

Carbon neutrality comes from reducing CO₂

What "HIGH PRODUCTIVITY" means to CKD

Lower productivity will result in loss. In addition, parts requiring maintenance will be wasted. We believe that achieving high productivity without maintenance leads to carbon neutrality. Our HP Series emphasizes that type of manufacturing, one that originates from the perspective of components. Improving productivity in high-frequency, stressed-environment processes, these unprecedented long service life products contribute to "production facilities that never stop" and "stable operation".



Industry-specific series available

P4-HP1 Series	Page 167
FP1 - G-HP1 Series	Page 215

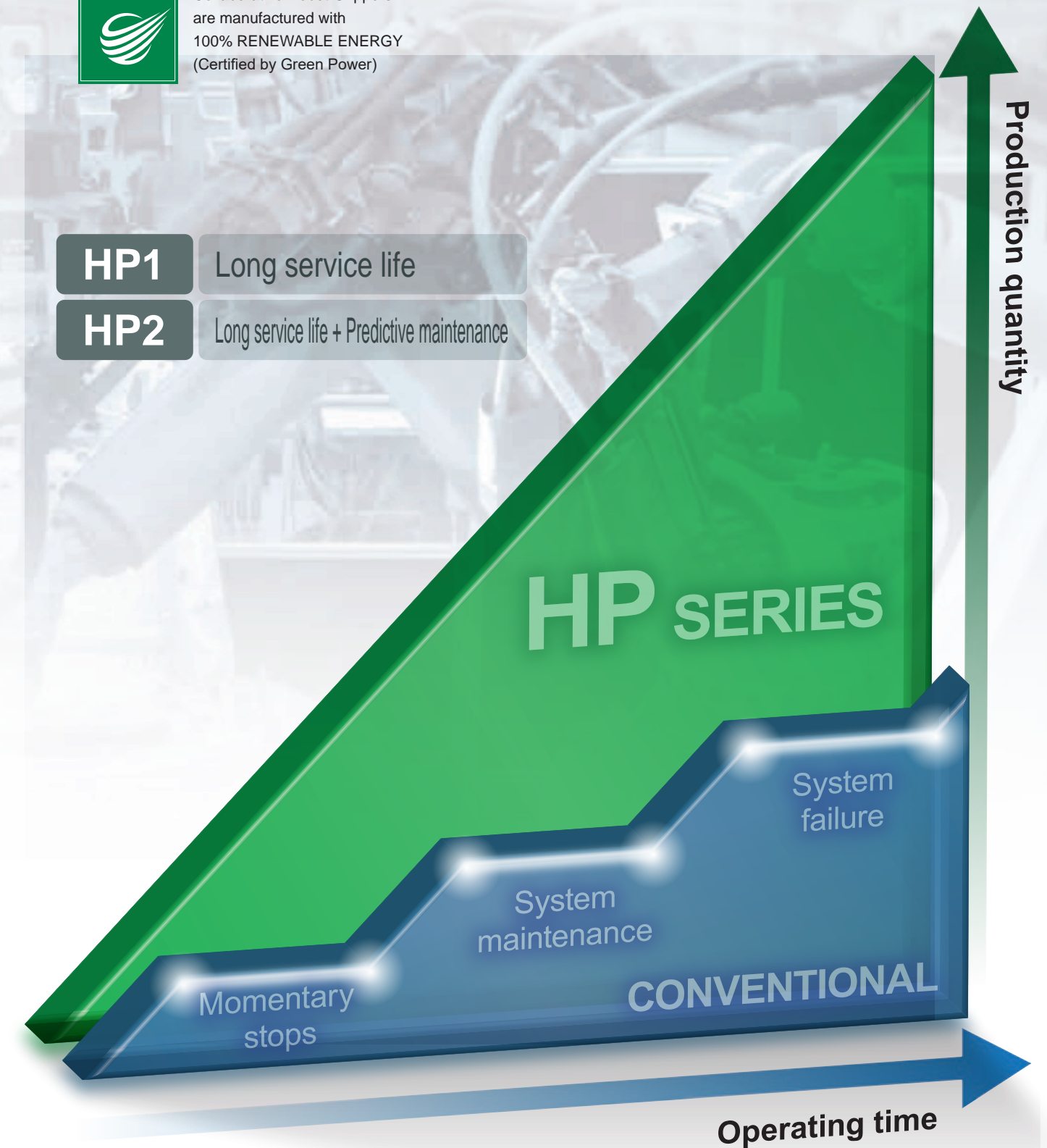


emissions through long service life products



Green power
Collaborative Robot Grippers
are manufactured with
100% RENEWABLE ENERGY
(Certified by Green Power)

- HP1** Long service life
- HP2** Long service life + Predictive maintenance



Optimized sliding parts Does not break even with high frequency usage

Long service life cylinder

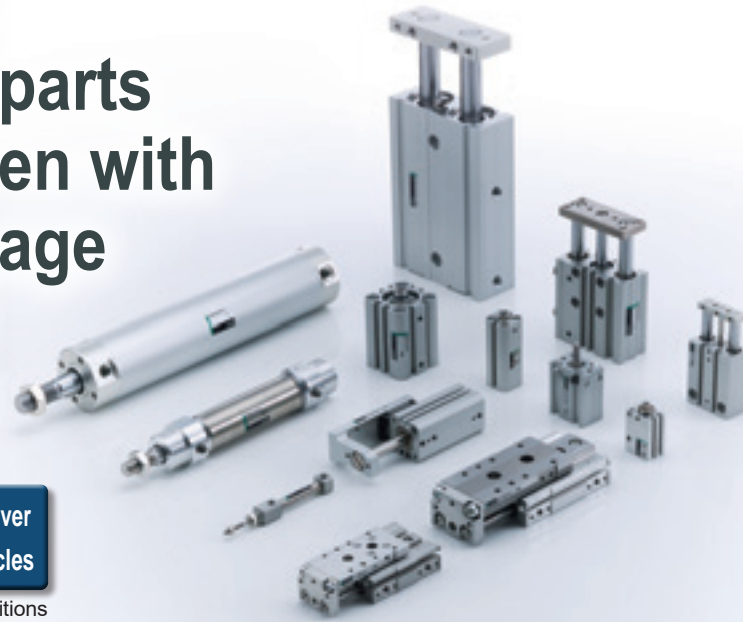
HP1 Series

Greatly reduces
unexplained stops

Greatly reduces
replacements

Service life over
20 million cycles

Subject to CKD prescribed conditions



Improved environmental resistance Does not break even in dusty environments

Environment resistance cylinder

G-HP1 Series

Greatly reduces
unexplained stops

Greatly reduces
replacements

Improved
environmental
resistance

Durability
over 5 million
cycles

Subject to CKD prescribed conditions

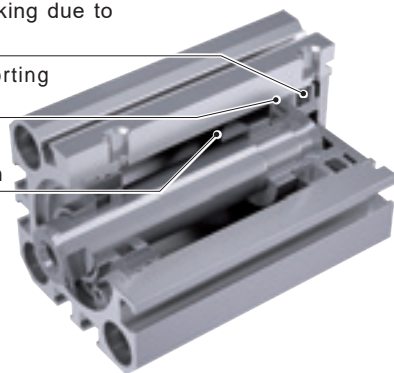


Long service life

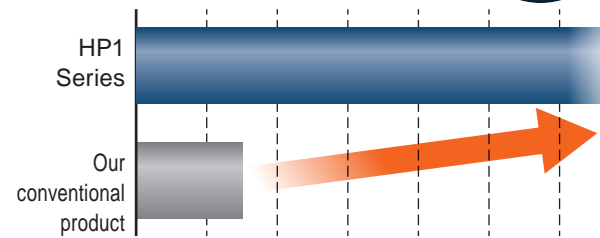
By optimizing packing design/seal functions and adopting grease supporting high frequency use, a long service life has been achieved with the same dimensions as conventional products.

Abrasion-resistant packing due to special compounding
Adopted grease supporting high-frequency usage

Optimized sealing function



Operational cycle



4x
or more
previous
models

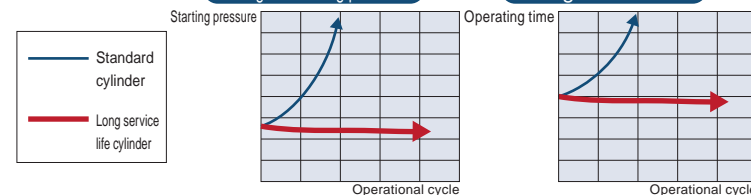
*The durability of the HP Series is the service life under our specified conditions. As it differs under working conditions or ambient environment, it is not guaranteed to be more than 4 times under all conditions.

Stable operation

The optimum structure of the sliding parts prevents the starting pressure from rising even in repeated operational cycles. As the starting pressure is constant, the operating time is also constant. Provides stable operation without unexplained stoppages.

Change in starting pressure

Change in tact time



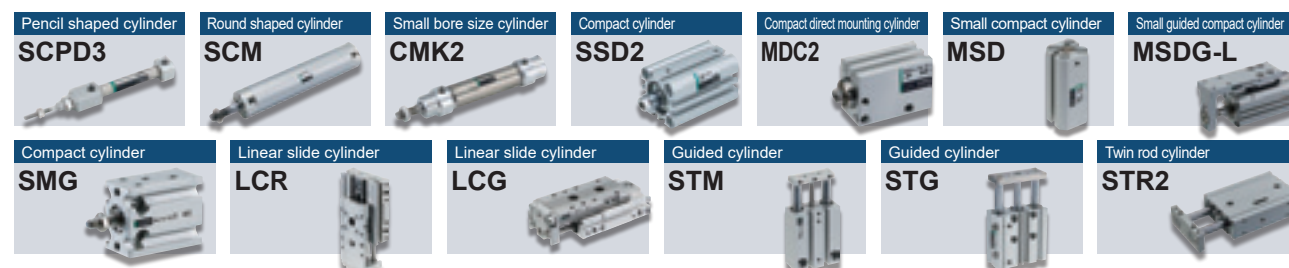
Switch with bending resistant lead wire can be selected

We offer switches that use bending-resistant lead wires that do not easily break even when used in moving parts. (Switch model No. T2HR3, T2VR3, F switches)



Same dimensions as conventional products

As it has the same dimensions as conventional products, it can be used as a replacement without changing the design or modifying the equipment.



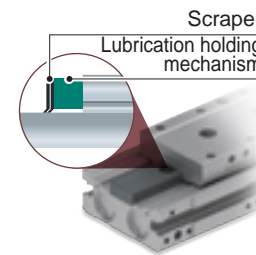
Long service life even in harsh environments

Equipped with a heavy duty scraper and lube keeper to prevent intrusion of dust and to maintain lubrication. Durability in dusty environment has been greatly improved.

Fiber assembly
(Lube keeping structure)
Powerful scraper
Powder / foreign matter

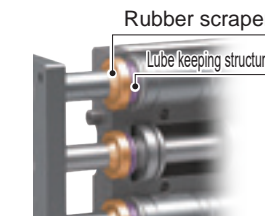
LCR guide

Seal structure and lubrication mechanism have been added. Improved guide durability

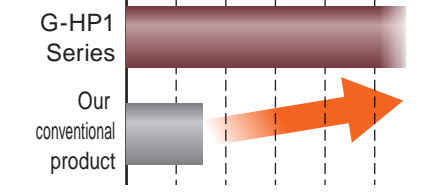


STG, STS/L guide

Countermeasures for dust also be applied to the guide rod section to contribute to long-term stable operation.



Operational cycle



4x
or more
previous
models

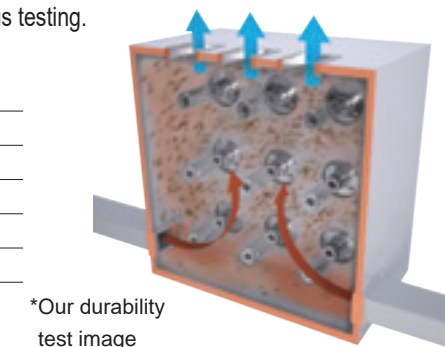
*The durability of the HP Series is the service life under our specified conditions. As it differs under working conditions or ambient environment, it is not guaranteed to be more than 4 times under all conditions.

Stable operation even in harsh environments

Tests are carried out in recreated dust environments. Durability has been confirmed through rigorous testing.

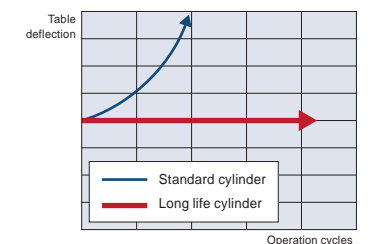
[Test conditions]

Working pressure	0.5 MPa
Dust type	5 to 75 μ m
Dust quantity	1.5g twice per day
Number of dustings	2 times/day
Load	No



*Our durability test image

LCR Table deflection change



Increased linear guide rigidity Achieves high rigidity, precision and durability

Linear Slide Hand

LSH-HP1 Series

Greatly reduces
unexplained stops

Greatly reduces
replacements

Significantly reduces
replacement time

Service life over
20 million cycles

Subject to CKD prescribed conditions



Grips and measures simultaneously Can be replaced before breakdowns.

Measuring hand

LSHM-HP2 Series

Momentary
stops greatly
reduced

Number of
replacements
greatly reduced

Predictive
maintenance

Service life over
20 million cycles

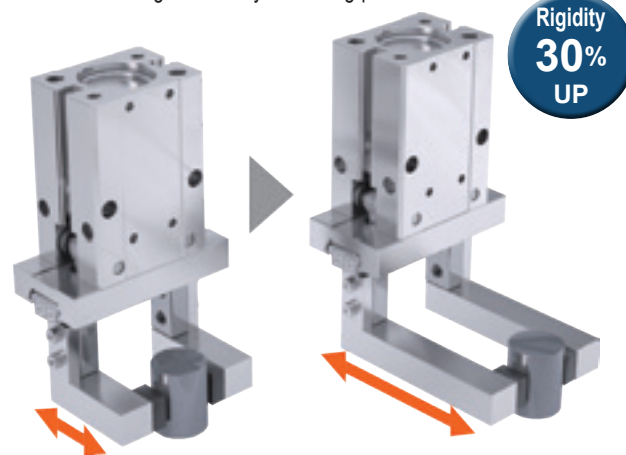
Subject to CKD prescribed conditions



High rigidity

Increased amount of overhang

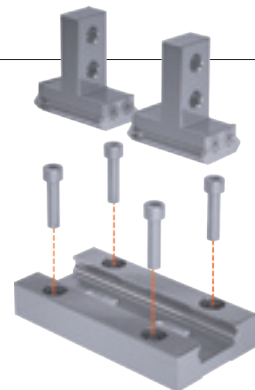
The guide rigidity has been improved compared to the conventional products, significantly increasing the allowable moment. The high rigidity suppresses the occurrence of backlash and maintains high accuracy for a long period of time.



High precision

Repeatability ± 0.01 mm

Integral construction of the guide rail and fingers ensures high rigidity and precision.

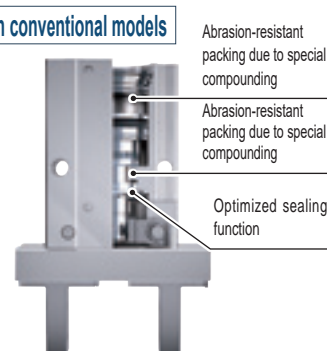


Long service life

Durability 4x or more compared with conventional models

Long-life cylinder sliding technology is used in the cylinder part. Achieves long service life and stable operation without unexplained stoppages.

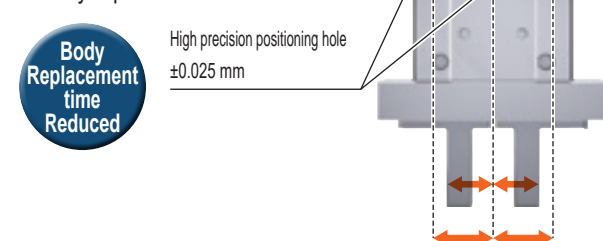
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Significant reduction in replacement time

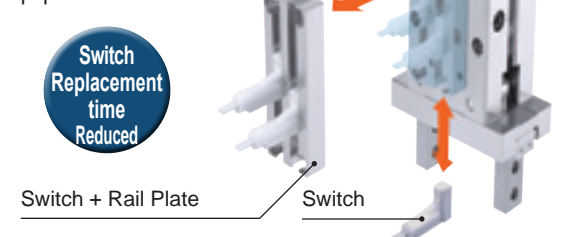
High precision positioning hole ± 0.025 mm

The addition of "positioning holes" with the grip center as reference allows the centering precision to be easily reproduced.



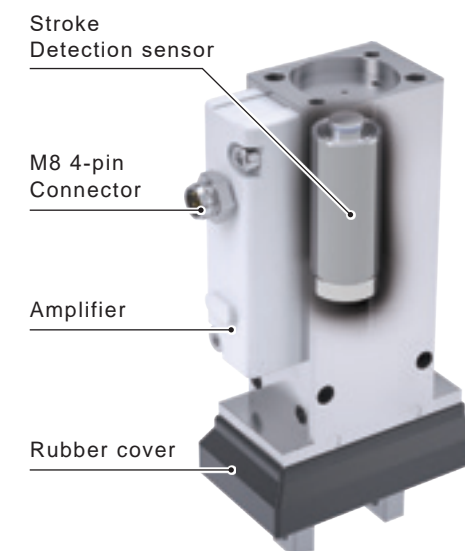
Rail plate system adopted

The rail plate allows switch replacement while the hand is attached to the robot or equipment.



Integrated structure

Finger positioning with high precision analog output. The hand body has a built-in stroke detection sensor and amplifier. The integrated structure achieves high-precision.



Repeatability ± 0.02 mm

An LVDT sensor with excellent vibration and shock resistance and integrated structure has been adopted to achieve unprecedented high repeatability.

Environmental resistance

The IP65 equivalent amplifier and rubber cover prevent the ingress of cutting chips and water drops.

Linearity correction adapter

Linearity F.S. $\pm 0.5\%$

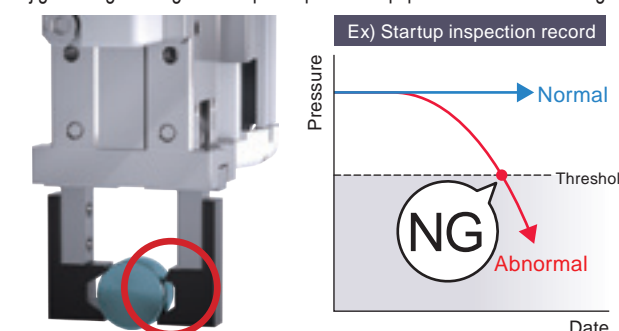
With correction adapter: F.S. $\pm 0.5\%$

Without correction adapter: F.S. $\pm 3\%$

A correction adapter is adopted to improve the linear accuracy.

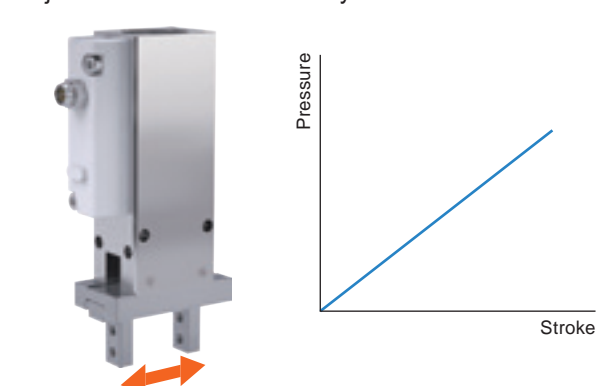
Predictive maintenance

Monitors attachments for abnormal wear and deformation of fingers and jigs through changes in output to prevent equipment and robot damage.



Elimination of human error

All strokes are output in detail, eliminating manual adjustment error as caused by conventional switches.



Measuring hand LSHM-HP2 Series

Switch output adapter

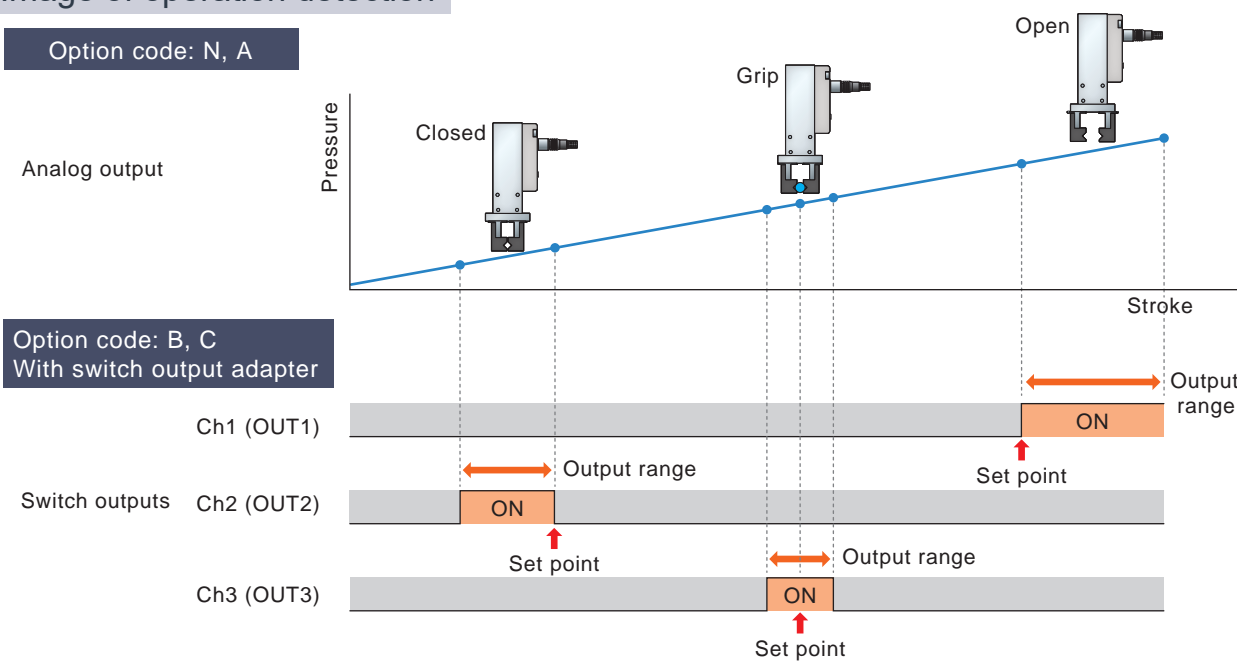


Easy setting

The operating range and output pattern can be easily selected with the rotary switch. Troublesome cylinder switches for adjustment work are not required. A fine operation range can also be selected with the high precision sensor.

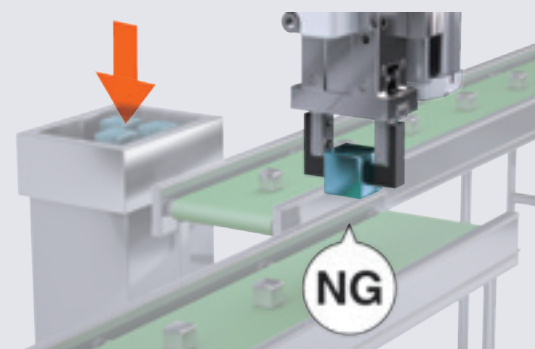
Image of operation detection

Option code: N, A



Workpiece foreign object judgment

Grips and measures simultaneously, reducing the number of inspection steps.



Workpiece model judgment

Capable of instantaneously judging minute differences in workpiece models.



IO-Link adapter

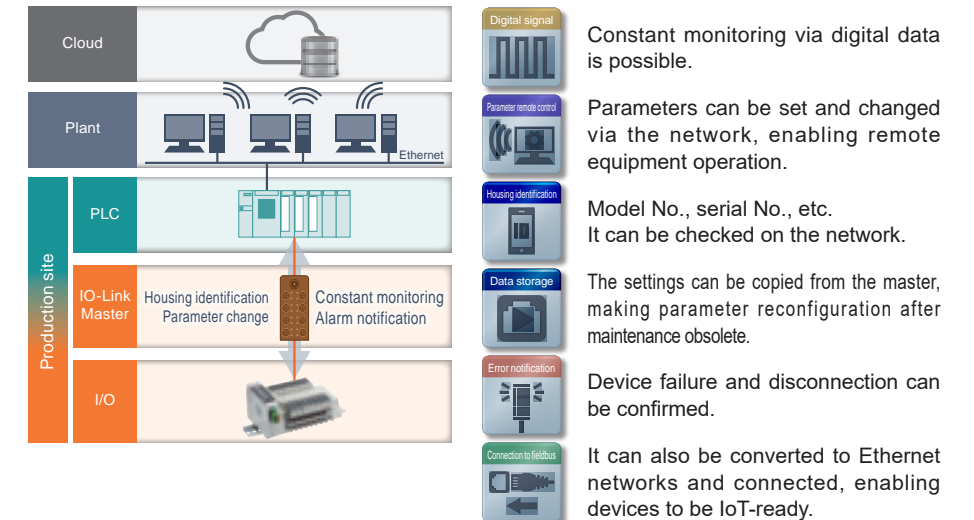
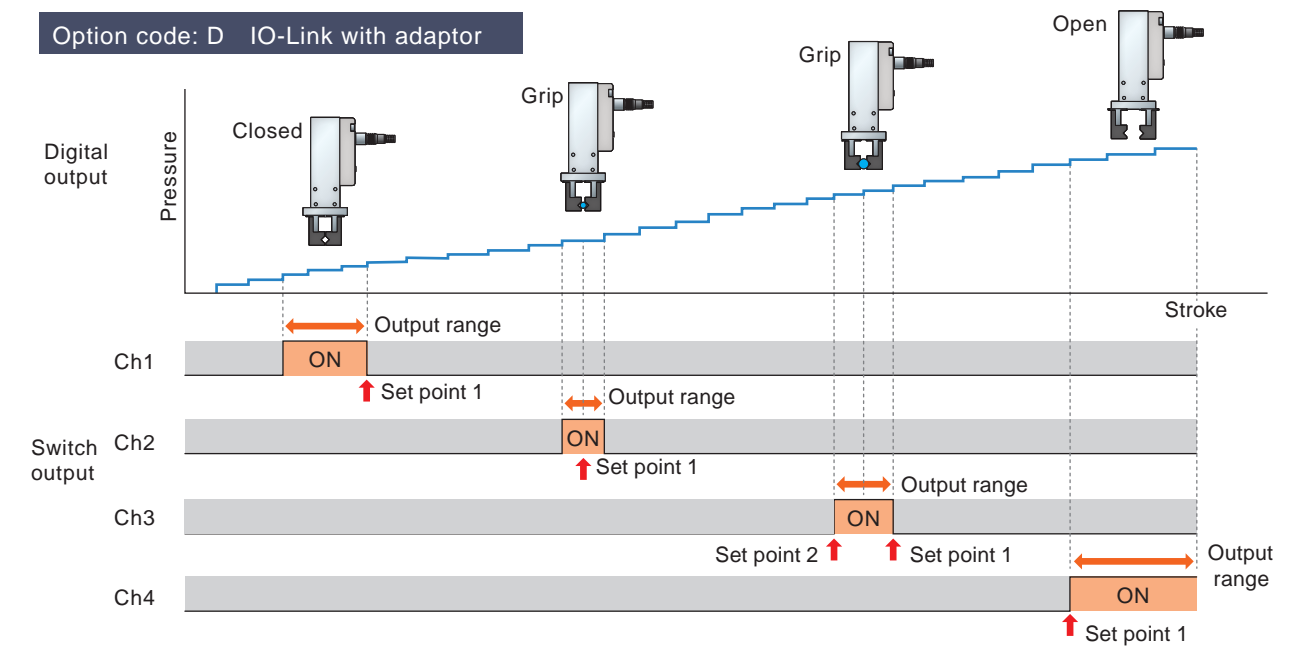


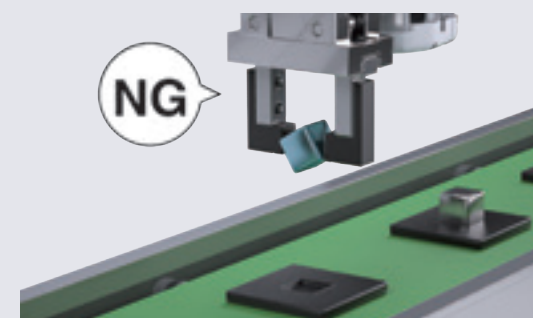
Image of operation detection

Option code: D IO-Link with adaptor



Gripping orientation judgment

By detecting misaligned orientations when gripped, contact accidents can be prevented at the transported destination.



Minute workpiece gripped / missed judgment

Accurately judges whether even tiny workpieces were gripped or missed.



Increased rigidity of linear guides even in thin types Achieves high rigidity, precision and durability

Low-profile long stroke hand

LST-HP1 Series

Momentary stops greatly reduced

Number of replacements greatly reduced

Significantly reduces replacement time

Service life over 20 million cycles

Subject to CKD prescribed conditions



Although thin, it can make measurements at the time of gripping. Can be replaced before breakdowns.

Low-profile long stroke hand with length measuring function

LSTM-HP2 Series

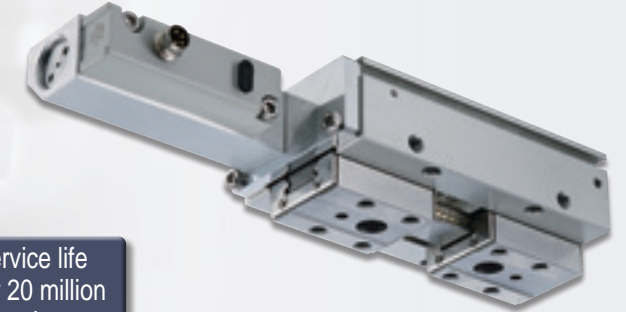
Momentary stops greatly reduced

Number of replacements greatly reduced

Predictive maintenance Available

Service life over 20 million cycles

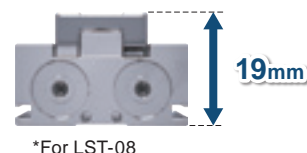
Subject to CKD prescribed conditions



Thin design from double piston system

Space saving Reduced moment of inertia

Reduces the height and space, contributing to reduced moment of inertia.



*For LST-08

High gripping force

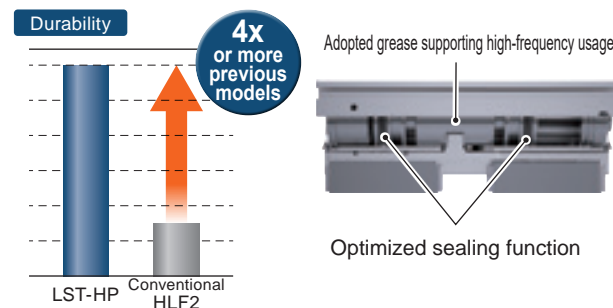
Adopting the double piston system realizes a compact body with high gripping force.



Long service life

Durability compared with conventional models 4x*

Highly advanced sliding technology has enabled durability 4 times that of conventional models.



*The durability of the HP Series is the service life under our specified conditions, which will differ depending on the working conditions and ambient environment. This is not a guarantee of 4 times or more under conditions.

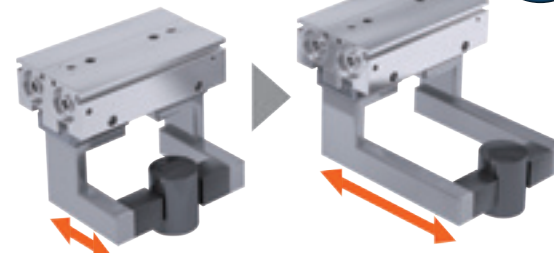
Increased linear guide performance

High rigidity High precision

Increased amount of overhang Repeatability ± 0.03 mm

By improving the guide rigidity beyond that of conventional products, the allowable moment has been increased.

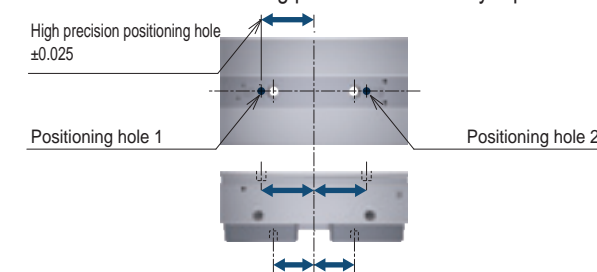
Rigidity 30% UP



Reduced processes on site

High precision positioning hole ± 0.025 mm

The addition of "positioning holes" with the grip center as reference allows the centering precision to be easily reproduced.



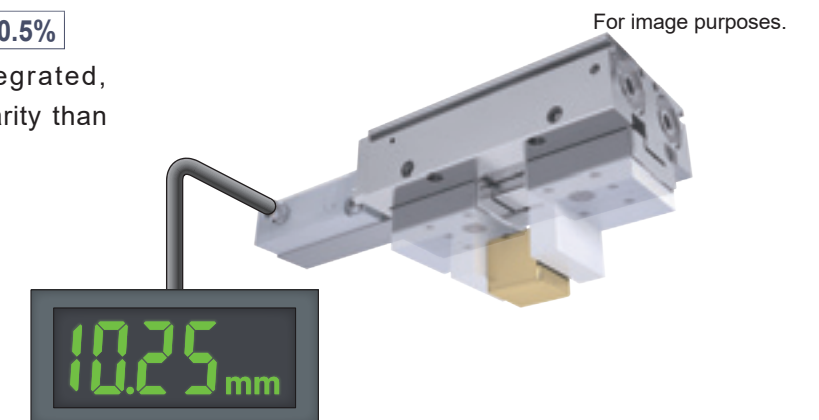
Switch with bending resistant lead wire can be selected

A switch can be selected that uses a bending-resistant lead wire that does not easily break even when used in moving parts.

High precision

Repeatability ± 0.04 mm Linearity F.S. $\pm 0.5\%$

A new sensor system has been integrated, achieving higher repeatability and linearity than ever before.



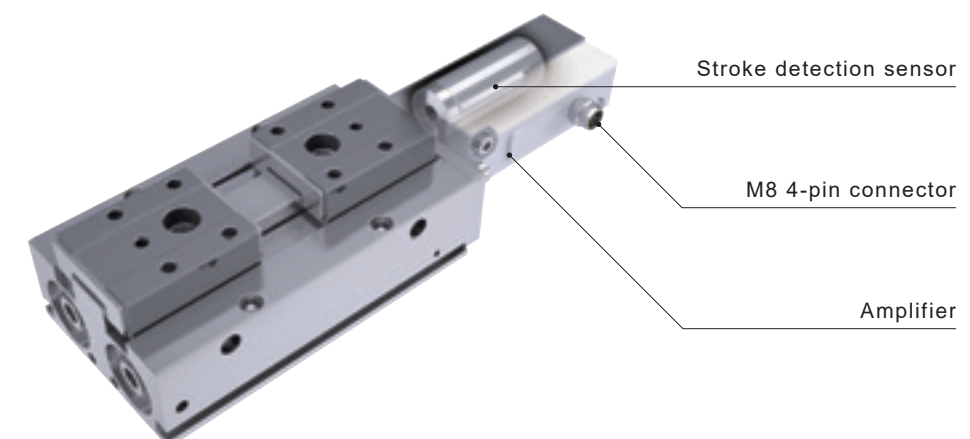
For image purposes.

Integrated structure

Excellent vibration and shock resistance LVDT* Uses a sensor of the method.

A displacement sensor is built into the body, achieving a high-precision integrated structure.

* LVDT is short for Linear Variable Differential Transformer, a sensor that converts mechanical displacement into electric signal for output.



Industry's 1st

HIGH PRODUCTIVITY SERIES

Increased guide rigidity even for wide types
Achieves high rigidity, precision and durability



Wide parallel hand

HMC-HP1 Series

Momentary stops greatly reduced

Number of replacements greatly reduced

Significant reduction in replacement time

Durability 10 million cycles or more

Subject to CKD prescribed conditions



Guide rigidity improved even with 3-way finger
Achieves high rigidity, precision and durability



3-way chuck

CKW-HP1 Series

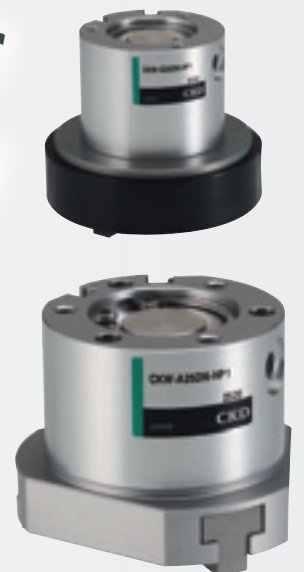
Momentary stops greatly reduced

Number of replacements greatly reduced

Significant reduction in replacement time

Durability 10 million cycles or more

Subject to CKD prescribed conditions

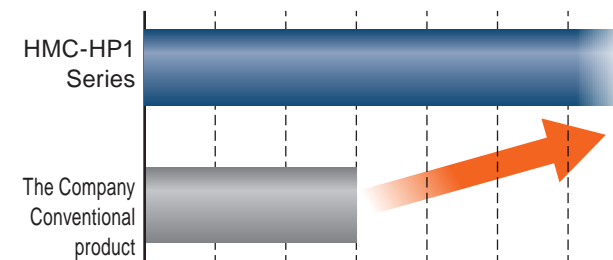


Long service life

Highly advanced sliding technology has enabled durability twice that of conventional models.

Operational cycle

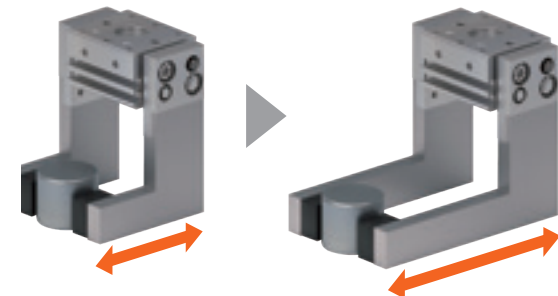
2x
or more
previous
models



High rigidity

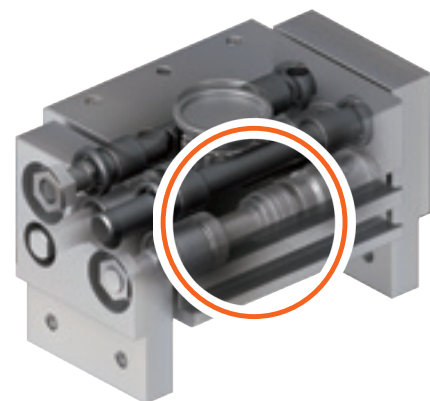
Improved guide rigidity has been achieved by redesigning the guide.

1.3x
or more
previous
models



High gripping force

Adopting a double piston structure realizes a compact body and high gripping force.



Abundant stroke

Extensive stroke is available.

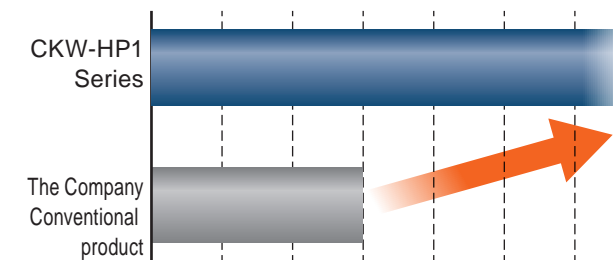
Stroke Type	Stroke (mm)					
	ø10	ø16	ø20	ø25	ø32	ø40
Short	20	30	40	50	70	100
Middle	40	60	80	100	120	160
Long	60	80	100	120	160	200

Long service life

Highly advanced sliding technology has enabled durability twice that of conventional models.

Operational cycle

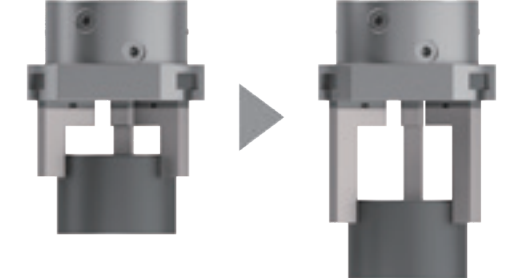
2x
or more
previous
models



High rigidity

Improved guide rigidity has been achieved by redesigning the guide.

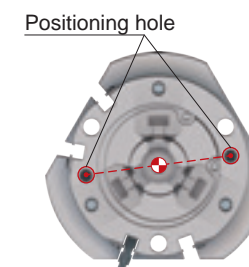
1.3x
or more
previous
models



Significant reduction in replacement time

High precision positioning hole $\pm 0.025\text{mm}$

Added "positioning hole" based on the gripping center. This contributes to the reduction of installation and maintenance work.



Rubber cover option

A highly reliable rubber cover for installation environments has also been available.

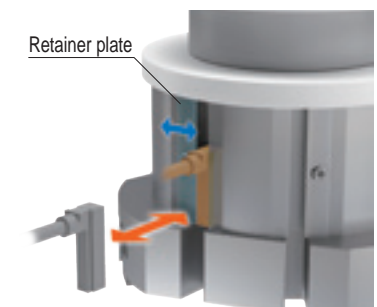


CKW-G-HP1 Chloroprene rubber

CKW-F-HP1 Fluoro rubber

High maintainability

Just slide the retainer plate, and the switch can be easily replaced while it is attached to the equipment.



Increased component service life and productivity from compressed air

Air booster

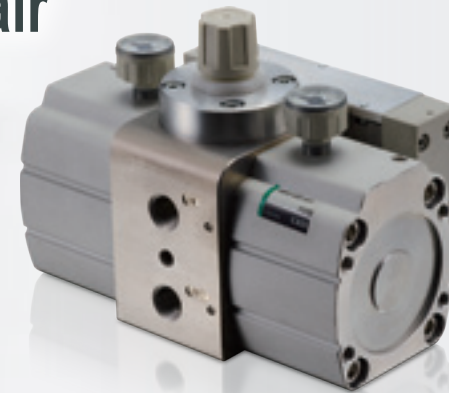
ABP2-HP1 Series

Momentary stops greatly reduced

Number of replacements greatly reduced

Durability 10 million cycles or more

Subject to CKD prescribed conditions



Long service life

The design of the packing part of the cylinder has been optimized, and the long-life 4G Series valve has been adopted, achieving more than twice the durability of conventional products.

2x
or more
previous
models

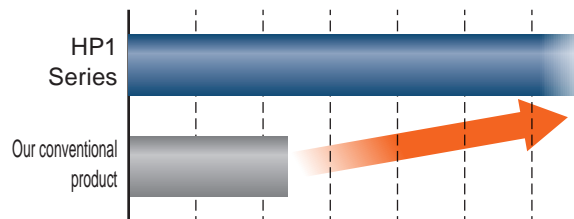


Valve: 4G4 master valve

Cylinder section: HP Series technology

- Abrasion-resistant packing due to special compounding
- Long service life grease
- Optimized sealing function

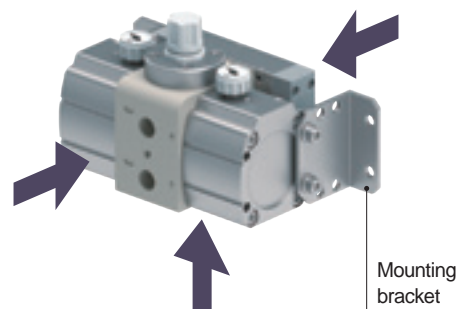
Operational cycle



Flexible mounting in any direction

Installation according to the layout is possible using brackets. Select from 3 directions for pipe leadout.

3
directions for pipe
leadout can be
selected.

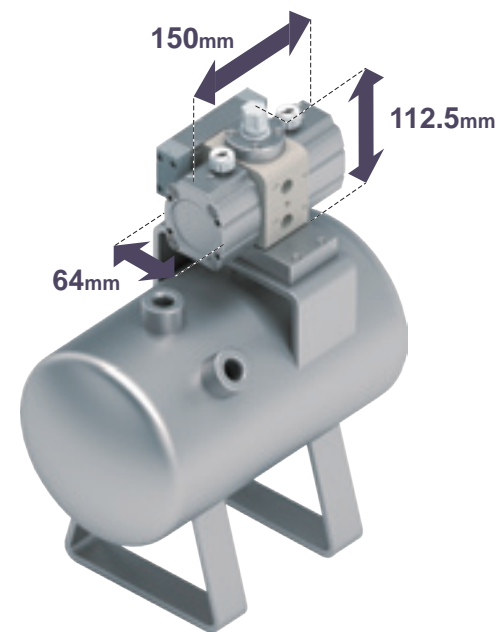


Piping available from 3 surfaces

Air tank

Can be compactly mounted with air tank. The air tank can be selected from 2 sizes, 5 L and 10 L.

Air tank
2 Sizes
Available



High reliability

Stable operation has been achieved by adopting the proprietary technology of our conventional ABP-12 product.

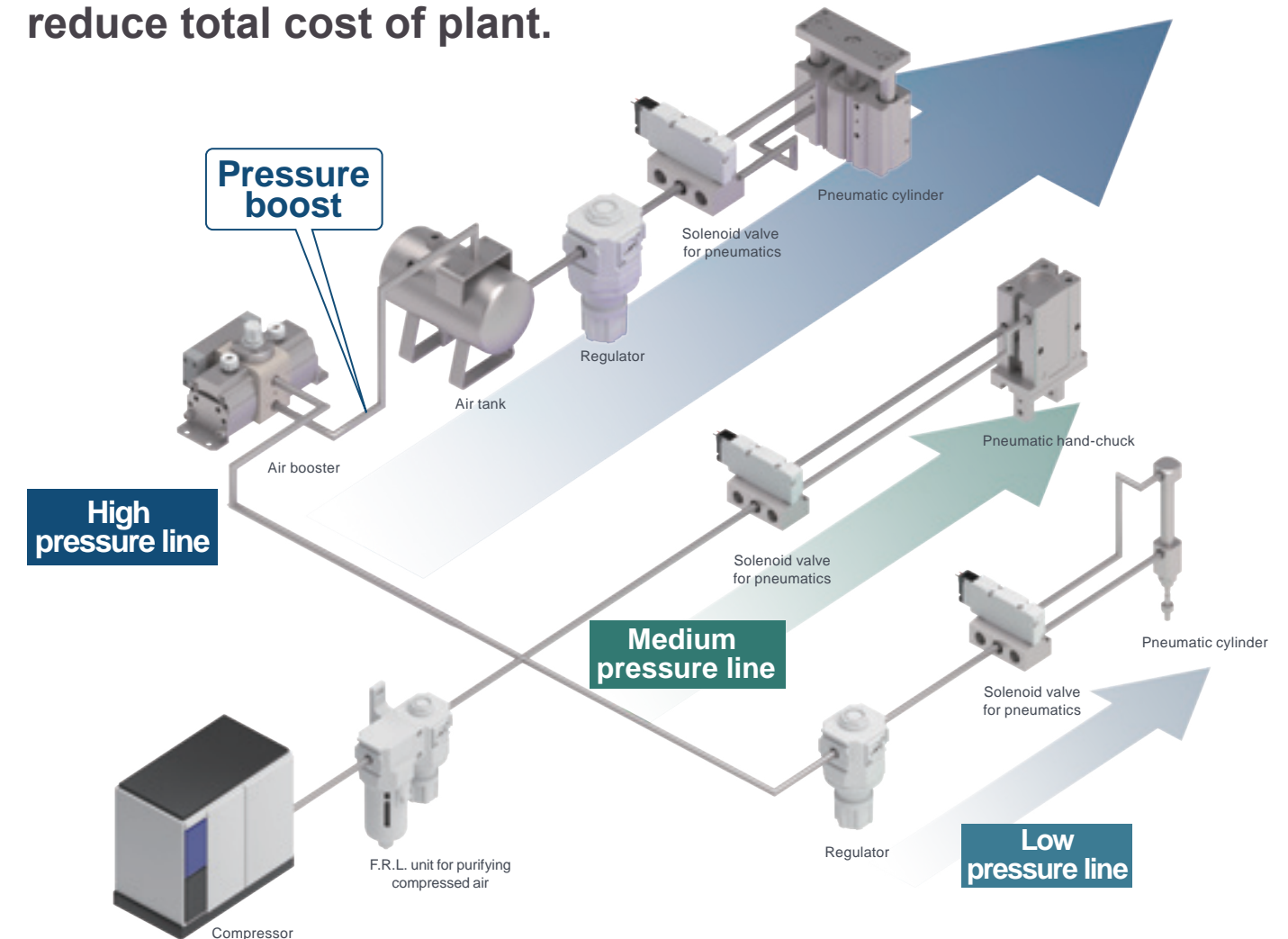
Low noise

By eliminating metal collisions, we have realized a 10dB reduction compared to conventional products.

*Subject to CKD measurement conditions.

10dB
less compared to
conventional models

Contributes to energy savings of the plant by utilizing existing compressed air equipment to boost pressure in areas where it is needed. Long service life components reduce total cost of plant.

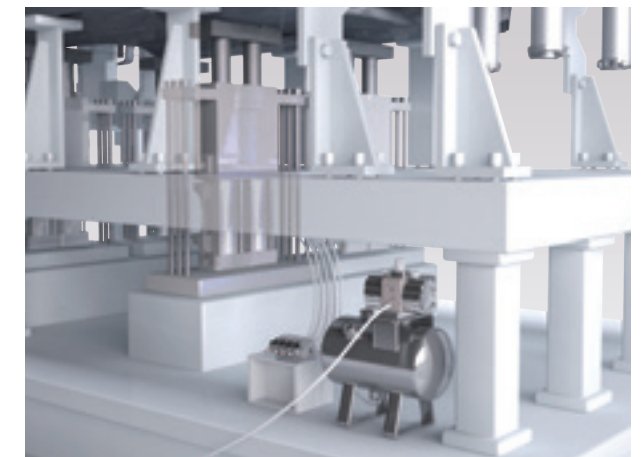


Case Study

Increased gripping force of robot hand



Increased cylinder thrust in narrow areas



Comprehensive pneumatic system only achievable by CKD

Manage compressed air properly and use the ideal system components to achieve longer service life

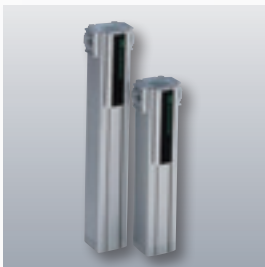
Drain countermeasures

Draining the compressed air can cause the grease of the component to flow and reduce the service life or cause rust, which may lead to component failure. It is necessary to take measures to prevent drainage from occurring and to remove the generated drainage.

Super dryer (High polymer membrane air dryer)

SD/SU/SDM Series

A high-performance air dryer that does not require a power supply and can be installed in the same manner as a filter. Reduces drainage on the secondary side of the dryer.



Drain separator

FX Series

Water drop separation efficiency of 99% is achieved by CKD's original fluid analysis method. Easy installation and reliable drain elimination.



Purifying compressed air

Foreign matter and oil in the compressed air may lead to component failure, so be sure to remove them with a filter or oil mist filter. Since they will certainly be used, CKD puts emphasis on elements with long service life.

Air filter

F Series

Two-layer structure is used for the filter element. Increases filtration area, improves filtration capacity and achieves a long service life.



Oil mist filter

M Series

A special coating is applied to the mantle to ensure long service life while removing oil. A differential pressure switch that outputs the service life of the mantle can also be mounted.



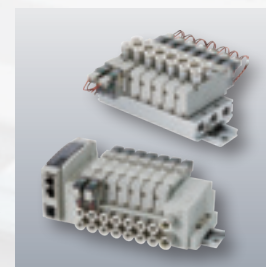
Reliability of the directional control valve

In order to extend the service life of equipment, the directional control valve that drives the actuator must also be reliable. CKD has also optimized the sliding part of the directional control valve to achieve stable operation.

Pilot operated 3, 5-port solenoid valve

4G Series

By optimizing the sliding part of the spool, it has achieved a long service life of over 100 million cycles* and stable operation, supporting high-frequency stable operation of the actuator.



*For image purposes.

Status monitoring

Since the operation status of the facility such as air flow rate and air pressure, number of operational cycles of each component and energization time are constantly output as digital signals, the status can be monitored for preventive maintenance.

Pilot operated 3, 5-port valve

4G Series

The solenoids being turned ON and device unit energization times can be monitored. Threshold values can be set, enabling preventive maintenance.



Compact flow rate sensor (RAPIFLOW)®

FSM3 Series

Monitors air flow rate. In addition to monitoring drops and fluctuations of the air flow rate, it helps manage the air consumption. Detects flow from bi-directions.



Digital pressure sensor

PPX Series

Monitors air pressure. Detects pressure drops and fluctuations. An error is output in two stages; "Caution" and "Abnormal".



Digital gap switch

GPS3 Series

Monitors the seating condition of the workpiece. Also outputs nozzle clogging signals.



Compact flow rate controller

FCM Series

Fluid control components for various gases. It can detect peripheral system abnormalities. Self-detection functions for detecting the deterioration of sensors and proportional solenoid valves.



Digital electro-pneumatic regulator

EVD Series

Compressed air pressure control component. Component operations and status monitoring. 2 switch output types (IO-Link data) can be set and output simultaneously.



Condensation countermeasures

When driving a compact actuator, air is not completely discharged from the valve, and drain is generated by using the same air repeatedly. A quick exhaust valve that can be easily installed is effective as a countermeasure.

Quick exhaust valve

QEL Series

The quick exhaust valve with push-in fitting can be easily retrofitted to an actuator with condensation.



*Subject to CKD prescribed conditions

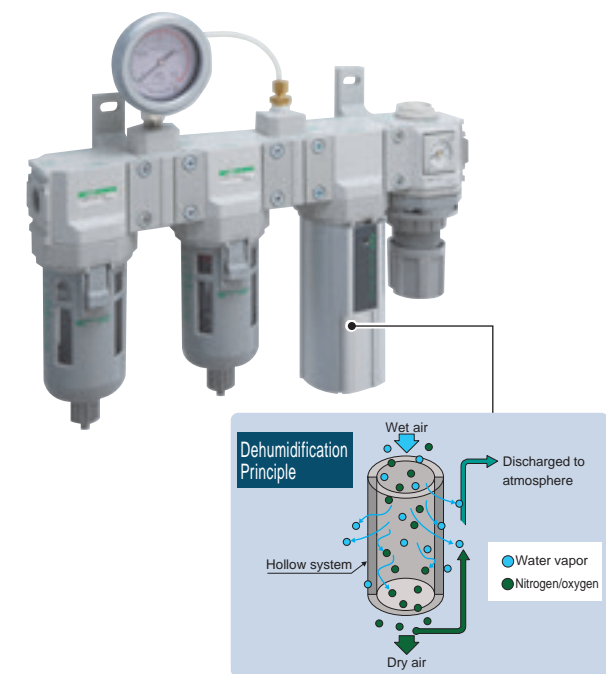
Super dryer (High polymer membrane air dryer)

Drain countermeasures

SD/SU/SDM Series

Catalog No. CB-024SA

The SD/SU/SDM Series is a dryer that can be used like a filter, dehumidifying with a high polymer membrane without using electricity. Since no power supply is required, easy installation, long service life and stable operation are realized.



No power supply needed

Since a power supply is not required, it can be easily retrofitted to a device that has a malfunction due to drain.

Stable operation

Since there are no mechanical movable parts or electrical parts, sudden breakdown does not occur and dry air can be stably supplied for long periods of time.

Modular design

Because of its unique modular concept, it can be directly connected to CKD's refining component, which helps reduce design, piping and installation steps.

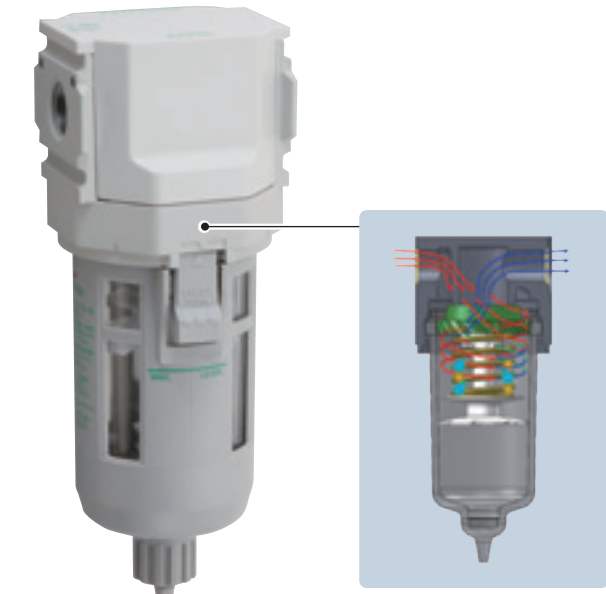
Drain separator

Drain countermeasures

FX Series

Catalog No. CB-024SA

The FX Series achieves 99% water drop separation efficiency with a high-performance louver while being lightweight and compact. Maintains long-term moisture removal capacity to remove drainage without using elements.



Optimal centrifugal mechanism

An ideal louver shape has been achieved using CKD's proprietary fluid analysis method. Water is reliably removed by the ideal centrifugal structure.



Unchanging water removal capacity

Since it does not rely on the filter element, it does not clog and the water removal performance does not change.

Modular design

Because of its unique modular concept, it can be directly connected to CKD's refining component, which helps reduce design, piping and installation steps.

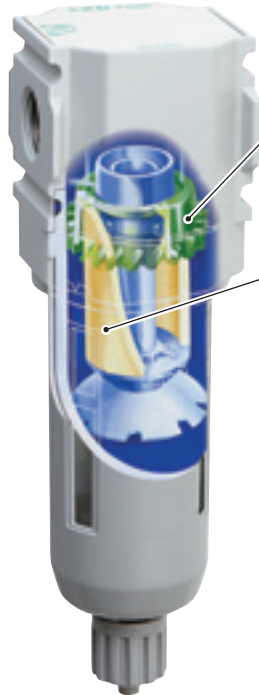
Air filter

Purifying compressed air

F Series

Catalog No. CB-024SA

The F Series has a unique two-layer structure element, so it has a wide filtration area and can be used stably for a long time with less pressure drops compared to normal elements.

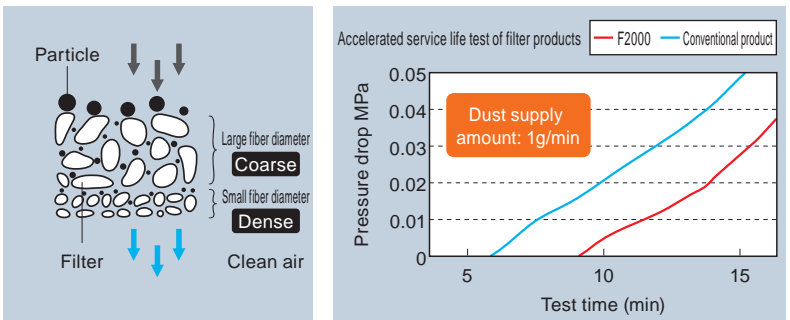


Louver has been optimized to reduce the size and space

Cyclone effect is improved by the ideal design of the louver. It has become smaller while maintaining the same water separation capacity.

Long service life with 2-layer structure element

It adopts CKD's proprietary two-layer structure element, improving filtration capacity and extending the service life.



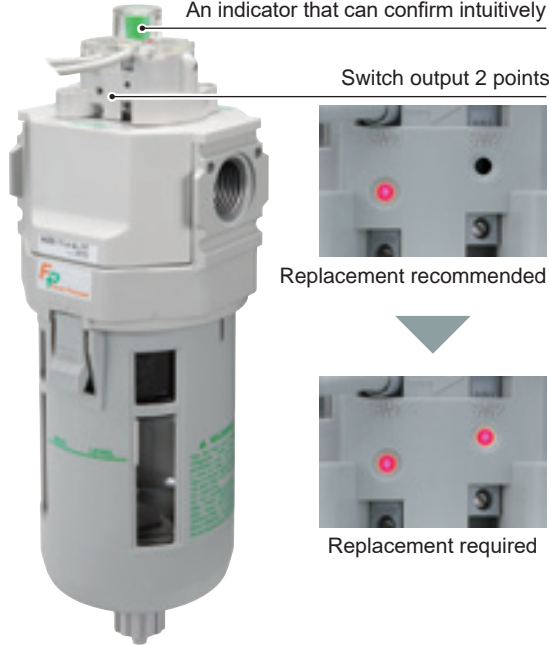
Oil mist filter

Purifying compressed air

M Series

Catalog No. CC-1383A

The M Series reliably removes oil from the compressed air, contributing to the protection of precise components and extending the service life of components. CKD has applied a special coating to the surface of the mantle to achieve a long service life.

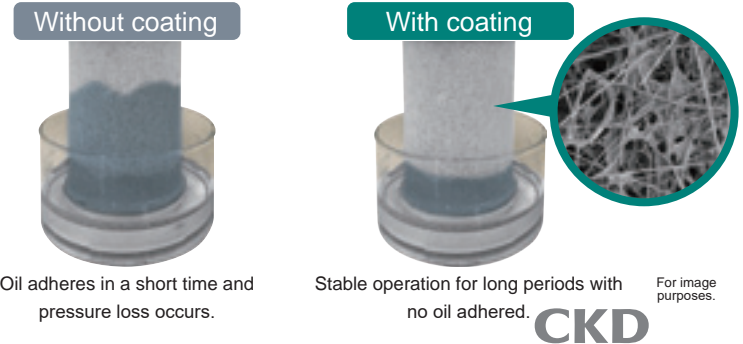


The differential pressure switch enables predictive maintenance

Detects pressure drops due to clogging of the mantle. In addition to the visual check indicator, it is capable of outputting the recommended replacement time and required replacement time.

Long-life mantle

A special coating is applied to the mantle surface to suppress pressure drops, enabling stable use for a long time.



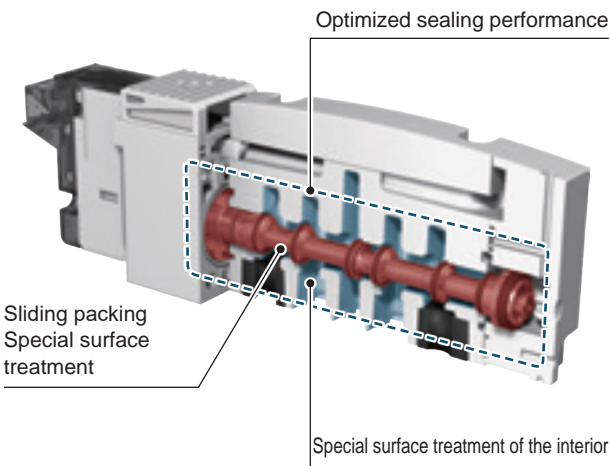
Pilot operated 3, 5-port solenoid valve

Reliability of the directional control valve

4G Series

Catalog No. CB-023SA

The 4G Series has optimized the sliding parts to achieve endurance of 100 million cycles or more*. Stable operation with low sliding supports the reliable operation of the actuator and stable operation of the equipment.



Low friction/long service life

The superb sliding mechanism of the main valve realizes low friction and long service life.
Response time 12 ±2 ms (4G1 single solenoid type)
Durability count of 100 million operations or more*
* Under our specified conditions.

Improved responsivity after startup

Smooth start even after time off. Effective for Monday morning troubles and unexplained stoppages as well.

Prevents problems with foreign matter

- Internal pilot filter equipped as standard.
- Air supply filter equipped as standard (ports A/B equipped as option)



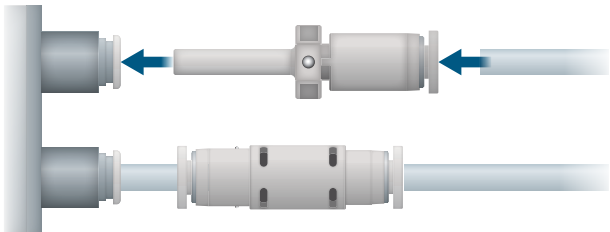
Quick exhaust valve

Condensation countermeasures

QEL Series

Catalog No. CC-1461A

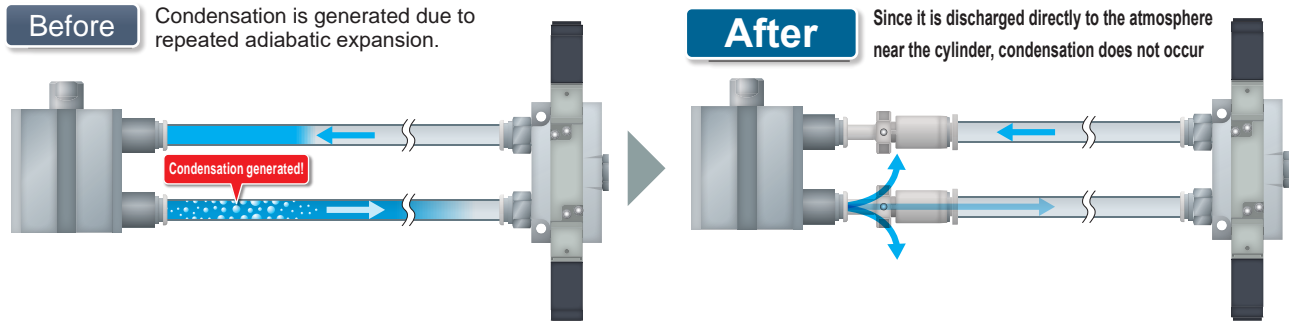
Installation of a quick exhaust valve is effective as a countermeasure against condensation in compact actuators. The QEL Series is compact, space saving and has push-in fitting, which allows it to be easily installed near the actuator.



Easy retrofitting

The plug type and in-line type are available, and can be installed directly or in the middle of the piping to suit the installation location.

Case Study



CKD

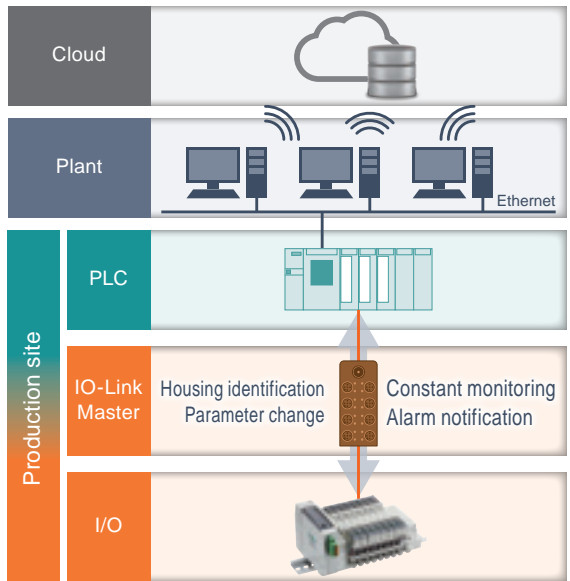
Status monitoring

IO-Link Compatible components Series

Catalog No. CC-1466A

It is important to acquire necessary data efficiently in order to monitor the condition of pneumatic components and perform preventive maintenance. IO-Link compatible Components can easily acquire data and utilize it.

What IO-Link can do



Features of IO-Link

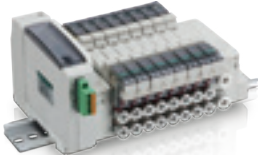
- Digital signal** Constant monitoring via digital data is possible.
- Parameter remote control** Parameters can be set and changed via the network, enabling remote equipment operation.
- Housing identification** Models, serial numbers, etc., can be confirmed on the network.
- Data storage** The settings can be copied from the master, making parameter reconfiguration after maintenance obsolete.
- Error notification** Device failure and disconnection can be confirmed.
- Connection to fieldbus** It can also be converted to Ethernet networks and connected, enabling devices to be IoT-ready.

IO-Link Compatible components Series

Pilot operated 3, 5-port valve

4G

- Specs
- Cylinder bore size ø20 to ø100
 - Working pressure range 0.2MPa to 0.7MPa
 - Degree of protection IP20



Digital pressure sensor

PPX

- Specs
- Set pressure For low pressure: -101.0 to +101.0kPa
For high pressure: -0.101 to +1.010 MPa
 - IO-Link communication specifications
Transmission speed: COM3 (230.4 kbps)
Minimum cycle time: 1.0ms



Compact flow rate controller

FCM

- Specs
- Flow rate control range 0.015L/min to 100L/min
 - Applicable fluid
Compressed air, nitrogen, argon, oxygen, city gas, methane, propane, hydrogen, helium
 - IO-Link communication specifications
Transmission speed COM3 (230.4 kbps)
Min. cycle time: 2 ms



Compact flow rate sensor RAPIFLOW®

FSM3

- Specs
- Flow rate range 0.5L/min to 1000L/min
 - Applicable fluid
Clean air, compressed air, nitrogen gas, argon, oxygen, carbon dioxide, gas mixture (argon + carbon dioxide)
 - IO-Link communication specifications
speed: COM2 (38.4 kbps) Min cycle time: 5 ms



Digital gap switch

GPS3

- Specs
- Working pressure: 50 to 200kPa
 - Detection range Short range 0.02 to 0.15mm Wide range 0.03 to 0.4mm
 - IO-Link communication specifications
transmission speed: COM2 (38.4 kbps)
Minimum cycle time: 5 ms



Digital electro-pneumatic regulator

EVD

- Specs
- Specified pressure range 50kPa to 1000kPa
 - Pressure control range 0kPa to 900kPa
 - IO-Link communication specifications
Transmission speed: COM3 (230.4 kbps)
Min. cycle time: 2 ms



CKD

For the rechargeable battery manufacturing processes, reduction

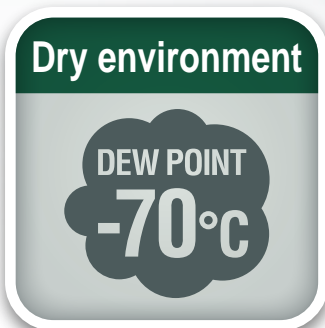
Make Progress!! P4 Series

With the progress of rechargeable and next-generation battery development, we have responded to the demand for components with improved dry environmental performance. Our products are compatible with the production stability of the manufacturing process and consistently meet the needs of rechargeable battery manufacturing, from electrode production to packaging.



Restrict materials for component parts.

Restricts the use of materials and surface treatments inappropriate for the rechargeable battery manufacturing process.



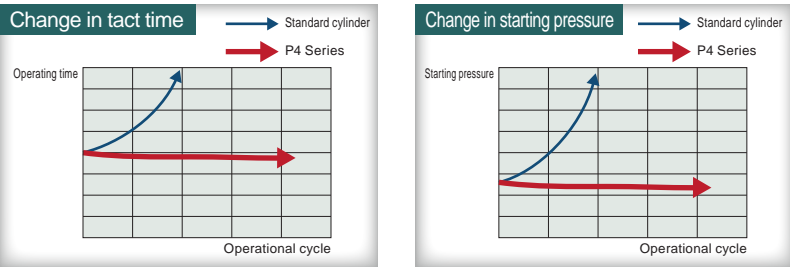
Long service life even in -70°C dew point environments

Adopted grease compatible with ultra-dry environments. Retains the smooth operation of the sliding part for long periods, even in dry environments.



Contributing to a system that never stops

Uses a special grease that supports low dew points and high frequency use. Contributes to stable operation of equipment.



of CO₂ emissions has been achieved with long service life products

Longer service life in environments with -70°C dew point. Contributes to reduced CO₂ emissions

By optimizing packing design and seal functions, and adopting high-frequency compliant grease suitable for ultra-low dew point environments, we have achieved a long service life with the same dimensions as those of the P4 Series.

Propose stable operation for long periods with CKD's proprietary sliding technology

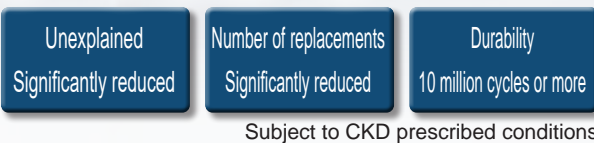


Realizes long-term stable operation in the rechargeable battery manufacturing process



Rechargeable battery compatible long service life cylinder

P4-HP1 Series



Further Progress!! P4-HP1 Series



For food manufacturing processes. Reduced

Satisfies a variety of needs for food processing

A broad standard lineup ranging from air filters to actuators that can be used safely and securely in food manufacturing processes. We offer total support for food manufacturing with total engineering capacity in packaging machines as well as pneumatic, fluid control, and electric-driven products.

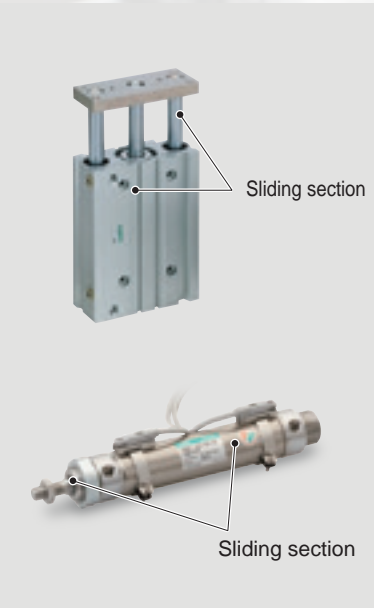


FP1 Series

Lubricant

Eliminates concerns over lubricant contamination!

Lubricant used in flow paths and sliding parts is changed to food-grade (NSF-H1), eliminating concerns over contamination caused by lubricant. The materials and dimensions are the same as those of the standard products



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

FP2 Series

Lubricant Materials Environment

Uses safe materials!

In addition to FP1, the flow path uses Food Sanitation Act compliant materials (resin, rubber)

CO₂ emissions with long service life products

Contributes to carbon neutrality by reducing maintenance and improving productivity.

HP
HIGH PRODUCTIVITY

Contributes to carbon neutrality by reducing maintenance and improving productivity.

Reduce production loss and waste

Durable

Rapid replacements

Early service-life notice

Contributes to food safety and security in food manufacturing processes.

FP
Food Process®

Contributes to food safety and security in food manufacturing processes.

FP1 Eliminates concerns over lubricant contamination

Environment-resistant cylinder For food manufacturing processes

FP1 - G-HP1 Series

Unexplained stops significantly reduced

Number of replacements Significantly reduced

Environmental resistance improved

Durability count 5 million cycles and over

Subject to CKD prescribed conditions



Compact cylinder Guided cylinder Rodless cylinder Compact cylinder Twin rod cylinder Linear slide cylinder Standard model

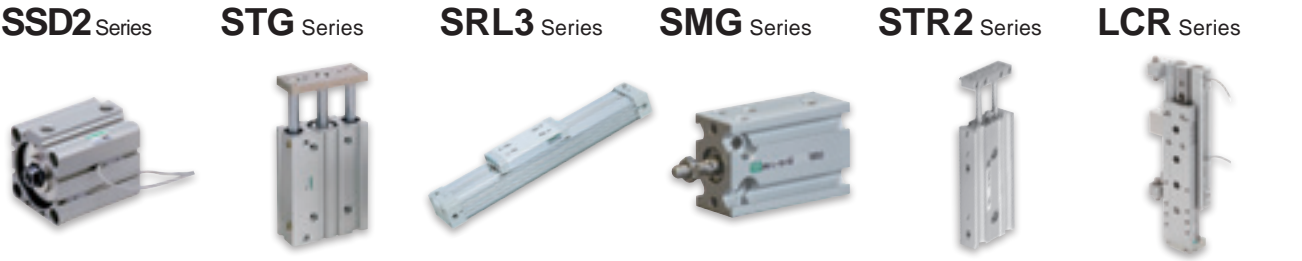


Table rotary actuator Linear Slide Hand Parallel hand Compact wide parallel hand Ultra thin parallel hand



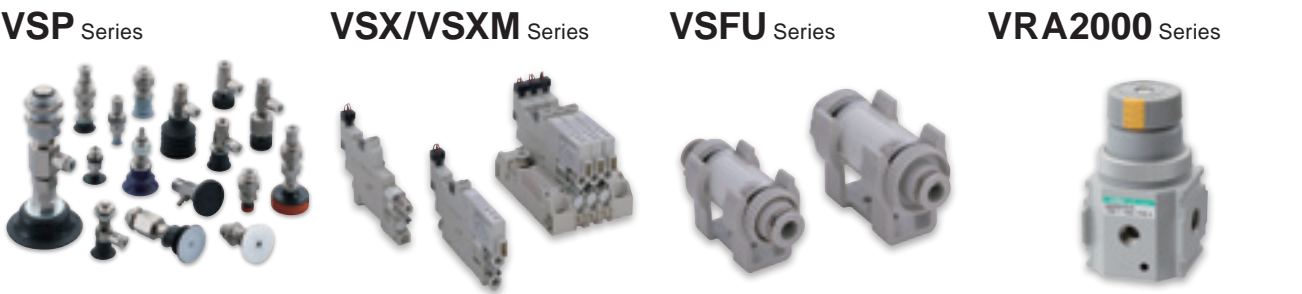
Precise suction plate Fine buffer Air bearing actuator Cylinder switch Pilot operated 3, 5-port valve Direct acting 3-port valve



Electric actuator Electric actuator



Suction pad Vacuum ejector Vacuum filter Vacuum regulator



Super heatless dryer High polymer membrane air dryer Super dryer (High polymer membrane air dryer) Nitrogen Gas Extraction Unit Medium main line filter Air filter



Precision regulator Electro-pneumatic regulator Pressure gauge Digital pressure sensor Compact flow rate sensor Residual pressure exhaust valve with spool position detection



Speed controller with adjusting dial Speed controller, elbow Fitting, tube 2, 3-port solenoid valve for dry air



Valve for high vacuum Air operated valve for chemical liquids Clean cylinder valve Air operated ball valve Diaphragm cylinder valve



Compatible with more than 100 models
A line-up that can contribute to the evolving rechargeable battery manufacturing processes

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

FP1

Electric actuator Slider

EBS-M Series



Electric actuator Guide integrated rod

EBR-M Series



Electric actuator Slider

EBS-L Series



Electric actuator Guide integrated rod

EBR-L Series



Electric actuator Slider

ETS Series



Electric actuator Low dust generation

ECS Series



Electric actuator Belt type

ETV Series



Electric actuator Low dust generation belt type

ECV Series



Electric actuator Fast tact/high rigidity

EKS-L Series



Pencil shaped cylinder

SCPD3 Series



Small bore size cylinder

CMK2 Series



Small bore size cylinder, stainless steel variation

CMK2-J Series



Round shaped cylinder

SCM Series



Tie rod air cylinders

SCG Series



Selex cylinder with T switch

SCA2 Series



Selex cylinder

SCS2 Series



Compact cylinder

SSD2 Series



Guided cylinder

STG Series



Rodless cylinder

SRL3 Series



Floating fitting

FJ Series



Feather hand (mini-parallel hand)

FH100 Series



Compact cross roller parallel hand

BHA/BHG Series



Compact wide parallel hand

HMF Series



Feather hand (mini-fulcrum hand)

FH500 Series



3-way finger bearing chuck

CKG Series



Powerful chuck

CKL2 Series



Powerful chuck with rubber cover

CKLG2 Series



PowerArm

PAW Series



Pilot operated 3, 4, 5-port valve

4G Series



Pilot operated 3, 5-port valve

W4G*2 Series



Filter/regulator combination

C*020/
C*030/
C*040/
C*050/
C*060/
Series



Filter/regulator

W1*00 to
W8*00
Series



Air filter

F1000 to
F8000
Series



Oil mist filter

M(X)1000 to
M(X)8000
Series



Regulator

R1*00 to
R8*00
Series



Drain separator

FX Series



Reed switch compact pressure switch

P1100 to
P8100
Series



Residual pressure exhaust valve

V1000/
V3000/
V3010/
V6010/
Series



Digital electro pneumatic regulator

EVD Series



Fitting

GW Series



Fitting (stainless steel Series)

ZW Series



Speed controller Elbow with push-in fitting

SC3W Series



Speed controller with adjusting dial

DSC Series



Speed controller line type with push-in fitting

SCL2 Series



Needle valve with adjusting dial

DVL-S Series



Speed controller

SC-M5 Series



Speed controller

SC1 Series



Metering valve with silencer

SMW/
SMW2
Series



Block valve

FPV Series



Quick valve

2QV/3QV Series



Single ejectors

VSH/VSC Series



Super dryer (High polymer membrane air dryer)

SU/SD Series



Nitrogen Gas Extraction Unit

NSU Series



Medium main line filter

AF Series



Pilot kick 2-port solenoid valve

APK Series



Air operated 2-port valve

SAB Series



Air operated 3-port valve

NAP Series



Materials compatible with the Food Sanitation Act are used

FP2

Nitrogen Gas Extraction Unit

NS Series



Oxygen monitor

PNA Series



Anti-bacterial/bacteria-removing filter

SFC/SFS Series



Suction pad

VSP Series



Pilot operated 2-port solenoid valve for compressed air

EXA Series



Compact pilot operated solenoid valve for water

FWD Series



Compact direct acting 2, 3-port solenoid valve

USB/G Series



Direct acting 2-port solenoid general purpose valve

AB31/41 Series



Direct acting 3-port solenoid general purpose valve

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



Pilot 2-port solenoid general purpose valve for dry air

ADK11-Z Series



Diaphragm cylinder valve

LAD Series



Diaphragm cylinder valve

NAD Series



Diaphragm cylinder valve, manifold

GNAD Series



Compact rotary valves

CHB/
CHG
Series



Pilot 2-port solenoid general purpose valve for dry air

MXB/
MXG
Series



Pilot 2-port solenoid general purpose valve for dry air

SPK Series



Metal-free solenoid valves

MYB3 Series



High corrosion resistant direct acting 2-port solenoid valve

HB Series



Check valve (nozzle)

CCN Series

