CKD

SM-273721-A

INSTRUCTION MANUAL

GAP SWITCH

GPS2,MGPS2,UGPS2

- Read this manual carefully and thoroughly before using this product.
- Pay extra attention to the instructions concerning safety.
- After reading this manual, keep it in a safe and convenient place.

19th Edition

CKD Corporation

For Safety Use

To use this product safety, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, **read this operation manual carefully for proper operation.**

Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ Precautions

- This product is designed for air and non-corrosive and non-combustible gasses, such as N2. Do not use it with corrosive and combustible gasses.
- Do not touch electric wiring connections (exposed live parts) : this will cause an electric shock. During wiring, keep the power off.
  Also, do not touch these live parts with wet hands.

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GPS2 , MGPS2 , UGPS2
GAP SWITCH
Manual No. SM-273721-A

		Revision	Oct.18.1999
		Revision	Nov.10.1999
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		Revision	Jul.09.2001
		Revision	Jun.08.2002
		Revision	Oct.19.2002
		Revision	Oct.01.2003
		Revision	Apr.13.2010
		Revision	Nov.01.2011
		Revision	Jul.01.2013
Preparation	Aug.18.1999	Revision	Aug.25.2014
Revision	Sep.03.1999	Revision	Jul.04.2022

1. Product

1.1 Specification

1.1.1 Single Type

Descriptions			GPS2－05－15	GPS2－07－15
Working fluid			Clean compressed air (must be oil free)	
Working pressure(Note2)		kPa	30 to 200	50 to 200
Detection distance range		mm	0.03 to 0.25	0.03 to 0.4
Repeatability		mm	±0.01 (detection distance range 0.03 to 0.1mm)	
Hysteresis		mm	0.01 or less (detection distance range 0.03 to 0.1mm)	
Type of detection nozzle		(Note1)	Single hole nozzle 1.5 dia. Standard (ϕ 1, ϕ 2)	
Power supply voltage		V	10.2 to 26.4 DC	
Current consumption		mA	15 or less (at 24V DC)	
Output style			NPN, PNP open collector	
Output rated			30V DC, 100mA or less	
Internal voltage drop		V	2.0 or less (100mA)	
Indicator light			LED green or yellow	
Insulation resistance			10MΩ and over with 500V DC mega	
Withstand voltage			No failure impressed at 1000V AC for one minute	
Vibration resistance		m/s²	98	
Ambient temperature		℃	5 to 60	
Degree of protection		(Note3)	IP67 or equivalent (connector type), IP64 or equivalent (DIN)	
Piping size		mm	Inner diameter 4	
Port size			Detection port Rc1/8, Supply port Rc1/4, Gauge port Rc1/4	
Weight		g	290 (electric connection C0)	
Standards			CE marking products	
Air consumption L/min(ANR)	Working pressure	50kPa	6 or less	11 or less
		100kPa	9 or less	15 or less
		200kPa	14 or less	24 or less

Note1: The above specifications apply to the 1.5 diameter single-hole detection nozzle.

Note2: If the nozzle clogs, supply pressure should be set between 100 and 200 kPa.

Note3: 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 lock must be provided and the cover screw must be tightened.

1.1.2 Manifold Type

Basic specification except for protection structure is as same as single type.

Degree of protection

Connecting Option	Degree of protection
T※	IP66
CT※	IP67
F※	IP64
C※	IP67

1.1.3 Unit Type

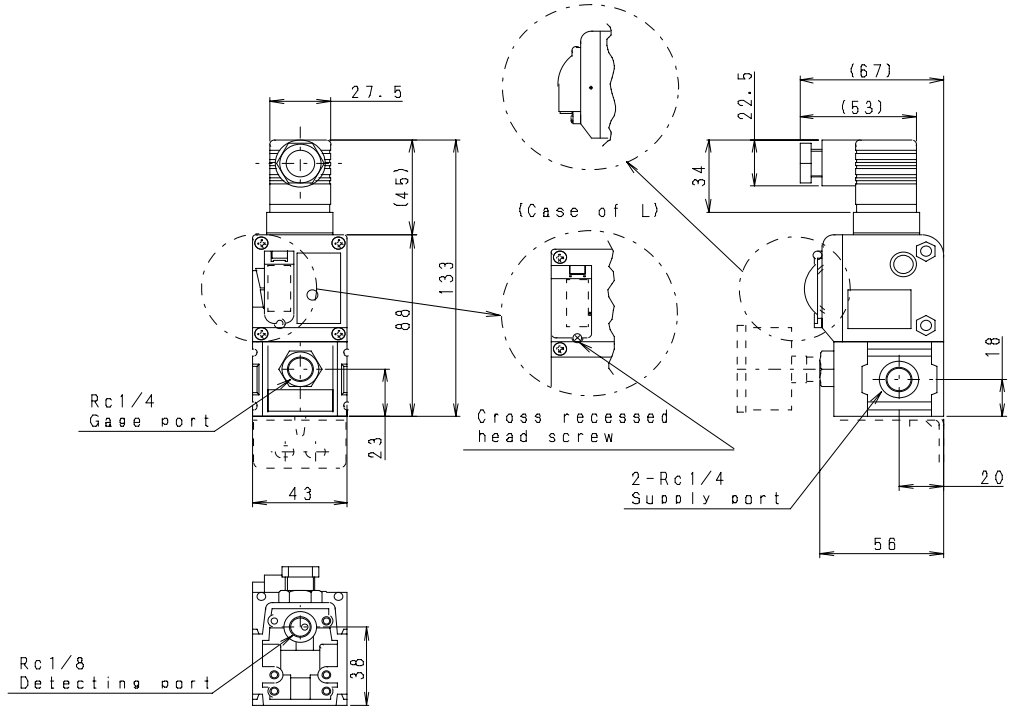
Basic specification is as same as single type.

Protection structure is as same as manifold type.
But it is not applicable to solenoid valve and regulator.

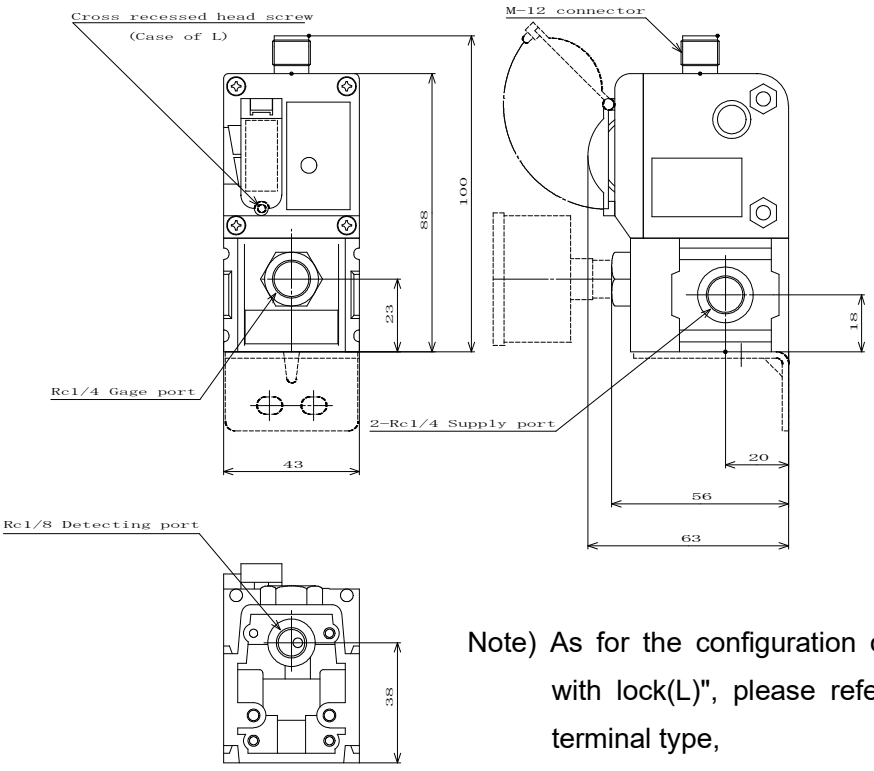
1.2 External dimension

1.2.1 Single Type

1.2.1.1 DIN-terminal

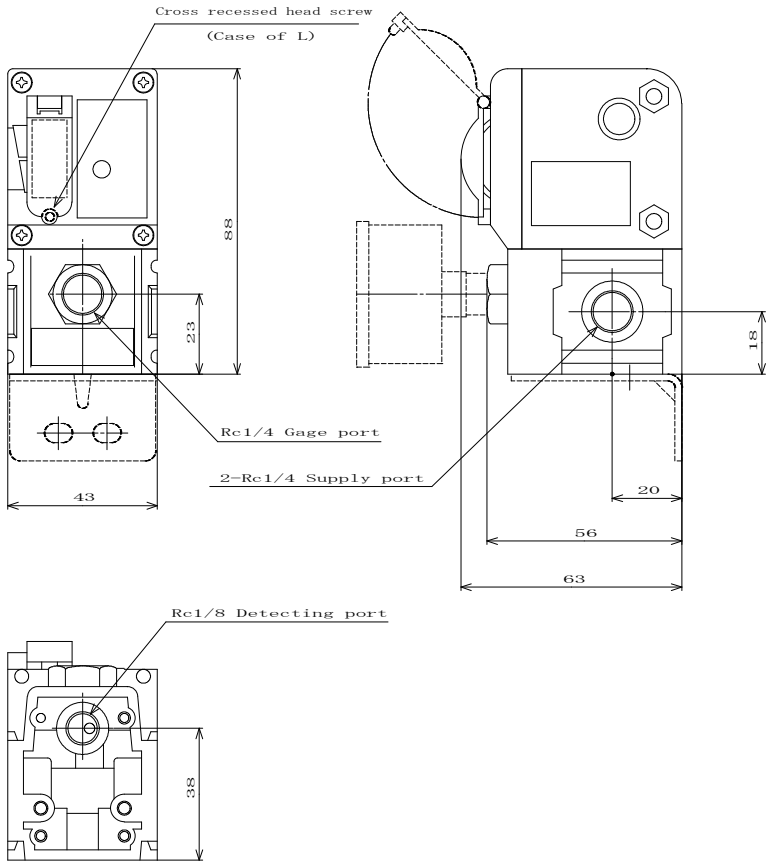


1.2.1.2 M12-connector



Note) As for the configuration of “dial switch cover with lock(L)", please refer to the above DIN terminal type,

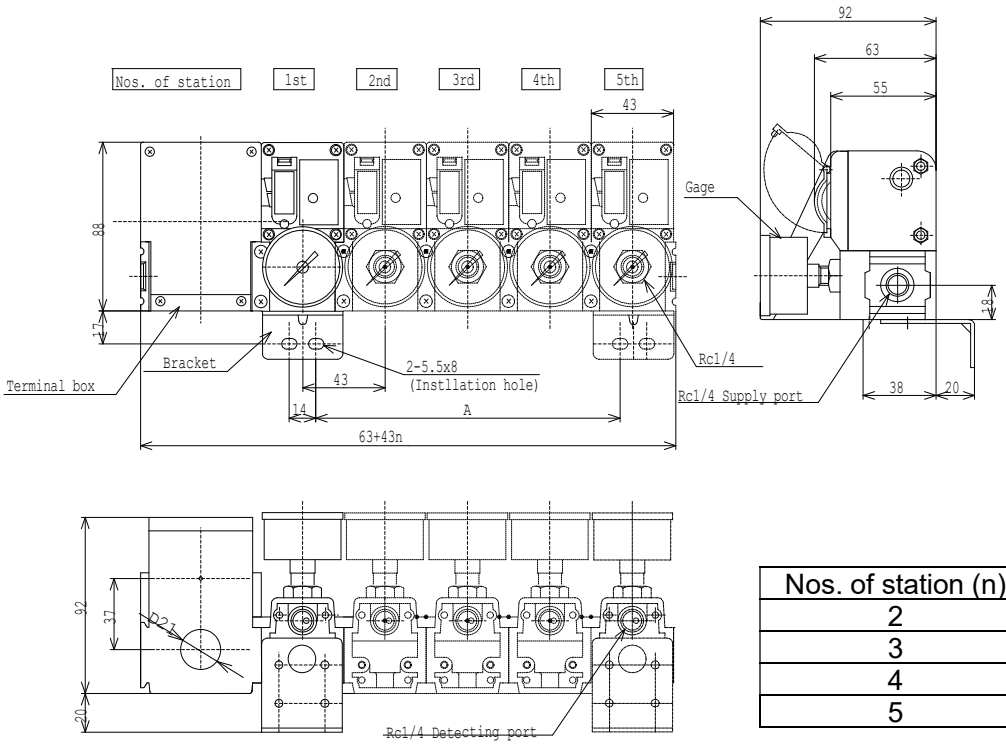
1.2.1.3 Goods for the common terminal box



Note) As for the configuration of “dial switch cover with lock(L)", please refer to the DIN terminal type of a page before,

1.2.2 Manifold

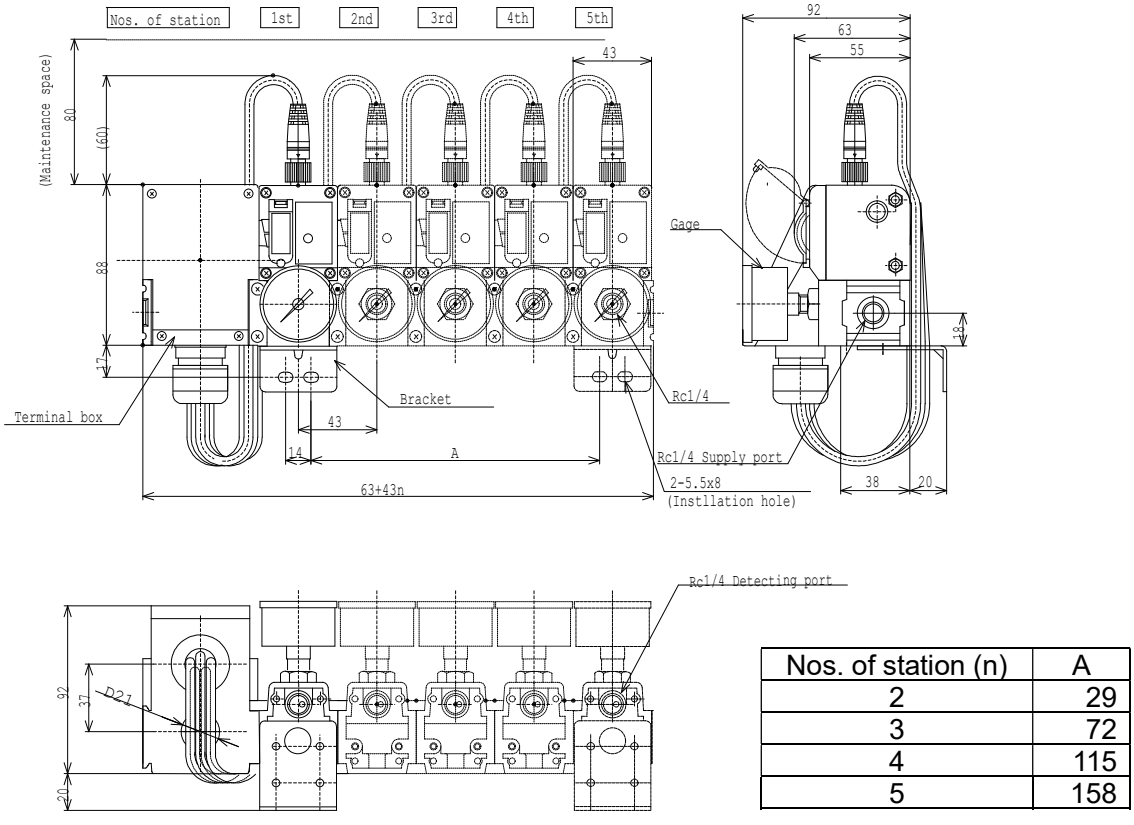
1.2.2.1 Lead wire type common terminal box (TL,TR)



Nos. of station (n)	A
2	29
3	72
4	115
5	158

Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

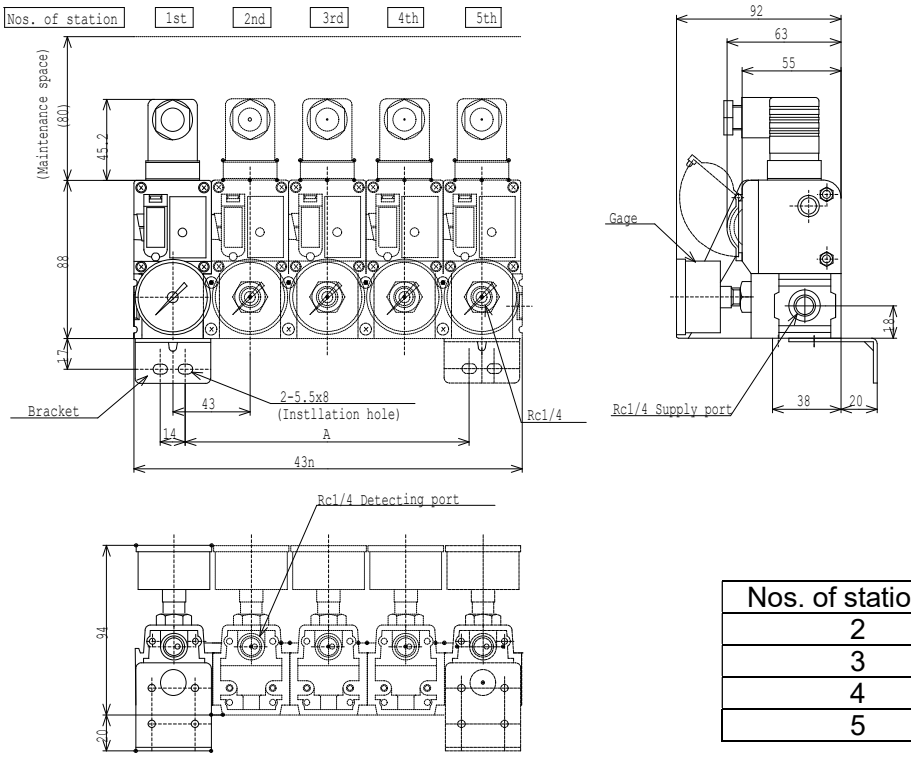
1.2.2.2 M12-connector type common terminal box (CTL,CTR)



Nos. of station (n)	A
2	29
3	72
4	115
5	158

Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

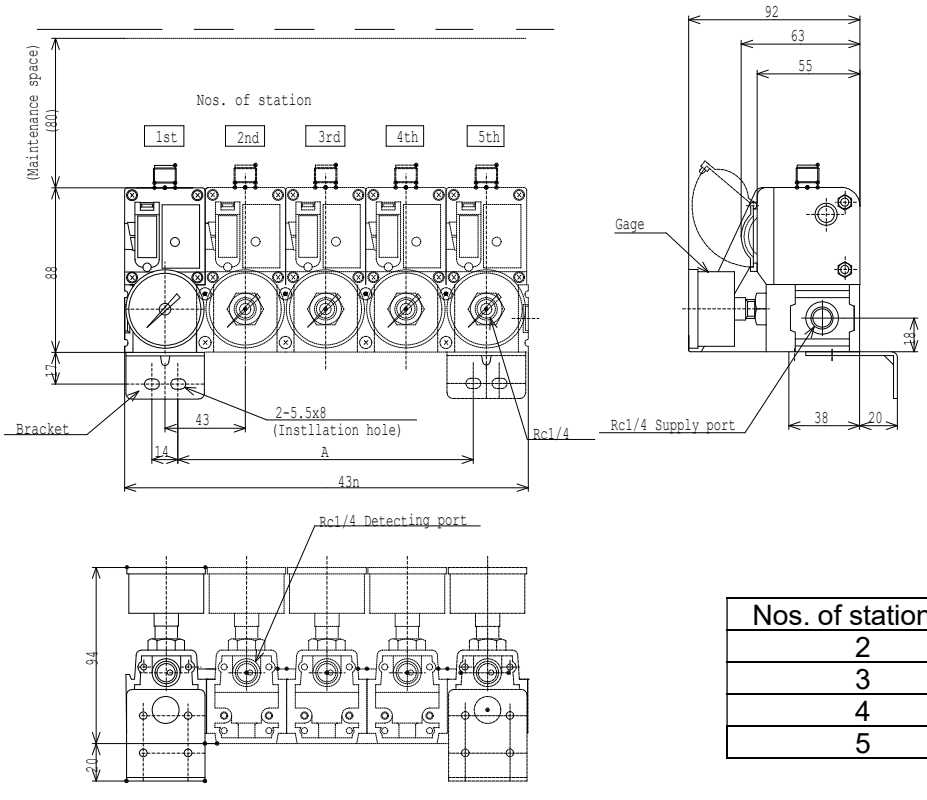
1.2.2.3 DIN-terminal (F)



Nos. of station (n)	A
2	29
3	72
4	115
5	158

Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

1.2.2.4 M12-connector (C)

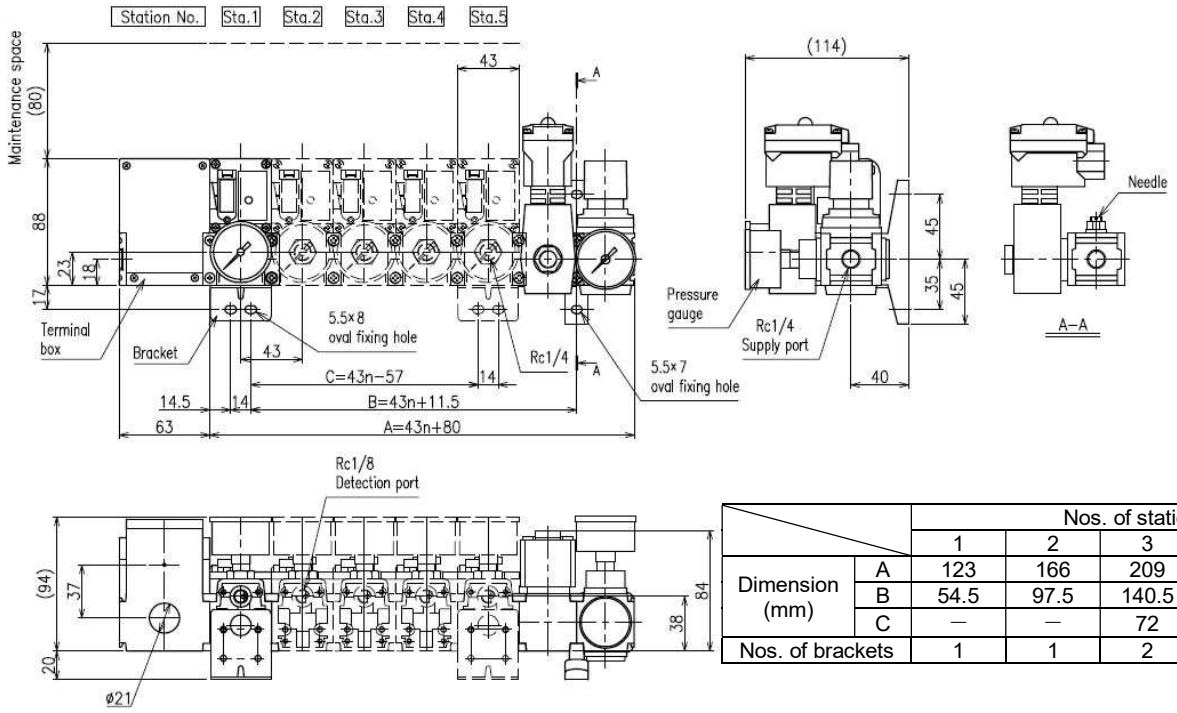


Nos. of station (n)	A
2	29
3	72
4	115
5	158

Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

1.2.3 Unit

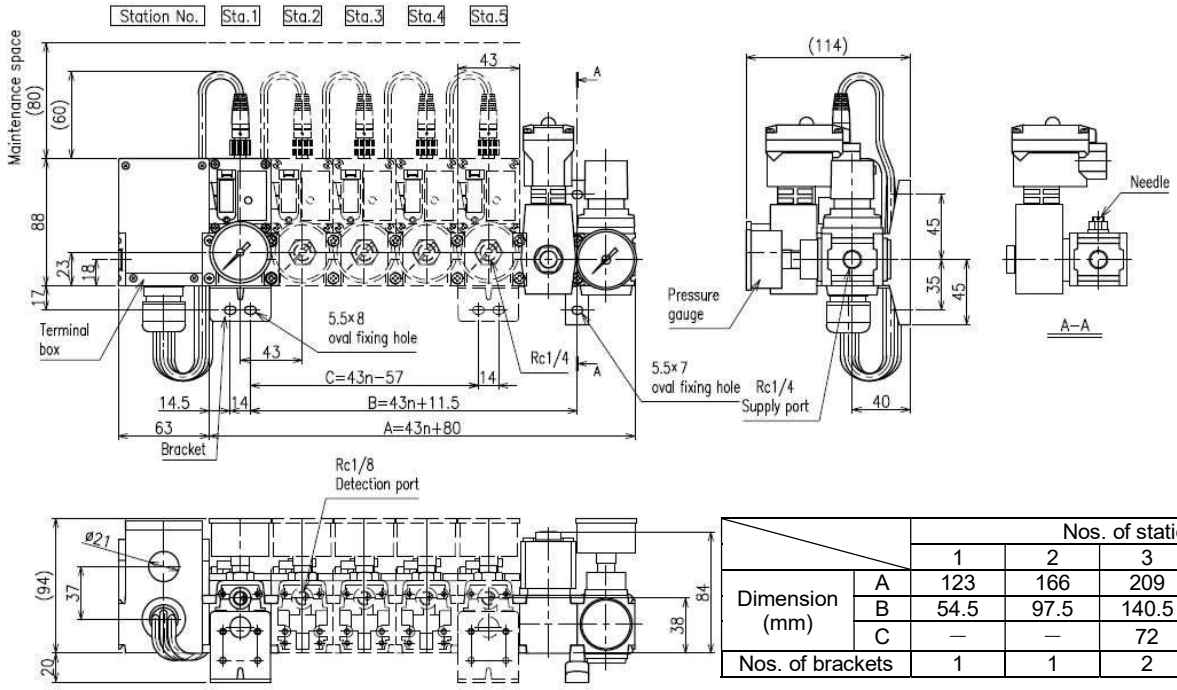
1.2.3.1 Lead wire type common terminal box (TL,TR)



		Nos. of station (n)				
		1	2	3	4	5
Dimension (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	—	—	72	115	158
Nos. of brackets		1	1	2	2	2

Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

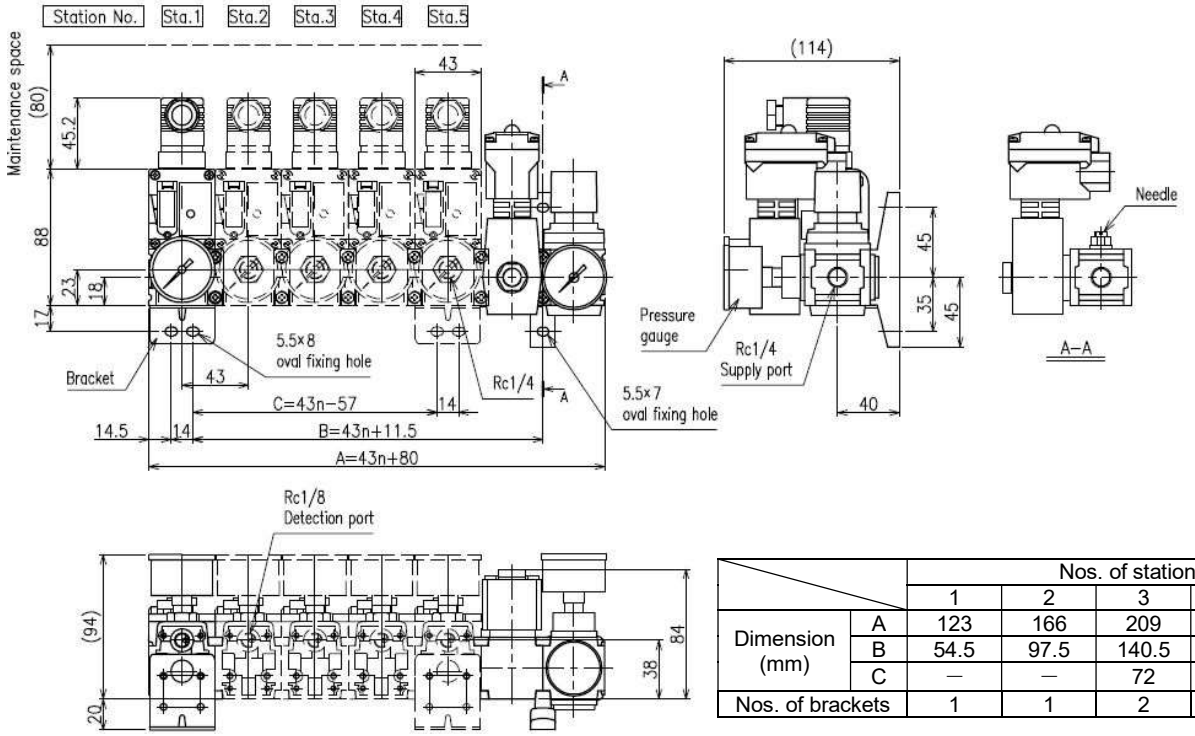
1.2.3.2 M12-connector common terminal box (CTL,CTR)



		Nos. of station (n)				
		1	2	3	4	5
Dimension (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	—	—	72	115	158
Nos. of brackets		1	1	2	2	2

Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

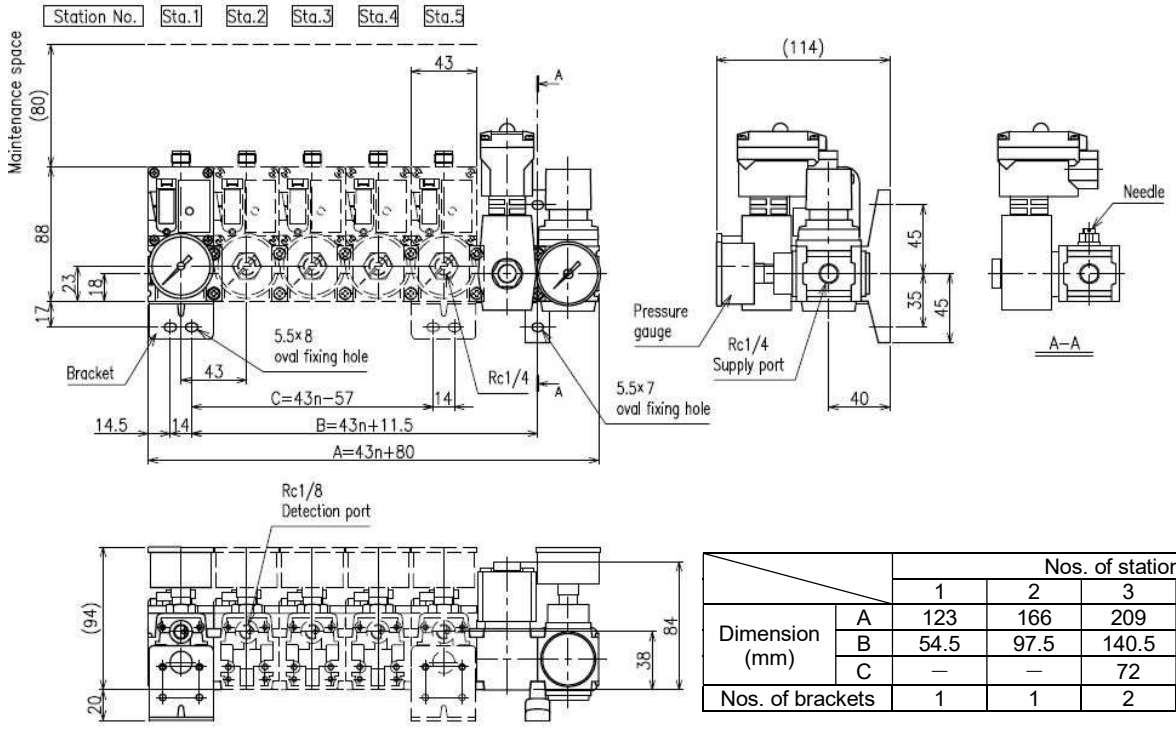
1.2.3.3 DIN-terminal box (F)



		Nos. of station (n)				
		1	2	3	4	5
Dimension (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	—	—	72	115	158
Nos. of brackets		1	1	2	2	2

Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

1.2.3.4 M12-connector (C)

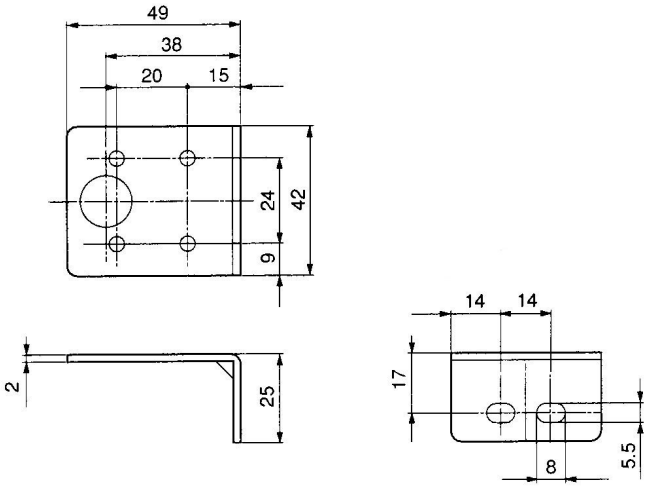


		Nos. of station (n)				
		1	2	3	4	5
Dimension (mm)	A	123	166	209	252	295
	B	54.5	97.5	140.5	183.5	226.5
	C	—	—	72	115	158
Nos. of brackets		1	1	2	2	2

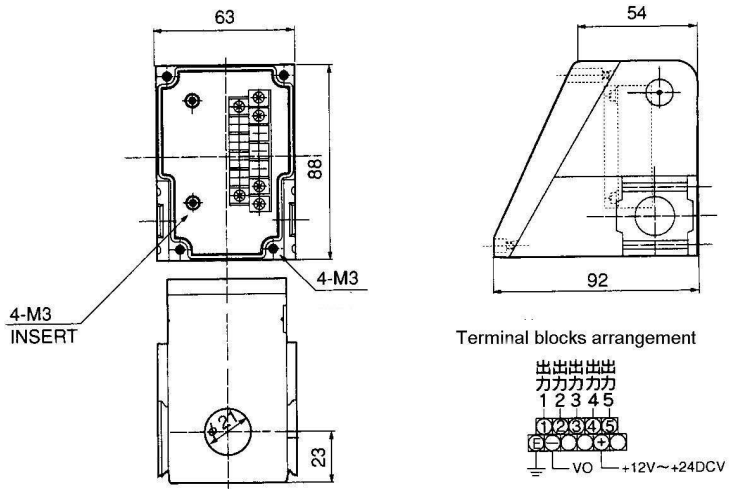
Note) As for the configuration of “dial switch cover with lock(L)", please refer to 3 pages of the DIN terminal type,

1.2.4 Attachment

1.2.4.1 Bracket

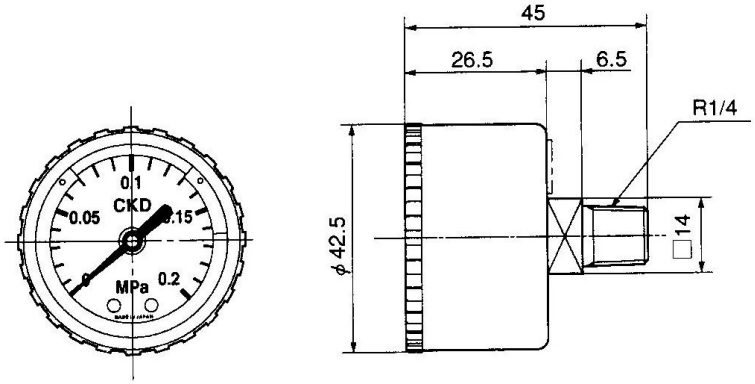


1.2.4.2 Terminal box



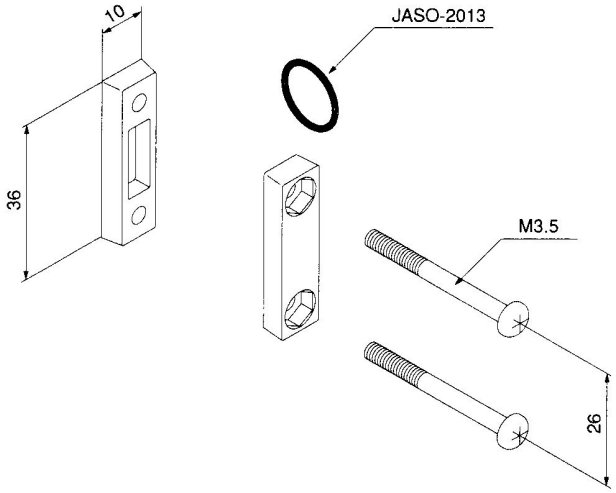
The order of terminal blocks which correspond to GPS2 is 1,2,3,4,5 order from the left of the front.

1.2.4.3 Pressure gage with safety mark

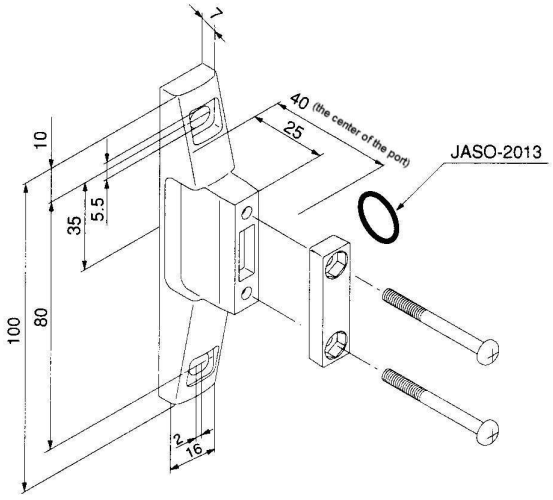


Setup range of safety zone : 0.03～0.2 MPa
Setup maximum width of safety zone : 0.09 MPa
Accuracy of gage : JIS B 7505 3 class equivalence

1.2.4.4 Joiner



1.2.4.5 T type bracket



2. CAUTIONS

1) Use the product within the ranges permitted by the specifications. If you have to exceed the permitted ranges or use the product for a special purpose, consult us beforehand.

● Exceeding the permitted ranges will prevent the product from achieving the intended performance and may cause a safety problem.

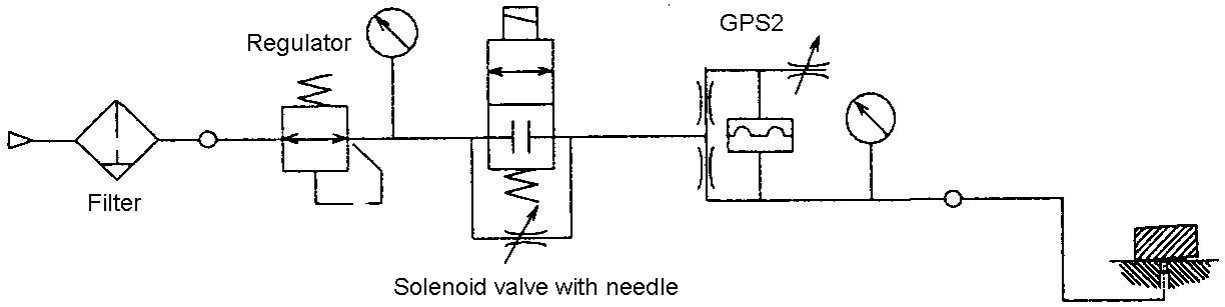
2) Make sure that the product will withstand the service environment.

● Do not install the gap switch in an environment that will be harmful to its functions.

● The gap switch is made mainly of aluminum and resin. Do not use the gap switch in an atmosphere that includes a corrosive gas. Avoid using the gap switch in a special environment such as the following: an environment in which a high temperature may prevail; in presence of chemical vapors or in proximity of chemicals; an environment in which ozone is produced; or an outdoor environment.

3) When designing the pneumatic circuit, pay attention to the particular requirements for the smooth flow of compressed air.

● The gap switch includes a small orifice. To prevent the orifice from being blocked by foreign matter or chips in the cutting fluid, supply clean air through the recommended circuit given in Fig. 1



Filter : 5 μ m or less
Regulator : low pressure use
Solenoid valve with needle : GPS2-AB3X-□-FL-□ (2-way valve only)

Figure 1 basic air-circuit

4) The mixture of compressor oil or tar-like substances may block the air flow and cause a malfunction. Periodically inspect the compressor and discharge the drain.

5) To prevent the reverse flow of the cutting fluid or oil from the detection nozzle, maintain a constant flow of the air or supply a minute flow of air from the bypass circuit using a solenoid valve with a needle as in the Fig. 1 .

6) Cutting or grinder chips may block the nozzle. An increase in the supply pressure will not be able to blow the chips off because the internal orifice will choke the flow. To enable the blow-off, install a 3-way valve to the detection port side as in Fig. 2. The orifice of the 3-way valve has to be 2.5 mm or larger in diameter.

2
CAUTION

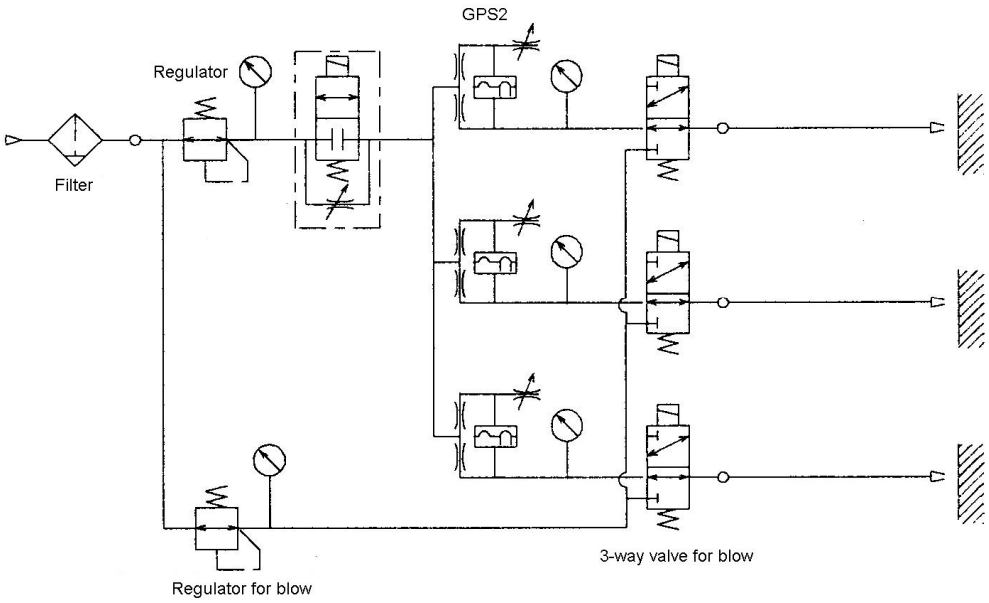


Figure 2　Using 3-way valve for blow

7)　If you might perform an air-blow operation at the detection nozzle, do not use the pneumatic circuits given in Figs. 3 and 4.　With the circuit given in Fig. 3, the cracking pressure at the check valve may disable detection at the higher end of the detection distance range.

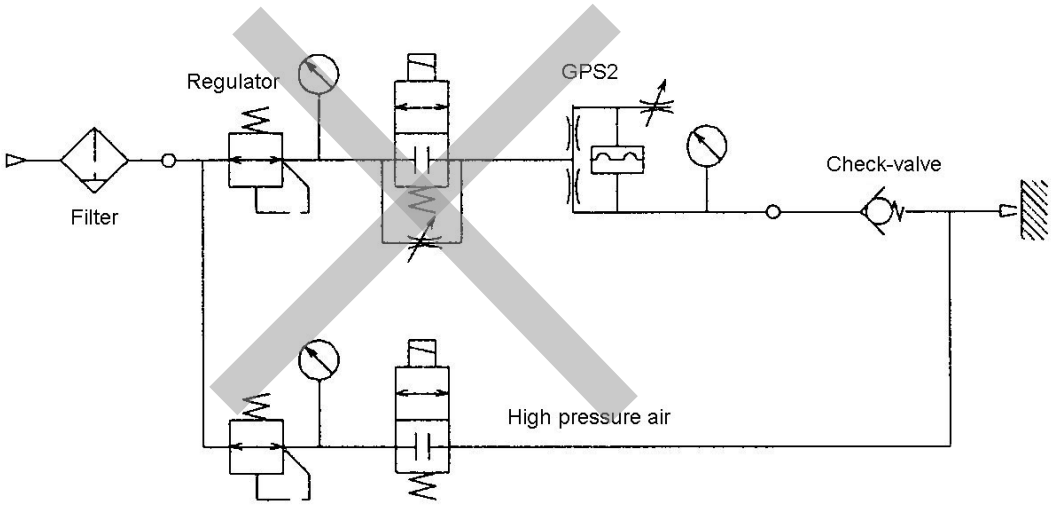


Figure 3　Using check-valve

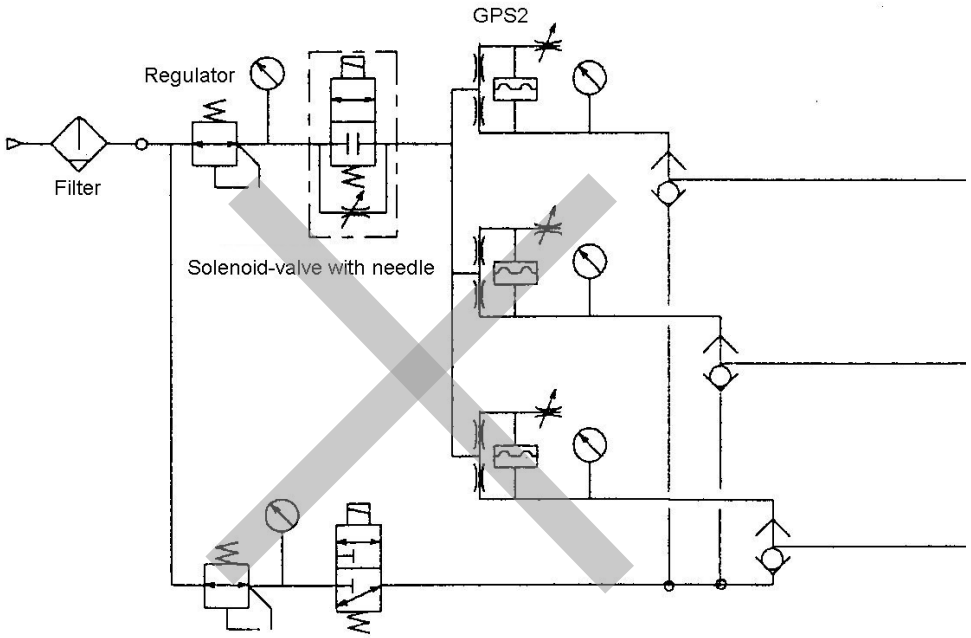


Figure 4 Using for shuttle-valve and 2-way valve

With the circuit given in Fig. 4, note that a successful action of the shuttle valve requires the minimum working pressure of 0.03 MPa. The valve sealing force comes from the back pressure at the detection nozzle. The back pressure will be so small without a workpiece that the sealing force will not be sufficient, causing a leak of the detection air from the exhaust port of the 3-way valve. Once the air has leaked, the back pressure will not rise even when a workpiece is set; the gap switch will remain at the OFF position. As in Fig. 2, use a solenoid valve or master valve as a reliable switching device.

8) The detection side piping should be provided using a tube 4 mm in inside diameter and 6 mm in outside diameter.

9) Select a GPS2 with an output style (NPN or PNP) that is compatible with the input unit of your programmable controller.

10) The gap switch includes a pneumatic bridge circuit. Note the difference in the signal retrieval timing between a conventional pressure switch circuit (Fig. 5) and the circuit we recommend for the gap switch.

● With the circuit given in Fig. 5, the closing of the solenoid valve turns OFF the pressure switch, regardless of the presence of a workpiece.

	No work	Existing work
Solenoid-valve close	OFF	OFF
Solenoid-valve open	OFF	ON

2
CAUTION

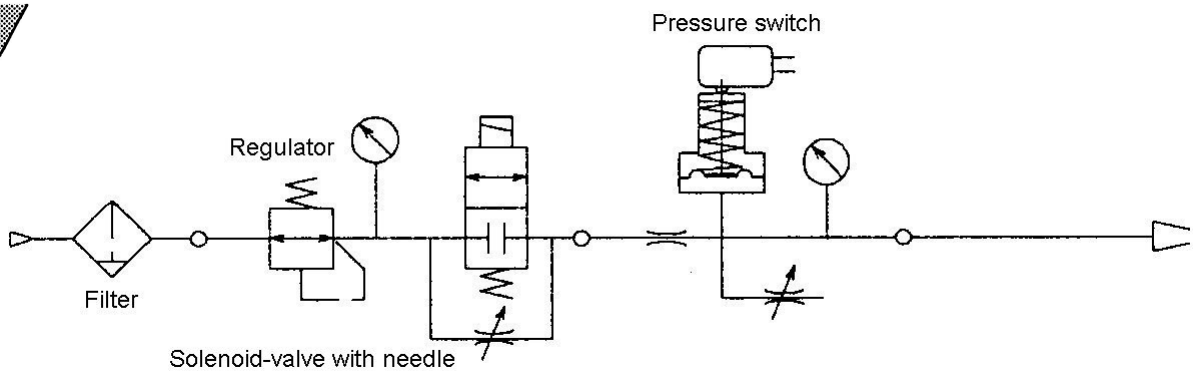


Figure 5　Pressure switch and Solenoid-valve with needle

● With the circuit given in Fig. 6, the presence of a workpiece turns ON the gap switch through the action of the minute flow of air.

	No work	Existing work
Solenoid-valve close	OFF	ON
Solenoid-valve open	OFF	ON

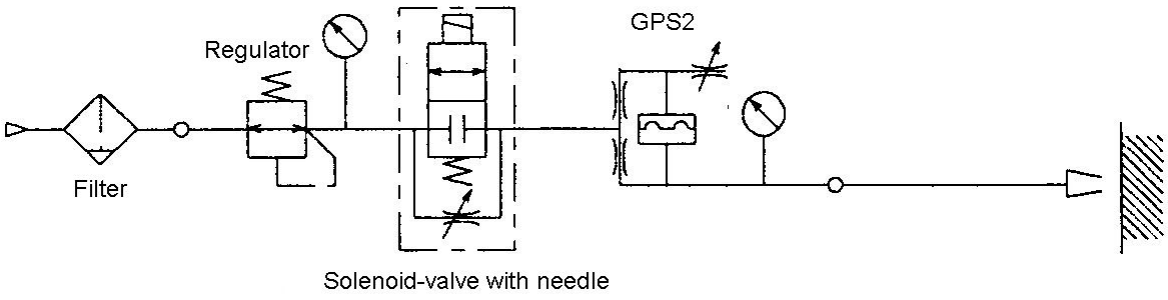


Figure 6　Gap switch and Solenoid-valve with needle

● If the circuit for a conventional pressure switch (Fig. 5) includes a control circuit that detects an air sensor abnormality, the OFF checking is performed when the solenoid valve is turned OFF. With the basic circuit for the gap switch (Fig. 6), however, the OFF checking should be performed when a workpiece comes off while the solenoid valve is ON. If the control circuit cannot be modified, the minute flow of air should be completely cut off. This, however, will produce a delay of about one second in the switching from ON to OFF.

● If a circuit used with the gap switch includes a blow circuit as in Fig. 7, the minute flow of air will be supplied to the gap switch during the air blow operation as well, producing the ON signal. Design the control circuit in such a way that the Workpiece In Position signal will be rejected during the air blow operation.

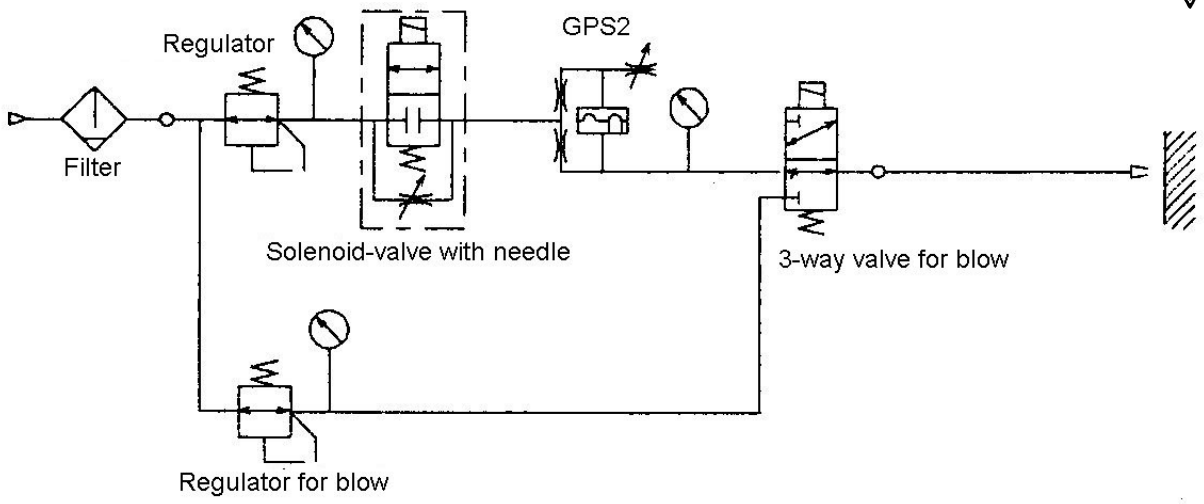


Figure 7　Circuit used with the gap switch includes a blow circuit

11) If a capacitive load such as a buzzer is connected to the load, an unintended action of the output protection circuit may interfere with the normal operation. When designing the load, consider not only the rated current but also the transient current value.

3. Operation

3.1 adjustment

1) Adjustment using the gap adjustment dial

● The adjustment dial has marks indicating the detection distance: red for 0.05 mm, blue for 0.1 mm, and yellow for 0.2 mm. The delivery inspection is performed using a detection nozzle 1.5 mm in diameter and a nylon tube 4 mm in inside diameter and 5 m in length. If you are going to use a nozzle other than the standard nozzle 1.5 mm in diameter, make an adjustment referring to one of the tables below.

The tables below show guidelines for use under the following conditions:

(condition) supply pressure : 100kPa

tube size : ϕ 6x ϕ 4 , length 5m

<GPS2-05-15>

		Detection distance(mm)			Change amount of detection distance per 1 notch (mm)
Detection nozzle		ϕ 1.0	ϕ 1.5	ϕ 2.0	ϕ 1.0～ ϕ 2.0
Mark	Red	0.07	0.05	0.03	0.005
	Blue	0.14	0.09	0.06	0.005～0.007
	Yellow	-	0.20	0.14	0.008～0.010

<GPS2-07-15>

		Detection distance(mm)			Change amount of detection distance per 1 notch (mm)
Detection nozzle		ϕ 1.0	ϕ 1.5	ϕ 2.0	ϕ 1.0～ ϕ 2.0
Mark	Red	0.07	0.05	0.03	0.005
	Blue	0.15	0.10	0.06	0.005～0.007
	Yellow	-	0.20	0.13	0.008～0.010

2) Adjustment using a master or schemer gage

● Three people are needed to do the work: one person to set the gage, one person to operate the machine, and one person to adjust the gap switch. Since the adjustment will involve machine operations, each person should pay attention to their safety and that of the other two people. For safety considerations, adjustment using the adjustment dial is preferable.

● For a successful schemer setting, press the master or schemer gage firmly against the detection nozzle.

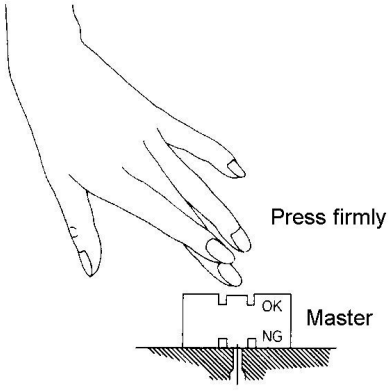
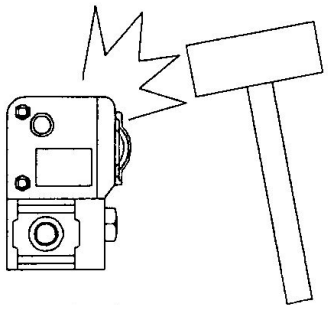


Figure 8

3.2 Notes on Use

1) If the adjustment dial receives a shock from being knocked, dropped, or hit, the marks on
the dial will not indicate the correct detection distances any more. Handle carefully.

Figure 9



2) A caution label on the reverse side of the gap switch tells you not to adjust the product. Since the adjustment has been done during the delivery inspection, do not remove the caution label and touch the comparison nozzle inside.

3) Use a single gap switch for each detection nozzle. If you connect a single gap switch to two nozzles, the gap switch will refer to the total of the values from the two nozzles when making a comparison.

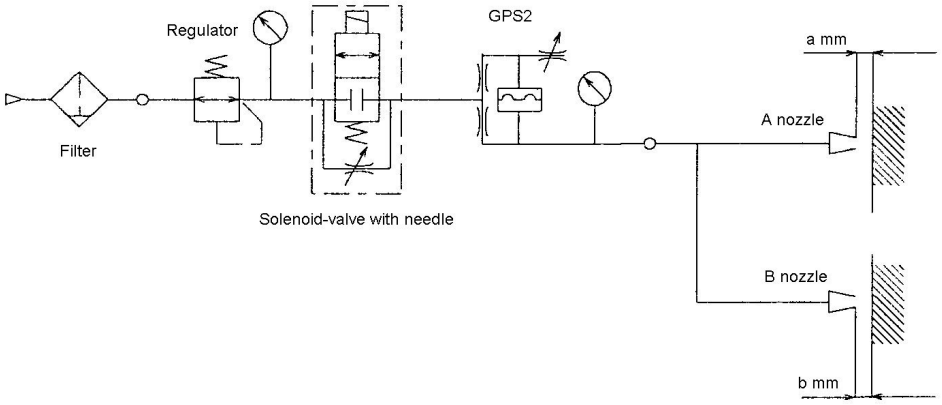


Figure 10 Using 1 GPS and 2 nozzle

a+b＞detection distance set judge as “off”
a+b≦detection distance set judge as “on”

With the detection distance set to 0.05 mm (red mark), the switch will be ON (indicating OK) when "a" is 0 mm and "b" is 0.05 mm. The switch will indicate "NG" when "a" is 0.03 mm and "b" is 0.03 mm. In the latter case, you would want the switch to indicate "OK" but the switch does not because it refers to the total of the values from the two nozzles. To ensure correct judgment, we recommend you to provide a gap switch for each nozzle.

4) For a short time after the startup, the switch will remain ON due to the presence, in the piping, of the cutting fluid that entered from the nozzle. Start the machine only after the cutting fluid has been drained by the detection air.

5) If the nozzle is blocked, the needle of the monitor pressure gauge will point to a high pressure value and will not return to zero. Disconnect the gap switch side piping and blow off the foreign matter using compressed air. If it does not work, insert a needle into the detection nozzle end.

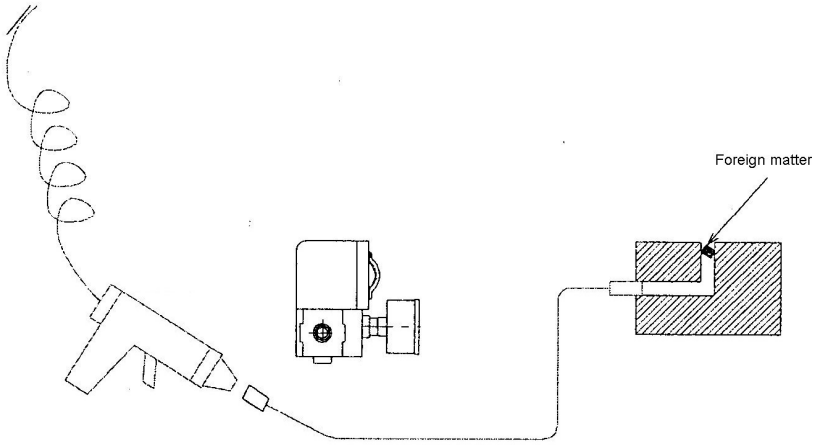


Figure 11

4. Installation

4.1 Installation

4.1.1 M-12 connector type

A connector can easily be disconnected by loosening the nut at the cable end. This feature allows speedy mounting and dismounting of individual gap switches.

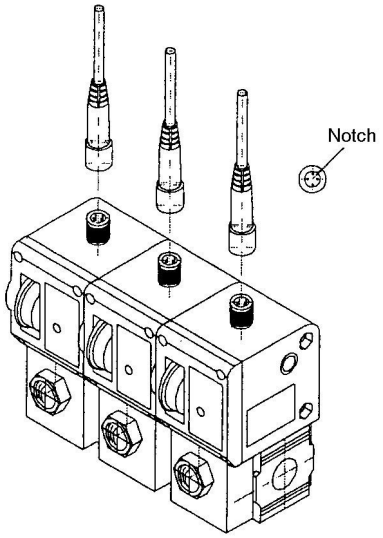


Figure 12 Disassembling M-12 connector cable

4.1.2 DIN-terminal type

After you remove the M3 screw at the top, the unit is split into a plug and a socket. This type of terminal requires a certain amount of work in the beginning for the wiring but enables speedy replacement of the gap switch afterward.

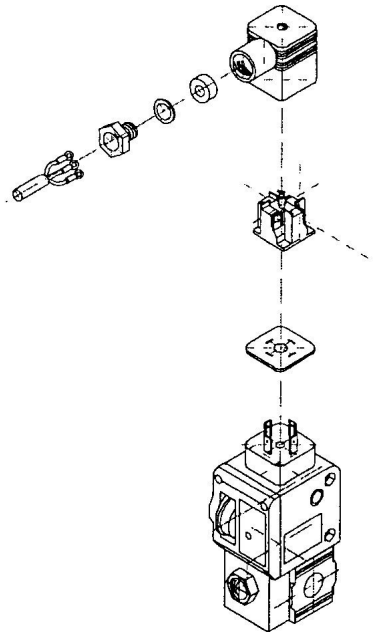


Figure 13 Disassembling DIN-terminal socket

4.1.3 Notes on installation

1) Pay attention to the following when installing the product:

- To prevent the penetration of cutting fluid, install the gap switch at a level higher than the seating face.
- Provide enough space for adjustment, monitoring, and holding.
- Choose rust-proof piping materials such as nylon and stainless tubes.
- Before connecting a tube, remove foreign matter and cutting chips from the inside of the tube by blowing air into it.
- When connecting a device or tube, pay attention not to allow the entry of a piece of seal tape or adhesive into the circuit.
- When mounting a device to the gap switch, do not allow the weight of the device to be held by the gap switch.
- If the gap switch is connected with a metal tube, the tube has to be fixed firmly at its position. Otherwise an excessive amount of stress may arise at the connecting portion.

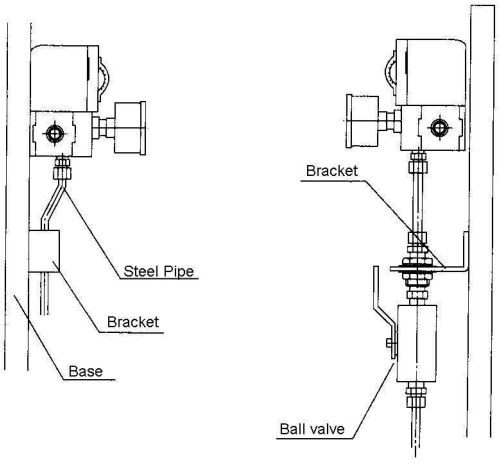


Figure 14

- Do not apply a shock to the gap switch by a hitting or knocking it.
- If you have to perform a welding operation nearby, cover the gap switch to protect it against the spatters.
- If you install the gap switch inside a box, be sure to provide a ventilation hole so that the pressure inside the box may remain the same as the barometric pressure. A rise in the internal pressure may cause a malfunction.

2) The bracket has two different bolt hole positions: one for the mounting of the gap switch with its rear panel facing the wall, another for the mounting via a T-type bracket.

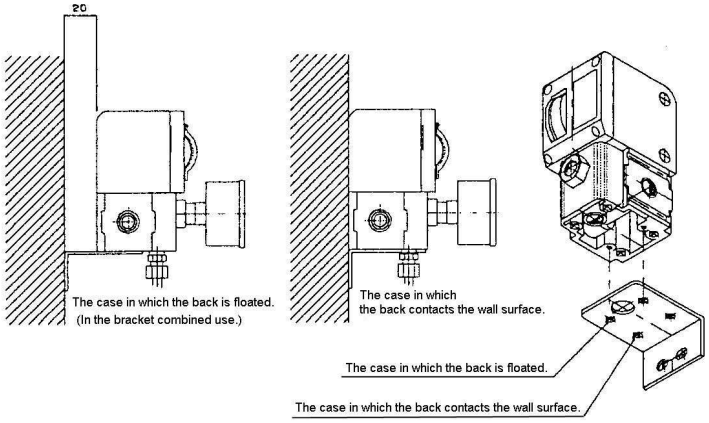
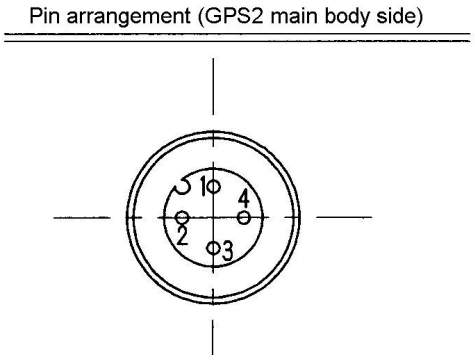


Figure 15

4.2 Wiring

4.2.1 M-12 connector type , wiring option (C＊)

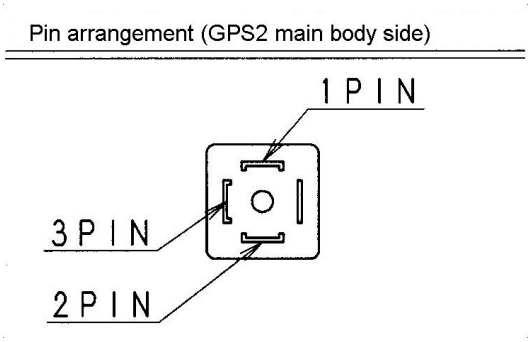
In case of wiring to M-12 connector type, refer to the following figure.



Pin No.	Wiring option (-C1、-C3、-C5) Lead wire color	Use
1	Brown	Power supply (+)
2	White	N.C. (no use)
3	Blue	Power supply (-)
4	Black	Output

Figure 16

4.2.2 DIN-terminal type



Pin No.	Use
1	Power supply (+)
2	Power supply (-)
3	Output

Figure 17

4.2.3 Common terminal box type

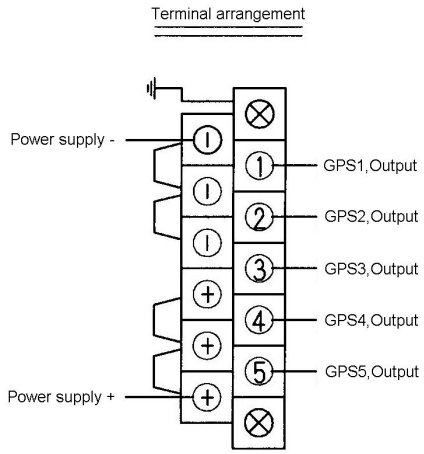
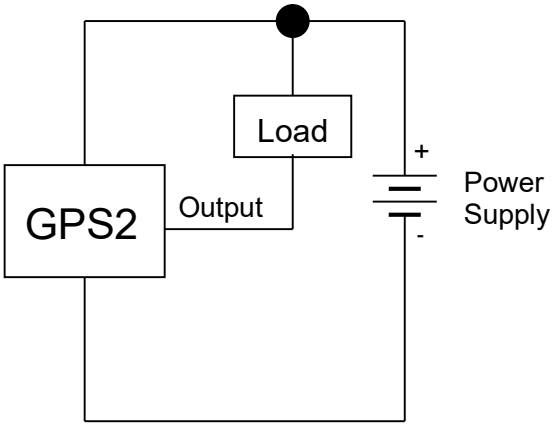


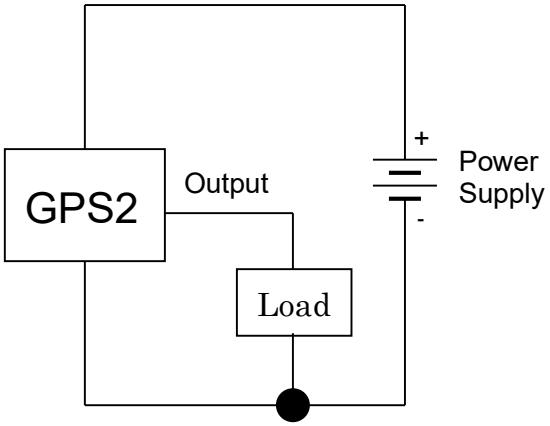
Figure 18

4.2.4 Notes on wiring

1) Gap switches come with two different output types: NPN open collector type and PNP open collector type. If you chose the wrong output type, the input unit will not be able to receive signals even though the internal lamps will function normally. We recommend our customers carefully choose gap switches of an output type compatible with the input unit in use.



Connection method of NPN open collector



Connection method of PNP open collector

2) The presence of a motor or power cable in proximity of the gap switch wires may cause
the sensor element in the gap switch to deteriorate or fail due to surges and noise. Be sure to separate the cables.

3) If a source of a major surge current (a motor or welder, for example) is present near the gap switch, install a surge killer close to the source.

4) A mistake in the wiring may cause damage to the internal circuit. Take care not to make a mistake in the wiring.

5) If an excessive current is caused by a short circuit in the load, for example, the protection circuit will trip. To restart, turn the power OFF and then ON. Note, however, that you have to find and remove the cause of the trip before turning the power
ON.

6) Note the differences in the lead wire colors between our old and new gap switches. Do not to make a mistake in the wiring.

GPS	GPS2 (Wiring option : cable)
Red (Power supply +)	Brown (Power supply +)
White (Output)	Black (Output)
Black (Power supply -)	Blue (Power supply -)
	White (No use)

7) Do not use the gap switch immediately after the startup while it is still in a transient state.

8) If you use a switching regulator in the power supply, be sure to provide a FG (frame ground) terminal.

5. Model code

5.1 Single type

GPS2 - Ⅰ - Ⅱ - Ⅲ Ⅳ Ⅴ - Ⅵ - Ⅶ

Ⅰ	Orifice diameter
0 5	ϕ 0.5
0 7	ϕ 0.7

Ⅱ	Setting type
15	Dial type detecting nozzle diameter

Ⅲ	Type of output
N	NPN open collector
P	PNP open collector

Ⅳ	Lamp color
G	Green
Y	Yellow

Ⅴ	Wiring option
F	DIN-terminal
C0	M-12 connector (cable : none)
C1	M-12 connector (1m cable : attached)
C3	M-12 connector (3m cable : attached)
C5	M-12 connector (5m cable : attached)
CTL	Assembled M-12 connector type common terminal box at the left side
CTR	Assembled M-12 connector type common terminal box at the right side
TL	Assembled lead wire type common terminal box at the left side
TR	Assembled lead wire type common terminal box at the right side
Goods for the common terminal box	
R	For the left assembling
L	For the right assembling
W	For the middle assembling

Ⅵ	Attachment , others
No code	Bracket : none
B	Bracket : attached
L	With dial cover lock

Ⅶ	Pressure gauge
No code	Pressure gauge : none
G2	Pressure gauge with safety mark : attached
GW2	Pressure gauge with safety mark : assembled

5.2 Manifold type

MGPS2 - Ⅰ - Ⅱ - Ⅲ Ⅳ Ⅴ Ⅵ - Ⅶ - Ⅷ

Ⅰ	Orifice diameter
0 5	ϕ 0.5
0 7	ϕ 0.7

Ⅱ	Setting type
15	Dial type detecting nozzle diameter

Ⅲ	Nos. of station
2	2 stations
3	3 stations
4	4 stations
5	5 stations

Ⅳ	Type of output
N	NPN open collector
P	PNP open collector

Ⅴ	Lamp color
G	Green
Y	Yellow

Ⅵ	Wiring option
TL	Assembled lead wire type common terminal box at the left side
TR	Assembled lead wire type common terminal box at the right side
T1	Assembled lead wire type common terminal box between 1st and 2nd unit from the left
T2	Assembled lead wire type common terminal box between 2nd and 3rd unit from the left
T3	Assembled lead wire type common terminal box between 3rd and 4th unit from the left
T4	Assembled lead wire type common terminal box between 4th and 5th unit from the left
CTL	Assembled M-12 connector type common terminal box at the left side
CTR	Assembled M-12 connector type common terminal box at the right side
F	DIN-terminal
C0	M-12 connector (cable : none)
C1	M-12 connector (1m cable : attached)
C3	M-12 connector (3m cable : attached)
C5	M-12 connector (5m cable : attached)

Ⅶ	Attachment , others
No code	Bracket : none
B	Bracket : attached
L	With dial cover lock

Ⅷ	Pressure gauge
No code	Pressure gauge : none
G2	Pressure gauge with safety mark : attached
GW2	Pressure gauge with safety mark : assembled

5.3 Unit type

UGPS2 - Ⅰ - Ⅱ - Ⅲ Ⅳ Ⅴ Ⅵ - Ⅶ - Ⅷ - Ⅸ - Ⅹ

Ⅰ	Orifice diameter
0 5	ϕ 0.5
0 7	ϕ 0.7

Ⅱ	Setting type
15	Dial type detecting nozzle diameter

Ⅲ	Nos. of station
1	1 station
2	2 stations
3	3 stations
4	4 stations
5	5 stations

Ⅳ	Type of output
N	NPN open collector
P	PNP open collector

Ⅴ	Lamp color
G	Green
Y	Yellow

Ⅵ	Wiring option
TL	Assembled lead wire type common terminal box at the left side
TR	Assembled lead wire type common terminal box at the right side
CTL	Assembled M-12 connector type common terminal box at the left side
CTR	Assembled M-12 connector type common terminal box at the right side
F	DIN-terminal
C0	M-12 connector (cable : none)
C1	M-12 connector (1m cable : attached)
C3	M-12 connector (3m cable : attached)
C5	M-12 connector (5m cable : attached)

Ⅶ	Attachment , others
L	With dial cover lock

Ⅷ	Pressure gauge
No code	Pressure gauge : none
GW2	Pressure gauge with safety mark : assembled

Ⅸ	Solenoid valve connecting type (note)
2E	DIN terminal box
2H	DIN terminal box with lamp
3N	HP terminal box with lamp

Ⅹ	Solenoid valve voltage
1	AC100V
2	AC200V
3	DC24V

note) The products for CE marking please select solenoid valve connecting type “2E”or “2H” .

5.4 Attachment

5.4.1 Bracket

GPS2 - B

5.4.2 Terminal box

GPS2 - Ⅰ

Ⅰ	Terminal box
CTL	For assembling M-12 connector type common terminal box at the left side
CTR	For assembling M-12 connector type common terminal box at the right side
TL	For assembling lead wire type common terminal box at the left side
TR	For assembling lead wire type common terminal box at the right side
TW	For assembling lead wire type common terminal box at the middle

5.4.3 Pressure gauge with safety mark

G40D - 8 - Ⅰ - S501

Ⅰ	Range
P02	0～0.2MPa
P04	0～0.4MPa
P10	0～1.0MPa

5.4.4 Solenoid valve with needle

GPS2 - AB3X - Ⅰ - FL - Ⅱ

Ⅰ	Solenoid valve connecting type
2E	DIN terminal box
2H	DIN terminal box with lamp
3N	HP terminal box with lamp

Ⅱ	Solenoid valve voltage
AC100V	
AC200V	
DC24V	

5.4.5 Joiner set

C1000 – J100 – W

5.4.6 T type bracket set

B110 – W