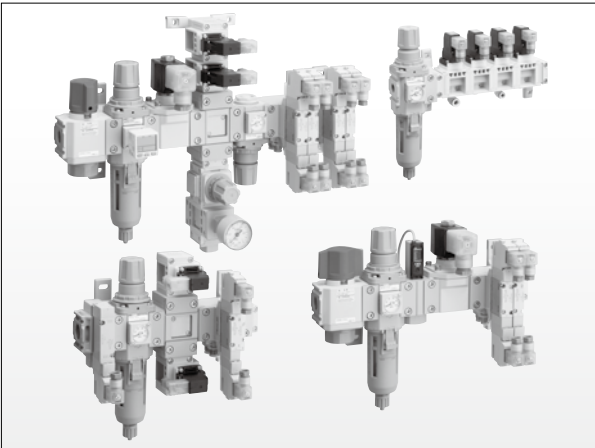
PNEUMATIC FILTERS, REGULATORS, LUBRICATORS (F. R. L. UNITS)

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



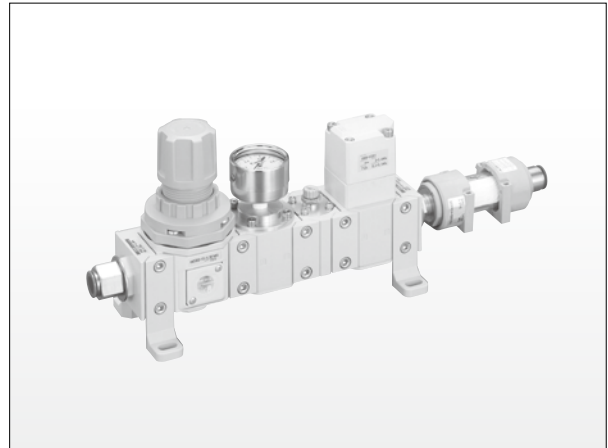
Air unit CXU Series CC-901A

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

- Bactericidal activity value 3
- 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



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

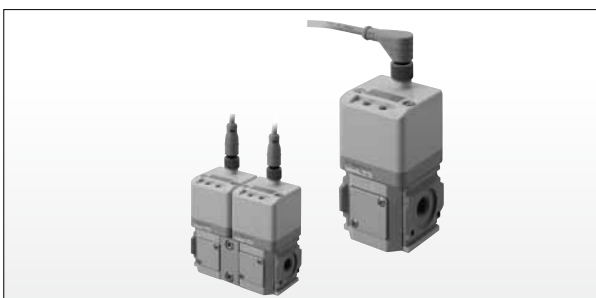


Pneumatic, vacuum and auxiliary components CB-024SA

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









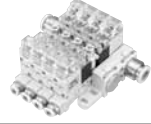


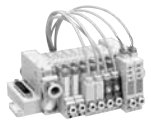


Pneumatic, vacuum and auxiliary components CB-024SA



[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 φ0.5 to φ2.0. 	
	<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 φ0.5 to φ2.0. 	
Ejector system compatible	<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. 	

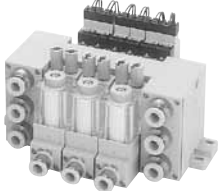
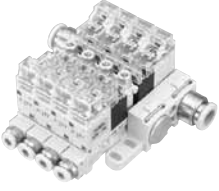

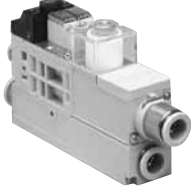
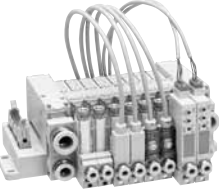
● Standard equipment ○ Option

	Model No.	Piping method			Components							Nozzle diameter φ (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. 	

Vacuum system equipment SELVACS CC-796A

●: 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 (φ4), 5 mm ² (φ6)					
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 (φ4), 4.5 mm ² (φ6) 3-way valve specification: 3.0 mm ² (φ4), 3.6 mm ² (φ6)					
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	●	●	●	●	●	●	-	-	-	-	-	-	-
Type 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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	-	-	-	-	-	-	●	●	●	●	-	-	●	●	●	●	-	-	-	-	-	●	●	-	
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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
		φ6	φ8	
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	φ4	φ 4	
	VSLF-66	φ6	φ 6	
	VSLF-46A	φ4	R1/8	
	VSLF-66A	φ6	R1/8	


Vacuum system equipment SELVACS CC-796A

● Vacuum filters


● Standard equipment ○ Optional selection

Series	Model No.	Port size						Remarks
		M5	φ4	φ6	φ8	φ10	φ12	
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
		φ4	φ6	φ8	φ10	
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	φ4	φ6	φ8	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
		φ2	φ4	φ6	φ8		
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



Vacuum components

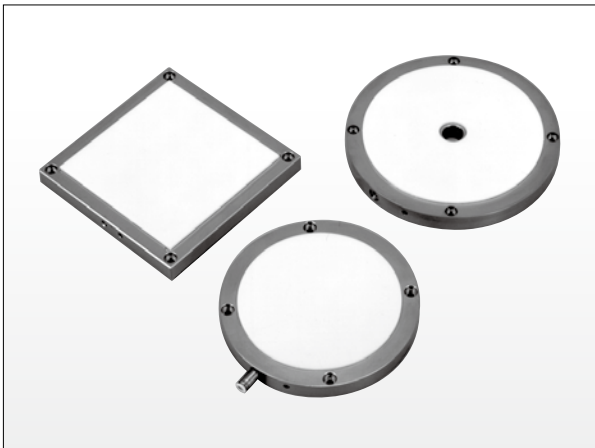
Precise suction plates

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



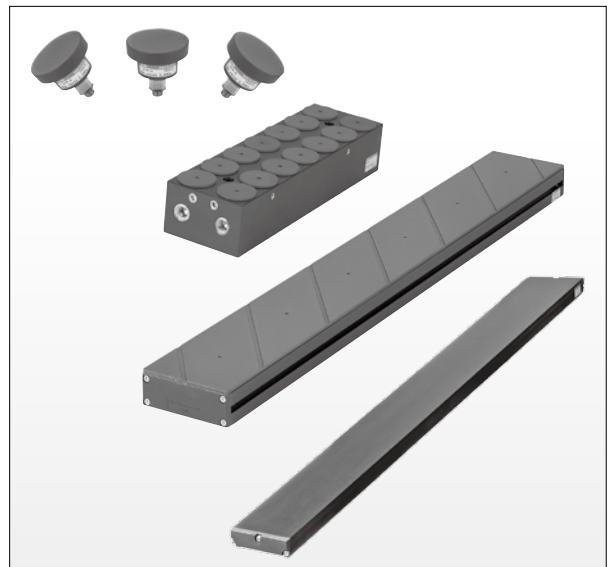
Pneumatic, vacuum and auxiliary components CB-024SA

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

A digital pressure sensor enabling simultaneous confirmation of the current and set pressure values with dual displays, a 3-color display, setting details copy function, 3 mode settings, etc. This fully loaded digital pressure sensor provides ease-of-use and high functionality not found conventionally.

● 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 (threshold setting available for two distant points within the detection range scale)
- 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 (Direct blow available. The structure allows disassembly for cleaning at orifice clogging occurrences. A function is provided to indicate the highly probable location of clogging by the blinking lamp.)

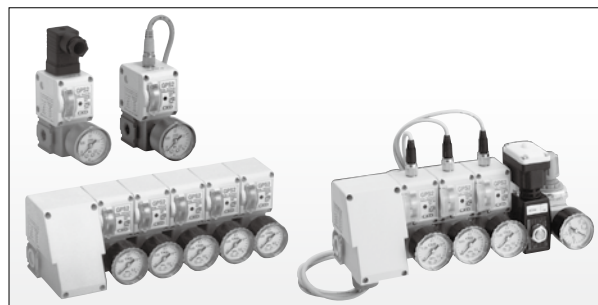


Digital gap switch GPS3 Series CC-1291A

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

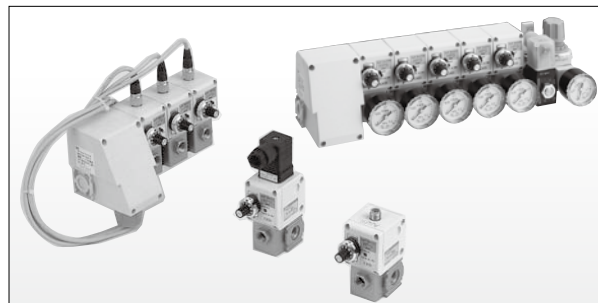


Pneumatic, vacuum and auxiliary components CB-024SA

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

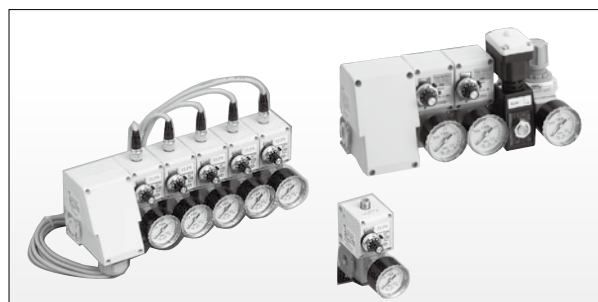


Pneumatic, vacuum and auxiliary components CB-024SA

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
- $\phi 0.3$ 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 detection target and enables detection of almost any object
- Various application such as presence confirmation and position/dimension confirmation



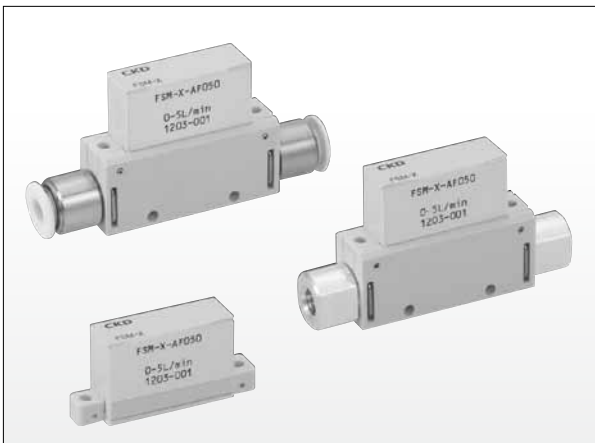
Pneumatic, vacuum and auxiliary components CB-024SA

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)

FSM2 Series

- High precision, high speed response, large flow rate and compact
- Varieties of functions that pursue options and operability
 - Needle valve integrated
 - Separate display
 - Clean-room specifications (P70, P80)
 - Panel mounting possible
 - Twin display/2-color display function
 - Bar display function



Compact flow rate sensor RAPIFLOW FSM2 Series CC-886A

Sensors

Compact flow rate controllers (RAPIFLOW)

FCM Series

- Compact, high speed and high precision
- Compatible with various fluids
- High speed controlling at 0.5 seconds
- Digital display allows confirmation of control status at a glance
- Achieved higher model availability with built-in microcomputer



Pneumatic, vacuum and auxiliary components CB-024SA

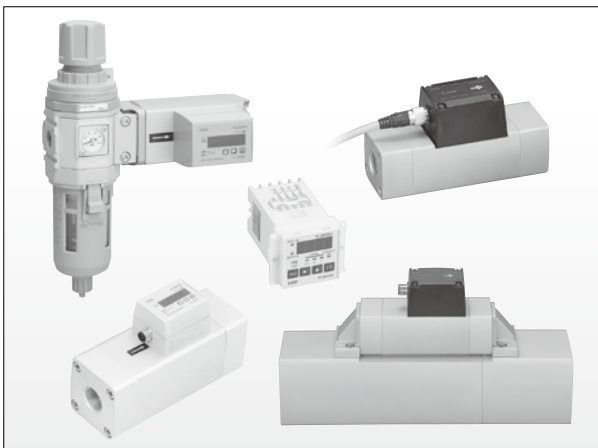
Pneumatic flow rate sensors (FLUEREX)

PF (F) Series PFU Series (display integrated)

- Four new functionalities added to the conventional PF series
 - (1) Low pressure loss 0.005 MPa
 - (2) Resistant to drain water drop getting into pipes
 - (3) Integrated display for improved usability
 - (4) Filter regulator unit series added
- Three reductions realized by unitization
 - (1) Assembly process reduction
 - (2) Piping space reduction
 - (3) Order process reduction

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.



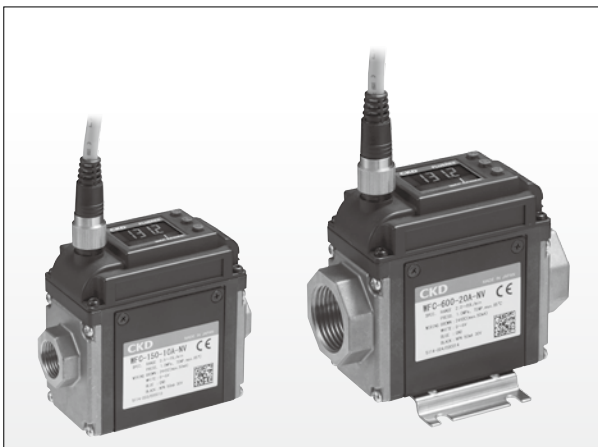
Pneumatic, vacuum and auxiliary components CB-024SA

Flow rate sensor for water

Capacitance electromagnetic flow sensors

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 repeatability in elbow piping
- No stabilized power supply and anti-noise ferrite core required
- Allows zero point adjustment by external input
- With 180° invertible display
- Reverse flow detection function equipped



Capacitance electromagnetic flow sensor WFC Series CC-1230A

Multi-monitors

MD Series

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



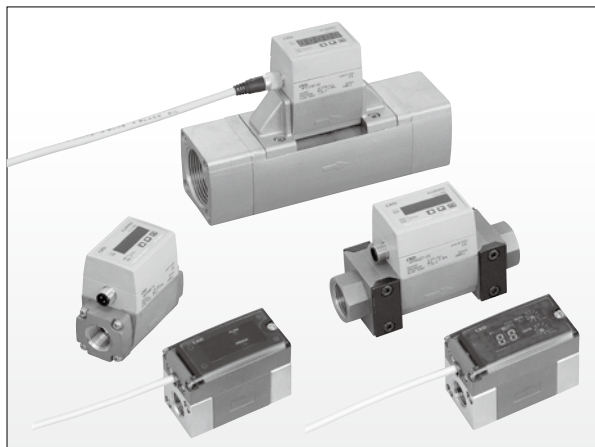
Multi-monitor MD Series CC-1290A

Flow rate sensor for water

Karman's vortex FLUEREX

WFK Series

- Reliable performance of Karman vortex detection method even in low-quality water environments
- Large effective cross-sectional area can minimize pressure loss
- Helps save energy in water pipe operation.
- 1.0 sec. high speed response has been enabled by our unique vortex street frequency processing technology.
- Instantaneous flow rate and accumulated flow displays can be switched with a single operation.
- With 5-digit digital display for easy check of accumulated flow for the day (WFK5027, 6027)
- Besides alarm output, analog output for record keeping is included as standard



Pneumatic, vacuum and auxiliary components CB-024SA



INDEX/DIRECT DRIVE ACTUATORS

Mechanic index series variation

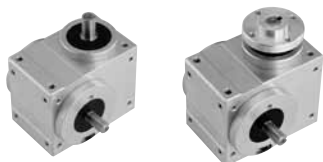
Basic operation	Roller gear cam		Parallel cam	Table drive	Conveyor drive	Hollow shaft	Wide angle	High speed	Multiple divisions	Flat
	Straight shaft	Flange shaft								
Index 	RGIS 025, 032	RGIS 025, 032		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		
	RGIS 040 to 250	RGIS 040 to 250		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
	RGIL 063 to 250			<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		
		RGIT 063 to 250		<input type="radio"/>		<input type="radio"/>		<input type="radio"/>		
		RGIM 063 to 100		<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
		RGID 200 to 250		<input type="radio"/>		<input type="radio"/>			<input type="radio"/>	<input type="radio"/>
		RGIB 250		<input type="radio"/>		<input type="radio"/>				<input type="radio"/>
			PCIS 040 to 250		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		
Oscillating 	RGOS 025, 032	RGOS 025, 032		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		
	RGOS 040 to 250	RGOS 040 to 250		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
	RGOL 063 to 250			<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		
			PCOS 040 to 250		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		
Reducer 	RGCS 040 to 250	RGCS 040 to 250		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
		RGCT 063 to 250		<input type="radio"/>		<input type="radio"/>		<input type="radio"/>		
		RGCM 063 to 100		<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
		RGCD 200 to 250		<input type="radio"/>		<input type="radio"/>			<input type="radio"/>	<input type="radio"/>
Circular P&P Oscillating P&P Index P&P 	PPIX/PPOX 063 to 180			<input type="radio"/>			<input type="radio"/>			
	PPIH/PPOH 040 to 080			<input type="radio"/>						
	PPIM 063 to 110			<input type="radio"/>						
Direct P&P 	PPLX(A) 040 to 080						<input type="radio"/>			
		PPLX(B) 040 to 080		<input type="radio"/>			<input type="radio"/>			
Peripheral devices	TSF Series (TSF2 to 18)		Worm reducer (HO32 to 135)							

Index units (Index Drive) CB-19A

Roller gear cam units

- Intermittent indexing device with orthogonal axis consisted of downsized, high speed, high output, and high precision roller gear cam and turret

■ Compact



- These are the smallest models that contribute to downsizing and automatization of machines. The compact index with roller gear mechanism is ideal as the drive source for positioning of small precision parts indexing.

Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Torque saver	Weight (kg)
RGIS 025	2 to 40	60 to 330	±90	0 to 400	TSF2	1.0
RGIS 032	(2 to 48)	(45 to 330)	±60			

Values in () are for RGIS032

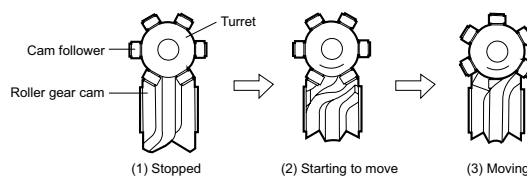
■ Standard



- Well-balanced design with roller gear cam and cam follower

Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Torque saver	Weight (kg)
RGIS 040	2 to 48	90 to 330	±60	0 to 600	TSF4.5	5
RGIS 050			±30		5.6	11
RGIS 063					6	18
RGIS 080					8	32
RGIS 110					11	62
RGIS 140					14	115
RGIS 180	18	230				
RGIS 250	-	-	-	-	-	650

Roller gear cam operation



With the cam followers arranged radially in the turret part of the output axis, the cam is driven while being preloaded by the tapered rib of the cam, producing very small backlash.



■ Wide angle

- Small indexing angle that allows wide-angle indexing and enables longer stopping time during continuous driving.



Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Torque saver	Weight (kg)
RGIL 063	2 to 8	45 to 240	±60	0 to 400	TSF4.5	17
RGIL 080			±30		5	27
RGIL 110					6	60
RGIL 140					8	100
RGIL 180					11	300
RGIL 250					14	520

■ Table type

- Equipped with a hollow fixed shaft, convenient for piping and wiring.



Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Hollow diameter (mm)	Weight (kg)
RGIT 063	3 to 48	90 to 330	±30	0 to 600	φ15.2	17
RGIT 080					φ26.7	29
RGIT 110					φ40	57
RGIT 140			±20		φ52.6	150
RGIT 180					φ65	300
RGIT 250					φ95	650



INDEX/DIRECT DRIVE ACTUATORS

Mechanic index units

Roller gear cam units



Small multiple division

- Thin housing enables lower the table mounting side, work position, and equipment height. Approx. 80% height compared with RGIS Series. Allows 4 to 24 indexing for one dwell period

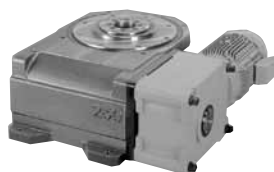
Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Total height (mm)	Weight (kg)
RGIM 063	4 to 96	90 to 330	±30	0 to 600	95	9
RGIM 080					148	25
RGIM 100					170	40



Flat

- Thin and ring-shaped structure with large-diameter output shaft and hollow fixed shaft is ideal for multiple process applications.

Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Hollow diameter (mm)	Weight (kg)
RGID 200	8 to 80	90 to 330	±30	0 to 250	φ160	70
RGID 250					φ200	130

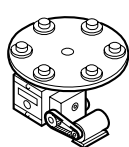


Basic

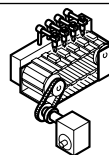
- Geared motor integrated with hollow fixed shaft

Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Hollow diameter (mm)	Weight (kg)
RGIB 250	2 to 32	120 to 330	±20	0 to 200	φ80	335

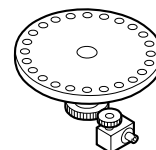
Application examples



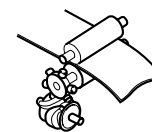
Example of table drive



Example of conveyor drive



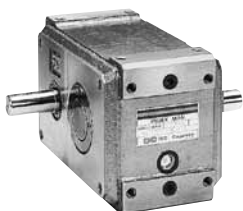
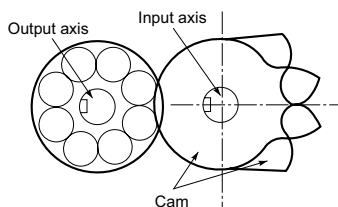
Example of mechanical reduction drive



Example of roll drive

Mechanic index units

Parallel cam units

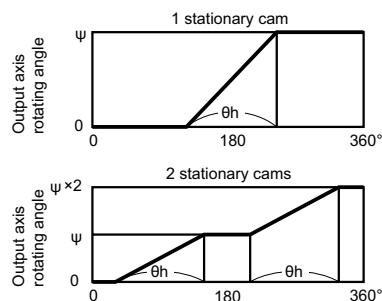


- Parallel cam mechanism index with parallel input and output shafts that is ideal for conveying small number of indexing (1, 2, 3, 4)

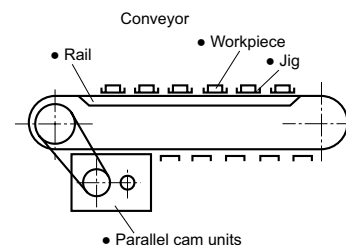
Model	Indexing No.	Indexing angle (°)	Indexing accuracy (sec)	Rotation speed (rpm)	Torque saver	Weight (kg)
PCIS 040	1 to 4 (6, 8)	90 to 330	±90	0 to 500	TSF4	3
PCIS 050					5	6
PCIS 063					5.6	11
PCIS 080					6	19
PCIS 100					8	32
PCIS 125					11	62
PCIS 160					14	130
PCIS 200					18	240
PCIS 250	(18)	400				

Values in () are for 2-dwell cam

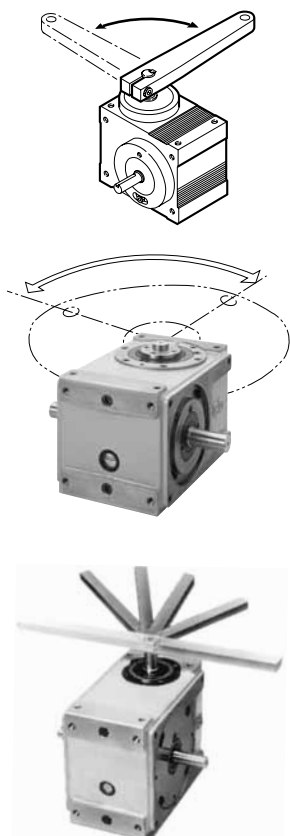
Timing diagram



Application examples



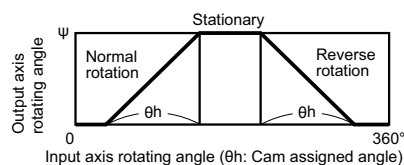
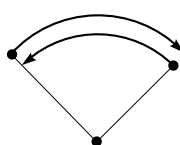
Oscillating units



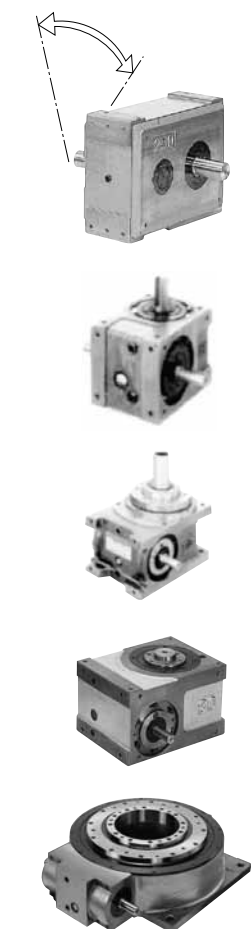
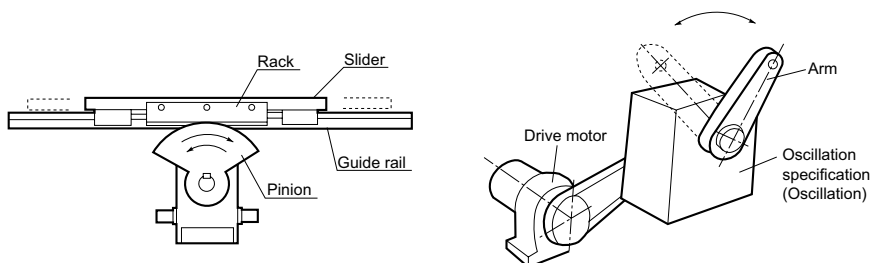
● High precision oscillation device with roller gear cam and parallel cam mechanism. Output shaft performs a cyclic operation: forward rotation - stop - reverse rotation - stop, by rotational motion with constant velocity on the input shaft.

- Compact RGOS
- Standard RGOS
- Wide angle RGOL
- Parallel PCOS

Operation and timing diagram



Application examples

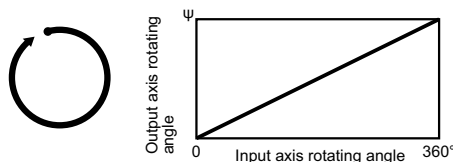


Reducer series

● Ball contact reducers. The reducer in the roller gear cam mechanism uses the cam follower to add preload, which enables high efficiency in deceleration and realizes high precision deceleration positioning almost without backlash.

- Standard RGCS
- Table type RGCT
- Small multiple division RGCM
- Flat RGCD

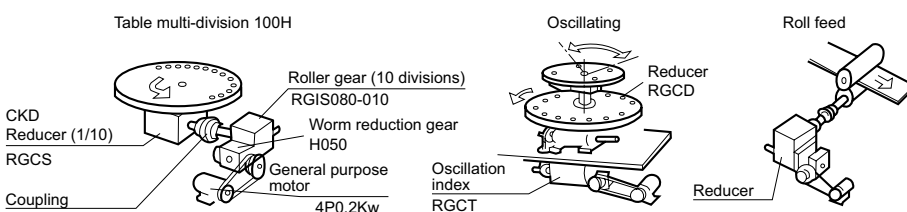
Operation and timing diagram



When an equal speed curve without acceleration/deceleration is used for the cam curve, the speed reduction mechanism with a reduction ratio corresponding to the indexing number* is achieved.

* Indexing number available for 1 stationary cam

Application examples

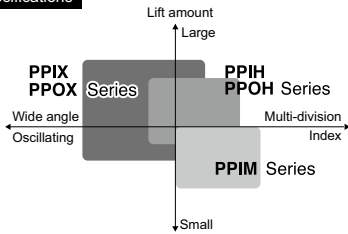




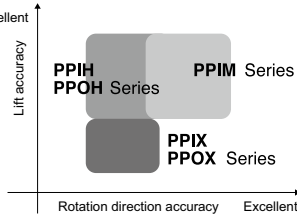
Circular P&P units

Circular P&P unit selection guide

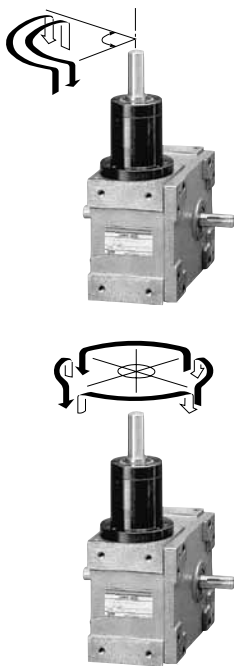
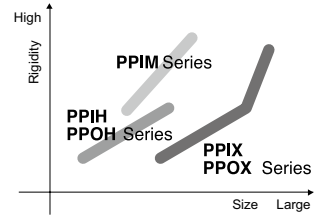
Specifications



Accuracy



Capacity



Standard

- Max. 0.5 min tact time cycle: PPIX/PPOX Series

Adopting grooved cam for lifting, thinner and more compact housing has been realized, which saves work space. Ideal for transporting various electronic parts and small parts.

PPOX (Oscillating P&P specifications)

Model	Lift (mm)	Oscillation angle (deg)	Repeatability (sec)	Rotation speed (rpm)	Max. arm radius (mm)*	Weight (kg)
PPOX 050	MAX18	30 to 180	30	0 to 120	150	8
PPOX 063	25				190	15
PPOX 080	30				240	25
PPOX 110	40				330	50
PPOX 140	50				420	90
PPOX 180	70				540	185

PPIX (Index P&P specifications)

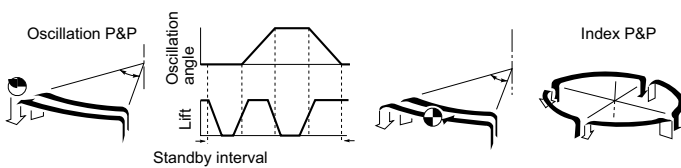
Model	Lift (mm)	Indexing No.	Indexing accuracy (sec)	Rotation speed (rpm)	Max. table O.D. (mm)*	Weight (kg)
PPIX 050	MAX18	2 to 8	±120	0 to 120	250	8
PPIX 063	25				320	15
PPIX 080	30				400	25
PPIX 110	40				550	50
PPIX 140	50				700	90
PPIX 180	70				900	185

* Consult CKD for the required oscillation angle, index angle and timing chart.

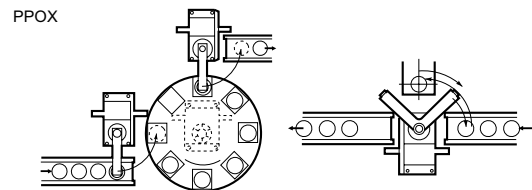
* Arm radius and table outer diameter are for reference.

Before selecting units, the torque value must be calculated by load calculation and the catalog must be referenced.

Operation and timing diagram



Application examples



High speed

- Max. 0.1 min tact time cycle: PPIH/PPOH Series

Two roller gear cams, for circulation and for lifting, are used for continuous preloaded driving, which minimizes backlashes and is ideal for high speed operation.



PPOH (Oscillating P&P specifications)

Model	Lift (mm)	Oscillation angle (deg)	Repeatability (sec)	Rotation speed (rpm)	Max. arm radius (mm)*	Weight (kg)
PPOH 040	MAX18	30 to 90	30	0 to 600	120	12
PPOH 050	25				150	21
PPOH 063	30				190	36
PPOH 080	40				240	67

PPIH (Index P&P specifications)

Model	Lift (mm)	Indexing No.	Indexing accuracy (sec)	Rotation speed (rpm)	Max. table O.D. (mm)*	Weight (kg)
PPIH 040	MAX18	2 to 12	±120	0 to 600	φ200	12
PPIH 050	25				φ250	21
PPIH 063	30	2 to 16	±90		φ320	36
PPIH 080	40				φ400	67

Circular P&P units



■ Compact, high speed and high precision

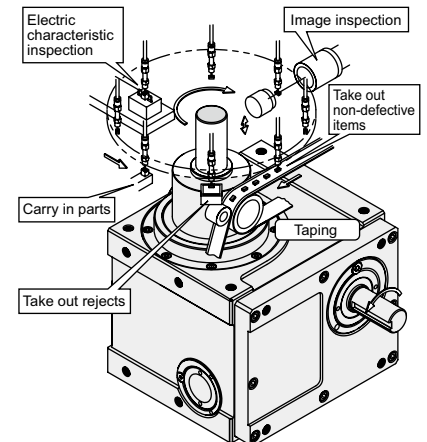
- High precision, high rigidity and space saving: PPIM Series
New main shaft structure has been adopted to improve precision and rigidity, and to support high speed and high precision transport of fine chip parts. Downsized body is suitable for smaller spaces.

PPIM (Index P&P specifications)

Model	Lift (mm)	Indexing No.	Indexing accuracy (sec)	Rotation speed (rpm)	Max. arm radius (mm)*	Weight (kg)
PPIM 063	4 to 10	4 to 16	±30	0 to 600	φ320	18
PPIM 080					φ400	32
PPIM 110	4 to 15				φ550	68

Application examples for PPIM

Inspection equipment for semiconductor chips or electronic parts, and taping equipment



Straight P&P unit Arm type A, Table type B



- 0.5 min/cycle high speed transport
Small and thin straight pick-and-place unit, in which two sets of roller gear cam mechanism are adopted to allow desired two-dimensional plane movement, and to suit for straight conveyor line of small workpieces.
- Small and thin body
Compact and thin design only require a small space. Arm type A and table type B are available according to the application.

PPLX (Arm type A)

Model	La stroke (mm)	Lb stroke (mm)	Repeatability (mm)	Input rotary shaft (rpm)	Payload (kg)*	Weight (kg)
PPLX 040	MAX80	MAX30	±0.02	0 to 120	MAX2.9	10
PPLX 050	100	40		0 to 100	4.0	15
PPLX 063	150	50		0 to 80	8.0	25
PPLX 080	200	60	11.2		50	

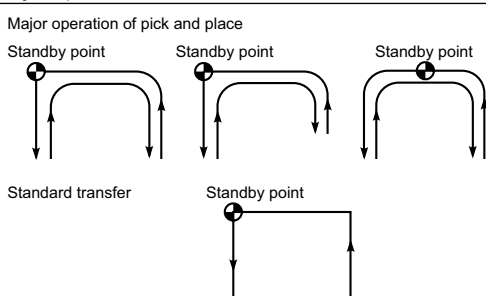
PPLX (Table type B)

Model	La stroke (mm)	Lb stroke (mm)	Payload (kg)*	Weight (kg)
PPLX 040	MAX80	MAX30	MAX3.8	10
PPLX 050	100	40	5.0	15
PPLX 063	150	50	8.8	25
PPLX 080	200	60	14.0	50

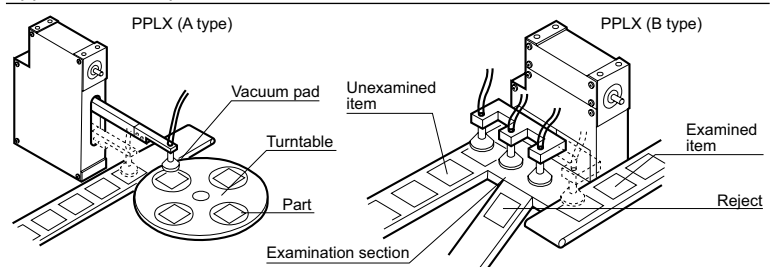
Refer to the catalog for the payload, minimum index angle, etc.

* Consult CKD for rotation speed of input shaft and options with motors.

Major operations



Application examples





Mechanic index units

Worm reducers

HO Series, TE Series

- Worm reducer dedicated for index units. Direct installation onto the input shaft enables an ideal rotation and braking operation, as well as full performance of index units
- TE Series are high-torque reducers



Index units (Index Drive) CB-19A

Mechanic index unit options

Torque savers (Overload protection component)

TSF Series

- Being installed directly onto the output shaft of index that prevents overload on the rotary shaft, this component protects index from overloading
- One-point setting is employed to move it back to the original position after operation



Index units (Index Drive) CB-19A

Mechanic index unit options

Table type torque savers

TST Series

- Being installed directly onto the output shaft of index that prevents overload of rotary shaft, this component protects table type index unit from overloading.
- One-point setting is employed to move it back to the original position after operation



Index units (Index Drive) CB-19A

Mechanic index unit options

Torque guard/coupling (Overload protection component)

TGX Series

- Coupling function
Misalignment caused by angle error, parallelism, or axial direction are absorbed by the ball & wedge mechanism
- One-positioned
Uses specific combination of ball and wedge alignment that only fits at one position
- Return accuracy ± 10 sec
- High precision trip (release)
- Easy torque setting



Index units (Index Drive) CB-19A

ABSODEX compact AX6000M Series

- **Space saving**
This unit has only 80 mm diameter and 47 mm height (AX6001M), and its rotary shaft and main body center are coaxial, which allows space-saving compact system design
- **Flexible**
With abundant functions of creating operation patterns, desirable operation can be easily designed as indexing, oscillation, continuous rotation, etc.
- **High reliability**
The gearless structure eliminates potential gear breakage due to overloading and accuracy degradation due to gear abrasion
- **Varieties of I/O signals**
Various I/O signals are available to suit indexing tables such as dividing position output (stop position output) and output during index. Encoder output function is also equipped to enable control using positioning units



Space saving

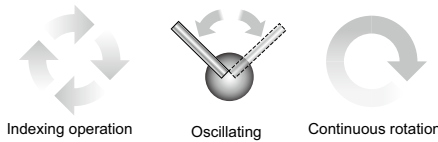
In addition to having the smallest external dimensions in the industry, the product is in a concentric circular shape (rotation axis and fixing axis are the same), making a compact space saving unit design possible.



Flexible

Since the program creation function is rich in content, you can manipulate operations in any way you desire. Additionally, simple operation settings including automatic creation of point specification programs are supported.

Amazingly easy setting even for complicated operation, such as combination of operations!



High reliability & maintenance-free

The direct drive method (gearless) relieves the user from concern about the change in accuracy due to gear damage or friction of the gear during overload.

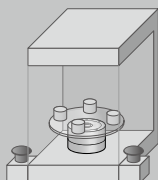


Model	Max. output torque (N·m)	Max. rotation speed (rpm)	Allowable moment of load inertia (kg·m ²)	Allowable axial load (N)	Shaft runout (mm)	Surface runout (mm)	Weight (kg)	Supported driver
AX6001M	1.2	240	0.034	600	0.03	0.05	1.2	AX9000MU
AX6003M	3.0		0.059				1.8	

ABSODEX compact AX6000M Series CC-1148A

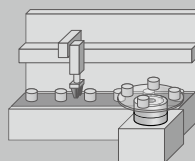
Application examples

Semi-automation of manual processes



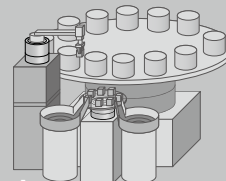
- [Purpose]
- Improvement of productivity
 - Stability of work

θ axis unit for modularizing the device



- [Purpose]
- Reduction of device design time
 - Reuse of the device

Add on as a sub-assembly process to an existing device (Replacement of components of an existing device)



- [Purpose]
- Improvement of the tact for the entire device
 - Downsizing of an existing device



ABSODEX high precision AX7000X Series

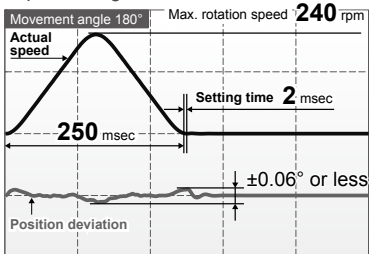
Industry's highest level high resolution encoder installed.

Resolution	4,194,304 Pulse/rev
Positioning repeatability	±2 seconds

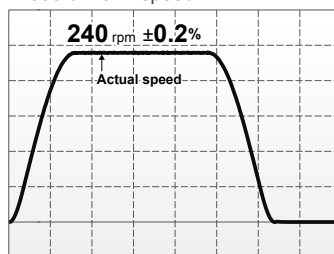
"High precision and high response" positioning

In addition to the highly precise positioning, responsivity and stability at uniform speeds have been greatly improved.

Speed waveform at the time of positioning



Speed waveform at the time of rotation at a uniform speed

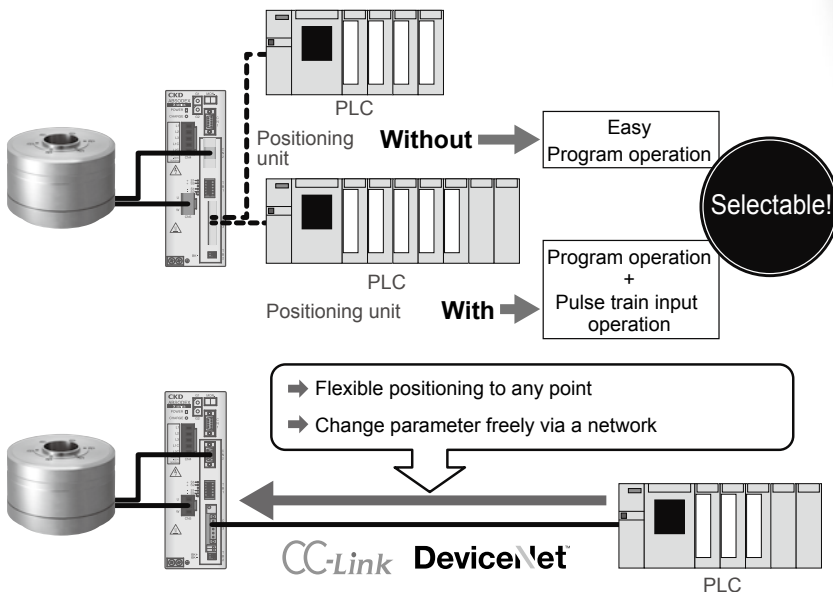


* The values above are for reference only and are not guaranteed. The values differ depending on the load or other conditions.

High performance

Flexible positioning possible

A multi-function driver (XS) unique to ABSODEX is supported. Equipped with a "flexible programming function" that easily realizes complex operations and "the industry's largest number of input/output signals" that allows for convenient interaction with the host controller.



Model	Max. output torque (N·m)	Max. rotation speed (rpm)	Allowable load inertia Moment (kg·m ²)	Allowable axial load (N)	Shaft runout (mm)	Surface runout (mm)	Weight (kg)	Supported driver
AX7022X	22	240	0.60	400	0.03	0.03	10	AX7000XS
AX7045X	45		0.90				13	

More **user-friendly** AXTools for both beginners and advanced users

Simple and easy interfaces are used for intuitive operation.



Intuitive setting enabled!



Support for creating a program for the new function "Point table operation"

Industry's first! Equipped with AI (artificial intelligence) adjustment function for **adjustment support**

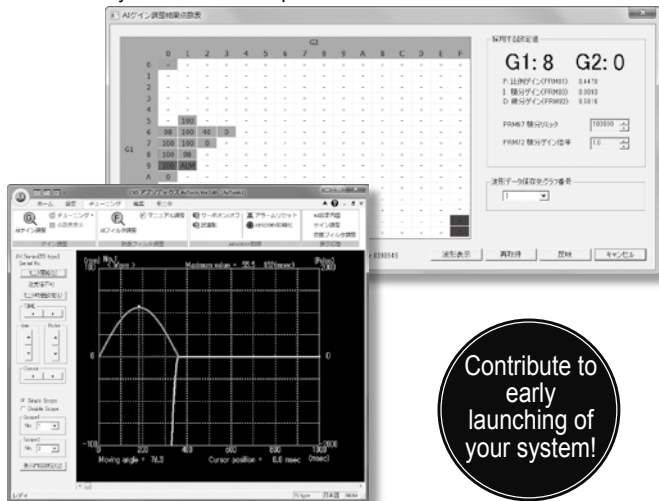
Equipped with AI (artificial intelligence) adjustment function that supports launching of the product. Adjustments conventionally performed by experienced operators can now be performed by beginners.

AI (artificial intelligence) adjustment function

- Automatically obtains data and advises optimal tuning.
- Reduction of dangerous operations using the alarm check function
- Users can set an optimal gain value while checking the listed adjustment results that are automatically scored and the operation waveform.

Previously...

- Manual tuning depended on experienced operators.
- Launching overseas was a concern.
- It was difficult to judge if adjustment results were good or not.

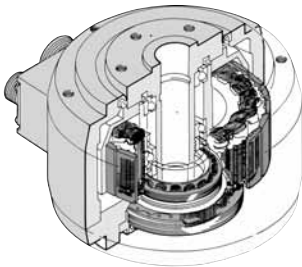


Contribute to early launching of your system!

*Support for all models of ABSODEX AX Series (TS/TH/MU/XS)







ABSODEX



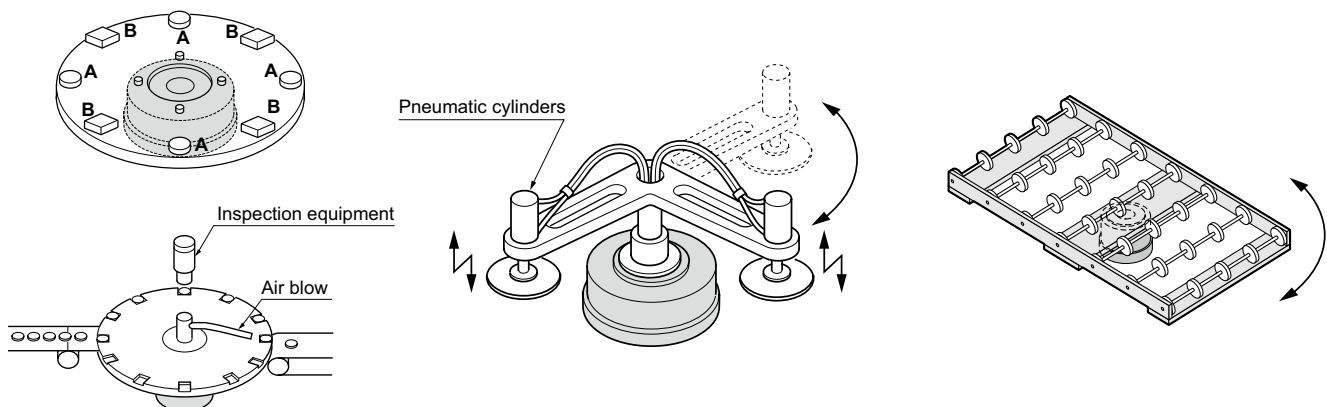
- Direct drive actuator with new-generation functionality
- ABSODEX adopted for construction of environment-friendly production facility
Energy saving, no replacement or disposal of lubricants, space saving
Specification easily changeable, reusable, and excellent in basic performance
- No need for returning to origin
The absolute resolver has been employed to confirm the current position without returning to the origin.
- Smooth cam curve drive
Four cam curves; modified sine, modified trapezoid, modified constant velocity, and trapezoid, are used for smooth stop depending on the usage.
- Compact and high torque
- Excellent operability
The interactive terminal enables easy program creation in an interactive manner.
- Select between TS driver (max. output 75 N·m or lower) and TH driver (max. output 150 N·m or larger)
- CC-Link, DeviceNet, PROFIBUS-DP, and EtherCAT supported drivers are also available

ABSODEX series variation

Series	Model	Indexing accuracy (sec)	Repeatability (sec)	Features					Supported driver	
				High speed	Hollow shaft	Waterproof	Brake	Compatibility	AX 9000TS	AX 9000TH
AX1000T Series	 AX 1022T to 1210T	±15	±5		○			◎	○	○
AX2000T Series	 AX 2006T to 2018T			◎	◎			◎	○	
AX4000T Series	 AX 4009T to 410WT	±30		○	◎		○	◎	○	○
AX8000T Series	 AX 8045 to 8070				○	◎	◎	◎	○	

* AX8000 Series are custom order products.

Application examples



ABSODEX high response



- Instant positioning quick response ABSODEX available with easier setup
- Shortened equipment tact time
 - Improved responsivity and reduced loss of time
Instant positioning available with 1/4 stabilization period compared with conventional models (according to measurement at CKD)
 - Integrated with peripheral devices and reduced startup time
A/B phase encoder output signal has been added to make synchronization with peripheral devices easier.
- Improved usability
 - Optimal tuning available in a short time
Semiautomatic tuning function added
 - Setup made easier
Adjustment software "AX Tools" are standardized
 - Increased I/O signals
Newly added ready output, servo-ON input and others
 - Maintains control function at driving power supply shutoff
Driving power and control power sources separated
- Downsized GH/WGH drivers
 - Approx. 65% volume compared with CKD's conventional models Depth reduced by 50 mm
- ABSODEX programming tool
 - Interactive terminal "AX0180" available
 - Rising adjustment software "AX Tools" are available (free)



AX0180

Model	Max. output torque (N·m)	Max. rotation speed (rpm)	Allowable load inertia Moment (kg·m ²)	Allowable axial load (N)	Shaft runout (mm)	Surface runout (mm)	Weight (kg)	Supported driver		
AX1022T	22	240	0.6	600	0.01	0.01	8.9	AX9000TS		
AX1045T	45		0.9				12.0			
AX1075T	75	140	4.0	23.0						
AX1150T	150	120	6.0	32.0			AX9000TH			
AX1210T	210		10.0	44.0						
AX2006T	6	300	0.3	1000	0.03	0.03	4.7	AX9000TS		
AX2012T	12		0.4				5.8			
AX2018T	18		0.5				7.5			
AX4009T	9	240	0.35	800			0.03	0.05	5.5	AX9000TS
AX4022T	22		0.60						12.3	
AX4045T	45	0.90	15.0							
AX4075T	75	140	5.00	36.0	AX9000TH					
AX4150T	150	100	75.00	44.0						
AX4300T	300		180.00	66.0						
AX4500T	500	70	300.00	115.0	0.08	198				
AX410WT	1000	30	600.00	20000						

ABSODEX CB-054A

ABSODEX dust-proof/waterproof



- $\phi 250$ index table with T groove
High speed and high precision absolute electronic index with dust-proof and waterproof structure. This index table is suitable for the rotary positioning device for machining and washing processes.

Model	Max. output torque (N·m)	Max. rotation speed (rpm)	Allowable load inertia Moment (kg·m ²)	Allowable axial load (N)	Shaft runout (mm)	Surface runout (mm)	Weight (kg)	Supported driver
AX8045T	45	100	0.9	1200	0.015	0.015	35.0	AX9000TS
AX8070T	70		4.0	2200			80.0	



TS/TH driver advantages

Compatibility

That allows free combination of supported driver and actuator

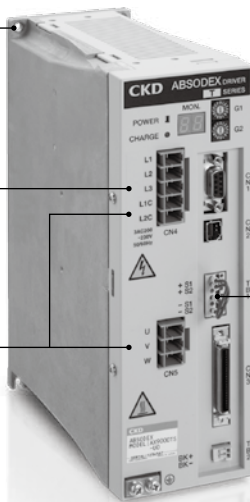
TS/TH driver

(For AX1000T, 2000T, 4000T)

Mounting hole added to the main unit

Main power supply and control power supply have been separated

Connectors employed



Terminal for safety function

Using the STO (Safe Torque Off) function, a circuit to shut off the driving power can be incorporated easily.

MU driver

(For AX6000M)

24 VDC adopted for power supply
Driver body has been downsized.

Connectors employed

Main power supply and control power supply have been separated



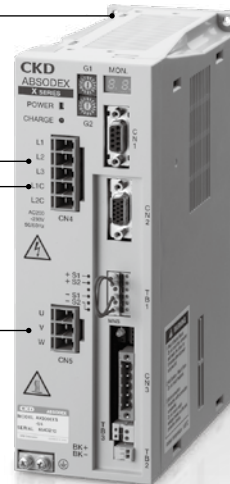
Mounting hole

Main power supply and control power supply have been separated

Connectors employed

XS driver

(For AX7000X)



Great usability!

- No need of backup battery for holding absolute position
- Free combination of supported driver and actuator

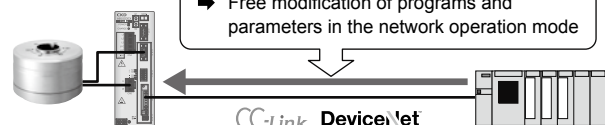
Useful functions that suit many applications!

- Encoder output function (parallel I/O)
- Dividing position output function

Recommended for equipment IoT!

- Monitoring function (TS/TH/XS reduced wiring serial communication)
- Network operation mode (XS reduced wiring serial communication)

- ➔ Flexible positioning at a desired position
- ➔ Free modification of programs and parameters in the network operation mode



TS/TH driver New interface specification option added



Ideal for equipment IoT!!

EtherCAT® specification added

[Compatible models]

AX1000T AX2000T AX4000T



● Abundant monitoring functions!

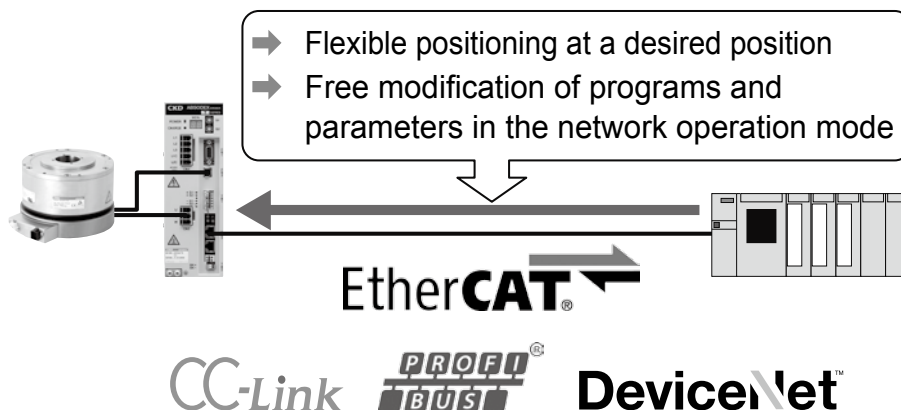
Variety of functions including current position, speed, electronic thermal value, and alarms can be used to monitor the current status of ABSODEX.

● Additional monitor function that can be used for preventive maintenance!

- Torque load factor : Monitors current torque load factor.
- Acceleration : Monitors current acceleration status.

● Network operation mode (direct value mode) added!

Using the network operation mode enables flexible positioning at a desired position from a host controller.



The same functions are also available on the conventional CC-Link specifications, PROFIBUS-DP specifications, and DeviceNet™ specifications.



GENERAL PURPOSE VALVES

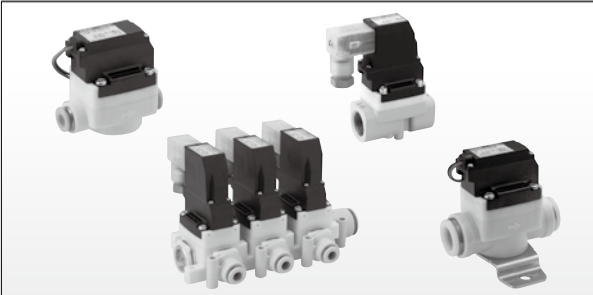
Pilot operated 2-port solenoid valve for compressed air

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



Pilot operated 2-port solenoid compact air blow valve for compressed air EXA Series CC-1007A

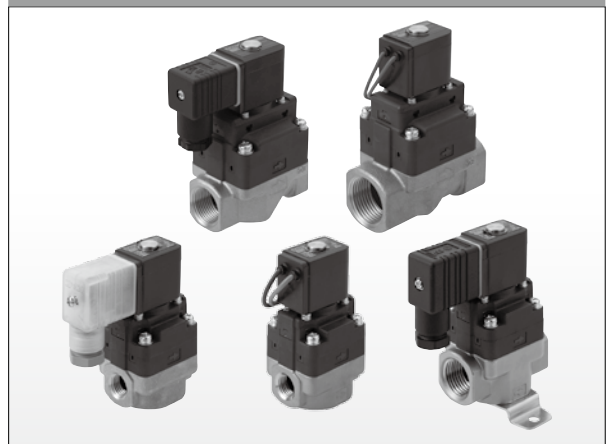
Compact pilot operated solenoid valve for water

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



Compact pilot operated solenoid valve for water FWD Series CC-1057A

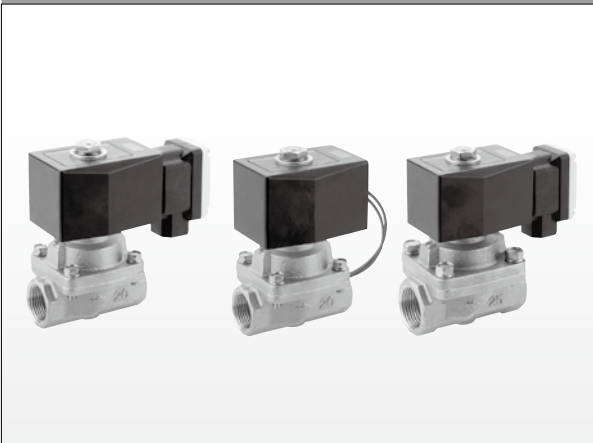
Pilot kick solenoid valve for steams

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



Pilot kick solenoid valve SPK Series for steam CC-1068A

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

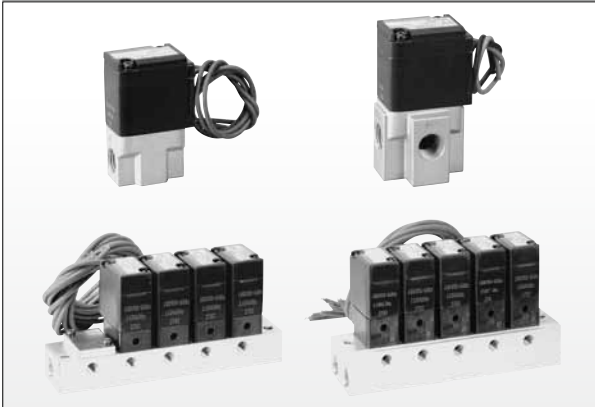
Dedicated fluid control direct acting 2, 3-port solenoid valves

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

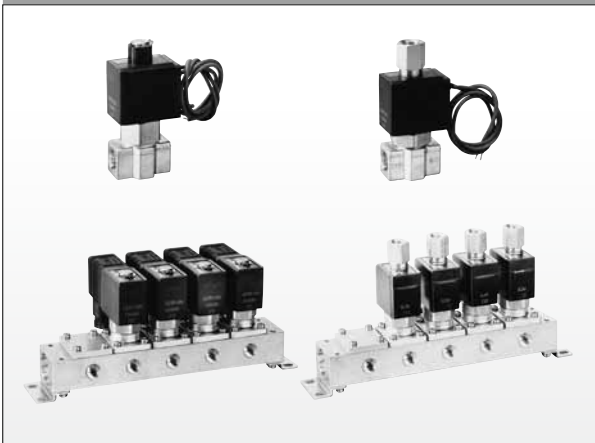
Dedicated fluid control direct acting 2, 3-port solenoid valves

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

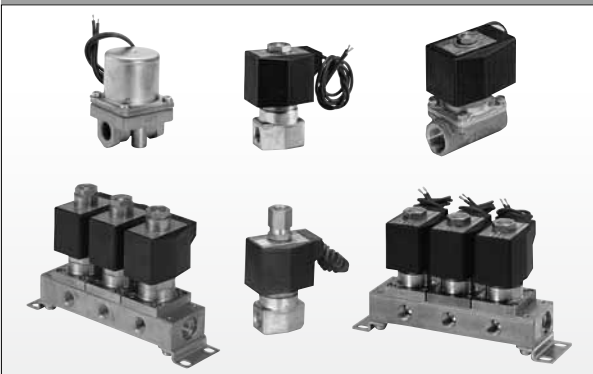
Multi-type fluid control direct acting 2, 3-port solenoid valves

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.

Port size: Rc3/8 to Rc3/4



Check valve CCH Series CC-1317A

Coolant valve/Modular coolant valves

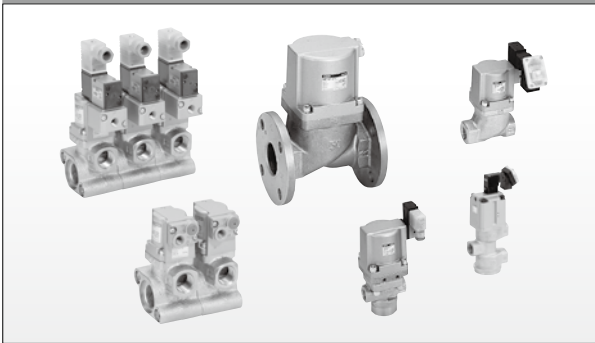
CVE2/CVSE2 CVE3/CVSE3 Series

- 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



Coolant valve CVSE2/CVSE3 Series option added CC-977A, 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



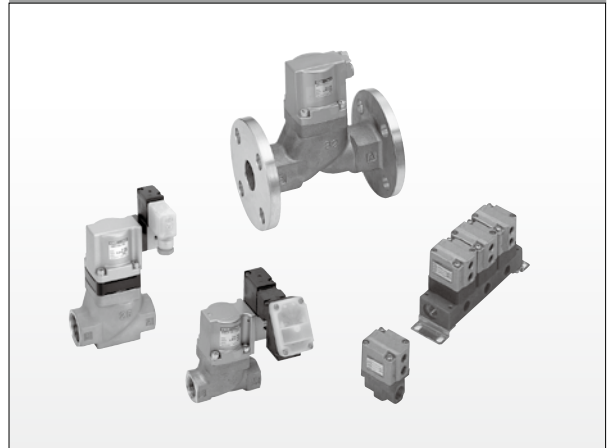
Weir diaphragm valve SWD/MWD Series CC-1096A

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



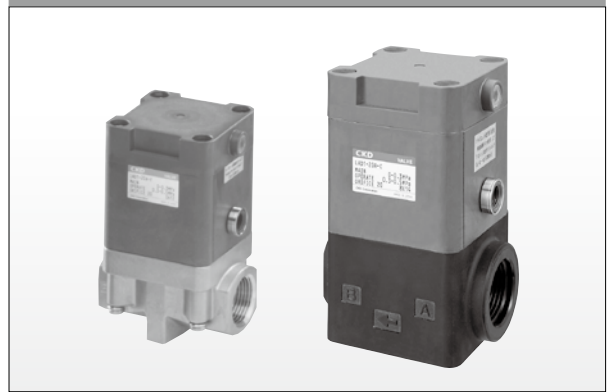
Fluid Control Valves CB-03-1SA

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



Diaphragm cylinder valve LAD/NAD Series CC-1082A



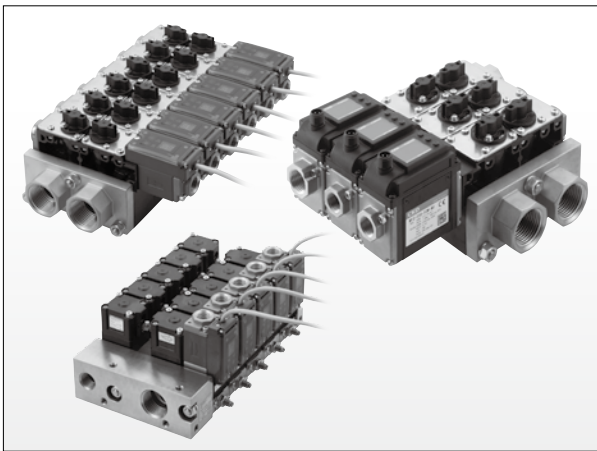
GENERAL PURPOSE VALVES

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

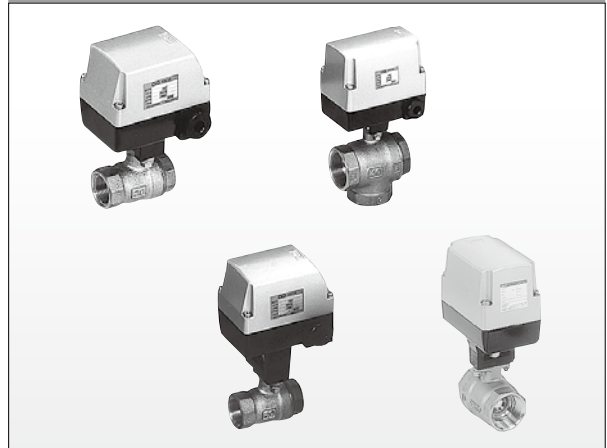
Motor-driven ball valves

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

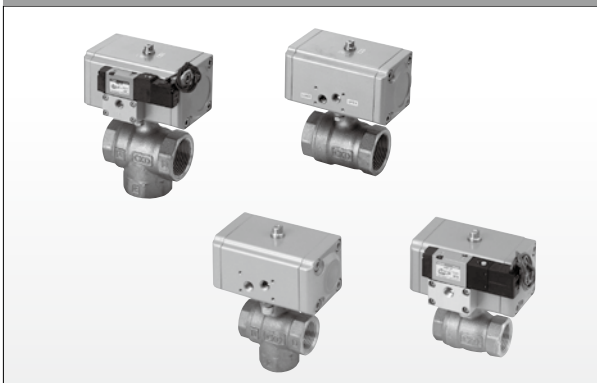
External pilot operated air drive ball valves

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



Compact rotary valve for steam CSB/CSBF Series CC-889A, Fluid control valves CB-03-1SA

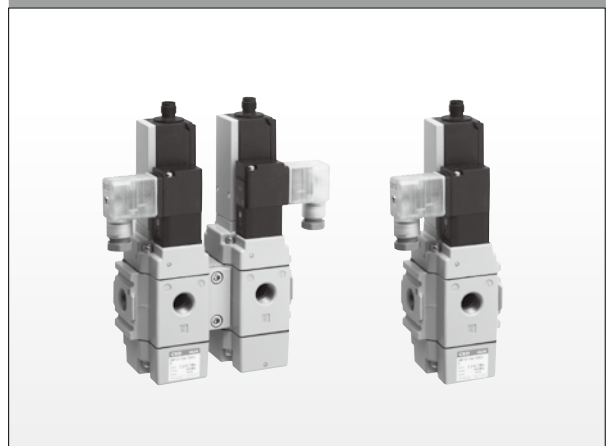
With spool position detection

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



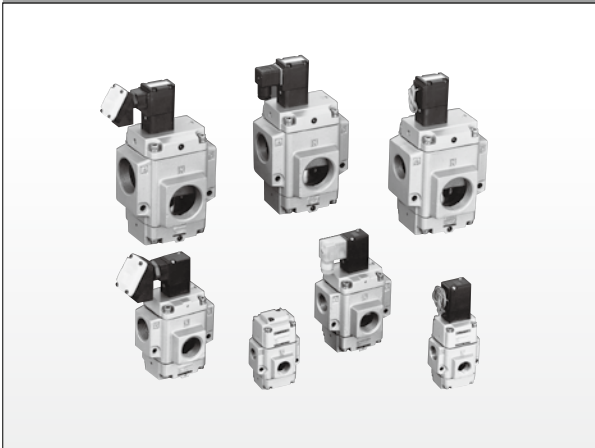
3-port solenoid valve with spool position detection SNP Series CC-1080A

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.

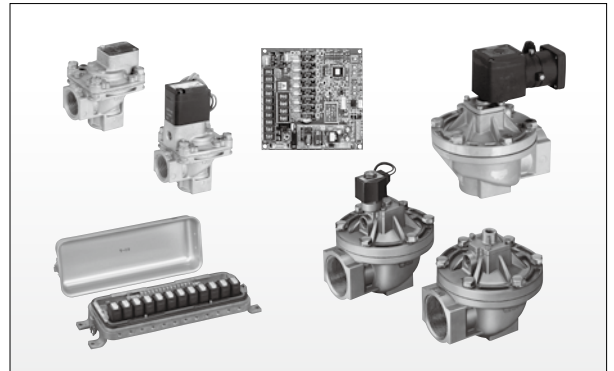


Fluid control valves CB-03-1SA

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
Large port size dust collector valve PD3/PDV3 Series (65A, 80A, 80M) CC-1049A

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.



Automatic watering control systems CC-297A

Automatic watering system components

Automatic watering controllers

RSC-S5 RSC-G RSCH-G RSC-1WP RSC-2WP RSC-W 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

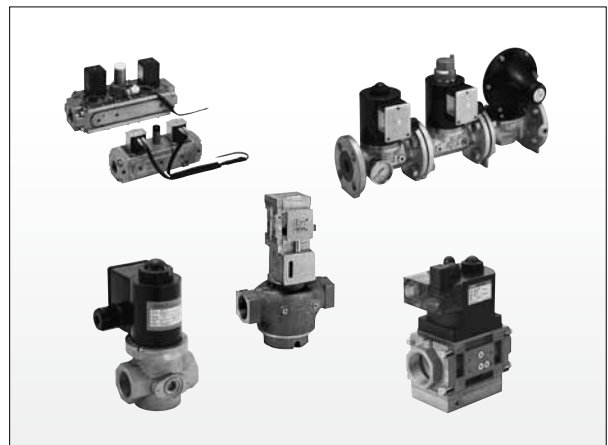


Automatic watering control systems CC-297A

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



HIGH PURITY CHEMICAL GASES/ LIQUID CONTROL SYSTEMS

Component for chemical liquids

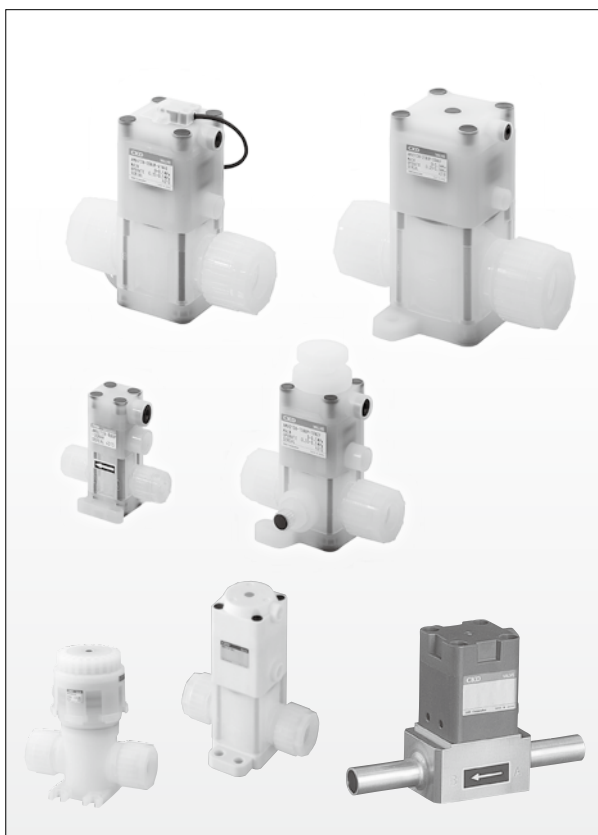
Air operated valves for chemical liquids

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
- 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
- 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



HIGH PURITY CHEMICAL GASES/ LIQUID CONTROL SYSTEMS

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

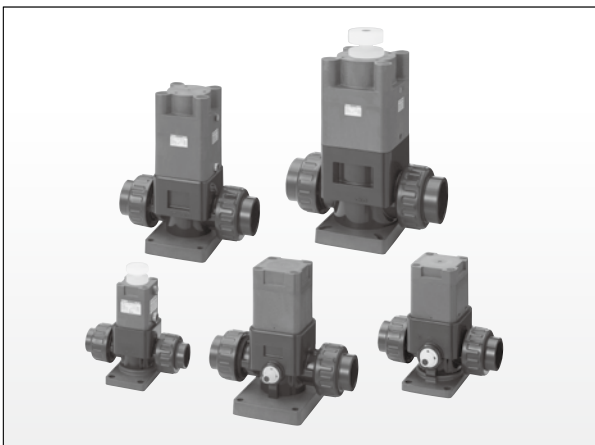
Component for chemical liquids

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

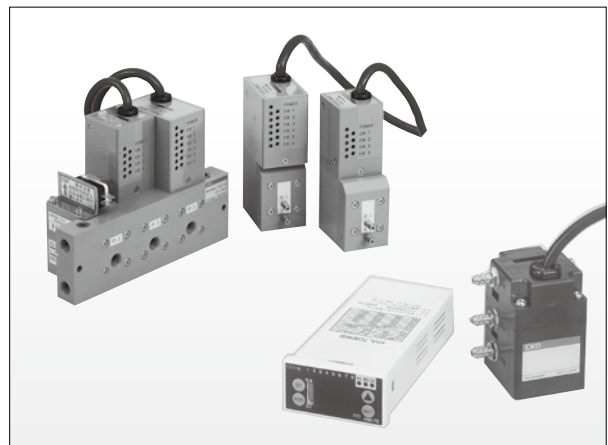
Component for chemical liquids

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

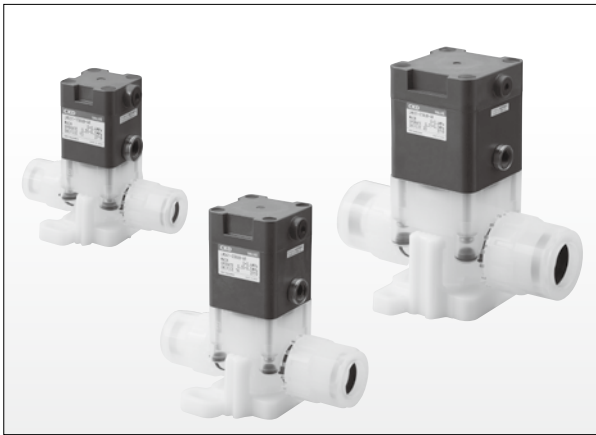


Wet Fine System/high purity chemical liquid system CB-031A

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

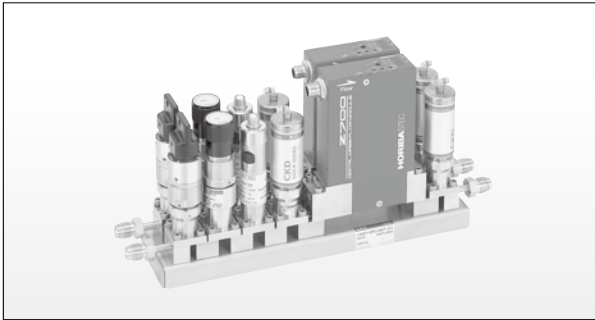
Equipment for process gases

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 valve: 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

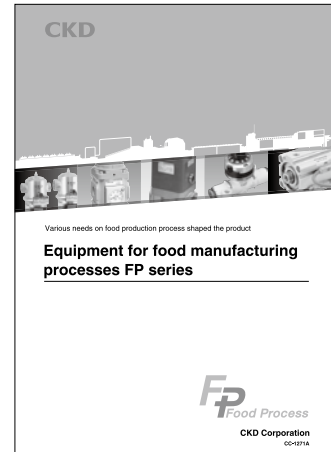
FP1 Eliminates possible contamination by lubricants
Food-grade (NSF H1) lubricants are used.

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.



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



Catalog No. CC-1271A



FP1

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



FP2

Materials compliant with the Food Sanitation Act are used.



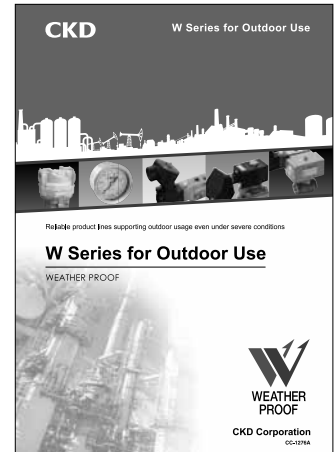
*Other compatible models are also available. Contact CKD for details.

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.
- Ozone exposure test (JIS D0205: 1987) cleared 400 hours.
- Accelerated weathering*1 test Equivalent to 3-year acceleration.

*1: Sunshine weatherometer test

Warranty period for up to 3 years

Gives you long-term peace of mind (option*2)

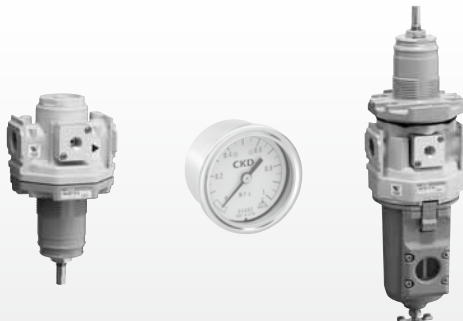
To support use in plants and overseas, the warranty will be either 3 years from the date of delivery or 1 year from initial use, whichever comes first.

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

*2: 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



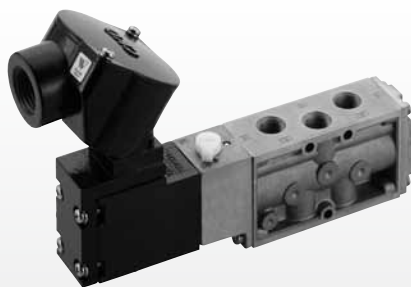
Pneumatic auxiliary components

SL-W Series, SC1-W Series



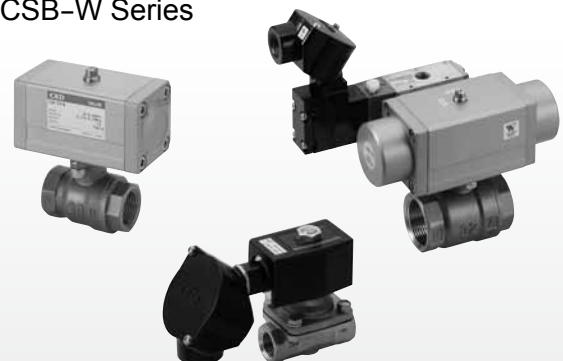
Pneumatic valve

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.



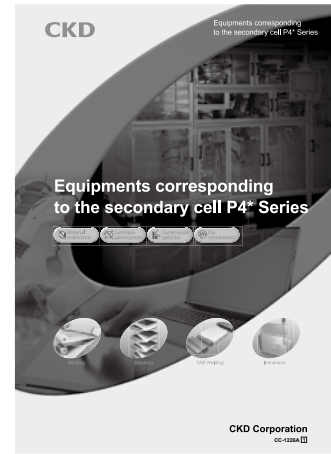
Suppresses dust generation of metal wear powder

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

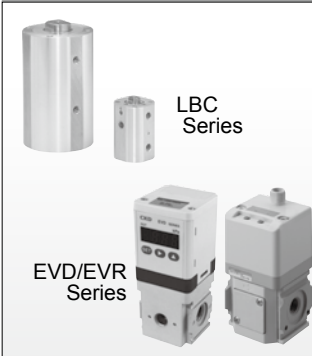
Dry air supply



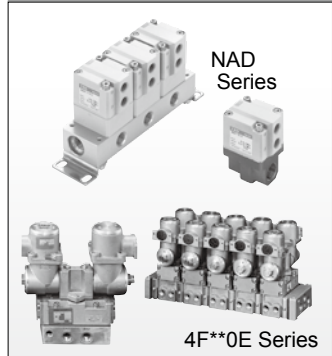
Fluid supply



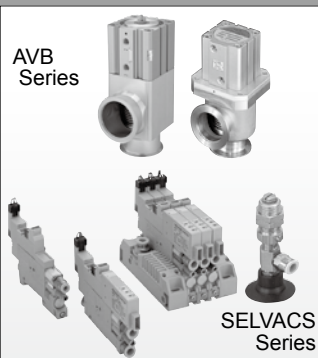
Tension control



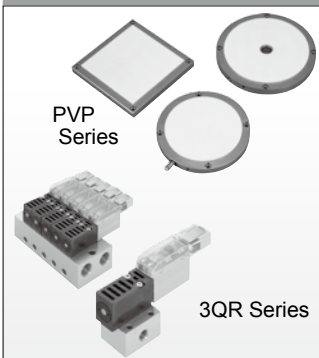
Explosion-proof environment



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 systems

The CKD devices for clean room systems have 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



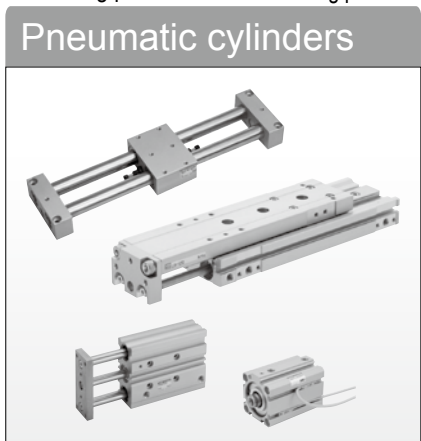
Semiconductor manufacturing process



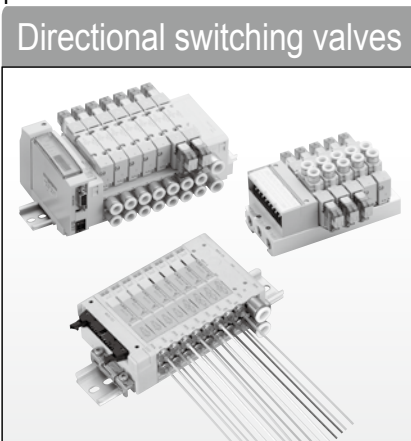
Liquid crystal manufacturing process



PDP manufacturing process



Pneumatic cylinders



Directional switching valves



F/R Units



Pneumatic auxiliary components

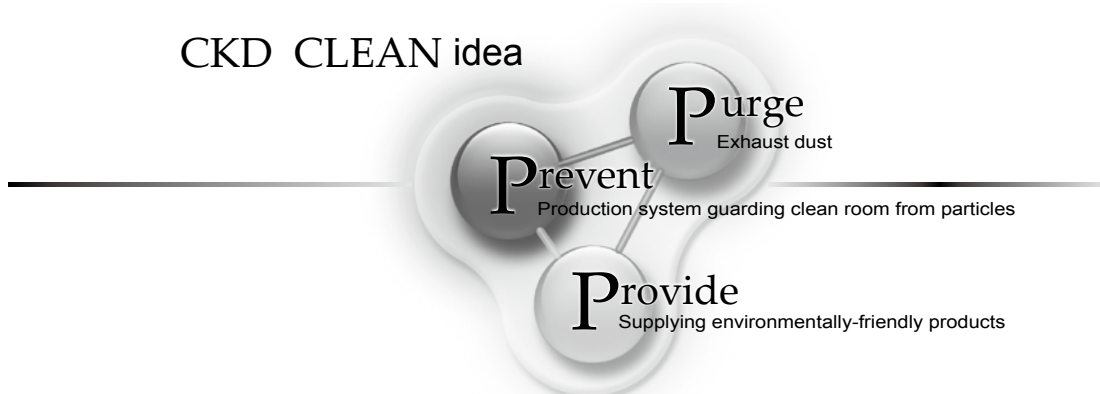


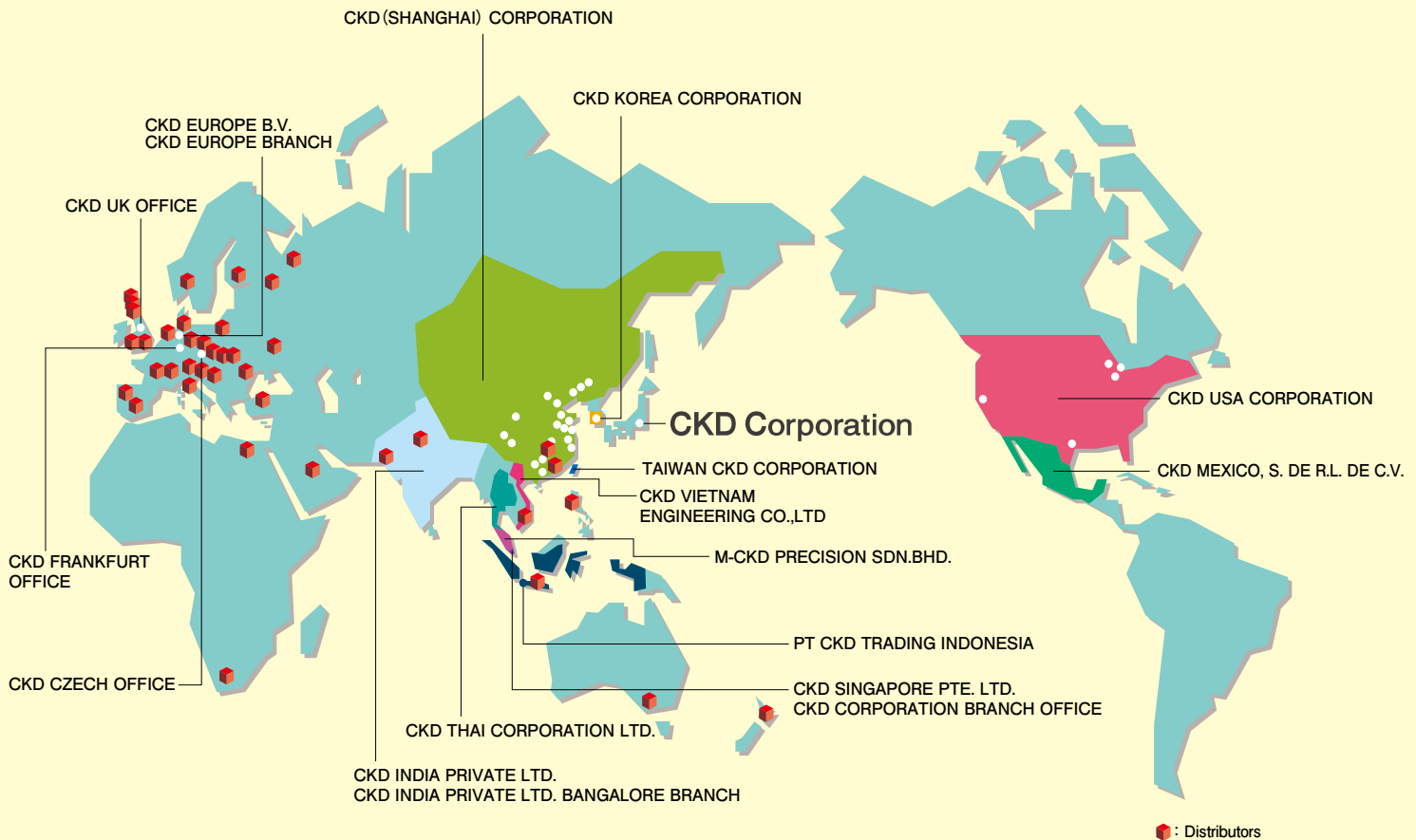
Sensors



Valves for air blow

CKD CLEAN idea





● : Distributors

CKD Corporation

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

U.S.A.

CKD USA CORPORATION

- CHICAGO HEADQUARTERS
4080 Winnetka Avenue, Rolling Meadows, IL 60008, USA
PHONE +1-847-368-0539 FAX +1-847-788-0575
- CINCINNATI OFFICE
- SAN ANTONIO OFFICE
- SAN JOSE OFFICE
- DETROIT OFFICE

Mexico

CKD MEXICO, S. DE R.L. DE C.V.

- Cerrada la Noria No. 200 Int. A-01, Querétaro Park II, Parque Industrial Querétaro, Santa Rosa Jáuregui, Querétaro, C.P. 76220, México
PHONE +52-442-161-0624

Europe

CKD EUROPE B.V.

- Beechavenue 125A, 1119 RB Schiphol-Rijk, The Netherlands
PHONE +31-23-554-1490
- GERMANY OFFICE

CKD CORPORATION EUROPE BRANCH

- SALES HEADQUARTERS
Beechavenue 125A, 1119 RB Schiphol-Rijk, The Netherlands
PHONE +31-23-554-1490
- CZECH OFFICE
- UK OFFICE

Malaysia

M-CKD PRECISION SDN.BHD.

- HEAD OFFICE
Lot No.6,Jalan Modal 23/2, Seksyen 23, Kawasan MIEL, Fasa 8, 40300 Shah Alam,Selangor Darul Ehsan, Malaysia
PHONE +60-(0)3-5541-1468 FAX +60-(0)3-5541-1533
- JOHOR BAHRU BRANCH OFFICE
- PENANG BRANCH OFFICE

Thailand

CKD THAI CORPORATION LTD.

- SALES HEADQUARTERS
Suwan Tower, 14/1 Soi Saladaeng 1, North Sathorn Road, Kwaeng Silom, Khet Bangrak, Bangkok 10500, Thailand
PHONE +66-(0)2-267-6300 FAX +66-(0)2-267-6305
- RAYONG OFFICE
- NAVANAKORN OFFICE
- EASTERN SEABOARD OFFICE
- LAMPHUN OFFICE
- KORAT OFFICE
- AMATANAKORN OFFICE
- PRACHINBURI OFFICE
- SARABURI OFFICE

- 2-250, Ouji, Komaki City, Aichi, 485-8551 Japan
- PHONE +81-(0)568-74-1338 FAX +81-(0)568-77-3461

Singapore

CKD SINGAPORE PTE. LTD.

- No.33 Tannery Lane #04-01 Hoesteel Industrial Building, Singapore 347789, Singapore
PHONE +65-67442623 FAX +65-67442486

CKD CORPORATION BRANCH OFFICE

- No.33 Tannery Lane #04-01 Hoesteel Industrial Building, Singapore 347789, Singapore
PHONE +65-67447260 FAX +65-68421022

India

CKD INDIA PRIVATE LTD.

- Unit No. 607, 6th Floor, Welldone Tech Park, Sector 48, Sohna Road, Gurgaon-122018, Haryana, India
PHONE +91-(0)124-418-8212

CKD INDIA PRIVATE LTD. BANGALORE BRANCH

- No. 201/B, 2nd Floor, Museum Terraces Apartment, No. 29, Museum Road, Bangalore-560001, Karnataka, India
PHONE +91-(0)80-4212-7008/7009 FAX +91-(0)80-4212-7007

Indonesia

PT CKD TRADING INDONESIA

- SALES HEADQUARTERS
Menara Bidakara 2, 18th Floor, Jl. Jend. Gatot Subroto Kav. 71-73, Pancoran, Jakarta 12870, Indonesia
PHONE +62 21-2938-6601 FAX +62 21-2906-9470
- SURABAYA OFFICE

Vietnam

CKD VIETNAM ENGINEERING CO.,LTD.

- 18th Floor, CMC Tower, Duy Tan Street, Cau Giay District, Hanoi, Vietnam
PHONE +84-4-37957631 FAX +84-4-37957637

Taiwan

台灣喜開理股份有限公司

TAIWAN CKD CORPORATION

- 16F-3, No. 7, Sec. 3, New Taipei Blvd., Xinzhuang Dist., New Taipei City 242, Taiwan
PHONE +886-(0)2-8522-8198 FAX +886-(0)2-8522-8128
- 新竹營業所 (HSINCHU OFFICE)
- 台中營業所 (TAICHUNG OFFICE)
- 台南營業所 (TAINAN OFFICE)

China

喜開理(上海)機器有限公司

CKD(SHANGHAI)CORPORATION

- 營業部 / 上海浦西事務所 (SALES HEADQUARTERS / SHANGHAI PUXI OFFICE)
Room 601, 6th Floor, Yuanzhongkeyan Building, No. 1905 Hongmei Road, Xinhui District, Shanghai 200233, China
PHONE +86-(0)21-61911888 FAX +86-(0)21-60905356
- 上海浦東事務所 (SHANGHAI PUDONG OFFICE)
- 無錫事務所 (WUXI OFFICE)
- 杭州事務所 (HANGZHOU OFFICE)
- 寧波事務所 (NINGBO OFFICE)
- 南京事務所 (NANJING OFFICE)
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- 天津事務所 (TIANJIN OFFICE)
- 長春事務所 (CHANGCHUN OFFICE)
- 大連事務所 (DALIAN OFFICE)
- 青島事務所 (QINGDAO OFFICE)
- 濟南事務所 (JINAN OFFICE)
- 煙台事務所 (YANTAI OFFICE)
- 瀋陽事務所 (SHENYANG OFFICE)
- 重慶事務所 (CHONGQING OFFICE)
- 成都事務所 (CHENGDU OFFICE)
- 西安事務所 (XI'AN OFFICE)
- 武漢事務所 (WUHAN OFFICE)
- 鄭州事務所 (ZHENGZHOU OFFICE)
- 長沙事務所 (CHANGSHA OFFICE)
- 廣州事務所 (GUANGZHOU OFFICE)
- 深圳西事務所 (WEST SHENZHEN OFFICE)
- 深圳東事務所 (EAST SHENZHEN OFFICE)
- 東莞事務所 (DONGGUAN OFFICE)
- 廈門事務所 (XIAMEN OFFICE)

Korea

CKD KOREA CORPORATION

- HEADQUARTERS
(3rd Floor), 44, Sinsu-ro, Mapo-gu, Seoul 121-856, Korea
PHONE +82-(0)2-783-5201~5203 FAX +82-(0)2-783-5204
- 水原營業所 (SUWON OFFICE)
- 天安營業所 (CHEONAN OFFICE)
- 蔚山營業所 (ULSAN OFFICE)

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