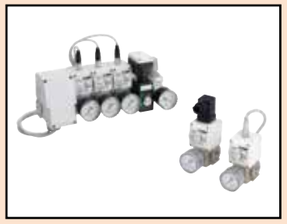
MEMO



Contact confirmation switch (gap switch)

GPS2, MGPS2, UGPS2 Series

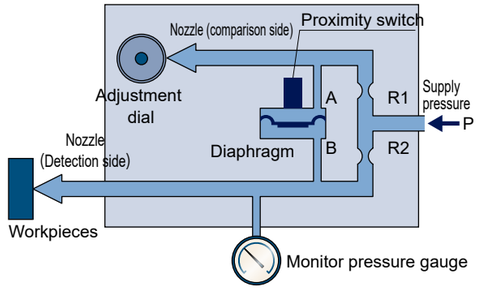
Overview

The GPS2 Series gap switch is an air sensor used to confirm the workpiece seating and clamping contacts. While retaining the features of the conventional GPS Series, a modular unit has been realized by incorporating a joiner connection structure, and the body strength has been increased by using aluminum die-cast.

Features

- **High stability**
  Air bridge circuit prevents the effect of fluctuations in the supply pressure.
- **Easy adjustment**
  The sensitivity can be easily adjusted with the scale on the sensitivity adjustment dial.
- **Non-contact detection**
  A non-contact measurement is taken, and so the product is not directly touched. Detection is possible without damaging valuable products.
- **Energy saving**
  The air consumption rate can be suppressed since this can be used with a working pressure of 0.03 MPa.
- **High precision**
- **Modularization**
  By incorporating a joiner connection, GPS2 units can be connected together, and can also be connected easily to the CKD regulator or filter.
- **Robustness**
  The body strength has been increased by using aluminum die-cast.
- **Environment conditions**
  The product can be used in environments where water, etc., may splash, as it has degree of protection IP67 (connector) equivalent.

●Gap switch principle drawing



Operational explanation

The air pressurized into port P passes through orifice R1 and R2 of the air bridge circuit, and flows to the nozzles on the comparison side and on the detection side. When the detection side nozzle clearance becomes smaller than the clearance set with the adjustment dial in the comparison side nozzle, a back pressure reverses and presses up the diaphragm. This activates the proximity switch and generates an electric signal.

Contact confirmation switch (gap switch) single unit

GPS2 Series

●Port size: Rc1/4 Rc1/8 ●nozzle size: ø1.5

Refer to the CKD website for detailed compatible model Nos.

Model No. Notation Method

GPS2 - 07 - 15 - N G TL - B - G2

- GPS2: Model No.
- 07: ❶Orifice size
- 15: Setting type: Dial type detection nozzle diameter
- N: ❷Output style
- G: ❸Lamp color
- TL: ❹Electrical connection option
- B: ❺Attachments and others
- G2: ❻Pressure gauge

Note: Refer to P. 140 to 145 for discrete model No. of option peripheral devices.

❶Orifice size

Code	Description
05	ø0.5
07	ø0.7

❷Output style

Code	Description
N	NPN open collector
P	PNP open collector

❸Lamp color

Code	Description
G	Green
Y	Yellow

❹Electrical connection option

Code	Description	
F	DIN terminal box (Pg11)	
C0	Connector	Without cable
C1		Cable 1 m attached
C3		Cable 3 m attached
C5		Cable 5 m attached
CTL	Connector common terminal box	Left side assembly
CTR		Right side assembly
TL	Lead wire common terminal box	Left side assembly
TR		Right side assembly
Lead wire common terminal box expanding manifold		
R	Lead wire outlet direction right (left end for mounting)	
L	Lead wire outlet direction left (right end for mounting)	
W	Lead wire outlet direction both sides (intermediate for mounting)	

❺Attachments and others

Code	Description	
Blank	Without bracket	
B	With bracket	
L	Dial cover with lock	

Note: Select "L" for automobile- and processing machine-related applications.

❻Pressure gauge

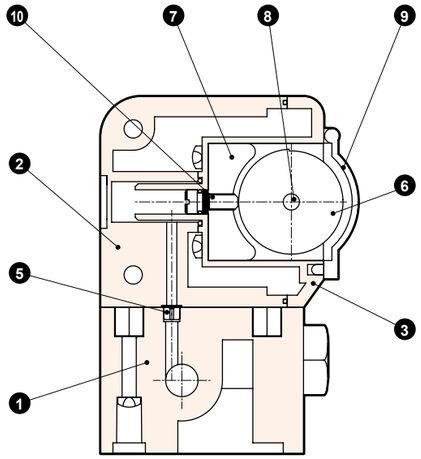
Code	Description
Blank	No pressure gauge
G2	Pressure gauge with safety marker attached (G40D-8-P02-S501)
GW2	Pressure gauge assembly with safety marker (G40D-8-P02-S501)

Specifications

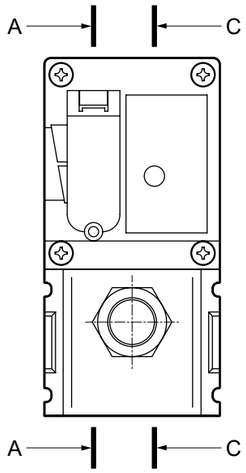
Item			GPS2-05-15	GPS2-07-15
Working fluid			Compressed clean air (lubrication not possible)	
Working pressure	*1 kPa		30 to 200	50 to 200
Detection range	mm		0.03 to 0.25	0.03 to 0.4
Repeatability	mm		±0.01 (detection range 0.03 to 0.1 mm)	
Hysteresis	mm		0.01 or less (detection range 0.03 to 0.1 mm)	
Detection nozzle type	*2		Single hole nozzle ø1.5 standard (ø1, ø2)	
Power supply voltage	V		10.2 to 26.4 DC	
Current consumption	mA		15 or less (when using 24 VDC)	
Output style			NPN, PNP open collector	
Output rating			30 VDC, 100 mA or less	
Internal voltage drop	V		2.0 or less (using 100 mA)	
Indicator lamp			LED green or yellow	
Insulation resistance			10 MΩ and over at 500 VDC megger	
Withstand voltage			No failure after application of 1,000 VAC for 1 minute	
Vibration resistance	m/s^2		98	
Ambient temperature	°C		5 to 60	
Degree of protection	*3		IP67 equivalent (connector), IP64 equivalent (DIN terminal box)	
Tube	mm		Inner diameter 4	
Port size			Supply port Rc1/4, detection port Rc1/8, pressure gauge port Rc1/4	
Weigh	g		290 (electrical connection option C0)	
Air consumption L/min (ANR)	Working pressure	50 kPa	6 or less	11 or less
		100 kPa	9 or less	15 or less
		200 kPa	14 or less	24 or less

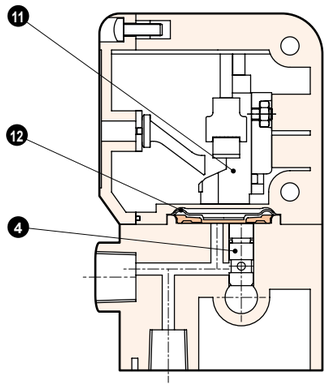
*1: If the nozzle clogs, working pressure should be set between 100 and 200 kPa.
*2: The above specifications apply to the detection nozzle with a ø1.5 single-hole nozzle.
*3: This product must be used under the following conditions:
(1) Piping and wiring must be completed and pressure applied.
(2) A waterproof bushing must be used on the wires to the terminal box.
(3) A dial cover with lock must be provided and the cover screw must be tightened.

Internal Structure Diagram / Material



A-A sectional view





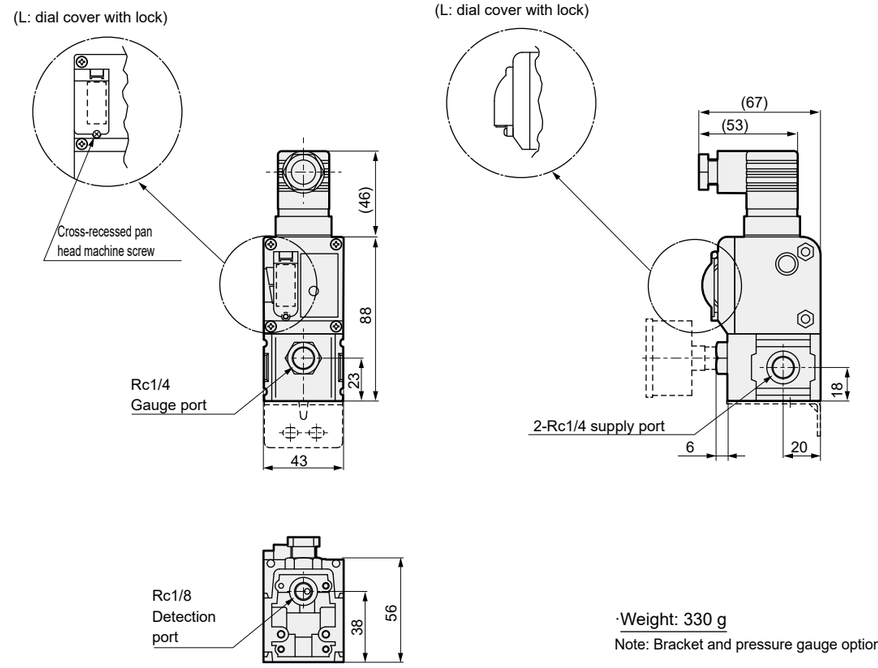
C-C sectional view

Part No.	Part name	Material	Part No.	Part name	Material
1	Base	Aluminum	7	Dial / Bracket	Aluminum
2	Body	Polybutylene terephthalate	8	Press fit pin	Stainless steel
3	Front cover	Polybutylene terephthalate	9	Dial cover	Polypropylene
4	Orifice nozzle A	Brass	10	Dial nozzle	Brass
5	Orifice nozzle B	Brass	11	Proximity switch	-
6	Dial	Stainless steel	12	Diaphragm	HNBR

Dimensions

●DIN terminal

●GPS2-□-15-□□F

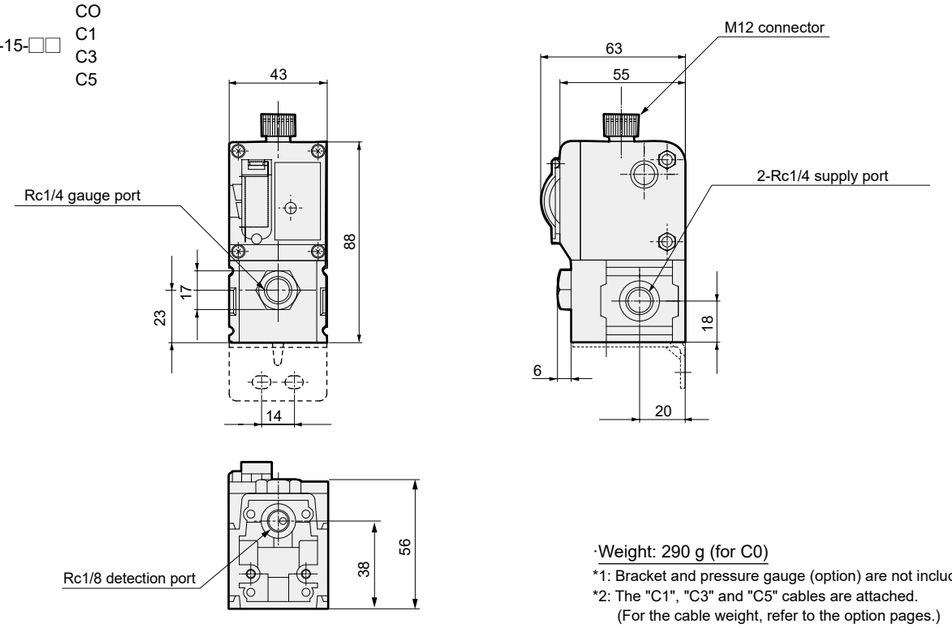


·Weight: 330 g

Note: Bracket and pressure gauge options are not included.

●Connector

●GPS2-□-15-□□ CO C1 C3 C5



·Weight: 290 g (for C0)

*1: Bracket and pressure gauge (option) are not included.

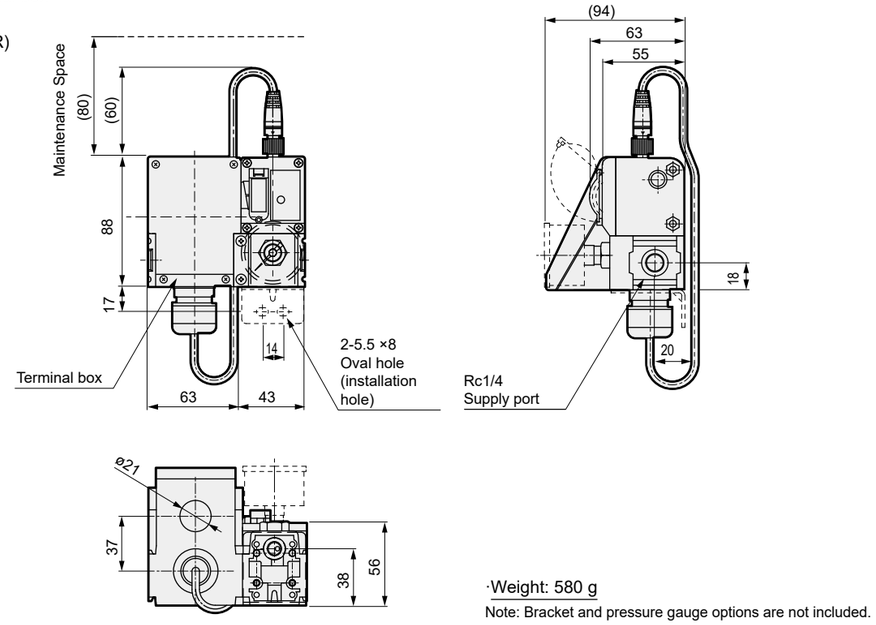
*2: The "C1", "C3" and "C5" cables are attached.
(For the cable weight, refer to the option pages.)

Note: The dial cover shape differs for the dial cover with lock. Refer to above DIN terminal type.

Dimensions

●Connector common terminal box

●GPS2-□-15-□□ CTL (CTR)



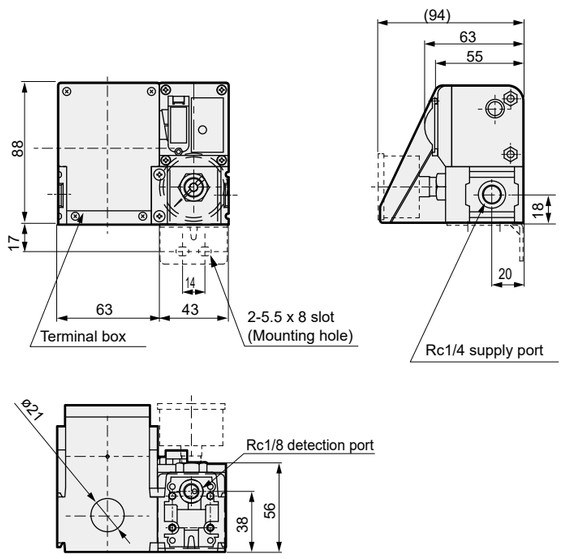
·Weight: 580 g

Note: Bracket and pressure gauge options are not included.

Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

●Lead wire common terminal box

●GPS2-□-15-□□ TL (TR)



·Weight: 510 g

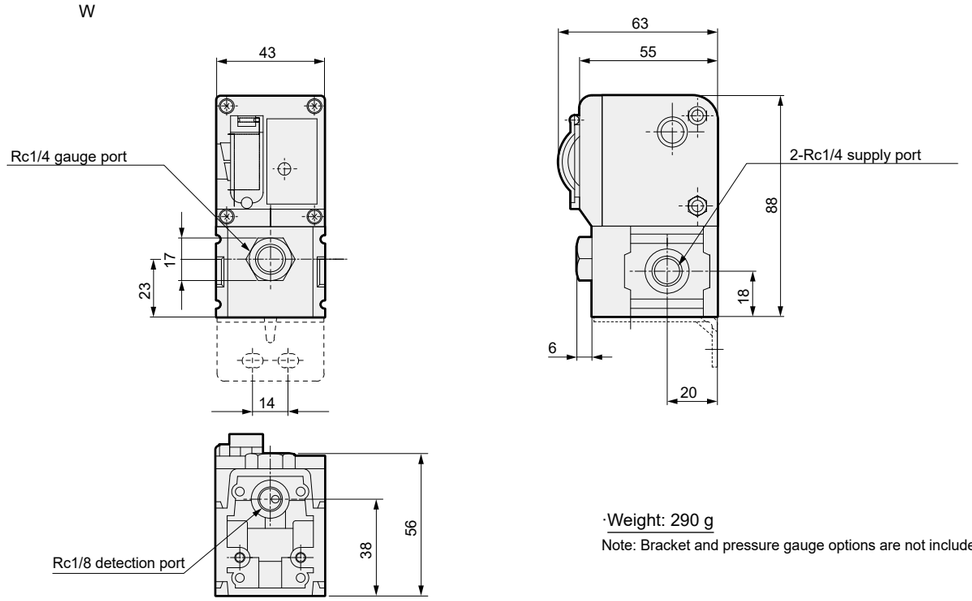
Note: Bracket and pressure gauge options are not included.

Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

Dimensions

●Discrete for lead wire common terminal box expanding manifold

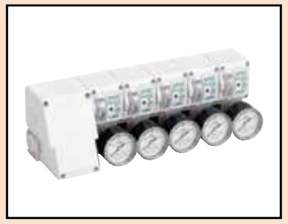
●GPS2-□-15-□□ R L W



·Weight: 290 g

Note: Bracket and pressure gauge options are not included.

Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.



Gap switch Manifold

MGPS2 Series

●Station No.: 2 to 5 stations

Refer to the CKD website for detailed compatible model Nos.

Model No. Notation Method

MGPS2 - 07 - 15 - 2 N Y TL - B - G2

- MGPS2: Model No.
- 07: ❶Orifice size
- 15: Setting type: Dial type detection nozzle diameter
- 2: ❷Station No.
- N: ❸Output style
- Y: ❹Lamp color
- TL: ❺Electrical connection option
- B: ❻Attachments and others
- G2: ❼Pressure gauge

Note: Refer to P. 140 to 145 for discrete model No. of option peripheral devices.

❶Orifice size

Code	Description
05	ø0.5
07	ø0.7

❷Station No.

Code	Description
2	2 stations
3	3 stations
4	4 stations
5	5 stations

❸Output style

Code	Description
N	NPN open collector
P	PNP open collector

❹Lamp color

Code	Description
G	Green
Y	Yellow

❺Electrical connection option

Code	Description		Degree of Protection
TL	Lead wire common terminal box	Left side assembly	IP 66 or equiv.
TR		Right side assembly	
T1		Left 1st	
T2		Left 2nd	
T3		Left 3rd	
T4		Left 4th	
CTL	Connector common terminal box	Left side assembly	IP 67 or equiv.
CTR		Right side assembly	
F	DIN terminal box (Pg11)		IP 64 or equiv.
C0	Connector	Without cable	IP 67 or equiv.
C1		Cable 1 m attached	
C3		Cable 3 m attached	
C5		Cable 5 m attached	

Note: The degree of protection should be used under the following conditions:
(1) Piping and wiring must be completed and pressure applied.
(2) A waterproof bushing must be used on the wires to the terminal box.
(3) A dial cover with lock must be provided and the cover screw must be tightened.

❻Attachments and others

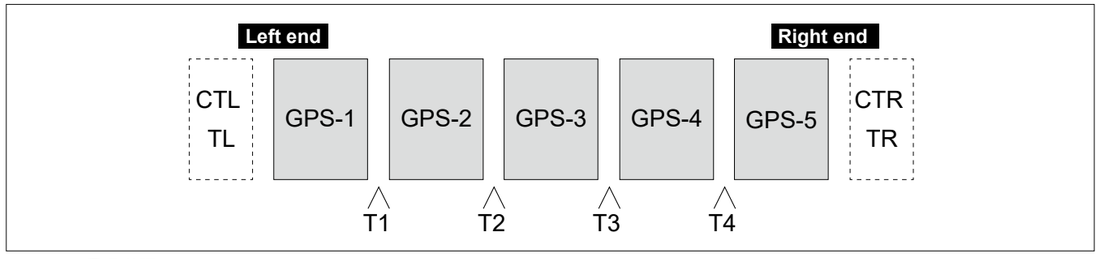
Code	Description	
Blank	Without bracket	
B	With bracket	
L	Dial cover with lock	

Note: Select "L" for automobile- and processing machine-related applications.

❼Pressure gauge

Code	Description
Blank	No pressure gauge
G2	Pressure gauge with safety marker attached (G40D-8-P02-S501)
GW2	Pressure gauge assembly with safety marker (G40D-8-P02-S501)

Terminal box installation position relation diagram



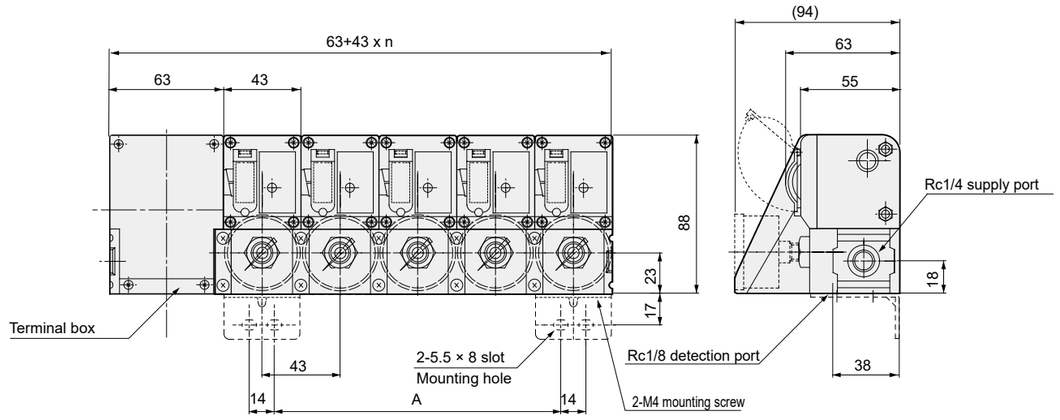
Specifications

Basic specifications are the same as the Discrete on page 127.

Dimensions

●Manifold (lead wire common terminal box: TL/TR)

●MGPS2-□-15-□□□ TL (TR)



Station No.	n	A	Weight (g)
2 stations	2	29	820
3 stations	3	72	1130
4 stations	4	115	1440
5 stations	5	158	1750

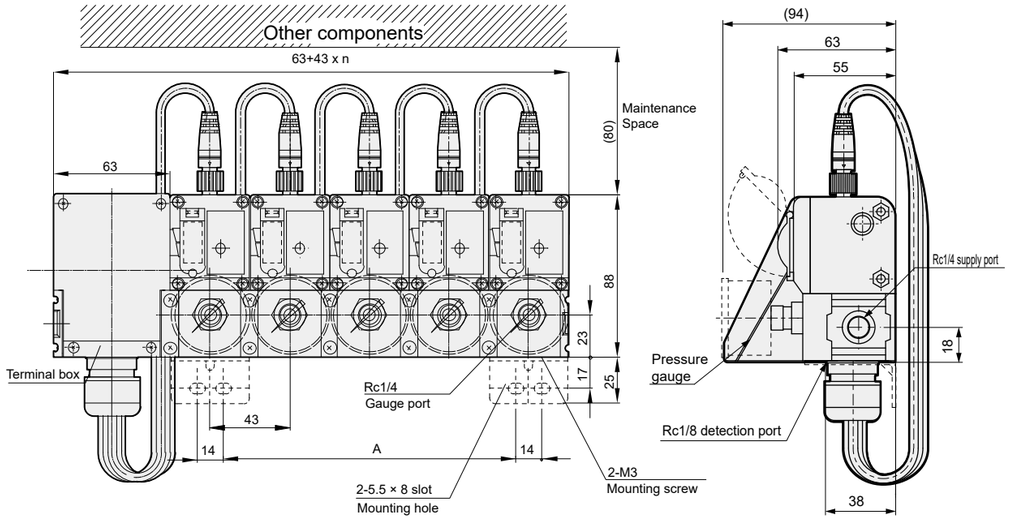
Note: Bracket and pressure gauge options are not included.

Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

Dimensions

●Manifold (connector common terminal box: CTL/CTR)

●MGPS2-□-15-□□□ CTL (CTR)



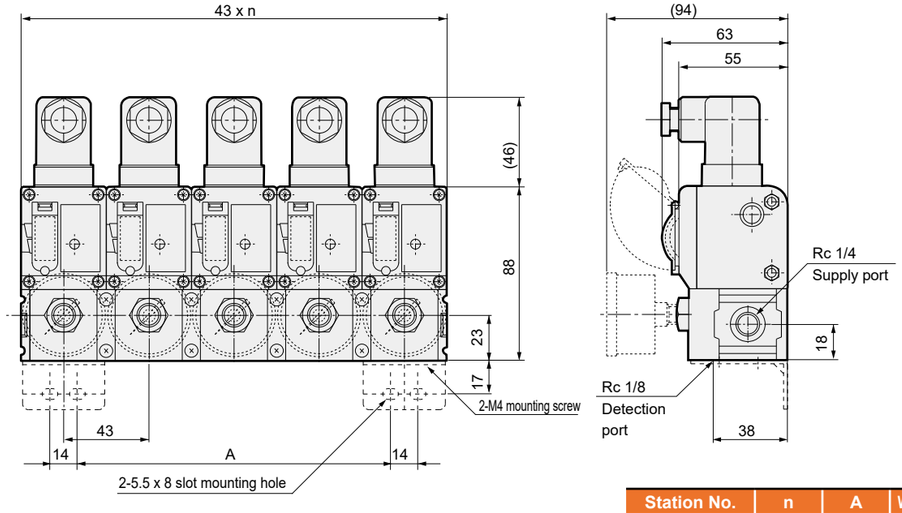
Station No.	n	A	Weight (g)
2 stations	2	29	930
3 stations	3	72	1270
4 stations	4	115	1610
5 stations	5	158	1960

Note: Bracket and pressure gauge options are not included.

Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

●Manifold (DIN terminal box: F)

●MGPS2-□-15-□□□ F



Station No.	n	A	Weight (g)
2 stations	2	29	680
3 stations	3	72	1020
4 stations	4	115	1360
5 stations	5	158	1700

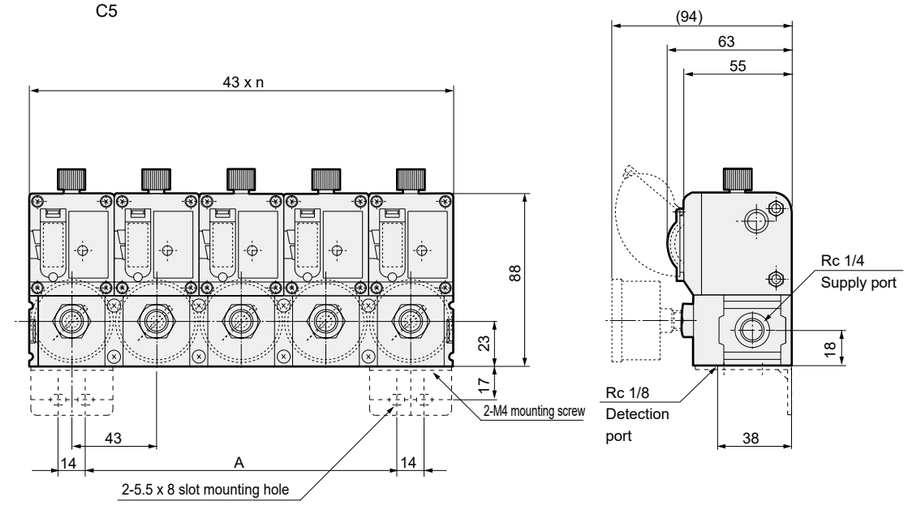
Note: Bracket and pressure gauge options are not included.

Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

Dimensions

●Manifold (connector: □C)

●MGPS2-□-15-□□□ C0 C1 C3 C5



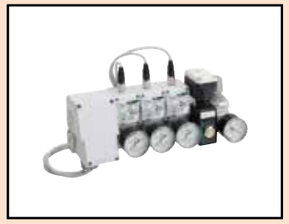
Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

(For C0)

Station No.	n	A	Weight (g)
2 stations	2	29	590
3 stations	3	72	880
4 stations	4	115	1180
5 stations	5	158	1480

*1: Bracket and pressure gauge options are not included.
*2: The "C1", "C3" and "C5" cables are attached.
(For the cable weight, refer to the option pages.)

●For information on options and peripheral dimensions diagrams, refer to P. 140 to 145.



Gap switch unit

UGPS2 Series

●Solenoid valve with needle, regulator integrated general purpose unit

Refer to the CKD website for detailed compatible model Nos.

Model No. Notation Method

UGPS2 - 07 - 15 - 2 N Y TL - L - GW2 - 2H - 1

- UGPS2: Model No.
- 07: ❶Orifice size
- 15: Setting type: Dial type detection nozzle diameter
- 2: ❷Station No.
- N: ❸Output style
- Y: ❹Lamp color
- TL: ❺Electrical connection option
- L: ❻Attachments and others
- GW2: ❼Pressure gauge
- 2H: ❽Solenoid valve electrical connection
- 1: ❾Solenoid valve voltage

Note: Refer to P. 140 to 145 for discrete model No. of option peripheral devices.

❶Orifice size

Code	Description
05	ø0.5
07	ø0.7

❷Station No.

Code	Description
1	1 station
2	2 stations
3	3 stations
4	4 stations
5	5 stations

❸Output style

Code	Description
N	NPN open collector
P	PNP open collector

❹Lamp color

Code	Description
G	Green
Y	Yellow

❺Electrical connection option

Code	Description	
TL	Lead wire common Terminal box	Left side assembly
TR		Right side assembly
CTL	Connector common Terminal box	Left side assembly
CTR		Right side assembly
F	DIN terminal box (Pg11)	
C0	Connector	Without cable
C1		Cable 1 m attached
C3		Cable 3 m attached
C5		Cable 5 m attached

❻Attachments and others

Code	Description
Blank	None
L	Dial cover with lock

Note: Select "L" for automobile- and processing machine-related applications.

❼Pressure gauge

Code	Description
Blank	Without (*1)
GW2	Pressure gauge assembly with safety marker (G40D-8-P02-S501)

*1: Regulator pressure gauge is also provided.

❽Solenoid valve electrical connection

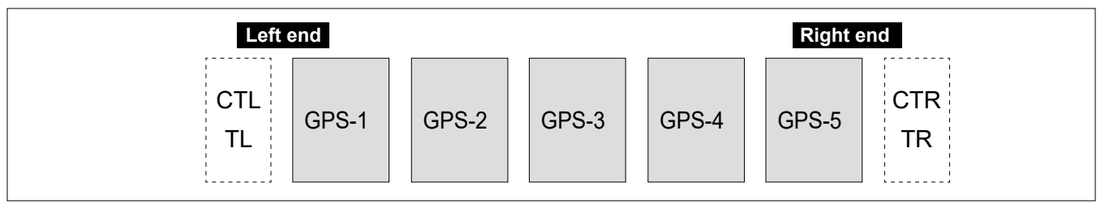
Code	Description
2E	DIN terminal box
2H	DIN terminal box with lamp
3N	HP terminal box with lamp

Note: For CE marking/UKCA-compatible parts, select from "2E" and "2H".

❾Solenoid valve voltage

Code	Description
1	100 VAC
2	200 VAC
3	24 VDC

Terminal box installation position relation diagram



Note: The solenoid valve with needle and regulator are mounted on the opposite side of the terminal box (right side when terminal box is on left side). The terminal box does not have a supply port.

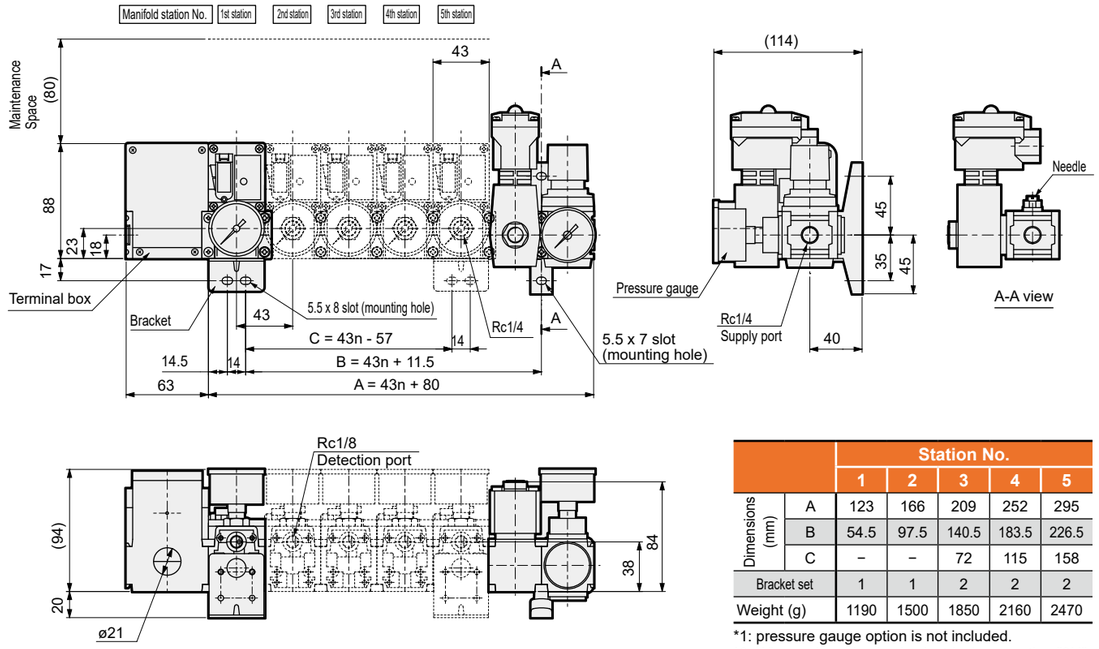
Specifications

Basic specifications are the same as the Discrete on page 127.

Dimensions

●Gap switch unit (lead wire common terminal box: TL/TR)

●UGPS2-□-15-□□□TL



		Station No.				
		1	2	3	4	5
Dimensions (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	–	–	72	115	158
Bracket set		1	1	2	2	2
Weight (g)		1190	1500	1850	2160	2470

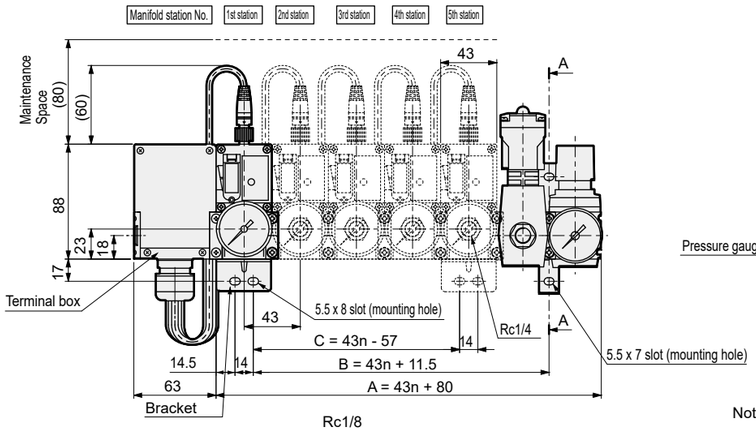
*1: pressure gauge option is not included.
*2: When solenoid valve is electrical connection "3N".

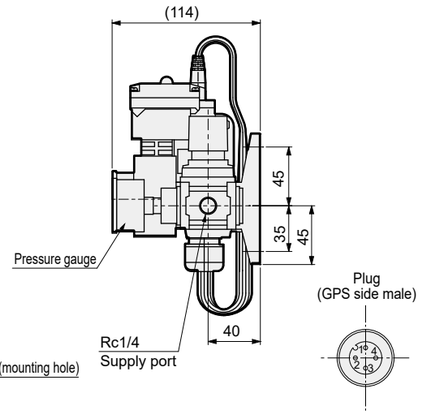
Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

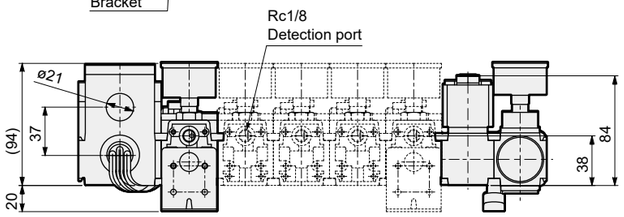
Dimensions

●Gap switch unit (connector common terminal box: CTL/CTR)

●UGPS2-□-15-□□□CTL







Note: Refer to the "A-A view" on P. 137 for needle position.

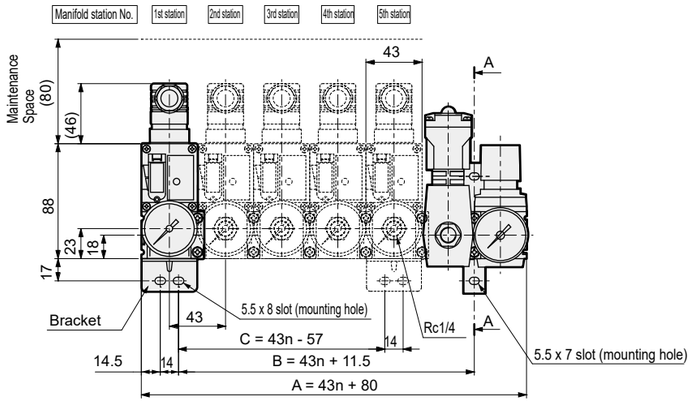
		Station No.				
		1	2	3	4	5
Dimensions (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	–	–	72	115	158
Bracket set		1	1	2	2	2
Weight g		1260	1600	1990	2330	2680

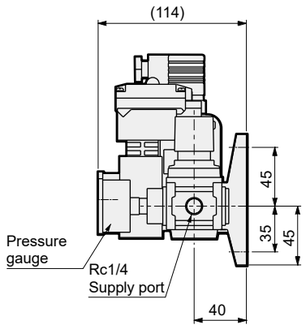
*1: pressure gauge option is not included.
*2: When solenoid valve is electrical connection "3N".

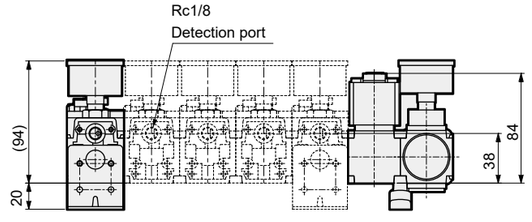
Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

●Gap switch unit (DIN terminal box: F)

●UGPS2-□-15-□□□F







Note: Refer to the "A-A view" on P. 137 for needle position.

		Station No.				
		1	2	3	4	5
Dimensions (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	–	–	72	115	158
Bracket set		1	1	2	2	2
Weight (g)		1010	1360	1740	2080	2420

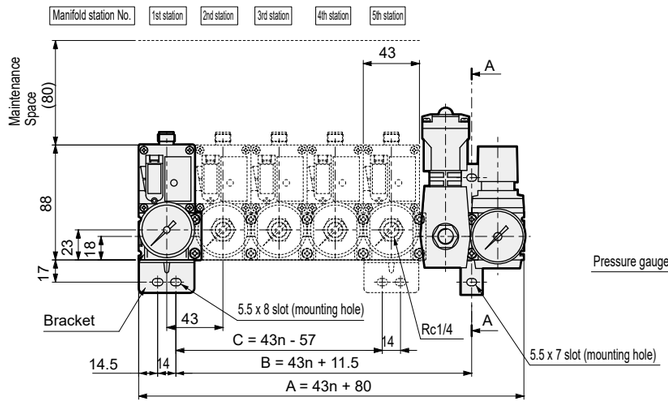
*1: pressure gauge option is not included.
*2: When solenoid valve is electrical connection "3N".

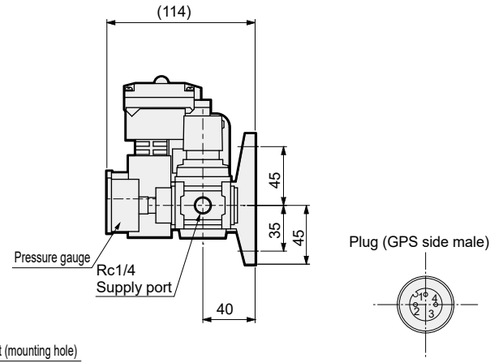
Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

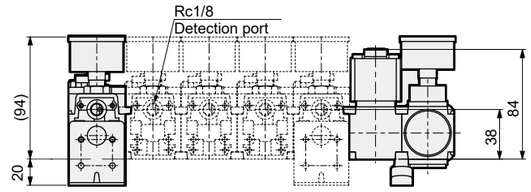
Dimensions

●Gap switch unit (connector: C□)

●UGPS2-□-15-□□□ C0 C1 C3 C5







Note: Refer to the "A-A view" on P. 137 for needle position.

		Station No.				
		1	2	3	4	5
Dimensions (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	–	–	72	115	158
Bracket set		1	1	2	2	2
Weight (For C0) g		970	1270	1610	1900	2200

*1: pressure gauge option is not included.
*2: When solenoid valve is electrical connection "3N".
*3: The "C1", "C3" and "C5" cables are attached.
(For the cable weight, refer to the option pages.)

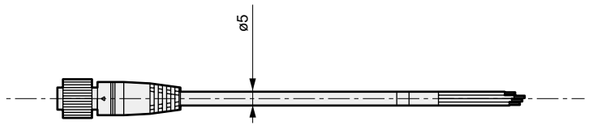
Note: The dial cover shape differs for the dial cover with lock. For the shape, refer to P. 129 for the DIN terminal box.

●For information on options and peripheral dimensions diagrams, refer to P. 140 to 145.

Model No. Notation Method options/Dimensions diagrams

●Model No. Notation Method connector cable

GPS2-C1
1 Cable length



1 Cable length

Code	Description	Weight (g)
C1	1 m	45
C3	3 m	123
C5	5 m	195

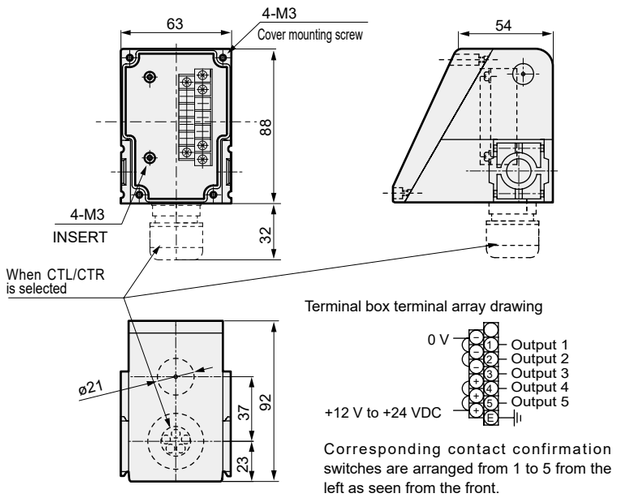
Lead wire color	Applications
Brown	Power supply +
White	NC
Blue	Power supply -
Black	Output

●Model No. Notation Method terminal box

GPS2-CTL
1 Terminal box

1 Terminal box

Code	Description	Weightg
CTL	For connector common terminal box left assembly	234 (for up to 4 stations)
CTR	For connector common terminal box right assembly	245 (for 5 stations)
TL	For lead wire common terminal box left assembly	207
TR	For lead wire common terminal box right assembly	
TW	For lead wire common terminal box intermediate assembly	



Terminal box terminal array drawing

Corresponding contact confirmation switches are arranged from 1 to 5 from the left as seen from the front.

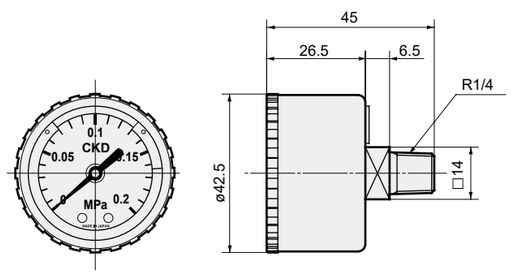
●Model No. Notation Method pressure gauge with safety marker

GPS2-G40D-8-P02-S501
Port size R1/4
Pressure gauge with safety marker
1 Pressure display

1 Pressure display

Code	Description
P02	0 to 0.2 MPa
P04	0 to 0.4 MPa
P10	0 to 1.0 MPa

Weight: 85 g

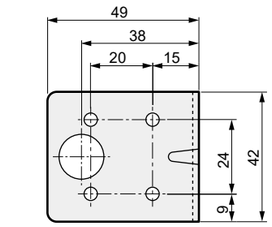


*1: Safety zone setting range: 0.03 to 0.2 MPa
*2: Safety zone setting max. width: 0.09 MPa
*3: Gage accuracy: JIS B 7505, Former 3.0 grade
*4: Cover material: Transparent nylon

Model No. Notation Method options/Dimensions diagrams

●Model No. Notation Method L-bracket

GPS2-B

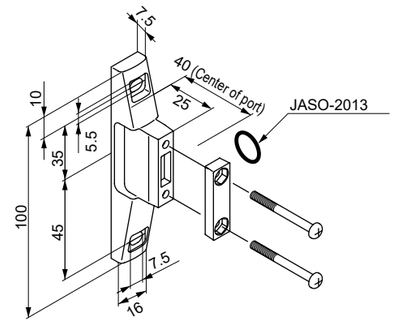


·Weight: 41 g
· Material: Iron
Trivalent chromate treatment

Body mounting dimensions Page 129.

●Model No. Notation Method T-bracket set

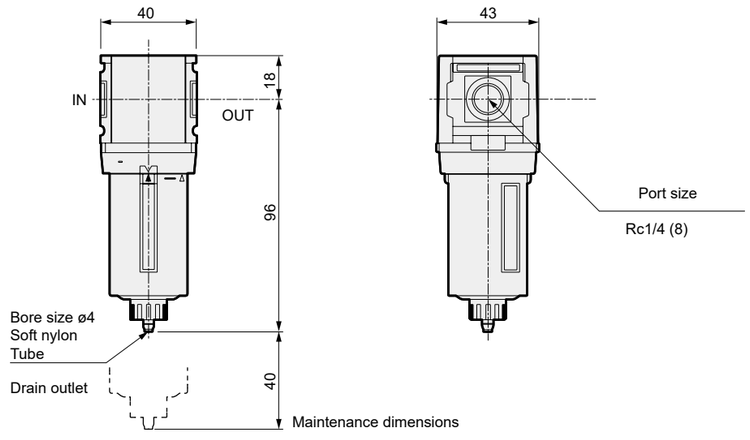
B110-W



·Weight: 24 g
· Material: Polyamide resin

●Model No. Notation Method air filter

F1000-8-W

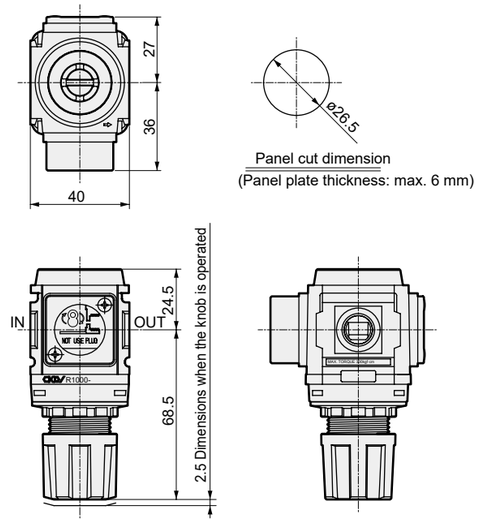


Weight: 87 g

Model No. Notation Method Peripheral components / Dimensions diagram

●Model No. Notation Method regulator

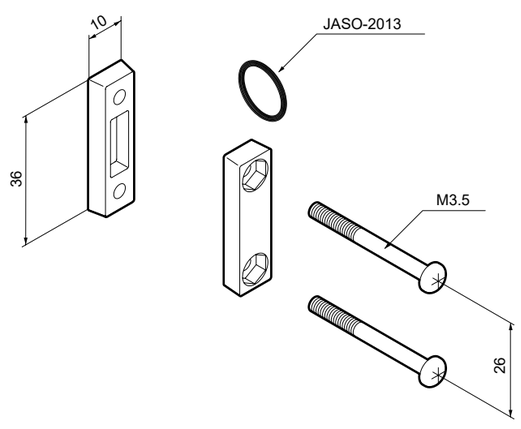
R1000-8-W-LT



Weight: 150 g

●Model No. Notation Method joiner set

C1000-J100-W

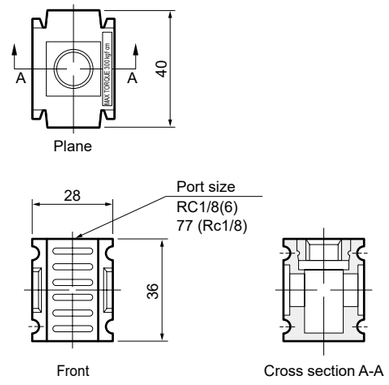


·Weight: 11 g
· Material: Polyamide resin

●Model No. Notation Method distributor

D101-00-8-W

Note: A joiner set and one gasket are attached.



·Weight: 45 g
· Material: Polyamide resin

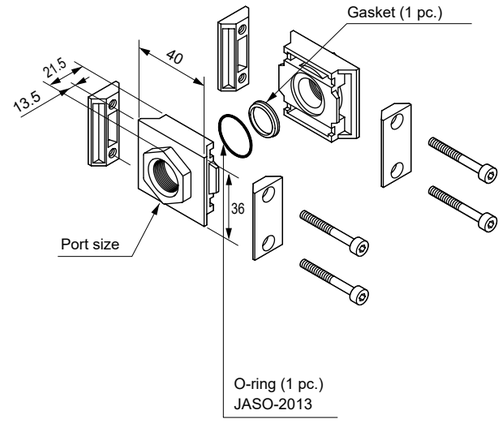
Model No. Notation Method Peripheral components / Dimensions diagram

●Pipe adaptor set
(with joiner set)

A100-8-W
❶Port size

❶Port size

Code	Description
8	Rc1/4
10	Rc3/8



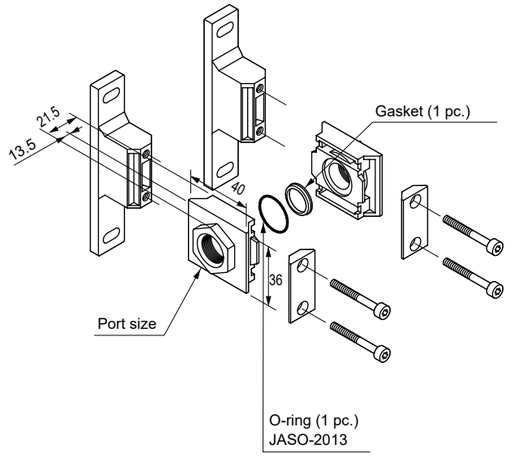
·Weight: 90 g
·Material: Aluminum alloy die-casting
Painted

●Pipe adaptor set
(with T-bracket set)

A100-8-W-B11W
❶Port size

❶Port size

Code	Description
8	Rc1/4
10	Rc3/8



·Weight: 90 g
·Material: Aluminum alloy die-casting
Painted

Model No. Notation Method Peripheral components / Dimensions diagram

Solenoid valve with needle

GPS2-AB3X-**2E**-FL-**AC100V**

❶Terminal box ❷Voltage

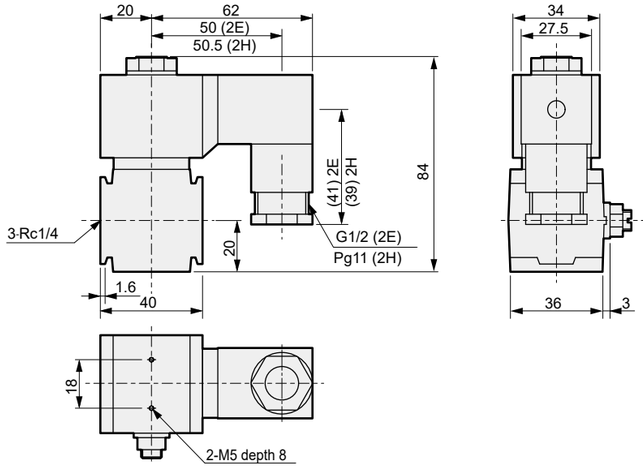
❶Terminal box

Code	Description
2E	DIN terminal box
2H	DIN terminal box with lamp
3N	HP terminal box with lamp

❷Voltage

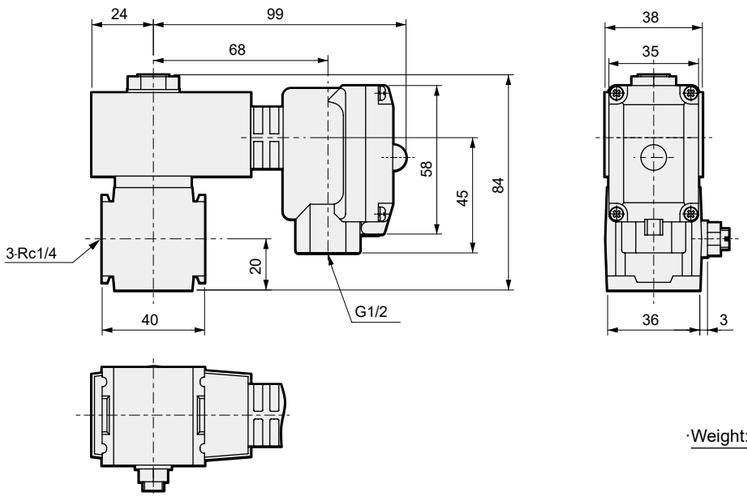
Code	Description
AC100V	100 VAC
AC200V	200 VAC
AC24V	24 VDC

●GPS2-AB3X-2E/2H-FL-AC100V/AC200V



·Weight: 280 g

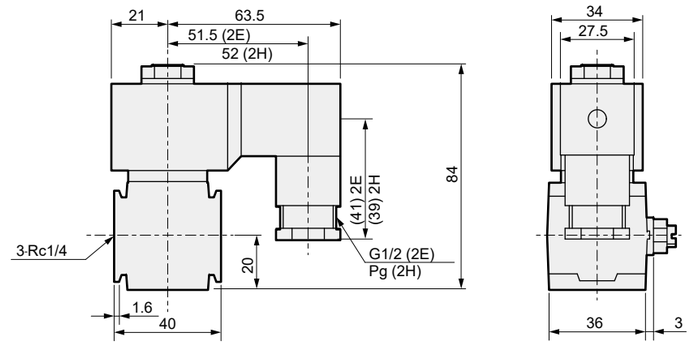
●GPS2-AB3X-3N-FL-AC100V/AC200V

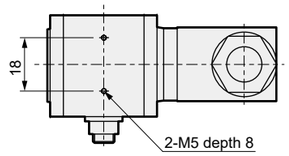


·Weight: 445 g

Model No. Notation Method Peripheral components / Dimensions diagram

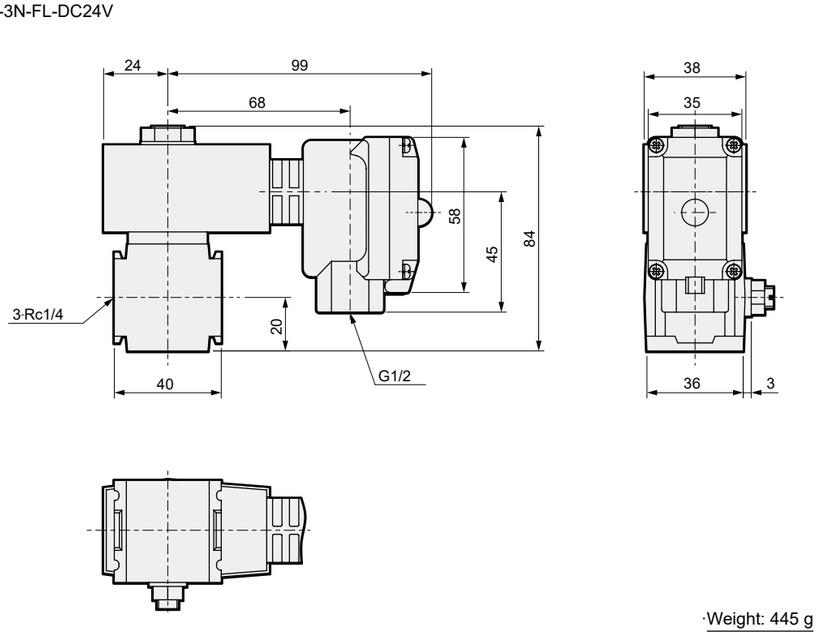
●GPS2-AB3X-2E/2H-FL-DC24V





·Weight: 280 g

●GPS2-AB3X-3N-FL-DC24V



·Weight: 445 g

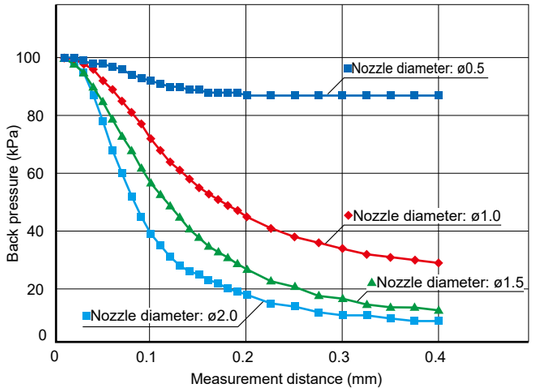
Characteristics data

Each property data is data of GPS2 single unit

●Back pressure characteristics 1 - change of nozzle diameter

Measuring conditions

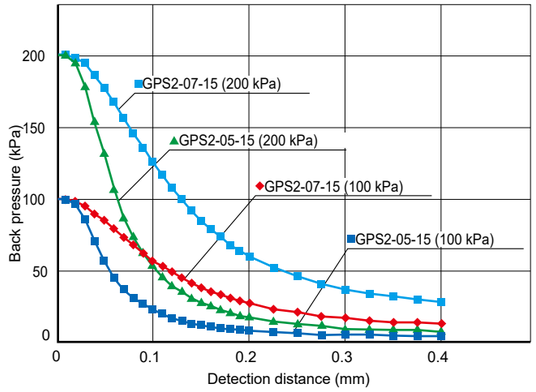
- Model No.: GPS2-07-15, Bore size: ø6 × ø4, Pipe length: 5 m
- Setting distance: 0.1 mm, Average supply pressure: 100 kPa



●Back pressure characteristics 2 - GPS2 difference in model

Measuring conditions

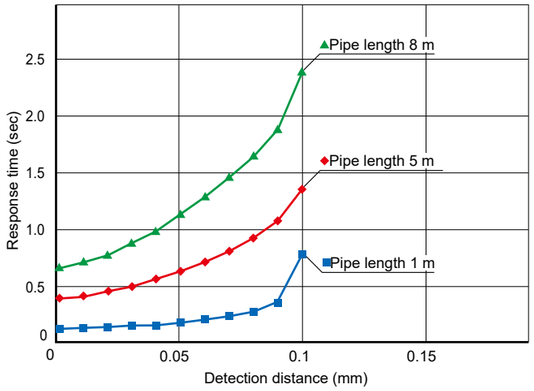
- Bore size: ø6 × ø4
- Pipe length: 5 m
- Nozzle diameter: ø1.5, Setting distance: 0.1 mm



●Response time 2 - influence by pipe length (OFF → ON)

Measuring conditions

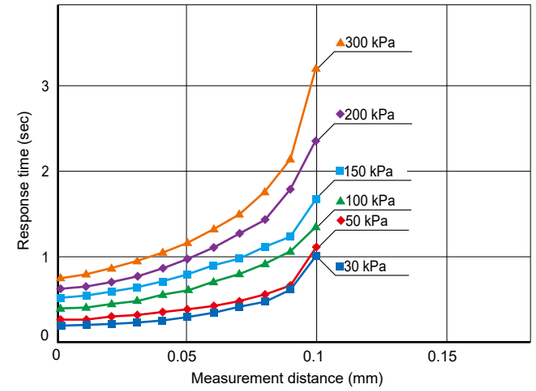
- Model No.: GPS2-07-15, Port size: ø6 × ø4
- Nozzle diameter: ø1.5
- Supply pressure: 100 kPa



●Response time 2 - influence by supply pressure (OFF → ON)

Measuring conditions

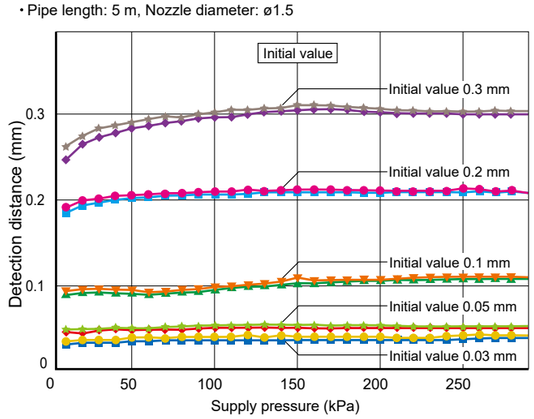
- Model No.: GPS2-07-15, Port size: ø6 × ø4
- Nozzle diameter: ø1.5, Pipe length: 5.0 m, Setting distance: 0.1 mm



●Supply pressure change - recommended range 50 to 200 kPa

Measuring conditions

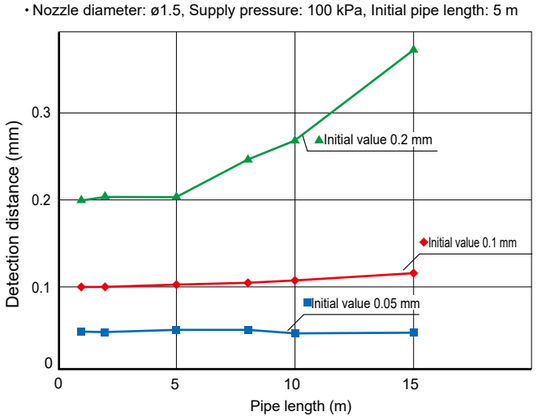
- Model No.: GPS2-07-15, Port size: ø6 × ø4
- Pipe length: 5 m, Nozzle diameter: ø1.5



●Influence to initial setting distance by pipe length

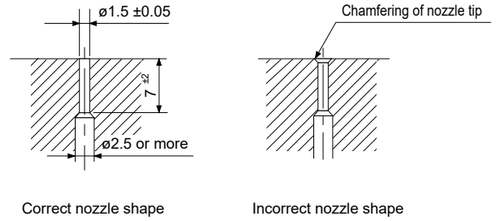
Measuring conditions

- Model No.: GPS2-07-15, Port size: ø6 × ø4
- Nozzle diameter: ø1.5, Supply pressure: 100 kPa, Initial pipe length: 5 m



Design of detection nozzle

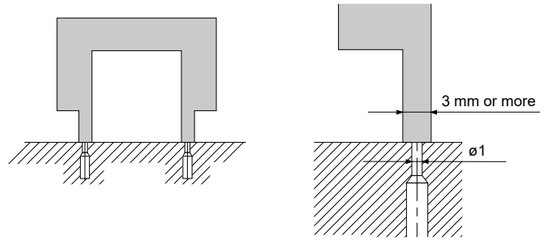
●Single hole nozzle



Design the detection nozzle with a point size of ø1.5 mm and depth of 7 ±2 mm. The blow-off section of the nozzle cannot be chamfered. If chamfered, the nozzle retracts from the seating place, and the scale on the adjustment dial and actual dimensions do not match.

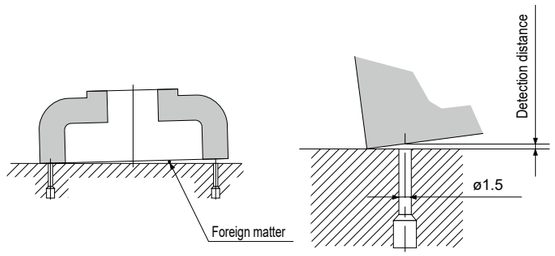
Selection of detection nozzle diameter

●When the workpiece detection surface is narrow - nozzle diameter ø1 and width is less than 3 mm, please contact us.



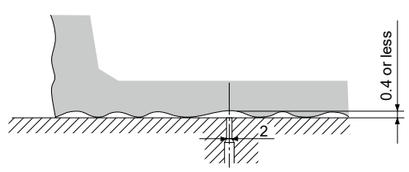
- Use with a detection distance of 0.1 mm or less.
- Use with a workpiece surface roughness of Rz=5 or less
- Check that nozzle does not separate from the detection surface.

●When the workpiece detection surface is sufficiently wide: Use ø1.5 mm nozzle.



- Use with a detection distance of 0.2 mm or less.
- Use with a workpiece surface roughness of Rz=5 or less

●When detecting the presence of a workpiece with a rough detection surface: Use ø1.5 mm or ø2.0 mm nozzle.



- The max. detection distance of the GPS2 is 0.4 mm. The workpiece cannot be detected if non-uniformity exceeds 0.4 mm. In that case, use the HPS-10.

Pneumatic components (sensors)

Safety Precautions

Be sure to read this section before use.
For general pneumatic components precautions, refer to Intro 17 for details.

Contact confirmation switch (gap switch) GPS2 Series

During Design and Selection

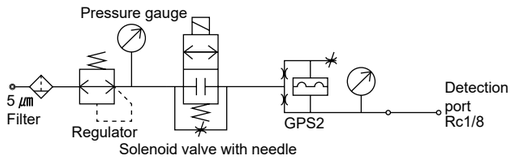
⚠WARNING

■Use the product in the range of conditions specified for the product. Contact CKD when using the product outside specifications or for special applications.
Use of the product outside the specifications range may result in insufficient performance, and its safety cannot be guaranteed.

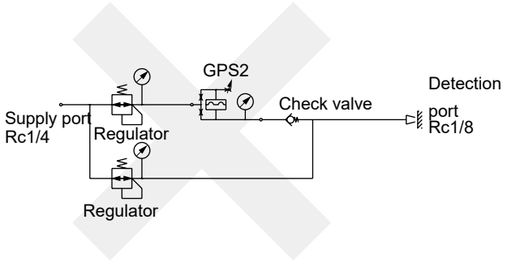
■Confirm before use that the product will withstand the working environment.
- This product cannot be used in environments where functional obstacles could occur.
- The main materials of this product are aluminum and resin. Do not use in atmospheres where corrosive gases are generated. Such environments include high temperatures, chemical atmospheres, where chemical liquids, vibration, moisture, water dripping, coolant, or gas is present; where ozone is generated; chemical plants, semiconductor pre-processing, outdoors, etc.
- Compressed air quality must satisfy JIS1.4.1, "oilless clean dry air."

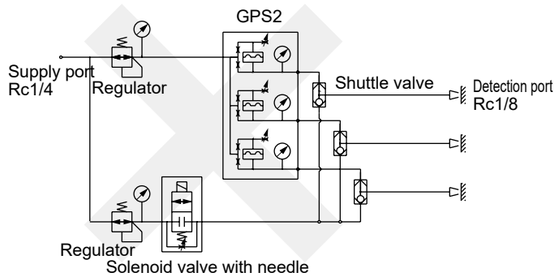
■Understand compressed air features before designing a pneumatic circuit.
This product has a small orifice, so to prevent the entry of foreign matter, use clean air with the recommended circuit shown below (Fig. 1).

Fig. 1 Recommended circuit



■Do not use the following air circuit when blowing air from the detection nozzle.
- Circuit with check valve
  The check valve acts as exhaust resistance, and limits the adjustable range.
- Circuit with shuttle valve and 2-way valve
  Residual pressure in the OUT side of the 2-way valve prevents a correct detection. Even if a 3-way valve is used, the shuttle valve may vibrate excessively.





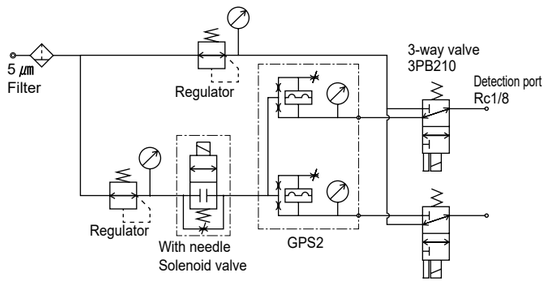
⚠CAUTION

■The entry of compressor oil and tarry substances may obstruct the flow of air and result in problems. Regularly inspect the compressor and discharge drainage.

■Keep the air flow constant so coolant and oil do not flow back from the detection nozzle, or use a solenoid valve with needle and let in a small amount of air from the bypass as shown in the recommended circuit (Fig. 1).

■Swarf and grinder chips, etc., could clog the nozzle. Increasing the supply pressure to blow these out will have no effect. Provide a 3-way valve on the pressurized nozzle as shown below (Fig. 2). The orifice for the 3-way valve should be ø2.5 mm or larger.

Fig. 2 Circuit for detection and air blow



■Select an output format (NPN, PNP) matching the input unit of the programmable controller being used.

■Operation may be disabled if a capacitance load such as an AC/DC buzzer is connected to the load. Turn power OFF and restart in this case. A protection circuit is provided to prevent damage from incorrect wiring or overcurrent. A relay must be used when connecting a capacitance load.

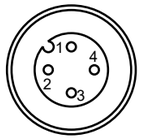
■GPS2 Precautions
- Detection side — Use inner diameter ø4 and outer diameter ø6 for piping.
- An air bridge circuit is used for this product. Even if the fine air solenoid valve is turned OFF, Even if the fine air solenoid valve is turned OFF, the output is not turned OFF, which is the same for the conventional pressure switch. Output is ON—OFF according to the pressure of a workpiece. Care must be taken when creating the program. If the program has already been created and cannot be changed, stop the fine air. Note that a delay of one second occurs when output is ON—OFF.
- Pressure switch and solenoid valve with fine air
  When the fine air solenoid valve is ON → Workpiece absent: OFF Workpiece present: ON
  When the fine air solenoid valve is OFF → Workpiece absent: OFF Workpiece present: OFF
- GPS2 and solenoid valve with fine air
  When the fine air solenoid valve is ON → Workpiece absent: OFF Workpiece present: ON
  When the fine air solenoid valve is OFF → Workpiece absent: OFF Workpiece present: ON

■Observe the following items when installing:
- Install this product so the detection port faces downward.
- Install this product at a position higher than the seating surface to prevent coolant from entering.
- Provide enough space for adjustment, monitoring, and maintenance.
- Use rust-resistant material such as nylon tubes or stainless steel pipes for piping material.
- When installing this product on a device, check that no load is applied to the device.
- When using steel pipes, securely fix the pipe to prevent excessive bending force from being applied to the connection.
- When welding near this product, cover it to prevent spatter from coming in contact.
- When housing this product in a box, provide an exhaust port so atmospheric pressure is maintained in the box.

■Observe the following items when wiring:
- When using a switching regulator for the power supply, ground the F.G. (frame ground).
- Avoid using in a transient state, continuing 1s after power is turned ON.
- Take special care to prevent load short-circuits or incorrect wiring. The protective circuit is activated. Turn power OFF to restart the product.
- Connector pins are arranged as shown in Fig. 3. Take special care to prevent incorrect wiring.

Brown → 24 VDC
Blue → 0 VDC
Black → signal, open collector

Fig. 3 Connector pin array (body side)

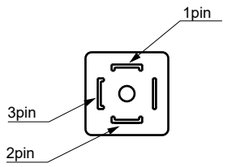


PIN array/lead wire color list

PIN No.	Electrical connection option (-C1, -C3, -C5) lead wire color	Applications
1pin	Brown	Power supply +
2pin	White	NC
3pin	Blue	Power supply -
4pin	Black	Output

The assignment of the DIN terminal box terminal numbers is shown in Fig. 4.

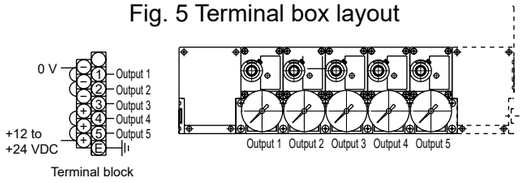
Fig. 4 DIN terminal box pin array (body side)



PIN No.	Applications
1pin	Power supply +
2pin	Power supply -
3pin	Output

When using the common terminal box, power supply terminals are on the lower side of the gland. Signal wire terminals are on the upper row. This product is wired as shown in Fig. 5.

Fig. 5 Terminal box layout



When using a load with a large rush current, such as a motor, the protection circuit will activate. In this case, use a relay.

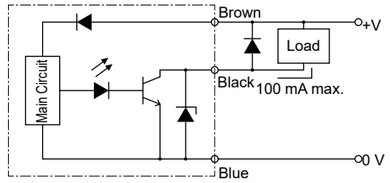
If there is a device (motor, welder) that generates a large surge near this product, insert a surge absorber, such as a varistor, at the source of the surge.

If this product's lead wire is wired with the drive cable or power cable, it is affected by surge and noise deteriorating or damaging the sensor element in the switch. Use separate wiring.

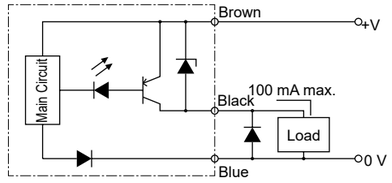
NPN output and PNP output contact confirmation switches are available. The lamp turns ON even if program controller compliance is incorrect, but signals are not retrieved. Wire the switch based on the output as shown in Fig. 6.

Fig. 6 Output circuit

(NPN output)



(PNP output)



■Handling the gap adjustment dial

The detection distance is stamped on the adjustment dial. Red indicates 0.05 mm, blue 0.1 mm, and yellow 0.2 mm. Shipment inspection is done with a 1.5 mm detection nozzle diameter, and a 5 m long 4 mm bore nylon tube. Use the following table when not using the standard nozzle of ø1.5.

◎ Relation between dial scale and detection distance

The following table is a guide for when the following conditions are applied.

(Conditions) Supply pressure: 100 kPa

Piping: ø6 × ø4 tube, length 5 m

[GPS2-05-15]

		Detection distance (mm)			Change in detecting distance per notch (mm)
Detection nozzle diameter		ø1.0	ø1.5	ø2.0	ø1.0 to ø2.0
Scale line	1 (Red wire)	0.07	0.05	0.03	0.005
	2 (Blue wire)	0.14	0.09	0.06	0.005 to 0.007
	3 (Yellow)	−	0.20	0.14	0.008 to 0.010

[GPS2-07-15]

		Detection distance (mm)			Change in detecting distance per notch (mm)
Detection nozzle diameter		ø1.0	ø1.5	ø2.0	ø1.0 to ø2.0
Scale line	1 (Red wire)	0.07	0.05	0.03	0.005
	2 (Blue wire)	0.15	0.10	0.06	0.005 to 0.007
	3 (Yellow)	−	0.20	0.13	0.008 to 0.010

■One detection nozzle can be used for one of these product units.

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No.→ Instruction Manual

MEMO