Contact confirmation switch (gap switch)

# GPS2/MGPS2/UGPS2 Series



## Overview

F.R.L F (Filtr) R (Reg)

L (Lub) **PresSW** 

Shutoff SlowStart

FImResistFR

Oil-ProhR

MedPresFR No Cu/ PTFE FRL Outdrs FR

FRI (Related)

CompFRL

LgFRL

PrecsR

VacF/R

Clean FR

ElecPneuR

AirBoost

SpdContr

Silncr

CheckV/

Jnt/tube

AirUnt

PrecsCompn

PresSW Cool AirFloSens. Contr

WaterRtSens

TotAirSys

(Total Air

TotAirSys (Gamma)

RefrDry

DesicDry

HiPolymDry

MainFiltr

Mech/ ElecPresSw ContactSW AirSens

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

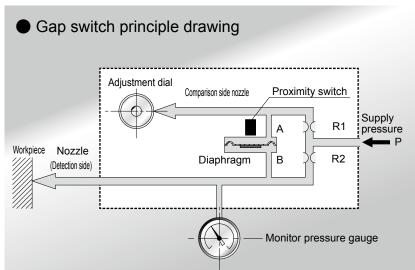
By incorporating a joiner connection, GPS2 units can be connected together, and can also be connected easily to the CKD regulator or filter.

Robustness

The body strength has been increased by using aluminum die-cast.

Environmental resistance

The product can be used in environments where water, etc., may splash, as it has degree of protection IP67 (connector) equivalent.



#### 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.

Dischrg Ending

etc



Contact confirmation switch (gap switch) single unit

## **GPS2** Series

Port size: Rc1/8
 Nozzle diameter: φ1.5







F.R.L

F (Filtr)

PresSW

Shutoff SlowStart FImResistFR Oil-ProhR MedPresFR No Cu/ PTFE FRL Outdrs FR FRI (Related) CompFRL LgFRL PrecsR VacF/R Clean FR ElecPneuR AirBoost SpdContr

Silncr

CheckV/

Jnt/tube

AirUnt

PrecsCompn

ElecPresSw

ContactSW

AirSens

PresSW Cool AirFloSens/ Contr WaterRtSens TotAirSys (Total Air) TotAirSys

RefrDry

DesicDry

HiPolymDry

MainFiltr

Dischrg

etc

Mech/

other

**Specifications** 1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Descriptions	GPS2-05-15	GPS2-07-15	
Working fluid	Compressed clean air (lubrication not possible)		
Working pressure (*2) kPa	30 (≈4.4 psi, 0.3 bar) to 200 (≈29 psi, 2 bar)	50 (≈7.3 psi, 0.5 bar) to 200 (≈29 psi, 2 bar)	
Detection range scale mm	0.03 to 0.25	0.03 to 0.4	
Repeatability mm	±0.01 (detection range	e scale 0.03 to 0.1 mm)	
Hysteresis mm	0.01 or less (detection rar	nge scale 0.03 to 0.1 mm)	
Detection nozzle (*1)	Single hole nozzle φ	1.5 standard (φ1, φ2)	
Power supply voltage V	10.2 to 2	26.4 VDC	
Current consumption mA	15 or less (when	n using 24 VDC)	
Output style	NPN, PNP o	pen 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 $M\Omega$ and over at 500 VDC megger		
Withstand voltage	No failure impressed at 1000 VAC for one minute		
Vibration resistance m/s <sup>2</sup>	98		
Ambient temperature °C	5 (41°F) to 60 (140°F)		
Degree of protection (*3)	IP67 equivalent (connector), IP64 equivalent (DIN terminal box)		
Connection tube mm	Inner diameter 4		
Port size	Detection port Rc1/8, supply port Rc1/4, pressure gauge port Rc1/4		
Weight g	290 (electric connection option C0)		
Air consumption S 50 kPa	6 or less	11 or less	
'   ⊵  100 kPa	15 or less		
l/min (ANR) 불 200 kPa	14 or less	24 or less	

- \*1: The above specifications apply to the φ1.5 single-hole detection nozzle.
- \*2: If the nozzle clogs, working pressure should be set between 100 and 200 kPa.
- \*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 th wires to the terminal box. (3) A dial cover with lock must be provided and the cover screw must be tightened.

	Code	Content
	A Orifice	size
ne	05	φ0.5
	07	φ0.7
	B Setting	type

How to order	
GPS2 - 07 - 15 - N G TL - B - G2	

Gap B Setting type switch Output style D Light color

	15	Dial detection nozzle diameter
6	Output	style

NPN open collector PNP open collector Light color

Green Yellow

	,

Electric connection option				
F	DIN terminal box (Pg11)			
C0	Connector (without cable)			
C1	Connector (cable 1 m attached)			
C3	Connector (cable 3 m attached)			
C5	Connector (cable 5 m attached)			
CTL	Connector common terminal box left assembly			
CTR	Connector common terminal box right assembly			
TL	Lead wire common terminal box left assembly			
TR Lead wire common terminal box right assembly				
Lead wire central terminal box expanding manifold				

Lead wire outlet direction right (left end for mounting) Lead wire outlet direction left (right end for mounting)

Lead wire outlet direction both sides (intermediate for mounting)

A Precautions for model No. selection	า
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- \*1 : Select L for automobile- and processing machine-related applications.
- \*2:Refer to pages 1174 to 1179 for option and model No. of related components.

Attachments and others

**■** Electric connection option

@ Pressure gauge

Attachments and others		
Blank	Without bracket	
B With bracket		
L (*1) Dial cover with lock		

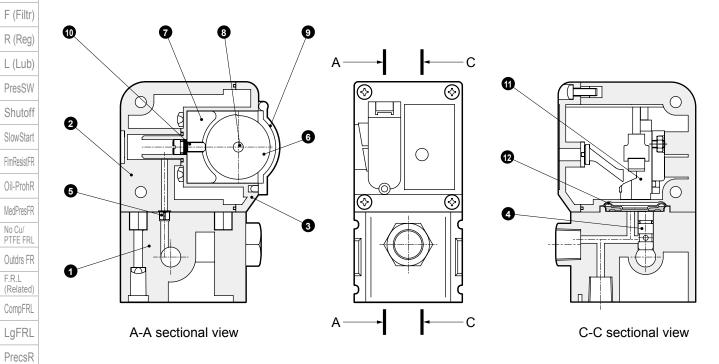
© Pressure gauge No pressure gauge
Pressure gauge with safety mark included (G40D-8-P02-S501) Blank Pressure gauge assembly with safety mark (G40D-8-P02-S501)



F.R.L

F.R.L

### Internal structure and parts list



#### Parts list

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

VacF/R Clean FR ElecPneuR AirBoost SpdContr Silncr CheckV/ other Jnt/tube AirUnt PrecsCompn Mech/ ElecPresSw ContactSW AirSens PresSW Cool AirFloSens/ Contr WaterRtSens TotAirSys (Total Air) TotAirSys (Gamma)

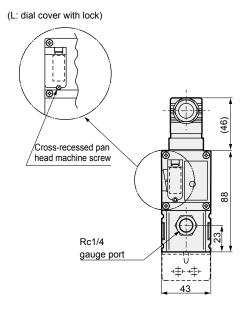
Ending

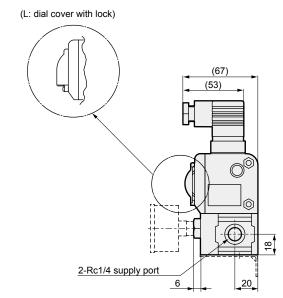
RefrDry DesicDry HiPolymDry MainFiltr Dischrg etc

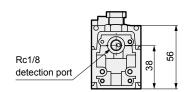
#### Dimensions

## Dimensions

- DIN terminal
  - GPS2-\*-\*-\*\*F



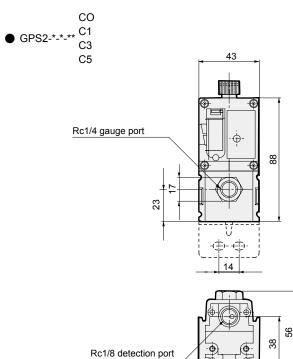


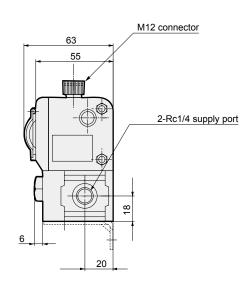


· Weight: 330 g

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

#### Connector





· Weight: 290 g (for C0)

- \*1: Bracket and pressure gauge (option) are not included.
- \*2: Cable for C1, C3, C5 is included. (For the cable weight, refer to the option pages.)

nensions

F.R.L F (Filtr)

R (Reg)

L (Lub)

PresSW

Shutoff

SlowStart

SiowStart

FImResistFR

Oil-ProhR

MedPresFR

No Cu/ PTFE FRL

Outdrs FR F.R.L

(Related)

CompFRL

LgFRL

PrecsR

VacF/R

Clean FR

ElecPneuR

AirBoost

SpdContr

Silncr

CheckV/ other

Jnt/tube

AirUnt

PrecsCompn

Mech/ ElecPresSw

ContactSW

AirSens PresSW

Cool AirFloSens/

Contr WaterRtSens

TotAirSys

(Total Air)
TotAirSys
(Gamma)

RefrDry

DesicDry

HiPolymDry

MainFiltr
Dischrg
etc

#### Dimensions

F.R.L

F (Filtr)

R (Reg)

L (Lub)

PresSW Shutoff SlowStart

FlmResistFR
Oil-ProhR

MedPresFR No Cu/ PTFE FRL

Outdrs FR

VacF/R

Clean FR ElecPneuR

AirBoost

SpdContr

Silncr CheckV/

Jnt/tube
AirUnt
PrecsCompn
Mech/
ElecPresSw

ContactSW AirSens PresSW

Cool

Contr

AirFloSens

WaterRtSens TotAirSys (Total Air)

TotAirSys (Gamma) RefrDry

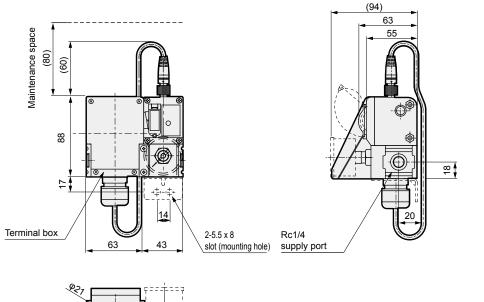
DesicDry

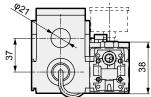
HiPolymDry

MainFiltr Dischrg etc

F.R.L (Related)
CompFRL
LgFRL
PrecsR

Connector common terminal box



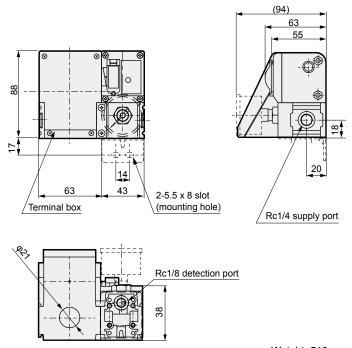


· Weight: 580 g

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

Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

Lead wire common terminal box



· Weight: 510 g

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

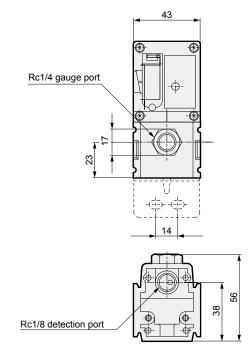
Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

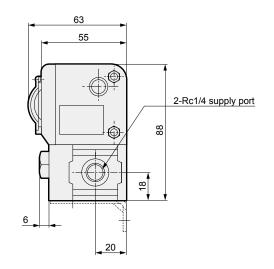
#### Dimensions



Single unit for lead wire common terminal box expanding manifold







· Weight: 290 g

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

Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

F.R.L

F (Filtr)

R (Reg)

PresSW

Shutoff

SlowStart

FImResistFR

....

Oil-ProhR

MedPresFR

No Cu/ PTFE FRL

Outdrs FR F.R.L

(Related)

CompFRL

LgFRL

PrecsR

VacF/R

Clean FR

ElecPneuR

AirBoost

SpdContr

Silncr

CheckV/ other

Jnt/tube

AirUnt

PrecsCompn

Mech/ ElecPresSw

ContactSW

AirSens

PresSW Cool

AirFloSens/ Contr

WaterRtSens

TotAirSys (Total Air)

TotAirSys (Gamma)

RefrDry

DesicDry HiPolymDry

MainFiltr
Dischrg
etc

Gap switch Manifold

## MGPS2 Series

Nozzle diameter: φ1.5 (standard)
 Station No.: 2 to 5 stations







#### Specifications

F.R.L

F (Filtr) R (Reg)

L (Lub) PresSW

Shutoff

SlowStart

No Cu/

FRI

Mech/

Cool

Contr

TotAirSys (Total Air

TotAirSys (Gamma) RefrDry

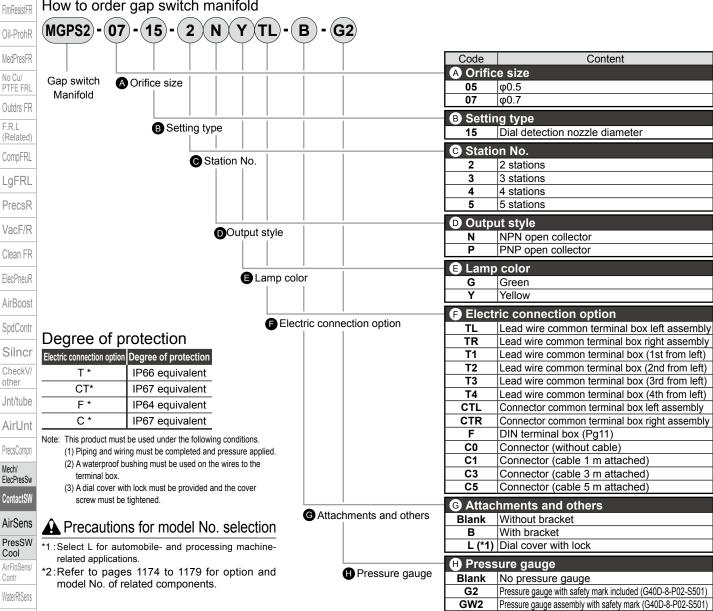
DesicDry

HiPolymDry

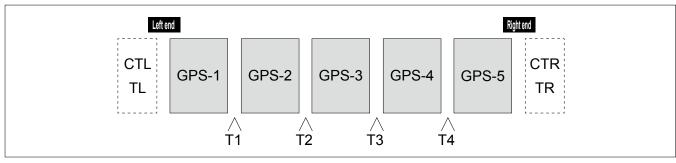
MainFiltr Dischrg etc

Basic specifications are the same as the single units on page 1133.

How to order gap switch manifold



#### Terminal box installation position relation diagram

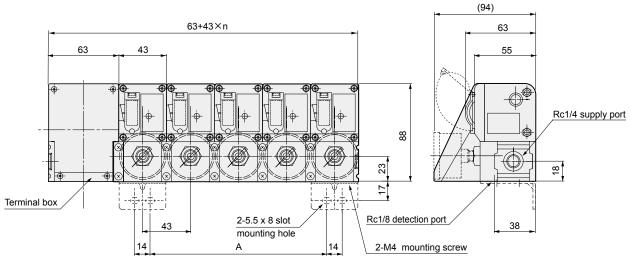


CKD

CAD **Dimensions** 

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

● MGPS2-\*-\*-\*\*\* TL

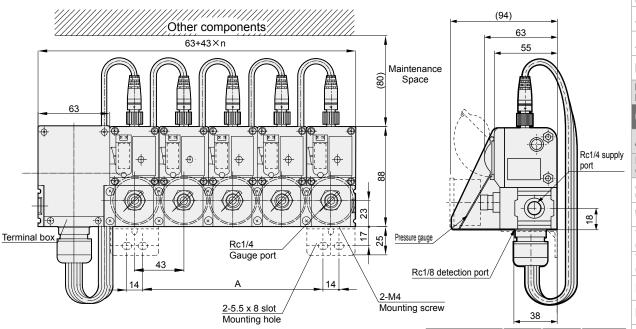


Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

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

<sup>\*</sup> Bracket and pressure gauge (option) are not included.

- Manifold (connector common terminal box: CTL/CTR)
  - MGPS2-\*-\*-\*\*\* CTL (CTR)



Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

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

<sup>\*</sup> Bracket and pressure gauge (option) are not included. Ending

F (Filtr)

F.R.L

R (Reg) L (Lub)

PresSW Shutoff

SlowStart

FImResistFR Oil-ProhR

MedPresFR No Cu/

PTFE FRL Outdrs FR FRI

(Related) CompFRL

LgFRL

**PrecsR** 

VacF/R Clean FR ElecPneuR

AirBoost

SpdContr

Silncr CheckV/ other

Jnt/tube AirUnt

PrecsCompn Mech/

ElecPresSw

AirSens PresSW Cool AirFloSens/ Contr

WaterRtSens TotAirSys (Total Air)

TotAirSys RefrDry

DesicDry

HiPolymDry MainFiltr Dischrg etc

#### **Dimensions**



F (Filtr)

R (Reg)

F.R.L

L (Lub)

PresSW

Shutoff

SlowStart

FlmResistFR

Oil-ProhR MedPresFR

No Cu/ PTFE FRL

Outdrs FR FRI

(Related) CompFRL

LgFRL

**PrecsR** 

VacF/R

Clean FR

ElecPneuR

AirBoost SpdContr

Silncr CheckV/

Jnt/tube

AirUnt

PrecsCompn Mech/

ContactSW

AirSens PresSW Cool AirFloSens

WaterRtSens TotAirSys

Contr

(Total Air) TotAirSys (Gamma)

RefrDry

DesicDry HiPolymDry

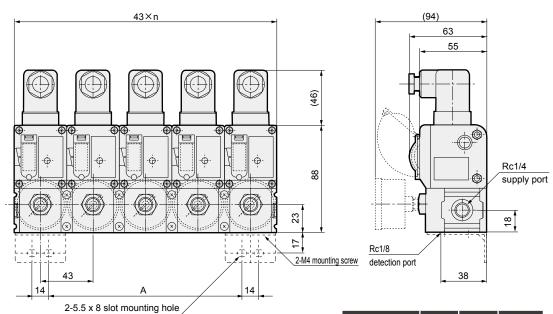
MainFiltr

Dischrg etc

Ending

Manifold (DIN terminal box: F)

● MGPS2-\*-\*-\*\*F



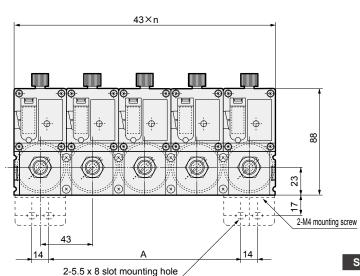
Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

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

<sup>\*</sup> Bracket and pressure gauge (option) are not included.

Manifold (connector: C\*)

C1 MGPS2-\*-СЗ



Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

(9	14)	
	63	
	55	
		Rc1/4 supply port
		€
Rc1/8 detection port	38	
Station No.	n A	Weight a (Ed

	Station No.	n	Α	Weight g (For C0	)
	2 stations	2	29	590	
	3 stations	3	72	880	
	4 stations	4	115	1180	
•	5 stations	5	158	1480	

<sup>\*1:</sup> Bracket and pressure gauge (option) are not included.

(For the cable weight, refer to the option pages.)

<sup>\*2:</sup> Cable for C1, C3, C5 is included.

### MEMO

F.R.L

F (Filtr)

R (Reg)

L (Lub)

PresSW

Shutoff

SlowStart

Olonotari

FImResistFR

Oil-ProhR

MedPresFR

No Cu/ PTFE FRL

Outdrs FR

F.R.L (Related)

CompFRL

LgFRL

PrecsR

VacF/R

Clean FR

ElecPneuR

AirBoost

SpdContr

Silncr

CheckV/ other

Jnt/tube

AirUnt

PrecsCompn

Mech/ ElecPresSw

ContactSW

AirSens

PresSW Cool AirFloSens/ Contr

UI I DIO

WaterRtSens

TotAirSys (Total Air)

TotAirSys (Gamma)

RefrDry DesicDry

HiPolymDry

MainFiltr

Dischrg etc

F.R.L F (Filtr) R (Reg) L (Lub) Gap switch unit

## UGPS2 Series

Solenoid valve with needle, regulator integrated general purpose







#### Specifications

**PresSW** 

Shutoff

SlowStart

FImResistFR

Oil-ProhR

MedPresFR

PTFE FRL

Outdrs FR

(Related)

CompFRL

LgFRL

PrecsR

VacF/R

Clean FR

ElecPneuR

AirBoost

SpdContr

Silncr

CheckV/

Jnt/tube

AirUnt

PrecsCompn

**ContactSW** 

AirSens

PresSW

AirFloSens/

WaterRtSens

TotAirSys (Total Air TotAirSys

(Gamma) RefrDry

DesicDry

HiPolymDry

MainFiltr Dischrg etc

Ending

Cool

Contr

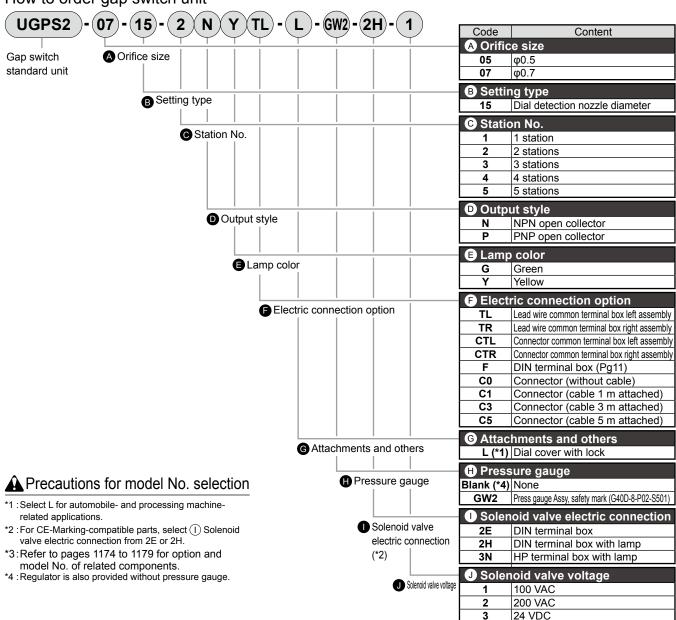
Mech/

FRI

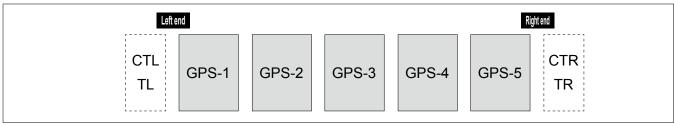
No Cu/

Basic specifications are the same as the single units on page 1133.

How to order gap switch unit



#### Terminal box installation position relation diagram



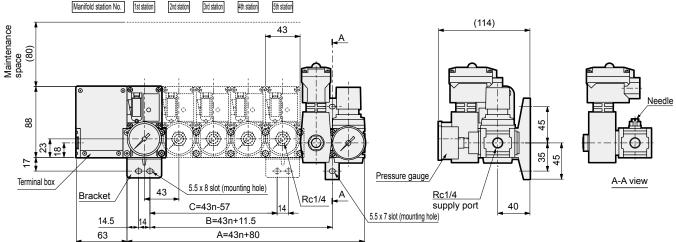
Note: The solenoid valve with needle and regulator are mounted on the opposite side of the terminal box (right side when terminal box is on left side). The terminal box does not have a supply port.

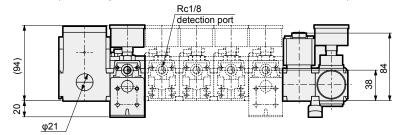
#### Dimensions

Dimensions CAD

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

● UGPS2-\*-\*-\*\*\*TL





		Station No.				
		1	2	3	4	5
	Α	123	166	209	252	295
Dimensions (mm)	В	54.5	97.5	140.5	183.5	226.5
(11111)	С	-	-	72	115	158
Bracket set		1	1	2	2	2
Weight	g	1190	1500	1850	2160	2470

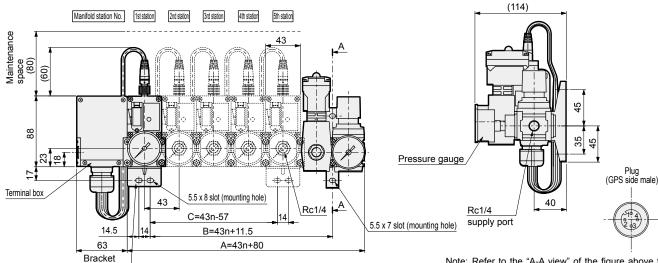
- \*1: Pressure gauge (option) is not included.
- \*2: When solenoid valve is the electric connection 3N.

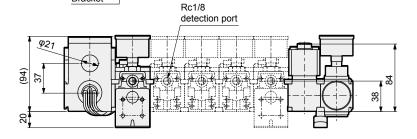
Gap switch unit (connector common terminal box: CTL/CTR)

the DIN terminal box on page 1135 for shapes.

Note) The dial cover shape differs for the dial cover with lock. Refer to

● UGPS2-\*-\*-\*\*\*CTL





Note: Refer to the "A-A view" of the figure above for needle position.

		Station No.					
		1	2	3	4	5	
	Α	123	166	209	252	295	
Dimensions (mm)	В	54.5	97.5	140.5	183.5	226.5	
(11111)	С	-	-	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 the electric connection 3N.

F.R.L F (Filtr)

R (Reg)

L (Lub)

PresSW

Shutoff

SlowStart

FlmResistFR
Oil-ProhR

MedPresFR No Cu/

PTFE FRL
Outdrs FR

F.R.L (Related)

CompFRL LgFRL

PrecsR VacF/R

Clean FR ElecPneuR

AirBoost

SpdContr

Silncr CheckV/ other

Jnt/tube

AirUnt

PrecsCompn Mech/

ElecPresSw ContactSW

AirSens PresSW

Cool
AirFloSens/

WaterRtSens
TotAirSvs

TotAirSys (Total Air) TotAirSys

(Gamma) RefrDry

DesicDry HiPolymDry

MainFiltr
Dischrg
etc

#### **Dimensions**



F (Filtr) R (Reg)

L (Lub)

F.R.L

PresSW Shutoff

SlowStart FImResistFR

Oil-ProhR MedPresFR

No Cu/ PTFE FRL Outdrs FR

FRI (Related) CompFRL

LgFRL

PrecsR VacF/R

Clean FR ElecPneuR

AirBoost SpdContr

Silncr CheckV other

Jnt/tube AirUnt

PrecsCompn Mech/

**ContactSW** 

PresSW Cool AirFloSens. Contr

AirSens

WaterRtSens TotAirSys (Total Air TotAirSys

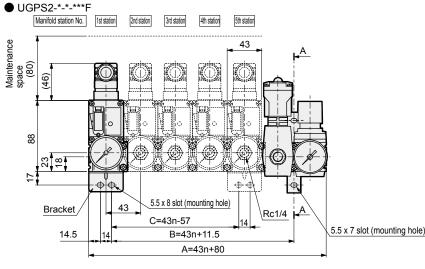
(Gamma) RefrDry

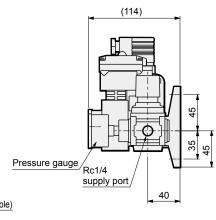
DesicDry HiPolymDry

MainFiltr

Dischrg

etc Ending Gap switch unit (DIN terminal box: F)





Rc1/8 38

Note) The dial cover shape differs for the dial cover with lock. Refer to the DIN terminal box on page 1135 for shapes.

Note: Refer to the "A-A view" on the previous page for needle position.

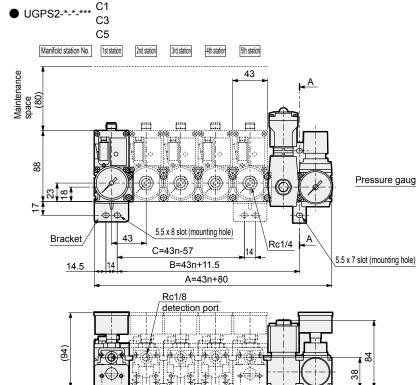
		Station No.					
		1	2	3	4	5	
<b>5</b>	Α	123	166	209	252	295	
Dimensions (mm)	В	54.5	97.5	140.5	183.5	226.5	
()	С	-	-	72	115	158	
Bracket set		1	1	2	2	2	
Weight	g	1010	1360	1740	2080	2420	

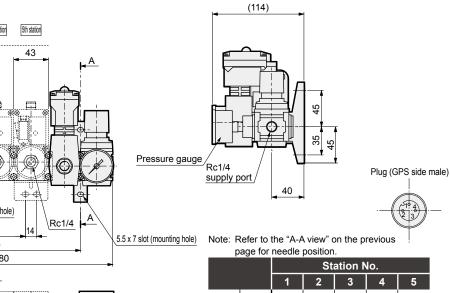
- \*1: Pressure gauge (option) is not included.
- \*2: When solenoid valve is the electric connection 3N.



C0

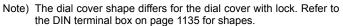
(94)





5 Α 123 166 209 252 295 Dimension В 54.5 97.5 140.5 183.5 226.5 (mm) С 72 115 158 2 Bracket set 1 1 2 2 Weight (For C0) 970 1270 1610 1900 2200

- \*1: Pressure gauge (option) is not included.
- \*2: When solenoid valve is the electric connection 3N.
- \*3: Cable for C1, C3, C5 is included. (For the cable weight, refer to the option pages.)



Refer to pages 1174 to 1179 for dimensions of options and peripheral devices.