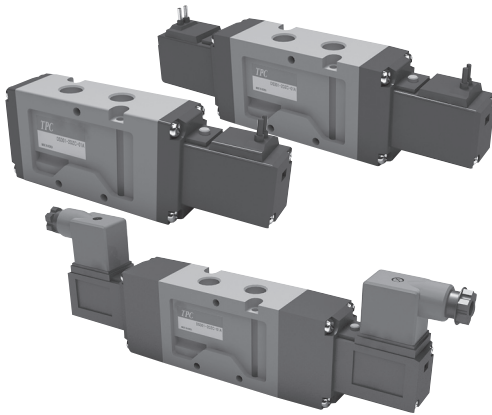


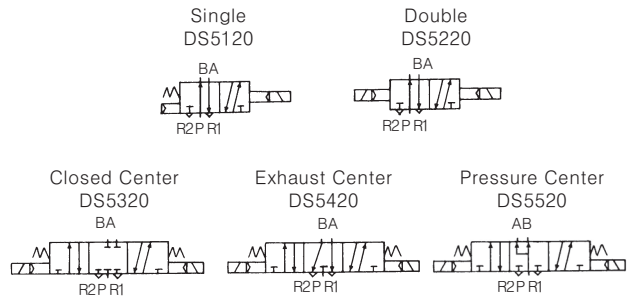
# Series DS5000

## Rubber Body Seal 5-Port Pilot Type



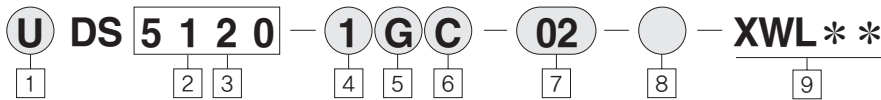
- SMALL SIZE AND LIGHT WEIGHT / WIDTH 32mm
- LARGE VALVE CAPACITY - CV2.8, RC(PT)3/8
- CV3.2, RC(PT)1/2
- LOW POWER CONSUMPTION/1.8W(DC)

### Symbol



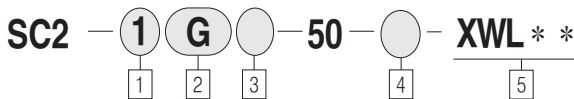
DW
DR100
DR200
RS1000, 2000
RS4000
SI UNIT
DV1000, DV3000, DV4000
DS300
DS3000
<b>DS5000</b>
DS2000
DS6000
DX1,DX2
DX1(2)R
DH
DP300, DP3000, DP5000
DM
DT220

## How to Order



- |  |   |  |  |
|--|---|--|--|
| <p><b>1 DS5000</b><br/>Blank : Metric (PT)<br/>U : NPT</p> <p><b>2 Type of Actuation</b><br/>1 : Single<br/>2 : Double<br/>3 : Closed Center<br/>4 : Exhaust Center<br/>5 : Pressure Center</p> <p><b>3 Body Type</b><br/>20 : Body ported type<br/>23 : Integrated exhaust type</p> <p><b>4 Voltage</b></p> | <p>1 : AC 110V, 50 / 60Hz<br/>2 : AC 220V, 50 / 60Hz<br/>3 : AC 120V, 50 / 60Hz<br/>4 : AC 240V, 50 / 60Hz<br/>5 : DC 24V<br/>6 : DC 12V<br/>7 : DC 6V<br/>8 : (AC 24V), 50 / 60Hz<br/>9 : DC 100V</p> <p>※ Please contact for other specifications</p> <p><b>5 Electrical Entry</b><br/>G : Grommet<br/>(Lead wire length 300mm)</p> | <p>DZ : DIN type terminal (Connector attached, Lamp/surge voltage protecting circuit attached)<br/>D : DIN type terminal<br/>N : DIN connector attaching type (No connector)</p> <p><b>6 Manual Override</b><br/>Blank : Non-locking push type<br/>C : Knob locking type</p> <p><b>7 Port Size</b><br/>02 : 1/4"<br/>03 : 3/8"<br/>04 : 1/2"</p> | <p><b>8 Special Option</b><br/>Blank : Standard type<br/>XC16 : Copper-free</p> <p><b>9 Length of Lead Wire</b><br/>Blank : 300mm(Standard type)<br/>XWL01 : 100mm<br/>XWL02 : 200mm<br/>XWL04 : 400mm<br/>:<br/>XWL20 : 2000mm</p> <p>※ Please contact for specification beyond standard length</p> |
|--|---|--|--|

### Pilot Valve Ass'y Order Form : ( Coil Item Number)



- |  |  |  |  |
|--|--|--|--|
| <p><b>1 Voltage</b><br/>1 : AC110V, 50/60Hz<br/>2 : AC220V, 50/60Hz<br/>3 : AC120V, 50/60Hz<br/>4 : AC240V, 50/60Hz<br/>5 : DC24V<br/>6 : DC12V<br/>7 : DC6V</p> | <p>8 : Others (Contact for specifications beside AC24V)<br/>9 : DC100V</p> <p><b>2 Electrical Entry</b><br/>G : Grommet<br/>(Lead wire length 300mm)</p> | <p>DZ : DIN type terminal (Connector attached, Lamp/surge voltage protecting circuit attached)<br/>D : DIN type terminal</p> <p><b>3 Manual Override</b><br/>Blank : Non-locking push type<br/>C : Knob locking type</p> <p><b>4 Special Option</b><br/>Blank : Standard type<br/>XC16 : Copper-free</p> | <p><b>5 Length of Lead Wire</b><br/>Blank : 300mm(Standard)<br/>XWL01 : 100mm<br/>XWL02 : 200mm<br/>XWL04 : 400mm<br/>:<br/>XWL20 : 2000mm</p> <p>※ Contact for specifications beside standard length.</p> |
|--|--|--|--|

## Series DS5000

### DIN Terminal Box Order Form

TVF3130-61-2005 - **Additional Symbol**

1

#### 1 Additional Symbol

Additional Symbol	Rated Voltage
①	AC110V
②	AC220V
③	AC120V
④	AC240V
⑤	DC24V
⑥	DC12V
⑦	DC6V
⑧	AC24V
⑨	DC100V

### Specifications

Fluid		Air	
Operating Pressure	2-position Single, 3-position	0.15~0.9MPa(21~128PSI)	
Range	2-position Double	0.1~0.9MPa(14~128PSI)	
Ambient and Fluid Temperature		5~50°C (122°F)	
Response	2-position Single, Double	40ms or Less {0.5MPa}	
Time	3-position	50ms or Less {0.5MPa}	
Max. Operating Frequency (Time/Second)	2-position Single, Double	5 c/s	
	3-position	3 c/s	
Lamp (LED)		Standard	
Lubrication		Not Required	
Manual Override		Non-Lock Push Type, Knob Lock Type	
Mounting Position		Free	
Impact-Resistant/Vibration-Resistant		30G/5G (8.3~2000Hz)	
Pilot Valve Exhaust Method		Individual Exhaust Type, Main Valve-Pilot Valve Integrated Exhaust Type	
Electrical entry		Grommet      DIN Connector	
Protecting structure		Vibration-Resistant      IP65	
Coil Voltages	AC 50/60Hz	110V, 220V, 120V, 240V, 24V	
	DC	24V, 12V, 6V, 100V	
Allowable Voltage Fluctuation		-15~+10% of Rated Voltage	
Apparent Electric Power	AC	No Lamp	5.6VA(50Hz), 5.0VA(60Hz)
		Lamp Attached	3.4VA(50Hz), 2.3VA(60Hz)
Power Consumption	DC	1.8W/2W(Lamp Attached)	
Lamp/Surge Voltage	AC	LED, Varistor	
Protecting Circuit	DC	LED, Varistor	

### Model

Piping	Type	Position	<sup>(1)</sup> Port Size (SUP, CYL.)	Effective Orifice mm <sup>2</sup> (Cv Factor)		<sup>(2)</sup> Weight(kg)	
				Rc(PT)3/8	Rc(PT)1/2	Rc(PT)3/8	Rc(PT)1/2
Body Ported	DS5120-○○- $\frac{02}{03}$ $\frac{04}{04}$	2 Position Single	Rc(PT)1/4	50(2.8)	58(3.2)	0.38	0.37
	DS5220-○○- $\frac{02}{03}$ $\frac{04}{04}$	2 Position Double		Rc(PT)3/8	50(2.8)	58(3.2)	0.48
	DS5320-○○- $\frac{02}{03}$ $\frac{04}{04}$	3 Position Closed Center	Rc(PT)1/2	40(2.2)	45(2.5)	0.59	0.58
	DS5420-○○- $\frac{02}{03}$ $\frac{04}{04}$	3 Position Exhaust Center		43(2.4)	48(2.7)	0.59	0.58
	DS5520-○○- $\frac{02}{03}$ $\frac{04}{04}$	3 Position Pressure Center		40(2.2)	45(2.5)	0.59	0.58

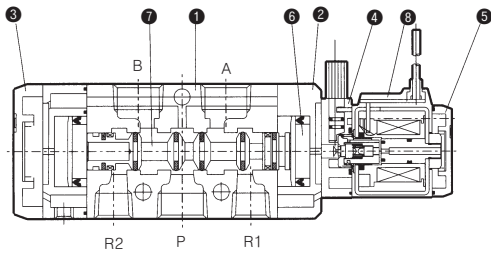
(1) Attachment of direct piping valve is available with each manifold base. (Manifold type/B mount-common exhaust)

(2) Weight of grommet type

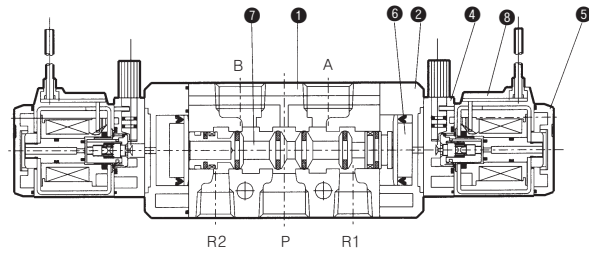
(3) Effective sectional area of valve is assigned by provider, which shows a bit of difference to exhaust-side effective sectional area.

# Series DS5000

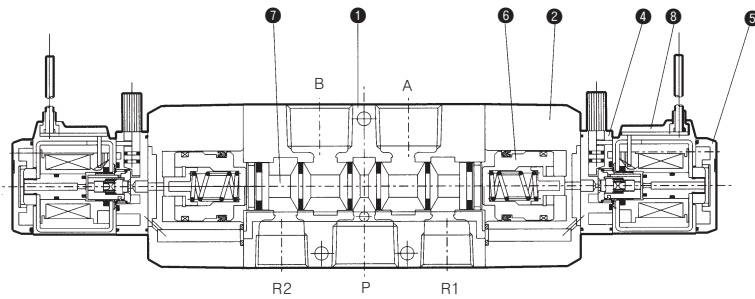
Single Solenoid



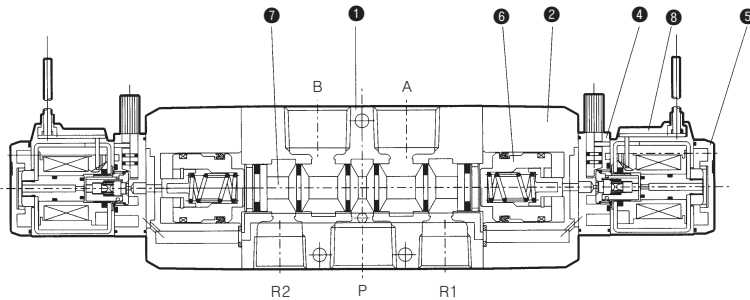
Double Solenoid



3 Position Closed Center



3 Position Exhaust Center



### Major Parts

No.	Name of Components	Material	Remark
1	Body	Aluminum Die Casting	Silver Painting
2	Adapter plate	Aluminum Die Casting	Black Painting
3	End Cover	Aluminum Die Casting	Black Painting
4	Pilot Body	Resin	
5	Pilot Cover	Resin	
6	Piston	<sup>(Note1)</sup> Resin	
7	Spool	Aluminum	

Note 1) 3-location type is aluminum.

### Reserved Components

No.	Name of Components	Material	Remark
8	<sup>(Note2)</sup> Pilot Valve Ass'y	-	-

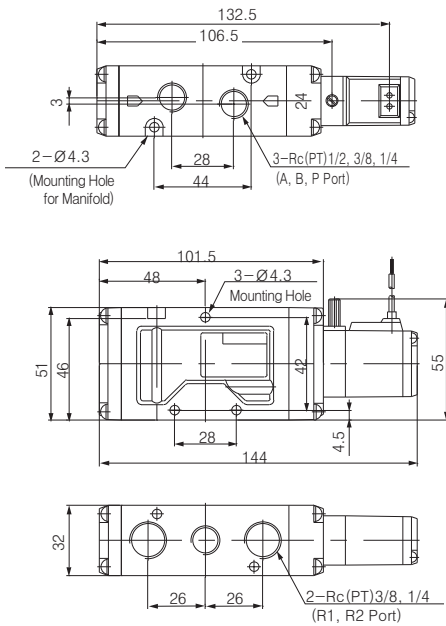
Note 2) Contact for ordering.

- DW
- DR100
- DR200
- RS1000, 2000
- RS4000
- SI UNIT
- DV1000, DV3000, DV4000
- DS300
- DS3000
- DS5000**
- DS2000
- DS6000
- DX1,DX2
- DX1(2)R
- DH
- DP300, DP3000, DP5000
- DM
- DT220

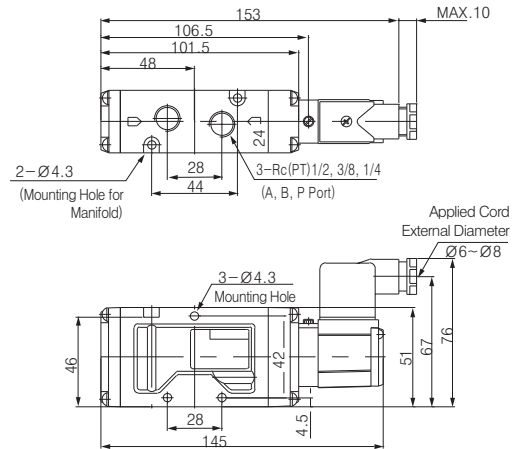
# Series DS5000

## Body Ported Type/2-Position Single Solenoid

Grommet DS512 ○ - ○ G

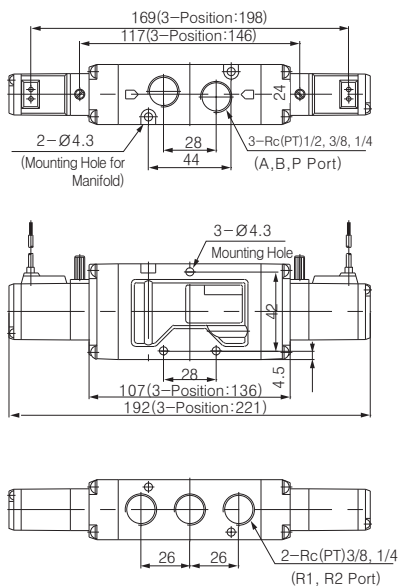


DIN Connector/DS512 ○ - ○ DZ

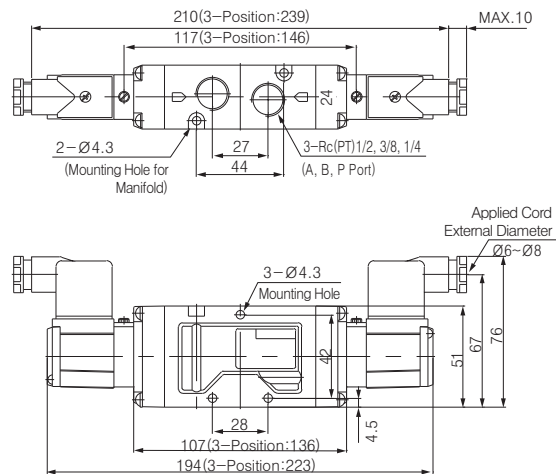


## Body Ported Type/2-Position Double Solenoid · 3-Position Closed Center · Exhaust Center

Grommet DS5 ○ 2 ○ - G



DIN Connector/DS5 ○ 2 ○ - ○ DZ



# Series DS5000

## Manifold



TVV5F5-20

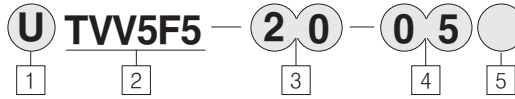
### Types/Specifications

Manifold Type	B Mount (Single Base Type)
Exhaust Port Type	Common Exhaust
Maximum Valve Connection Number	10-Connection

(1) For more than 5-connection, pressurized at both ends of P (SUP) port and exhausted by both R (EXH) ports.

Manifold Base Type	R (EXH) Port Type	Piping Direction/Connect Location			Pipe contact diameterRc(PT)			Applied Valve Type
		P	R	A,B	P	R	A,B	
TVV5F5-20	Common	Transverse	Transverse	Upper	1/2	3/8	3/8, 1/2	DS5○20
		Base	Base	Valve				

### Manifold Base Order Form



**1** Manifold

Blank : Metric (PT)  
U : NPT

**2** DS5000 Series Manifold

**3** Manifold Specification

Symbol : 20  
A, B Port Piping Location : Valve  
Port Piping Diameter  
P : Rc(PT)1/2  
R : Rc(PT)3/8  
Applied Valve Type: DS5○20

**4** Stations

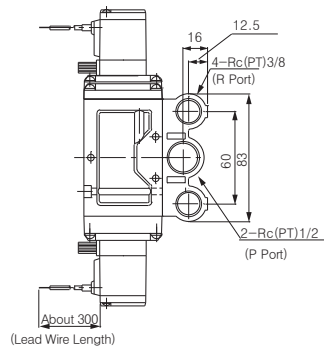
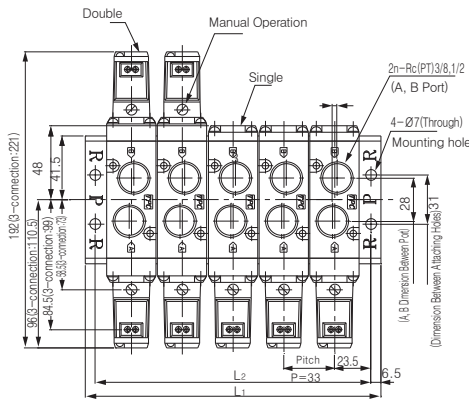
02 : 2 Stations  
:  
10 : 10 Stations

**5** Component Symbol

Symbol : 1  
Passage specification  
P : Common  
R : Common  
Piping Specification  
A, B : Upper  
Remark : 20 Type

## Common EXH/TVV5F5 - 20

Common EXH/TVV5F5 - 20 - ○○1



### L : Dimension Sheet

(n : Connection Number)

L	n	2	3	4	5	6	7	8	9	10
L1		93	126	159	192	225	258	291	324	357
L2		80	113	146	179	212	245	278	311	344

DW

DR100

DR200

RS1000, 2000

RS4000

SI UNIT

DV1000  
DV3000  
DV4000

DS300

DS3000

**DS5000**

DS2000

DS6000

DX1,DX2

DX1(2)R

DH

DP300  
DP3000  
DP5000

DM

DT220

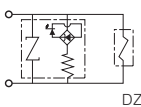
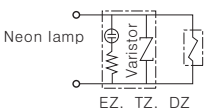
# Series DS5000

## Notices for Handling

### Notices for Products

Please fully understand the notices prior to utilization, and refer to safety notice and common notice.

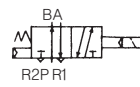
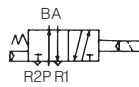
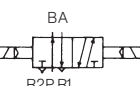
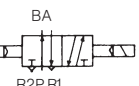
### Indicator Light / Surge Voltage Suppressor

Rated Voltage	AC, DC
Less than 24V	
Less than 200V	

Note 1) No lamp attaching type for Grommet (G) type  
 Note 2) ZNR is called as Varistor, which is surge voltage protection circuit.

### In Case of Using 3-Port Valve (in case of 5-port)

With closing one direction of cylinder port (A and B), it is applied as 3-port valve of normal closed (N.C) or Normal Open (N.O). It is comfortable if 3-port valve is needed. But, do not apply for special purposes such as Non Leak Valve. Moreover, please use with opened condition for exhaust port.

Plug Location	B Port (CYL.1 Port)		A Port (CYL.2 Port)	
	N.C		N.O	
Solenoid Number	Single	(X)Plug 	(X)Plug 	
		(X)Plug 	(X)Plug 	

### For the Quality of Fluid Applied

- ① 5 $\mu$ m filter resolution is sufficient.
- ② Large amount of drain may cause operation failure of pneumatic equipment which firstly uses valve and environmental contamination, so that special management is required. Moreover, if management of drain exhaust is difficult, it is recommended to use automatic exhaust attaching filter.
- ③ If large quantity of carbon powder is generated from compressor, it may cause operation failure owing to attaching on valve inside. It is recommended to use less carbon powder generating compressor or install collecting filter.

### For Piping

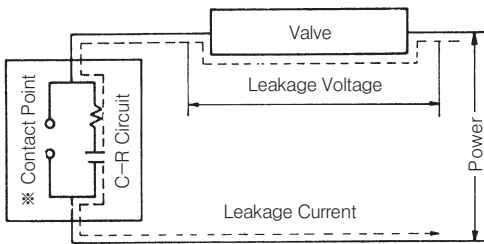
- ① Fully remove chip, cutting oil or dust in a pipe with air blow (flushing) or washing prior to piping.
- ② In case of connecting fittings or pipes, be cautious not to allow chip or seal material of piping screw incoming. Moreover, roll over screw part with seal tape with 1.5~2 spin margins.
- ③ Check if silencer is attached to PE port of manifold valve.
- ④ Connecting torque during piping

Contact screw	Proper Tightening Torque kgf · cm(N · m)	Material of Tightening Part
M3	3.1~3.9(0.31~0.39)	Resin
	4.7~5.9(0.47~0.59)	Aluminum
M4	7.5~9.5(0.75~0.95)	Resin
	11.5~14.5(1.15~1.45)	Aluminum
M5	15~20(1.5~2)	Resin
PT 1/8	70~90(7~9)	Aluminum
PT 1/4	120~140(12~14)	

# Series DS5000

## For Leakage Voltage

- ① In case of power OFF, restrain residual leakage voltage in both end of AC coil under 20% of rated voltage, and under 3% for DC coil. (Please measure AC coil with manually pressing metal pin.)
- ② In case of using C-R circuit for contact point protection, be cautious that leakage voltage possibly increases owing to leakage current through C-R circuit.



\* Be cautious that some of non-contact point relays have protection circuit built-in.

## Operating Environment

- ① Do not attach around the place affected by corrosive gas, chemical liquid, sea water splash, rainwater and steam.
- ② Make a measure such as protection cover, etc, for attaching in the place affected by water drops, oil and spatter during welding process.
- ③ Prevent inflow of dust into valve with attaching silencer at exhaust port of valve.

## For Using in Low Temperature

It is available to use by -10°C, however, full caution is needed for condensation of drain and moist. It is recommended to install drier for the case above.

## For Sequential Power Supply

In case of sequential power supply, apply more than 0.1 second for power supply and 0.05 second for power OFF.

## In Case of Long Term Power Supply

In case of using for a long period with power supply, please ask for consultation to manufacturer.

## How to Find the Flow Rate

- ① In case of  $P_2 + 1.033 \leq P_1 + 1.033 \leq 1.89(P_2 + 1.033)$

$$Q = 22.2S \sqrt{\frac{\Delta P(P_2 + 1.033)}{G}} \cdot \sqrt{\frac{273}{273 + \theta}}$$

- ① In case of  $1.89(P_2 + 1.033) < P_1 + 1.033$

$$Q = 11.1S(P_1 + 1.033) \frac{1}{\sqrt{G}} \cdot \sqrt{\frac{273}{273 + \theta}}$$

- Q : Flux in Conventional Condition (N l / min)
- P<sub>1</sub> : 1st Side Pressure (Gauge Pressure) (kgf/cm<sup>2</sup>)
- P<sub>2</sub> : 2st Side Pressure (Gauge Pressure) (kgf/cm<sup>2</sup>)
- ΔP : Pressure Differential (P<sub>1</sub> - P<sub>2</sub>) (kgf/cm<sup>2</sup>)
- S : Effective Sectional Area (mm<sup>2</sup>)
- G : Specific Gravity (Air=1)
- θ : Temperature of Air Applied (°C)

## Lubrication

- ① Initially lubricated, possible to use with non-Lube.
- ② Please use turbine oil class 1 (ISOVG32) for refueling. Moreover, if refueling is stopped, it may cause operation failure owing to loss of initial lubricant, so that refueling should be continued. Please contact for turbine oil class 1 (ISOVG32).

## Port Indicating Symbol Sheet

Index	DS300	DS3000, DS5000
Inlet	P(SUP)	
Outlet	A(CYL)	A(CYL.2) and B(CYL.1)
Exhaust Hole	R(EXH)	R1(EXH2) and R2(EXH1)
KS Symbol (Single solenoid)		
	S:P(SUP)	

- DW
- DR100
- DR200
- RS1000, 2000
- RS4000
- SI UNIT
- DV1000, DV3000, DV4000
- DS300
- DS3000
- DS5000**
- DS2000
- DS6000
- DX1, DX2
- DX1(2)R
- DH
- DP300, DP3000, DP5000
- DM
- DT220