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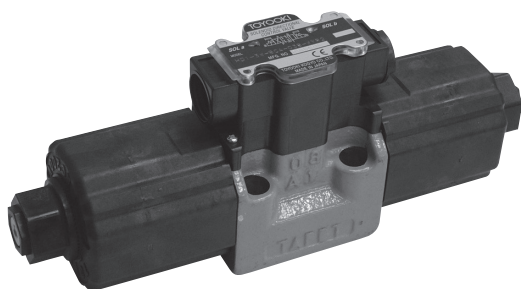
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SOLENOID VALVE (HD*-WY*) SIZE 03



Cautions on use

Please read the Operating Manual carefully to ensure correct usage.

- The piping must be arranged so that the R port is always filled with fluid to make the most of the features of the oil-immersed type valve.
- When installing a no-spring type valve, install it so as to set the spool horizontally.
- Finish the mounting faces to the same quality as the valve faces (3.2 μ mRz).
- Using a valve with the R port plugged can cause operation failure.
- For valves with detent, to hold the spool position without supplying power to the solenoid the back pressure must be 5 MPa or lower for the HD3 series or 2 MPa or lower for the HD1 series.
- Where a PLC is connected directly, select a type with the diode or M12 -4 pin connector type to protect the PLC output card.

Description of the model designation

HD3 (S) -3W-BCA-03B-WYR1 (H)

Max operating pressure _____
1: 10 MPa
3: 25 MPa
Mounting bolt _____
No code: 03 type M8 bolt (standard)
S: 03 type M6 bolt (option)
Switching function _____
3W : Spring center type
2WD: No spring detent type
2S : Spring offset type
Spool type _____
Refer to the SPOOL TYPES table.
Nominal size _____
Conforming to ISO4401-05-04-0-94 (M6 bot type only)
Model code _____

Option functions

- ① M12-4 pin connector type
(only for HD1(S)-WYD2 type)
A: Load side -COMMON right side
B: Load side -COMMON left side
C: Load side +COMMON right side
D: Load side +COMMON left side
- ② Quick return function (NOTE 1)
(only for HD-WYR*)
H: Quick return
- ③ With diode
(only for HD*-WYD2)
S: Load side -COMMON
T: Load side +COMMON

Voltage indication

D2: DC 24 V
R1: AC 100 V
R2: AC 200 V

Wiring method

WY: Cable connection to the side of the terminal box

NOTE 1: The valve with quick return function provides faster response for switching to OFF

Series selection table

	Series	Power Source		Low Voltage	Surge Absorber	M12 4-pin Connector	Quick Return	Compatibility to DeviceNet
		DC	AC					
Low-pressure Type	HD1 (S) -WYD*	○		○	CR + Varistor			
	HD1 (S) -WYD* (A~D)	○		○	Diode	○		○
	HD1 (S) -WYD* (SorT)	○		○	Diode			○
	HD1 (S) -WYR*		○	○	Rectifier			
	HD1 (S) -WYR*H		○	○	Rectifier		○	
High-pressure Type	HD3 (S) -WYD*	○			CR + Varistor			
	HD3 (S) -WYD* (SorT)	○			Diode			○ (NOTE 2)
	HD3 (S) -WYR*		○		Rectifier			
	HD3 (S) -WYR*H		○		Rectifier		○	

NOTE2: Select the slave unit carefully since the solenoid current value is high.

Valve specifications

Series		HD1	HD3
Max. operating pressure (MPa)		10	25
Max. flow (NOTE 3) (L/min)		60	120
Permissible back pressure at T port (NOTE 4) (MPa)		10 (2)	16 (5)
Switching frequency (CYCLE/s)		2 or lower	
Permissible voltage variation range		Rated voltage $\pm 10\%$ V	
Protection structure class		IEC529 IP65	
Hydraulic fluid cleanliness		Complying with ISO11218-Class 12 (NAS1638-Class 12)	
Operating fluid (recommendation)		ISO VG22, 32, 46	
Viscosity (mm ² /s)		15 to 400	
Fluid temperature (°C)		0 to 65	
Ambient temperature (°C)		-10 to 50	
Tightening torque (N·m)		M6: 10 to 12 M8: 13 to 15	
Mass (kg)		3W, 2WD: 4.8 2S: 3.5	

NOTE 3: For details, refer to the operation limit.

NOTE 4: Values in parentheses are for the detent type.

Solenoid specifications

● HD1 Series

Solenoid model	SLH1-03B-D2	SLH1-03B-R1	SLH1-03B-R2
Rated voltage	DC24V	AC100V	AC200V
Frequency	—	50/60Hz	50/60Hz
Holding current	0.2A	0.06A	0.03A
Power consumption	4.8W	5.8W	6.6W
Voltage variation range	$\pm 10\%$ V		

● HD3 Series

Solenoid model	SLH5-03B-D2	SLH5-03B-R1	SLH5-03B-R2
Rated voltage	DC24V	AC100V	AC200V
Frequency	—	50/60Hz	50/60Hz
Holding current	1.5A	0.46A	0.25A
Power consumption	36W	40W	44W
Voltage variation range	$\pm 10\%$ V		

Terminal box

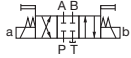
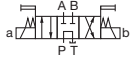
● Size 03B DC type

Solenoid	Rated Voltage	Terminal Box	
		Double Solenoid Type	Single Solenoid Type
HD $\frac{1}{3}$ (S) -***-***-03B-WY D2	DC24V	TBH3-03B-D1W	TBH3-03B-D1S
HD $\frac{1}{3}$ (S) -***-***-03B-WY D2 S	DC24V	TBH3-03B-D1W-S	TBH3-03B-D1S-S
HD $\frac{1}{3}$ (S) -***-***-03B-WY D2 T	DC24V	TBH3-03B-D1W-T	TBH3-03B-D1S-T
HD 1 (S) -***-***-03B-WY D2 A	DC24V	TBH3-03B-D1W-001A	TBH3-03B-D1S-001A
HD 1 (S) -***-***-03B-WY D2 B	DC24V	TBH3-03B-D1W-001B	TBH3-03B-D1S-001B
HD 1 (S) -***-***-03B-WY D2 C	DC24V	TBH3-03B-D1W-001C	TBH3-03B-D1S-001C
HD 1 (S) -***-***-03B-WY D2 D	DC24V	TBH3-03B-D1W-001D	TBH3-03B-D1S-001D

● Size 03B AC type

Solenoid	Rated Voltage	Terminal Box	
		Double Solenoid Type	Single Solenoid Type
HD $\frac{1}{3}$ (S) -***-***-03B-WY R1 R2	AC100V AC200V	TBH3-03B-R1W	TBH3-03B-R1S
HD $\frac{1}{3}$ (S) -***-***-03B-WY R1 R2 H	AC100V AC200V	TBH3-03B-R1W-H	TBH3-03B-R1S-H

Spool types

Type	Spring Center	No Spring Detent	Spring Offset
Model	HD*-3W-*-*B-WY*	HD*-2WD-*-*B-WY*	HD*-2S-*-*B-WY*
Spool Type (NOTE 6)	3W-BCA 	2WD-BcA 	2S-BcA 
	3W-BDA 		2S-KcP 
	3W-BGA 		
	3W-AEB (NOTE 5) 		

NOTE 5: Spool type 3W-AEB is available only for the HD3 series.

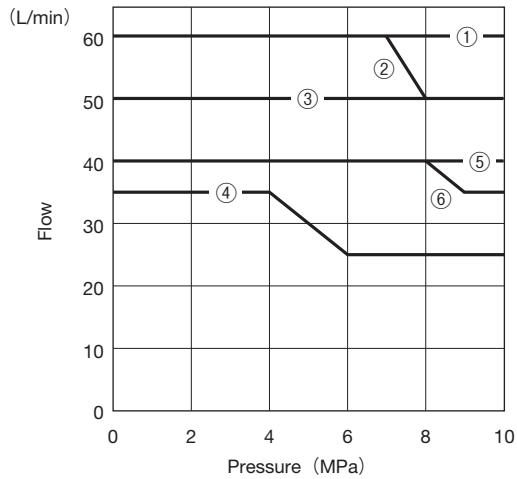
NOTE 6: For spool types not shown above, please consult us.

Valve performance

Operation Limit (Dynamic Viscosity: 33 mm²/sec)

The performance will vary slightly depending on the circuit conditions and the operation conditions (voltage, pressure, flow, viscosity, etc.).

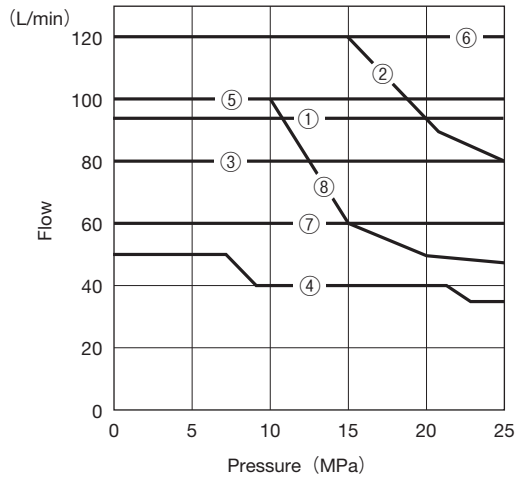
HD1-03B Series



Circuit	Cylinder circuit	A port blocked	B port blocked
Spool Type			
3W-BCA	①	②	②
3W-BDA	③	③	④
3W-BGA	①	②	②
2WD-BcA	⑤ (③)	③	⑤
2S-BcA	③	①	⑥
2S-KcP		②	④

NOTE: (): Indicates the operation limit when used at the cylinder stroke end.

HD3-03B Series

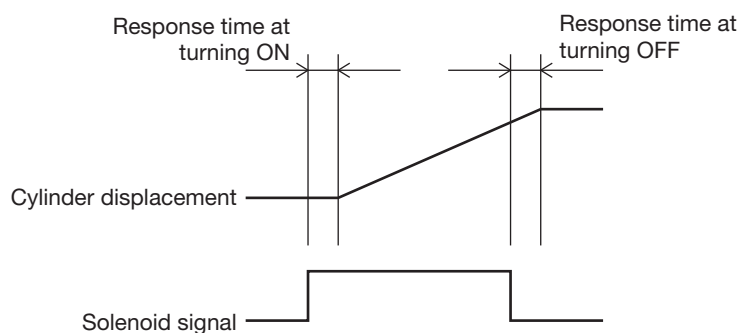


Circuit	Cylinder circuit	A port blocked	B port blocked
Spool Type			
3W-BCA	①	②	②
3W-BDA	③	③	④
3W-BGA	⑤	②	②
3W-AEB	⑦	⑦	⑦
2WD-BcA	① (⑤)	③	③
2S-BcA	③	⑥	⑦
2S-KcP		①	⑧

NOTE: (): Indicates the operation limit when used at the cylinder stroke end.

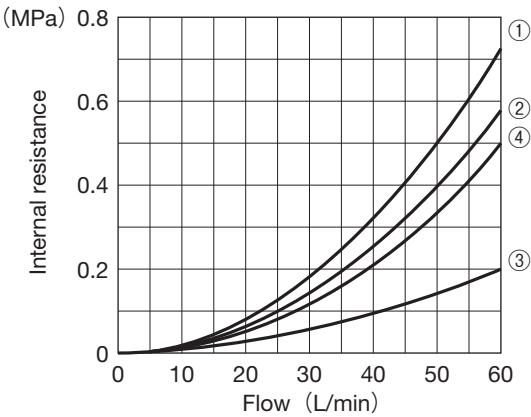
●03B Series

Spool Type	Solenoid Signal	HD1		HD3	
		WYD* WYR*H	WYD* (A·B·C·D) WYD* (S·T) WYR*	WYD* WYR*H	WYD* (A·B·C·D) WYD* (S·T) WYR*
3W-BCA	ON	0.09 (sec)	0.09 (sec)	0.04 (sec)	0.04 (sec)
	OFF	0.06 (sec)	0.23 (sec)	0.02 (sec)	0.18 (sec)
3W-BDA	ON	0.07 (sec)	0.07 (sec)	0.04 (sec)	0.04 (sec)
	OFF	0.05 (sec)	0.22 (sec)	0.03 (sec)	0.16 (sec)
3W-BGA	ON	0.10 (sec)	0.10 (sec)	0.05 (sec)	0.05 (sec)
	OFF	0.06 (sec)	0.25 (sec)	0.03 (sec)	0.15 (sec)
3W-AEB	ON			0.05 (sec)	0.05 (sec)
	OFF			0.02 (sec)	0.10 (sec)
2WD-BcA	ON	0.13 (sec)	0.13 (sec)	0.06 (sec)	0.06 (sec)
	OFF				
2S-BcA	ON	0.07 (sec)	0.07 (sec)	0.04 (sec)	0.04 (sec)
	OFF	0.06 (sec)	0.21 (sec)	0.04 (sec)	0.16 (sec)
2S-KcP	ON				
	OFF				

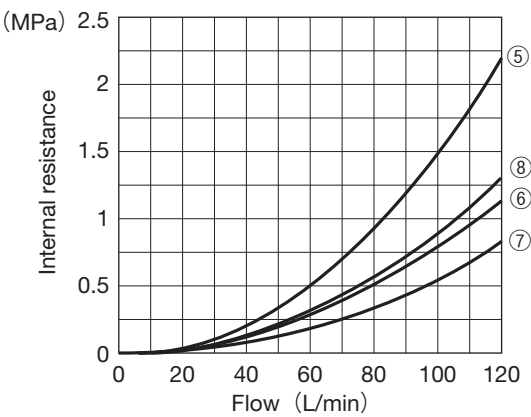


Internal Resistance (Dynamic Viscosity: 33 mm²/sec)

●HD1-03B Series



●HD3-03B Series



●HD1-03B Series

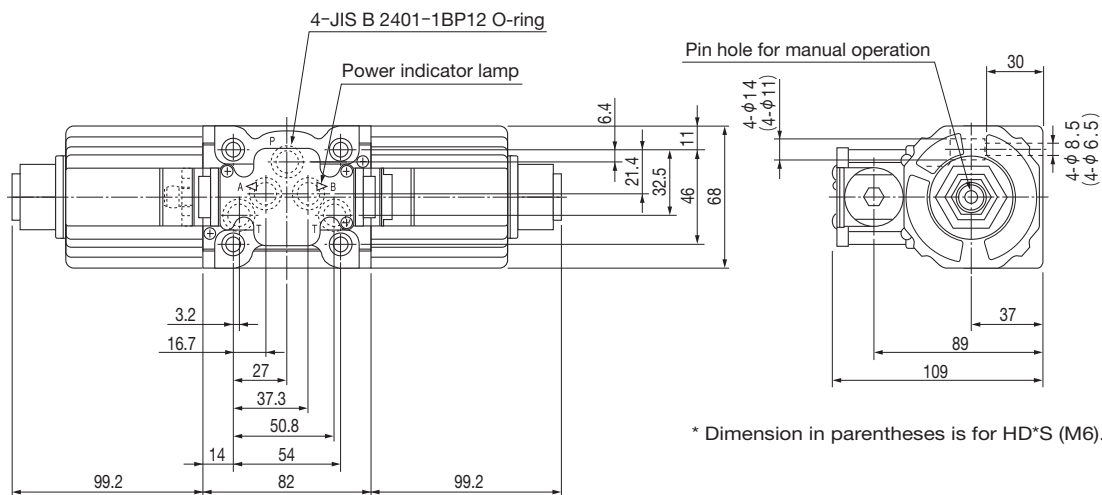
Direction Of Flow \ Spool Type	3W			2WD	2S	
	BCA	BDA	BGA	BcA	BcA	KcP
P→A or B	①	②	①	①	①	①
A or B→T	①	③	④	②	①	
P→T		④				

●HD3-03B Series

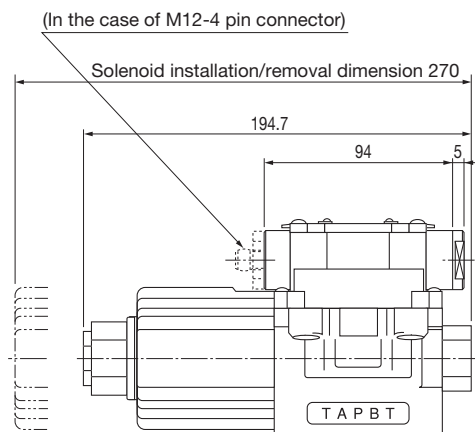
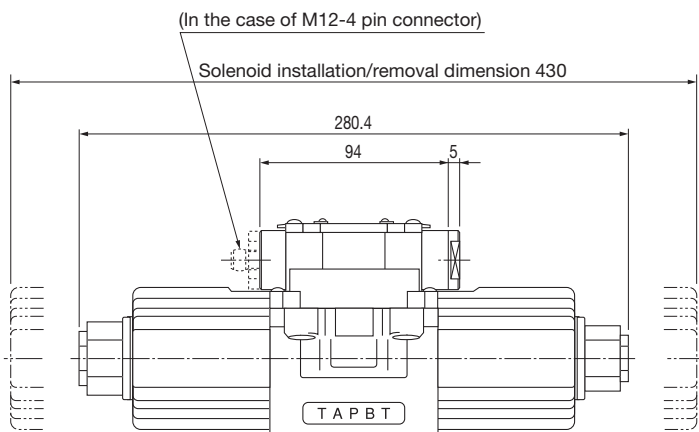
Direction Of Flow \ Spool Type	3W				2WD	2S	
	BCA	BDA	BGA	AEB	BcA	BcA	KcP
P→A or B	⑤	⑤	⑤	⑤	⑤	⑤	⑤
A or B→T	⑥	⑦	⑦	⑤	⑥	⑤	
P→T		⑤		⑧			

Outside dimensions

Size 03 series

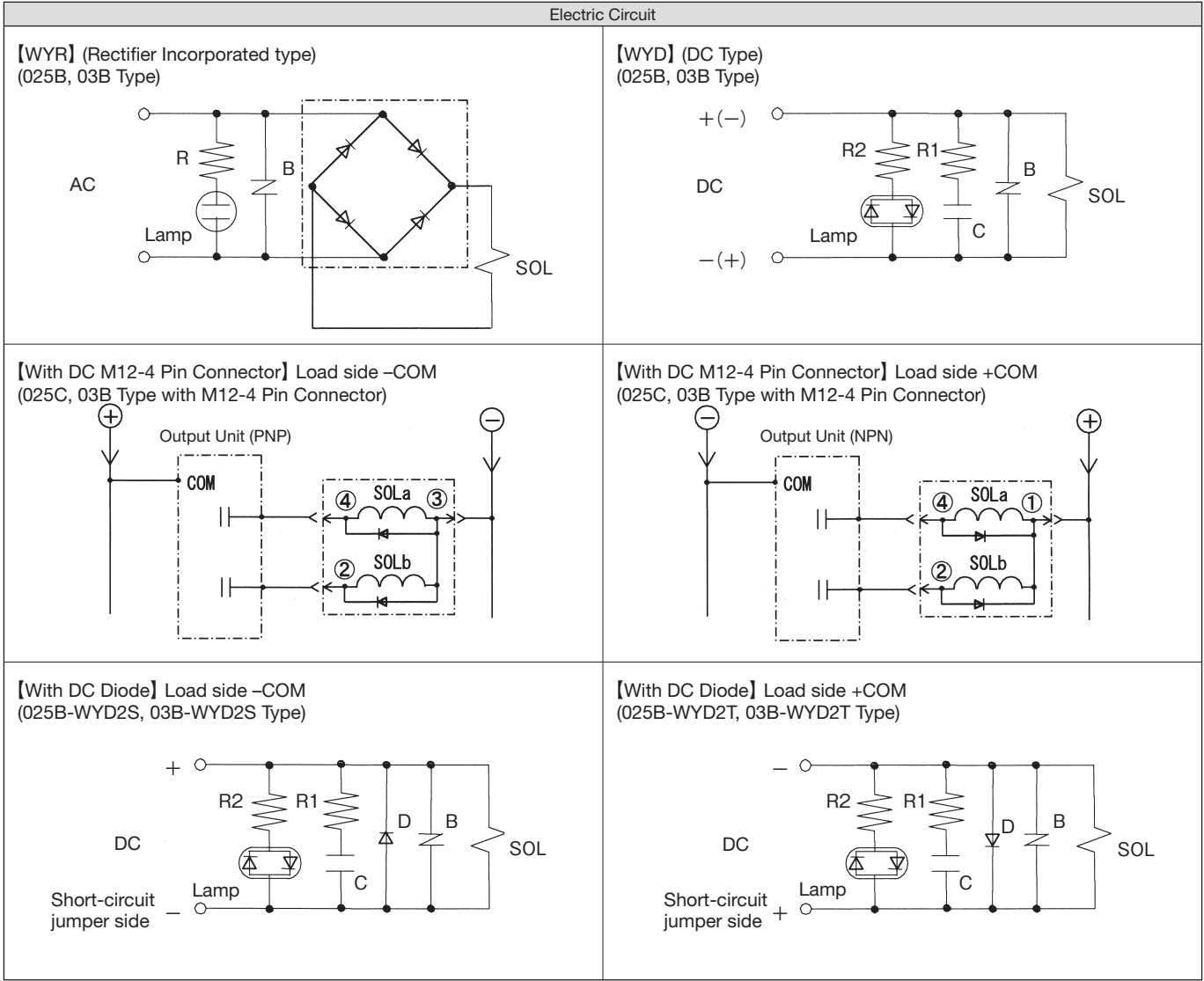
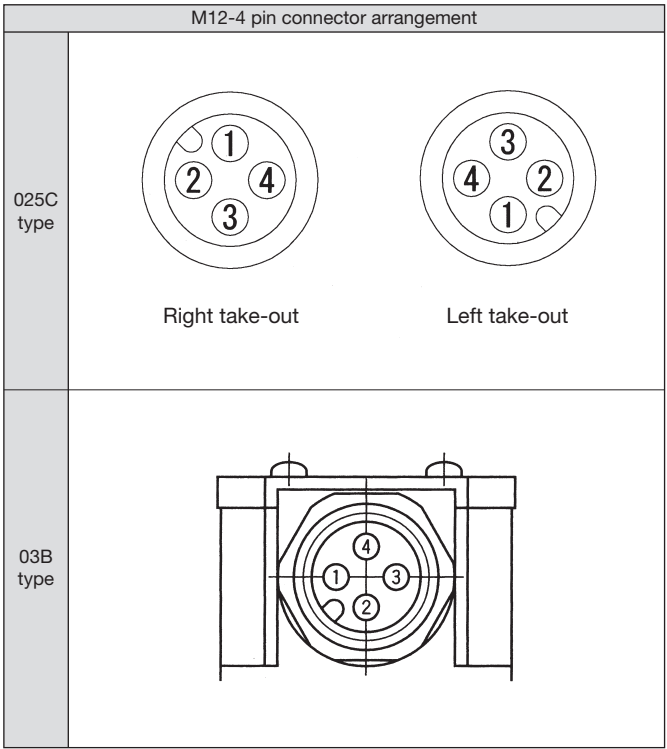
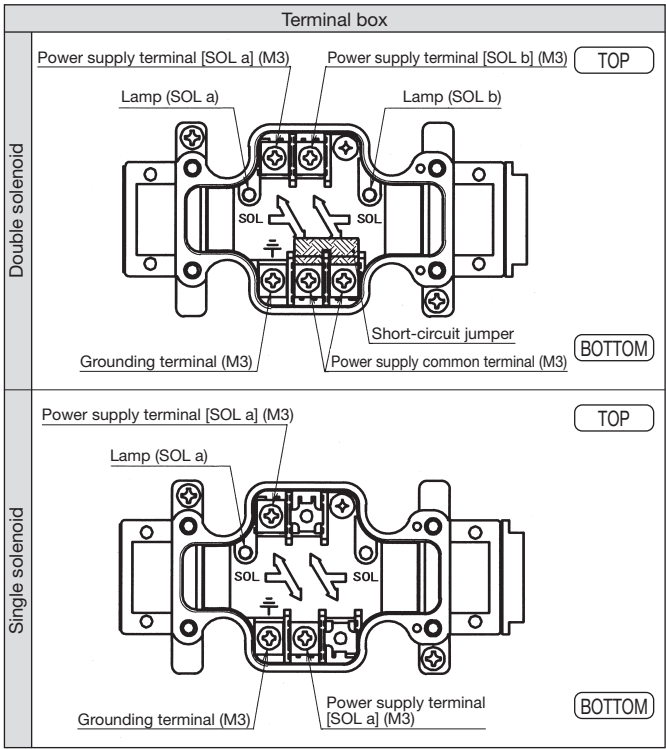


* Dimension in parentheses is for HD*S (M6).

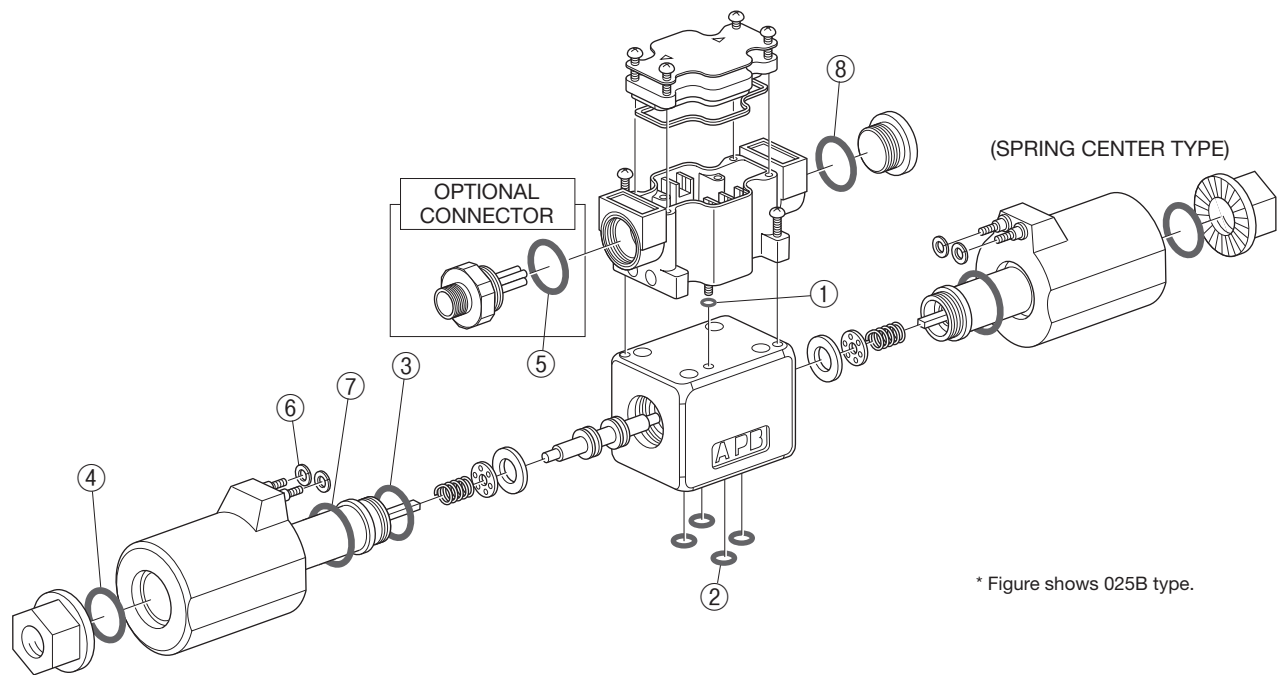


● For the sub-plate SHD03-**T1A, refer to page L-2.
SHD03-**T3, refer to page L-6.

■Connecting method



Packing list



Size 025 Series

No.	Part No.	Name	Q'ty
①	JIS B 2401-1A P4	O-ring	1
②	JIS B 2401-1B P9	O-ring	4
③	JIS B 2401-1B P18	O-ring	2
④	JIS B 2401-1A P20	O-ring	2 (1)

NOTE: (): The number of O-rings used in a spring-offset type valve 025C type (M12-4 pin connector type) does not need ①, ⑤ and ⑧.

No.	Part No.	Name	Q'ty
⑤	JIS B 2401-1A P21	O-ring	1
⑥	S 4	O-ring	4 (2)
⑦	S 26	O-ring	2 (1)
⑧	AS568-019	O-ring	1

Size 03 Series

No.	Part No.	Name	Q'ty
①	JIS B 2401-1A P4	O-ring	1
②	JIS B 2401-1B P12	O-ring	5
③	JIS B 2401-1B P18	O-ring	2
④	-	-	-

NOTE: (): The number of O-rings used in a spring-offset type valve

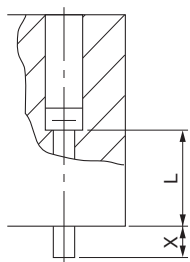
No.	Part No.	Name	Q'ty
⑤	JIS B 2401-1A P21	O-ring	1
⑥	JIS B 2401-1A P3	O-ring	4 (2)
⑦	-	-	-
⑧	AS568-019	O-ring	1

■ Mounting bolts

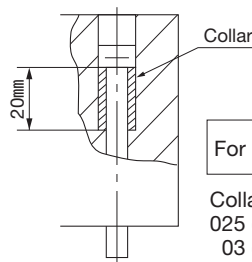
Mounting bolts are not supplied with valves and should be ordered separately.

Since the mounting bolt seat height of new type valves differs from that of conventional valves, please order the adjusting collars or mounting bolts for a new type valve when replacing a valve in a circuit where stack valves are used.

For the 03B series with M6 type mounting bolts, please order the mounting bolts for a new type valve.



Unit: mm		
Series	X	L
025B	8	22
03B	10	30



For replacing conventional valve

Collar model
025 (for M5) : HH-00200 (4 bolts)
03 (for M8) : HH-00271 (4 bolts)

025B Series Mounting Bolts for the HY-TEGRA System

Hexagon socket head bolt

No. of Stack Levels	Bolt Type
1	JIS B 1176 M5×30
2	HKS-NA-5×65
3	HKS-NA-5×100
4	HKS-NA-5×135
5	HKS-NA-5×170

Stud bolt

No. of Stack Levels	Bolt Type
1	
2	HKS-NC-5×71
3	HKS-NC-5×106
4	HKS-NC-5×141
5	HKS-NC-5×176

023B Series Mounting Bolts for the HY-TEGRA System

M6 hexagon socket head bolt

No. of Stack Levels	Bolt Type
1	JIS B 1176 M6×40
2	HKS-NA-6× 95
3	HKS-NA-6×150
4	HKS-NA-6×205
5	HKS-NA-6×260

M6 stud bolt

No. of Stack Levels	Bolt Type
1	
2	HKS-NC-6×106
3	HKS-NC-6×161
4	HKS-NC-6×216
5	HKS-NC-6×271

M8 hexagon socket head bolt

No. of Stack Levels	Bolt Type
1	JIS B 1176 M8×40
2	HKS-NA-8× 95
3	HKS-NA-8×150
4	HKS-NA-8×205
5	HKS-NA-8×260

M8 stud bolt

No. of Stack Levels	Bolt Type
1	
2	HKS-NC-8×106
3	HKS-NC-8×161
4	HKS-NC-8×216
5	HKS-NC-8×271

① Use mounting bolts of the strength category class 12.9.

② Stud bolts are supplied with nuts.

③ If an M6 type solenoid valve is used for the 03B series, also use an M6 type (H*3HS) HY-TEGRA valve.

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