

Components for industrial automation 2016-2017



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 advance into the future.



We supply high quality products based on our state-of-the-art production technologies.

We have organized production systems to supply high quality products in Japan and around the world.

All of our production factories have established production systems that not only produce high quality products efficiently, but in which the environment has also been given considerable consideration.

Production System



ISO9001-certified
"Creating products" with superior quality.
JQA-0535 ISO 9001
Automatic Machinery Division Production Headquarters



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

Head Plant (Komaki City)

Main plant to produce automated machinery and FA systems



Kasugai Plant

Plant to produce fluid control components for semiconductor manufacturing



Yokkaichi Plant

Plant to meet the domestic and international needs of pneumatic components



Inuyama Plant

Plant to produce high-function 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

Overseas production base mainly for semiconductor-related components



M-CKD PRECISION SDN. BHD.

This Malaysian site provides quick and reliable response for customers



PT CKD MANUFACTURING INDONESIA

Overseas production base to meet the needs of the Indonesian market



ACTUATORS



PNEUMATIC VALVES



PNEUMATIC AUXILIARY COMPONENTS



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)



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



RELATED PNEUMATIC PRODUCTS



INDEX/DIRECT DRIVE ACTUATOR



FLUID CONTROL VALVES



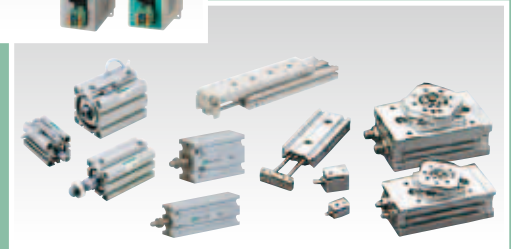
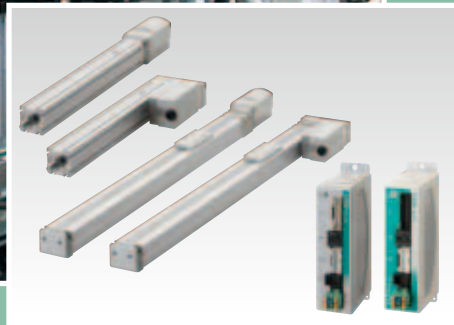
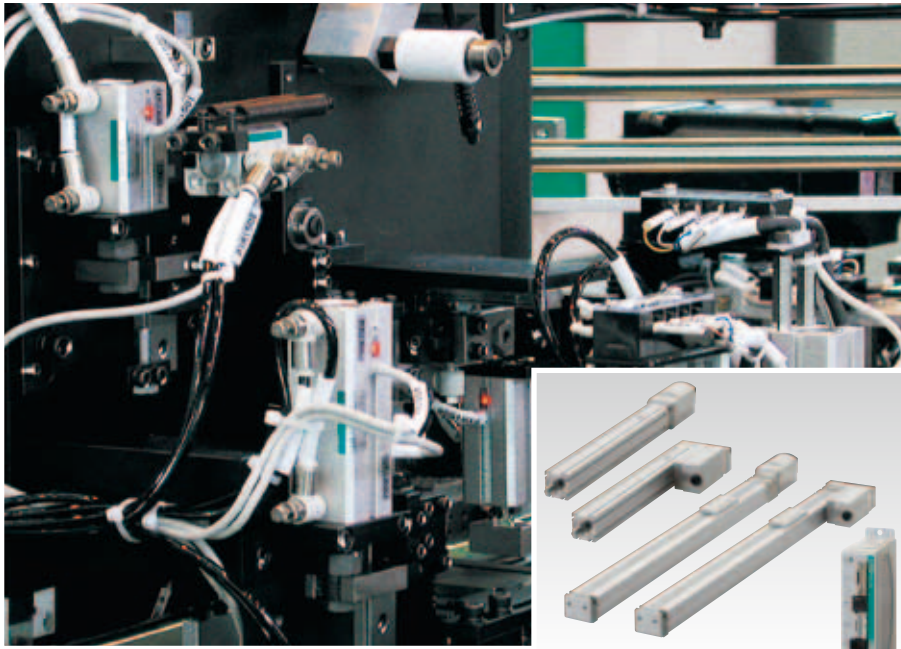
FINE SYSTEM DEVICES
HIGH PURITY CHEMICAL GAS/LIQUID CONTROL SYSTEMS

FP W P4 P7

Industry-specific series



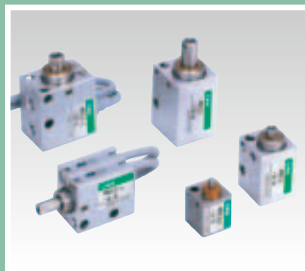
ACTUATORS



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



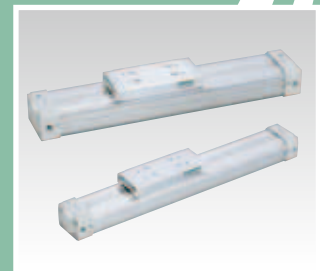
● Electric actuators



● Small direct mounting cylinders



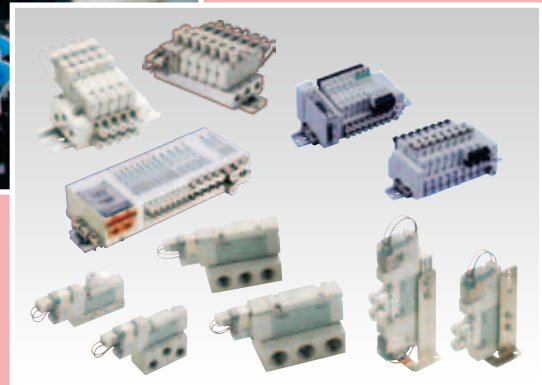
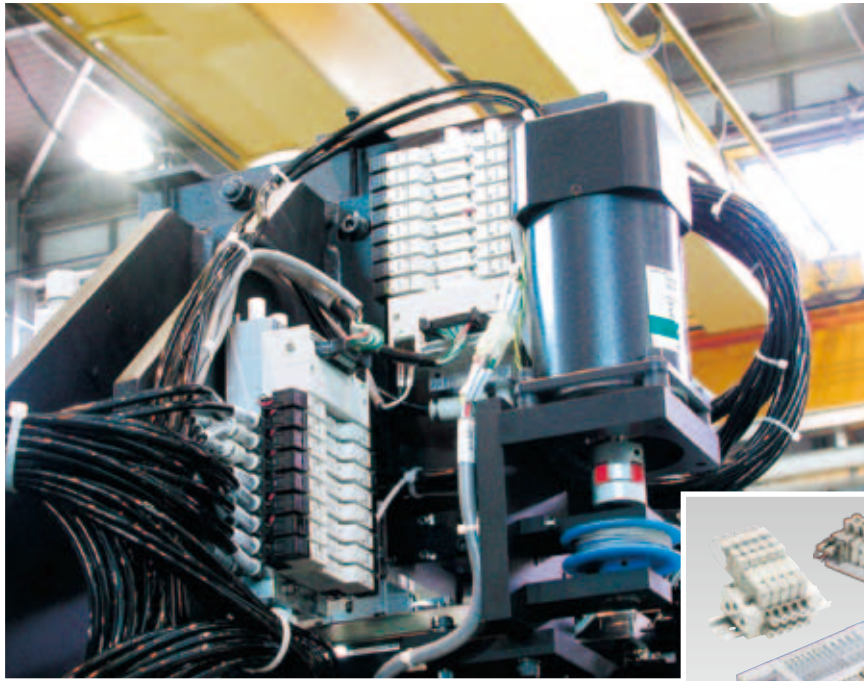
● Guided cylinders



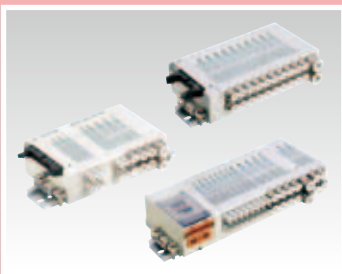
● Rodless cylinders



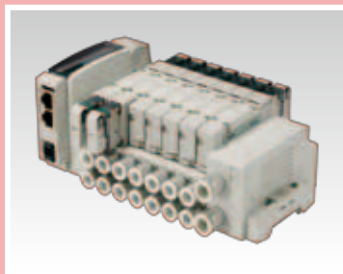
PNEUMATIC VALVES



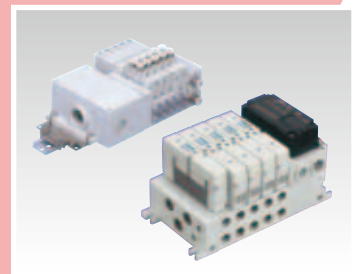
CKD is meeting increasingly diverse market requirements by continually applying our compressed air technologies.



● Small pneumatic valves (reduced wiring valve)



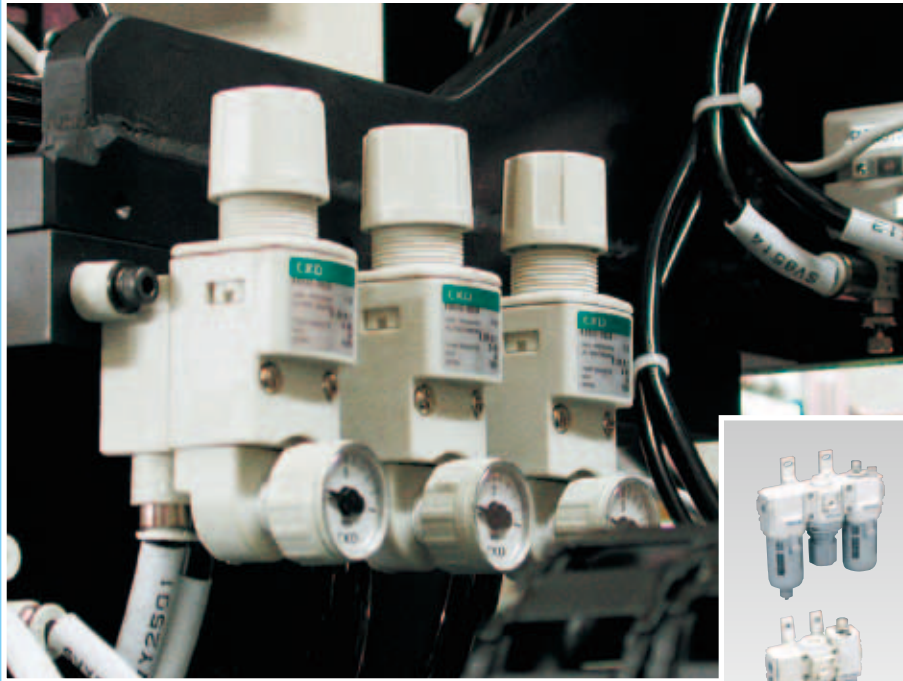
● Pneumatic valves (reduced wiring valve)



● Pneumatic valves (plug-in manifold)



RELATED PNEUMATIC PRODUCTS



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



● Refrigeration air dryers



● F.R.L. Combinations



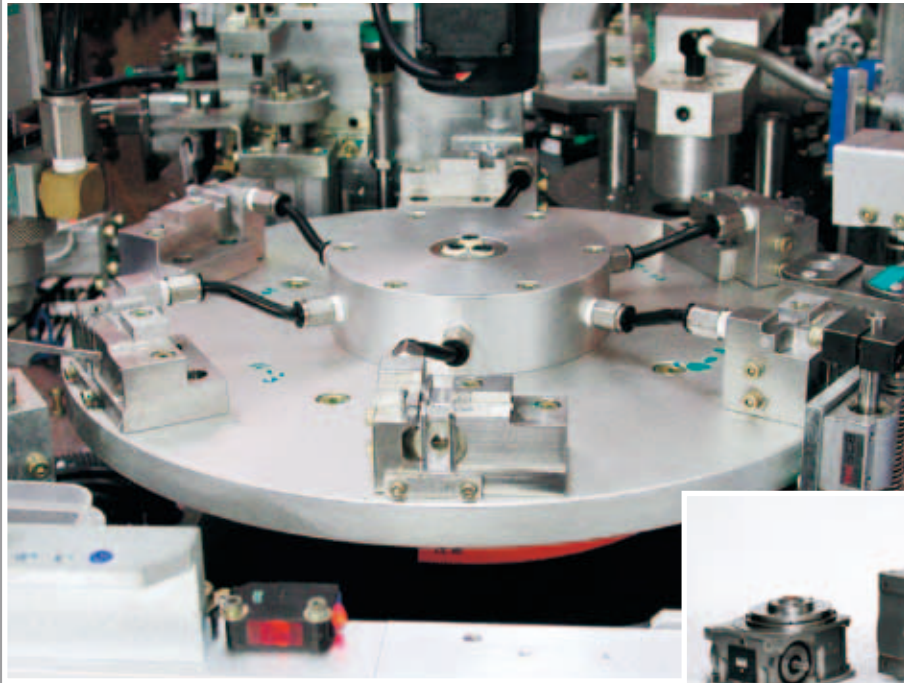
● SELVACS
(vacuum system components)



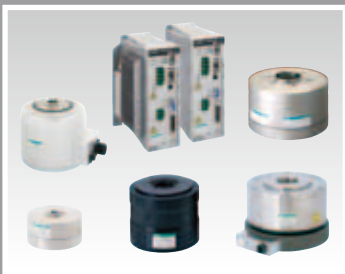
● Speed controllers



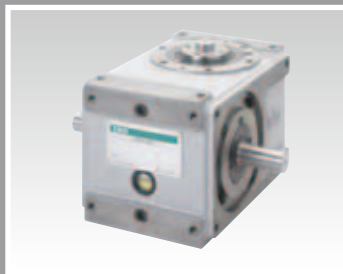
INDEX/DIRECT DRIVE ACTUATOR



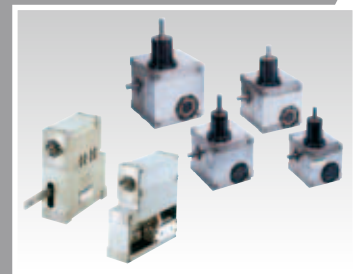
In every type of drive system for processing, assembly and machining, CKD's labor saving machines perform robustly at manufacturing sites every where.



●ABSODEX (DD actuator)



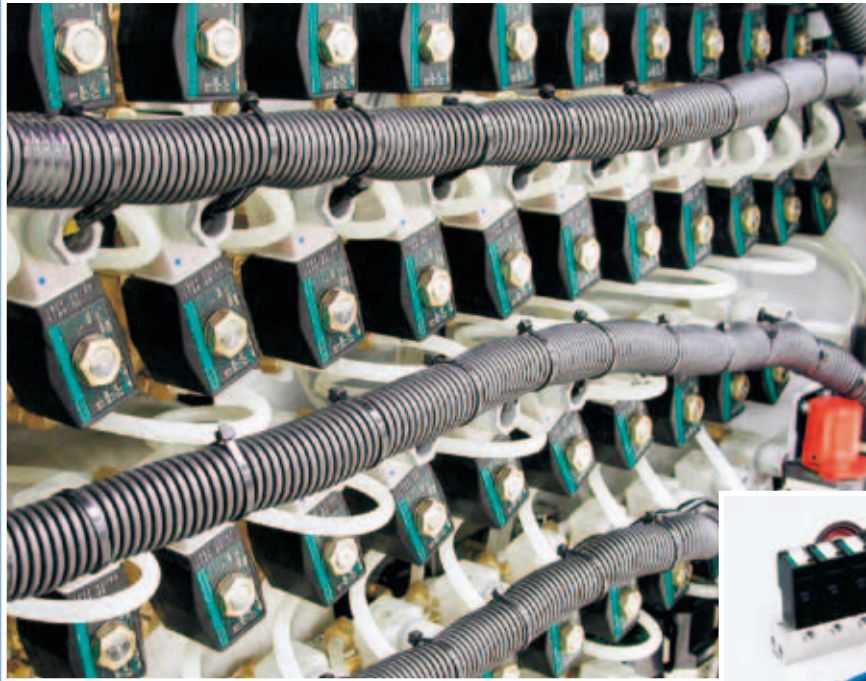
●Roller gear cam units



●Rotational pick and place types
●Forward moving pick and place types
Arm (A type) and Table (B type)



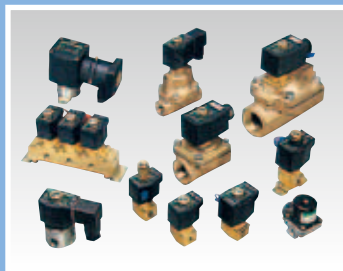
FLUID CONTROL VALVES



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



● Pilot operated solenoid valves



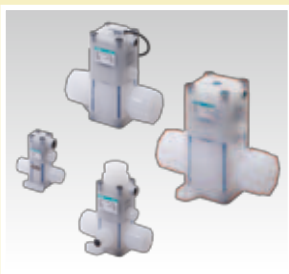
● General Purpose Valves



● Cylinder valves



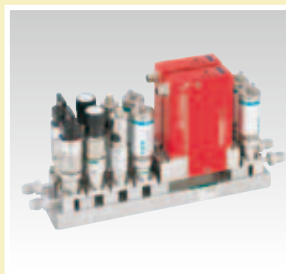
Limitless purity and precision. CKD's devices work with cutting-edge technology in a super clean environment.



●Pneumatic valves for chemical liquids



●Valve for process gases



●Integrated gas supply systems



●Pneumatic valves for high vacuum

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Human and nature-friendly advanced technologies provide comfort to a wide range of industries.



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INDEX/DIRECT DRIVE ACTUATOR

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Fluid control valves

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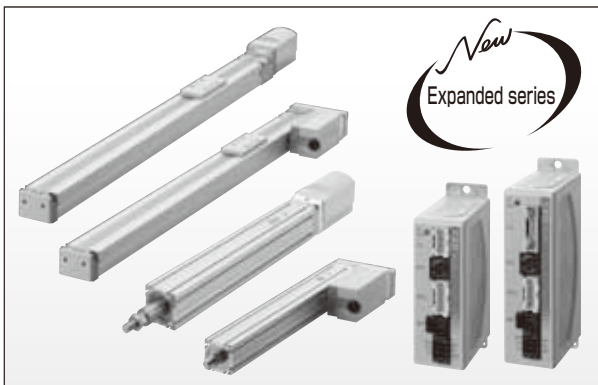


Electric driven actuator

Electric actuator

ERL2/ESD2 Series

- Motor mounting direction selectable
In addition to the conventional straight type, left, right and bottom mounting methods are available
- More controller models added
"Pulse train input" controller was added to the conventional "7-point positioning" and "63-point positioning" controllers
- Easy setup tool
Easy setup tool (E-Tools) is included in addition to the teaching pendant (ETP2).
- Full compatibility
"Full compatibility" which allows for any combination of actuators and controllers



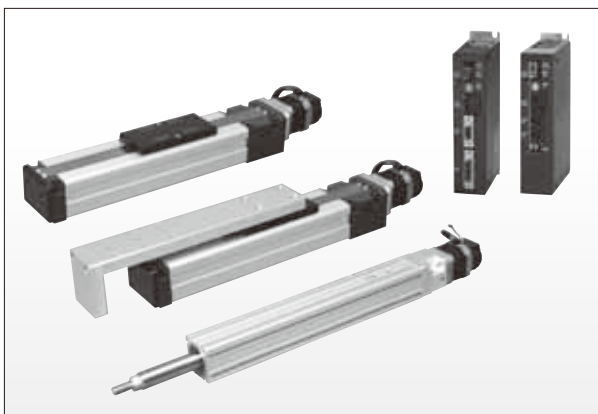
Electric actuator ERL2/ESD2 Series CC-1219A

Electric driven actuator

Electric actuator

KBZ Series

- High speed
Allowable max. speed of 800 mm/s
- Equipped with servo motor
A servo motor is used for the small shaft allowing for high speed, quick acceleration/deceleration and greater weight capacity
- Absolute specification
No need to return to the home position
- Small controller
Developed to target the smallest size and lowest price



Electric actuator KBZ Series CC-1102A

Electric driven actuator

Electric actuator Motorless type

Ball screw driven ETS Series

- Motor size: 8 types, lead: 7 types, motor mounting orientation: 5 types
- Mount a motor you're familiar with.
- Home position sensor and limit sensor can be installed.
- Stroke length range: 100 - 1500 mm (in 50 mm pitch)
- Wide range of application with max. load capacity of 150 kg, and max. speed of 2000 mm/s

Belt driven ETV Series

- Belt driven model based on ETS Series
- Long stroke as range of 100-3500 mm (in 50 mm pitch) and high speed as max. speed of 2000 mm/s.
- Motor size: 6 types, motor mounting orientation: 6 types
- Install a motor you're familiar with.

Ball screw driven, low particle generation ECS Series

- Based on the ETS Series, this model has a fully covered construction with the vacuum port to achieve low particle generation.
- Motor size: 7 types, lead: 7 types, motor mounting orientation: 5 types
- Install a motor you're familiar with.
- Home position sensor and limit sensor can be installed.
- Stroke length range: 100-1500 mm (in 50 mm pitch)
- Wide range of application with Max. load capacity of 150 kg, and max. speed of 2000 mm/s.

Belt drive low dust generation type ECV Series

- Low dust generation is achieved through use of a vacuum port and a full-cover structure based on the ETV Series.
- Motor size: 6 types, motor mounting direction: 6 types
- Possible to mount a motor you're familiar with

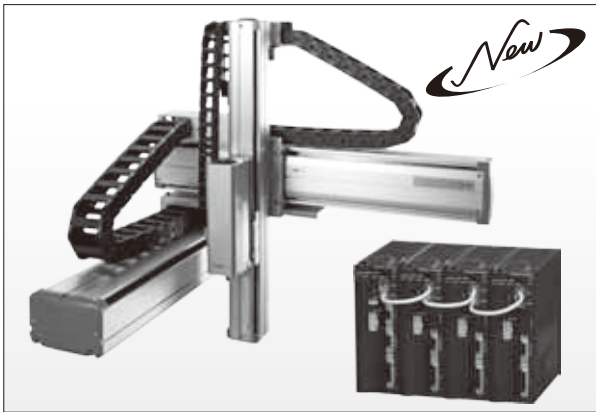


Electric actuator ETS Series CC-1165A
ECS Series CC-1217A
ETV Series CC-1216A
ECV Series CC-1257A

Electric actuator

KBX Series

- High tact
MAX 2000 mm/s (timing belt drive)
- High precision
Repeatability: ± 0.01 mm (ball screw drive)
- All models are absolute types
Long service life lithium batteries (50,000 hour life) are used and all models do not require to return to home position.
- High level processing with a high speed CPU
High level processing is achieved due to a high speed CPU
- Wide variation
8 types of ball screws, 7 types of timing belts
4 directions selectable for each axis motor mounting position.



Electric actuator KBX Series CC-1275A

Electric shuttle mover

ESM Series

- Single axis two dimension transfer/space saving with only one motor
Two dimension movement is achieved without using multi-axis or a gantry robot.
Space can be utilized freely as desired. Space saving is also possible as desired.
- Long stroke, 20 m maximum
Features a long stroke that changes conventional ideas of electric actuators.
ESM will solve your problems before you even consider using a linear motor.
- Multi-point positioning/soft start and stop
Electric actuators are good at multi-point positioning, acceleration and deceleration setting or changing operation speed.
Of course, so is the ESM.
- Compatible with other manufacturers' motors
Mount a motor you're familiar with.
Similar to the other motorless series, brackets compatible with other manufacturers' motors are available.



Electric shuttle mover ESM Series CC-1259A

Electric actuator

ESSD/ELCR Series

- Space saving
Built-in controller eliminates the need for controller installation space and wiring
- Installable like a pneumatic cylinder
Design resembles a pneumatic cylinder in every way, from appearance to configuration and control
- Motion control at will
Set speed and acceleration control, positioning completion width (in-position), and choose between three control modes
- Easy teaching
Easy setting with five buttons, enabling direct teaching



Electric actuator ESSD/ELCR Series CC-1002A



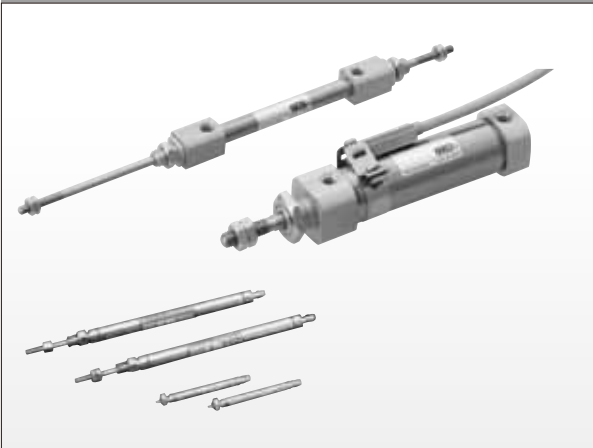
Standard type

Pencil shaped cylinder

SCP*3 Series

- More lightweight and smaller
- Double acting, single acting/extend, pull, low speed, and heat resistance types are available
- Space saving with the small T series standard switch
- Copper and PTFE free as standard
- Five types of inside diameter: $\phi 2.5$ to $\phi 16$

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



Pneumatic cylinders | CB-029SA

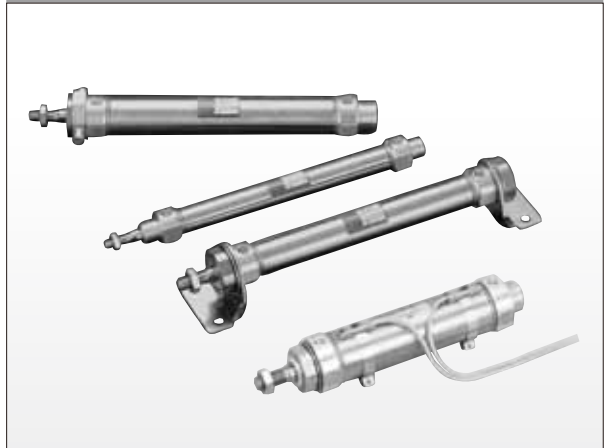
Standard type

Medium bore size cylinder

CMK2 Series

- Pre-lubricated, high corrosion proof and long life
- Wide variations, such as double acting, single acting/extend, pull, position locking, low speed and heat resistance type
- A wide variety of options, such as bellows and rod material change
- Standard cylinder can be mounted with a cylinder switch as it is
- Four types of inside diameter: $\phi 20$, $\phi 25$, $\phi 32$ and $\phi 40$
- Stainless steel exterior type is supported

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



Pneumatic cylinders | CB-029SA

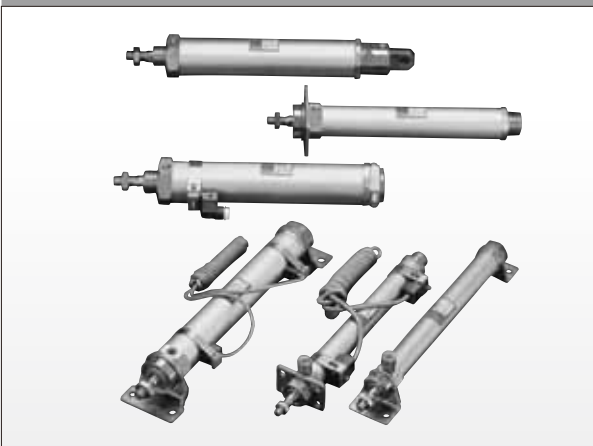
Standard type

Medium bore size cylinder

CMA2 Series

- Non-lubrication, long service life
- Two types of variation: double acting type and direct type
- Rich options, such as bellows and rod material change
- Standard cylinder can be mounted with a cylinder switch as is
- Three types of inside diameter: $\phi 20$, $\phi 30$ and $\phi 40$

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



Pneumatic cylinders | CB-029SA

Standard type

Round shaped cylinder

SCM Series

- Total length dimension is short
- Attachment is easy
- Simple design
- Band type is adopted to attach and move a cylinder switch at will
- Eight types of inside diameter: $\phi 20$ to $\phi 100$

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



Pneumatic cylinders | CB-029SA

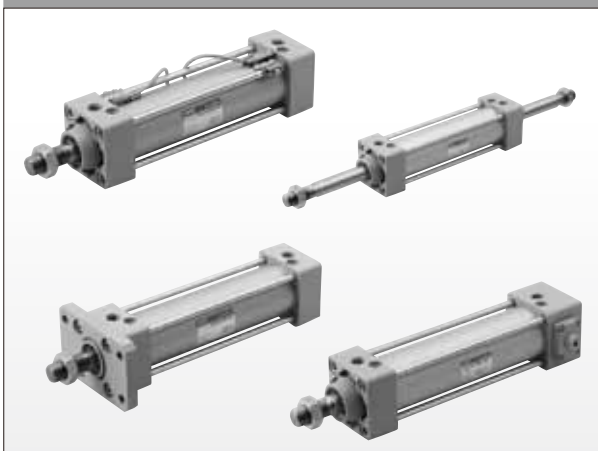
Standard type

Tie rod air cylinder

SCG Series

- New, earth-conscious cylinder
- Cushion needle is on the same side of air supply port to make attachment or adjustment easy
- Rubber scraping, coolant proof and anti-spatter adherence types have the same dimensions as the standard type to improve stability
- Wide variety of cylinder switches
- Six types of inside diameter: $\phi 32$ to $\phi 100$

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



Pneumatic cylinders | CB-029SA

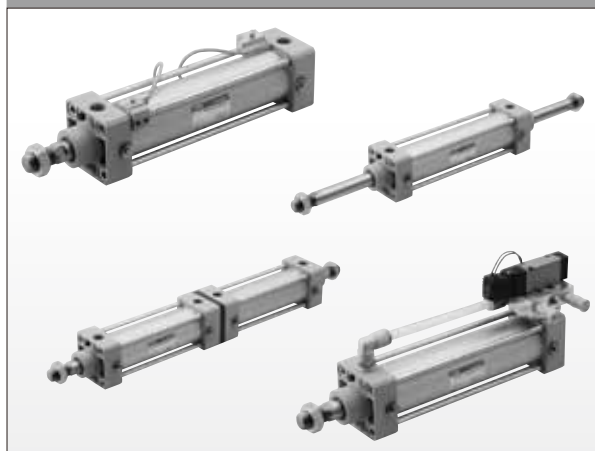
Standard type

Large bore size cylinder

SCA2 Series

- High reliability and ample series variations, such as pre-lubricated type
- More lightweight, higher corrosion proof, and higher shock-proof
- Ample choice of cylinder switches
- Standard cylinder can be mounted with a cylinder switch as is
- Five types of inside diameter: $\phi 40$ to $\phi 100$

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



Pneumatic cylinders | CB-029SA

Standard type

Large bore size cylinder

SCS2 Series

- Lubrication or non-lubrication can be selected
- High reliability and ample series variations, such as double rod type, two stage type, low hydraulic type, and heat resistance type
- Wide variety of cylinder switches
- Six types of inside diameter: $\phi 125$ to $\phi 250$

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



Pneumatic cylinders | CB-029SA

With valve

Small cylinder with valve

CKV2 Series

- Stainless steel tube is adopted to improve corrosion resistance and durability
- Piping, wiring, speed regulation and manual override are all concentrated on top for easy operation
- Common exhaust is possible
- Speed adjustment is easy
- Two types of variation: double acting type and rotation-stop type

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



Pneumatic cylinders | CB-029SA



With valve

Cylinder with valve

CAV2/COV*2 Series

- Integrated cylinder and solenoid valve
- Select from two types: lubrication or non-lubrication
- Two types of solenoid valves: single and double
- Standard type and short overall length type are available
- Wide variety of cylinder switches

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



Pneumatic cylinders | CB-029SA

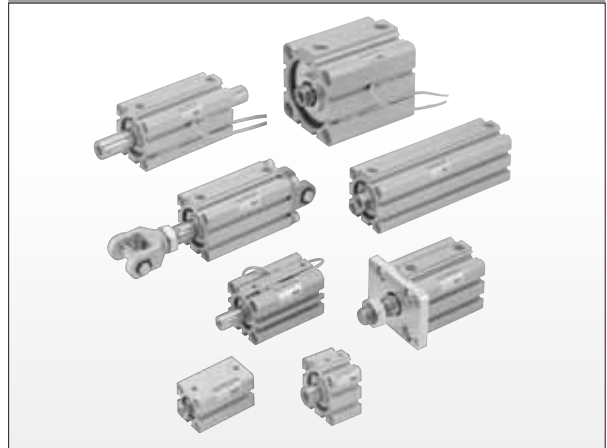
Space saving type

Compact cylinder

SSD2 Series

- Cylinder switch grooves provided on four surfaces
- Ample stroke settings optimize design-based model selection
- Rubber cushion is optional with the same dimensions
- Wide variety of cylinder switches
- 15 types of inside diameter: $\varnothing 12$ to $\varnothing 200$

Bore size $\varnothing 12$ to $\varnothing 200$



Pneumatic cylinders | CB-029SA

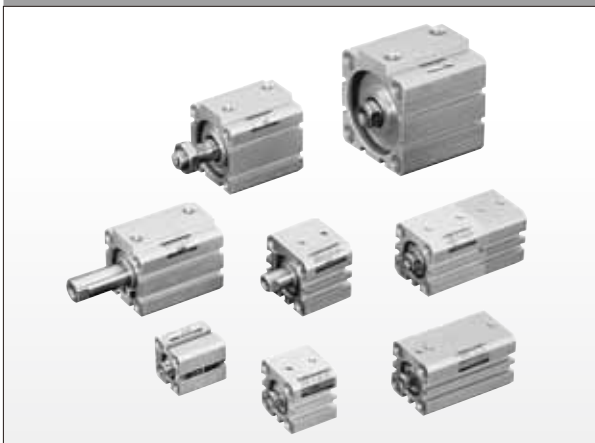
Space saving type

Compact cylinder

SSD Series

- More space-saving and more compact in total length
- Miniature cylinder switch neatly contained in the body
- Direct installation with hexagon socket bolts
- Wide variety of cylinder switches
- 13 types of inside diameter: $\varnothing 12$ to $\varnothing 160$

Bore size $\varnothing 12$ to $\varnothing 160$



Pneumatic cylinders | CB-029SA

Space saving type

Guided super compact cylinder

SSG Series

- SSD2 Series is equipped with a guide rod to improve lateral load resistance and non-rotating performance
- User-friendly plate is equipped
- Cylinder switch grooves provided on four surfaces
- 10 types of inside diameter: $\varnothing 12$ to $\varnothing 100$

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



Pneumatic cylinders | CB-029SA

Space saving type

Small direct mounting cylinder

MDV Series

- Rod metal rim is threaded for direct installation
- Total length and outside dimensions are minimized to reduce installation space
- Equipped with a miniature switch

Bore size $\varnothing 6, \varnothing 10$



Small direct mounting cylinder MDV Series CC-905

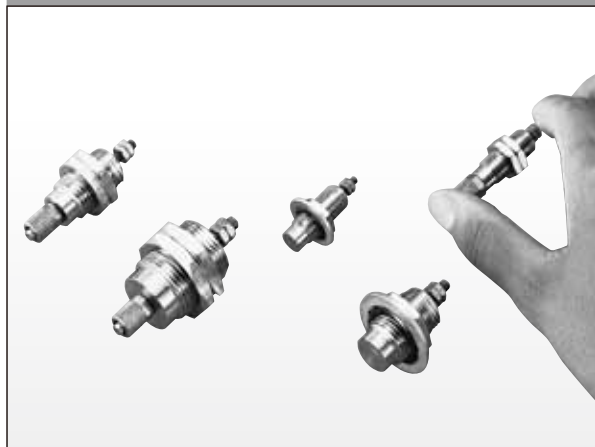
Space saving type

Cartridge cylinder

CAT Series

- Miniature, thumb-sized single acting cylinder
- Full thread type outside, attachment to jig and panel is easy
- Three types of inside diameter: $\varnothing 6, \varnothing 10$ and $\varnothing 15$

Bore size $\varnothing 6$ to $\varnothing 15$



Pneumatic cylinders I CB-029SA

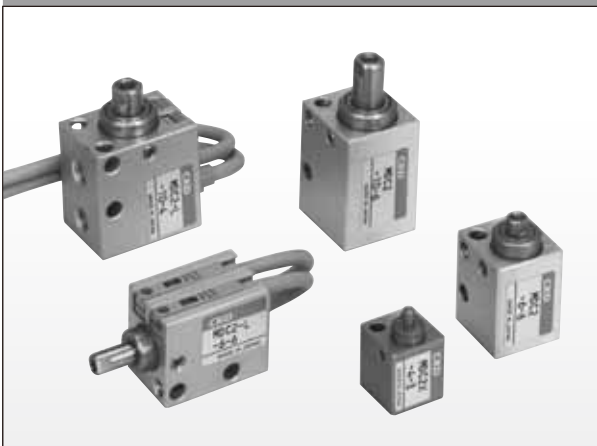
Space saving type

Small direct mounting cylinder

MDC2 Series

- Square body is adopted for direct installation
- Total length dimension and outside dimension are minimized to reduce space
- Rod metal section has a spigot for easy center alignment
- Depending on the use, you can select between double acting and single acting
- Miniature reed/proximity switch can be installed

Bore size $\varnothing 4$ to $\varnothing 10$



Pneumatic cylinders I CB-029SA

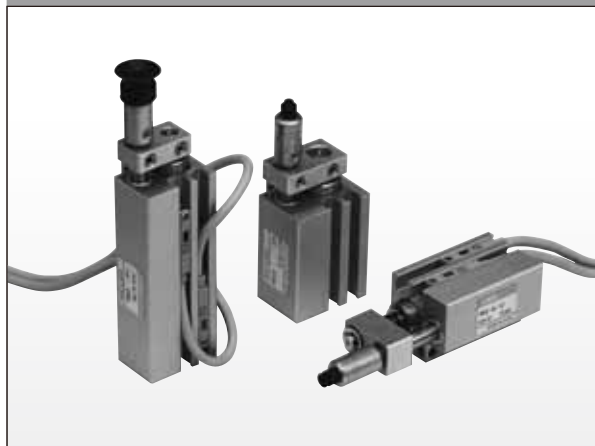
Space saving type

Small cylinder with suction pad

MVC Series

- Workpiece suction and vacuum passage for guide rod are equipped as standard
- Guide rod for rotation-stop is provided as standard
- Rod end can have a socket-type suction pad ($\varnothing 2$ to $\varnothing 10$)
- Square body is adopted for 2-way direct installation
- Miniature cylinder switch is integrally contained in the body groove portion

Bore size $\varnothing 6, \varnothing 10$



Pneumatic cylinders I CB-029SA



Space saving type

Compact cylinder

SMG Series

- Integrated mount block makes less space and more lightweight (33% weight reduction and 23% space saving)
- Freely and directly install from 5 sides as standard
- Maintenance improved by new installation method
- New: Rotation-stop type (M), fine speed type (F), and clean room type (P7*/P5*)

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



Pneumatic cylinders | CB-029SA

Space saving type

Small compact cylinder

MSD/MSDG Series

- Axial length and installation space is reduced
- Design with long service life - 4 times greater than conventional
- Oil retaining copper bearing is adopted for the rod bearing section to improve wear resistance
- Select between two piping directions: body side and bottom
- Can be mounted directly from 3 directions

Bore size $\varnothing 6$ to $\varnothing 16$



Pneumatic cylinders | CB-029SA

Space saving type

Flat and compact cylinder

FC* Series

- Rectangle flat cylinder with cylinder width dimension reduced by 50%
- Easily installable in a narrow space
- This flat cylinder comes with a rotation-stop function as standard
- Wide variety of cylinder switches
- Five types of inside diameter: $\varnothing 25$ to $\varnothing 63$

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



Pneumatic cylinders | CB-029SA

With brake

Free position locking flat and compact cylinder

UFCD Series

- Lockable in any position when the piston rod is still.
- Lock direction can be freely reversed, so it can be removed even with a workpiece, etc., inserted
- Space-saving, simple design
- The cylinder body naturally stops rotation due to its oval piston structure, thus a separate rotation-stop mechanism is unnecessary
- Five types of inside diameter: $\varnothing 25$ to $\varnothing 63$

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



Free position locking flat and compact cylinder UFCD Series CC-954A

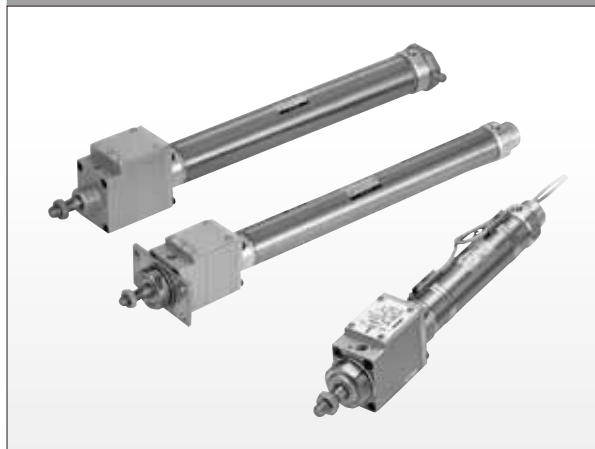
With brake

Brake cylinder

ULKP/ULK Series

- Newly developed swash plate brake is adopted for surface contact, significantly improving the rod holding power
- Brake release is easy. You have only to return the inclination of the brake plate
- Stopping accuracy is $\pm 1\text{mm}$ or less (300mm/s at no-load)
- Wide variety of cylinder switches
- Five types of inside diameter: $\varnothing 16$, $\varnothing 20$, $\varnothing 25$, $\varnothing 32$ and $\varnothing 40$

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



Pneumatic cylinders II CB-030SA

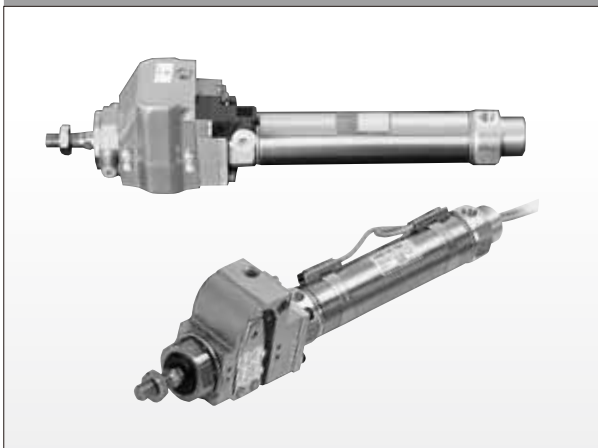
With brake

Brake cylinder

JSK2/JSM2 Series

- Non-lubricated cylinder has a unique mechanical brake
- When pressure is down or power is off, the rod is locked immediately to ensure safety
- Stopping accuracy is $\pm 1\text{mm}$ or less (300mm/s at no-load)
- Wide variety of cylinder switches
- Inside diameter: JSK2 has four types: $\varnothing 20$, $\varnothing 25$, $\varnothing 32$ and $\varnothing 40$; JSM2 has three types: $\varnothing 20$, $\varnothing 30$ and $\varnothing 40$

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



Pneumatic cylinders II CB-030SA

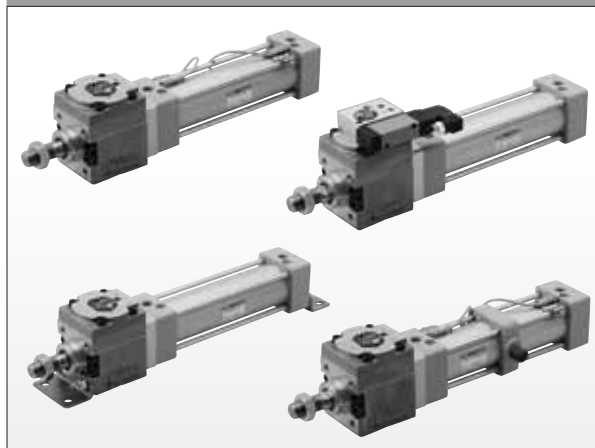
With brake

Tie-rod cylinder with brake

JSG Series

- The same braking mechanism proven to be reliable in the JSC3 Series is adopted
- Due to a unique locking mechanism, the rod holding force is twice that of the thrust force
- Compact and reliable brake section
- Wide variety of cylinder switches
- Five types of inside diameter: $\varnothing 40$ to $\varnothing 100$

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



Pneumatic cylinders II CB-030SA



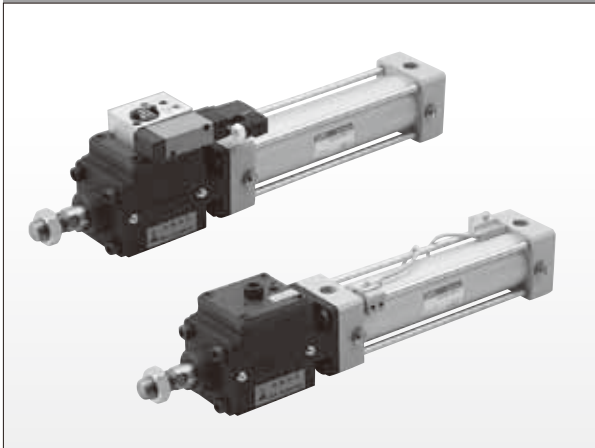
With brake

Brake cylinder

JSC3 Series

- Reliable large bore size cylinder with a unique mechanical brake
- When pressure is down or power is off, the rod is locked immediately to ensure safety
- Stopping accuracy is $\pm 1\text{mm}$ or less (300mm/s at no-load)
- Wide variety of cylinder switches
- 5 types of inside diameter: $\varnothing 40$ to $\varnothing 100$

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



Pneumatic cylinders II CB-030SA

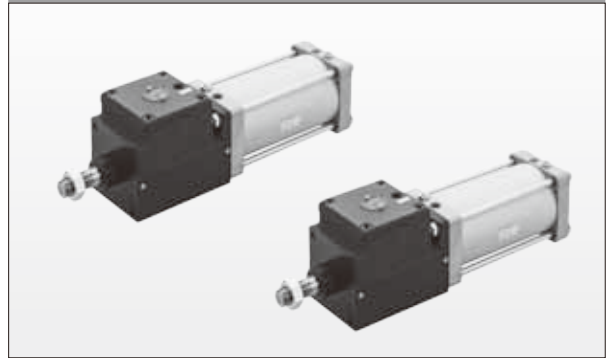
With brake

Brake cylinder

JSC4 Series

- Small switch equipped
Equipped with a T-type switch smaller than the conventional type. Saves space by eliminating protrusions when mounted.
- Magnet provided as standard (LN, LH)
Switches can be additionally mounted on all products (LN, LH).
- Ports and needle on the same surface
The air supply/exhaust ports and cushion needle are positioned on the same surface, allowing easier installation and adjustment of the cylinder.
- Installation dimensions compatibility (excluding LH)
Installation dimensions are compatible with existing product (JSC3), so no need to worry about maintenance. (*piping port position is changed.)

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



Pneumatic cylinders II CB-030SA

With brake

Position locking compact cylinder

USSD Series

- Compact cylinder is preinstalled with free locking positioning mechanism.
- Can be locked in any stroke position, including stroke end.
- Select between two positions: forward lock and back lock.
- The rod can be freely moved when lock direction is reversed.
- Unlocking is easy. Just turn the locking swash plate back to its original inclination.

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



Pneumatic cylinders II CB-030SA

With brake

Free position locking large bore size cylinder

USC Series

- Large bore size cylinder pre-installed with free lock positioning mechanism.
- Can be locked in any stroke position, including stroke end.
- Select between two positions: forward lock and back lock.
- Unlocking is easy. Just turn the locking swash plate back to its original inclination.

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



Pneumatic cylinders II CB-030SA

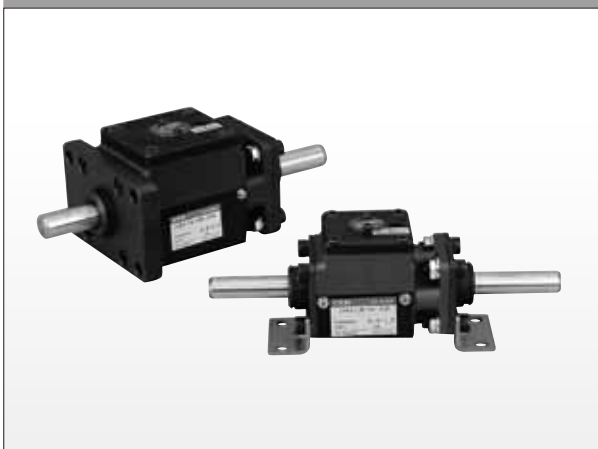
With brake

Brake unit

JSB3 Series

- Brake section of brake cylinder is separately serialized
- Retains a strong holding power of 980N to 19608N, corresponding to rod diameters of $\varnothing 16$ to $\varnothing 45$
- Stopping accuracy is $\pm 1\text{mm}$ or less (300mm/s at no-load)

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



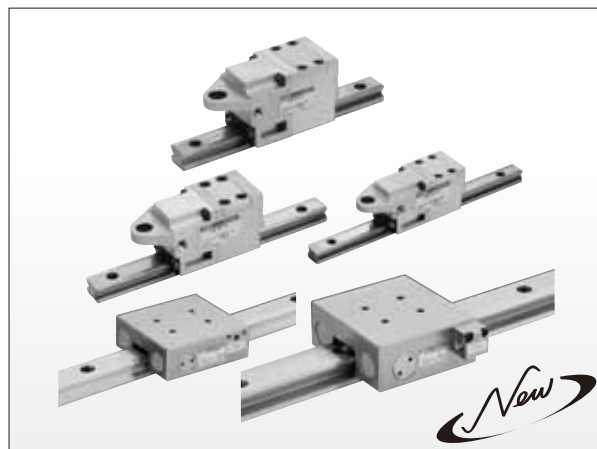
Pneumatic cylinders II CB-030SA

With brake

Linear guide lock

LML/LMB Series

- Small size but strong holding force
- Backlash at lock is very slight
- Unit available for holding when stopped, emergency stop or position locking
- Unlock with air supply (Manual release is also possible)
- Dust-proofing is handled by a scraper provided as standard in front of and behind the lock unit



Pneumatic cylinders II CB-030SA

Combined functions

Guided cylinder

STM Series

- Rigid and lateral load resisting cylinder with excellent rod non-rotating accuracy
- Space-saving type, very small for a guided cylinder
- Back piping and side installation are possible
- Two types: metal bush bearing and roller bearing

Bore size $\varnothing 6$, $\varnothing 10$



Pneumatic cylinders II CB-030SA

Combined functions

Guided cylinder

STG Series

- Ecological products
- Saves weight and resources
- Piping available in two directions: front and side; installation is possible from three sides: front, side and bottom
- Ten types of inside diameter: $\varnothing 12$ to $\varnothing 100$

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



Pneumatic cylinders II CB-030SA



Combined functions

Guided cylinder

STS/L Series

- Max. stroke 400mm $\phi 20$ to $\phi 80$
- Incorporated devices are improved in accuracy
With two guide rods using metal bush or ball bearing
- Neat design No protrusions, space-saving
- Usable with high load Comes with two guide rods
- End plate material can be chosen

Bore size $\phi 8$ to $\phi 100$



Pneumatic cylinders I CB-029SA

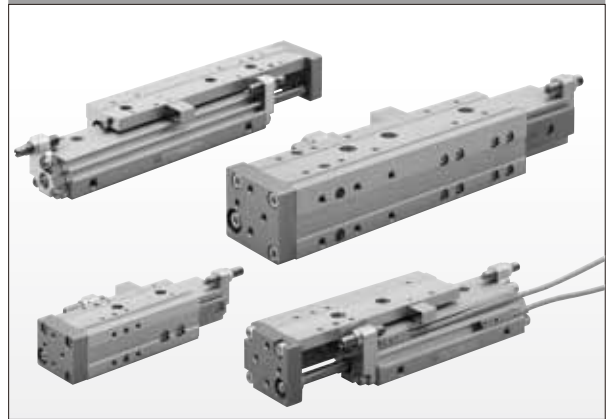
Combined functions

Linear slide cylinder

LCW Series

- Specifications you're familiar with provided as standard
Bore sizes ($\phi 12$, 16, and 20) and stroke length (30, 50, 75) are summarized in three types. Stroke length adjusting capability is equipped as a standard
- By inheriting traits of LCR, achieved high rigidity and lightness
- Installed on 3 planes
By adopting innovative L-type table, achieved high flexibility in design
- Piping directions and wiring directions are on the same plane
Simple piping and wiring result in better workability and visibility
- Small size, space-saving
Length reduced 27% in axial direction, and area by 20%

Bore size $\phi 12$, $\phi 16$, $\phi 20$



Linear slide cylinder LCW Series CC-1132A

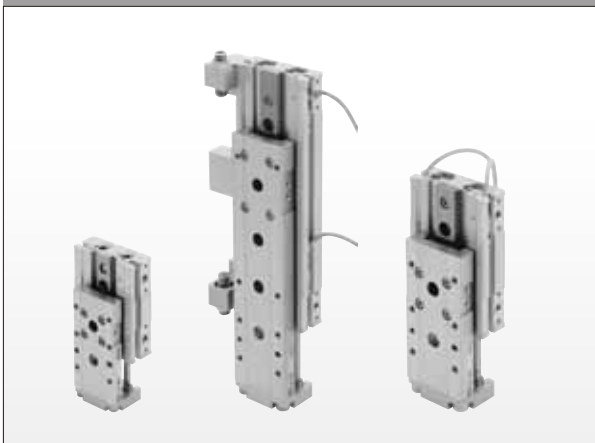
Combined functions

Linear slide cylinder Standard model

LCR Series

- Aluminum table is adopted to reduce weight by 10%
- Higher rigidity with rigid linear guide and slide table
- More flexible design, with features such as laterally symmetrical stoppers, multi-side piping and positioning holes

Bore size $\phi 6$ to $\phi 25$



Pneumatic cylinders II CB-030SA

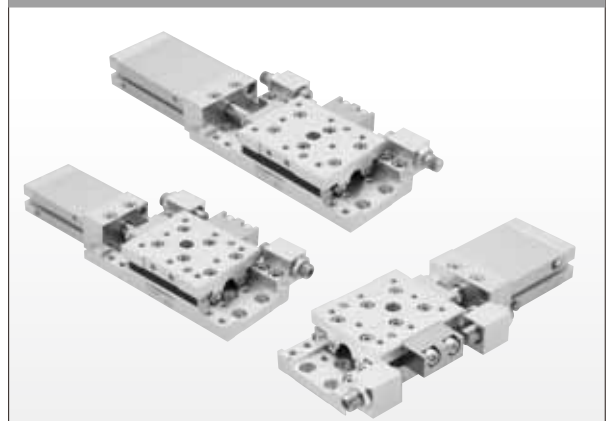
Combined functions

Linear slide cylinder Thin/Light/High rigidity type

LCX Series

- Thin type design
Exhaustive thinning: conventional dimension halved from 60 mm to 34 mm, optimizing space-saving use
- For reducing tact time and energy
Conventional product weight halved, enabling the moving parts to be lighter
- High precision and high rigidity
Uses a separate type linear guide
- Wide variety of options, such as flexible combination, position locking type, long stroke type, and dowel hole-equipped type

Bore size $\phi 25$, $\phi 32$



Pneumatic cylinders II CB-030SA

Combined functions

Linear slide cylinder Super-high rigidity model

LCG Series

- Uses the world's top-class wide guide to achieve the highest rigidity in the industry
- Aluminum table is adopted to reduce weight by 10%
- Higher rigidity with rigid linear guide and slide table
- More flexible design, with features such as laterally symmetrical stoppers, multi-side piping and positioning holes

Bore size $\varnothing 6$ to $\varnothing 25$



Pneumatic cylinders II CB-030SA

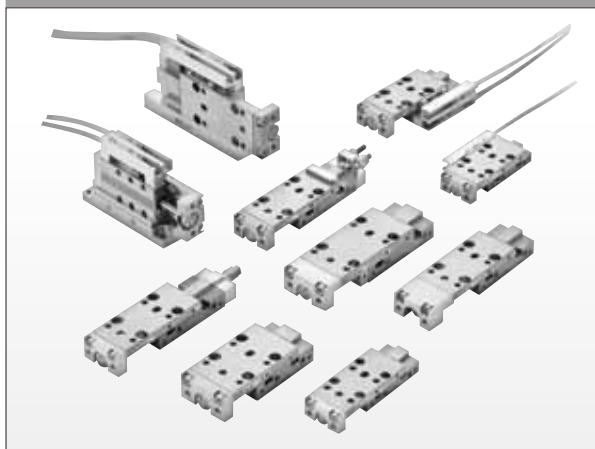
Combined functions

Linear slide cylinder Miniature model

LCM Series

- Best for high precision positioning
- With the size installable in a narrow space, piping flexibility is increased
- Workpiece can be direct installed on the top and front of table
- Corrosion-proof stainless steel is adopted for the cylinder body and slide table
- 4-point contact linear guide is adopted. Load in all directions is supported

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



Pneumatic cylinders II CB-030SA

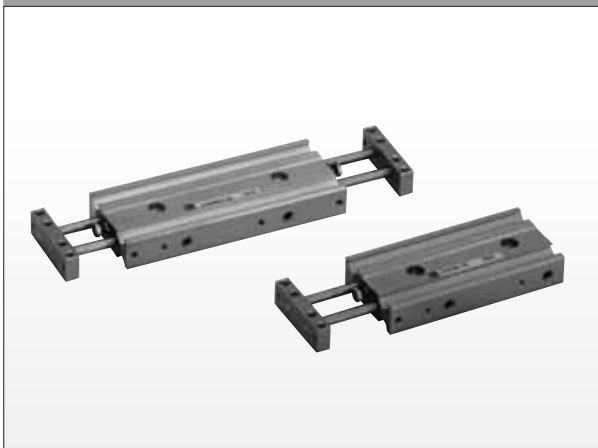
Combined functions

Twin rod cylinder

STR2 Series

- High-level non-rotating accuracy
- Selectable bearing
 - Two types of bearings are available: metal bush and ball bearings
- Space-saving
 - Switch neatly contained in the cylinder body
- Miniature type is available.
 - Miniature type of $\varnothing 6$ added
- Installation on both sides of piping port

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



Pneumatic cylinders II CB-030SA

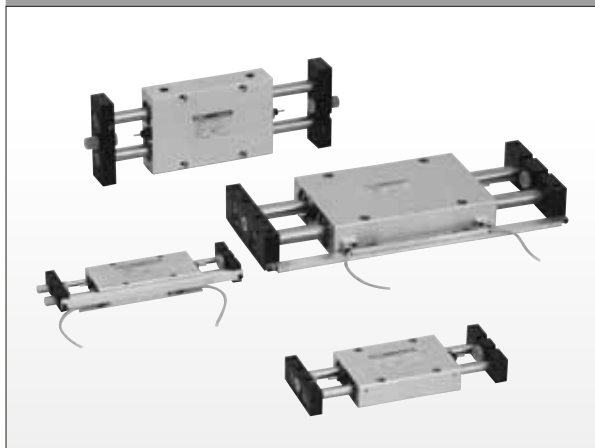
Combined functions

Unit cylinder

UCA2 Series

- Best for simplified robots
 - Its modular design makes it suitable for simplified robots used in assembly, conveyance, etc.
- Two type of usage
 - Two types are available depending on the usage: body and end plate mounting
- High position accuracy
 - This double rod type has excellent orbital position accuracy

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



Pneumatic cylinders II CB-030SA



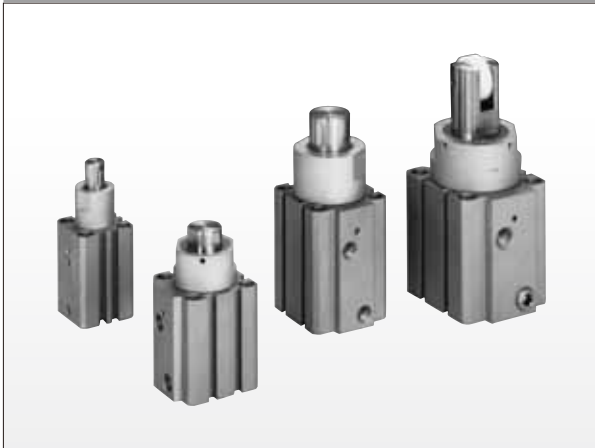
Combined functions

Stopper cylinder

STK Series

- Designed for high loads
Uses a rod one level thicker than standard
- Direct installation with hexagon socket bolts
- Space-saving & square shape
- Three types of actuation
Depending on the use, double acting type, single acting pull type, and double acting spring integrated type are available
- End shape can be chosen
Round rod type, chamfered type and roller type are available

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



Pneumatic cylinders I CB-029SA

Combined functions

Stopper cylinder

STA2 Series

- Adjustable shock absorber is adopted to support various loads
- Roller material can be chosen between resin and steel
- Actuation can be chosen between double acting type and double acting spring integrated type

Bore size $\varnothing 50$



Stopper cylinder STA2 Series CC-1005A

High-speed type

High speed cylinder

HCA Series

- New packing is adopted to realize high speed drive
- Allowable max. speed 3,000mm/s. A wide range of conditions are supported.
- Impact absorption is smooth at 3,000mm/s
- Eight types of inside diameter: $\varnothing 20$ to $\varnothing 100$

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



Pneumatic cylinders II CB-030SA

High-speed type

High energy absorption cylinder

HCM Series

- New cushioning mechanism enables smooth stop at stroke end
- Allowable max. speed 2,000mm/s. A wide range of conditions are supported. Easy adjustment mechanism
- Impact-absorbing capacity is five times larger than conventional cylinders
- Cushion packing of floating type. Projecting at start is prevented
- Six types of inside diameter: $\varnothing 20$ to $\varnothing 63$

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



Pneumatic cylinders II CB-030SA

Rodless type

Rodless cylinder

SRL3 Series

- Due to flat piston, thin type design with a very low table position.
- Due to a flat piston, more load can be set allowing for a high load capacity with baffle function
- Built to withstand high speeds for high-speed packing
- You can select between common port (one-way piping) and standard port
- Wide variations, such as guided type, position locking type, and type with dustproof cover
- Ten types of inside diameter: $\phi 12$ to $\phi 100$

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



Pneumatic cylinders | CB-029SA

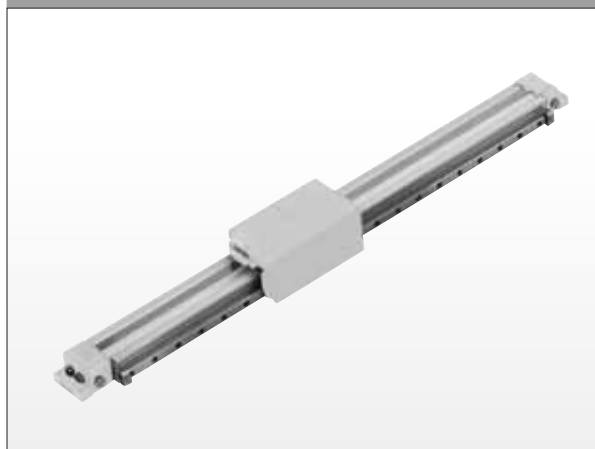
Rodless type

High precision guided rodless cylinder

SRG3 Series

- Rodless cylinder is integrated with uniaxial high precision guide
- Four types of inside diameter: $\phi 12$ to $\phi 25$
- Built to withstand high speeds for high-speed packing
- You can select between common port (one-way piping) and standard port
- Wide variety of cylinder switches

Bore size $\phi 12$ to $\phi 25$



Pneumatic cylinders | CB-029SA

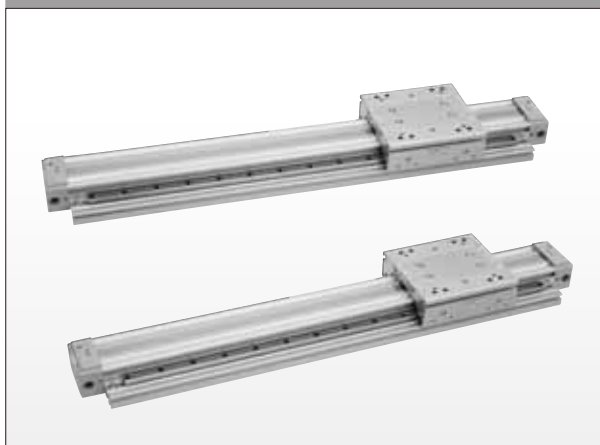
Rodless type

High precision guided rodless cylinder

SRM3 Series

- Rodless cylinder is integrated with biaxial high precision guide
- Tubes can be fixed directly from top or bottom. The bottom has a T slot
- You can select between common port (one-way piping) and standard port
- Wide variety of cylinder switches
- Four types of inside diameter: $\phi 25$, $\phi 32$, $\phi 40$ and $\phi 63$

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



Pneumatic cylinders | CB-029SA

Rodless type

Rodless cylinder with brake

SRT3 Series

- Rodless cylinder is integrated with newly developed swash plate brake for surface contact.
- Brake release is easy. Just turn the brake plate back to its original inclination
- Stopping accuracy is ± 1 mm or less (300mm/s at no-load)
- Wide variety of cylinder switches
- Eight types of inside diameter: $\phi 12$ to $\phi 63$

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



Pneumatic cylinders | CB-029SA



Rodless type

Magnet type rodless cylinder

MRL2 Series

- Thin type design with a low slide table. And installation is direct
- Two types of pistons available: single (one piston) and twin (two pistons)
- Piping can be selected between two directions: axial and lateral
- Twin (two pistons) type doubles the cylinder thrust
- Proximity cylinder switch can be mounted
- Six types of inside diameter: $\varnothing 6$ to $\varnothing 32$

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



Pneumatic cylinders | CB-029SA

Rodless type

Magnet type rodless cylinder with high precision guide

MRG2 Series

- High precision and high rigidity with a linear guide
- Thin type design with a low slide table. And installation is direct
- One side common porting is possible
- Two workpiece installation faces
- Wide variety of cylinder switches
- Inside diameter: $\varnothing 10$, $\varnothing 16$, $\varnothing 25$

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



Pneumatic cylinders | CB-029SA

Rodless type

Shuttle mover

SM-25 Series

- Combination of units enables 3-D conveyance at will
- O-ring is adopted for the joint section of each unit, realizing no air leaks, simple structure and easy assembling

Bore size $\varnothing 25$



Pneumatic cylinders | CB-029SA

Clamp cylinder

CAC4 Series

- Cylinder only for clamp work
- Various switches, such as reed, proximity, two-color indicator and strong magnetic fields, can be mounted
- Four types of inside diameter: $\varnothing 40$, $\varnothing 50$, $\varnothing 63$ and $\varnothing 80$
- Two types available for switch mounting method: band method in which switch rotating and moving are adjustable and tie rod method

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



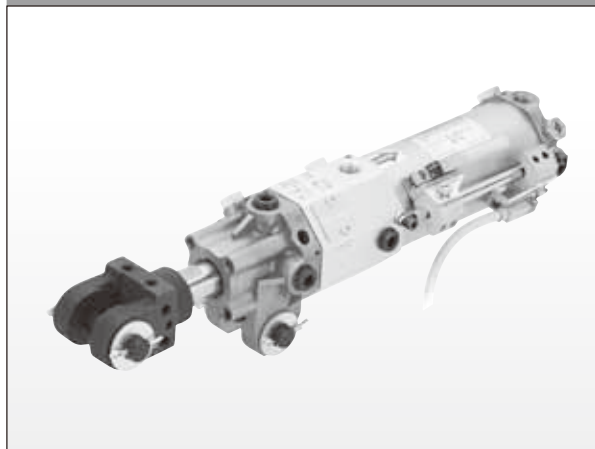
Pneumatic cylinders II CB-030SA

Position locking clamp cylinder

UCAC2 Series

- Clamp cylinder is preinstalled with free locking positioning mechanism
- Lockable in any position
- Select between forward lock and back lock.
- The rod can be freely moved when lock direction is reversed.
- Unlocking is easy. Just turn the locking swash plate back to its original inclination.
- There are two types of switch mounting: the band method for freely adjusting the switch rotation and movement, and the tie rod method.

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



Pneumatic cylinders II CB-030SA

Lightweight clamp cylinder/ Lightweight position locking clamp cylinder

CAC-N32/40 Series

- Uses the highly reliable and lightweight CMK2 series for cylinder body
- Various switches, such as reed, proximity, two-color indicator and strong magnetic fields can be mounted

UCAC-N32/40 Series

- CAC-N series is preinstalled with the free position locking mechanism
- Locking is possible at any position when the cylinder is stationary
- Free locking in the reverse direction

Bore size $\varnothing 32$, $\varnothing 40$



Pneumatic cylinders II CB-030SA

Rotary clamp cylinder

RCS Series

RCC2 Series

- Space-saving & square shape
- Two guide slots are adopted for total bore to make them wear-resistant
- Six types of inside diameter: $\varnothing 16$ to $\varnothing 63$

Bore size $\varnothing 16$ to $\varnothing 63$



Pneumatic cylinders II CB-030SA



Special function type

Lifter cylinder

LFC-KL Series

- Allowable eccentric load and allowable torque improved
- Rubber air cushion to effectively reduce the impact noise and impact acceleration at stroke end is equipped as standard
- Table face is enlarged to improve user-friendliness
Our direct drive actuator ABSODEX Series can be equipped

Bore size $\varnothing 100$



Lifter cylinder LFC-KL Series CC-902A

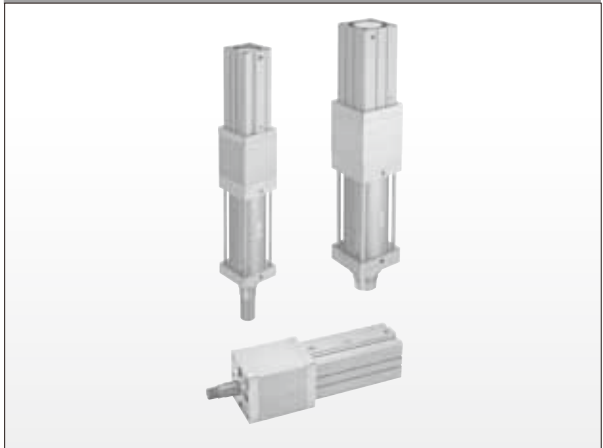
Special function type

Mechanical power cylinder

MCP Series

- High thrust power (2t and 5t) is realized in any position with only a pneumatic source
- Eco-friendly cylinder with no waste oil as it is made up of pneumatic circuits
- Moving section cylinder and booster section cylinder have nearly the same inside diameter, saving space
- Installation direction is free

Effective thrust for 2t and 5t



Mechanical power cylinder MCP Series CC-958A

Special function type

Balancer unit

BBS Series

- Load of max. 200kg can be balanced down to 5 kg, enabling little power to lift workpieces, etc.
- Brake is equipped as standard. A safety mechanism to prevent workpieces from dropping even if air is cut off
- Weight change by workpiece is automatically recognized to keep best balance (BBS-A)
- Supports all-air methods without electricity. Usable in explosion proof atmosphere

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



Balancer unit BBS Series CC-960A

Related products

Extremely low sliding balancing cylinder

BBS Series

- A balancing cylinder that does not cause stress for workers
- Position locking mechanism (BBS-OU type) designed with safety in mind
- Low sliding with special packing and processing
- Compatible with lateral load (BBS-OS/OU-B type)



Extremely low sliding balancing cylinder BBS Series CC-1212A

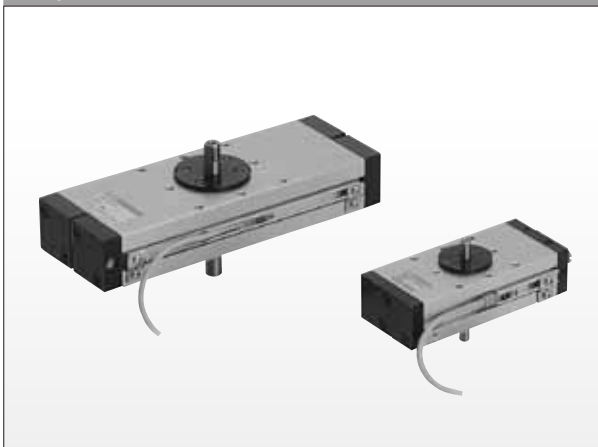
Oscillation & rotary drive type

Rotary actuator (Rack and pinion)

RRC Series

- Rack-and-pinion type rotary actuator
- Angle adjusting type is also available
- Torque: 0.7, 3.1, and 5.6N•m Angle: 90° to 270°

Torque 0.7 to 5.6N•m



Pneumatic cylinders II CB-030SA

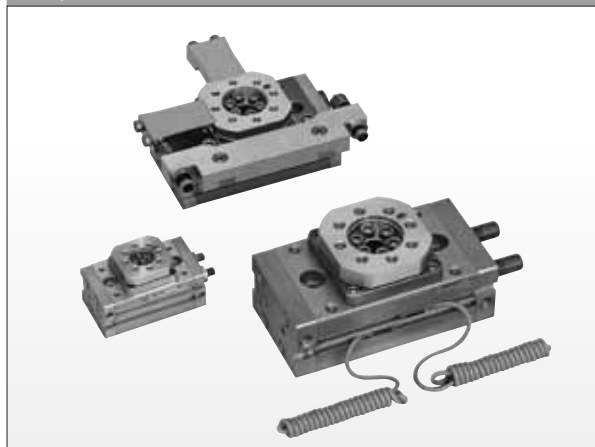
Oscillation & rotary drive type

High precision rotary actuator

GRC Series

- Rack-and-pinion type, table type rotary actuator
- You can choose between standard type and high precision type with the same dimensions
- 90° specification and 180° specification are individually available
- Extraction direction of piping port can be chosen from three sides
- Six types of torque size: 0.5, 1, 2, 3, 5.2 and 8.1N•m

Torque 0.5 to 8.0N•m



Pneumatic cylinders II CB-030SA

Oscillation & rotary drive type

Fine speed fan rotary actuator

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
- Small size, light weight and high torque
- Multiple mounting sides for all installation places

Torque 0.35 to 2.71N•m



Fine speed rotary axis type SFR table type SFRT Series CC-984A

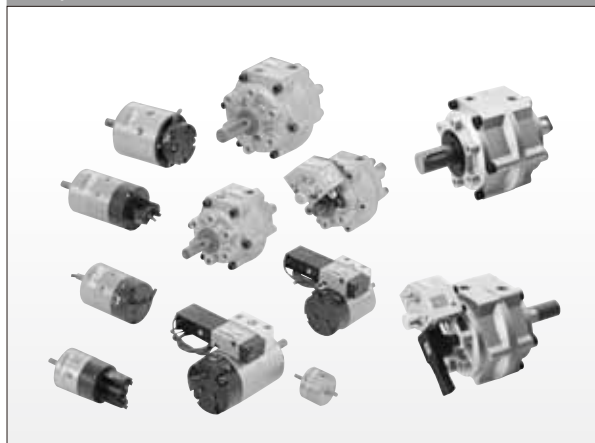
Oscillation & rotary drive type

Rotary actuator (vane)

RV3* Series

- Small size, lightweight and high durability
- Oscillation origin can be selected between 45° and 90°, expanding the installability for devices
- Wide variations, such as valved type, angle variable type and low hydraulic type
- Switch is available
- Torque: 0.12 to 206N•m

Torque 0.12 to 206N•m



Pneumatic cylinders II CB-030SA

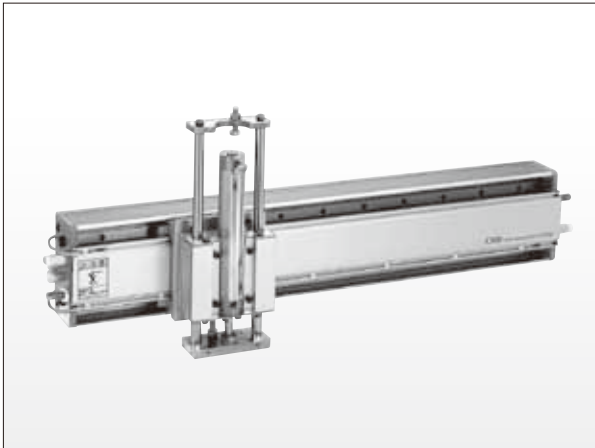


Unit components

New handling system

NHS Series

- Combine modules like building blocks
This conveyance system targets at being able to freely combine parts depending on its usage.
- High rigidity & high precision
Drive part of X-axis module is a guided rodless cylinder with a linear guide incorporated
- Compact and easy to attach
Attachment is easy in a narrow space due to concentrated ports for piping
- Reduction of design man-hours and assembling man-hours
X-axis, Z-axis and attachment can be selected according to the application



Pneumatic cylinders II CB-030SA

Unit components

Hybrid robot

HR Series

- R-axis and Z-axis in HRL-1 Series are thin and have high rigidity
- Bearing section uses ball bearing
- Position detection switch, shock absorber and speed control valve are equipped as standard



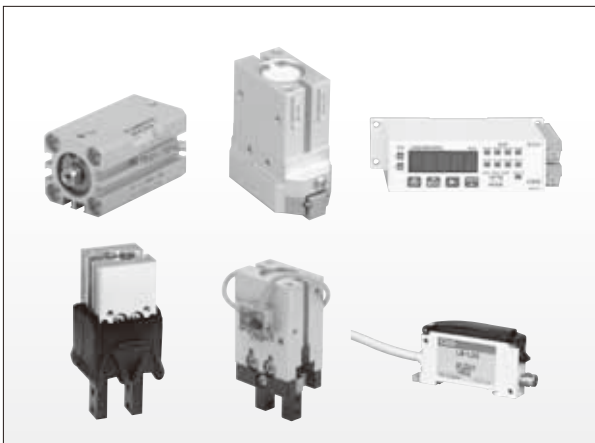
Pneumatic cylinders II CB-030SA

With length measuring function

Cylinder/hand with length measuring sensor

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

- This air compressor is in a dimension of its own with its small cylinder and hand component having length measuring sensors to simultaneously perform the functions of actuator, length measuring and grip detection.
- Analog output type provides linear voltage outputs in a specified stroke range, thus it can perform as an actuator while simultaneously measuring the workpiece length.
- Since the intermediate grip of workpiece can be detected, various needs of workpiece transfer are met, including detection of mixed workpiece or abnormal grip.



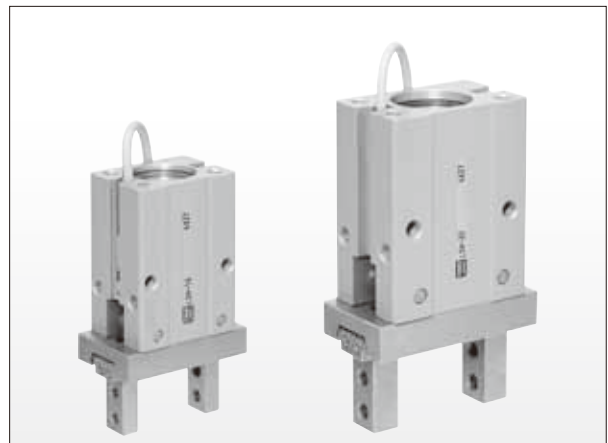
Pneumatic cylinders II CB-030SA

Related components

Linear slide hand

LSH Series

- High rigidity and high precision
Linear guide enables high rigidity and high precision.
- High flexibility in design
This can be mounted in one of the three orientations: axial (top), lateral, and longitudinal.
- Equipped with impact absorbing mechanism
Original shock-absorbing mechanism (custom order) grips the work piece firmly with less shock even at high speed. Reduces impact to approximately 1/30.



Linear slide hand LSH Series CC-1221A

Related products

Hand and chuck

- A wide range of models, variations and options.
- Make a selection that fits your needs.
- Various types of cylinder switches available.



Pneumatic cylinders II CB-030SA

Related products

Linear guide hand (Long stroke)

LHA-**-L1 Series

- With twice the length of stroke of the existing model LHA series, usable in common among various workpiece sizes
- As the body is thin, more than one can be placed
- Adopts an integrated linear guide with high rigidity, high accuracy and long durability



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

Related products

Low-profile long stroke hand

HLF Series

- Uses double piston method for high gripping power
- With long stroke length, usable in combination with various workpiece sizes
- Thinner and lighter than the existing model HLC series
- Mountable in four directions



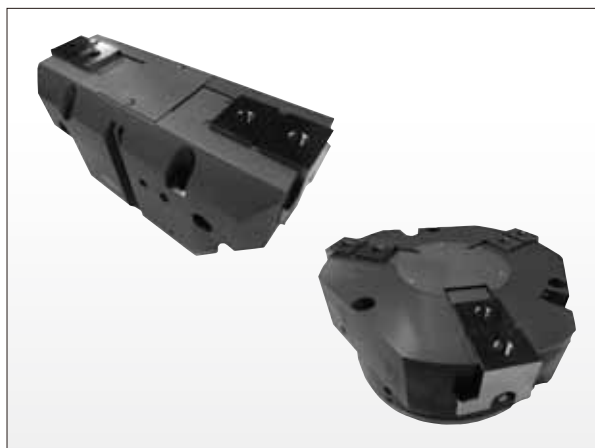
Low-profile long stroke hand HLF Series CC-1152A

Related products

Hand and Chuck with high gripping force

HHC, HHD Series/CKT, CKU Series

- High gripping force and long jaws, suitable for large workpieces
- With long stroke length, usable in combination with various workpiece sizes
- Compact and material optimized
- High gripping force: 8333 N (theoretical value at 0.5 MPa)



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



Related products

Shock absorber

SKL Series

- Shortened operation time for fast machine cycle
- Improved durability
- Direct stopping
No external stopper required.

NCK Series

- Best for the impact absorption of thrust and low speed energy
- Simple design & compact size
- Linear stop is achieved by a slit orifice
- Wide absorption range and easy to attach without adjuster
- Maximum absorption energy can be selected from a wide range of 1J to 200J

SCK Series

- Adjuster optimizes capacity adjustment
- Detent mechanism is adopted to keep the adjuster normal in use
- Usable with a wide temperature range of -10°C to $+80^{\circ}\text{C}$
- Wide range of 17 models
- Maximum absorption energy can be selected from a wide range, 0.049J to 588J

FCK Series

- Three types are available: 1m/s for low speed, 2m/s for medium speed and 3m/s for high speed
- Three types of orifice: single-hole, adjustable multi-hole and multi-hole
- Usable with a wide temperature range of 5°C to 70°C
- Adjuster optimizes capacity adjustment
- Maximum absorption energy can be selected from a wide range, 1.5J to 720J



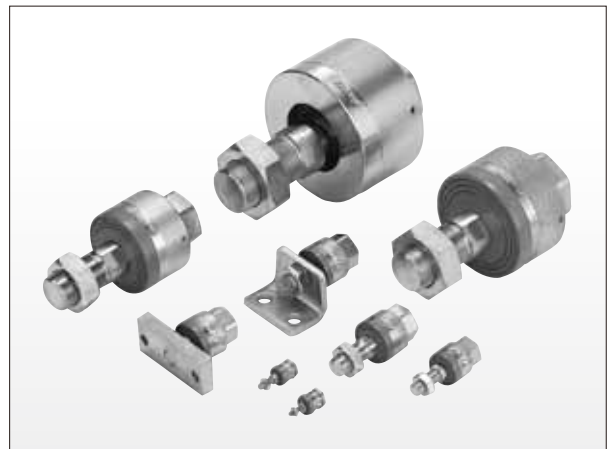
Pneumatic cylinders II CB-030SA
Shock absorber SKL Series CC-1236A

Related products

Floating joint

FJ Series

- Eliminates misalignment and parallelism defects during cylinder mounting to achieve smooth rod actuation
- Three types are available: basic type, flange type and foot type
- 18 types of screw size: M3 to M45



Pneumatic cylinders II CB-030SA

Related products

Simplified floating joint

FK Series

- Simplified floating joint that eliminates misalignment and parallelism defects during cylinder mounting
- 8 types of male threads and 13 types of female threads



Pneumatic cylinders II CB-030SA

Magnet suction hand

MHC2 Series

- Capable of securely attaching to oily steel plates and those with punched-out holes.
- Suction force can be chosen from three types of 50, 100, and 200 N.
- No air is used during suction, and this uses less energy compared to the common vacuum pad.
- Rubber pieces to prevent slipping of the suctioned workpieces are part of the standard equipment.



Magnet suction hand MHC2 Series CC-1209A

Flexible support

FSB Series

- Retains the copied shape of any workpiece.
- Setup can be easily changed when the shape of the workpiece is changed.
- Can be used as a robot hand.



Flexible support FSB Series CC-1210A

Free position lock unit

FPL Series

- Just by pressing this against a surface, you can adjust the object to be parallel to it.
- Unique locking mechanism retains the angle.
- No special jig is required.
- Holds the work piece within the range of up to $\pm 20^\circ$.



Free position lock unit FPL Series CC-1211A



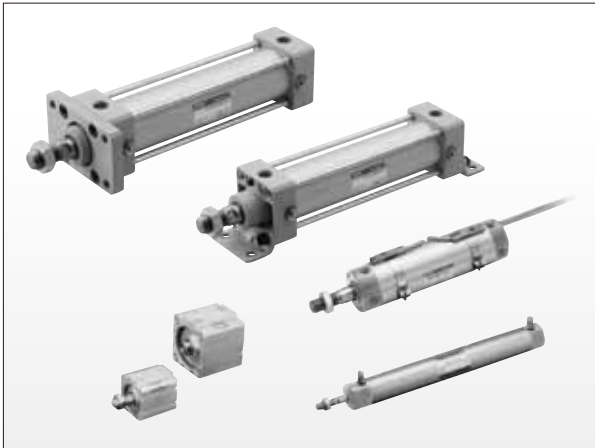
ACTUATORS

High performance type

Low friction cylinder

U Series

- Newly developed special sliding packing
- Smoothly follows the pressure fluctuation from low pressure to high pressure
- Smooth and stable actuation even at 10mm/s
- Various models and sizes are available
- Various switches, such as reed, proximity and two-color indicator can be mounted



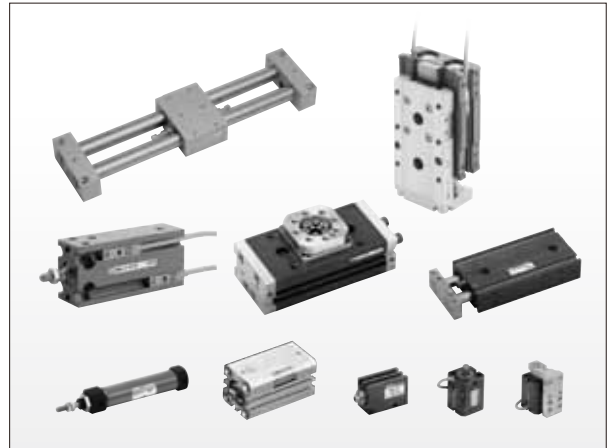
Low friction cylinder CC-620

High performance type

Fine speed cylinder

F Series

- Smooth actuation with no stick slip at super-low speed up to 1mm/s
- Smooth actuation and stop at stroke rise and end
- 10 models with inside diameters of $\varnothing 6$ to $\varnothing 100$
- Various switches, such as reed, proximity and two-color indicator can be mounted

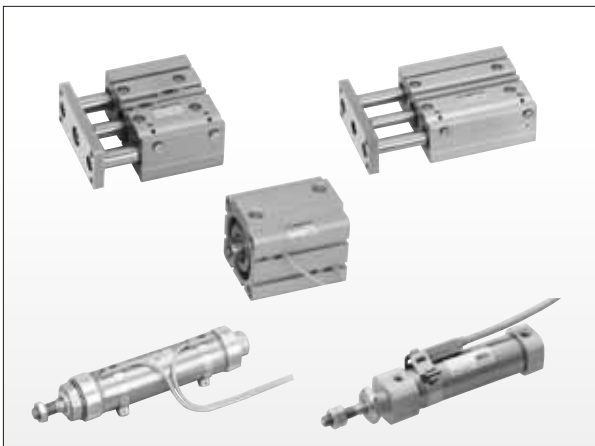


High performance type

Cylinder with rubber and air cushion

*C Series

- Reduced collision noise level
- Reduced collision deceleration
- Adjustments unnecessary by cushion needle, etc.
- All models have the same dimension as the standard type



High performance type

Air bearing actuator

LBC Series

- Air hydrostatic type soft actuator based on non-contact air bearing mechanism with zero sliding resistance
- Clean environment is supported
- Due to allowable minimum load control of 0.01N, soft touch on workpiece is possible
- Workpiece can be supported with the optimum load
- Space-saving & compact
- High precision linear control of load is enabled by combination with electro-pneumatic regulator



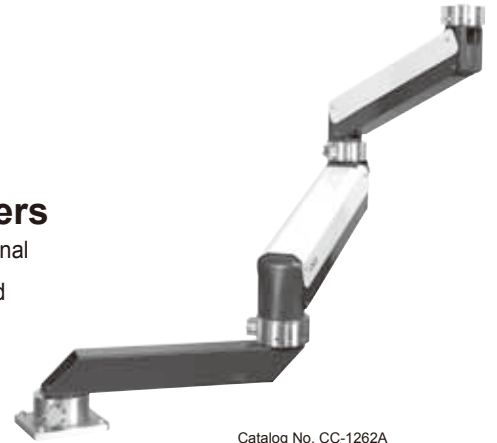
Air bearing actuator LBC Series CC-652

Power Arm (assistance mechanism)

PFB2 Series

Human assist that has evolved along with workers

Lower back pain is a type of work-related accident which accounts for 60% of occupational injuries. Transferring heavy objects is an everyday task. Burden reductions are achieved by making use of a power-assist or balancer mechanism, as well as a standalone assistance or suit type device. We at CKD make use of air pressure and propose new mechanisms as human assist equipment with our motto "All to lessen your burden".

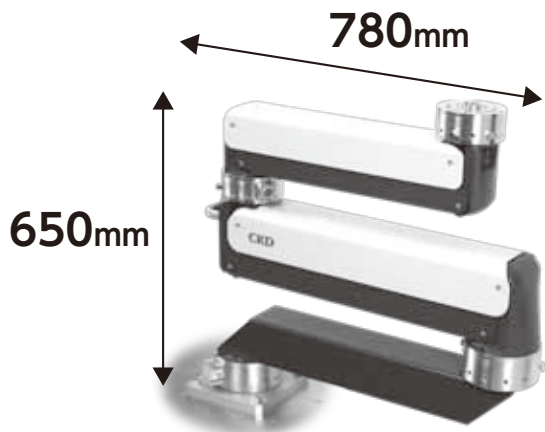


Catalog No. CC-1262A

Compact

Compact

Since it is a multi-axis type it can be folded compactly and easily stored compared to conventional arm or belt types.



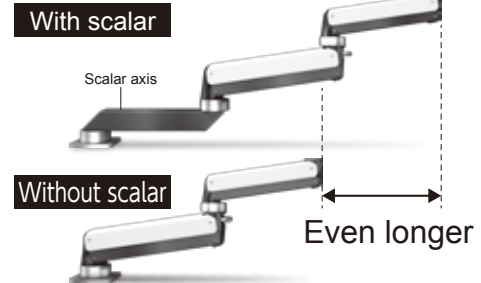
Wide

A wide movement range according to usage

Free combination is possible with either a single-axis type or a multi-axis type according to your usage or location.



For a multi-axis type, if the load is the same, a wider movement range is possible by using a scalar axis.



Light & Strong

Lightweight but highly rigid

A pneumatic cylinder is used as part of the body. Flexural and torsional rigidity are improved while remaining compact and lightweight.



Easy

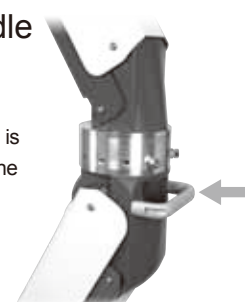
Excellent operability

The center of gravity is near to the operator and thus operation is easy. Excellent operability is achieved since the moving part is lightweight and there is little inertia.



Operating handle

An operating handle is allocated to the joints. The operability of the arm is improved and operating the arm is possible without touching the moving part.





PNEUMATIC VALVES

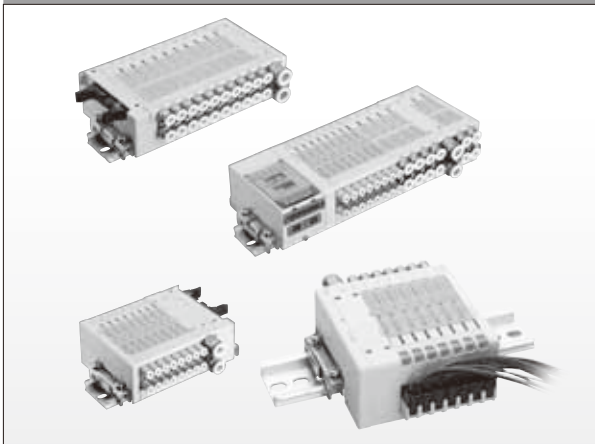
Compact 3, 4-port pilot operated valve

Compact pneumatic valve (reduced wiring valve)

MN3/4E00 • MN3/4E0 Series

- **Environment protection**
Achieves compactness and saves power by being lightweight, using a smaller amount of materials, and conserving energy. CKD is among the first to reduce environmentally unfriendly chemical substances. Lead-free solder and our other materials conform to JIG-101A Level A.
- **Small size & space-saving**
In addition to MN3/4E0 Series with 10mm of valve block width, MN3/4E00 has come with 7mm of valve block width and 7mm of manifold pitch.
The manifold still more compact with a 7 mm pitch contributing to device downsizing and integration.
- **Power saving**
MN3/4E0 Series : 0.6W
MN3/4E00 Series : 0.4W
Power saving type (option E) reduces further power consumption.
- **ø3 Push-in fitting in the lineup**
ø3 tube is supported to reduce piping volume and ensure flow rate; ø1.8 tube is also supported to save space for tubing.
- **Diversity**
 - Many electric connections and optional extras
Many electric connections are available, including serial transmission compatible with various connectors and diverse networks.
Simple, plug-in capable regulator blocks are available.
- **High performance**
 - 12ms response balanced between A port and B port.
(Our data value based on the N3E0 double 3-port valve integrated type)
 - Troublesome wiring work is unnecessary
Adoption of connectors allows wiring work to be completed during assembly.
Electrical connection for either of right and left wiring blocks or valve station number change does not affect the regularity of connector pin array.
- **Safety**
 - Prevention of malfunction
Check valve, manual override with protective cover, and filter on air supplying port against foreign substances are equipped as standard.
Intensive pursuit of safety prevents valve malfunctioning.

Applicable cylinder bore size: up to ø32



3, 4-port pilot operated valves MN3/4E Series CC-945A

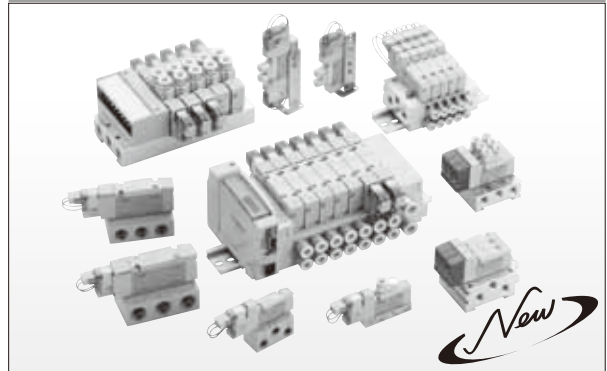
Compact & medium size pilot operated 3/4/5-port valve

Metal and resin-based pneumatic valve

4GA/B/D/E/1/2/3R • M4GA/B/D/E/1/2/3R • MN4GA/B/D/E/1/2R Series

- Cylinders up to ø100 are driven with valve width 10mm, 15mm and 18mm
New 3/4/5-port reduced wiring valve with safety function
- **Safety function reinforced by detailed response**
Equipped with manual override with protective cover, check valve and filter on air supply ports
- **Reliability enhanced**
Durability of over 100 million cycles, response time of 12ms±2ms and low wattage of 0.35W are realized
- **Ease of use enhanced**
On wiring connectors, horizontal common, wiring-saved rotating type connectors and a tool-free manual operating device are adopted
- **Wide variation**
Discrete, metal-based manifold, block manifold, individual and reduced wiring
- Various types of serial communication are available

Applicable cylinder bore size: up to ø100



Pneumatic valves in general CB-023SA

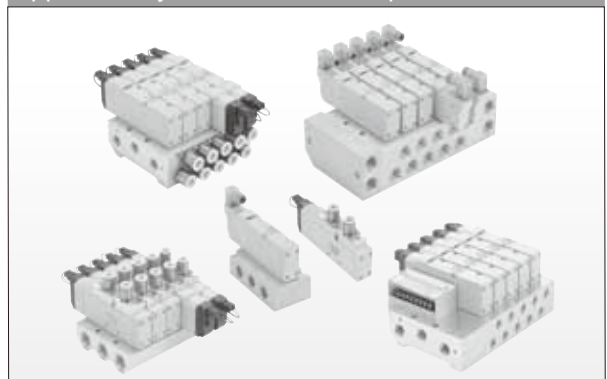
Large pilot operated 5-port valve

Metal and resin-based pneumatic valve

4G^A_B4 Series

- Large flow rate pilot operated 5-port valve (Metal-based type)
4G Series built on the concept of 4GA1/2/3 Series
- **Operability improved**
Tool-free manual override, common upper and side wiring, front extraction of P-R port, many electric connections
- **Reliability enhanced**
Durability enhanced by improving the structure of the sliding section, packing, etc. Filter on air supply port prevents foreign substances from entering
- **Safety enhanced**
Manual override with protective cover against external forces

Applicable cylinder bore size: up to ø160



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

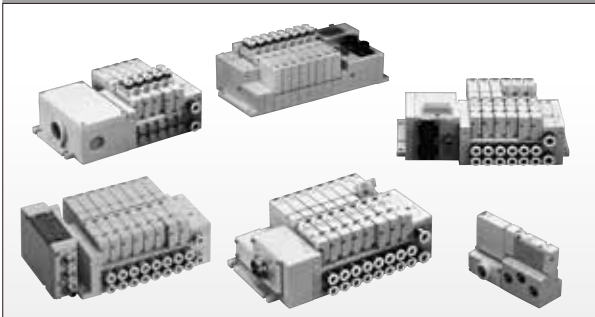
Plug-in block manifold

W4G2 Series

Environment and "Human" friendly concept of [4G²/MN4G² Series] is extended.

- Environmental consciousness enhanced
 - Halogen free lead is used for internal wiring
 - Material name is displayed on main resin material
- Environment resistance increased
IP65-compliant protection structure
- Various types of serial transmission are available
- Ease of use enhanced
 - Plug-in system is adopted for easy valve replacement
 - Connector connection between manifold blocks eliminates the need for wiring work to increase station number (for DC)
- Cylinders up to $\varnothing 80$ are driven with valve width 15mm
New 3/5-port reduced wiring valve with safety function

Applicable cylinder bore size: up to $\varnothing 80$



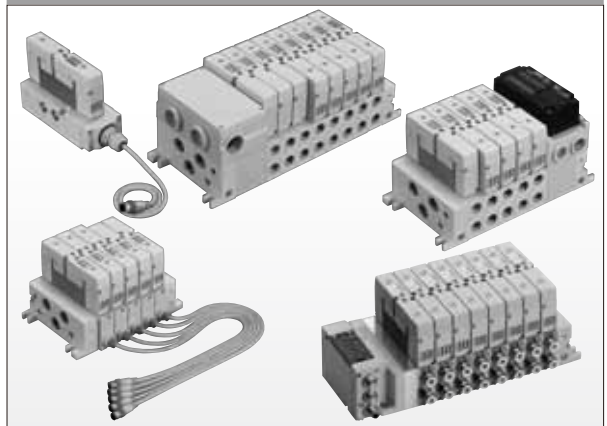
Pneumatic valves CB-023SA

Plug-in block manifold

W4G4 Series

- Cylinders up to $\varnothing 125$ are driven with valve width 25mm
Enhanced performance in installation area, workability, durability, power consumption and more
- Many electric connections and options
Serial transmission, I/O cable connector, spacer type regulator, common exhaust block, etc.
- Improvement in safety and reliability
Rubber cover on manual buttons prevents malfunctions by preventing foreign substances from entering
- IP65-equivalent protection structure

Applicable cylinder bore size: up to $\varnothing 125$



Pneumatic valves CB-023SA

Selex valve (reduced wiring valve)

MN4S0 Series

- No dead space
One-sided solenoid type with 3/4-port reduced wiring manifold valves
- For space saving of devices
Flat top, 40mm high, block manifold
Manifold pitch 11mm
- Drives cylinders up to $\varnothing 40$
 $C[\text{dm}^3/(\text{S}\cdot\text{bar})]: 0.57 \text{ to } 0.80 \text{ *1}$
- Low wattage for energy saving
Power consumption 0.6W
- Double 3-port valve integrated type is available

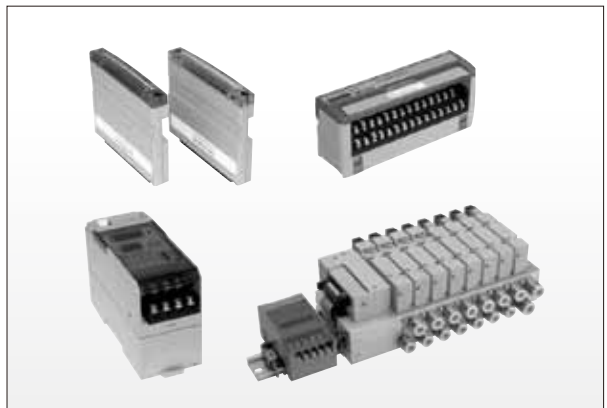
Applicable cylinder bore size: up to $\varnothing 40$



Pneumatic valves CB-023SA

UNIWIRE[®] System W Series (H function-compatible)

- Connectable to each company's PLC
UNIWIRE system is an independent transmission system which is not restrained by the type of PLC. Through a uni-connector, it can be connected to each PLC manufacturer's I/O unit and can be controlled without changing PLC program. From the viewpoint of PLC, wiring can be reduced without regard to UNIWIRE system.
- Basic specification supports 256 points (Slave station for valves is for 128-point)
- Input terminal can turn all points ON continuously (Resistance of heating element is distributed)
- STW & PTW (with H function) configuration enables to connect to 50 units
- Mixed operation with conventional UNIWIRE[®] system H series



Pneumatic valves CB-023SA

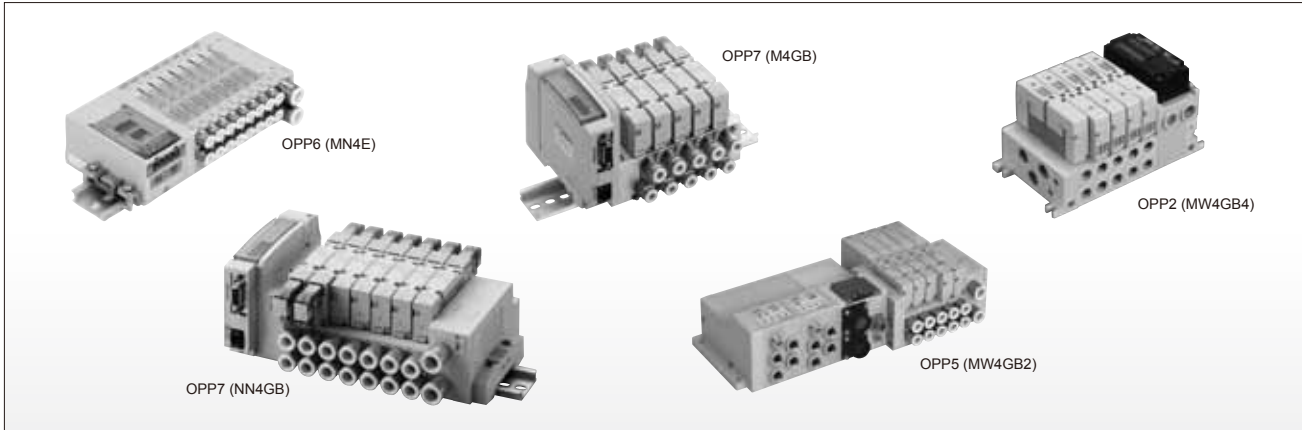
*1 Effective cross-sectional area S is determined by $S=5C$.



Network compatible solenoid valve

OPP* Series

- Solenoid valve slave unit is created for each manufacturer's network.



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 (ver. 1.10)	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 T8GP1/2	OPP7 Series	M4G, MN4G		
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		
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		
Japanese PROFIBUS Organization Siemens	PROFIBUS-DP	T8P1/2 T8PP1/2	OPP7 Series	M4G, MN4G		
		OMRON Corporation Beckhoff Automation	EtherCAT	T8EC1/2 T8ECP1/2	OPP7 Series	M4G, MN4G
T7EC1/2 T7ECP1/2	OPP8 Series			MW4G		
ODVA TAG JAPAN	EtherNet/IP			T8EN1/2 T8ENP1/2	OPP7 Series	M4G, MN4G
				CKD, KURODA Pneumatics Ltd.	UNIWIRESYSTEM	T6A0/1
UNIWIRESYSTEM	T6J0/1	OPP2 Series OPP3 Series	MW4G4, MN4TB, M4TB, LMF0 MN4S0, MN4E, MN4G, M4G			
		SUNX	S-LINK		T6E0/1 T7E0/1	OPP3 Series OPP4 Series
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 unit type
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.

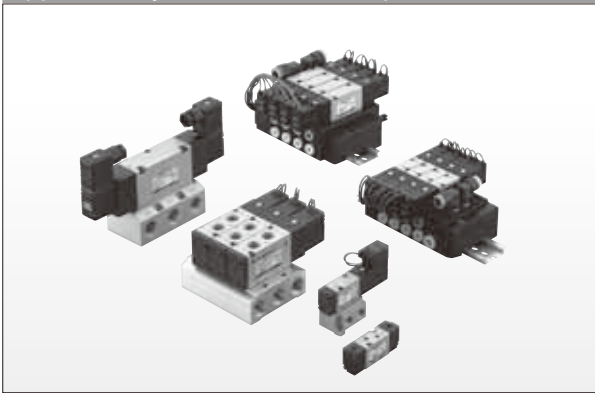
3/4/5-port pilot operated valve

Selex valve

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

- Valve width 15mm, 18mm, 23mm, 29mm. Compact 3/4/5-port valve
- Drives cylinders up to $\phi 160$
C[dm³/(S·bar)]: 0.60 to 13 *1
- Low wattage for energy saving
Power consumption 1.8W
- 2 types of pipe specification
Body piping, base piping
- 2 types of manifold
Metal-based manifold & block manifold

Applicable cylinder bore size: up to $\phi 160$



Pneumatic valves CB-023SA

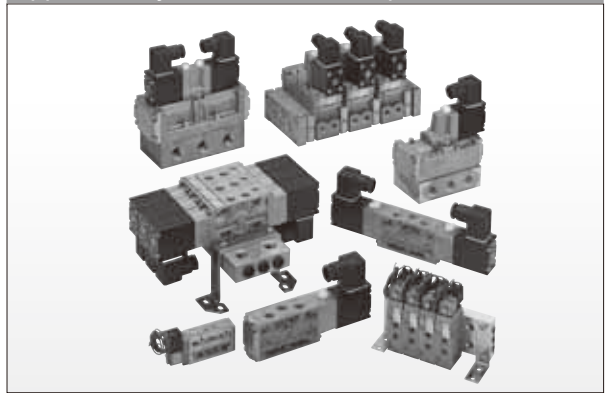
5-port pilot operated valve

Selex valve

4F/M4F Series

- Usable in a wide variety of fields
5-port valve
- Drives cylinders up to $\phi 250$
4F0 to 6 : C[dm³/(S·bar)]: 0.61 to 18 *1
4F7 : Effective cross-sectional area : 160mm²
- Soft spool method
Long durability, low frequency use possible, environment resistant (compressed air)
- Wide variations
Single unit, manifold
- Outdoor specifications option

Applicable cylinder bore size: up to $\phi 250$



Pneumatic valves CB-023SA
4F2/3 Series outdoor specification option CC-1070A

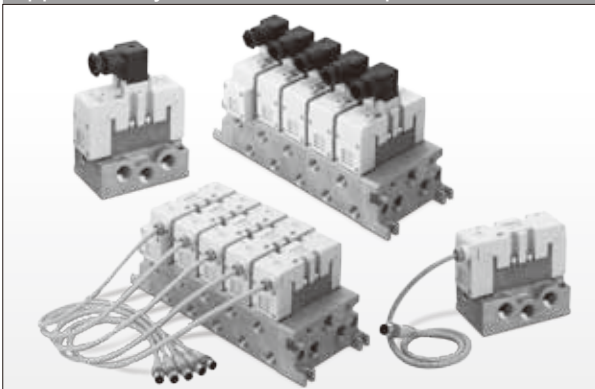
ISO valve

ISO valve

PV5G/PV5/GMF Series

- Small body size
- Improvement in operability
Operability, such as installing adjustment and maintenance, is enhanced by easy-to-press, easy-to-see design
- 2-color indicator
- Improvement in safety and reliability
Rubber cover on manual buttons prevents malfunctions by preventing foreign substances from entering
- Easy, smooth piping
Improved work efficiency as the valve body does not protrude beyond the base

Applicable cylinder bore size: up to $\phi 160$



ISO valve PV5G/PV5/GMF series CC-824A

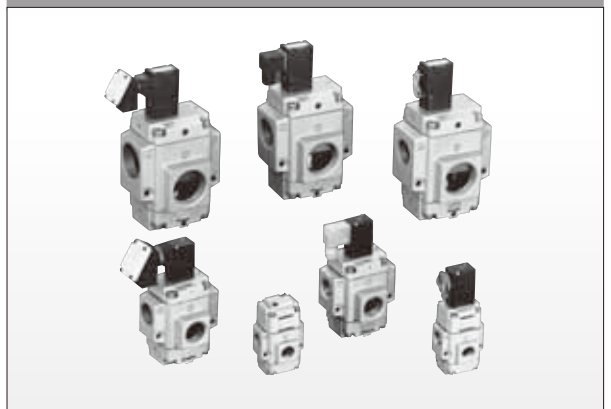
Large flow rate 3-port valve

Large flow rate 3-port valve

NP/NAP/NVP Series

- Large flow rate 3-port valve for compressed air and low vacuum
Please select from 2 types according to usage.
- Internal pilot type: NP Series
- External pilot type: NAP/NVP Series
- Compact and light weight design
- Large flow rate design
10A, 25A : C[dm³/(S·bar)]: 15 to 18
20A to 50A : Effective sectional area : 195 to 660mm²

Port size : Rc3/8 to Rc2



Pneumatic valves CB-023SA

*1 Effective cross-sectional area S is determined by $S=5C$.



PNEUMATIC VALVES

Miniature direct acting 3-port valve

Small pneumatic valve

3MA0/3MB0 Series

- For size reduction of devices
Valve width of 10mm, space-saving miniature direct acting poppet 3-port valve
- Drives cylinders up to $\varnothing 16$
0.1 to 0.15mm²
- Low wattage for energy saving
Power consumption 0.6W
- Various wire connections are available
Lead wire, C-connector, D-connector
- Wide variations
Discrete, manifold

Applicable cylinder bore size: up to $\varnothing 16$



Pneumatic valves in general CB-023SA

Miniature pilot operated 5-port valve

Small pneumatic valve

4SA0/4SB0 Series

- For space and weight reduction of devices
10mm wide miniature 5-port valves
- Drives cylinders up to $\varnothing 25$
C[dm³/(S·bar)]: 0.3 *1
- Low wattage for energy saving
Power consumption 0.6W
- Various wire connections are available
Lead wire, C-connector, D-connector
- Reduced wiring for PLC control
Flat cable, D sub-connector

Applicable cylinder bore size: up to $\varnothing 25$



Pneumatic valves in general CB-023SA

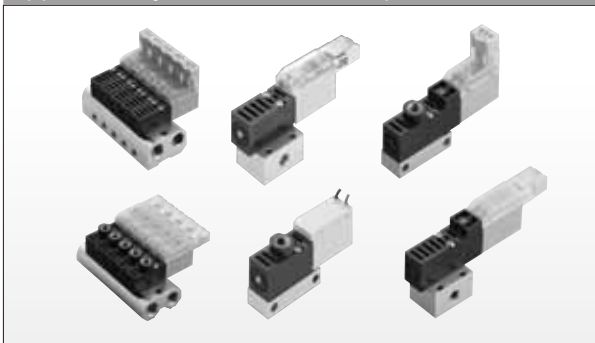
Compact direct acting 3-port valve

Compact direct acting 3-port valve

3QRA1/3QRB1 Series

- Lightweight
19g Lightest in its class, allowing for device optimization
- Compact size
Solenoid valve body width 10mm. For space reduction of devices
- Large flow rate
Effective sectional area of 2.0m (C value 0.4) realizes a large flow rate with a small light weight size.
- Response time
4ms±1ms(ON) 1.5ms±1ms(OFF) accelerates vacuum attainment and destruction.
- Long durability
Over 100 million cycles under strict test conditions.
- Conformance
RoHS, low ozone, and rechargeable battery manufacturing process are supported as standard.
- State can be maintained during power outage (self-retaining)
- No need for continuous power, allowing electric power and heat generation reduction (self-retaining type)

Applicable cylinder bore size: up to $\varnothing 25$



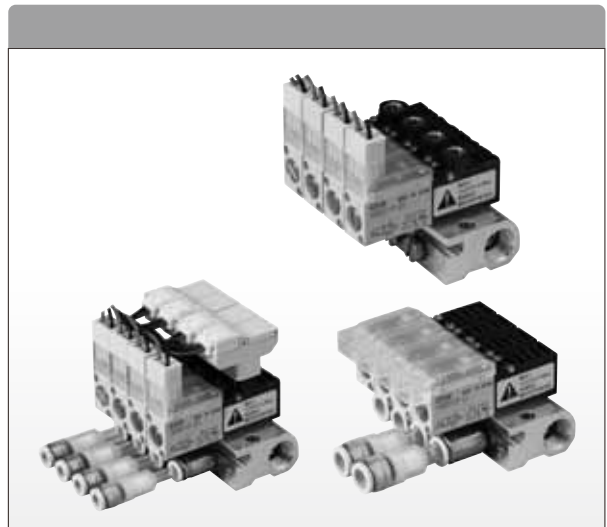
Pneumatic valves in general CB-023SA

Compact direct acting 3-port valve vacuum suction unit

3QR negative pressure switching unit

MV3QRA1/MV3QRB1 Series

- Optimized for suction transport of small objects
By taking advantage of 3QR's high responsiveness for large flow rate, you can create a stable high speed suction transport system without using any pressurized air source.
- Minimum footprint
Features minimized and optimized; achieves a thin and lightweight manifold wall without a vacuum breaking valve.
- Depending on the application, this can be mounted on the vacuum pressure sensor unit.
- Easy-to-maintain one-touch vacuum filter can be installed.



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

*1 Effective sectional area S is determined by $S=5C$.

Dual 3-port solenoid valve integrated manifold

MN3Q Series

- Compact size
Manifold height reduced to 34mm. Installable in narrow locations.
- Installation
Installation method can be selected between DIN rail installation and direct installation.
- Piping
The supply/exhaust port position can be selected freely, increasing flexibility of piping.

Applicable cylinder bore size: up to $\phi 16$



Dual 3-port solenoid valve integrated manifold MN3Q Series CC-1066A

Selex valve

3PA/3PB Series

- Low pressure and vacuum applications are widely supported
Valve width 15mm and 22mm
Compact direct acting balance poppet 3-port valve
- Drives cylinders up to $\phi 40$
 $C[\text{dm}^3/(\text{S}\cdot\text{bar})]: 0.33 \text{ to } 1.1$ *1
- Low wattage for energy saving
Power consumption 1.8W
- Various wire connections are available
Lead wire, terminal box, C-connector, D-connector
- Wide variations
Discrete, manifold

Applicable cylinder bore size: up to $\phi 40$



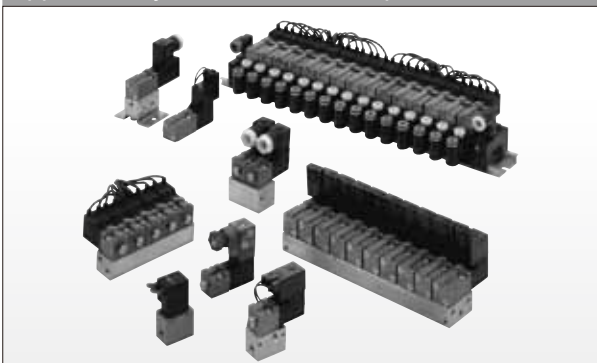
Pneumatic valves in general CB-023SA

Miniature pneumatic valve

P/M/B Series

- Block manifold enables easy assembly, piping and maintenance
Valve width 15mm Small size 2/3/5-port valve
- Drives cylinders up to $\phi 16$
 $C[\text{dm}^3/(\text{S}\cdot\text{bar})]: 0.15$ *1
- Low wattage for energy saving
Power consumption 1.8W
- Various wire connections are available.
Lead wire, terminal box, C-connector, D-connector
- Wide variations
Single-unit, metal-based manifold, block manifold

Applicable cylinder bore size: up to $\phi 16$



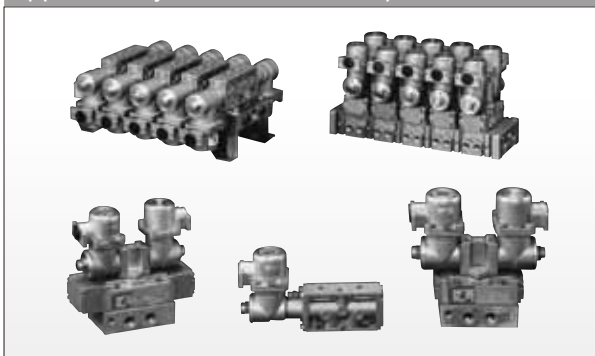
Pneumatic valves in general CB-023SA

Selex explosion proof 5-port valve

4F**0E Series

- Explosion proof functionality d2G4
Pressure and explosion proof structure, flame-proof grade 2, ignitability G4
- Drives cylinders up to $\phi 250$
4F3 to 6 : $C[\text{dm}^3/(\text{S}\cdot\text{bar})]: 3.9 \text{ to } 18$ *1
4F7 : Effective sectional area : 160mm^2
- Easy wiring
Pilot solenoid valve can be manually rotated 360° . Wiring port can be rotated by 90°
Wide wiring BOX
- Wide variations
Discrete, manifold and locking manual knob are equipped as standard

Applicable cylinder bore size: up to $\phi 250$



Pneumatic valves in general CB-023SA

*1 Effective sectional area S is determined by $S = 5C$.



PNEUMATIC VALVES

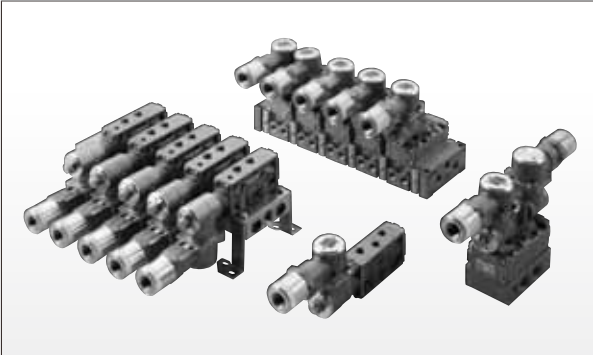
Explosion proof 5-port valve

Explosion proof 5-port pilot operated valve

4F**0EX Series

- Compatible with international explosion prevention policies
Explosion proof functionality Ex d IIB T4
Pressure and explosion proof structure d/cable IIB/temperature characteristics T4
Certificate of type examination No. TC20523
- Compatible with outdoor use
Degree of protection IP65 (dust/jet-proof)
- Wide range of selectable cable diameters:
ø7.5 to ø13.5

Applicable cylinder bore size: up to ø250



Explosion proof 5-port pilot operated valve 4F**0EX Series CC-1159A

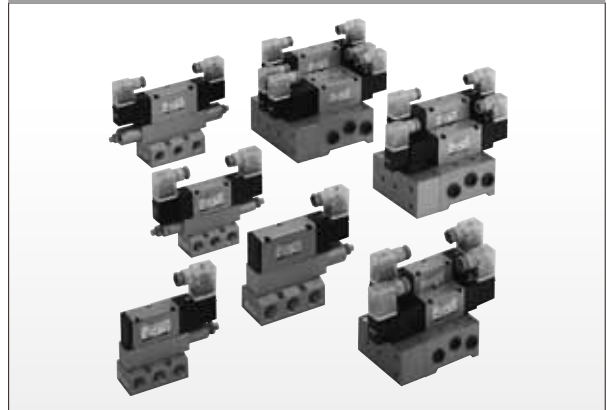
Shock absorbing valve

Shock absorbing valve

SKH Series

- Bound phenomenon at cylinder stroke end is reduced
- Drives cylinders up to ø125
C[dm³/(S·bar)]: 4.3 to 16.3 *1
- Wide variations
Speed variable unit, deceleration unit, and single-sided decelerating unit

Applicable cylinder bore size: up to ø125



Pneumatic valves in general CB-023SA

Large & super large 3/4/5-port valve

Poppet type 3/4-port valves

PCD Series

- Compact, large flow rate 3/4-port valves
Port size Rc1/4 to Rc1/2
- Drives cylinders up to ø160
Effective sectional area 23 to 58mm²
- Manual override is equipped as standard
Non-lock manual override



Pneumatic valves in general CB-023SA

Manual switchover 4-port valve

Manual switchover 4-port valve

HMV/HSV Series

- Low sliding friction and easy operation
Detent incorporated rotary type, swing lever type
- Drives cylinders up to ø160
C[dm³/(S·bar)]: 1.6 to 10.2 *1
- Port size
Rc1/4 to Rc3/4
- Wide variations
Miniature type, standard type

Applicable cylinder bore size: up to ø160



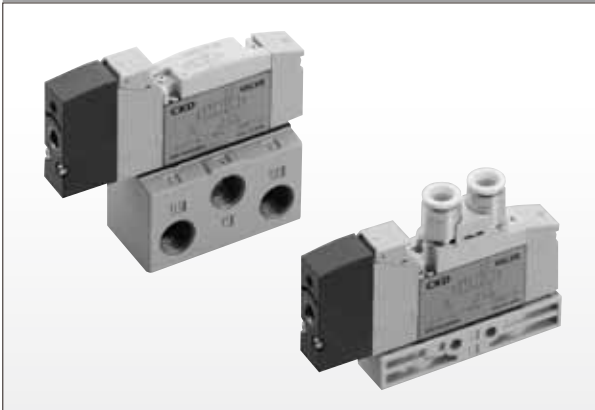
Pneumatic valves in general CB-023SA

Pneumatic valve

4G^{1/2/3R} Series

- Drives cylinders up to $\varnothing 100$
C[dm³/(S·bar)]: 0.66 to 4.5 *1
- Upgraded safety functions, reliability and user-friendliness

Applicable cylinder bore size: up to $\varnothing 100$



Pneumatic valves CB-023SA

*1 Effective sectional area S is determined by $S=5C$.

Selex valve

4K^{1/2} Series

- Drives cylinders up to $\varnothing 160$
C[dm³/(S·bar)]: 0.60 to 13 *1
- Compact types with valve width 15mm, 18mm, 23mm, 29mm

Applicable cylinder bore size: up to $\varnothing 160$



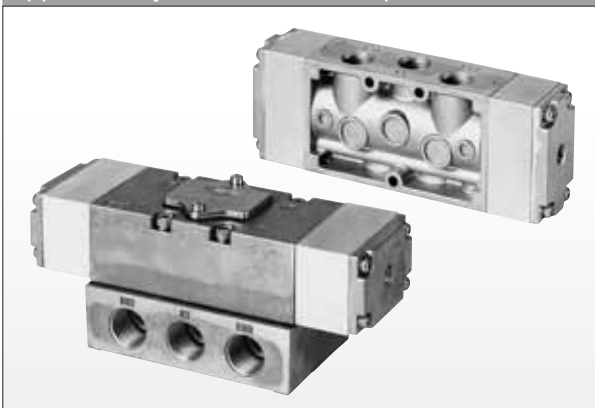
Pneumatic valves CB-023SA

Selex valve

4F Series

- Drives cylinders up to $\varnothing 250$
4F0 to 6 : C[dm³/(S·bar)]: 0.61 to 18 *1
4F7 : Effective sectional area : 160mm²
- Excellent in total performance and usable in a wide variety of fields
- Environment resistant (unconditioned air)

Applicable cylinder bore size: up to $\varnothing 250$

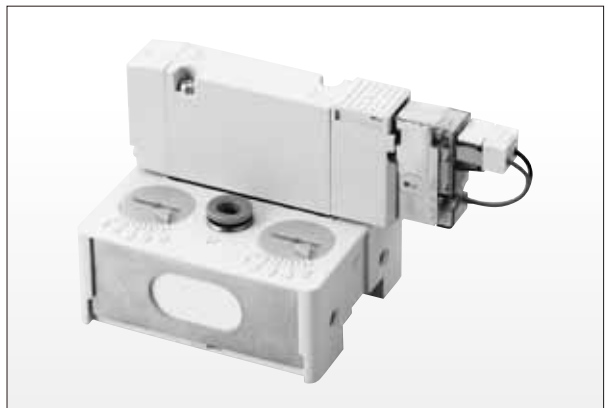


Pneumatic valves in general CB-023SA

*1 Effective sectional area S is determined by $S=5C$.

4GR Unit valve

- Three functions integrated into one unit valve (valve, speed controller, silencer)
 - Reduced man-hours for model selection, purchasing process, and installing
 - Unitization reduces footprint (by 66%*)
 - Unitization reduces weight (by 61%*)
- * Compared to the valve 4GE210R + Speed controller SC1-6 + Silencer SLW-6A assembled model
- Reduced man-hours for adjusting actuation speed by 10-step scaled speed controller



4G Unit valve CC-1134A



Speed controller

Needle valve with adjusting dial

DVL Series

- Linear flow characteristics
- Visible control of flow rates
- Usable as speed control valve
- Oil-prohibition type available
- Unrestricted installation



Needle valve with adjusting dial DVL Series CC-860A

Speed controller

Speed control valve with adjusting dial

DSC Series

- Flow characteristics in proportion to needle rotation speed.
- Adjustable speed setting
- Uses push locking method.
- Misadjustment prevention
- Reduces man-hours
- 5 port sizes from M5 to R1/2



Speed control valve with adjusting dial DSC Series CC-1021A

Speed controller

Miniature speed controller

SC Series

- Four types in series: straight, elbow, flat and adjustable
- Low speed and constant speed types are available



Auxiliary Components CB-024SA

Speed controller

Miniature in-out speed controller

SCD Series

- Flow rate control of both air supply and exhaust is possible
- Flow rate adjustable, very slow speed type available



Auxiliary Components CB-024SA

Direct piping type speed controller

SC3R/SC3W/SC3U Series

- L-rotation type and 360° flexible piping type are available
- Wide selection



Auxiliary Components CB-024SA

Speed controller Stainless steel corrosion-resistant type

SC3P Series

- Speed control valve uses highly anti-corrosive stainless steel
- Ozone-proof materials for preventing degradation are used as standard for the check packing
- All substances which adversely affect the global environment have been eliminated from the materials



Auxiliary Components CB-024SA

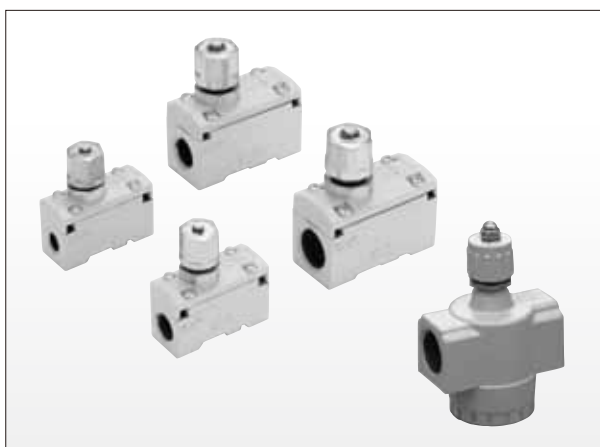
Speed controller medium/large bore size type

SC1 Series(Medium bore size type)

- Possible to disassemble without removing the piping
- Two ways of installation, bottom or side
- Size Rc1/8 to 1/2

SC Series(Large bore size type)

- Size Rc3/4 to 2

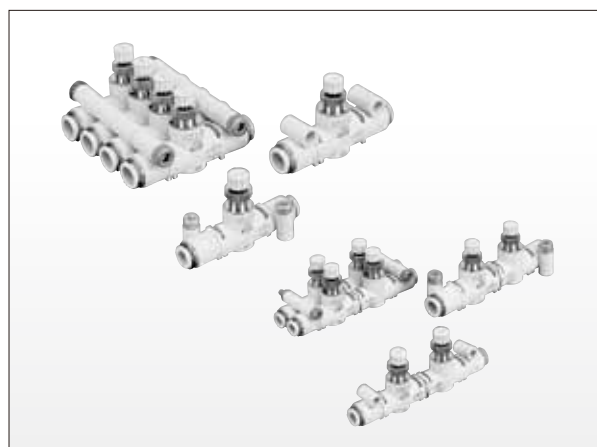


Auxiliary Components CB-024SA

In-line speed controller

SCL2/SCD2 Series

- Line type speed controller useful for remote and concentrated control.
- 360° rotatable mounting hole enables flexible mounting without bracket.
- Meter-in / meter-out integrated type is available for preventing popping out and speed stability.
- Flow rate is one class larger than expected for its small size.
- Speed-adjustable, very slow speed type option available.
- Ozone-proof materials are used as a standard for the packing.



Auxiliary Components CB-024SA



Silencer

Metering valve with silencer

SMW2 Series

- Small size, lightweight and high flow rate
Major reduction in size and weight with 50% reduction in volume and 80% reduction in weight compared to the CKD SMW Series. The largest effective sectional area in its class.
- Silencing effect of over 23 dB(A)
Silencing effect improved by a unibody design with a high silencing P.P. sintered element and the body.
- Push lock type needle
Push lock knob is used to enable the needle to be locked with a single operation.
- Environmental design
By using plastic materials only, sorting at disposal is eliminated.



Auxiliary Components CB-024SA

Silencer

Silencer

SL/SLW/SLM Series

- Large silencing effect
- Flame resistant resin is used for the main body (SLW Series)



Auxiliary Components CB-024SA

Auxiliary valve

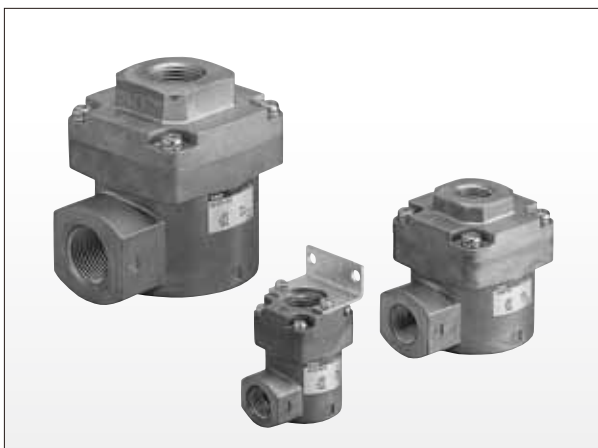
Quick exhaust valve/Shuttle valve

QEV2 Series

- Ample models with port size Rc1/8 to 1
- Large effective sectional area
- Mounting bracket is available (Small port size type)

SHV2 Series

- Low cracking pressure
- Large effective cross-sectional area
- Mounting direction is free
- Mounting bracket is available (Small port size type)



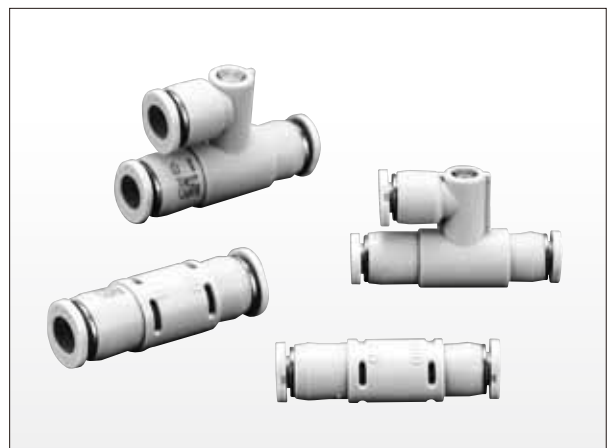
Auxiliary Components CB-024SA

Auxiliary valve

Quick exhaust valve line type

QEL Series

- Small size, space-saving in-line type
- Valving element uses standard ozone-proof material for degradation prevention
- All substances which adversely affect the global environment have been eliminated from the materials



Auxiliary Components CB-024SA

Small check valve with push-in fitting

CHL Series

- Small size, space-saving in-line type
- $\varnothing 4, 6$ push-in fitting enables compact piping and high workability
- Flame resistant resin is used



Auxiliary Components CB-024SA

Check valve

CHV2 Series

- Wide variation with bore size Rc1/8 to Rc11/2.
- Compact and lightweight: 34% reduction in volume and 25% reduction in weight (compared to CKD).
- Fluoro rubber and oil-prohibition options available.
- Mounting plate is available for small bore size type.



Auxiliary Components CB-024SA

Block valve

FPV Series

- The best compact valve for cylinder position locking and intermediate stop.
- Compact and lightweight: 34% reduction in volume and 25% reduction in weight (compared to CKD).
- Cylinder can be direct mounted with variations of port size M5 to R1/2.
- Device-matching white body.
- Speed controller attachment is available. (Custom order)
- Models with manual buttons for bleeding residual pressure is also available. (Custom order)

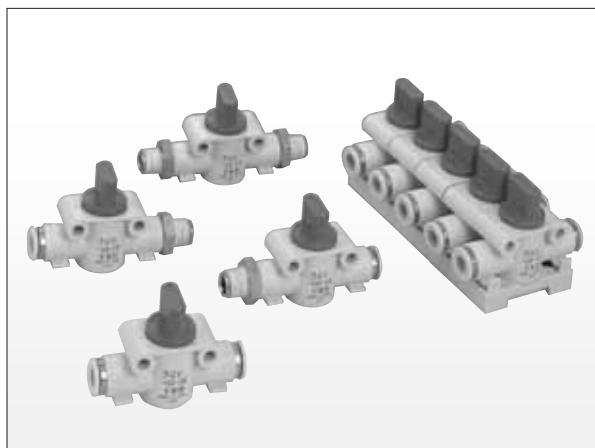


Auxiliary Components CB-024SA

Quick exhaust valve

2QV/3QV Series

- Straight flow path and large effective sectional area.
- Flame resistant resin is used as standard. (UL94 Standard V-0 equivalent)
- Manifold is available with an optional bracket.
- 2/3-port valves are included.



Auxiliary Components CB-024SA



Auxiliary valve

Threshold sensor

PWS Series

- Detect the exhaust pressure near stroke end with high precision
- Output signal can be selected between electrical and air types



Auxiliary Components CB-024SA

Fitting/tube

Rotary joint

RJF Series

- Built-in bearing enables high rigidity and low sliding resistance
- Ample lineup with 4, 6, 8, 12 and 16 circuits
- 12 and 16 circuits include a space-saving type
- Port size includes Rc1/8 in addition to M5 (4, 6 and 8 circuits)



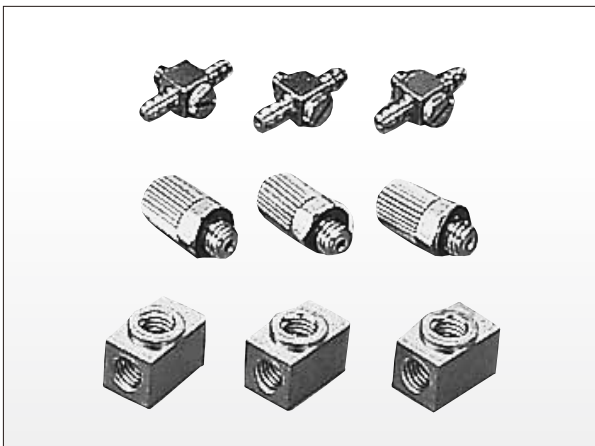
Auxiliary Components CB-024SA

Fitting/tube

Miniature fitting

F Series

- Special guide structure enables easy insertion, does not come off easily
- For both soft nylon and urethane tubes



Auxiliary Components CB-024SA

Fitting/tube

Joint

GW/GWJ Series

- No flow rate loss with respect to bore size
- White body blends into the work environment. Flame resistant resin is used as standard
- V shaped packing seal is adopted for sealing between tube and fitting. Easy insertion but reliable sealing
- Wide variety of pipe outside diameters: $\varnothing 3.2$ to $\varnothing 12$



Auxiliary Components CB-024SA

Fitting, stainless steel series

ZW/ZSP Series

- Compact size for space-saving
- Smooth mounting and removal of tube
- Sealing ensures no leak
- White body and bushing ring use flame resistant resin
- All metal parts use stainless steel as standard

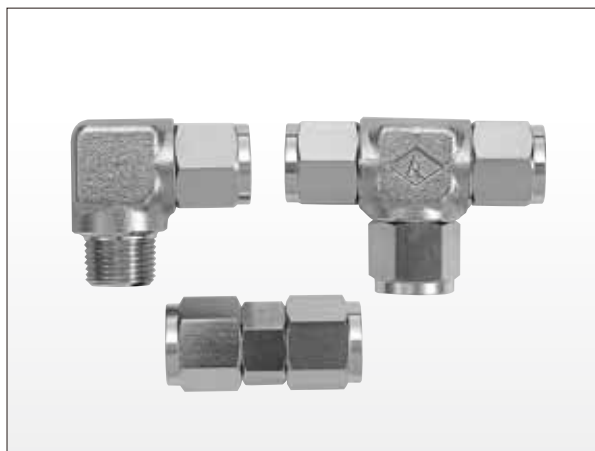


Auxiliary Components CB-024SA

Tightening fitting stainless steel series

ZJ Series

- Easy Fit mechanism (integration of nut and sleeve) for working efficiency
- Unique sleeve eliminates tubing twist
- No sleeve replacement required, even with repeated use
- Smooth body bore diameter
- A wide variety of sizes suitable to various tubes
- Oil can be removed by cleaning

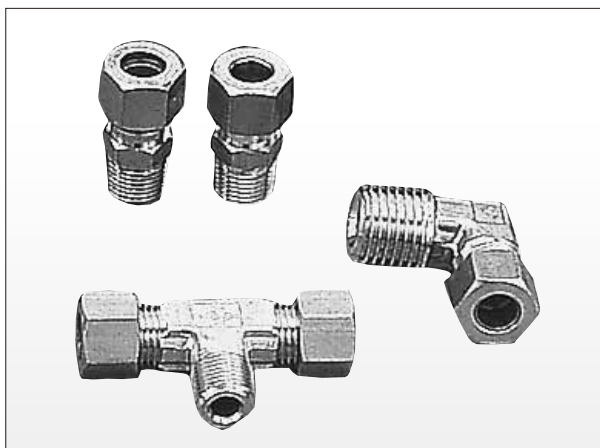


Auxiliary Components CB-024SA

Tightening fitting

MJ/JL Series

- Highly reliable double chuck joint
- In addition to various tubes, copper tubes are also supported
- No flow rate loss with respect to bore size



Auxiliary Components CB-024SA

Tube

F/U/NU/KX/SR Series

(F except for white, U, KX and SR are manufactured by Aoi Co., Ltd.)

- Choose from a wide variety of tubes for different purposes



Auxiliary Components CB-024SA



Fitting/tube

Fiber tube

- Ultrathin tube as fine and flexible as lead wires
- Outer diameter $\varnothing 1.8$, minimum bending radii 4mm
- Volume resistivity approx. $1 \times 10^8 \Omega \cdot \text{cm}$ or less
- Best for piping of very slow speed cylinder
- Wide variety of tube colors and fittings



Auxiliary Components CB-024SA

Fitting/tube

Antistatic tube

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

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

- Resistant to static electricity and dust build-up
Volume resistance ratio - black: 10^4 to $10^8 \Omega \cdot \text{cm}$
Other colors : 10^6 to $10^{12} \Omega \cdot \text{cm}$.
Antistatic properties such as prevention of electrostatic discharge and dust accumulation.
- Flexible piping ($\varnothing 3.2$, $\varnothing 4$, $\varnothing 6$)
This antistatic tube is supple and flexible for easy piping in narrow spaces.
(For use of push-in fitting, a separate insert ring is needed)
- Variety of colors
Black, white, transparency, transparent blue, transparent green and transparent red (-F2) are available.
Applications can be distinguished by color.
- Wide variety of products
Six sizes available: $\varnothing 3.2$, $\varnothing 4$, $\varnothing 6$, $\varnothing 8$, $\varnothing 10$ and $\varnothing 12$.



Auxiliary Components CB-024SA



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)

Refrigerated air dryer

Refrigerated air dryer Xeroaqua

GX3200D/GX5200D Series

- High quality and high reliability
Operational in ambient temperature of 45°C. (40°C with existing models).
Stainless steel heat exchanger compatible with oil free air.
- Energy saving
Energy-saving design lowers air-loss on drainage.
Compact design lowers electric power consumption.
- Thin, slim, and compact body
- Easy maintenance
- Flashing pattern of warning lamp indicates the cause of emergency stoppage.



Refrigerated air dryer Xeroaqua CC-1156A

Refrigerated air dryer

Refrigerated air dryer Xeroaqua

GT9000/GT9000W/GT9000WV Series

- Stainless steel heat exchanger compatible with oil free air
- New refrigerant R-407C with zero ozone-depletion-potential.
- Energy saving
[Air cooling type GT9300 to 9450, Water cooling type GT9300W to 9450W]
Power consumption reduced by 50% with unit number control.
[Water cooling type GT9000WV Series]
Configurable dew point. Reduce max. power by 60% with inverter control. Continuous operation even at high loads.

Compatible air compressors (GT9000(W)) 75 to 450kW
(GT9000WV) 710kW•960kW



Auxiliary Components CB-024SA

Desiccant type air dryer

Heatless dryer

HD/SHD Series

- Max. purge rate reduced by 96% with energy saving control
- Variable exhaust method significantly reduces noise by approximately 35dB (compared with conventional models)
- Electronic control system reduces power consumption by 1/3 (compared with conventional models)
- Performance verification ensured by digital pressure dew point display
- Multi tower type significantly reduces installation area (1/3 to 1/2 smaller than conventional models)
- Filters for inlet and outlet are equipped as standard

Process air flow rate (HD) 75 to 1235ℓ/min(ANR)
(SHD) 2.5 to 24m³/min(ANR)



Auxiliary Components CB-024SA

High polymer membrane air dryer

Super dryer

SD/SU Series

- Environment friendly freon-free dryer
- Due to no movable parts, clean dry air can be supplied for a long time.
- Reduced size and weight enables easy installation.
- Does not create or increase noise, due to being electricity-free.
- Extreme low dew point up to -60°C
- Large flow rate with 75kW class compressor is supported

Process air flow rate (SD/SU) 35 to 890ℓ/min(ANR)
(SDM) 1.36 to 12.4m³/min(ANR)



Auxiliary Components CB-024SA



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)

Air filter (medium)

Medium main line filter

AF2000 Series

- New material and structure allows even lower pressure loss, longer durability and greater compactness
- Space saving installation is made possible because filters can be connected by the module kit
- Differential pressure indicator necessary for checking durability, highly reliable snap drain provided as standard
- Easy element replacement made possible

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



Auxiliary Components CB-024SA

Air filter (medium)

Medium main line filter

AF4000 Series

- High performance main line filter with stainless housing supports a clean environment. Excellent for oil-free air line
- Residual pressure alarm function
- No tools needed during element replacement thanks to the band type housing tightening feature
- Time management of element replacement. Flashing lamp indicates need for replacement

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



Auxiliary Components CB-024SA

Air filter (large)

Large main line filter

AF3000 Series

- Low pressure element saves energy
- Differential pressure gauge is equipped as standard
- Mounting legs are equipped as standard, enabling easy piping work
- Easy maintenance
Just remove the upper flange and rotate the element for easy replacement.
- Wide range of products for a variety of applications

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



Auxiliary Components CB-024SA

Air filter (large)

Large main line filter

AF5000 Series

- Stainless vessel is adopted for all models. (SUS304)
- Long durability and low pressure element saves energy
- Automatic drain with no air loss is equipped
Equipped as standard on P and S types
- Remote control available
Alarm output signal by differential switch indicates element replacement time
- Easy element replacement
Just remove the upper flange and turn the element screw

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



Auxiliary Components CB-024SA

Automatic drain

DT Series

- Snap mechanism increases durability 15 times (compared with our previous models)
- Compact & lightweight
- Top piping and side piping are possible
- Standard manual cock
- Both types of N.O and N.C are available

Applicable compressor 0.75 to 75kW



Auxiliary Components CB-024SA

Automatic drain

DB Series

- No useless drain of compressed air (Energy saving)
Opening and closing of solenoid valve is controlled by a drain level sensor
- Alarm output indicates abnormal drain
- Large bore size diaphragm valve ensures drain
- TEST button enables manual drain
- IP65



Auxiliary Components CB-024SA

Drain separator

FX Series

- Lightweight and compact drain separator
- Separating efficiency 99%
- Applicable compressor 0.75kW - 37kW











Drain separator FX Series CC-1136A



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

[Combination]

Series	Available combinations						Model No.
	F	R	L	W		M	
	Filter	Regulator	Lubricator	Filter/Regulator	Reverse Filter/Regulator	Oil mist Filter	
● FRL Combination P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 	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
● WL Combination P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 			L1000-W	W1000-W			C1010-W
			L3000-W	W2000-W			C2010-W
			L3000-W	W3000-W			C3010-W
			L4000-W	W4000-W			C4010-W
● FR Combination P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 	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
● FMR Combination P1=0.7MPa 	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
● WM Combination P2=0.7MPa 				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
● RM Combination P2=0.7MPa 		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
● FM Combination P1=0.7MPa 	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
● FFM Combination P1=0.7MPa 	F3000-W(5μm) F3000-W(0.3μm)					M3000-W	C3070-W
	F4000-W(5μm) F4000-W(0.3μm)					M4000-W	C4070-W
	F6000-W(5μm) F6000-W(0.3μm)					M6000-W	C6070-W
	F8000-W(5μm) F8000-W(0.3μm)					M8000-W	C8070-W

Modular design (Selex FRL)

*P1=Primary pressure P2=Secondary pressure ΔP2=Differential pressure


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

Note: Piping adapter is attached.









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


[Combination]

Model series name		Application	Model No.
Separate type	<ul style="list-style-type: none"> ● FRL kit P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 	Set type (With accessory)	K60570

[Filter/Regulator]

Series	Application						Model No.
	F	R	L	W SELEX		M	
	Filter	Regulator	Lubricator	Filter/Regulator	Reverse Filter/Regulator	Oil mist Filter	
Modular design (Selex FRL)	<ul style="list-style-type: none"> ● Filter/Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 				●		WB500 (compact) W1000-W W2000-W W3000-W W4000-W W8000-W
	<ul style="list-style-type: none"> ● Filter/Regulator Flame resistant P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 				●		W3000-G4 W4000-G4 W8000-G4
	<ul style="list-style-type: none"> ● Filter/Regulator Outdoor series P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 				●		WW4000 WW8000
	<ul style="list-style-type: none"> ● Reverse filter/Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 					●	W1100-W W2100-W W3100-W W4100-W W8100-W
	<ul style="list-style-type: none"> ● Reverse filter/Regulator Flame resistant P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 					●	W3100-G4 W4100-G4 W8100-G4

Series	Application						Model No.	
	F	R	L	W SELEX		M		
	Filter	Regulator	Lubricator	Filter/Regulator	Reverse Filter/Regulator	Oil mist Filter		
Small type	<ul style="list-style-type: none"> ● Small filter/Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 	Integrated push-in fitting and mounting bracket						WB500

Series	Application						Model No.	
	F	R	L	W SELEX		M		
	Filter	Regulator	Lubricator	Filter/Regulator	Reverse Filter/Regulator	Oil mist Filter		
Separate type	<ul style="list-style-type: none"> ● 7000 Series P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 	Filter and regulator integrated filtration rating 5μm						B7019-*C

*P1=Primary pressure P2=Secondary pressure ΔP2=Differential pressure

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

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





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


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








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

[Filter]

Series	Application						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=0.7MPa ΔP=0.02MPa 						F1000-W
							F2000-W
							F3000-W
							F4000-W
							F6000-W
						F8000-W	
	<ul style="list-style-type: none"> ● Filter/Flame-resistant series P1=0.7MPa ΔP=0.02MPa 						F3000-G4
							F4000-G4
							F8000-G4
	<ul style="list-style-type: none"> ● Filter/Outdoor series P1=0.7MPa ΔP=0.02MPa 						FW4000
							FW8000
	<ul style="list-style-type: none"> ● Filter/Medium pressure series P1=1.3MPa ΔP=0.02MPa 						FM3000-W
						FM4000-W	
						FM6000-W	
						FM8000-W	

Series	Application						Model No.
	F	R	L	W Regulator		M	
	Filter	Regulator	Lubricator	Filter/Regulator	Reverse Filter/Regulator	Oil mist Filter	
Clean-room type	<ul style="list-style-type: none"> ● Inline type clean filter P1=0.7MPa ΔP=0.03MPa 						FCS500
							FCS1000

Model series name	Application	Model No.	
Separate type	<ul style="list-style-type: none"> ● Air filter P1=0.7MPa ΔP2=0.02MPa 	Wide variety of models Rated filtration 5μm	A1019-*C
			1138-*E
			1126-*E
	<ul style="list-style-type: none"> ● Heavy duty air filter P1=0.7MPa ΔP2=0.002MPa 	High drain removal type Rated filtration 5μm	A1338
			1326
<ul style="list-style-type: none"> ● Submicron air filter P1=0.7MPa ΔP2=0.01MPa 	Tar removal Rated filtration 0.3μm	1138-*C-EY	
		A1338-*C-Y	
		1126-*C-EY	
		1326-*C-Y	
<ul style="list-style-type: none"> ● Micro alescer micro naught type P1=0.7MPa ΔP2=0.01MPa 	Oil removal Oil removal rate 0.1PPMWW	1219-2C	
		1238-6C	
		1226-8C	
		1126J-*C	
<ul style="list-style-type: none"> ● Micro alescer odor naught type P1=0.7MPa ΔP2=0.01MPa 	Odor removal	1238-6C-X	
		1226-8C-X	
		1226J-*C-X	

*P1=Primary pressure P2=Secondary pressure ΔP2=Differential pressure

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

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

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



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

[Oil mist filter]

Series	Application						Model No.	
	F	R	L	W SELEX		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=0.7MPa ΔP=0.01MPa ● Rated filtration: 0.3μm ● Secondary oil concentration 0.5mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> 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=0.7MPa ΔP=0.01MPa ● Rated filtration: 0.01μm ● Secondary oil concentration 0.01mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> M1000-W M2000-W M3000-W M4000-W M6000-W M8000-W
	<ul style="list-style-type: none"> ● Oil mist filter (X type) P1=0.7MPa ΔP=0.01MPa ● Rated filtration: Activated carbon-based suction ● Secondary oil concentration 0.003mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> 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=0.7MPa ΔP=0.01MPa ● Rated filtration: 0.01μm ● Secondary oil concentration 0.001mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> MX1000-W MX3000-W MX4000-W MX6000-W MX8000-W
	<ul style="list-style-type: none"> ● Oil mist filter outdoor series (S type) P1=0.7MPa ΔP=0.01MPa ● Nominal filtration rating: 0.3 μm ● Secondary oil concentration 0.5mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> MW4000-S MW8000-S
	<ul style="list-style-type: none"> ● Oil mist filter outdoor series (M type) P1=0.7MPa ΔP=0.01MPa ● Nominal filtration rating: 0.01 μm ● Secondary oil concentration 0.01mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> MW4000-M MW8000-S
	<ul style="list-style-type: none"> ● Oil mist filter medium pressure type (S type) P1=1.4MPa ΔP=0.01MPa ● Rated filtration: 0.3μm ● Secondary oil concentration 0.5mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> MM3000-W*-S MM4000-W*-S MM6000-W*-S MM8000-W*-S
	<ul style="list-style-type: none"> ● Oil mist filter medium pressure type (M type) P1=1.4MPa ΔP=0.01MPa ● Rated filtration: 0.01μm ● Secondary oil concentration 0.01mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> MM3000-W MM4000-W MM6000-W MM8000-W
	<ul style="list-style-type: none"> ● Oil mist filter medium pressure type (X type) P1=1.4MPa ΔP=0.01MPa ● Rated filtration: Activated carbon-based suction ● Secondary oil concentration 0.003mg/m³ 						<ul style="list-style-type: none"> ● 	<ul style="list-style-type: none"> MM3000-W*-X MM4000-W*-X MM6000-W*-X MM8000-W*-X

Auxiliary Components CB-024S










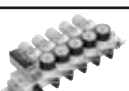




*P1=Primary pressure P2=Secondary pressure ΔP2=Differential pressure

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.15
					●	●								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 FILTER, REGULATOR, LUBRICATOR (F.R.L UNIT)

[Regulator]

Series	Application							Model No.	
	F	R		L	W Regulator		M		
	Filter	Regulator	Reverse/ Regulator	Lubricator	Filter/ Regulator	Reverse Filter/Regulator	Oil mist Filter		
Modular type ● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						R1000-W R2000-W R3000-W R4000-W R6000-W R8000-W	
	● Regulator/Flame-resistant series P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						R3000-G4 R4000-G4 R8000-G4
	● Regulator/Outdoor series P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RW4000 RW8000
	● Regulator oil-prohibition series P1=0.7MPa P2=0.5MPa 		●						RN3000 RN4000 RN8000
	● Regulator medium pressure series P1=1.6MPa P2=0.5MPa 		●						RM3000-W RM4000-W
	● Reverse regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 			●					R1100-W R2100-W R3100-W R4100-W R6100-W R8100-W
Small type ● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RA050/RA060 (manifold type) RA800 RB500	
	● Block manifold Regulator 		●						MNRB500A MNRB500B
Precision type ● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RJB500	
	● Block manifold Regulator 		●						MNRJB500A MNRJB500B
● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RP2000	
● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RPE1000	
Clean-room type ● Clean regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RC2000	
	● Clean regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						2619






*P1=Primary pressure P2=Secondary pressure ΔP2=Differential pressure

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






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

[Regulator]

	Model series name	Application	Model No.	
Separate type	<ul style="list-style-type: none"> ● Regulator P1=0.7MPa P2=0.5MPa $\Delta P=0.1$MPa 	Diverse models	B2019-*C	
			2215-*C	
	<ul style="list-style-type: none"> ● Reverse regulator P1=0.7MPa P2=0.5MPa $\Delta P=0.1$MPa 	Check valve integrated, no by-pass circuit required	2419-*C	
			2415-*C	
	<ul style="list-style-type: none"> ● Dial air regulator P1=0.7MPa P2=0.5MPa 	With setting dial	2302-*C	
			2303-*C	
			2304-*C	
	<ul style="list-style-type: none"> ● Remote control dial air regulator P1=0.7MPa P2=0.5MPa 	For remote control	2302-*C-R	
			2303-*C-R	
			2304-*C-R	
<ul style="list-style-type: none"> ● Pressure relief valve Set pressure 0.7MPa Upward pressure 0.08MPa 	Set pressure maintained	B6061-*C		

[Lubricator]

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

	Model series name	Application	Model No.	
Separate type	<ul style="list-style-type: none"> ● Lubricator econo-mist type P1=0.5MPa $\Delta P=0.03$MPa 	Fine oil mist supplied	A3019-*C	
			3003E-*C	
			3004E-*C	
<ul style="list-style-type: none"> ● Lubricator auto-fill type 	Automatic supply type	3003E-*C-V		

Auxiliary Components CB-024S

*P1=Primary pressure P2=Secondary pressure ΔP2=Differential pressure

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

*P1=Primary pressure ΔP2=Differential pressure





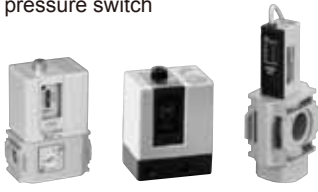



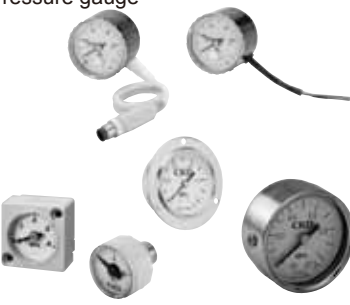

	Port size												Max. flow rate m ³ /min (Reference)	
	ø4	ø6	ø8	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
				●	●									0.55/0.7
					●	●								1.1/2.25
					●	●	●							1/1.7/2.7
								●	●					6.3/10.0

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



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

[Other related products]

Model series name	Application	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 	Small size, lightweight and space-saving in-line type	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	
		FA831-50A	
<ul style="list-style-type: none"> ● Drain discharger 	Snap drain Heavy duty drain Tank drain	DT3000-W/4000-W	
		DB1000/3000	
		5100-4C	
<ul style="list-style-type: none"> ● Moisture indicator (P1=0.7MPa) 	Dew point monitor for dry type air dryer	6119-2C	
<ul style="list-style-type: none"> ● Air pressure switch 	Within setting precision ± 0.02 MPa	APE-8T	
		APE-8N	
		APE-8F	
		P4000-W	
		P*100-W	
		APS-W	
<ul style="list-style-type: none"> ● Shut-off valve 	Prevent residual pressure accidents in pneumatic lines	V1000-W	
		V3000-W	
<ul style="list-style-type: none"> ● Lockout valve (OSHA compliant) 	Prevent residual pressure accidents in pneumatic lines	V3010-W	
		V6010-W	
<ul style="list-style-type: none"> ● Quick exhaust valve 	2/3 port valves added to lineup	2QV	
		3QV	
<ul style="list-style-type: none"> ● Slow start valve 	To ensure safety at starting and stopping	V3301-W	
		V3321-W	
<ul style="list-style-type: none"> ● Pressure gauge 	Thin shape pressure gauge suitable for built-in	G401	
	Pressure gauge with safety sign	G40D/50D	
	Pressure gauge with limit mark	G45D/G41D	
	General purpose pressure gauge	D49D/50D	
	Pressure gauge for panel mount	G53D	
	Pressure gauge with switch	G52D	
	Micro pressure gauge	G29D	
	Small round shape pressure gauge	G39D	
<ul style="list-style-type: none"> ● Differential pressure gauge 	Air filter life measurement	GA400-8-P02	

	Port size															Max. flow rate	
	ø4	ø6	ø8	ø10	ø12	1/16	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		
		●															10L/min(ANR)
							●	●									100L/min(ANR)
									●	●							200L/min(ANR)
									●	●							600L/min(ANR)
	●	●															10L/min(ANR)
	●	●															15/20L/min(ANR)
		●	●	●													25/50/60L/min(ANR)
									●								0.3m³/min
										●							0.6m³/min
											●						1m³/min
												●					3m³/min
														●			6m³/min
															●		10m³/min
									●	●							
										●	●	●	●				
																	0.05m³/min
										●							
										●							
										●	●	●					
										●							
										●	●	●					
										●							
										●	●	●					
										●	●	●					
												●	●				
	●	●	●	●	●			●	●	●	●						
	●	●	●	●	●			●	●	●	●						
									●	●	●						
									●	●	●						
										●							
										●							
										●							0 to 0.4MPa 0 to 1.0MPa
										●	●						0 to 1.0MPa 0 to 0.4MPa
										●	●						0 to 0.2MPa 0 to 0.4MPa 0 to 1.0MPa
										●	●						0 to 0.2MPa 0 to 0.4MPa 0 to 2.0MPa
										●	●						0 to 0.2MPa 0 to 0.4MPa 0 to 1.0MPa
										●							0 to 1.0MPa
											●						0 to 1.0MPa
																	0 to 0.4MPa 0 to 1.0MPa
									●								



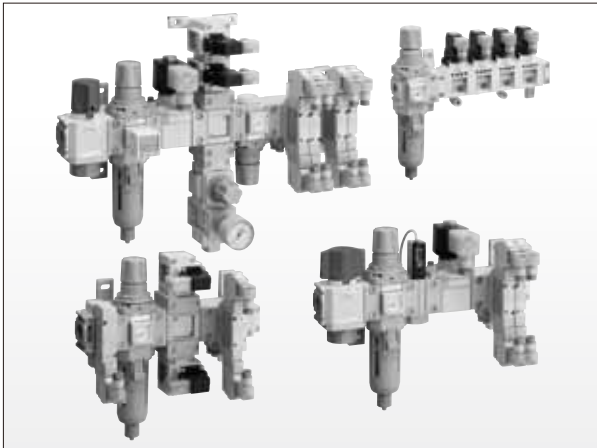
PNEUMATIC FILTER, REGULATOR, LUBRICATOR (F.R.L UNIT)

F.R.L unit

Air unit

CXU Series

- Piping eliminated. Easy to install
 - Installation space reduced by eliminating piping and tube
 - No threading section, no external leak
- Flexible combinations
 - Vertical and horizontal piping can be changed flexibly. Solenoid valves can also be connected directly
 - Modular connection enables flexible exchange and expansion of pneumatic components



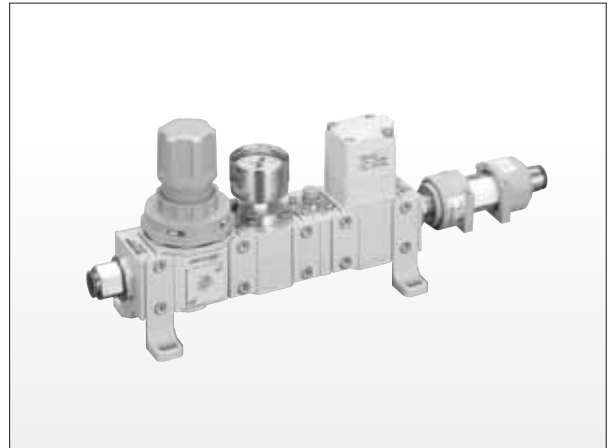
Air unit CXU Series CC-901A

Clean filter

Clean air unit

CAU30 Series

- Clean blow system in one unit
- High rigidity aluminium body with transparent filter
- Compact and space-saving unit type without piping
- Completely oil-prohibited
- Two-system type is available



Clean air unit CAU30 Series CC-872A

Regulator

Regulator for water

WR1/WR2 Series

- User-friendly and compact regulator for water
- Knob shape is designed to control pressure easily
- Pressure control knob can be locked with one push
- Mesh filter is equipped as standard



Auxiliary Components CB-024SA

Electro pneumatic regulator

Pressure regulating component that controls input pressure proportional to output.

- High precision and high response system. Depending on the application, air pressure can be continuously controlled. The best component for thrust and tension control.
- For automatization
Flexible continuous operation evolves into more advanced electronic control.
- EVS2 Series
Size and weight reduction with energy-saving effect.
- Low pressure electro-pneumatic regulator EVL series
Proportional control can be freely done from 0 kPa to 50 kPa with high precision.



Auxiliary Components CB-024SA

Thin electro pneumatic regulator

MEVT Series

Thin type electro pneumatic regulator manifold type for PC control and reduced wiring. Best for various thrust controls and fine speed cylinder control, etc., in semiconductor or precision fields

- Thin: 14mm, lightweight: 80g
- Supports networking
- Displays the operation status with two colors
- Easy piping and wiring
- Two installation directions
- High precision and quick response
- Eco-friendly product

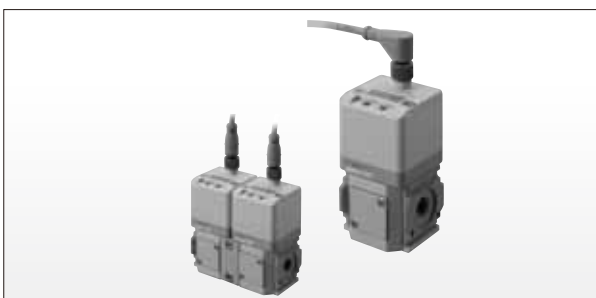


Auxiliary Components CB-024SA

High precision electro-pneumatic regulator

EVR Series

- High precision pressure precision
 - 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: three times up (compared with existing models)
- New features are equipped
 - Input signal 0 shut-off on 0%F.S. Pressure control pattern is selectable.
- Easy operation
 - "Zero point adjustment", "Span point adjustment", "Pressure control pattern" are operatable with two buttons.
- Compatibility and installability
 - Installation is compatible with the existing model (EV2500).
 - Two types of connectors are available (straight type, L-type, 1 m and 3 m length for each type are available.)



Electro-pneumatic regulator EVR Series CC-1174A

Digital electro-pneumatic regulator

EVD Series

- Outstanding user-friendliness and installation performance
 - Mounted digital display shows control status at a glance
 - Parallel input type is equipped as standard
 - Small-sized design
 - Two connection directions enabled with D-sub connector method
 - Module connection possible
- Built-in microcomputer allows advanced functionality
 - Error display function ●Zero/span adjustment function
 - Direct memory function ●Switch output function
- Highly accurate and quick response pressure control
- Eco-friendly design
 - No lead, no polyvinyl chloride ●Material display
 - Energy-saving with auto power off function

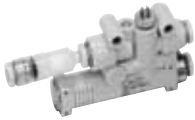










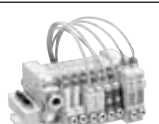


Auxiliary Components CB-024SA



[Vacuum system equipment SELVACS]

● Ejector system type

Model	Series	
Discrete ejector	<p>VSY Series Single-unit with vacuum breaker</p> <ul style="list-style-type: none"> ● Integrated ejector and vacuum release. ● Compact, lightweight design enables use at end of vacuum piping. 	
	<p>VSH Series Single unit solenoid valve direct mount type</p> <ul style="list-style-type: none"> ● Can mount solenoid valves directly to supply ports M5 to R1/4. ● Wide variety of nozzle diameters from $\varnothing 0.5$ to $\varnothing 2.0$ 	
	<p>VSU Series Single unit tube type</p> <ul style="list-style-type: none"> ● Able to mount on piping with vacuum and support ports arranged in a straight line. ● A dedicated fixed bracket is available. 	
	<p>VSB Series Single unit square type</p> <ul style="list-style-type: none"> ● Body can be mounted and fixed with built-in square silencer ● Optional mechanical vacuum switch available. 	
	<p>VSC Series Single unit pad direct mount type</p> <ul style="list-style-type: none"> ● Able to mount pad directly to vacuum ports M5 to R3/8. ● Wide variety of nozzle diameters from $\varnothing 0.5$ to $\varnothing 2.0$ 	
Ejector system type	<p>VSG Series 20mm width single unit type unit</p> <ul style="list-style-type: none"> ● Single unit type with basic functions emphasized. ● Unitized valves, vacuum switches and vacuum filters can be selected depending on the application. 	
	<p>VSK/VSKM Series 16mm width universal type unit</p> <ul style="list-style-type: none"> ● Each unit is modular, so it is possible to select the best one for each case ● Options include check valve integrated and air timer disruption types. 	
	<p>VSJ/VSJM Series 20mm width universal type unit</p> <ul style="list-style-type: none"> ● Can control flow of break air and pressure. ● Vacuum release circuit relief shortens vacuum releasing time. 	
	<p>VSN/VSNM Series 10.3mm width small type unit</p> <ul style="list-style-type: none"> ● Compact, light vacuum unit. ● Fast and stable response. 	
	<p>VSX/VSXM Series 10.5mm width universal type unit</p> <ul style="list-style-type: none"> ● Compact, slim vacuum unit. ● Either direct fixing or DIN rail installation is possible. 	
	<p>VSQ Series 31.5mm width single unit type unit</p> <ul style="list-style-type: none"> ● Large vacuum units for high flow control. ● Three standard nozzles are available: single, 2-step, and twin. 	
	<p>VSZM Series 11mm pitch manifold dedicated unit</p> <ul style="list-style-type: none"> ● Wire-saving vacuum unit for manifold. ● Energy saving by reducing valve power consumption to 0.55W. ● A wide range of applications are supported by ample vacuum switch variations. 	

●: Standard ○: Option

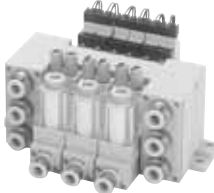
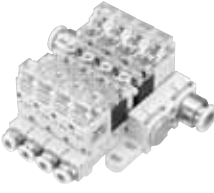

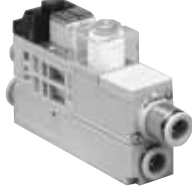
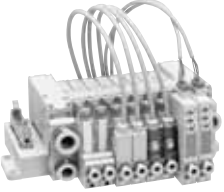
Model No.	Direction of piping			Components							Nozzle diameter ϕ (1/10mm)							
	Single unit component	Manifold		Vacuum generation valve	Vacuum break valve	Vacuum pressure switch	Vacuum filter	Silencer	Check valve	04	05	06	07	10	12	15	20	
		Individual wiring	Reduced wiring															
VSY	●			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



RELATED PNEUMATIC PRODUCTS

[Vacuum system equipment SELVACS]

● Vacuum pump system type

Model	Series	
Vacuum pump system type Vacuum change unit	VSJP/VSJPM Series 20mm width universal type unit <ul style="list-style-type: none"> ● Can control flow of break air and pressure. ● Vacuum release circuit relief shortens vacuum releasing time. ● Vacuum solenoid valves includes self holding type as standard. 	
	VSNP/VSNPM Series 10.3mm width small type unit <ul style="list-style-type: none"> ● Compact, light vacuum unit. ● Fast and stable response. 	
	VSXP/VSXPM Series 10.5mm width universal type unit <ul style="list-style-type: none"> ● Compact thin type vacuum unit. ● Either direct fixing or DIN rail installation is possible. ● 3-port valve (option) enables high cycles. 	
	VSQP Series 31.5mm width discrete type unit <ul style="list-style-type: none"> ● Large vacuum units for high flow control. ● Normal open and normal close are standardized for vacuum solenoid valves. 	
	VSZPM Series 11mm pitch manifold dedicated unit <ul style="list-style-type: none"> ● Wire-saving vacuum unit for manifold. ● Energy saving by reducing valve power consumption to 0.55W. ● A wide range of applications are supported by ample vacuum switch variations. 	

Vacuum system equipment SELVACS CC-796

●: Standard ○: Option













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



RELATED PNEUMATIC PRODUCTS

[Vacuum system equipment SELVACS]

● Suction pad

Pad shape	Holder shape	
	With buffer	Vacuum outlet
Compact suction pad (VSP-M*-various pad shapes) ● Space conserved by downsizing existing holder 	[Small] none (Fixed type)	Top/joint Side/joint Direct mount type
Standard type (General type): VSP-*R ● Ideal for thick, flat workpieces 	none (Fixed type) none (With stopper)	Top/joint Side/joint Direct mount type Top/joint Side/joint Direct mount type
Standard type (Deep type): VSP-*A ● Ideal for picking up round balls, etc. 	none (Fixed type) none (With stopper)	Top/joint Side/joint Direct mount type Top/joint Side/joint Direct mount type
Sponge type: VSP-*S ● Ideal for workpieces with uneven surfaces, such as exterior walls 	none (Fixed type) Provided (With stopper)	Top/joint Side/joint Top/joint Side/joint Direct mount type
Bellows type: VSP-*B ● Ideal for soft workpieces, such as paper or vinyl-packed products 	none (Fixed type) Provided (With stopper)	Top/joint Side/joint Top/joint Side/joint Direct mount type
Multi-stage bellows type: VSP-*W ● Ideal for transferring inclined workpieces or vinyl-packed products 	none (Fixed type) Provided (With stopper)	Top/joint Side/joint Top/joint Side/joint Direct mount type
Oval type: VSP-*E ● Ideal for workpieces with limited suction space, such as IC circuit boards 	none (Fixed type) none (Screw type) Provided (With stopper)	Top/joint Side/joint Top/joint Side/joint Direct mount type Top/joint Side/joint
Soft type: VSP-*L ● Ideal for unloading molded parts, and transferring delicate workpieces 	none (Fixed type) Provided (With stopper) Provided (without stopper)	Top/joint Side/joint Side/joint (Direct mount type) Top/joint Side/joint Direct mount type Top/joint Side/joint
Soft bellows type: VSP-*LB ● Ideal for unloading molded parts, and picking up paper, etc. 	none (Fixed type) Provided (With stopper) Provided (without stopper)	Top/joint Side/joint Side/joint (Direct mount type) Top/joint Side/joint Direct mount type Top/joint Side/joint
Nonskid type: VSP-*K* ● Ideal for workpieces covered with oil, such as pressed parts 	none (Fixed type) Provided (With stopper)	Top/joint Side/joint Top/joint Side/joint Direct mount type
Thin type: VSP-*P ● Ideal for transferring thin workpieces Suitable for transfer of workpieces 	none (Fixed type) Provided (With stopper)	Top/joint Side/joint Direct mount type Top/joint Side/joint Direct mount type
Long stroke (VSP various pads shapes) ● Ideal when distance from pad to workpiece is not specific 		

○: Option


	Pad size	Pad material	Free holder (swinging)	Fall prevention valve
	● Standard small type (ø0.7, ø1, ø1.5, ø2, ø3, ø4) is added to conventional pad type series	● Material for small type Nitrile rubber, Silicone rubber, Urethane rubber, Fluoro rubber, Antistatic silicone rubber, Antistatic butadiene rubber, NBR compliant with food sanitation law		○
	ø1, ø2, ø3, ø4, ø6, ø8, ø10, ø15, ø20, ø25, ø30, ø40, ø50, ø60, ø80, ø100, ø150, ø200	Nitrile rubber, Silicone rubber, Urethane rubber, Fluoro rubber, Antistatic silicone rubber, Antistatic butadiene rubber, NBR compliant with food sanitation law	○	○
	ø15, ø20, ø25, ø30, ø40, ø50, ø60, ø80, ø100	Nitrile rubber, Silicone rubber, Urethane rubber, Fluoro rubber, Antistatic silicone rubber, Antistatic butadiene rubber, NBR compliant with food sanitation law	○	○
	ø10, ø15, ø20, ø25, ø30, ø35, ø50, ø70, ø100	Chloroprene rubber	○	○
	ø10, ø20, ø30, ø40, ø50, ø80	Nitrile rubber, Silicone rubber, Antistatic silicone rubber	○	○
	ø10, ø20, ø30, ø40, ø50	Nitrile rubber, Silicone rubber, NBR compliant with food sanitation law		○
	4×10, 4×20, 4×30, 5×10, 5×20, 5×30, 6×10, 6×20, 6×30, 8×20, 8×30	Nitrile rubber, Silicone rubber, Antistatic butadiene rubber	○	○
	ø4, ø6, ø8, ø10, ø15, ø20, ø30, ø40	Nitrile rubber, Silicone rubber, Fluoro silicone rubber, Antistatic silicone rubber	○	○
	ø6, ø8, ø10, ø15, ø20	Nitrile rubber, Silicone rubber	○	○
	ø10, ø20, ø30, ø40, ø50	Oil resistant NBR	○	○
	ø8, ø10, ø15, ø20	Nitrile rubber, Fluoro silicone rubber		
	● Compatible pad shape Standard type...General Standard type...Deep type	Bellows type, Oval type Nonskid type, Sponge type	○	○
		● Compatible stroke 10mm, 15mm, 20mm, 30mm, 40mm, 50mm		



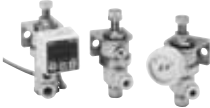
RELATED PNEUMATIC PRODUCTS

[Vacuum system equipment SELVACS]


● Fall prevention valve

Series	Model No.	Port size		Remarks
		Vacuum generator side	Workpiece side	
VSECV Series ● Separate circuit workpiece maintains vacuum even if workpiece deviates. ● This is applicable for SELVACS suction pad series. 	VSECV-M3	M3		
	VSECV-M4	M4		
	VSECV-M5	M5		
	VSECV-M6	M6		
	VSECV-6A	R(c)1/8		

● Small vacuum regulator

Series	Model No.	Port size		Remarks
		ø6	ø8	
VSRVV Series ● Terminal pressure can be controlled in addition to source pressure. ● Either a vacuum pressure switch with a digital indicator or a vacuum pressure gauge can be selected. 	VSRVV-*A*	○	○	Elbow (Output: male thread)
	VSRVV-*B*	○	○	Elbow (Supply: male thread)
	VSRVV-*U*	○	○	Union type




● Vacuum break unit

Series	Model No.	Port size		Remarks
		Vacuum generator side	Workpiece side	
VSLF Series ● Control vacuum break air while maintaining vacuum characteristics of vacuum ejector. ● Vacuum release circuit relief shortens vacuum releasing time. 	VSLF-44	ø4	ø4	
	VSLF-66	ø6	ø6	
	VSLF-46A	ø4	R1/8	
	VSLF-66A	ø6	R1/8	


Vacuum system equipment SELVACS CC-796

● Vacuum filter


●: Standard ○: Option

Series	Model No.	Port size						Remarks
		M5	ø4	ø6	ø8	ø10	ø12	
VSFB Series Large capacity union type <ul style="list-style-type: none"> ● Dust and water drops are eliminated with the cyclone effect and element. ● The entire dust case is removed with a single touch, preventing dust from scattering. 	VSFB-66			●				Filtration area: 20cm ²
	VSFB-88				●			Filtration area: 20cm ²
	VSFB-1010					●		Filtration area: 20cm ²
	VSFB-1212						●	Filtration area: 20cm ²
VSFU Series Small union type <ul style="list-style-type: none"> ● Tools are not required to replace or clean the element. ● In-line types are easily installed in piping. 	VSFU-1S	○	○	○				Filtration area: 2.8cm ²
	VSFU-1L	○	○	○				Filtration area: 4.7cm ²
	VSFU-2	○	○	○				Filtration area: 7.5cm ²
	VSFU-3			○	○	○		Filtration area: 12.5cm ²
VSFJ Series Small socket type <ul style="list-style-type: none"> ● Best for single unit ejectors with no integrated vacuum filter. 	VSFJ-44		●					Filtration area: 0.8cm ²
	VSFJ-66			●				Filtration area: 1.1cm ²


● Inline filter

Series	Model No.	Port size				Remarks
		ø4	ø6	ø8	ø10	
FSL Series <ul style="list-style-type: none"> ● Small size, light weight and space-saving in-line type. ● Usable with positive or negative pressure. ● Easy maintenance. 	FSL100	●	●			Filtration area: 4.7cm ²
	FSL200	●	●			Filtration area: 7.5cm ²
	FSL500		●	●	●	

● Vacuum pressure switch

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

● Air tweezers

Series	Model No.	Pad diameter				Rubber material	Holder shape
		ø2	ø4	ø6	ø8		
VST Series <ul style="list-style-type: none"> ● Pen shape body incorporates a suction pad and an ejector. ● Best for small parts assembly, etc. ● Package type is also available. 	VAT-A*N	○	○	○	○	Nitrile rubber	Type without valve
	VAT-A*S	○	○	○	○	Silicone rubber	Type without valve
	VAT-B*N	○	○	○	○	Nitrile rubber	Valve integrated type
	VAT-B*S	○	○	○	○	Silicone rubber	Valve integrated type



RELATED PNEUMATIC PRODUCTS

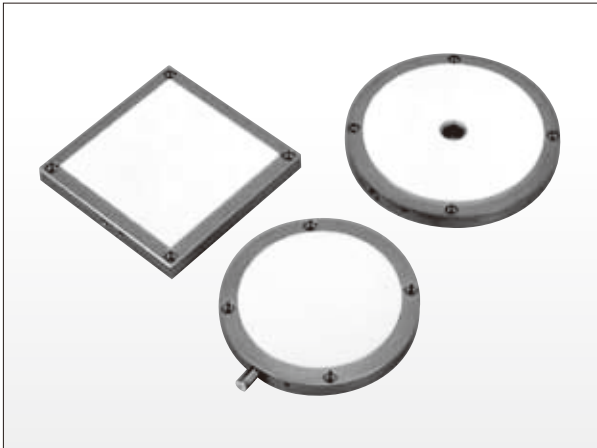
Components for vacuum

Precise suction plate

PVP Series

Vacuum suction plate with multi-porous fluorine resin on the workpiece contact surface
Since the suction surface is processed with high precision, workpiece can be maintained with high suction and high precision.

- Precision (high accuracy)
Suction surface flatness: 2 μ m, parallelism: 5 μ m
- Soft Suction surface hardness is Shore D60
- Sure 40% porosity causes strong suction.
- Light
Visible porous material specific gravity 1.3 and base (Al) specific gravity 2.7



Auxiliary Components CB-024SA

Components for vacuum

Vacuum regulator

VRA2000 Series

- □50×90 compact size
- 180L/min large flow rate
- High repeat pressure accuracy \pm 4kPa



Auxiliary Components CB-024SA

Components for vacuum

Vacuum filter

VFA1000, VFA3000, VFA4000 Series

- Pressure loss of filter does not increase for long periods of use
- More than 80% moisture removal by centrifugal separation effect of louvers
- Repeatedly usable by simple flushing after dust attachment



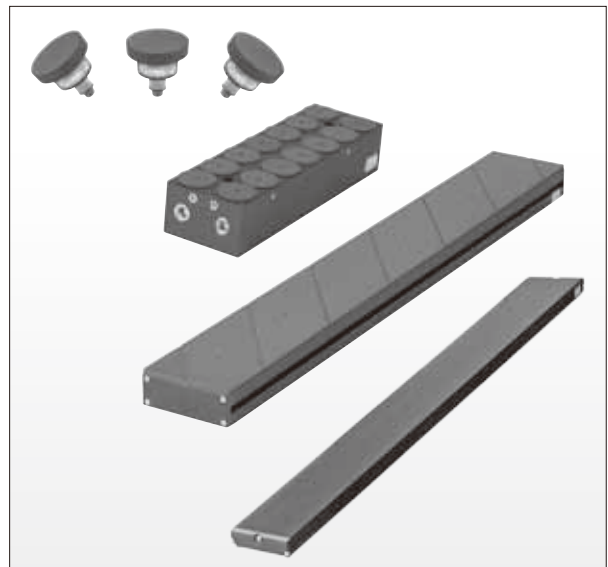
Auxiliary Components CB-024SA

Components for vacuum

Glass float module

GFM Series

- New porous material for stable floating
- New antistatic material prevents static electricity
- Class 10



Glass float module GFM Series CC-883A

Electronic pressure switch

High precision air pressure and vacuum pressure detection enables digital measurement display.

- **PPX Series**
New user-friendly, high-function digital pressure sensor with dual display to simultaneously check [current value] and [set value] of pressure, 3-color display, copy function of setting details, and 3-mode setting, etc.
- **PPG Series**
IP65-compliant protective structure
Equipped with the pressure unit switching feature
- **PPE Series**
Small-sized pressure SW. Piping connection can be chosen.
- **PSW Series**
Semiconductor pressure sensor provides reliability and long durability



Auxiliary Components CB-024SA

Digital gap switch

GPS3 Series

- Highly accurate 2-point output (at 2 points within the detection distance range, threshold can be set)
- A wide range, from the material surface to the precision work surface, is detected (detection distance range: 0.03 to 0.4 mm)
- Excellent maintainability (Direct blow possible. Structure can be disassembled when the orifice is clogged. In addition, there is a function which indicates the clogged point by flashing a lamp.)
- Manifold type and standard type are also supported

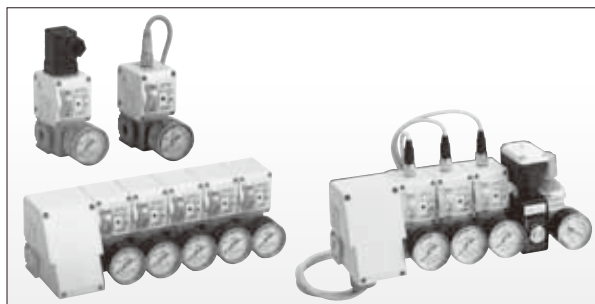


Digital gap switch GPS3 Series CC-1291A

Contact confirmation switch (Gap switch)

GPS2 Series

- Air bridge circuit prevents the effect of working pressure
- Easy adjustment is enabled with the scale of adjustment type dial
- Non-contact measurement will not damage products

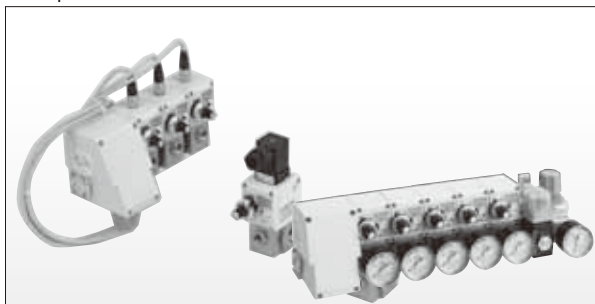


Auxiliary Components CB-024SA

Close contact confirmation switch

HPS Series

- Precision linear needle enables highly accurate variable-adjustment
- Low pressure use can reduce air consumption.
- Lock mechanism with dial scale enables easy adjustment with no problem of deviation.

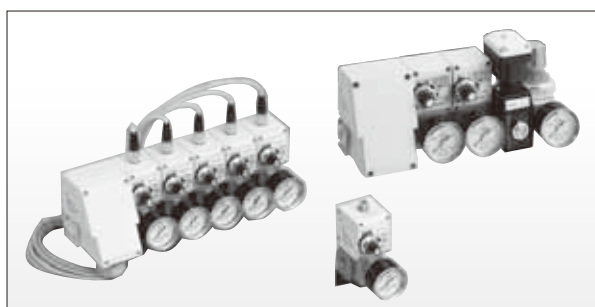


Auxiliary Components CB-024SA

Cutting tool broken detecting switch

TLPS Series

- Non contact detection enables detections during rotation, reducing the takt time compared to conventional methods.
- Air nozzle-based self cleaning enables use even in environments where coolant or swarf scatter.
- $\varnothing 0.3$ small diameter drill
1mm chip on the drill cutting edge can be detected.



Auxiliary Components CB-024SA



RELATED PNEUMATIC PRODUCTS

Sensors

PEL systems

Switching element, detection nozzle, PL switch, and SEPEL switch

- Small-sized. Space-saving, high precision and high response
- Non-contact detection enables detection of almost any object without damaging it
- A wide range of applications, such as presence, position or dimension confirmation



Auxiliary Components CB-024SA

Sensors

Small flow rate sensor (RAPIFLOW)

FSM2 Series

- High precision, fast response, large flow rate and compact
- Wide variety of functions for increased options and operability
 - Needle valve integrated type · Separate indicator
 - Clean specifications (P70, P80) · Panel mount is possible
 - Dual display/2-color display function · Bar display function



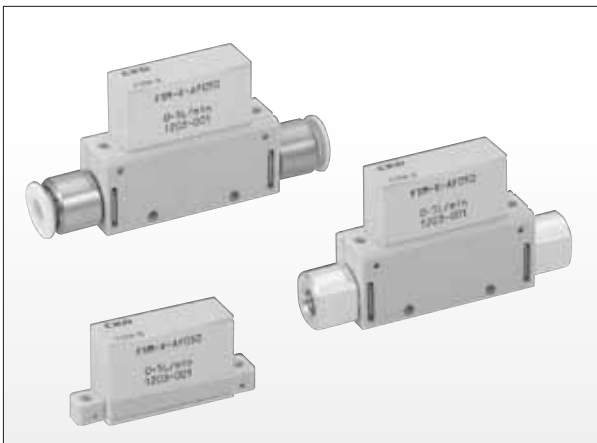
Small flow rate sensor RAPIFLOW FSM2 Series CC-886A

Sensors

Miniature flow rate switch (RAPIFLOW)

FSM-X Series

- Miniature, lightweight
Separated sensor head saves extra space. Weighs 4g, and achieves an extremely thin width of 8mm
- Bi-directional fluid measurement
Along with bi-directional fluid measurement, uni-direction measurement is also possible. Both measurement types allow suction/release confirmation
- Wide flow rate range
Bi-direction flow; $\pm 0.5, \pm 1, \pm 5, \pm 10\text{l/min}$
Uni-direction flow; $0.5, 1, 5, 10\text{l/min}$
A total of eight types are available.
Miniature shape but usable up to a large flow rate (10l/min)



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

Sensors

Small flow rate controller (RAPIFLOW)

FCM Series

- Small size, high speed and high precision
- Compatible with different fluids
- 0.5s high-speed control
- Mounted digital display shows control status at a glance
- Microcomputer enables multiple models



Auxiliary Components CB-024SA

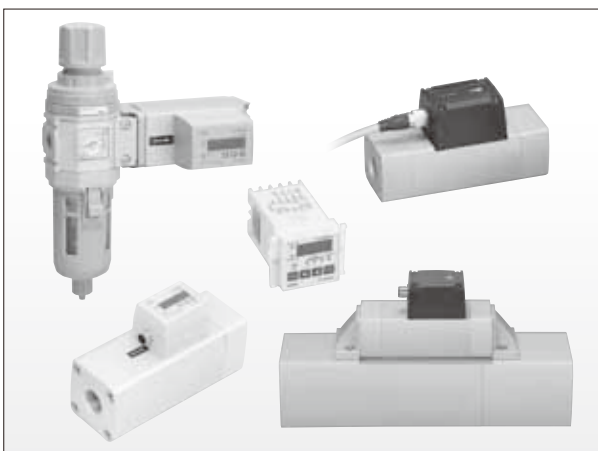
Flow sensor for compressed air (FLULEX flow sensor)

PF(F) Series PFU Series (Integrated display type)

- Four new features added to the conventional PF series!
 - ① Low pressure loss 0.005MPa
 - ② Prevents drain waterdrops from entering the piping
 - ③ Integrated display increases manageability
 - ④ Unit type with filter and regulator is added to the series
- Unitization enables three reductions!
 - ① Reduction of assembling man-hours
 - ② Reduction of piping space
 - ③ Reduction of ordering man-hours

PFD/PFK Series (Separate display type)

- Wide variety of outputs
- Corrections not required, readable directly with a digital gauge
- Excellent general accuracy $\pm 4\%$ F.S.



Auxiliary Components CB-024SA

Multi-monitor

MD Series

- Supports flow rate/pressure regardless of the sensor
- Analog output can be proportional to the displayed value
- Visually effective 3-color display
- Lock function prevents operation mistakes
- Energy saving mode function for power saving
- Scaling function enables displaying sensor input converted to a desired value



Multi-monitor MD Series CC-1290

Capacitance type electromagnetic flow sensor

WFC Series

- Thanks to its thorough construction, water of any quality can be used.
- Electrostatic capacity type will have no detection failure due to deposition on the electrodes.
- Repeatability is guaranteed even if an elbow is used in the piping.
- No stabilizing power supply is needed and no ferrite core is required for noise reduction.
- Zero point adjustment can be done through external input.
- Display can be inverted 180 degrees.
- Equipped with reverse flow detection feature.

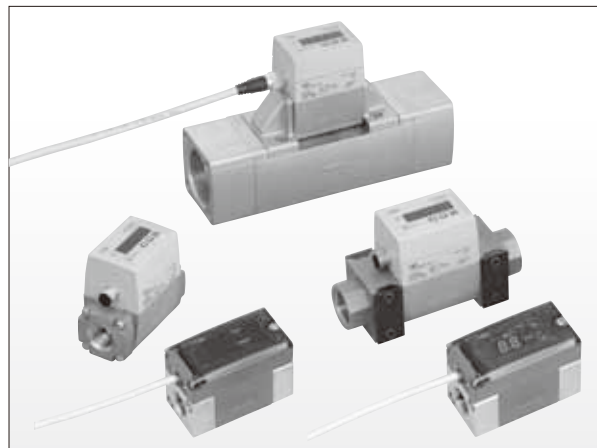


Electrostatic capacity electromagnetic flow rate sensor WFC Series CC-1230A

Karman vortex type FLULEX flow sensor

WFK Series

- Karman vortex detection method enables use even in environments with poor water quality
- Large effective cross-sectional area achieves low pressure loss.
- Helps save energy in a water supply pump.
- Unique vortex frequency processing technology achieves a fast response of 1.0 second
- Display of instantaneous flow and integrating flow rates is switched by one touch
- 5-digit digital display (WFK5027/6027) is equipped to enable one-day integrating flow rate to be viewed at a glance
- In addition to alarm output, an analog output useful for record control is equipped as standard



Auxiliary Components CB-024SA



INDEX/DIRECT DRIVE ACTUATOR

Mechanical Index System Table

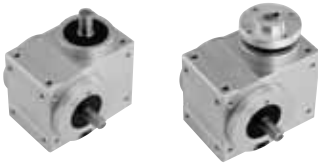
Fundamental motion	Roller gear cam		Parallel cam	Table drive	Conveyor drive	Hollow shaft	Wide angle	High speed	Multi-index	Flat
	Straight shaft	Flange shaft								
Index 	RGIS 025, 032	RGIS 025, 032								
	RGIS 040 to 250	RGIS 040 to 250								
	RGIL 063 to 250									
		RGIT 063 to 250								
		RGIM 063 to 100								
		RGID 200 to 250								
		RGIB 250								
			PCIS 040 to 250							
Oscillator 	RGOS 025, 032	RGOS 025, 032								
	RGOS 040 to 250	RGOS 040 to 250								
	RGOL 063 to 250									
			PCOS 040 to 250							
Reducer 	RGCS 040 to 250	RGCS 040 to 250								
		RGCT 063 to 250								
		RGCM 063 to 100								
		RGCD 200 to 250								
Circling type P&P Oscillating P&P Index P&P 	PPIX/PPOX 063 to 180									
	PPIH/PPOH 040 to 080									
		PPIIM 063 to 110								
Linear type P&P 	PPLX(A) 040 to 080									
		PPLX(B) 040 to 080								
Peripheral devices	TSF Series (TSF2 to 18)		Worm reducer (HO32 to 135)							

Index units (Indexman) CB-19

Roller gear cam unit

- Orthogonal shafts type intermittent indexing device composed of a compact, high speed, high power, precise roller gear cam and turret.

■ Small type



- The smallest model for device downsizing and automatization. The index small type with a roller gear mechanism is suitable as a drive source for index positioning of small precision parts.

Model	Index number	Total index angle (°)	Index accuracy (s)	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			

RGIS032 in brackets

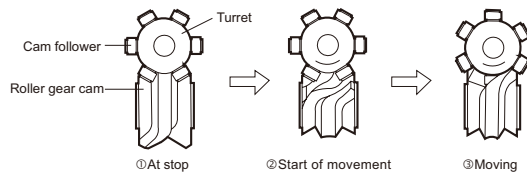
■ Standard type



- Roller gear cam and cam follower based on a balanced design.

Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Torque saver	Weight (kg)
RGIS 040	2 to 48	90 to 330	±60	0 to 600	TSF4.5	5
RGIS 050					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

Movement of roller gear cam



Cam followers are arranged radially at the output shaft turret with preload constantly applied by the tapered ribs of the cam, minimizing backlash.



■ Wide angle type

- A wide angle index is obtained with a small index angle, increasing stop time in continuous operations.



Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Torque saver	Weight (kg)
RGIL 063	2 to 8	45 to 240	±60	0 to 400	TSF4.5	17
RGIL 080					5	27
RGIL 110					6	60
RGIL 140					8	100
RGIL 180					11	300
RGIL 250					14	520

■ Table type

- Features a hollow fixed shaft useful for piping and wiring.



Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Hollow diameter (mm)	Weight (kg)
RGIT 063	3 to 48	90 to 330	±30	0 to 600	ø15.2	17
RGIT 080					ø26.7	29
RGIT 110					ø40	57
RGIT 140			±20		ø52.6	150
RGIT 180					ø65	300
RGIT 250					ø95	650



INDEX/DIRECT DRIVE ACTUATOR

Mechanical index unit

Roller gear cam unit



Small multi-index type

- Thin type housing enables reduction of table installation surface, work position, and component height. About 80% the height of the RGIS series. 4 to 24 indexes are possible for one dwell.

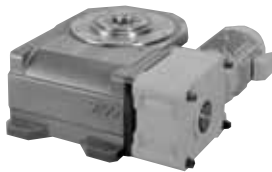
Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Overall height (mm)	Weight (kg)
RGIM 063	4 to 96	90 to 330	±30	0 to 600	95	9
RGIM 080					148	25
RGIM 100					170	40



Flat type

- The output shaft section has a large diameter hollow fixed shaft and its thin type ring-shaped structure is ideal for excellent, high efficiency, multi-process machines.

Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Hollow hole diameter (mm)	Weight (kg)
RGID 200	8 to 80	90 to 330	±30	0 to 250	ø160	70
RGID 250					ø200	130

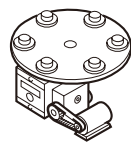


Basic type

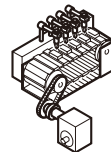
- Geared motor integrated type with a hollow fixed shaft

Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Hollow hole diameter (mm)	Weight (kg)
RGIB 250	2 to 32	120 to 330	±20	0 to 200	ø80	335

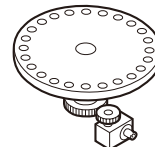
Use cases



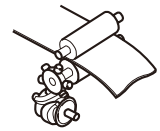
Example of table drive



Example of conveyor drive



Example of gear reducer drive

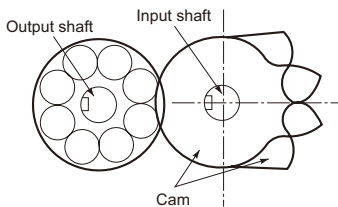


Example of roll drive

Mechanical index unit

Parallel cam unit

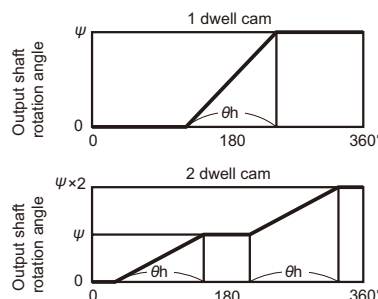
- Index devices with a parallel cam mechanism where input and output shafts are parallel to conveyor feeding suitable for small index numbers (1, 2, 3, 4).



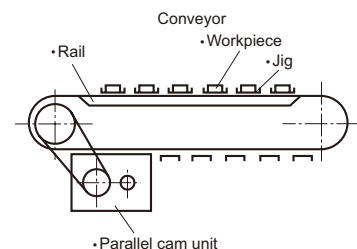
Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Torque saver	Weight (kg)
PCIS 040	1 to 4 (6, 8)	90 to 330	±90	0 to 500	TSF4	3
PCIS 050					5	6
PCIS 063					5.6	11
PCIS 080			6		19	
PCIS 100			8		32	
PCIS 125			11		62	
PCIS 160			14		130	
PCIS 200			18		240	
PCIS 250			(18)		400	

2 dwell cam in parentheses

Timing diagram



Use cases

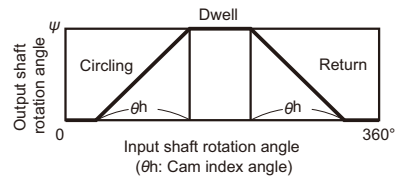
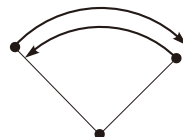
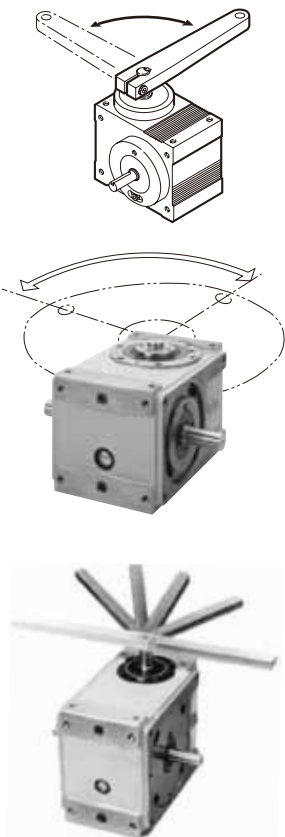


Oscillator unit

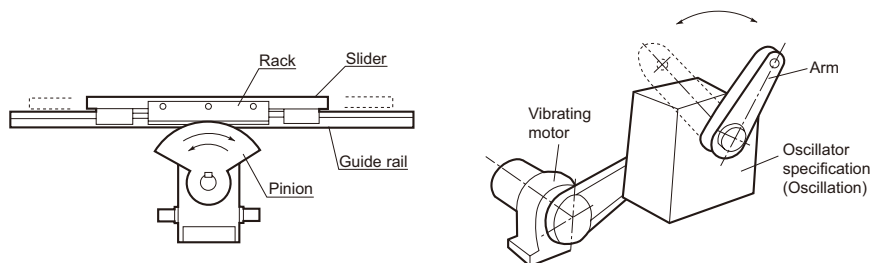
● High precision oscillating devices with a roller gear cam/parallel cam mechanism. A constant velocity revolution is given to the input shaft causing the output shaft to move in a cycle of circling-stop-reversion-stop.

- Small type RGOS
- Standard type RGOS
- Wide angle type RGOL
- Parallel type PCOS

Movement and Timing Diagram



Use cases

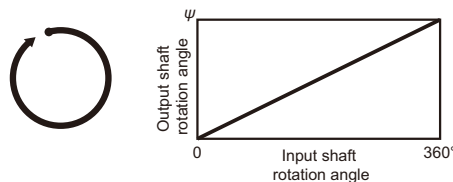


Reducer Series

● Rolling contact reducer. Reducer with a roller gear cam mechanism applies preload by using a cam follower, increasing the speed reduction efficiency. High precision speed-reduced positioning is realized with little backlash.

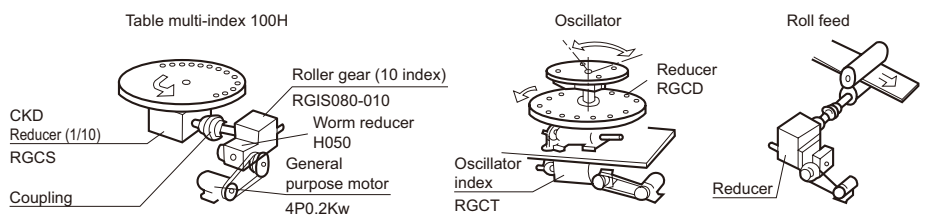
- Standard type RGCS
- Table type RGCT
- Small multi-index type RGCM
- Flat type RGCD

Movement and Timing Diagram



A deceleration mechanism suited for the index number* is realized by using a constant velocity curve without acceleration and deceleration for the cam curve.
*Index number possible for one dwell

Use cases





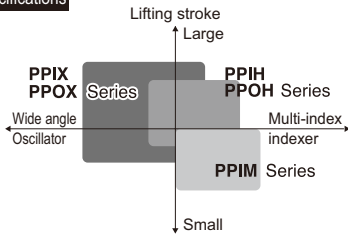
INDEX/DIRECT DRIVE ACTUATOR

Mechanical index unit

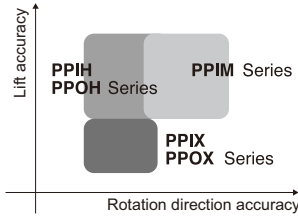
Circling type P&P unit

Circling type P&P unit selection guide

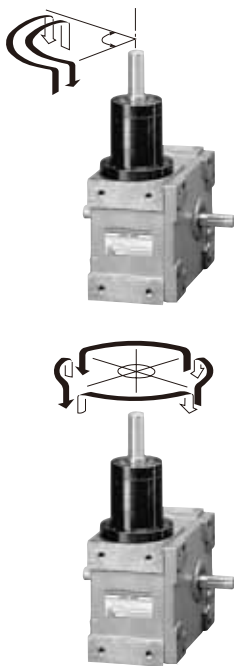
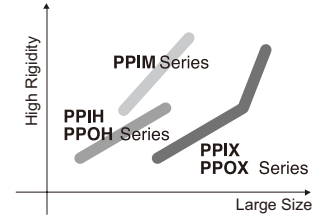
Specifications



Accuracy



Performance



Standard type

- Max. 0.5 second/cycle is realized for tact time: PPIX/PPOX Series

A thin and compact housing is achieved by using a grooved cam for lifting, enabling effective use of work space. Ideal for transfer of various electronic parts and small parts.

PPOX (Oscillator P&P specification)

Model	Lifting amount (mm)	Oscillating angle (deg)	Repeat accuracy (s)	Rotation speed (rpm)	Allowable 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 specification)

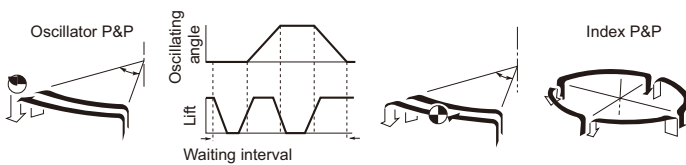
Model	Lifting amount (mm)	Index number	Index accuracy (s)	Rotation speed (rpm)	Allowable table outer diameter (mm)*	Weight (kg)
PPIX 050	MAX18	2 to 8	±120	0 to 120	250	8
PPIX 063	25				320	15
PPIX 080	30				400	25
PPIX 110	40				550	50
PPIX 140	50				700	90
PPIX 180	70				900	185

*For necessary oscillating angle, index angle, timing chart, etc., please contact us.

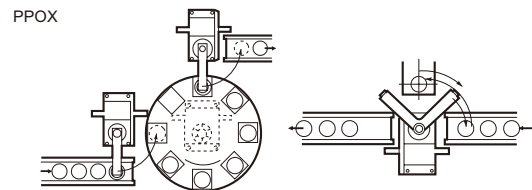
*Arm radius and table outer diameter are estimates.

When planning equipment selection, calculate torque values based on the load and confirm with the catalog.

Movement and Timing Diagram



Use cases



High speed type

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

Suitable for high-speed operation. Two roller gear cams are used for circling and lifting with preload constantly applied, minimizing backlash.



PPOH (Oscillator P&P specification)

Model	Lifting amount (mm)	Oscillating angle (deg)	Repeat accuracy (s)	Rotation speed (rpm)	Allowable 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 specification)

Model	Lifting amount (mm)	Index number	Index accuracy (s)	Rotation speed (rpm)	Allowable table outer diameter (mm)*	Weight (kg)
PPIH 040	MAX18	2 to 12	±120	0 to 600	ø200	12
PPIH 050	25				ø250	21
PPIH 063	30				ø320	36
PPIH 080	40	2 to 16	±90		ø400	67

Circling type P&P unit



■ Small size, high speed and high precision type

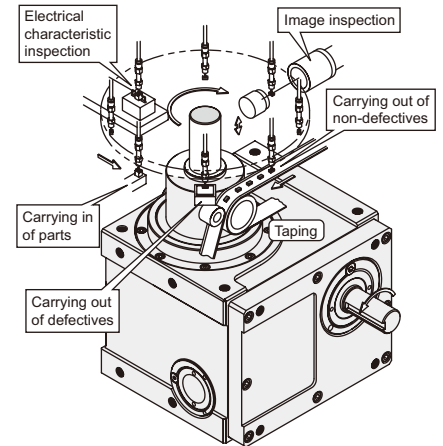
- High precision, high rigidity, space-saving: PPIM Series
New main shaft structure improves high precision and high rigidity, supporting high speed and high precision transfer of tiny chip components. Body miniaturization saves space.

PPIM (Index P&P specification)

Model	Lifting amount (mm)	Index number	Index accuracy (s)	Rotation speed (rpm)	Allowable arm radius (mm)*	Weight (kg)
PPIM 063	4 to 10	4 to 16	±30	0 to 600	ø320	18
PPIM 080					ø400	32
PPIM 110	4 to 15				ø550	68

Use cases of PPIM

Inspection machines and taping machines for semiconductor chips, electronic components, etc.



Linear type P&P units Arm type A, Table type B



- Max. 0.5 second/cycle for high speed transfer
Small size thin type linear pick & place unit. Two sets of roller gear cam mechanisms enable any 2D planar motion for straight-ahead conveyor line of small workpieces, etc.
- Small size/thin type
Thin and compact. Space saving Arm type A and table type B are available depending on the application.

PPLX (Arm type A)

Model	La Stroke (mm)	Lb Stroke (mm)	Repeat accuracy (mm)	Input shaft rotation (rpm)	Loading weight (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

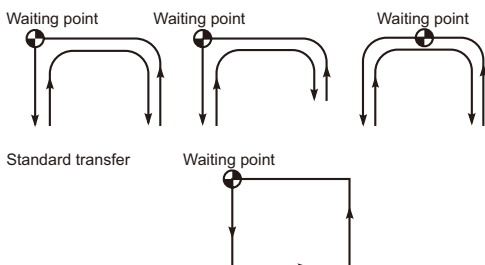
PPLX (Table type B)

Model	La Stroke (mm)	Lb Stroke (mm)	Loading weight (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

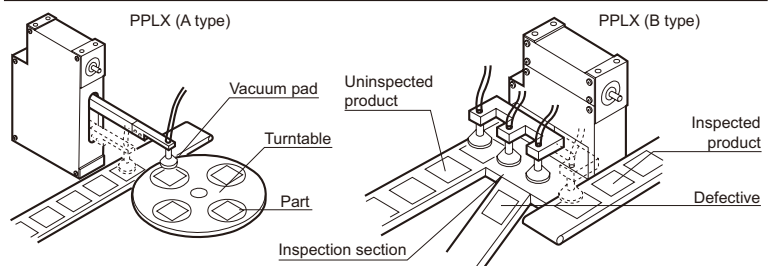
For loading weight, minimum index angle, etc., refer to the catalog
*For input shaft rotation speed and options with motor, please contact us.

Main movements

Main movements of Pick & Place



Use cases





INDEX/DIRECT DRIVE ACTUATOR

Mechanical index unit

Worm reducer

HO Series/TE Series

- Worm reducer for use with Index units (Indexman). When directly installed on the input shaft, the ideal rotation and braking is realized, maximizing the performance of Index units.
- TE series is a high torque type reducer.



Index units (Indexman) CB-19A

Mechanical index unit option

Torque saver (Overload protection device)

TSF Series

- This is a safety device which is attached to the index output shaft to prevent rotary shaft overload in order to protect the index from overload.
- One point setting which is always reset to the same position after actuation.



Index units (Indexman) CB-19A

Mechanical index unit option

Torque saver for table type

TST Series

- This is a safety device which is attached to the index output shaft to prevent rotary shaft overload in order to protect the index from overload.
- One point setting which is always reset to the same position after actuation.



Index units (Indexman) CB-19A

Mechanical index unit option

Torque guard coupling type (Overload protection device)

TGX Series

- Coupling function
Angle error, parallelism error, and misalignment of axial displacement are absorbed by the ball and wedge mechanism.
- One position
The ball and wedge array is a special combination that only matches at one position.
- Return accuracy $\pm 10s$
- High precision trip (Release)
- Simple torque setting



Index units (Indexman) CB-19A

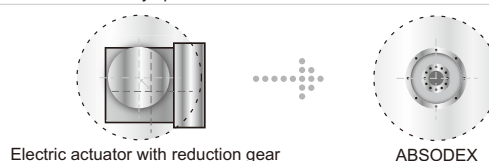
ABSODEX compact type AX6000M Series

- **Space saving**
In addition to its small dimensions of 80 mm diameter, 47 mm height (AX6001M), the rotary shaft and body have the same core, resulting in a compact design that completely eliminates unnecessary space.
- **Flexible**
Possesses the capability to create various actuation patterns, allowing easy realization of one's desired actuation, such as "indexing actuation", "oscillator actuation", or "continuous rotation actuation".
- **Highly reliable**
Thanks to the gearless structure, there's no need to worry about gears being damaged by overload or loss of precision from worn-out gears.
- **Various I/O signals**
Various I/O signals suitable for index table, including "segment position output (stop position output)" and "index halfway output" are available. As encoder output capability is also equipped, controlling with positioning unit is also possible.



Space saving

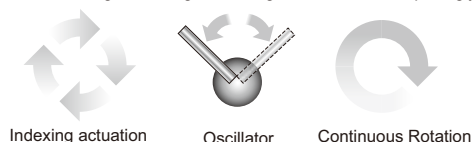
In addition to the smallest dimensions in the industry, adopting a concentric form (rotating and fixed core are same) enabled compact equipment design that eliminates unnecessary space.



Flexible

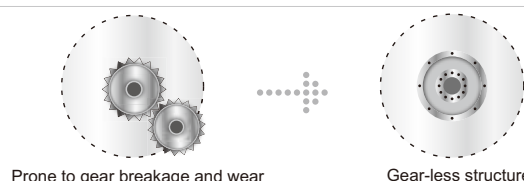
Capable of creating a wide variety of programs, allowing achievement of one's desired actuation. Also supports easy actuation settings, including auto-creation of a pointing program.

Complex actuation settings including combining actuations are surprisingly simple!



High reliability and maintenance free

Thanks to the gearless structure, there's no need to worry about gears being damaged by overload or loss of precision from worn-out gears.



Model	Max. output torque (N·m)	Max. revolving speed (rpm)	Allowable load inertia Moment (kg·m ²)	Allowable axial load (N)	Axial runout (mm)	Face deflection (mm)	Weight (kg)	Compatible driver
AX6001M	1.2	240	0.034	600	0.03	0.05	1.2	AX9000MU
AX6003M	3.0		0.059				1.8	

ABSODEX compact type AX6000M Series CC-1148A

Use cases

Half-automated processes

[Purposes]
 • Better productivity
 • Stable operation

θ axis unit on modularization of equipment

[Purposes]
 • Faster equipment design time
 • Reuse of equipment

Add as a sub-assembling process to existing equipment
 (Replacement of configuration factors of existing equipment)

[Purposes]
 • Improvement of overall takt time of equipment
 • Compacting existing equipment



INDEX/DIRECT DRIVE ACTUATOR

Electronic index unit

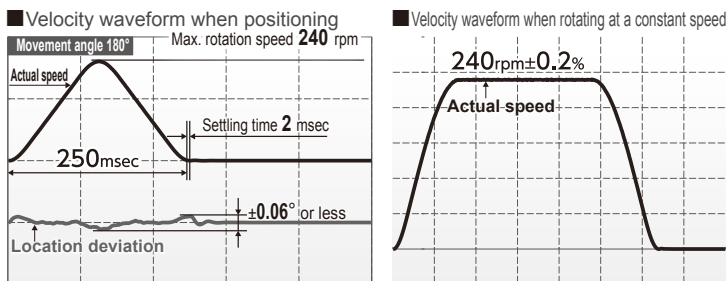
ABSODEX high precision type AX7000X Series

Best-in-class high-resolution encoder equipped

Resolution	4,194,304 pulse/rev
Repeat positioning accuracy	±2 seconds

"High precision x high response" positioning is achieved

In addition to high precision positioning, responsibility and stability at a constant speed are also greatly improved.

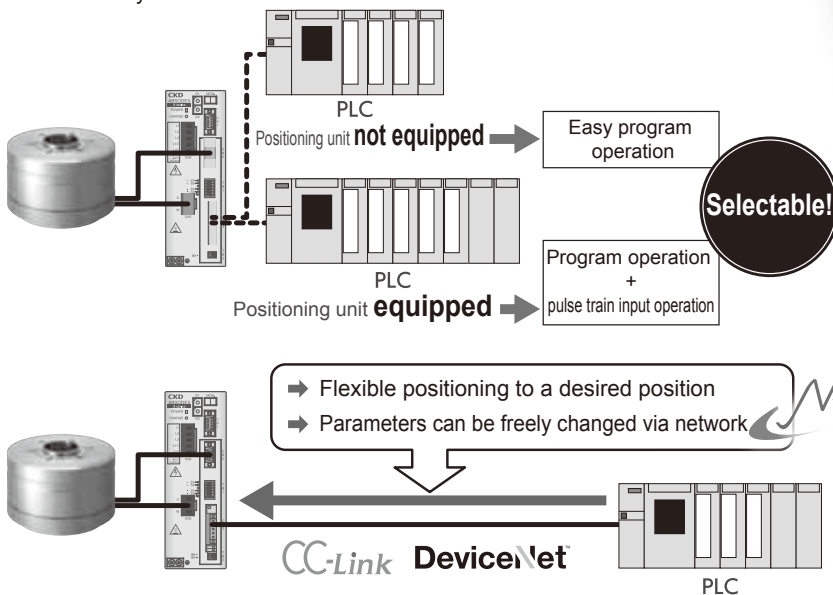


* The above values are for reference and not guaranteed. Values vary depending on load conditions etc.

High performance

Flexible positioning is possible

As an ABSODEX-specific feature, a multi-functional driver (XS type) is supported. "Flexible programming function" enables complex movements easily. Conveniently communicate with higher controllers using the most input signals in the industry!



Model	Max. output torque (N·m)	Max. rotation speed (rpm)	Allowable moment of load inertia(kg·m ²)	Allowable axial load (N)	Axial 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	

For both beginners and experts, it's now **even easier** to use AX Tools

A simple and easy interface which can be operated intuitively is adopted.



...ce and ease-of-use



Intuitive setting!

New



Program creation for a new function "Point table operation" is supported

First in the industry! Equipped with AI (artificial intelligence) function to **support adjustments**

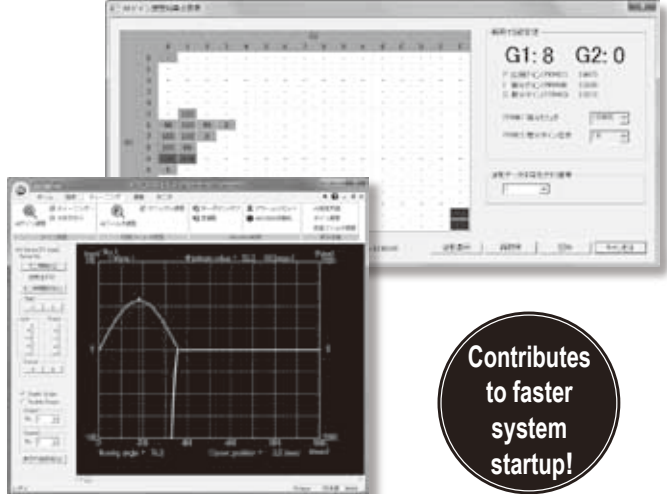
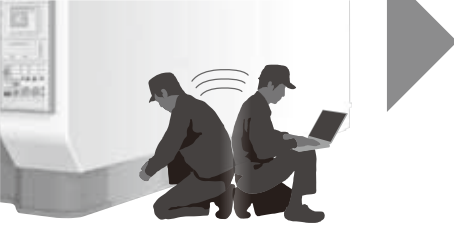
AI (artificial intelligence) adjustment function to support product startup is equipped. Even a beginner can make adjustments just like an expert.

With AI (artificial intelligence) adjustment function

- Automatically obtains data and advises the optimal tunings
- Reduces dangerous operation with an alarm check function
- Tuning results are automatically scored. You can set the optimal gain values while checking points and moving waveforms displayed as a list

In conventional models...

- Manual tuning relies on experts
- Worried about overseas startup
- Evaluating the tuning results is difficult



Contributes to faster system startup!

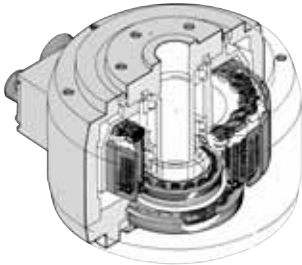
* Compatible with all models of the ABSODEX AX Series (TS/TH/MU/XS)



INDEX/DIRECT DRIVE ACTUATOR





Electronic index unit

ABSODEX



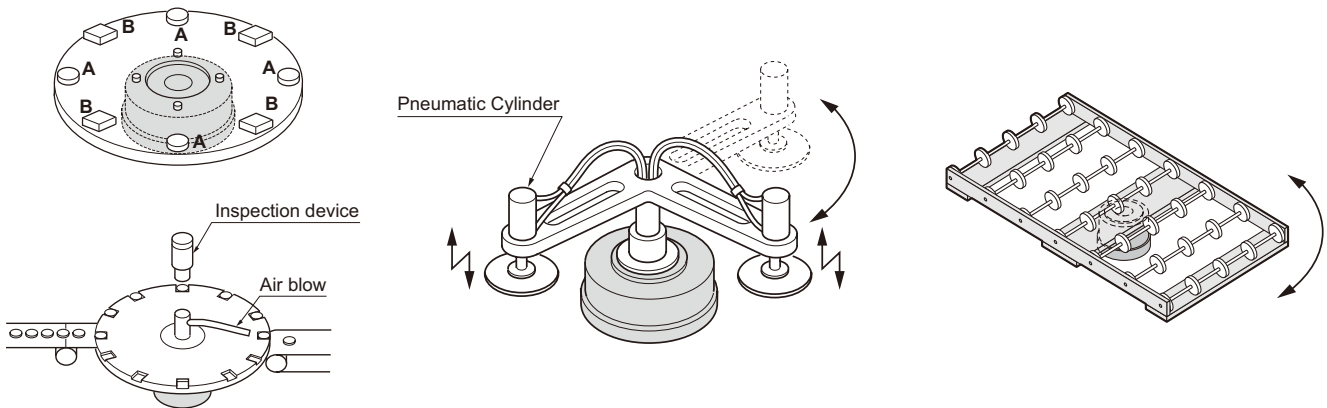
- New generation multi function direct drive actuator.
- ABSODEX enables establishment of environmentally-conscious productive facilities. Energy saving. No need to replace or dispose of lubricant. Space saving. Specifications are easy to change and parts easy to reuse. Excellent basic performance.
- Return to home position not required
Absolute resolver enables recognition of current position without returning to origin.
- Smooth cam curve drive
4 types of cam curves are available, including modified sine, modified trapezoidal, deformation rate and trapezoid.
- Compact & high torque
- Excellent operability
Programs are created easily by answering questions with the interactive terminal.
- You can select between TS type driver (Max. output 75N•m) and TH type driver (Max. output 150N•m or more).
- Drivers compatible with CC-LINK, DeviceNet and PROFIBUS-DP are available.

ABSODEX System Table

Series	Model	Index accuracy (s)	Repeat accuracy (s)	Features					Compatible driver	
				High speed	Hollow shaft	Waterproof	Brake	Interchangeable	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				○	◎	◎	◎	○	

* The AX8000 Series is a custom order product.

Use cases



ABSODEX Quick response type



- Instantaneous positioning makes setup easier. Quick response ABSODEX
- Shorter tact time for equipment
 - Improved response reduces time loss
 - Instantaneous positioning reduces stabilization time to 1/4 (based on CKD measurements)
 - Start time reduced by linking with peripheral components
 - By adding A/B phase output signal, peripheral components are easier to synchronize.
- Improved usability
 - Optimal tuning in no time.
 - Semi-automatic tuning function added.
 - Easier setup.
 - Adjusting software "AX Tools" comes as standard.
 - Increased I/O signals.
 - Added ready output, servo on, etc.
 - Control is on even when the motor is off.
 - Power supply separated between motor and control
- Downsized GH/WGH type drivers
 - Volume reduced to 65%. 50mm shorter depth (compared to our previous models)
- ABSODEX programming tool
 - Interactive terminal "AX0180" is available.
 - Starting adjustment support tool "AX Tools" provided free



AX0180

Model	Max. output torque (N·m)	Max. revolving speed (rpm)	Allowable load inertia Moment (kg·m ²)	Allowable axial load (N)	Axial runout (mm)	Face deflection (mm)	Weight (kg)	Compatible driver		
AX1022T	22	240	0.6	600	0.01	0.01	8.9	AX9000TS		
AX1045T	45		0.9				12.0			
AX1075T	75		4.0				23.0			
AX1150T	150	120	6.0	2200			32.0	44.0	AX9000TH	
AX1210T	210		10.0							
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	3700			0.05	0.05	36.0	AX9000TH
AX4150T	150		75.00						44.0	
AX4300T	300		180.00						66.0	
AX4500T	500	70	300.00	20000	0.08	0.08			115.0	AX9000TH
AX410WT	1000	30	600.00						198	

Direct drive actuator quick response type ABSODEX AX2000T Series CC-995A
1000
4000

ABSODEX Dustproof & waterproof type



- $\phi 250$, Index table with T slot
- High speed and high precision electronic index with dustproof & waterproof structure based on absolute method Index table suitable for rotary positioning device in processing & cleaning process.

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



INDEX/DIRECT DRIVE ACTUATOR

What's new in the TS/TH driver?

- **Quick response**
High speed CPU improves responsiveness to significantly shortens the time needed for stabilization. This helps you shorten the tact time of the equipment.
- **Compact and light**
The large type (maximum torque of 150 N·m or greater) is made 65% smaller in volume (compared to our previous models). Lightweight with a plastic body

- **Encoder output added**
Positioning control through pulses is easier with the new A-B phase output of current position feature.

- **UL/cUL Certified**
The actuator is certified by the following standards.

·UL1004-1
·CSA 22.2 No.100
(File no. : E328765)



- The driver is certified by the following standards.
UL508C
CSA 22.2 No.14
(File no. : E325064)



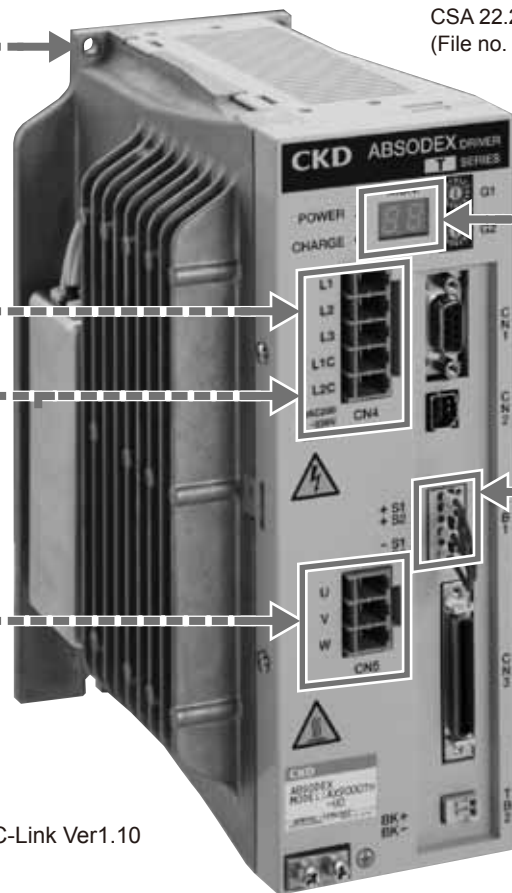
- **Mounting hole eliminates the task of using a mounting bracket**

- **Separate main power supply and control power supply**
It is now possible to cut off only the main power supply

- **7 segment LED 2-digit display**
Improved visibility and indication of alarm details makes maintenance easier. The set value for gain adjustment will be shown on the LED as well.

- **Connector provided**
Easy crimping free wiring. Risks of electric shock lowered since the terminal is not exposed.

- **Terminal for safety**
Create a power cut off circuit easily with the STO function. (safe torque off)



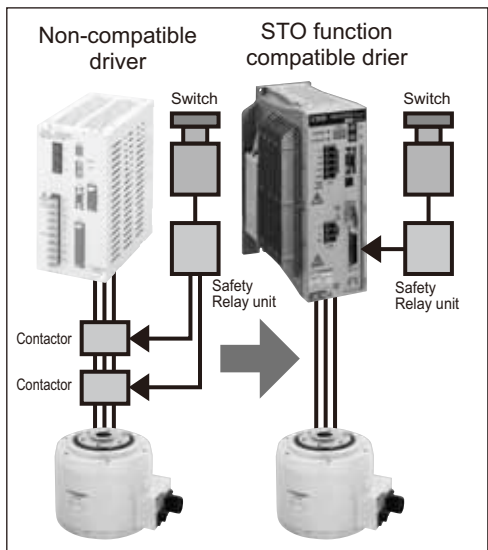
- **Supported fieldbus**

CC-Link CC-Link Ver1.10

DeviceNet DeviceNet

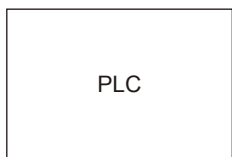
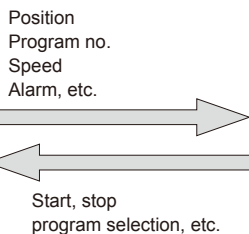
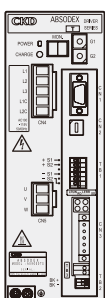
PROFIBUS PROFIBUS DP

- **Monitor with serial communication**
Program number, position and alarm can be monitored from the PLC.



Installation of contactor for cutting off motor power is no longer required.

AX9000TS/TH-U2(U3,U4)



MEMO



FLUID CONTROL VALVES

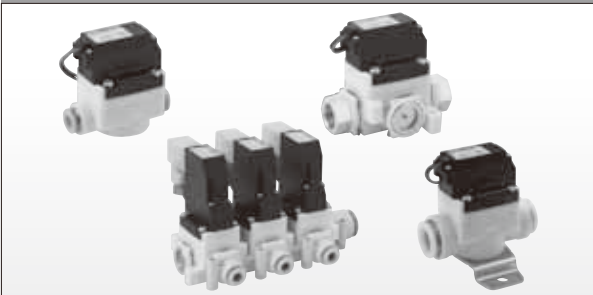
2 port pilot operated solenoid valve for compressed air

Compact air blow valve

EXA Series

- Large flow rate / low power consumption
A low wattage (0.6W) 3-way pilot valve for the actuator enables both large flow rate and energy efficiency. (Operable directly from PC)
- Compact and lightweight
Materials are optimized for weight reduction. Volume reduced by 70%, weight by 30% compared to CKD's conventional models.
- Piping connection is easy
Body with push-in fitting reduces labor. Screw joint is also usable.
- Oil-prohibition specification (optional)
Ideal for oil-restricted environments.
- Manifold type
Saves space by allowing for a wide variety of piping layouts.

Port size: push-in fitting $\phi 6$ to $\phi 12$, screw-in fitting Rc1/4, Rc3/8



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

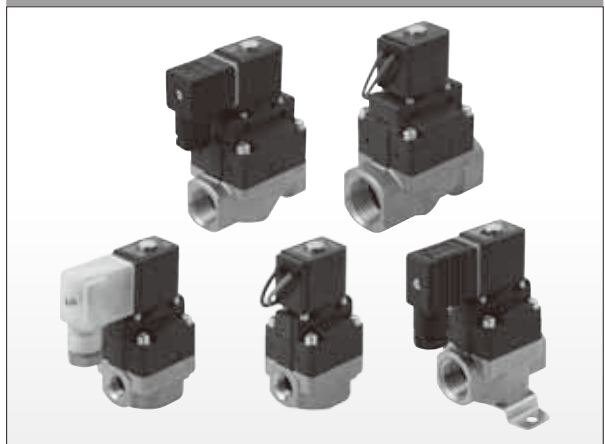
Compact pilot operated solenoid valve for water

Compact pilot operated solenoid valve for water

FWD Series

- Lower power consumption
- Compact and lightweight
Materials are optimized for weight reduction.
- Large flow rate
Over 1.3 times compared to previous CKD models.

Port size: Rc1/4 to Rc1



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

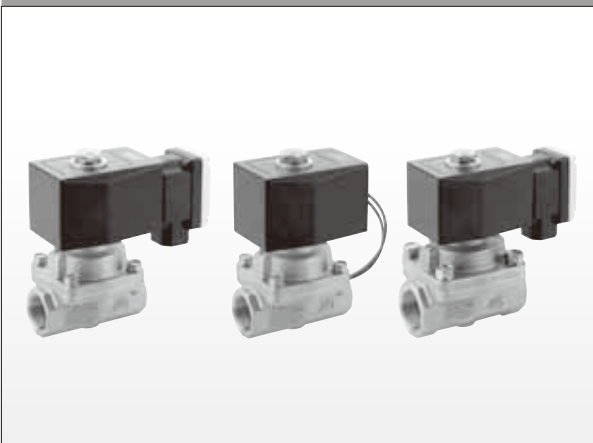
Pilot kick solenoid valve for steam

Pilot kick solenoid valve for steam

SPK Series

- Life-cycle of 100 million uses. Greatly improved durability.
- Lower power consumption (1/2 of previous CKD models), reducing energy usage.
- Improved external seal functionality. Uses high temperature and steam resistant PTFE square rings.
- Improved maintenance. Adoption of high-maintainability HP terminal box (optional).
- High resistance to scaling and dust. Inheritance of CKD proven specially-structured piston ring.

Port size: Rc1/2 to Rc1



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

Compact direct acting type 2/3-port solenoid valves

Compact direct acting type 2/3-port solenoid valves

HNB/HNG USB/USG Series

- Space-saving small direct acting 2/3-port solenoid valves
Useful for space-saving design of devices.
- Various fluids can be controlled
Solenoid valves suitable for control of various fluids including air, water and low vacuum.
- Compact but long durability design
Wear resistance is enhanced by specially-structured movable parts. (HN Series)

Port size: M5, M6, Rc1/8, Barb fitting



General Purpose Valves CB-03-1SA

Direct acting 2/3 port solenoid valve for dedicated fluid control

Special purpose valve for compressed air

FAB/FAG GFAB/GFAG Series

- Easy-to-use body porting
- Wide series variations
5 models with coil width 18 to 40mm. Series features a wide range of options, such as port size, orifice and working pressure.
- Low wattage design
- High reliability
Specially structured movable parts prevent wear, dramatically increasing durability.
- Lightweight aluminium die-casting body.

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



Fluid control valves CB-03-1SA

Direct acting 2/3 port solenoid valve for dedicated fluid control

Special purpose valve for dry air

FGB/FGG GFGB/GFGB Series

- Easy-to-use body porting
- Wide series variations
4 models with coil width 22 to 40mm. Series features a wide range of options, such as port size, orifice and working pressure.
- Low wattage design
- High reliability
Specially structured movable parts prevent wear, dramatically increasing durability even when super-dry fluid is used.
- Lightweight aluminium die-casting body.

Port size: Rc1/8 to Rc1/2



Fluid control valves CB-03-1SA

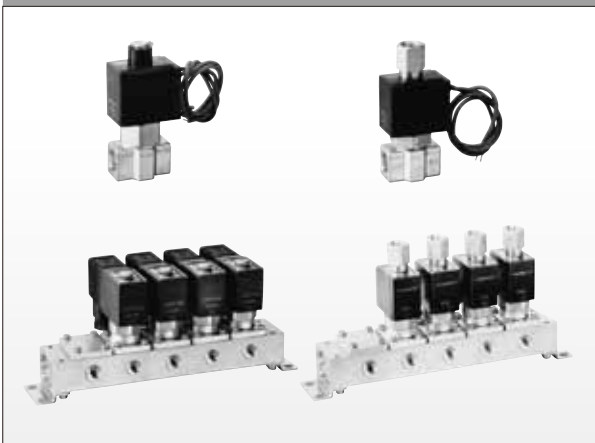
Direct acting 2/3 port solenoid valve for dedicated fluid control

Special purpose valve for water

FWB/FWG GFWB/GFWG Series

- Wide series variations
4 models with coil width 22 to 40mm. Series features a wide range of options, such as port size, orifice and working pressure.
- Low wattage design
- High reliability
Special magnetic material for corrosion resistance.

Port size: Rc1/8 to Rc1/2



Fluid control valves CB-03-1SA

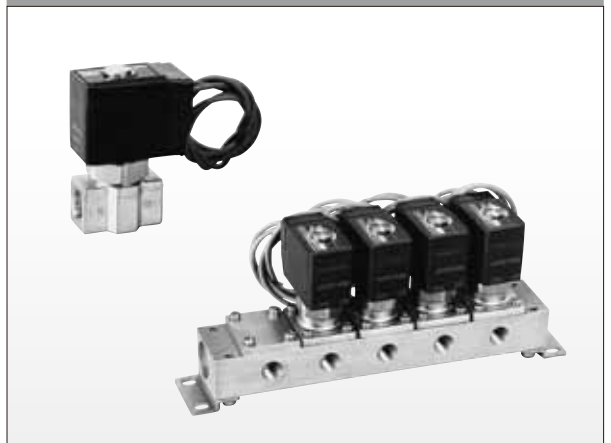
Direct acting 2/3 port solenoid valve for dedicated fluid control

Special purpose valve for medium vacuum

FVB GFVB Series

- 2 port solenoid valve for medium vacuum (1.33×10^{-2} Pa(abs)) control
- Wide series variations
4 models with coil width 22 to 40mm. Series features a wide range of options, such as port size, orifice and working pressure.
 - Low wattage design
 - Low leakage achieved
 1.33×10^{-6} Pa·m³/sec He or less leakage is maintained.

Port size: Rc1/8 to Rc1/2



Fluid control valves CB-03-1SA



FLUID CONTROL VALVES

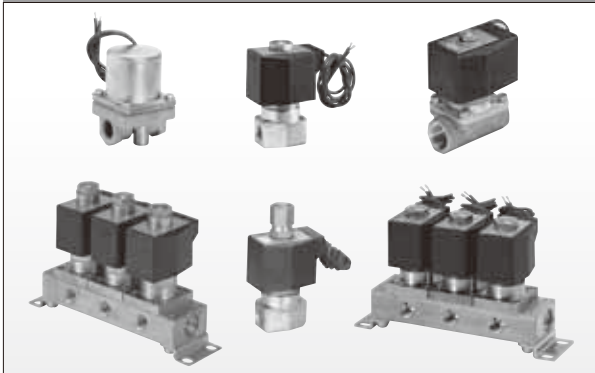
General purpose 2/3-port solenoid valve

Direct acting general purpose valve

AB/AG GAB/GAG Series

- 2/3 port solenoid valves for various fluids control
Solenoid valves suitable for control of various fluids including air, water, gas, oil and vacuum.
- A wide range of options
A variety of options, such as wetted material and coil housing are available.
- Wide series variations
A wide range of series, such as 2/3-port valve, port size, orifice, working pressure are available.
- DC low wattage series
Power consumption of 7W. Large energy saving compared with conventional 11W

Port size: Rc1/8 to Rc1



Fluid control valves CB-03-1SA

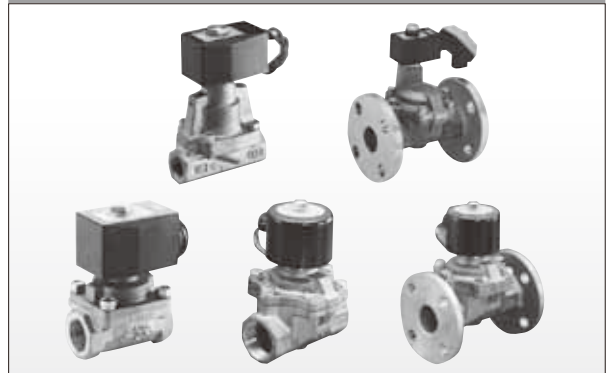
General purpose 2/3-port solenoid valve

Pilot operated general purpose valve

AP/AD APK/ADK Series

- 2-port solenoid valve for various fluids control
Solenoid valves suitable for control of various fluids including air, water, gas, oil and vacuum.
- A wide range of options
A variety of options, such as wetted material and coil housing are available.
- Wide series variations
A wide range of series, such as piston type, diaphragm type, port size, orifice and working pressure range are available.
- DC low wattage series
Power consumption of 7W. Large energy saving compared with conventional 11W

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



Fluid control valves CB-03-1SA

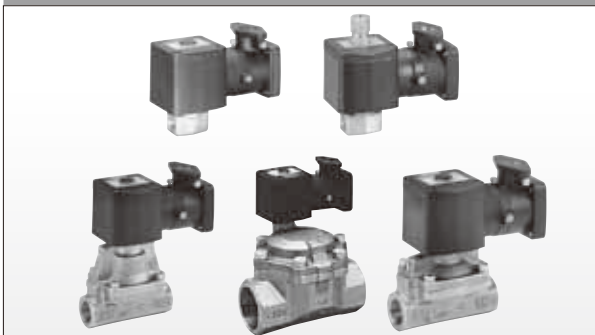
General purpose 2/3-port solenoid valve

Explosion proof general purpose valve

AB*E AG*E AP*E AD*E ADK*EX/*E Series

- Solenoid valves for various fluids control in hazardous locations
Explosion proof structure: Exd II BT4, Exd II BT2, d2G4, d2G2
- 2/3-port solenoid valves for various fluids control
Solenoid valves suitable for control of various fluids including air, water, gas, oil and steam.
- A wide range of options
A variety of options, such as material for wetted part and junction box are available. Products compliant with the international explosion protection guidelines are available.
- Wide series variations
A wide range of series, such as from direct acting type Rc1/4 (port size) to large-sized 50 flange for pilot operated diaphragm piston valve, are available.

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



Fluid control valves CB-03-1SA

Coolant check valve

Coolant check valve

CCH Series

- Foreign matter resistant internal structure and large flow rate structure
- FKM sealant for high reliability
- Internal sealing: O-ring + metal touch
- Working pressure: High pressure up to 7.0 MPa can be used.

Port size: Rc3/8 to Rc3/4



Coolant check valve CCH Series CC-926A

Coolant valve/Module coolant valve

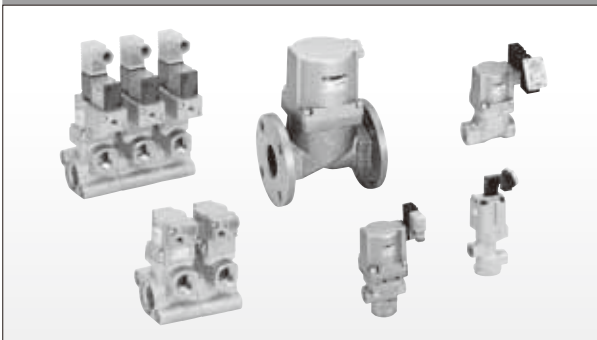
CVE2/CVSE2 CVE3/CVSE3 Series

- For coolant liquid control
Valve for control of machine tool cutting oil and coolant liquid. In particular, a metal seal method is adopted as a countermeasure against swarf, grain or foreign matter, ensuring high reliability.
- Highly corrosion resistant material used
- Ample variations
Air operated type, solenoid valve integrated type, actuation signal retrieving switch type, etc., are available.

GCVE2/GCVSE2 Series

- Module connection is possible (Max. 5 stations)
- Compact
- Connection screw without piping intervention (Embedding connection)
- Discrete valve is usable as a branch
- Easy expansion after installation

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



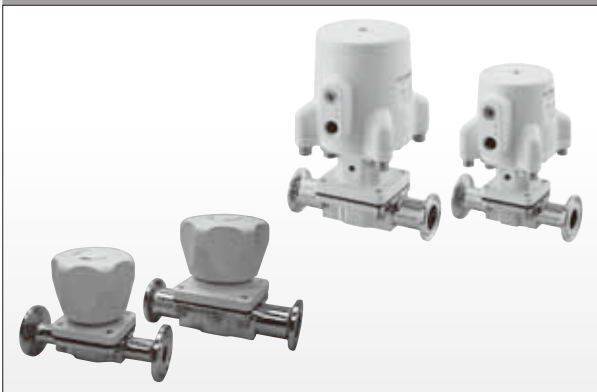
Coolant valve CVSE2/CVSE3 Series Options added CC-977A, Fluid control valve CB-03-1SA
Module coolant valve GCVE2 Series (Air operated type) GCVSE2 Series (Solenoid valve integrated) CC-933A

Weir type diaphragm valve

SWD/MWD Series

- Aims for asepsis (abacterial)
Seal structure prevents any gaps between diaphragm and body. Thorough analysis has resulted in a flow path structure with high cleanliness efficiency.
- Space saving and power saving
Air consumption is drastically reduced, thanks to compactness of actuator with diaphragm high-efficiency and operation in low pilot pressure.

Connection diameter: Ferule connection 8A to 40A



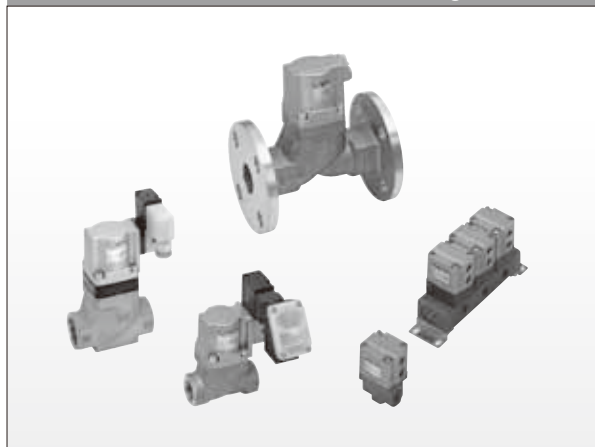
Weir type diaphragm valve SWD/MDW Series CC-1096A

Cylinder valve

SAB/SVB NAB/GNAB Series

- 2-port valves for various fluids control
Compatible with air, water, gas, low vacuum and steam as well as high viscosity fluid and powder mixed fluid.
- Ample variations
Rc1/4 to 80 flange are available depending on the port size.
- Motion sensing switch type is available

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



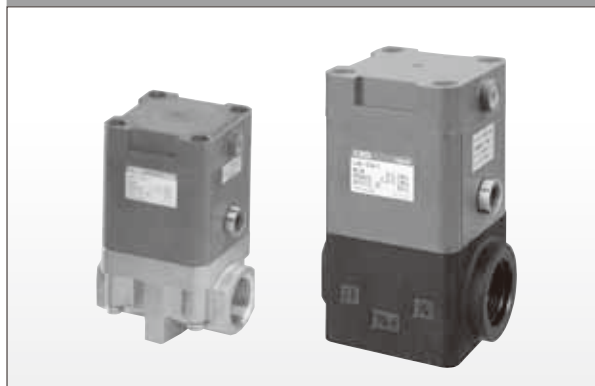
Fluid control valves CB-03-1SA

Diaphragm type cylinder valve

LAD Series

- Particle reduction
Particle has been greatly reduced by assembling in special environment with all wetted parts composed of resin.
- Enhanced usability for port thread
Adequate piping can be freely selected and connected.
- Flow path with low pressure loss
Effective sectional area has been significantly improved by a flow path design to greatly reduce the pressure loss. Moreover, it contributes to energy saving.

Port size: Rc3/8 to Rc1



Diaphragm type cylinder valve LAD/NAD Series CC-1082A



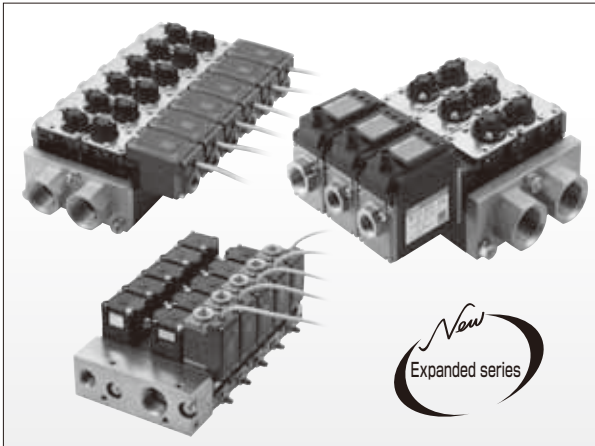
FLUID CONTROL VALVES

Coolant control unit

Integrated unit for water control

WXU Series

- Space-saving, piping-free
Installation space significantly reduced by unitization with discrete piping connection eliminated.
Footprint 80% reduced compared to CKD previous models (2-fluid control type)
- Improved quality
Due to no-screw piping between components, the fear of external leak is eliminated.
Foreign matter will not enter during use.
- Labor reduced
Labor for troublesome piping design, piping work, material arrangement etc., are reduced significantly



Integrated unit for water control WXU Series CC-1116A

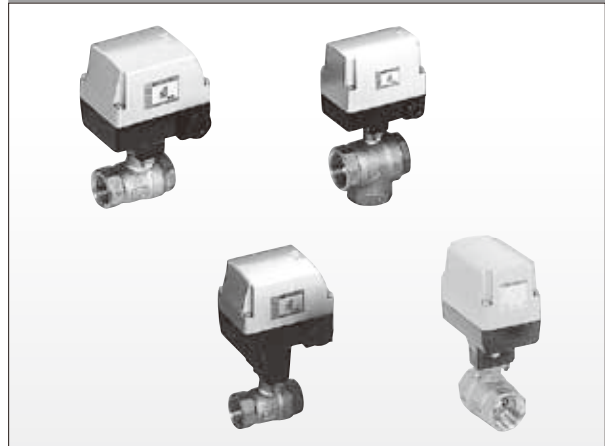
Motor driven ball valve

Motor valve

MXB/MXG Series

- 2/3-port valves for various fluids control
Compatible with various fluids including air, water, hot water, oil and steam.
- Forward and reverse rotation (Excl. some series)
- Low pressure loss and large flow rate
- Lineup also includes proportional control motor valves

Port size: Rc3/8 to Rc2



Fluid control valves CB-03-1SA

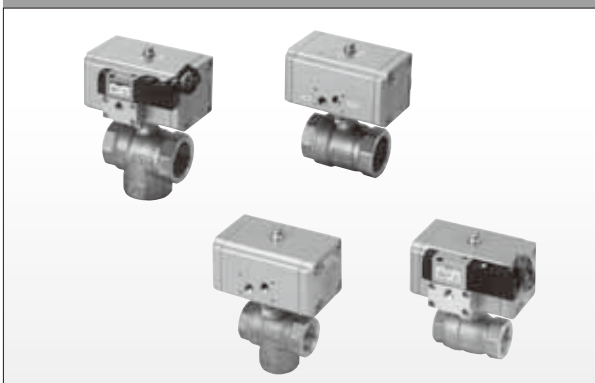
External pilot operated air drive ball valve

Compact rotary valve

CHB/CHG/CHBF CSB/CSBF Series

- General purpose 2/3-port valve
Compatible with various fluids including air, water, hot water, oil and steam.
- New structure for reliable actuation
Air drive double piston system with non-conventional rack and pinion. Precise actuation and high reliability.
- Pilot operated valve is installable
- Resistant against foreign matter and water scales
Forward and reverse operation enables foreign matter to be easily excluded.
- Low pressure loss and large flow rate

Port size: Rc3/8 to Rc2



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

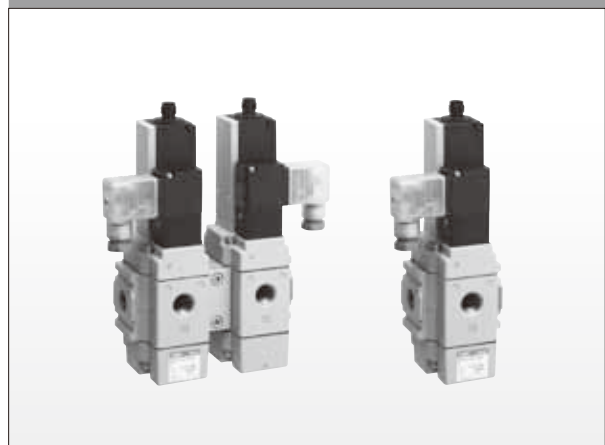
With Spool position detection feature

3 port solenoid valve

SNP Series

- Can be used as the residual pressure relief valve for the pneumatic system
- Signal output of open/closed status of the valve available using a limit switch
- Dual breaker circuit can be created using two of these in serial modular connection
- Can be set up as a single unit with an FRL using the modular connection

Port size: Rc3/8 to Rc3/4



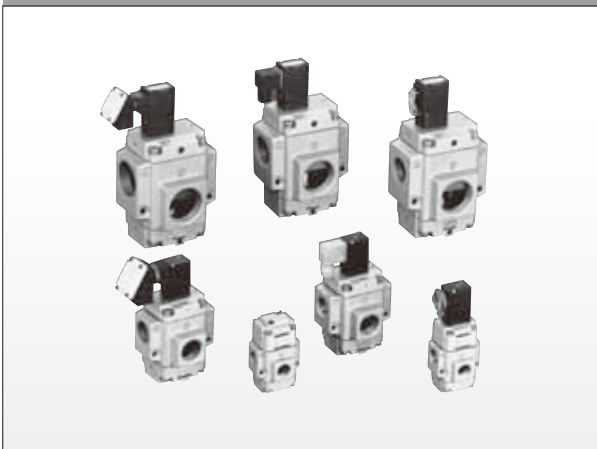
3-port solenoid valve with spool position detection SNP Series CC-1080A

Large flow rate 3-port valve

NP NAP NVP Series

- Large flow rate 3-port valve for air pressure & low vacuum
Either type can be selected according to usage.
- Internal pilot method: NP Series
- External pilot method: NAP/NVP Series
- Compact and lightweight design
- Large flow rate design
10A/25A : $C[dm^3/(S \cdot bar)]$: 15 to 18
20A to 50A: Effective sectional area : 195 to 660mm²

Port size: Rc3/8 to Rc2



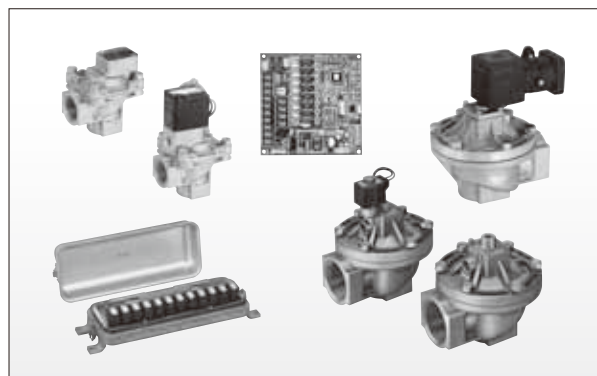
Fluid control valves CB-03-15A

Large port size dust collector valve components

PD3/PDV3 PD2/PDV2 PJVB

PDVE4 OMC2 Series

- High frequency and large flow rate jet control
Large flow air can be jetted in an instant.
- Suitable for dust removal of bag filter type dust collector or behavior control of ceramics, medicines, agricultural chemicals, fertilizer, chemical raw materials, construction materials, foods, etc.
- Microcomputer-based compact and high performance controller OMC Series
Two push control of valve, setting of OFF time can be done easily.
- Control box type manifold solenoid valve PJVB Series
Common wiring enables easy operation and space reduction.
- Pressure and explosion proof structure d2G4 PDVE4 Series



Fluid control valves CB-03-15A
Large port size dust collector valve PD3/PDV3 Series (65A, 80A, 80M) CC-1049A

Metal free solenoid valve

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 liquid control
- Compact & lightweight design
Size and weight reduction design to allow change from centralized medical treatment to mobile medical treatment.
- Maintenance free
Long durability design for improved device reliability.
- Wide variation
A wide range of models for various reagents and testing liquids.
- Reduced noise
Very quiet valve operation for working environment.



Fluid control valves CB-03-15A

Highly corrosion-resistant solenoid valve

UMB1/UMG1 HB11 • 21 • 31 • 41 Series

- High corrosion resistant stainless steel solenoid valve for water, pure water and chemical liquid control
- Internal residual reduced
With internal residual reduced, fluid contamination and deterioration can be minimized.
- Response to advanced technologies
Compatible with ion exchanged water, semiconductor cleaning fluid, etc. (HB Series)



Fluid control valves CB-03-15A



FLUID CONTROL VALVES

Components for Life Science

Metal free pinch valve

HYN Series

- 2/3 port solenoid valve (Pinch valve)
Revolutionary solenoid valve structure enables three usages with one model. (NC type, NO type, 3-port valves)
- Tube is attached/detached with a single motion
Easy tube replacement and cleaning.
- With manual mechanism
- Low noise
Metallic sound at solenoid operation is eliminated, keeping the environment quiet.
- Low wattage design



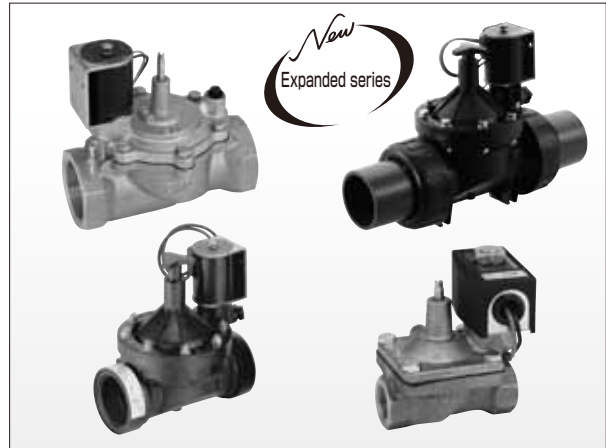
Fluid control valves CB-03-1SA

Automatic watering control systems

Automatic watering valve

RSV-K GSV/GSV2 RSV-W Series

- Watering valve for urban greenery, golf courses, grounds, protected horticulture, and farmlands, etc.
- Union connection (GSV2)
- Low water hammer structure
- Wide variety of options
Pilot flow path protecting self-cleaning filter, flow adjustability, manual operation function, latch type coil, etc. Piping port size: 15A to 100 flange.
- Japan Water Works Association qualified product (RSV-W series)
- Use with CKD's automatic watering controller.



Automatic watering control systems CC-297A

Automatic watering control systems

Automatic watering controller

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.
- Various application programs are supported
Usable for day-of-the-week watering, intermittent watering, sensor detection watering, etc.
- Ample variations
You can select from solar cell, commercial power or alkaline battery method.
- Measures against lightning-induced failures
- Use with CKD's automatic valve controller.

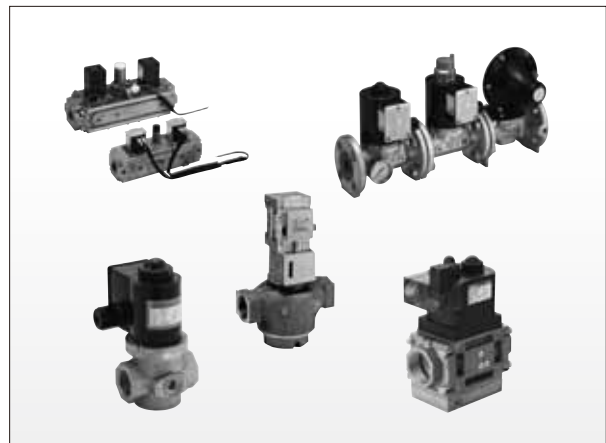


Automatic watering control systems CC-297A

Gas combustion system components

Direct acting valve and combination valve for gas

- Ample variations
- Domestic product
- High performance and long durability
- V series is ideal for high frequency and high durability industrial furnaces.
- Low cost type is available.



Gas combustion systems G-2A



Component for chemical liquids

Air-operated valve for chemical liquids

AMD/AMG/GAMD AMD*1H/AMD*1M Series

Air operated valves used as ON/OFF of clean chemical fluids (including pure water) in the fluid flow devices for semiconductor and LCD manufacturing etc.

- High performance/high quality systems necessary for ultra high purity process control
- Part3R series is released as an all-in-one model compatible with various specifications
 - 1/4", 3/8", 1/2", 3/4", 1 inch size
 - Compatible with various chemical liquids
 - Specification pressure 0.5MPa
 - Operating fluid temperature 120°C
 - Indicator is equipped as standard with an optional sensor (excluding 1/4")
 - Manifold and cutting are supported
- High-pressure types up to 0.7MPa are serialized for supplying chemical liquid. Moreover, models that can deal with water hammer are available in this series
- Metal parts are eliminated as much as possible for this series so that the products can be used in lines using strong acid (hydrochloric acid, hydrofluoric acid or nitric acid).
- Wide variety of connection fittings
- SUS body type is available from small to large size for solvents and addressing static charge.
- Large port size type based on PP or PVC material is also available for discharge
- Special specifications are available in order to meet various methods of control



High Purity Chemical Liquid System CB-031A
 Air-operated valve for chemical liquids: AMD part 3R series CC-1177A

Component for chemical liquids

Manual valve for chemical liquid

MMD/GMMD/TMD MMD*0H/MMD*0M Series

Manual valves used in the fluid flow devices with clean chemical fluids (including pure water) for semiconductor and LCD manufacturing etc.

- High quality systems necessary for ultra high purity process control
- A wide variation of manual valves for chemical liquids are serialized from small to large size
- High-pressure types up to 0.7MPa are serialized for supplying chemical liquid
- Metal parts are eliminated as much as possible for this series so that the products can be used in the lines using strong acid (hydrochloric acid, hydrofluoric acid, or nitric acid).
- Wide variety of connection fittings
- SUS body type is available from small to large size for solvents and addressing static charge.
- Manifold type is also available for liquid supply system (PTFE body)
- Manual operation by either knob or push-in for open/close



High Purity Chemical Liquid System CB-031A



Component for chemical liquids

Drip prevention valve for chemical liquids

AMS*2 AMDS*0 Series

Fine adjustment valve at nozzle end in the resist coating process

- Pulling strength at nozzle end can be fine adjusted
- Fine adjustments to pulling strength speed are easily accomplished with the speed controller
- Internal structure prevents air from staying in the flow path
- Air operated valve integrated type is also available



High Purity Chemical Liquid System CB-031A

Component for chemical liquids

Fine regulator

PYM10/PMM20/PMP202/402 Series

Regulator for controlling the pressure of chemical liquids in equipment that uses high purity chemicals (including pure water) for production of semiconductors, LCD, and the like

- Filter integrated type prevents entry of foreign matter
- Excellent flow rate and pressure characteristics and easy installation
- High corrosion resistance
Fluoro-resin (PFA/PTFE) and SUS316 are used for wetted parts, improving corrosion resistance
- Excellent pressure and flow characteristics
Use of fluorine resin diaphragm results in better pressure and flow characteristics compared to metal diaphragm
- Filter is built-in, ensuring safety against foreign matter in fluid
- Panel mount installation enables easy attachment as well as bottom side installation
- Pilot regulator
Regulator designed to provide stable pressure through pilot air control



High Purity Chemical Liquid System CB-031A

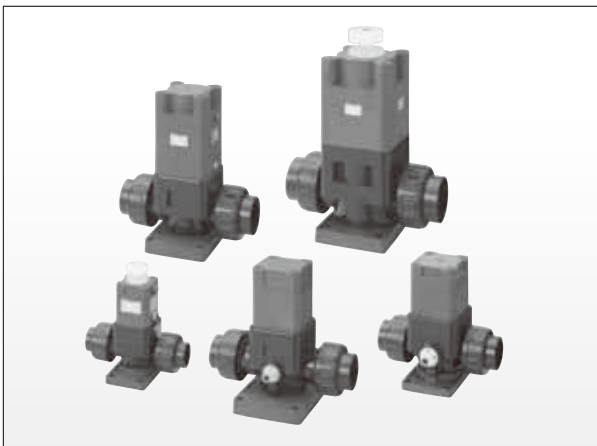
Component for chemical liquids

Water hammerless valve

AMD*1L

Water hammerless valve designed to minimize vibration in order to improve the accuracy and durability of the equipment for manufacturing LCD, solar battery etc. with pure water

- Water hammerless function is equipped as standard in all series
- Wide variety of series (Union fitting 15A to 50A)
- Joints are PVC union fitting
- Wide variety of options
(With or without flow rate adjustment and/or bypass)
- Export Trade Control Order inapplicable



Water hammerless valve AMD*1L Series CC-816A

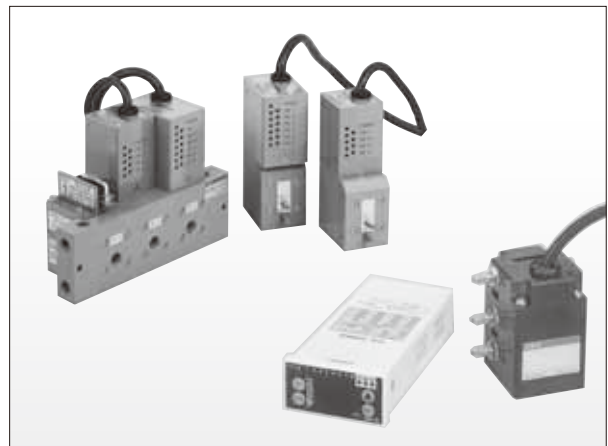
Component for chemical liquids

Fine level switch

KML50/MKML • KML60/MXKML • KML703 Series

This switch accurately detects the level of corrosive fluids, such as pure water, acid, alkali, and solvent, and outputs electrical signals

- A combination of 1 to 8-point, three types of level switches enables fluid level to be efficiently and safely detected (KML50/KML60)
- Display can show 8 different fluid levels with one detection tube
- Setting detection flow not required
Incorporated flow control fixing orifice eliminates the need for installation of external aperture and setting of detection flow



High Purity Chemical Liquid System CB-031A

Air operated valve for chemical liquid

LMD Series

- 6 models with different orifice sizes
 - 6 orifice sizes: $\varnothing 4$, 6.3, 8, 10, 16, and 20
 - 9 connection diameters: 1/4", 3/8", 1/2", 3/4", 1", $\varnothing 6$, $\varnothing 10$, $\varnothing 12$, and $\varnothing 25$
- New flared tube fittings
- Installation method
 - Two-point bracket compatible with AMD Series
 - Similar to the popular AMD part 3, the shape of the bracket is designed to save space
- Numerous options
 - Fluoropolymer coating for metal parts with the flow adjuster and the indicator



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

Flow rate adjusting valve

FMD Series

MNV Series

A valve to control the flow of chemical liquid within a device using clean chemical liquid (including pure water), in manufacturing of semiconductors or LCDs

- Two types of flow control methods, manual and electric, are available
- Designed to be used for highly corrosive fluids (FMD)
- High temperature resistant (MNV)
- Two types of orifices are available according to flow rate (FMD orifice size: $\varnothing 1.6$, $\varnothing 3.5$)



Wet Fine Components CB-031A
Electric needle valve MNV Series CC-1260A

Air operated valve for process gas

AGD**R Series

LGD** Series

Air operated valves used as ON/OFF of clean process gas in the gas flow devices for semiconductor and LCD manufacturing etc.

- High performance/high quality necessary for ultra high purity process gas control
- Appropriate seal structure and increased surface roughness prevent particle from occurring (0.001 particles/cycle or less)
- For inner surface roughness, electrolytic polishing is adopted as standard
- Options
 - Block valve, branch valve, valve with switch, etc.



Dry Fine system/high purity gas control system components CB-035A
Manual valve for process gas: LGD Series CC-1171A

Manual valve for process gas

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

Manual valves used as ON/OFF of clean process gas in the gas flow devices for semiconductor and LCD manufacturing, etc.

- High performance/high quality necessary for ultra high purity process gas control
- Manual operation by either knob open/close or single motion
- Appropriate seal structure and increased surface roughness prevent particles from occurring
- For inner surface roughness, electrolytic polishing is adopted as standard



Dry Fine system/high purity gas control system components CB-035A
Manual valve for process gas: LGD Series CC-1171A



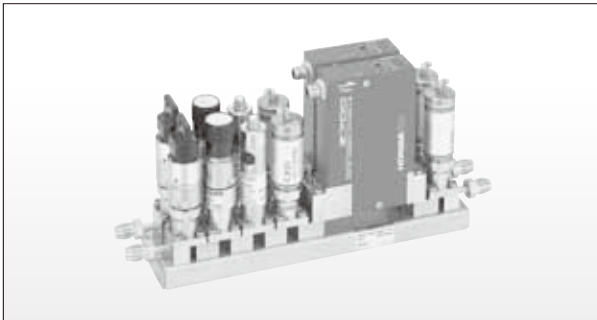
Components for process gas

Integrated Gas Supply System

IAGD Series

Integrated gas supply system to totally control clean process gas in the gas flow devices for semiconductor and LCD manufacturing etc.

- Volume dramatically reduced compared to conventional piping types (down 50%)
- Improved interchangeability
With the volume and dead volume reduced, interchangeability has significantly improved (More than twice)
- Easy maintenance
One way workability and bolt installation make maintenance easier
- Compact
The footprint is down 60% from conventional types
- Improved corrosion resistance
Realized by removing welding sections (or areas)



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

Components for process gas

Regulator for process gas

PGM Series

PGM series is an ideal regulator for pressure control of ultra high purity gas in semiconductor manufacturing lines.

- Reduced particle occurrence
- Small pressure drop
- Stable control in a very small flow rate range
- Excellent installability, operability
- Clean level compatible with ultra-high purity gas
- Improvement in inner sealing properties



High Purity Gas Control Systems CB-035A

Equipment for processed gas

Air operated valve for process gas

AGD21R-A AGD11R-HD

An air operated valve used to turn ON/OFF gas within devices that flow clean process gas, in manufacturing of semiconductors or LCDs

- Highly functional and high quality essential for controlling extremely high-purity process gases
- Highly durable (10 million cycles guaranteed)
- High temperature resistant (AGD21R-A)
- An integrated type is available



Highly durable gas valve for high temperature AGD21R-A Series CC-1111A
 Highly durable gas valve AGD11R-HD Series CC-1201A

Components for high vacuum

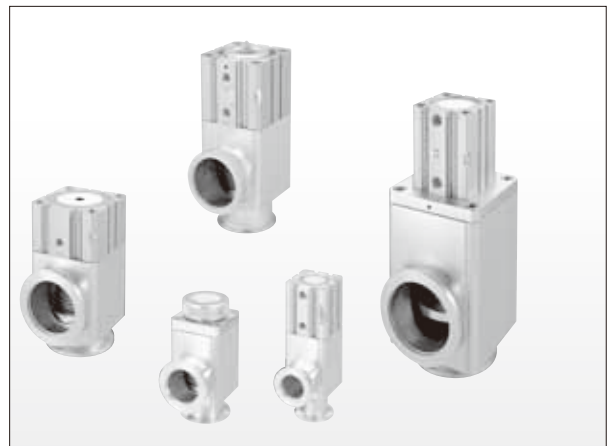
Valve for high vacuum

AVB / AVP / MVB / MVP Series

(NW16 to 160) (1/4) (NW16 to 50) (NW25 to 50)

Air operated valves used as ON/OFF for vacuum exhaust in the dry process devices for semiconductor and LCD manufacturing, etc.

- Unique formed bellows leads to long durability
- Body material is aluminum or SUS depending on the application
- Vacuum pump can be connected to any port
- Switch for confirming action can be equipped
- 2-stage type: AVB*47 Series added (NW25 to 63)
- Manual valve: MVB*17 Series added (NW16 to 50)



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

Valve for high vacuum

AVB*17/AVB*47 High temperature specification

Takes the good points of the AVB** 7 series and adds high temperature specification.

- AVB*17 NC type high temperature specification: NW16 to 63
- AVB*47 2-stage type high temperature specification: NW25 to 63
- High temperature-capable: Fluid temperature 150°C
- Switch for confirming action can be equipped



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

Solenoid valve for high vacuum

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

Solenoid valve for high vacuum meets various needs including LCD and CRT manufacturing, food drying and electron microscopes

- Wide variety of orifices from $\phi 1.0$ to $\phi 15$
- Max. operating pressure differential 1.0MPa from N2 pressurization to vacuum (Differs depending on model, please reconfirm)
- Ideal for high vacuum control without air source (However, be mindful of particles, durability, etc.)



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

Vacuum pressure proportional control system

VEC Series

The system is controllable in a wide range from high vacuum to low vacuum.

- Vacuum pressure can be controlled from high vacuum (13.3Pa) to low vacuum (around 93kPa).
- Particle disturbance can be prevented by lowering gradually from atmospheric pressure.
- While maintaining vacuum pressure control, cutoff function can be performed as well.
- All-in-one function design simplifies vacuum circuit system piping and reduces space.



Custom order

Electric vacuum valve

EVB Series

Electrically driven vacuum valve that uses motor operation for multistage control of valve opening, realizing a wide range of conductance

- Motor operated 30-point opening setting
- Valve close is based on a proven spring seal
- Opening monitoring function, various signal outputs
- Remarkable durability and sealing



Electric vacuum valve EVB Series CC-1019

Industry-specific series

[Equipment for food manufacturing processes FP Series]



This logo stands for CKD's stance on supporting food manufacturing processes with our safe equipment.

Catalog No. CC-1271A

Meeting various needs of food manufacturing processes

We provide total support for your food manufacturing processes with our excellent engineering capability in packaging, pneumatic, fluid control and electric equipment

A wide range of offerings from air filters to actuators which can be used reliably and safely in food manufacturing processes are available

FP1 Eliminates contamination concern caused by lubricants
Food grade lubricant (NSF H1) is used.

FP2 Materials are also safe!
In addition to FP1, resin and rubber materials conforming to the Food Sanitation Act are used.
* Notification No. 370 of Ministry of Health, Labour, and Welfare, Specifications and Standards for Food and Food Additives, etc. under Food Sanitation Act (1959)

FP3 Further enhanced reliability and safety!
In addition to FP2, considerations have been made for food manufacturing processes.



FP1

Prevents food contamination caused by lubricant.
Food grade lubricant (NSF H1) is used.



4G Series



SSD2 Series



STG-M Series



BHA Series



W1*00 to 8*00 Series



AF Series



SAB Series



GW Series



SC3W Series

FP2

Materials conforming to the Food Sanitation Act are used.



AB31/41 Series



AG31/41/33/43/34/44 Series



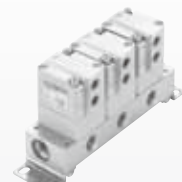
ADK11-Z Series



LAD Series



NAD Series



GNAD Series



CHB/CHG Series



MYB3 Series



HB Series

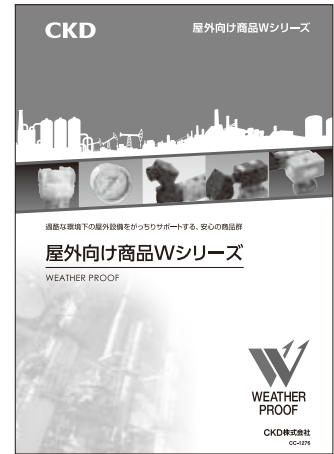
* Other supported models are available. Contact CKD for details.

Industry-specific series

[W Series for outdoor use]



This logo indicates CKD products guaranteed for outdoor use.



Catalog No. CC-1276A

A wide range of reliable products that support outdoor equipment used in severe environments

CKD's outdoor series guarantees a long lifespan even in a severe outdoor environment.

Durability required for outdoor use is guaranteed

- Compound cycle test (JIS H8502: 1999) 960-hour passed.
- Ozone exposure test (JIS D0205: 1987) 400-hour passed.
- Accelerated weathering*1 test 3-year acceleration equivalent.

*1: Sunshine weather meter test

Up to 3 years warranty for further reliability (option*2)

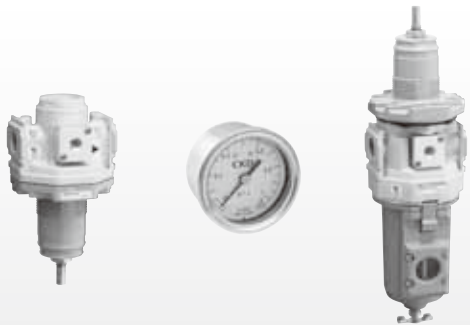
In order to support plants and usage overseas, the warranty period is 3 years from delivery or 1 year from start of use.

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

*2: An option of the F.R.L. unit. (except GW49D)

F.R.L. unit

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



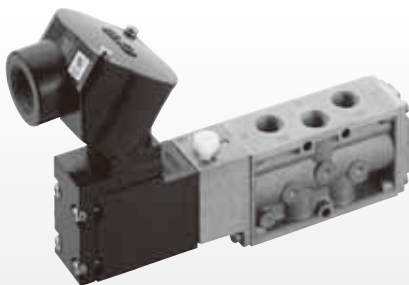
Pneumatic auxiliary components

SL-W Series, SC1-W Series



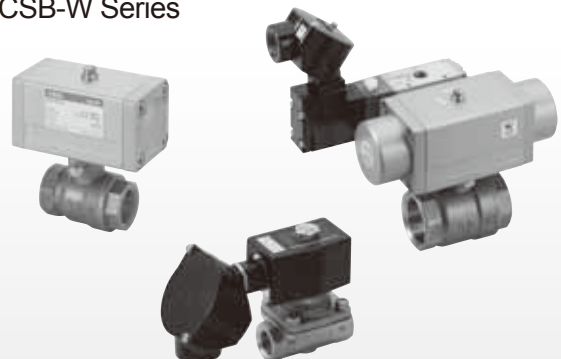
Pneumatic valve

4F Series



Fluid control valve

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

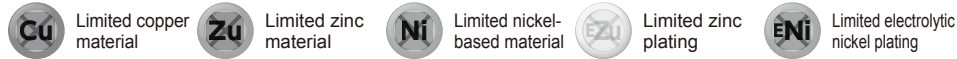
Industry-specific series

[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.

Material Restrictions Component material limitation

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



Countermeasures for dust Long service life even in dusty environments

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

Countermeasures for dust generation 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 metal wear powder outside.

DRY Dry environment Long service life even in ultra-dry environments

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



Catalog No. CC-1226A

Dry air supply



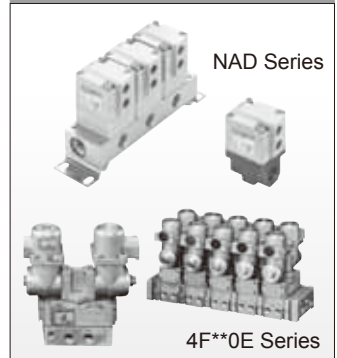
Fluid supply



Tension control



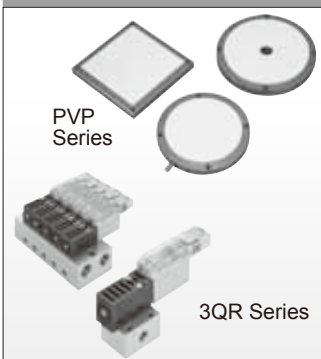
Explosion-proof environment



Vacuum control



Suction transport



Electrolyte/pouring-related



Air blow-related



Labor-saving



Assembling/inspection process



Industry-specific series

[Clean equipment series]

A CKD clean equipment system usable in a cleanroom

The CKD clean equipment system is products developed for use in a cleanroom. All are manufactured from a manufacturing system realizing our original clean philosophy. Products are available suited to your cleanliness level/installation location/environments/process contacts/usages, etc.



Catalog No. CB-0335



Semiconductor manufacturing process

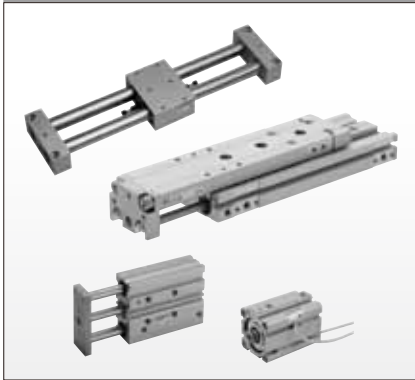


Liquid crystal manufacturing process

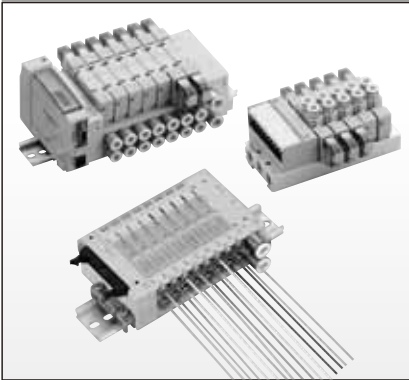


PDP manufacturing process

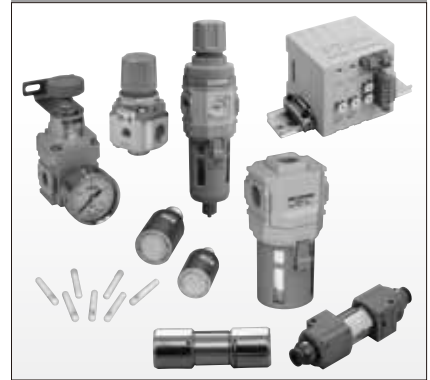
Pneumatic cylinder



Directional switching valve



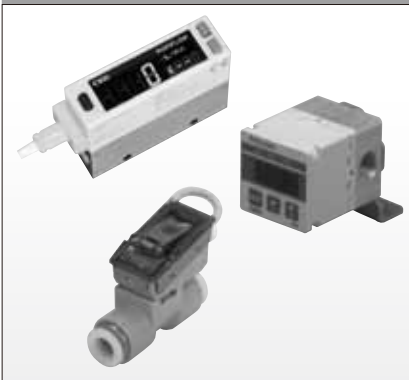
F.R. unit



Pneumatic auxiliary components



Sensor device



Valve for air blow

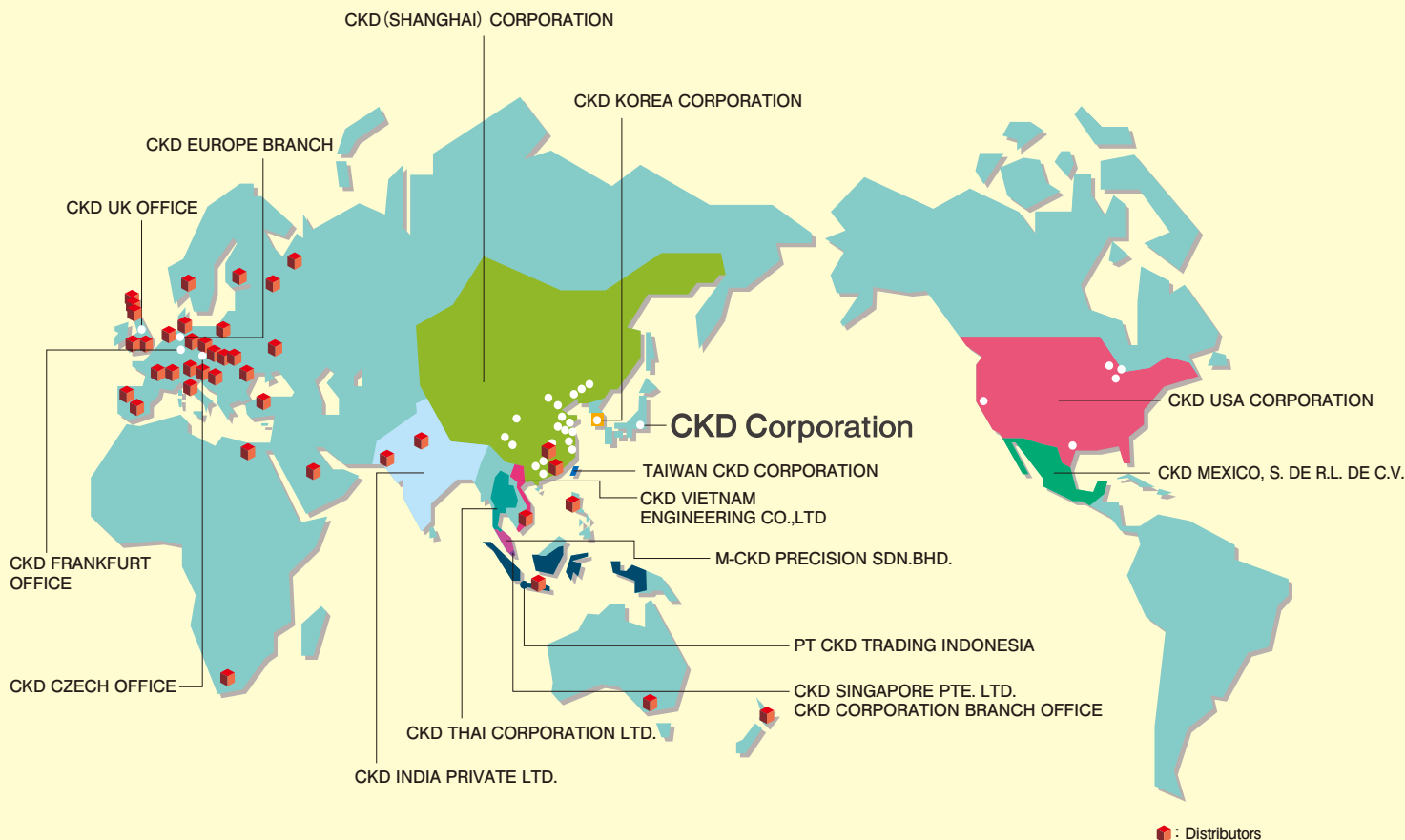


CKD CLEAN Philosophy

Prevent
A production system which prevents foreign substances from entering cleanrooms

Purge
To completely discharge dust

Provide
To provide products suitable to environments



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