

Components for
industrial automation
2012



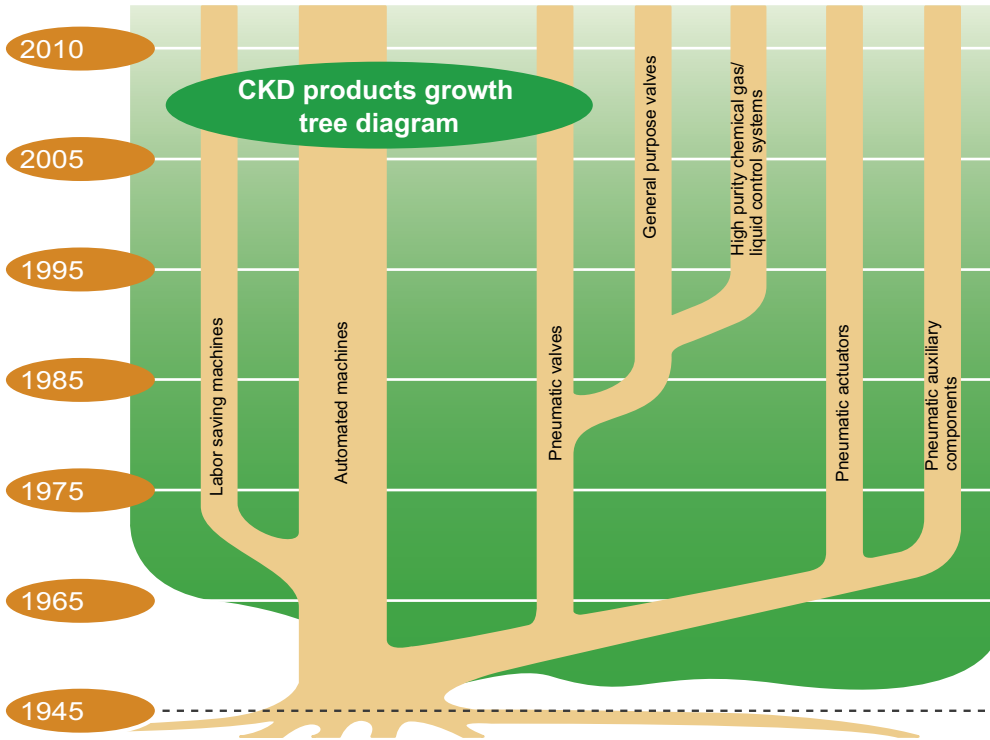
CKD combines and integrates advanced technologies to build world-class systems that deliver exceptional productivity.

CKD

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





CKD provides various components to meet the ever growing demand of industries





(CKD's exceptional know-how and technologies for every industry)


Since its founding, CKD has been a pioneer in automation. We have always been anticipating the changing times and adapting our various automatic machinery and automation products to meet the changing needs. Now we offer a vast number of products to users in every industry. By integrating our advanced technologies, we build exceptional know-how into the products we sell. CKD is not afraid of changing times.


- 


ACTUATOR
- 


PNEUMATIC VALVES
- 


PNEUMATIC AUXILIARY COMPONENTS
- 

PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)
- 

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

RELATED PNEUMATIC PRODUCTS
- 

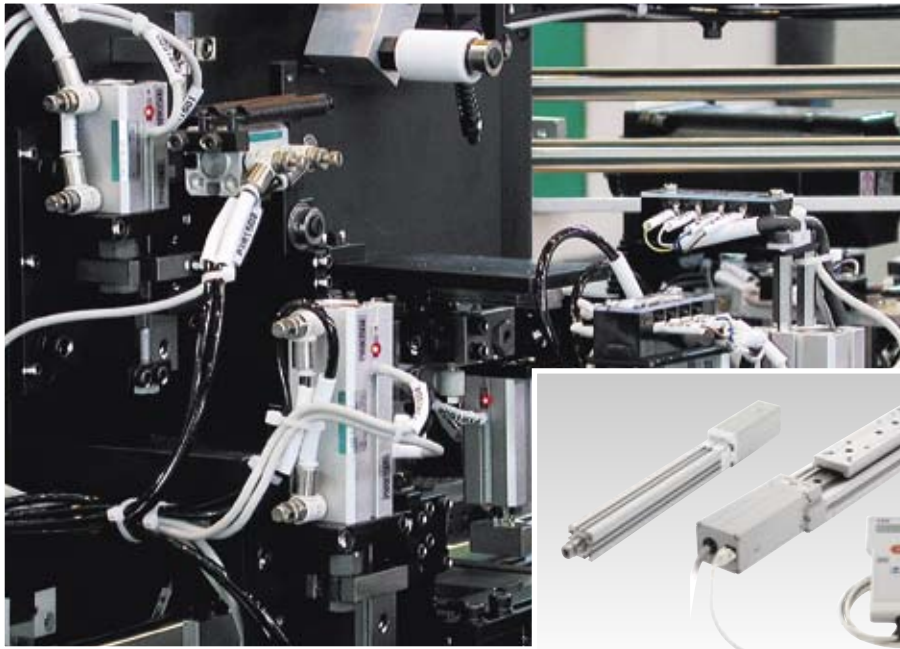
GENERAL PURPOSE VALVES
- 

HIGH PURITY CHEMICAL GAS/ LIQUID CONTROL SYSTEMS
- 

LABOR SAVING MECHANISMS



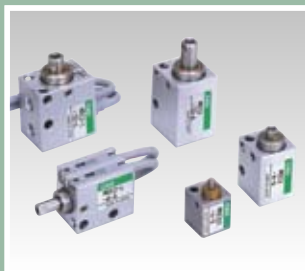
ACTUATOR



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



● Electric linear actuator



● Small direct mounting cylinder



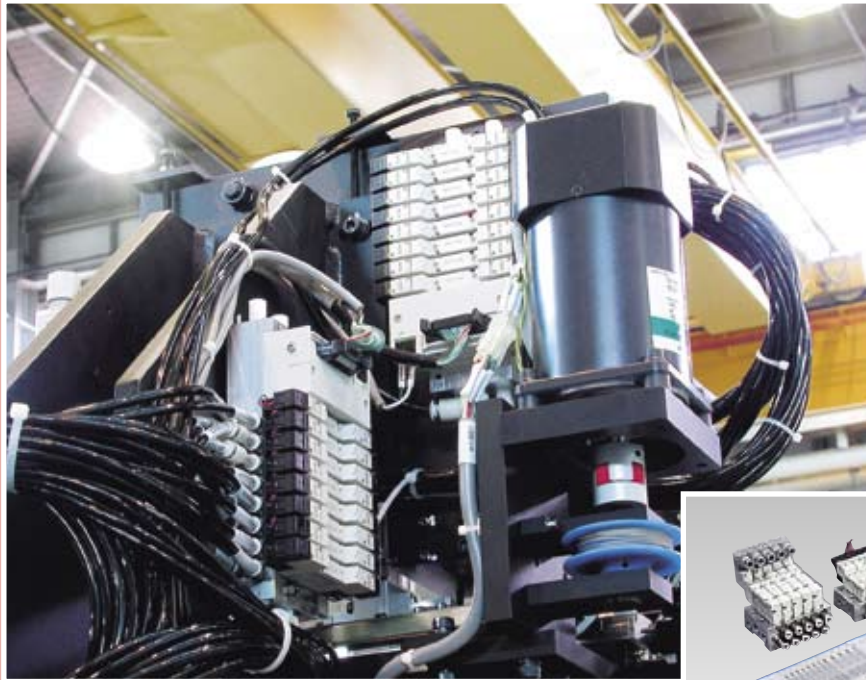
● Guided cylinder



● Rodless cylinder



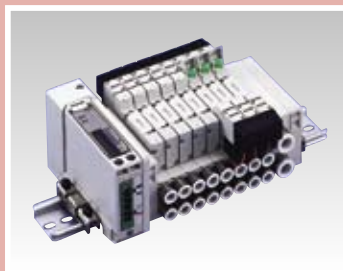
PNEUMATIC VALVES



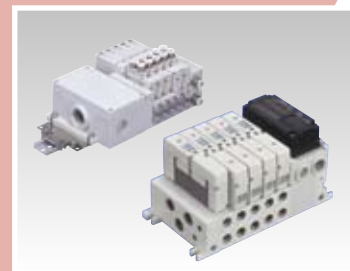
CKD is meeting increasingly diverse market requirements by continual application of our compressed air technologies.



● Small pneumatic valves (reduced wiring valve)



● Pneumatic valves (reduced wiring valve)



● Pneumatic valves (plug-in manifold)



RELATED PNEUMATIC PRODUCTS



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



● Refrigerated air dryer



● F.R.L. Combination



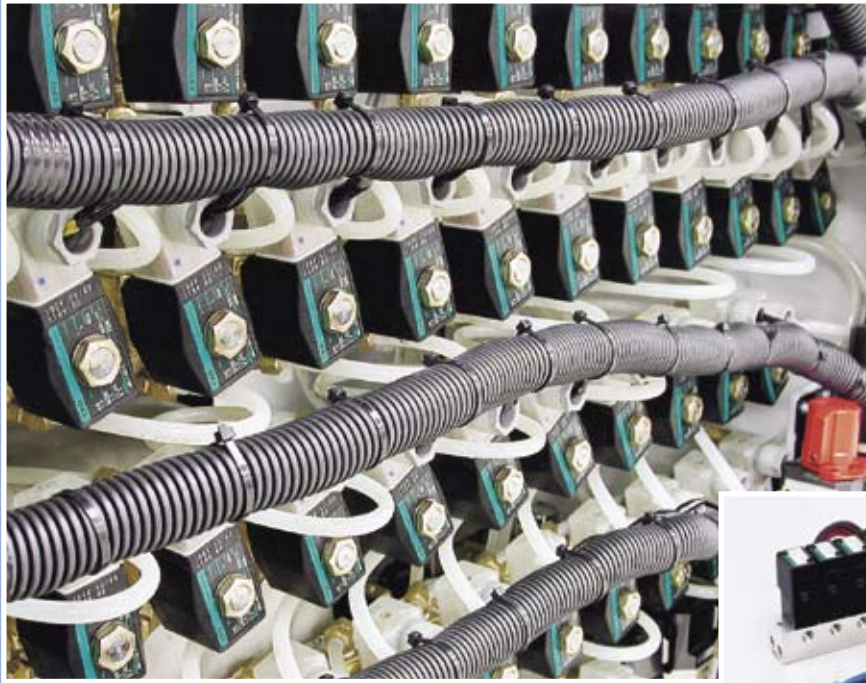
● SELVACS
(vacuum system component)



● Speed control valve



GENERAL PURPOSE VALVES



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



● Pilot operated solenoid valve



● Direct acting solenoid valve
(General purpose valve)



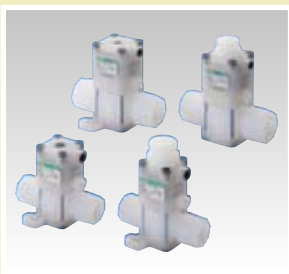
● Cylinder valve



HIGH PURITY CHEMICAL GAS/ LIQUID CONTROL SYSTEMS



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



● Air operated valve for chemical liquid



● Valve for process gas



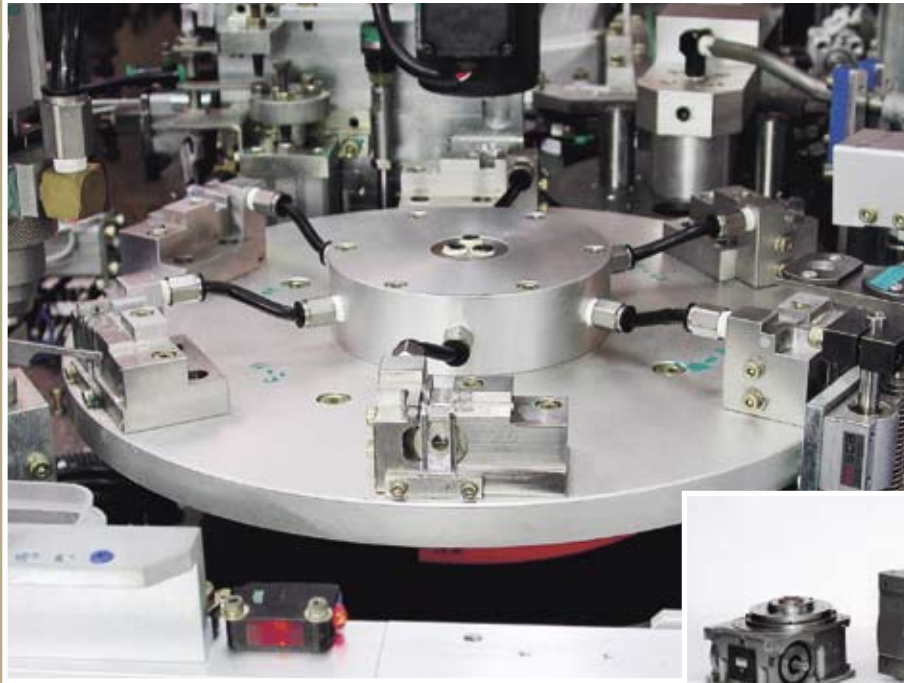
● Integrated gas supply system



● Air operated valve for high vacuum



LABOR SAVING MECHANISMS



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



●ABSODEX (DD actuator)



●Roller gear cam units



●Oscillating P&P unit
●Linear P&P unit arm type A type, table type B type

CONTENTS

Human and nature-friendly advanced technologies increase the comfort in various fields.



Actuator

ACTUATOR

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PNEUMATIC VALVES

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GENERAL PURPOSE VALVES

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ACTUATOR

Electric driven actuator

Electric driven actuator

ESSD/ELCR Series

- Space saving
Built-in controller eliminates the need for controller installation space and wiring
- Installable like a pneumatic cylinder
Design which can imagine a pneumatic cylinder as it is, including appearance configuration, various controls and usage
- Motion control at will
Three control modes, speed & acceleration control and positioning completion width (imposition) can be set
- Easy teaching
Easy setting with five buttons, enabling direct teaching



Electric driven actuator ESSD/ELCR Series CC-1002

Electric driven actuator

Electric linear actuator

KBB Series

- Absolute specification
Absolute specification enabling immediate program run without zero return
- Combination by BBS system
Build-block like combination by selecting from units
- Powerful with slim shaft
The shaft has a small section diameter of 78×75 but a max. weight capacity of 50kg
- Minimizing of installation space
Lineup of rightward, leftward and downward 3-way fold shaft reduces the installation area
- Focused basic performance
Small AC servo motor, high rigidity linear guide and grinding ball screw are used



Electric linear actuator KBB Series CC-783

Electric driven actuator

Compact table slider

KSA Series

- Ultrathin type, small size and light weight
30W ultra-small AC servo motor and high precision linear guide are adopted.
- 500mm/s high-speed conveying
Ball screw Screw lead 2mm & 10mm
- 2-shaft device is easy to mount
Two small table linear actuators can be direct mounted without attachment plate
- 2 models on load
Two types are available with two linear guides or one linear guide
- Table "L" type added
Designability is improved with the table position "L" (left side) type



Compact table slider KSA Series CC-588

Standard type

Pencil shaped cylinder

SCP*3 Series

- More lightweight and smaller
- Double acting, single acting/extend, retreat, low speed, and heat resistance types are available
- Ample choice of cylinder switches
- Copper and PTFE free as standard
- Five types of inside diameter: $\varnothing 2.5$ to $\varnothing 16$

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



Pneumatic cylinders | CB-029S

Standard type

Medium bore size cylinder

CMK2 Series

- Pre-lubricated, high corrosion proof and long life
- Wide variations, such as double acting type, single acting/extend, retreat, position locking, low speed type and heat resistance type
- Rich 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: $\varnothing 20$, $\varnothing 25$, $\varnothing 32$ and $\varnothing 40$

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



Pneumatic cylinders | CB-029S

Standard type

Medium bore size cylinder

CMA2 Series

- Pre-lubricated and long 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 it is
- Three types of inside diameter: $\varnothing 20$, $\varnothing 30$ and $\varnothing 40$

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



Pneumatic cylinders | CB-029S

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: $\varnothing 20$ to $\varnothing 100$

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



Pneumatic cylinders | CB-029S



ACTUATOR

Standard type

Tie-rod air cylinder

SCG Series

- Earth-conscious advanced cylinder
- Cushion needle is on the same side of air supply port to make attachment or adjustment easy
- Double acting rubber scraper type, coolant resistant type and spatter adherence prevention type have the same dimensions as standard type to improve installability
- Ample choice of cylinder switches
- Six types of inside diameter: $\varnothing 32$ to $\varnothing 100$

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



Pneumatic cylinders | CB-029S

Standard type

Medium 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 it is
- Five types of inside diameter: $\varnothing 40$ to $\varnothing 100$

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



Pneumatic cylinders | CB-029S

Standard type

Medium bore size cylinder

SCS Series

- You can select between pre-lubricated type and lubrication type
- High reliability and ample series variations, such as double rod type, two stage type, low hydraulic type, and heat resistance type
- Ample choice of cylinder switches
- Six types of inside diameter: $\varnothing 125$ to $\varnothing 250$

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



Pneumatic cylinders | CB-029S

With valve

Small cylinder

CKV2 Series

- Stainless steel tube is adopted to improve corrosion resistance and service life
- 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 baffle type

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



Pneumatic cylinders | CB-029S

With valve

Cylinder with valve

CAV2/COV*2 Series

- Integrated cylinder and solenoid valve
- You can select between pre-lubricated type and lubrication type
- Two types of solenoid valves: single and double
- Standard type and short overall length type are available
- Ample choice of cylinder switches

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



Pneumatic cylinders I CB-029S

Space saving type

Compact cylinder

SSD2 Series

- Installation on all four faces
- Ample stroke settings optimize design-based model selection
- Rubber cushion is optional with the same dimensions
- Ample choice of cylinder switches
- 15 types of inside diameter: $\varnothing 12$ to $\varnothing 200$

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



Compact cylinder SSD2 Series CC-937

Space saving type

Compact cylinder

SSD Series

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

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



Pneumatic cylinders I CB-029S

Space saving type

Guided 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 slits are placed on the four sides
- 10 types of inside diameter: $\varnothing 12$ to $\varnothing 100$

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



Guided compact cylinder SSG Series CC-893



ACTUATOR

Space saving type

Small direct mounting cylinder

MDV Series

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

Bore size $\phi 6, \phi 10$



Small direct mounting cylinder MDV Series CC-905

Space saving type

Cartridge cylinder

CAT Series

- Miniature single acting cylinder with a total length of thumb size
- Full thread type outside, attachment to jig and panel is easy
- Three types of inside diameter: $\phi 6, \phi 10$ and $\phi 15$

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



Pneumatic cylinders I CB-029S

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 $\phi 4$ to $\phi 10$



Pneumatic cylinders I CB-029S

Space saving type

Small cylinder with vacuum pad

MVC Series

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

Bore size $\phi 6, \phi 10$



Pneumatic cylinders I CB-029S

Space saving type

Compact cylinder

SMG Series

- Integrated mount block makes less space and more lightweight (33% weight reduction and 23% space saving)
- Direct installable freely from 5 sides as standard
- Maintenance improved by new installation method

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



Compact cylinder SMG Series CC-1071

Space saving type

Small compact cylinder

MSD/MSDG Series

- Axial length is compacted. Installation space is reduced.
- Design for four times longer life
- Oil retaining copper system bearing is adopted for rod bearing section to improve wear resistance
- Piping can be selected between two directions: body side and bottom
- 3-way direct installable

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



Pneumatic cylinders I CB-029S

Space saving type

Flat and compact cylinder

FC* Series

- Rectangle flat cylinder with cylinder width direction dimension 50% reduced
- Easily installable in a narrow space
- Due to flat cylinder, baffle function is preinstalled
- Ample choice of cylinder switches
- Five types of inside diameter: $\varnothing 25$ to $\varnothing 63$

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



Pneumatic cylinders I CB-029S



ACTUATOR

With brake

Free position locking flat and compact cylinder

UFCD Series

- Lockable in any position when the piston rod is still.
- Easily removable with workpiece etc. inserted when lock direction is reversed
- Space-saving, simple design
- Since the cylinder body is a baffle due to its elliptical piston structure, separate baffle 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-954

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)
- Ample choice 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 I CB-029S

With brake

Brake cylinder

JSK2/JSM2 Series

- Pre-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)
- Ample choice 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 I CB-029S

With brake

Tierod cylinder with break

JSG Series

- The same braking mechanism as reliable and proven JSC3 Series is adopted
- Due to a unique lock mechanism, the rod holding power is twice larger than the thrust force
- Compact and reliable brake section
- Ample choice of cylinder switches
- Five types of inside diameter: $\varnothing 40$ to $\varnothing 100$

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



Pneumatic cylinders I CB-029S

With brake

Brake cylinder

JSC3 Series

- Reliable medium bore size 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)
- Ample choice of cylinder switches
- Nine types of inside diameter: $\varnothing 40$ to $\varnothing 180$

Bore size $\varnothing 40$ to $\varnothing 180$



Pneumatic cylinders | CB-029S

With brake

Position locking compact cylinder

USSD Series

- Compact cylinder is preinstalled with free locking positioning mechanism
- Lock position can be locked in any stroke positions including a stroke end
- You can select between two ways: forward lock and backward lock.
- The rod can be freely moved when lock direction is reversed
- Unlock is easy. You have only to return the inclination of the swash plate for lock

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



Pneumatic cylinders | CB-029S

With brake

Free locking positioning medium bore size cylinder

USC Series

- Medium bore size cylinder is preinstalled with free locking positioning mechanism
- Lock position can be locked in any stroke positions including a stroke end
- You can select between two ways: forward lock and backward lock.
- Unlock is easy. You have only to return the inclination of the swash plate for lock

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



Pneumatic cylinders | CB-029S

With brake

Brake unit

JSB3 Series

- Brake section of SELTOP cylinder is separately serialized
- A strong holding power of 980N to 19608N is retained according to the 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 | CB-029S



ACTUATOR

With brake

Linear guide lock

LMB Series

- Small size but strong holding power
- Backlash at lock is very slight
- Usable for holding at stop, emergency stop and position locking
- Unlock with air supply (Manual release is also possible)
- To prevent dust, scrapers are preinstalled before and behind the lock unit



Pneumatic cylinders I CB-029S

Combined functions

Guided cylinder

STM Series

- Structure excellent in the rod non-rotating accuracy, rigidity and lateral load resistance
- Space-saving type, very small for a guided cylinder
- Back piping and side installation are possible
- Two types: slide bearing and roller bearing

Bore size $\phi 6, \phi 10$



Guided air cylinder STM Series CC-884

Combined functions

Guided cylinder

STG Series

- Ecological products
- Weight saving and resource saving are realized
- Piping has two ways: front and side; installation has three types: front, side and bottom
- Ten types of inside diameter: $\phi 12$ to $\phi 100$

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



Pneumatic cylinders I CB-029S

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 slide or roller bearing
- Neat design No convex and space-saving
- Usable with high load With two guide rods
- End plate material can be chosen

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



Pneumatic cylinders I CB-029S

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, such as stopper's symmetrical form, multiple piping and dowel hole

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



Linear slide cylinders in general CB-039

Combined functions

Linear slide cylinder Thin type/Light/High rigidity

LCX Series

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

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



Linear slide cylinder LCX Series CC-1001

Combined functions

Linear slide cylinder Super-high rigidity model

LCG Series

- Industry's broadest guide is adopted to realize the industry's number-one super-high rigidity
- Aluminum table is adopted to reduce weight by 10%
- Higher rigidity with rigid linear guide and slide table
- More flexible design, such as stopper's symmetrical form, multiple piping and dowel hole

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



Pneumatic cylinders I CB-029S

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 $\phi 4.5$ to $\phi 8$



Pneumatic cylinders I CB-029S



ACTUATOR

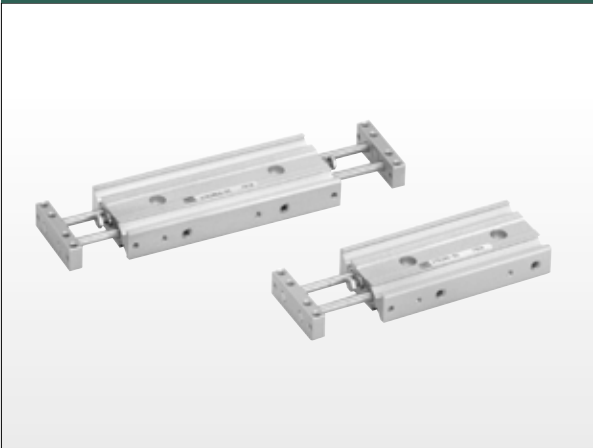
Combined functions

Twin rod cylinder

STR2 Series

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

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



Pneumatic cylinders I CB-029S

Combined functions

Unit cylinder

UCA2 Series

- Best for simplified robots
 - Due to modular design, simplified robots, such as assembling and conveyance, are usable
- Two type of usage
 - Depending on the use, two types: body mount and end plate mount
- High position accuracy
 - Due to double rod type, the orbital position accuracy is excellent

Bore size $\phi 10$ to $\phi 32$



Pneumatic cylinders I CB-029S

Combined functions

Stopper cylinder

STK Series

- Design for high loads
 - Rod which is one rank thicker than normal rod diameter is adopted
- Direct installation
 - Direct installable with hexagon socket bolts
- Space-saving & square shape
- Three types of actuation
 - Depending on the use, double acting type, single acting retreat 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 $\phi 20$ to $\phi 50$



Pneumatic cylinders I CB-029S

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 $\phi 50$



Stopper cylinder STA2 Series CC-1005

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: $\phi 20$ to $\phi 100$

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



Pneumatic cylinders | CB-029S

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. Adjustment is easy with Adjust 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: $\phi 20$ to $\phi 63$

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



Pneumatic cylinders | CB-029S

Rodless type

Rodless cylinder

SRL3 Series

- Due to flat piston, thin type design with a very low table position.
- Due to flat piston, load can be received; high load capacity with baffle function
- Packing for high speed is adopted to stand high speed
- 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-029S

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 $\phi 25$
- Packing for high speed is adopted to stand high speed
- You can select between common port (one-way piping) and standard port
- Ample choice of cylinder switches

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



Pneumatic cylinders | CB-029S



ACTUATOR

Rodless type

High precision guided rodless cylinder

SRM3 Series

- Rodless cylinder is integrated with biaxial high precision guide
- Tube 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
- Ample choice of cylinder switches
- Four types of inside diameter: $\varnothing 25$, $\varnothing 32$, $\varnothing 40$ and $\varnothing 63$

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



Pneumatic cylinders I CB-029S

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. 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)
- Ample choice of cylinder switches
- Eight types of inside diameter: $\varnothing 12$ to $\varnothing 63$

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



Pneumatic cylinders I CB-029S

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 sideways
- 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 I CB-029S

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 workpieces installation faces
- Ample choice of cylinder switches
- Inside diameter: $\varnothing 10$, $\varnothing 16$, $\varnothing 25$

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



Pneumatic cylinders I CB-029S

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 leak, simple structure and easy assembling

Bore size $\phi 25$



Pneumatic cylinders | CB-029S

Special function type

Clamp cylinder

CAC4 Series

- Cylinder only for clamp work
- Various switches, such as reed, proximity, two-color indicator and strong magnetic field, can be mounted
- Four types of inside diameter: $\phi 40$, $\phi 50$, $\phi 63$ and $\phi 80$

Bore size $\phi 40$ to $\phi 80$



Pneumatic cylinders | CB-029S

Special function type

Position locking clamp cylinder

UCAC2 Series

- Clamp cylinder is preinstalled with free locking positioning mechanism
- Lockable in any position
- You can select between two ways: forward lock and backward lock.
- The rod can be freely moved when lock direction is reversed.
- Unlock is easy. You have only to return the inclination of the swash plate for lock

Bore size $\phi 50$, $\phi 63$



Pneumatic cylinders | CB-029S



ACTUATOR

Special function type

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 I CB-029S
Rotary clamp cylinder small bore RCC2 Series CC-1045
Rotary clamp cylinder small bore RCS Series CC-1046

Special function type

Lifter cylinder

LFC-KL Series

- Allowable eccentric load and running 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-902

Special function type

Mechanical power cylinder

MCP Series

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

Effective thrust for 2t and 5t



Mechanical power cylinder MCP Series CC-958

Special function type

Balancer unit

BBS Series

- Load of max. 200kg is balanced up to 5kg, enabling workpiece lifting etc. with a small power
- Brake is equipped as standard. Safety mechanism to prevent workpiece from dropping even if air should be cut off
- Weight change by workpiece is automatically recognized to keep best balance (BBS-A)
- All air type with no need for electricity can be supported. Usable in explosion proof atmosphere

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



Balancer unit BBS Series CC-960

Oscillating & 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-030S

Oscillating & rotary drive type

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 dimension
- 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-030S

Oscillating & rotary drive type

Fine speed rotary actuator

SFR/SFRT Series

- Original seal structure realizes the industry's smallest air leak
- Operation is possible with various speeds ranging from low speed to high speed
- Table type (SFRT) and shaft type (SFR) are available
- Small size, light weight and high torque
- Many-sided installation type for all installation places

Torque 0.35 to 2.71N•m



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

Oscillating & rotary drive type

Rotary actuator (vane)

RV3* Series

- Small size, light weight and high durability
- Oscillating 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 66.6N•m

Torque 0.12 to 66.6N•m



Pneumatic cylinders II CB-030S



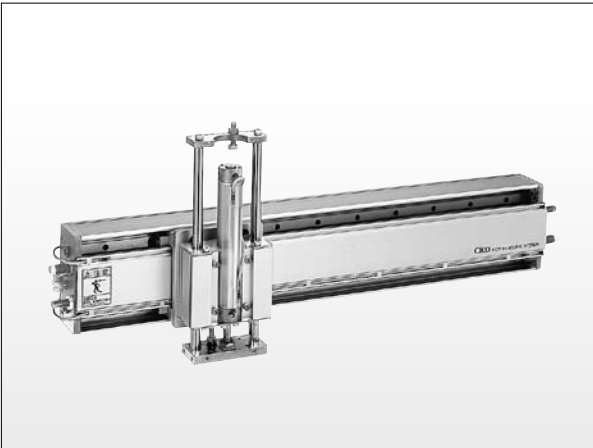
ACTUATOR

Unit components

New handling system

NHS Series

- Feeling of plastic model
Target conveyance system is capable of free combination depending on the use
- 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 airports for piping
- Reduction of design manhours and assembling manhours
X-axis, Z-axis, and attachment are appropriately selected according to the use



Pneumatic cylinders II CB-030S

Unit components

Hybrid robot

HR Series

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



Pneumatic cylinders II CB-030S

With length measuring function

Cylinder and hand with length measuring sensor

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

- New dimension air compressor 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 the specified stroke range; it can perform length measurement as well as the workpiece of an actuator.
- 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-030S

Hand and chuck

- A wide range of models, variations and options
- You can make a selection depending on the use
- Various cylinder switches, such as reed and proximity



Pneumatic cylinders II CB-030S

Shock absorber

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
- Maximal 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 $+80^{\circ}\text{C}$
- Ampler choice of 17 models
- Maximal absorption energy can be selected from a wide range of 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
- Maximal absorption energy can be selected from a wide range of 1.5J to 720J



Pneumatic cylinders II CB-030S

Floating joint

FJ Series

- When cylinder is installed, misalignment and parallelism defective are resolved to achieve a normal 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-030S

Floating connection

FK Series

- When cylinder is installed, misalignment and parallelism defective are resolved with ease. Simplified floating joint FK
- 8 types of male thread and 13 types of female thread



Pneumatic cylinders II CB-030S



ACTUATOR

High performance type

Low friction cylinder

U Series

- Newly developed special sliding packing is adopted
- 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 impact noise level
- Reduced impact acceleration
- Adjustment by cushion needle etc. is unnecessary
- All models have the same dimension as standard type



High performance type

Air bearing actuator

LBC Series

- Air static pressure 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 best 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



PNEUMATIC VALVES

Compact pilot operated 3/4-port valve

Compact pneumatic valve (reduced wiring valve)

MN4E Series

- Environment protection
The compactness and power saving nature of the product realizes its light weight, smaller amount of materials used, and thrifty energy consumption. CKD is among the first to reduce environmentally affecting 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 compacter with 7mm pitch contributes 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.
- $\varnothing 3$ one-touch joint in the lineup
 $\varnothing 3$ tube is supported to reduce piping volume and ensure flow rate; $\varnothing 1.8$ 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 block is available.
- High performance
 - 12ms response balanced between A port and B port.
(Our data value based on the double N3E0 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.

Suitable cylinder diameter: up to $\varnothing 32$



Pilot operated 3/4-port valves MN3E/4E Series CC-945

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

Metal and resin-based pneumatic valve

4G^{AD}_{BE} Series

- Cylinders up to $\varnothing 100$ 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
Manual override with protective cover, check valve and filter on air supplying port are equipped as standard
- Reliability enhanced
Service life of over 60 millions cycles, response time of 12ms \pm 2ms and low wattage of 0.6W are realized
- Ease of use enhanced
Common upper and side wiring, reduced wiring connector rotation (upper and side), tool-free manual override are adopted
- Wide variation
Discrete, metal-based manifold, block manifold, individual and reduced wiring

Suitable cylinder diameter: up to $\varnothing 100$



Pneumatic valves in general CB-023S

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 4-GA1/2/3 Series
- Operability improved
Tool-free manual override, common upper and side wiring, front extraction of P-R port, many electric connections
- Reliability enhanced
Service life enhanced by improving the structure of sliding section, packing, etc. Filter on air supplying port against foreign substances
- Safety enhanced
Manual override with protective cover against external force

Suitable cylinder diameter: up to $\varnothing 160$



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



PNEUMATIC VALVES

Medium size pilot operated 3/5-port valve

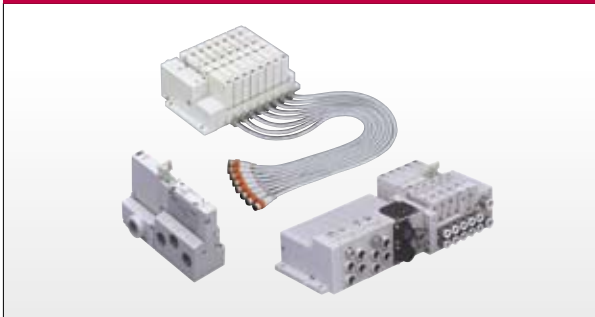
Plug-in block manifold

W4G2 Series

Environment and "Human" friendly concept of [4G^Δ/MN4G^Δ 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
- 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

Suitable cylinder diameter: up to $\varnothing 80$



Pneumatic valves in general CB-023S

Large pilot operated 5-port valve

Plug-in block manifold

W4G4 Series

- Cylinders up to $\varnothing 125$ are driven with valve width 25mm
Performances, such as installation area, workability, service life and power consumption, are enhanced
- 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

Suitable cylinder diameter: up to $\varnothing 125$



Pneumatic valves in general CB-023S

Compact pilot operated 3/4-port valve

SELEX valve (reduced wiring valve)

MN4S0 Series

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

Suitable cylinder diameter: up to $\varnothing 40$



Pneumatic valves in general CB-023S

Plug-in type 4/5-port valve

Reduced wiring valve

4TB Series

- Easy piping and maintenance with dead space dramatically reduced
One side solenoid plug-in type 4/5-port reduced wiring valves
- Driving cylinders up to $\varnothing 180$
 $C[\text{dm}^3/(\text{S}\cdot\text{bar})]: 0.51 \text{ to } 14.6$ *1
- Low wattage for energy saving
Power consumption 1.4W
- Block manifold method is adopted
Flexible station number change
- Drip proof option IP65 is available

Suitable cylinder diameter: up to $\varnothing 180$



Pneumatic valves in general CB-023S

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

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

- Connectable to each company's PLC
UNIWIRED 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 UNIWIRED 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 UNIWIRED[®] system H series



Pneumatic valves in general CB-023S

SAVENET System

- Network in pursuit of new generation's field network
 - 8msec for 63-station connection with a communication line transmission rate of 3Mbps.
 - 63-station connectable. Max. 2016 points connectable.
 - Max. 500m line can be constructed with two lines.
- A variety of master interfaces and drivers are available
Various PC buses are supported (ISA Bus, PCI bus, PCMCIA card, C bus, VME bus and CompactPCI)
- Ample terminals for user friendliness.



Pneumatic valves in general CB-023S

Network-compatible solenoid valves

OPP* Series

- Various manufacturers' networks are supported by solenoid valve slave stations.



Pneumatic valves in general CB-023S

PLC manufacturer	Communications system	Wiring block model no.	Slave station series	Mounted valves
CC-Link Association Mitsubishi Electric	CC-Link (ver1.10)	T6G1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
		T6G1	OPP3 Series	MN4S0, MN4E, MN4G, M4G, M4SA/B1
		T7G1	OPP4 Series	MN4G
		T8G1/2/7	OPP5 Series	MW4G2 *1
		T7G1/2	OPP6 Series	MN4E0, MN4E00
ODVA OMRON	DeviceNet	T6D1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
		T7D1	OPP4 Series	MN4G
		T8D1/2/7	OPP5 Series	MW4G2 *1
JTEKT	DLNK	T7D1/2	OPP6 Series	MN4E0, MN4E00
OMRON	CompoBus/S	T6C0/1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
		T6C0/1	OPP3 Series	MN4S0, MN4E, MN4G, M4G, M4SA/B1
		T7C0/1	OPP4 Series	MN4G
		T8C1/6	OPP5 Series	MW4G2 *1
CKD, KURODA Pneumatics	UNIWIRED System	T6A0/1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
			OPP3 Series	MN4S0, MN4E, MN4G, M4G, M4SA/B1
	UNIWIRED H System	T6J0/1	OPP2 Series	MW4G4, MN4TB, M4TB, LMF0
SUNX	S-LINK	T6E0/1	OPP3 Series	MN4S0, MN4E, MN4G, M4G, M4SA/B1
		T7E0/1	OPP4 Series	MN4G
	S-LINK V	T7N1/2	OPP6 Series	MN4E0, MN4E00
ONTEC	SAVENET	T7L1	OPP4 Series	MN4G
Japan AS-i Association	AS-i	T8MA/6	OPP5 Series	MW4G2 *1

* For compatibility with other networks, please contact us.

I/O block		
Product name	Model no.	Type of compatible slave station
Input block	W4G-IN	T8C1/T8C6 T8D1/T8D2/T8D7
Output block	W4G-OUT	T8G1/T8G2/T8G7 T8M6/T8MA

The input-and-output block is compatible with *1.



PNEUMATIC VALVES

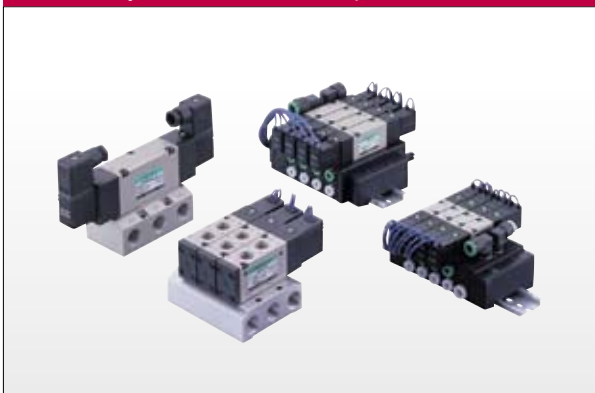
3/5-port pilot operated valve

3/5-port pilot operated valve

4K_A Series

- Valve width 15mm, 18mm, 23mm, 29mm. Compact 3/5-port valve
- Driving 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 porting & base porting
- 2 types of manifold
Metal-based manifold & block manifold

Suitable cylinder diameter: up to $\phi 160$



Pneumatic valves in general CB-023S

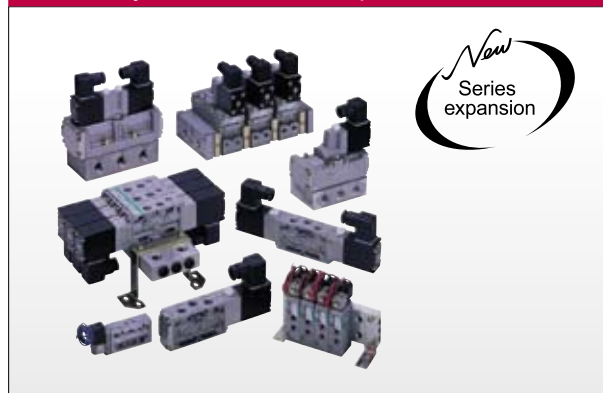
5-port pilot operated valve

5-port pilot operated valve

4F Series

- Usable in wide fields
5-port valve
- Driving cylinders up to $\phi 250$
4F0 to 6 : C[dm³/(S·bar)]: 0.61 to 18 *1
4F7 : Effective sectional area : 160mm²
- Soft spool method is adopted
Long service life, low frequency use possible, environment resistant (compressor air)
- Wide variations
Discrete, manifold
- Outdoor specifications option

Suitable cylinder diameter: up to $\phi 250$



Pneumatic valves in general CB-023S
4F2/3 Series outdoor specification option CC-1070

ISO conformed 5-port pilot operated valve

ISO conformed 5-port pilot operated valve

PV5G/PV5/CMF Series

- Small body size
Small size is realized with improved total performance
- Improvement in operability
Operability, such as installing adjustment and maintenance, is enhanced by easy-to-press or easy-to-see design
- 2-color indicator adopted
- Improvement in safety and reliability
Rubber cover on manual buttons prevents malfunctions by preventing foreign substances from entering

Suitable cylinder diameter: up to $\phi 160$



Pneumatic valves in general CB-023S

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 in general CB-023S

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

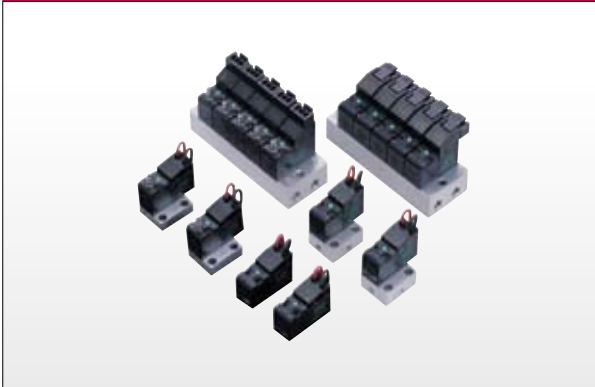
Miniature direct acting 3-port valve

Small pneumatic valve

3MA0/3MB0 Series

- For size reduction of devices
Depth 10mm and space saving miniature direct acting poppet 3 ports valve
- Driving cylinders up to $\phi 26$
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

Suitable cylinder diameter: up to $\phi 16$



Pneumatic valves in general CB-023S

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
- Driving cylinders up to $\phi 25$
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

Suitable cylinder diameter: up to $\phi 25$



Pneumatic valves in general CB-023S

Compact direct acting 3-port valve

Compact direct acting 3-port valve

3QRA1/3QRB1 Series

- Lightweight
19g Lightest in the class and 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 small size and light weight.
- Responsiveness
4ms±1ms(ON) 1.5ms±1ms(OFF) accelerates vacuum attainment and destruction.
- Long service life
Over 100 million cycles under strict test conditions.
- Conformance
RoHS, low ozone, and rechargeable battery manufacturing process are supported as standard.

Suitable cylinder diameter: up to $\phi 25$



Compact direct acting port valve 3QRA1/3QRB1 Series CC-1020

Dual 3-port solenoid valve integrated manifold

Dual 3-port solenoid valve integrated manifold

MN3Q Series

- Compact size
Manifold height reduced to 34mm. Installable in a narrow place
- 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.

Suitable cylinder diameter: up to $\phi 16$



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

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



PNEUMATIC VALVES

Compact direct acting balance poppet 3-port valve

Compact direct acting balance poppet 3-port 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
- Driving cylinders up to $\phi 40$
 $C[d\text{m}^3/(S\cdot\text{bar})]$: 0.33 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

Suitable cylinder diameter: up to $\phi 40$



Pneumatic valves in general CB-023S

Pilot operated poppet 3-port valve

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
- Driving cylinders up to $\phi 16$
 $C[d\text{m}^3/(S\cdot\text{bar})]$: 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
Discrete, metal-based manifold, block manifold

Suitable cylinder diameter: up to $\phi 16$



Pneumatic valves in general CB-023S

Explosion proof 5-port valve

Explosion proof 5-port valve

4F**0E Series

- Explosion proof functionality d2G4
Pressure and explosion proof structure, explosion class 2, ignitability G4
- Driving cylinders up to $\phi 250$
4F3 to 6 : $C[d\text{m}^3/(S\cdot\text{bar})]$: 3.9 to 18 *1
4F7 : Effective sectional area : 160mm²
- 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

Suitable cylinder diameter: up to $\phi 250$



Pneumatic valves in general CB-023S

Shock absorbing valve

Shock absorbing valve

SKH Series

- Bound phenomenon at cylinder stroke end is reduced
- Driving cylinders up to $\phi 125$
 $C[d\text{m}^3/(S\cdot\text{bar})]$: 4.3 to 16.3 *1
- Wide variations
Speed variable unit, deceleration unit, and one end decelerating unit

Suitable cylinder diameter: up to $\phi 125$



Pneumatic valves in general CB-023S

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

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
- Driving cylinders up to $\varnothing 160$
Effective sectional area 23 to 58mm²
- Manual override is equipped as standard
Non-lock manual override



Pneumatic valves in general CB-023S

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
- Driving cylinders up to $\varnothing 160$
C[dm³/(S·bar)]: 1.6 to 10.2 *1
- Port size
Rc1/4 to Rc3/4
- Wide variations
Miniature type, standard type

Suitable cylinder diameter: up to $\varnothing 160$



Pneumatic valves in general CB-023S

Master valve 4/5-port valve

Pneumatic valve

4G Series

- Driving cylinders up to $\varnothing 100$
C[dm³/(S·bar)]: 0.66 to 4.5 *1
- Safety function, reliability and user-friendliness are upgraded

Suitable cylinder diameter: up to $\varnothing 100$



Pneumatic valves in general CB-023S

Master valve 4/5-port valve

Master valve

4K Series

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

Suitable cylinder diameter: up to $\varnothing 160$



Pneumatic valves in general CB-023S

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



PNEUMATIC VALVES

Master valve 4/5-port valve

Master valve

4F Series

- Driving 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 wide fields
- Environment resistant (compressor air)

Suitable cylinder diameter: up to $\varnothing 250$



Pneumatic valves in general CB-023S

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



Speed control valve

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-860

Speed control valve

Speed control valve with adjusting dial

DSC Series

- Flow characteristics in proportion to number of needle turn
- Stylization of speed setting
- Push lock method is adopted.
- Prevent misadjustment
- Reduce work man-hours



Speed control valve with adjusting dial DSC Series CC-1021

Speed control valve

Miniature speed control valve

SC Series

- 4 types of straight, elbow, flat and adjustable are serialized
- Low speed and constant speed types are available



Auxiliary Components CB-024S

Speed control valve

Miniature meter in meter out speed control valve

SCD Series

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



Auxiliary Components CB-024S



Speed control valve

Speed control valve Direct piping type

SC3R/SC3W/SC3U Series

- L-rotation type and 360° flexible piping type are available
- Ample series



Auxiliary Components CB-024S

Speed control valve

Speed control valve Stainless corrosive enduring type

SC3P Series

- Speed control valve uses stainless steel excellent in corrosion resistance
- Check packing uses as standard ozone-proof material for degradation prevention
- Material contains no substance affecting earth environment



Speed controller Stainless corrosive enduring type CC-931

Speed control valve

Speed control valve Medium/large port size type

SC1 Series(Medium port 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 port size type)

- Size Rc3/4 to 2



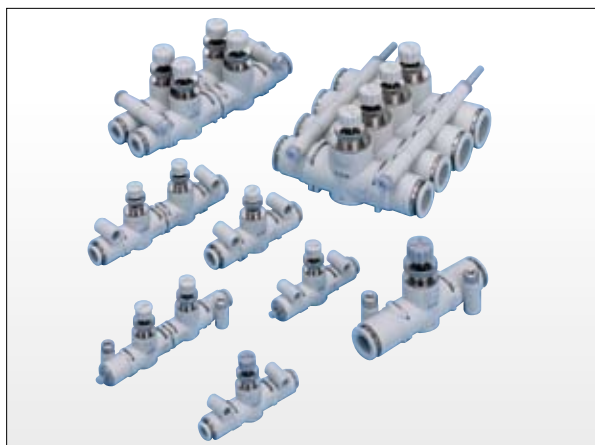
Auxiliary Components CB-024S

Speed control valve

In-line speed control valve

SCL2/SCD2 Series

- Line type speed control valve useful for remote and concentrated control.
- 360° rotatable mounting hole enables flexible mounting without bracket.
- Meter-in / meter-out integrated type is available for popping out prevention and speed stability.
- One class larger flow rate is achieved for small size.
- Speed adjustable very slow speed type is available as option.
- Packing material with high ozone resistance is used as standard.



Auxiliary Components CB-024S

Metaring valve with silencer

SMW2 Series

- Small size, light weight and high flow rate
Major reduction in size and weight with 50% reduction in volume and 80% reduction in mass compared to the CKD SMW Series. The class largest effective sectional area.
- Silencing effect of over 23 dB(A)
Silencing effect improved by integrating high silencing P.P sintered element with body.
- Push lock type needle is adopted
Push lock knob is used to enable the needle to be locked with a single operation.
- Environmental design
Using plastic material only, no need to separate rubbish.



Auxiliary Components CB-024S

Silencer

SL/SLW/SLM Series

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



Auxiliary Components CB-024S

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 sectional area
- Mounting direction is free
- Mounting bracket is available (Small port size type)



Auxiliary Components CB-024S

Quick exhaust valve line type

QEL Series

- Small size, space-saving in-line type
- Valving element uses as standard ozone-proof material for degradation prevention
- Material contains no substance affecting regional environment



Auxiliary Components CB-024S



Auxiliary valve

Small check valve with push in joint

CHL Series

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



Auxiliary Components CB-024S

Auxiliary valve

Check valve

CHV2 Series

- Wide variation with port size Rc1/8 to Rc11/2.
- Compact and lightweight with 34% reduced in volume and 25% reduced in weight (CKD comparison).
- Fluoro rubber and oil-prohibition are available as option.
- Mounting plate is available for small port size type.



Auxiliary Components CB-024S

Auxiliary valve

Block Valve

FPV Series

- Compact valve best for cylinder position locking and intermediate stop.
- Compact and lightweight with 34% reduced in volume and 25% reduced in weight (CKD comparison).
- Cylinder can be direct mounted with variations of port size M5 to R1/2.
- Device-matching white body is adopted.
- Speed control valve type is available. (Custom order)
- Type with manual button for residual pressure blowdown is also available. (Custom order)



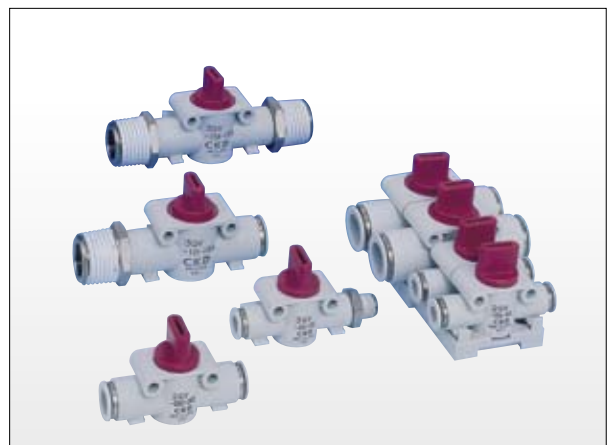
Auxiliary Components CB-024S

Auxiliary valve

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-024S

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-024S

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)

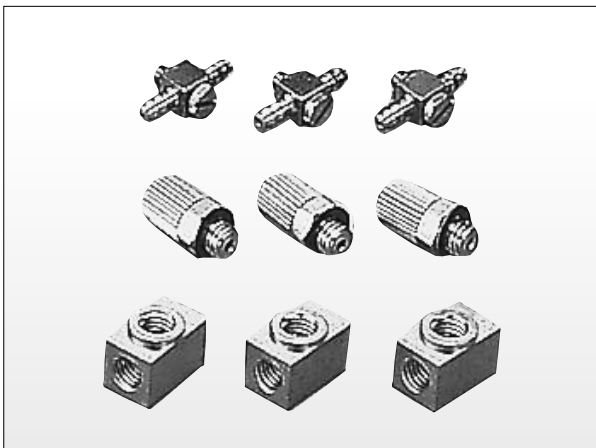


Auxiliary Components CB-024S

Miniature fitting

F Series

- CKD original guided structure enables easy to insert while difficult to come off
- For both soft nylon and urethane tubes



Auxiliary Components CB-024S

Fitting

GW/GWJ Series

- No flow rate loss for bore size
- White body for comfortable 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
- Ample pipe outside diameters $\varnothing 3.2$ to $\varnothing 12$



Auxiliary Components CB-024S



Fitting/tube

New stainless fitting 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-024S

Fitting/tube

Tightening joint Stainless steel series

ZJ Series

- Easy Fit mechanism (integration of nut and sleeve) for working efficiency
- Unique sleeve eliminates tubing twist
- Repeated use requires no sleeve replacement
- Smooth body bore diameter
- Ample size variations suitable to various tubes
- Oil can be removed by cleaning



Auxiliary Components CB-024S

Fitting/tube

Tightening fitting

MJ/JL Series

- High reliable double chuck joint
- In addition to various tubes, copper tube is also supported
- No flow rate loss for bore size



Auxiliary Components CB-024S

Fitting/tube

Tube

F/U/NU/KX/SR Series

- Various tubes are available for purposes and usages



Auxiliary Components CB-024S

Air fiber

- Ultrathin tube as fine and flexible as lead wire
- 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-024S

Antistatic tube

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

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

- Resistant to static electricity and dust build-up
Volume resistivity is black : 10^4 to $10^8 \Omega \cdot \text{cm}$
Other colors : 10^9 to $10^{12} \Omega \cdot \text{cm}$.
Antistatic measures against static electricity and dust attachment.
- 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, an insert ring is separately needed)
- Variegated colors
Black, white, transparency, transparent blue, transparent green, transparent red (-F2) are available.
Colors can be used for the application.
- Abundance of products
Six sizes of $\varnothing 3.2$, $\varnothing 4$, $\varnothing 6$, $\varnothing 8$, $\varnothing 10$ and $\varnothing 12$ are available.



Auxiliary Components CB-024S



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)

Refrigerated air dryer

Compact refrigerated air dryer

GK3100D/GK5100 Series

- New refrigerant R-407C with zero ozone-depletion-potential is adopted for all models
- Stainless steel heat exchanger compatible with oil free air
- Highly reliable snap drain
- Easy maintenance
- Energy-saving type

Applicable air compressor (GK3100D) 2.2 to 11kW
(GK5100) 2.2 to 5.5kW



Refrigerated air dryer GK3100D/GK5100 Series CC-1010

Refrigerated air dryer

Refrigerated air dryer

GX3200/GX5200 Series

- New refrigerant R-407C with zero ozone-depletion-potential is adopted for all models
- Stainless steel heat exchanger compatible with oil free air
- Uses a minimal air loss drain discharger
- Thin and slim compact body
- Reliable design with operational status visible, dust filter equipped, automatic drain outer mounted

Applicable air compressor (GX3200) 15 to 55kW
(GX5200) 7.5 to 75kW



Refrigerated air dryer Zero Aqua GX3200/5200 Series CC-1025

Refrigerated air dryer

Refrigerated air dryer

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. Stop free at high loads.

Applicable air compressor (GT9000(W)) 75 to 450kW
(GT9000WV) 710kW-960kW



Refrigerated air dryer Zero Aqua GT9000 Series CC-1022
Refrigerated air dryer Zero Aqua GT9000/GT9000W/GT9000WV Series CC-1053

Desiccant type air dryer

Heatless air dryer

HD/SHD Series

- Max. purge rate reduced by 96% with energy saving control
- Significantly reduce noise level to approx. 35dB(A) by variable exhaust method (CKD comparison)
- Power consumption reduced by 1/3 with electronic control system (CKD comparison)
- Performance verification ensured by digital pressure dew point display
- Installation area significantly reduced by multi tower type (1/3 to 1/2 as large as before)
- 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-024S

High polymer membrane air dryer

High polymer membrane air dryer

SD/SU Series

- Environment friendly freon-free dryer
- Due to no movable parts, clean dry air can be supplied for a long time.
- Reduction of size and weight enables easy installation into the equipment.
- With no electricity used, noise does not occur or influence.
- 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-024S

Air filter (medium)

Medium main line filter

AF2000 Series

- New material and new structure further low pressure loss, long service life and compactness
- Space saving installation is made possible because filters can be connected by the module kit
- Differential pressure indicator necessary for checking service life, highly reliable snap drain provided as standard
- Easy element replacement made possible

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



Medium main line filter AF Series CC-972

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 exchange thanks to the band type housing tightening feature
- Time-controlled element exchange. Lamp flashing indicates the need of replacement.

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



Medium main line filter AF Series CC-972

Air filter (large)

Large main line filter

AF3000 Series

- Low pressure element contributes to energy saving
- Differential pressure gauge is equipped as standard
- Mounting legs are equipped as standard, enabling easy piping work
- Easy maintenance
The element can be easily replaced only by turning it after removing the upper flange.
- Abundance of products for wide applications

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



Auxiliary Components CB-024S



PNEUMATIC AUXILIARY COMPONENTS (MAIN LINE UNIT)

Air filter (large)

Large main line filter

AF5000 Series

- Stainless vessel is adopted for all models. (SUS304)
- Long service life and low pressure element contributes to energy saving.
- 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.
Only remove the upper flange and turn the element screw.

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



Auxiliary Components CB-024S

Drain discharger

Automatic drain

DT Series

- The snap mechanism increases durability 15 times (CKD comparison)
- 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-024S

Drain discharger

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
- When drain is abnormal, it is indicated by the alarm output
- Large port size diaphragm valve ensures drain
- TEST button enables manual drain
- IP65











Auxiliary Components CB-024S

MEMO



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

*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 ● 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 type FRL	● Filter/Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 				●		WB500 (compact) W1000-W W2000-W W3000-W W4000-W W8000-W		
		● Filter/Regulator Flame resistant P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 				●		W3000-G4 W4000-G4 W8000-G4	
			● Reverse filter/Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 					●	W1100-W W2100-W W3100-W W4100-W W8100-W
				● Reverse filter/Regulator Flame resistant P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 					●

Series	Application						Model no.
	F	R	L	W SELEX		M	
	Filter	Regulator	Lubricator	Filter/Regulator	Reverse Filter/Regulator	Oil mist Filter	
Small type ● 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 ● 7000 Series P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 	Integrated Filter and Regulator Rated filtration 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
			●	●									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 type ● Filter P1=0.7MPa ΔP=0.02MPa 							F1000-W	
							F2000-W	
							F3000-W	
							F4000-W	
							F6000-W	
							F8000-W	
	● Filter/Flame resistant P1=0.7MPa ΔP=0.02MPa 							F3000-G4
								F4000-G4
								F8000-G4
● Filter/Medium pressure 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 type ● Inline type clean filter P1=0.7MPa ΔP=0.03MPa 							FCS500
							FCS1000

Model series name	Application	Model no.
● Air filter P1=0.7MPa ΔP2=0.02MPa 	Ample models Rated filtration 5μm	A1019-*C
		1138-*E
		1126-*E
● Heavy duty air filter P1=0.7MPa ΔP2=0.002MPa 	High drain removal type Rated filtration 5μm	A1338
		1326
● 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
● Micro alescero micro naught type P1=0.7MPa ΔP2=0.01MPa 	Oil removal Oil removal rate 0.1PPMW/W	1219-2C
		1238-6C
		1226-8C
		1126J-*C
● Micro alescero odor naught type P1=0.7MPa ΔP2=0.01MPa 	Odor removal	1238-6C-X
		1226-8C-X
		1226J-*C-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		
				●	●									0.46/0.61
					●	●								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
					●	●	●							1.6/2.0
					●	●								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)



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 type <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 ● Oil mist filter (M type) P1=0.7MPa ΔP=0.01MPa ● Rated filtration: 0.01μm ● Secondary oil concentration 0.01mg/m³ ● Oil mist filter (X type) P1=0.7MPa ΔP=0.01MPa ● Rated filtration: Activated carbon-based Suction ● Secondary oil concentration 0.003mg/m³ ● High performance oil mist filter P1=0.7MPa ΔP=0.01MPa ● Rated filtration: 0.01μm ● Secondary oil concentration 0.001mg/m³ ● Oil mist filter Medium pressure type (S type) P1=1.4MPa ΔP=0.01MPa ● Rated filtration: 0.3μm ● Secondary oil concentration 0.5mg/m³ ● Oil mist filter Medium pressure type (M type) P1=1.4MPa ΔP=0.01MPa ● Rated filtration: 0.01μm ● Secondary oil concentration 0.01mg/m³ ● 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 						●	M1000-W*-S M2000-W*-S M3000-W*-S M4000-W*-S M6000-W*-S M8000-W*-S	
							●	M1000-W M2000-W M3000-W M4000-W M6000-W M8000-W
							●	M1000-W*-X M2000-W*-X M3000-W*-X M4000-W*-X M6000-W*-X M8000-W*-X
							●	MX1000-W MX3000-W MX4000-W MX6000-W MX8000-W
							●	MM3000-W*-S MM4000-W*-S MM6000-W*-S MM8000-W*-S
							●	MM3000-W MM4000-W MM6000-W MM8000-W
							●	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
					●	●								0.61
					●	●	●							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	<ul style="list-style-type: none"> ● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						R1000-W R2000-W R3000-W R4000-W R6000-W R8000-W	
	<ul style="list-style-type: none"> ● Regulator/Flame resistant P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						R3000-G4 R4000-G4 R8000-G4	
	<ul style="list-style-type: none"> ● Regulator oil-prohibition P1=0.7MPa P2=0.5MPa 		●						RN3000 RN4000 RN8000	
	<ul style="list-style-type: none"> ● Regulator medium pressure P1=1.6MPa P2=0.5MPa 		●						RM3000-W RM4000-W	
	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RA050/RA060 (manifold type) RA800 RB500
		<ul style="list-style-type: none"> ● Block manifold Regulator 		●						MNRB500A MNRB500B
	Precision type	<ul style="list-style-type: none"> ● Regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RJB500
		<ul style="list-style-type: none"> ● Block manifold Regulator 		●						MNRJB500A MNRJB500B
	Clean type	<ul style="list-style-type: none"> ● Clean regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 		●						RC2000
<ul style="list-style-type: none"> ● Clean regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 			●						2619	

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		
				●	●									0.77/1.35
					●	●								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
					●	●								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 ΔP2=0.1MPa 	Diverse models	B2019-*C 2215-*C
	<ul style="list-style-type: none"> ● Reverse regulator P1=0.7MPa P2=0.5MPa ΔP2=0.1MPa 	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"> ● 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 type	<ul style="list-style-type: none"> ● Lubricator P1=0.5MPa ΔP=0.3MPa 				●			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 ΔP=0.03MPa  	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 components>

Model series name	Application	Model no.		
<ul style="list-style-type: none"> ● Clean exhaust filter 	Conduct direct exhaust in a cleanroom	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 to improve 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 Automatic drain with manual cock	DT3000-W/4000-W		
		DB1000/3000		
		5100-4C		
		5002-2C		
<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		



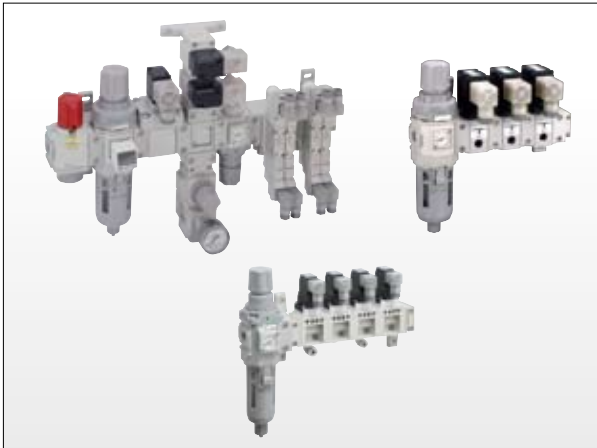
PNEUMATIC FILTER, REGULATOR, LUBRICATOR (F.R.L UNIT)

F.R.L. unit

Air unit

CXU Series

- Piping eliminated. No troublesome piping work.
 - Installation space reduced by eliminating piping and tube
 - No threading section, no external leak
- Combination is flexible
 - Vertical and horizontal pipes can be arranged versatility. Solenoid valves can also be connected directly
 - Module joining enables air components to be changed and expanded freely



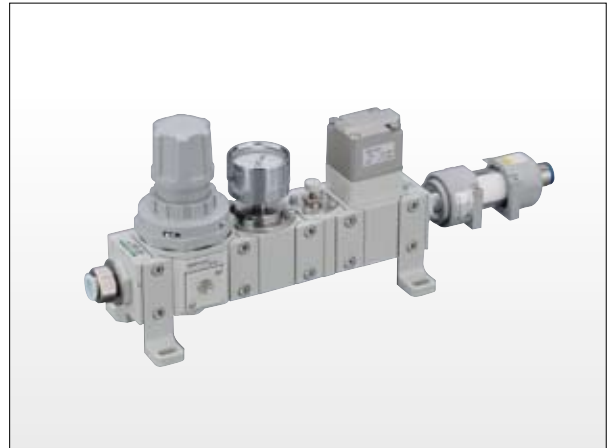
Air unit CXU Series CC-901

Clean filter

Clean air unit

CAU30 Series

- A clean blow system is realized in a unit
- High rigidity aluminium body with transparent filter
- Due to unit type without piping, compact and space-saving
- Overall oil-prohibition
- Two system type is available



Clean air unit CAU30 Series CC-872

Regulator

Regulator for water

WR Series

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



Regulator for water WR Series CC-880

Electro pneumatic regulator

Component to control pressure and flow rate with input proportional to output.

- High precision and high response system Depending on various applications, air pressure and flow rate can be continuously controlled. Best control component as a thrust controller and a tension controller.
- For automatization Flexible continuous operation evolves into more advanced electronic control.
- EV2000 series Semiconductor pressure sensor is adopted for high precision control of pressure with ON and OFF of solenoid valve
- EVS Series Size and weight reduction with energy-saving effect.
- Low pressure electro pneumatic regulator EVL series Proportional control can be freely done from 0kPa to 50kPa with high precision.
- Interface Connection of a proportional control valve is easy.



Auxiliary Components CB-024S

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 type of 14mm, Light weight of 80g.
- Support network.
- Display the operation status with two colors.
- Easy piping and wiring tasks.
- Two installation directions.
- High precision and quick response.
- Eco-friendly product.



Auxiliary Components CB-024S

Digital electro-pneumatic regulator

EVD Series

- Outstanding user-friendliness and installation performance
 - Mounted digital display, which allows us to see control status in one glance
 - Parallel input type is equipped as standard
 - Small-sized design
 - Enabled two connection directions with D-sub connector method
 - Enabled module connection
- High-function with microcomputer incorporated
 - Error display function ●Zero/span adjustment function
 - Direct memory function ●Switch output function
- Enabled 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-024S



<Vacuum system components SELVACS>

●Ejector system type

Model	Series	
Discrete ejector	VSY Series Discrete, with vacuum breaker ● Integrated ejector and vacuum release. ● Compact, lightweight design enables use at end of vacuum piping.	
	VSH Series Discrete solenoid valve direct mount type ● Enable to mount solenoid valve directly to supply ports M5 to R1/4. ● Wide variations from ø0.5 to ø2.0 nozzle diameters.	
	VSU Series Discrete tube type ● Enable to mount on piping with vacuum and support ports arranged in a straight line. ● A dedicated fixed bracket is available.	
	VSB Series Discrete square type ● Enable to mount and fix the body with built-in square silencer. ● Mechanical vacuum switch is available as option.	
	VSC Series Discrete pad direct mount type ● Enable to mount pad directly to vacuum ports M5 to R3/8. ● Wide variations from ø0.5 to ø2.0 nozzle diameters.	
Ejector system type	VSG Series 20mm width discrete type unit ● Discrete type with basic functions emphasized. ● Unitized valves, vacuum switches and vacuum filters can be selected dependent on the application.	
	VSK/VSKM Series 16mm width universal type unit ● Enable to select optimum unit by each modular unit. ● Options include check valve integrated and air timer break types.	
	VSJ/VSJM Series 20mm width universal type unit ● Enable to control break air flow and pressure. ● Vacuum release circuit relief shortens vacuum releasing time.	
	VSN/VSNM Series 10.3mm width small type unit ● Compact, light vacuum unit. ● Fast and stable response is realized.	
	VSX/VSXM Series 10.5mm width universal type unit ● Compact, slim vacuum unit. ● Either direct fixing or DIN rail installation is possible.	
	VSQ Series 31.5mm width discrete type unit ● Large vacuum units for high flow control. ● Three standard nozzles are available: single, 2-step, and twin.	
	VSZM Series 11mm pitch manifold dedicated unit ● 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.	


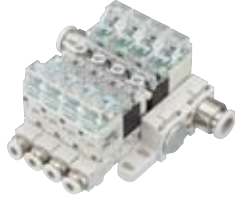

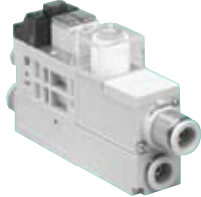

●: Standard ○: Option

	Model no.	Direction of piping			Components						Nozzle diameter ϕ (1/10mm)							
		Discrete 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			●	●	●	○	●	○				○	○				



<Vacuum system components SELVACS>

● Vacuum pump system type

Model	Series	
Vacuum pump system type Vacuum change unit	VSJP/VSJPM Series 20mm width universal type unit ● Enable to control break air flow and pressure. ● Vacuum release circuit relief shortens vacuum releasing time. ● Vacuum solenoid valves includes self hold type as standard.	
	VSNP/VSNPM Series 10.3mm width small type unit ● Compact, light vacuum unit. ● Fast and stable response is realized.	
	VSXP/VSXPM Series 10.5mm width universal type unit ● Compact thin type vacuum unit. ● Either direct fixing or DIN rail installation is possible. ● 3-port valve (option) enables high cycle.	
	VSQP Series 31.5mm width discrete type unit ● 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 ● 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)					
	Discrete 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 sectional area 3.5mm ² (ϕ 4), 5mm ² (ϕ 6)					
VSJPM		●													
VSNP	●			●	●	●				Vacuum valve effective sectional area 0.4mm ²					
VSNPM		●													
VSXP	●			●	●	○	●			Vacuum valve effective 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 sectional area 16.5mm ²					
VSZPM			●	●	●	○	●			Vacuum valve effective sectional area 4.5mm ²					



RELATED PNEUMATIC PRODUCTS

<Vacuum system components SELVACS>

● Suction pad

Pad shape		Holder shape	
		With buffer	Vacuum outlet
Compact vacuum pad (VSP-M*-Various pads shape) ● 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)	Top/joint Side/joint Direct mount type
		none (With stopper)	Top/joint Side/joint Direct mount type
Standard type (Deep type): VSP-*A ● Ideal for picking up round balls, etc.		none (Fixed type)	Top/joint Side/joint Direct mount type
		none (With stopper)	Top/joint Side/joint Direct mount type
Sponge type: VSP-*S ● Ideal for workpieces with uneven surfaces, such as exterior walls		none (Fixed type)	Top/joint Side/joint
		Provided (With stopper)	Top/joint Side/joint Direct mount type
Bellows type: VSP-*B ● Ideal for soft work pieces, such as paper or vinyl-packed products		none (Fixed type)	Top/joint Side/joint
		Provided (With stopper)	Top/joint Side/joint Direct mount type
Multi-stage bellows type: VSP-*W ● Ideal for transferring inclined work pieces or vinyl-packed products		none (Fixed type)	Top/joint Side/joint
		Provided (With stopper)	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)	Top/joint Side/joint
		none (Screw type)	Top/joint Side/joint Direct mount type
		Provided (With stopper)	Top/joint Side/joint
Soft type: VSP-*L ● Ideal for unloading molded parts, and transferring delicate workpieces		none (Fixed type)	Top/joint Side/joint Side/joint (Direct mount type)
		Provided (With stopper)	Top/joint Side/joint Direct mount type
		Provided (without stopper)	Top/joint Side/joint
Soft bellows type: VSP-*LB ● Ideal for unloading molded parts, and picking up paper, etc.		none (Fixed type)	Top/joint Side/joint Side/joint (Direct mount type)
		Provided (With stopper)	Top/joint Side/joint Direct mount type
		Provided (without stopper)	Top/joint Side/joint
Nonskid type: VSP-*K* ● Ideal of workpieces covered with oil, such as pressed parts		none (Fixed type)	Top/joint Side/joint
		Provided (With stopper)	Top/joint Side/joint Direct mount type
Thin type: VSP-*P ● Ideal for transferring thin workpieces Suitable for transfer of workpieces		none (Fixed type)	Top/joint Side/joint Direct mount type
		Provided (With stopper)	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 typ Nitrile rubber, Silicone rubber, Urethane rubber, Fluoro rubber, Antistatic silicone rubber, Antistatic butadiene rubber, NBR compliant with food sanitary regulations		○
	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 sanitary regulations	○	○
	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 sanitary regulations	○	○
	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 sanitary regulations		○
	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 components 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 vacuum 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 main 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 components 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"> ● This is best for discrete ejector 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 inline 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 joint, 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 vacuum pad and an ejector. ● Best for assembly, etc. of a small part. ● 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

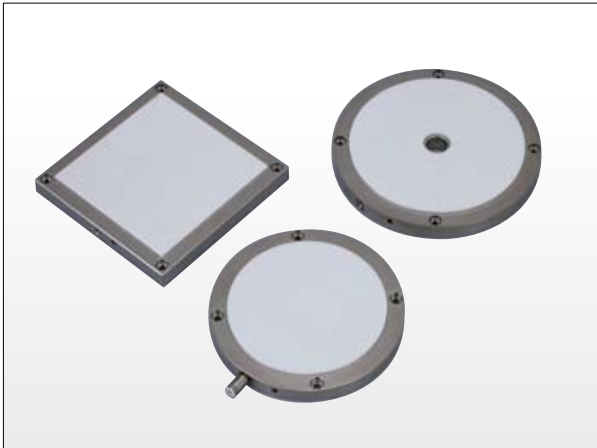
Components for vacuum

Precision suction plate

PVP Series

Vacuum suction plate with multi-porous fluoro 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
Multi-porous fluorine resin visible weight 1.3 and base (Al) weight 2.7



Auxiliary Components CB-024S

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-024S

Components for vacuum

Vacuum filter

VFA Series

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



Auxiliary Components CB-024S

Components for vacuum

Float star

GFM Series

- New porous material for stable floating
- New anti-static material against static electricity
- Class 10 level is achieved



Float star GFM Series CC-883

Electronic pressure switch (Parect 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.
- **PPS2 Series**
Semiconductor pressure sensor with microcomputer enables digital display of pressure.
- **PPD3/PPD Series**
Integrated type, separate type, panel attachment, stainless steel specification are available. Output forms include digital display, analog output, two-point output, etc.
- **PPE Series**
Small-sized pressure SW. Piping connection can be chosen.
- **PSW Series**
Reliability and long service life are achieved by semiconductor pressure sensor.

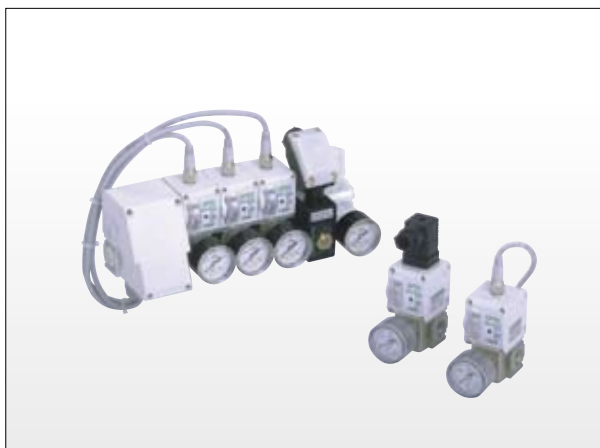


Auxiliary Components CB-024S

Contact confirmation switch (Gap switch)

GPS2 Series

- Air bridge circuit prevents the effect of supply pressure
- Easy adjustment is enabled with the scale of adjustment type dial
- Non-contact measurement without damaging products

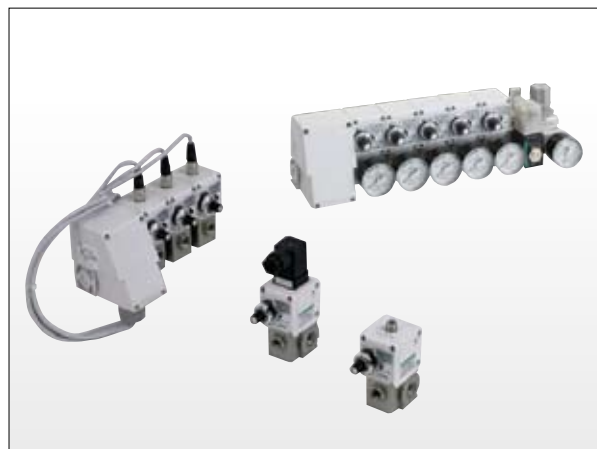


Auxiliary Components CB-024S

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.

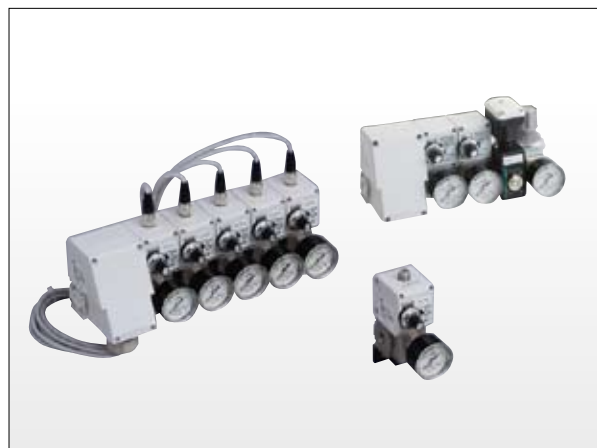


Auxiliary Components CB-024S

Cutting tool broken detecting switch

TLPS Series

- Non contact detection enables detections during rotation, reducing the tact time comparing to conventional methods
- Air nozzle-based self cleaning function enables use even in the environment with cutting water and swarf scattering.
- $\phi 0.3$ small diameter drill
1mm chip on the drill cutting edge can be detected.



Auxiliary Components CB-024S



RELATED PNEUMATIC PRODUCTS

Sensor components

PEL system components

Switching element, detection nozzle, PL switch, and SEPEL Switch are all

- Small-sized. Space-saving, high precision and high response
- Non-contact detection enables to detect almost all objects without damaging them
- A wide of applications, such as presence, position or dimension confirmation



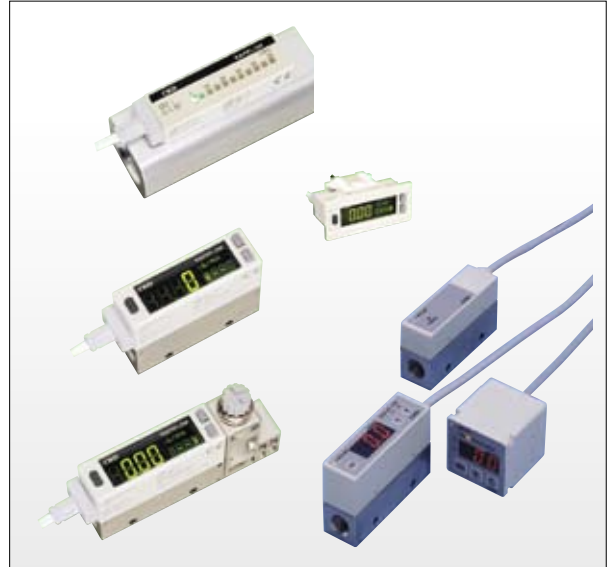
Auxiliary Components CB-0245

Sensor components

Small flow rate sensor (RAPIFLOW)

FSM2 Series

- High precision, fast response, large flow rate and compact
- Ample functions in pursuit of 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-886

Sensor components

Miniature flow rate switch (RAPIFLOW)

FSM-X Series

- Miniature, light weight
Separated sensor head furthers space-saving. The mass of 4g and the thinnest width of 8mm are achieved
- Both direction flow measurement is possible
One-way direction flow rate detection is also added. Both direction type enables adsorption-desorption confirmation
- Wide flow rate range
Both direction flow; $\pm 0.5, \pm 1, \pm 5, \pm 10\text{L/min}$
One-way direction flow; 0.5, 1, 5, 10L/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-1000

Sensor components

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, which allows us to see control status in one glance
- Microcomputer realizes multi-model

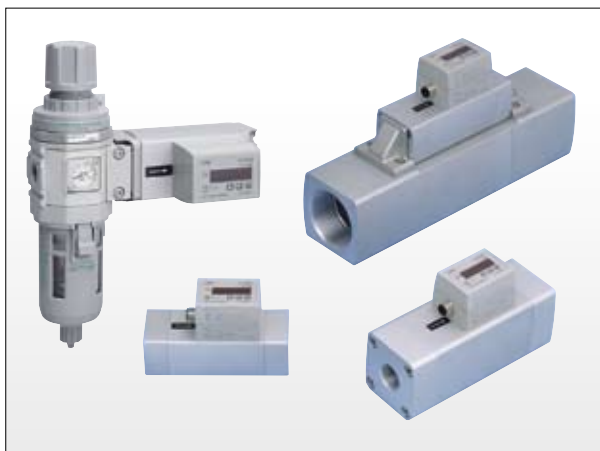


Auxiliary Components CB-0245

Flow sensor for compressed air (Integrated display type FLUEREX)

PF(F) Series PFU Series

- Four "New" are added to the conventional PF series!
 - ① Low pressure loss 0.005MPa
 - ② Prevents drain waterdrop 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



Auxiliary Components CB-024S

Flow sensor for compressed air (Separate display type FLUEREX)

PFD/PFK Series

- Ample output variations
- Compensation eliminated, readable directly with a digital gauge
- Excellent general accuracy $\pm 4\%$ F.S.

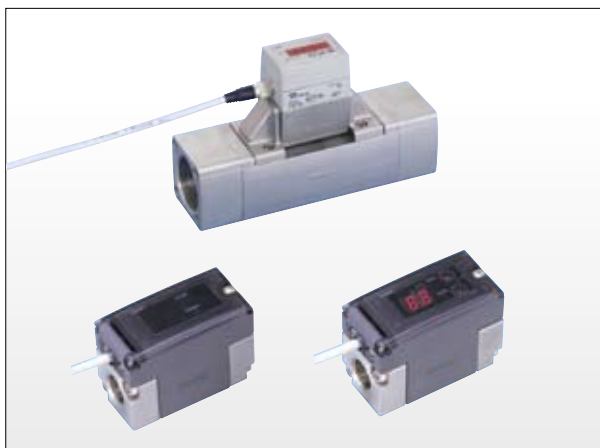


Auxiliary Components CB-024S

Karman vortex type FLUEREX

WFK Series

- Karman vortex detection method enables use in the environment with bad water quality
- A large effective sectional area realizes low pressure loss for energy saving of conveying 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-024S



GENERAL PURPOSE VALVES

2 port pilot operated solenoid valve for compressed air

Small air blow valve

EXA Series

- Large flow rate and low power consumption are achieved
A low wattage (0.6W) 3 way pilot valve enables large flow rate and energy efficiency at once. (Operable directly from PC)
- Compact and light in weight
Use materials are optimized for weight reduction. Volume reduced by 70%, weight by 30% compared to CKD's conventional models.
- Piping connection is easy
Man-hour reduction by push-in joint. Screw joint is also usable.
- Oil-prohibition specification (option)
Ideal for oil-restricted environment
- Manifold type
Achieving various piping layouts for space-saving.

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



Pilot operated 2 port solenoid valve for compressed air, small size air blow valve EXA Series CC-1007

Compact pilot operated solenoid valve for water

Compact pilot operated solenoid valve for water

FWD Series

- Lower power consumption
1/3 of CKD previous models.
- Compact and light in weight
Use materials are optimized for weight reduction. Mass and volume approx. 1/3 of CKD previous models.
- Large flow rate
Over 1.3 times compared to CKD previous models.

Port size: Rc1/4 to Rc1



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

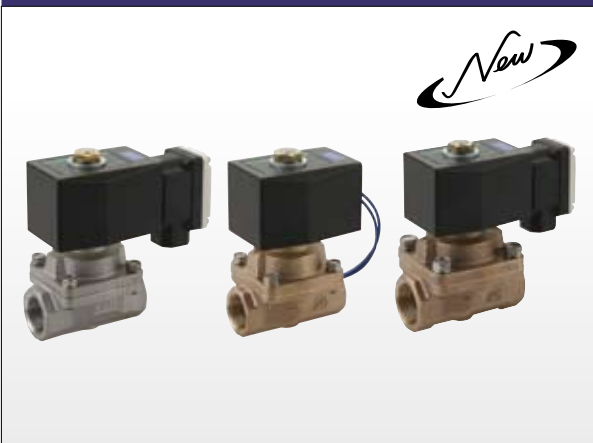
Pilot solenoid valve for steam

Pilot solenoid valve for steam

SPK Series

- 1 million cycle-life Greatly improved durability.
- Lower power consumption (1/2 of CKD previous models) contributes to energy reduction.
- Improved external seal functionality. Adoption of 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 solenoid valve for steam SPK Series CC-1068

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 and 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 service life design
Wear resistance is enhanced by specially-structured movable parts. (HN Series)

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



General Purpose Valve CB-03-15

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. A wide range of series, such as port size, orifice, working pressure.
- Low wattage design
- High reliability
Specially structured movable parts prevent wear, dramatically increasing service life.
- Lightweight aluminium die-casting body is adopted.

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



General Purpose Valve CB-03-1S

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

Special purpose valve for dry air

FGB/FGG Series

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

Port size: Rc1/8 to Rc1/2



General Purpose Valve CB-03-1S

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

Special purpose valve for water

FWB/FWG Series

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

Port size: Rc1/8 to Rc1/2



General Purpose Valve CB-03-1S

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

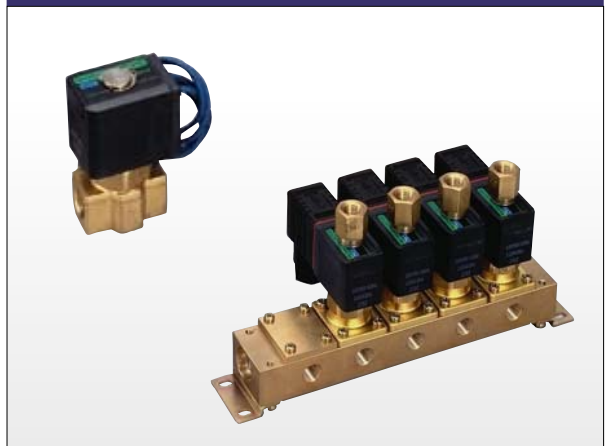
Special purpose valve for medium vacuum

FVB 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. A wide range of series, such as port size, orifice, 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



General Purpose Valve CB-03-1S



GENERAL PURPOSE VALVES

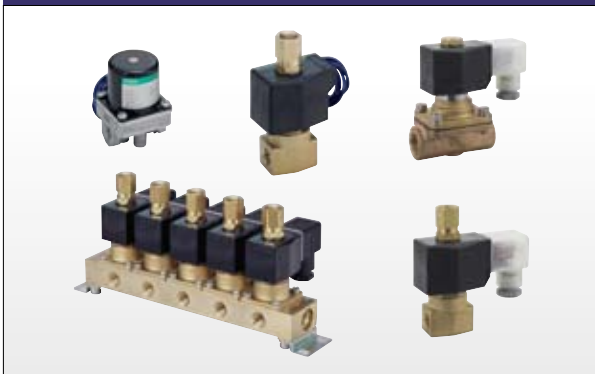
Direct acting type 2/3 port solenoid valve for various fluids control

Direct acting type solenoid valve (general purpose valve)

AB/AG 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
Ample 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



General Purpose Valve CB-03-1S

Direct acting type 2/3 port solenoid valve for various fluids control

Pilot operated solenoid valve (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
Ample 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



General Purpose Valve CB-03-1S

Direct acting type 2/3 port solenoid valve for various fluids control

Explosion proof solenoid valve (general purpose valve)

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

- Solenoid valves for various fluids control in hazardous locations
Explosion proof structure: 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
Ample options, such as wetted material and junction box, are available.
- Wide series variations
A wide range of series, such as direct acting type Rc1/4 (port size) large-sized 50 flange for pilot operated diaphragm piston valve, are available.

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



General Purpose Valve CB-03-1S

2 port pilot operated solenoid valve

2 port pilot operated solenoid valve

KZV3 Series

- Heat-resistant molded coil (Heat-resistant class H-IP65)
- AC100V/AC200V common coil for multi-voltage
- Various fluids compatible Steam, water, oil

Port size: Rc1/2 to Rc2



2 port pilot operated solenoid valve KZV3 Series CC-1023

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.

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



Coolant valve CVSE2/CVSE3 Series Options added CC-977, General Purpose Valve CB-03-1S

Module coolant valve

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: Rc1/2 to Rc3/4



Module coolant valve GCVE2 Series (Air operated type) GCVSE2 Series (Solenoid valve integrated) CC-933

Cylinder valve

SAB/SVB NAB 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



General Purpose Valve CB-03-1S

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-1082



GENERAL PURPOSE VALVES

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
- Proportional control motor valve is added to lineup

Port size: Rc3/8 to Rc2



General Purpose Valve CB-03-1S

External pilot operated air drive ball valve

Compact rotary valve

CHB/CHG/CHBF CSB/CSBF Series

- 2/3 port valves for various fluids control
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



CSB/CSBF Series for compact rotary valve steam CC-889, General Purpose Valve CB-03-1S

Pilot operated air drive poppet valve

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 : $C[\text{dm}^3/(\text{S}\cdot\text{bar})]$: 15 to 18
20A to 50A : Effective sectional area : 195 to 660mm²

Port size: Rc3/8 to Rc2



Pneumatic valves in general CB-023S

Coolant control unit

Integrated water unit

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 screwed piping between components, the fear of external leak is eliminated.
The execution of work can let in no foreign matter.
- Man-hours reduced
Man-hours for troublesome piping design, piping work, material arrangement etc. are reduced significantly



Integrated water unit WXU Series CC-1026

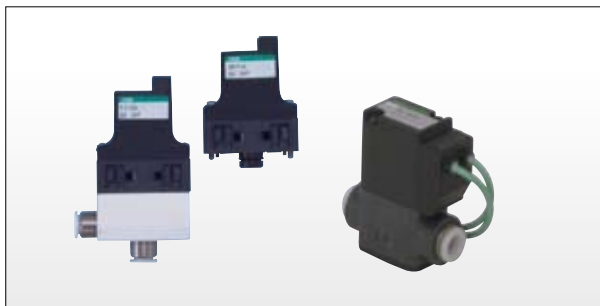
Solenoid valve for air blow

Pulsejet Jr. PJ Series

- Miniature solenoid valve for compressed air jet control
Suitable for transfer and selection of industrial parts as well as foods.
- High response 1msec or less
- Long service life design
Original actuator structure ensures a stable operation with more than a billion cycles.
- Miniature, ultra-thin type design

FAPB FAD Series

- Ideal for machine tool swarf removal or scrubber equipment
- Low wattage design
- Long service life design
Anti-wear special structure is adopted for movable parts.
- Weight saving design
FAD: Aluminium body, FAPB: Resin body.



General Purpose Valve CB-03-1S

Pulsejet control 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
Valve 2 strikes prevention, easy halt time setting.
- Control box type manifold solenoid valve PJVB Series
Common wiring enables easy operation and space reduction.
- Pressure and explosion proof structure d2G4 PDVE4 Series

General Purpose Valve CB-03-1S
Large port size pulsejet valve PD3/PDV3 Series (65A, 80A, 80M) CC-1049

Metal free solenoid valve for chemical liquids

MR10/MAB1/MAG1 MEB2/MEG2 MYB1/MYG1/MYB2/MYG2 MYB3/MVG3 MJB3 EMB M HMTB1/HMTG1 Series

- Solenoid valve for water, pure water and chemical liquid control
- Compact & light weight design
Size and weight reduction design for change from intensive medical treatment to nonfixed medical treatment.
- Maintenance free
Long service life 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.



General Purpose Valve CB-03-1S

Solenoid valve for high corrosion resistant chemicals

UMB1/UMG1 HB 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)



General Purpose Valve CB-03-1S



GENERAL PURPOSE VALVES

Medical analysis process components

Automatic watering system components

Metal free pinch valve for chemicals

Automatic watering valve

HYN Series

RSV-K GSV RSV-W Series

- 2/3 port solenoid valve for chemical liquid control (Pinch valve)
Solenoid valve which has an epoch-making structure enabling 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

- Watering valve for urban greening, golf courses, grounds, protected horticulture, fields, etc.
- Low water hammer structure
- Ample option variations
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.



General Purpose Valve CB-03-1S



Automatic watering control components CC-297

Automatic watering system components

Gas combustion system components

Automatic watering controller

Direct acting valve and combination valve for gas

RS/RSC/RSCH Series

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

- Automatic watering controller for urban greening, golf courses, grounds, protected horticulture, fields, 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.
- Countermeasure against induced lightning
- Use with CKD's automatic valve controller.



Automatic watering control components CC-297



Gas combustion system G-2



HIGH PURITY CHEMICAL GAS / LIQUID CONTROL SYSTEMS

Component for chemical liquids

Air-operated valve for chemical liquids

AMD/AMG/GAMD

AMD*1H 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
- Part3 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, a water hammer type is available in this series
- Ample connection joints
- SUS body type is available from small to large size for solvent and static
- Large port size type based on PP or PVC material is also available for discharge
- Special specifications fitting to other controls are also available



High Purity Chemical Liquid System CB-31
Air operated valves for chemical liquids AMD3*3/AMD4*3 Series CC-1015
Air operated valves for chemical liquids AMD2*3 Series CC-1067

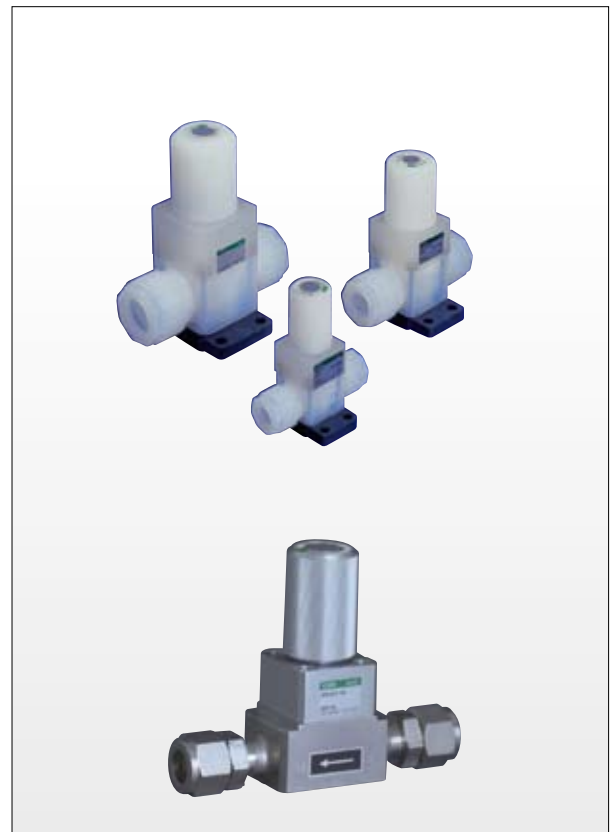
Component for chemical liquids

Chemical liquid manual valve

MMD 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
- Ample connection joints
Super Fitting, SUPER 300, FLOW WELL 20/60, Final Lock, Flared Tube Fitting etc.
- SUS body type is available from small to large size for solvent and static
- Manifold type is also available for liquid supply system (PTFE body)
- Manual operation by either knob open/close or single motion



High Purity Chemical Liquid System CB-31



HIGH PURITY CHEMICAL GAS / LIQUID CONTROL SYSTEMS

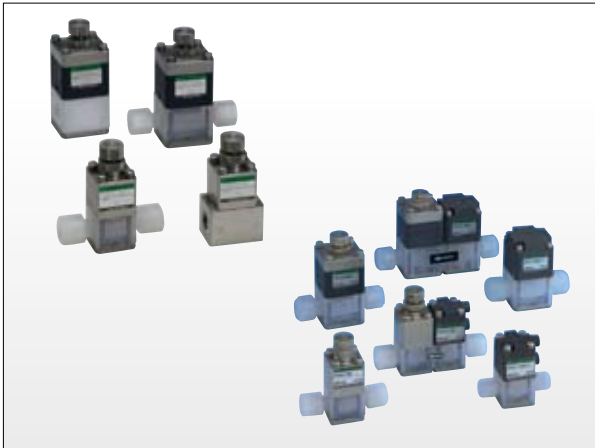
Component for chemical liquids

Drip prevention valve for chemical liquid

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
- Pulling strength speed is easy to fine adjust by speed control valve
- Internal structure prevents air from staying in the flow path
- Air operated valve integrated type is also available



High Purity Chemical Liquid System CB-31

Component for chemical liquids

Fine regulator

PYM10/PMM20/PMP 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 preventing 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 realized 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-31

Component for chemical liquids

Water hammerless valve

AMD*1L

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

- Water hammerless function is equipped as standard in all series
- Ample series (Union fitting 15A to 50A)
- Joints are PVC union fitting
- Ample options
(With flow rate adjustment and/or bypass)
- Export Trade Control Order inapplicable



Water hammerless valve CC-816

Component for chemical liquids

Fine level switch

KML 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)
- With a display to enable 8-point fluid level to be detected with one detection tube (KML70)
- 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-31

Air operated valve for process gas

AGD**R 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/cycle or less)
- For inner surface roughness, electrolytic polishing is adopted as standard
- Options
Block valve, branch valve, valve with switch, etc.



Valve for process gas AGD**R/MGD**R/OGD**R Series CC-1004

Manual valve for process gas

OGD*0R/MGD*0R 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 particle from occurring
- For inner surface roughness, electrolytic polishing is adopted as standard



Valve for process gas AGD**R/MGD**R/OGD**R Series CC-1004

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)



High Purity Gas Control Systems CB-35

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-35



HIGH PURITY CHEMICAL GAS / LIQUID CONTROL SYSTEMS

Components for high vacuum

Air operated valve for high vacuum

AVB / MVB / MVP Series

(NW16 to 160) (NW16 to 50) (NW25 to 50)

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

- Unique formed bellows leads to long service life
- 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**7/MVB*17 Series CC-1028

Components for high vacuum

Air operated valve for high vacuum

AVB High temperature specification

High temperature specification is added with the good points of AVB** 7 series.

- 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-1028

Components for vacuum

Solenoid valve for high vacuum

HVB Series

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

- Ample series of orifices from $\phi 1.0$ to $\phi 15$
- Max. operating differential pressure 1.0MPa from N₂ pressurization to vacuum (This differs depending on the model. Please confirm.)
- Ideal for high vacuum control without air source (Be careful of particle, service life, etc.)



High Purity Gas Control Systems CB-35

Components for vacuum

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.
- With vacuum pressure control function maintained, cutoff function can be performed as well.
- All-in-one designed function simplifies vacuum circuit system piping and reduces space.



Custom order

Electric vacuum valve

EVB Series

Electrically driven vacuum valve realizes a wide range of conductance by the multistage control of valve opening with motor operation

- Opening setting 30-point with motor operation
- Valve close is based on a proven spring seal
- Opening monitoring function, various signal outputs
- Remarkable service life and sealing



Electric vacuum valve EVB Series CC-1019



LABOR SAVING MECHANISMS

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 300	 RGIS 040 to 450								
	 RGIL 063 to 250									
		 RGIT 063 to 450								
		 RGIM 063 to 100								
		 RGID 200 to 700								
		 RGIB 250 to 450								
			 PCIS 040 to 250							
Oscillator 	 RGOS 025, 032	 RGOS 025, 032								
	 RGOS 040 to 300	 RGOS 040 to 450								
	 RGOL 063 to 250									
			 PCOS 040 to 250							
Reducer 	 RGCS 040 to 300	 RGCS 040 to 450								
		 RGCT 063 to 450								
		 RGCM 063 to 100								
		 RGCD 200 to 700								
Circling type P&P Oscillating P&P Index P&P 	 PPIX/PPOX 063 to 180									
	 PPIH/PPOH 040 to 080									
	 PPIM 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)							

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 for drive source for index positioning of small precision parts.

Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Torque saver	Mass (kg)
RGIS 025	2 to 40 (2 to 48)	60 to 330 (45 to 330)	±90	0 to 400	TSF2	1.0
RGIS 032			±60			

RGIS032 in brackets

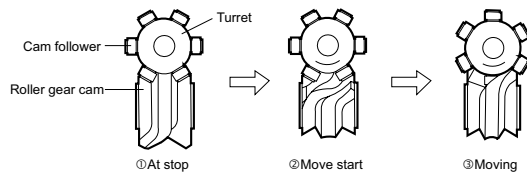
Standard type

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



Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Torque saver	Mass (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	
RGIS 300			-		950	
RGIS 350			-		1450	
RGIS 450	-	3300				

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 the continuous operation.



Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Torque saver	Mass (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

- This 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)	Mass (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			ø52.6	150		
RGIT 180			ø65	300		
RGIT 250			ø95	650		
RGIT 350	0 to 400		±20		ø146.3	1200
RGIT 450					ø218.5	2200



Roller gear cam unit



Small multi-index type

● Thin type housing enables to reduce the table installation surface, work position, and component height. About 80% of the height for 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)	Mass (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 the best machines with high efficiency multi-process.



Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Hollow hole diameter (mm)	Mass (kg)
RGID 200	8 to 80	90 to 330	±30	0 to 250	∅160	70
RGID 250					∅200	130
RGID 300					∅250	260
RGID 350			±20		∅340	340
RGID 450					∅430	890
RGID 600					∅500	2000
RGID 700	∅600	2800				

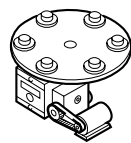
Basic type

● Geared motor integrated type with a hollow fixed shaft

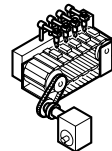


Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Hollow hole diameter (mm)	Mass (kg)
RGIB 250	2 to 32	120 to 330	±20	0 to 200	∅80	335
RGIB 350					∅138	1000
RGIB 450					∅180	2060

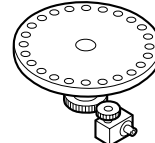
Use cases



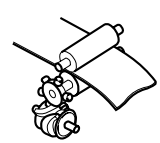
Example of table drive



Example of conveyor drive



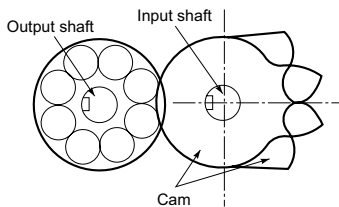
Example of gear reducer drive



Example of roll drive

Parallel cam unit

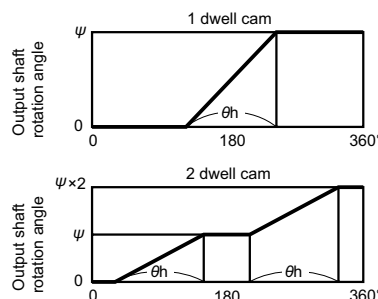
● Index devices with a parallel cam mechanism where input and output shafts are parallel to conveyor feeding suitable for small index numbers (1, 2, 3, 4).



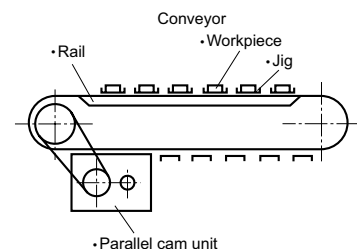
Model	Index number	Total index angle (°)	Index accuracy (s)	Rotation speed (rpm)	Torque saver	Mass (kg)
PCIS 040	1 to 4 (6.8)	90 to 330	±90	0 to 500	TSF4	3
PCIS 050					5	6
PCIS 063					5.6	11
PCIS 080					6	19
PCIS 100			±60		8	32
PCIS 125					11	62
PCIS 160					14	130
PCIS 200					18	240
PCIS 250	(18)	400				

2 dwell cam in brackets

Timing diagram



Use cases

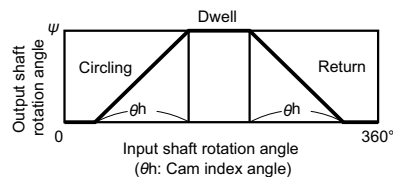
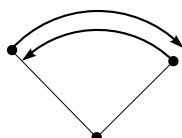
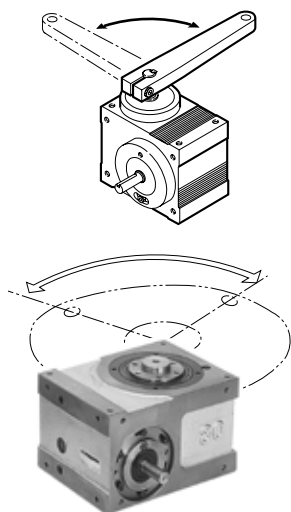


Oscillator unit

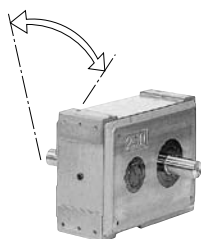
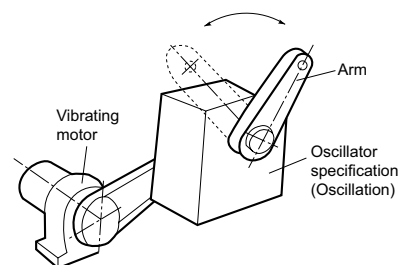
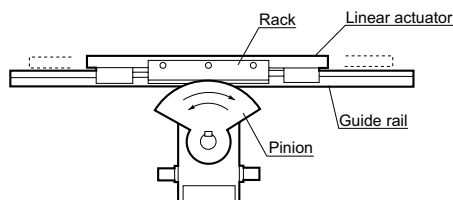
● High precision oscillating devices with a roller gear cam/parallel cam mechanism. A constant velocity revolution is given to the input shaft causing the output shaft a cycle movement of circling-stop-reversion-stop.

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

Movement and Timing Diagram



Use cases

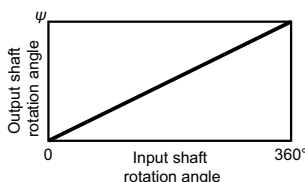
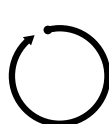


Reducer Series

● 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.

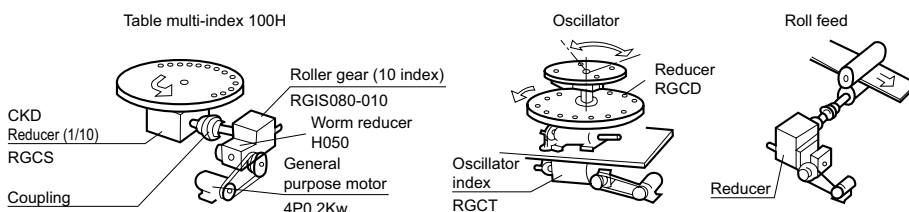
- Standard type RGCS
- Small multi-index type RGCM
- Table type RGCT
- Flat type RGCD

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





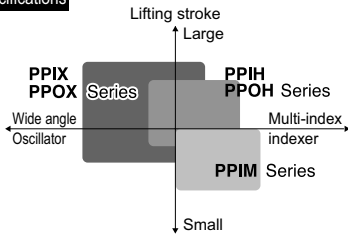
LABOR SAVING MECHANISMS

Mechanical index unit

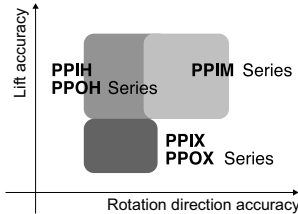
Circling type P&P unit

Circling type P&P unit selection guide

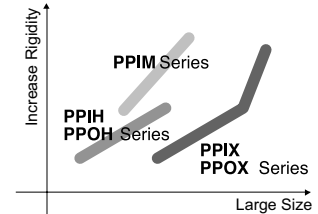
Specifications



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)*	Mass (kg)
PPOX 050	MAX18	30 to 180	Permissible	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)

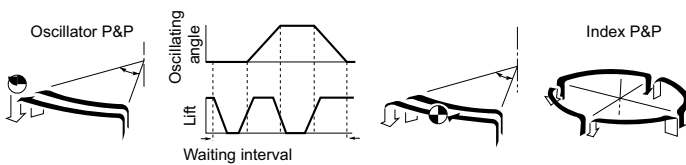
Model	Lifting amount (mm)	Index number	Index accuracy (s)	Rotation speed (rpm)	Allowable table outer diameter (mm)*	Mass (kg)
PPIX 050	MAX18	2 to 8	±120	0 to 120	250	HO32
PPIX 063	25				320	32
PPIX 080	30				400	40
PPIX 110	40				550	50
PPIX 140	50				700	60
PPIX 180	70				900	80

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

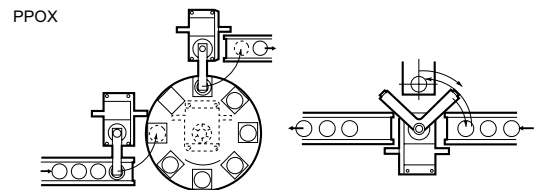
*Arm radius and table outer diameter are estimates.

For designing of model selection, it is necessary to determine torque values by load calculation and confirm the catalog.

Movement and Timing Diagram



Use cases



High speed type

● Max. 0.1 second/cycle realized for 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)*	Mass (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)*	Mass (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

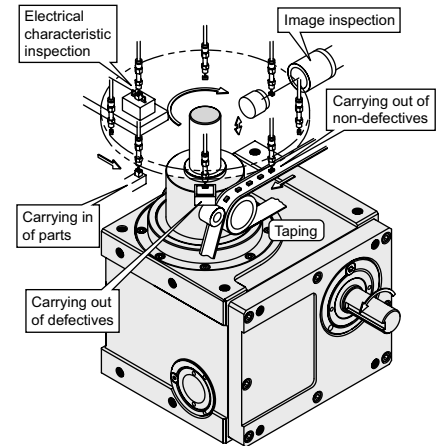
- High precision, high rigidity, space-saving: PPIM Series
New main shaft structure improves high precision and high rigidity, supporting high speed and high precision transfer of tiny chip components. Body miniaturization leads to space-saving.

PPIM (Index P&P specification)

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

Use cases of PPIM

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



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



- Max. 0.5 second/cycle is realized for high speed transfer
Small size thin type linear pick & place unit 2 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 mass (kg)*	Mass (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

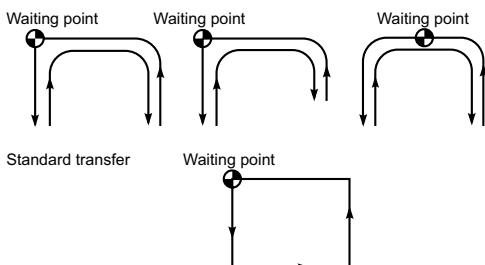
PPLX (Table type B)

Model	La Stroke (mm)	Lb Stroke (mm)	Loading mass (kg)*	Mass (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

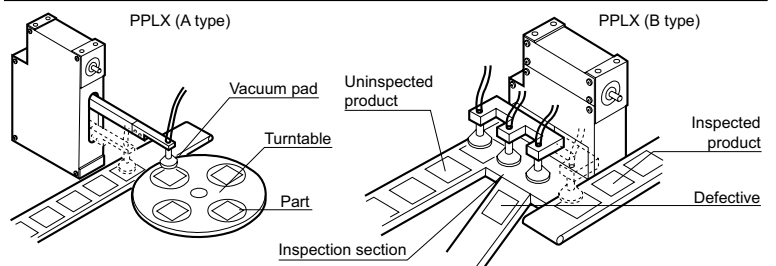
For loading mass, minimum index angle, refer to the catalog etc.
*For input shaft rotation speed and options with motor, contact us.

Main movements

Main movements of Pick & Place



Use cases





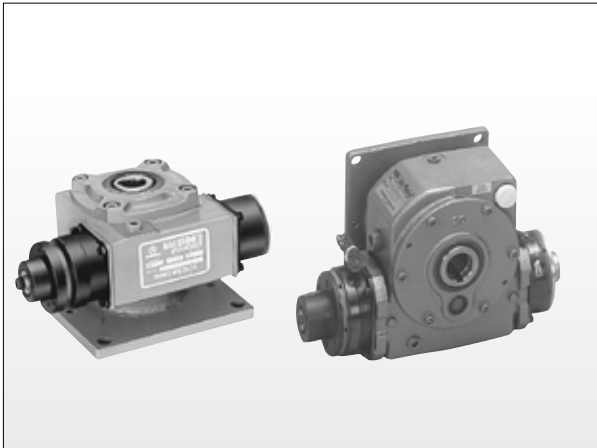
LABOR SAVING MECHANISMS

Mechanical index unit

Worm reducer

HO Series/TE Series

- This worm reducer is dedicated for INDEX MAN. When directly installed on the input shaft, the ideal rotation and braking is realized, maximizing the performance of INDEX MAN.
- TE series is a high torque type reducer.



INDEX MAN CB-19

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 MAN CB-19

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 MAN CB-19

Mechanical index unit option

Torque guard coupling type (Overload protection device)

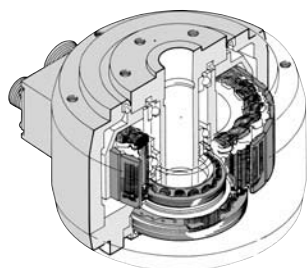
TGX Series

- 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 so that it matches at only one position.
- Return accuracy $\pm 10s$
- High precision trip (Release)
- Simple torque setting







INDEX MAN CB-19

ABSODEX

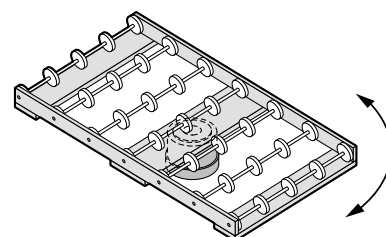
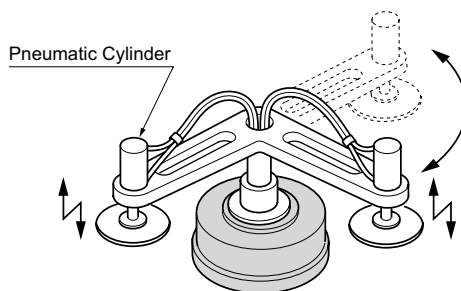
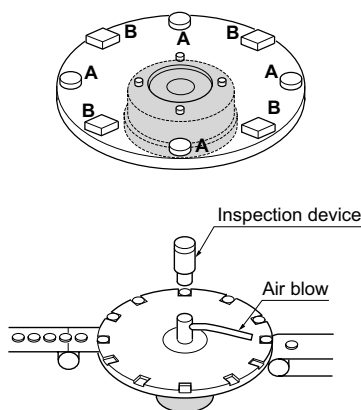


- New generation multi function direct drive motor.
- ABSODEX enables to establish an environmentally-conscious productive facilities. Energy saving. No need to replace or dispose lubricant. Space saving. Specifications are easy to change and parts easy to reuse. Excellent basic performance.
- Return to origin not required
Absolut resolver is adopted to enable current position recognition without return to origin.
- Smooth cam curve drive
4 types of cam curves are used, including modified sine, modified trapezoidal, deforming constant velocity and trapezoid.
- Compact & high torque
- Excellent operability
Programs are created easily by answering questions with the interactive terminal.
- You can select between S/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	BRK	Interchangeable	AX 9000S	AX 9000TS	AX 9000TH
AX1000T Series	 AX 1022T to 1210T	±15	±5		○					○	○
AX2000T Series	 AX 2006T to 2018T	±30		⊙	⊙			⊙		○	
AX4000T Series	 AX 4009T to 410WT	±30		○	⊙		○	⊙		○	○
AX8000 Series	 AX 8045 to 8070	±15			○	⊙	⊙		○		

Use cases



Labor saving mechanisms



LABOR SAVING MECHANISMS

Electronic index unit

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 measurement result)
 - 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.
 - Adjustment software (AX tools) preinstalled.
 - Increased I/O signals.
 - Ready output, servo on, etc. added.
 - 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 (CKD comparison)
- ABSODEX programming tool
 - Interactive terminal "AX0180H" 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	1.01	8.9	AX9000TS				
AX1045T	45		0.9				12.0					
AX1075T	75		140				4.0		23.0			
AX1150T	150	120	6.0	2200			0.03	0.05	32.0	AX9000TH		
AX1210T	210		10.0						44.0			
AX2006T	6		300						0.3		1000	0.03
AX2012T	12	0.4		5.8								
AX2018T	18	0.5		7.5								
AX4009T	9	240	0.35	800	0.03	0.05			5.5	AX9000TH		
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		100						75.00			44.0
AX4300T	300								180.00			66.0
AX4500T	500	70		300.00	115.0							
AX410WT	1000	30	600.00	20000	0.08	198						

ABSODEX Quick Response Type AX¹⁰⁰⁰2000T Series CC-995
4000

Electronic index unit

ABSODEX Dustproof & waterproof type



- ø250, 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
AX8045	45	100	0.9	1200	0.015	0.015	35.0	AX9045S
AX8070	70		4.0	2200			80.0	AX9070S

What's new in the TS/TH driver?

- **Quick response**
Improved response and reduced stabilization time with the faster CPU allows you to reduce tact time even further.
- **Compact and light weight**
Footprint of large models with max. output torque of 150N•m ore more has been reduced by 65.
(Compared to CKD's GH type driver)
Due to, light weight was made.

- An encoder output is added.
By adding the A-B phase output for current position, position control using pulse is now easier and certain.

- **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 LED2-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 Ver1.10



DeviceNet

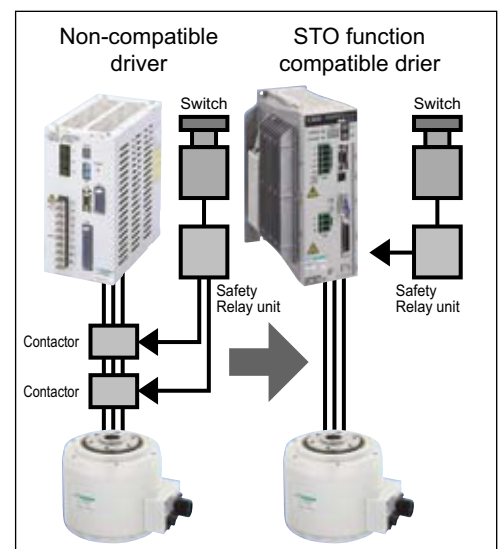
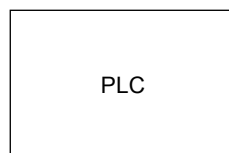
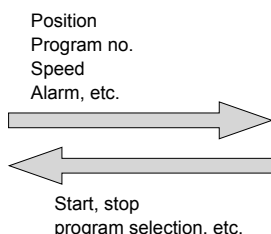
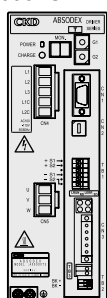


PROFIBUS DP

- Monitor with serial communication

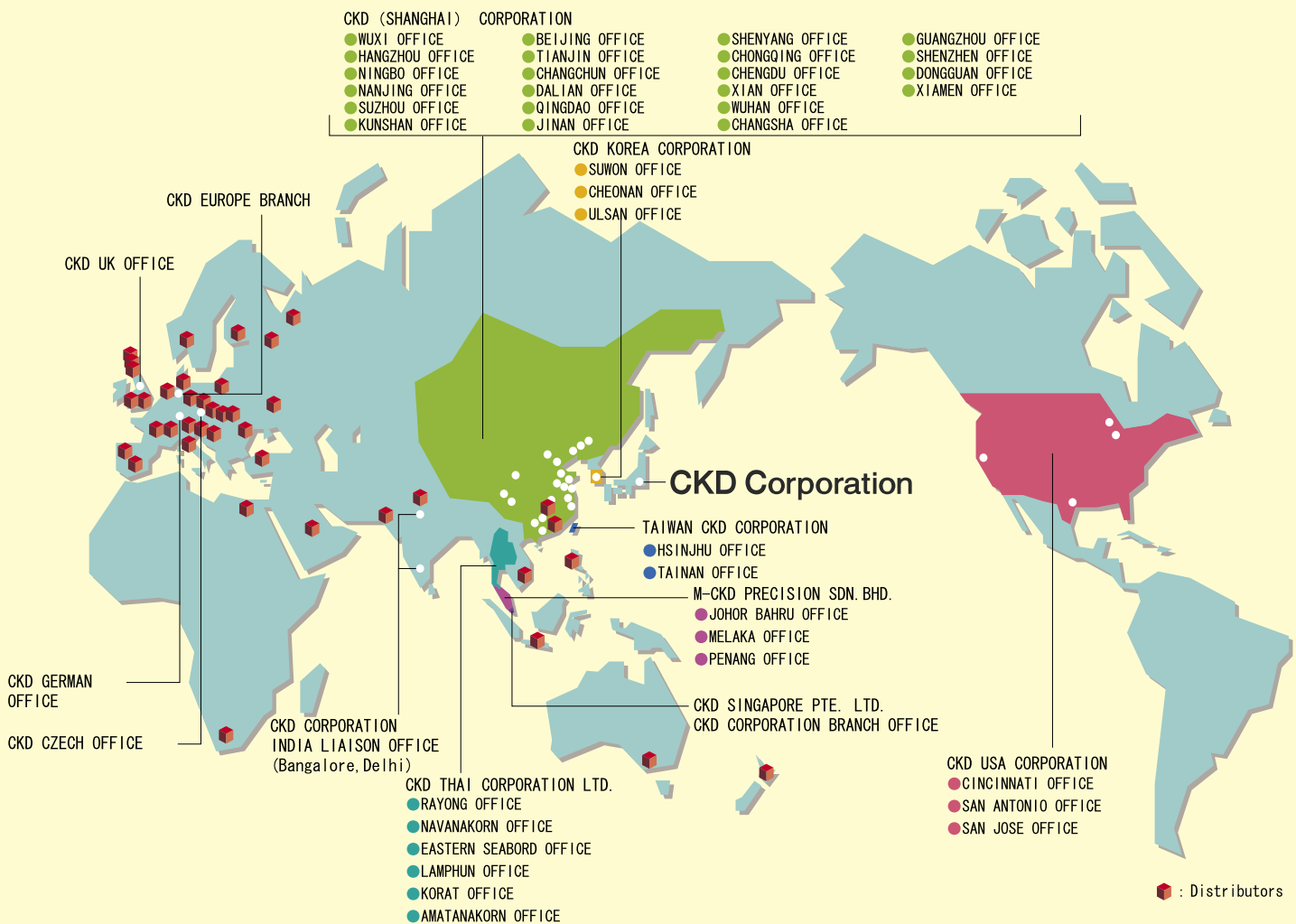
Program no, position and alarm could be monitored from the PLC.

AX9000TS/TH-U2(U3,U4)



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

Labor saving mechanisms



CKD Corporation

- OVERSEAS SALES ADMINISTRATION DPT. SALES AND MARKETING DIV. 2-250 Uji Komaki, Aichi 485-8551, Japan
- PHONE +81-(0)568-74-1338 FAX +81-(0)568-77-3461

U. S. A. CKD USA CORPORATION

- HEADQUARTERS
- 4080 Winnetka Avenue, Rolling Meadows, IL 60008 USA
- PHONE +1-847-368-0539 FAX +1-847-788-0575

EUROPE CKD EUROPE BRANCH

- De Fruittuinen 28 Hoofddorp 2132NZ The Netherlands
- PHONE +31-(0) 23-5541490 FAX +31-(0) 23-5541491

Malaysia M-CKD PRECISION SDN. BHD.

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

Thailand CKD THAI CORPORATION LTD.

- SALES HEADQUARTERS-BANGKOK OFFICE
- Suwan Tower, 14/1 Soi Saladaeng 1, North Sathorn Rd., Bangrak, Bangkok 10500 Thailand
- PHONE +66-(0) 2-267-6300 FAX +66-(0) 2-267-6305

Singapore CKD SINGAPORE PTE. LTD.

- No. 33 Tannery Lane #04-01 Hoesteel Industrial Building Singapore 347789
- PHONE +65-67442623 FAX +65-67442486
- CKD CORPORATION BRANCH OFFICE**
- No. 33 Tannery Lane #04-01 Hoesteel Industrial Building Singapore 347789
- PHONE +65-67447260 FAX +65-68421022

Taiwan TAIWAN CKD CORPORATION

- 16F-3, No. 109, Sec. 1 Jhongshan RD., Shinjhuang Dist., New Taipei City, 24250, Taiwan (R. O. C)
- PHONE +886-(0) 2-8522-8198 FAX +886-(0) 2-8522-8128

China CKD (SHANGHAI) CORPORATION

- SALES HEADQUARTERS / SHANGHAI OFFICE
- Room 601, Yuan Zhong Scientific Research Building, 1905 Hongmei Road, Shanghai, 200233, China
- PHONE +86-(0) 21-61911888 FAX +86-(0) 21-60905356

Korea CKD KOREA CORPORATION

- HEADQUARTERS
- 3rd FL, Sam Young B/D, 371-20 Sinsu-Dong, Mapo-Gu, Seoul, 121-110, Korea

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

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