

SOLENOID CHARACTERISTICS

● For 025 type solenoid valve

Electric source	Solenoid block model	Rated voltage	Permissible range of voltage variation	Starting current	Holding current	Consumed power	Solenoid valve
AC	SLH3-025-A1 SLH3-025-A1-D	100V/50Hz	90 ~ 110 V	2.0 A	0.45A	18.5W	HD3-025A-WYA1 HD3-025A-WDA1
		100V/60Hz	90 ~ 121 V	1.80A	0.31A	14.8W	
		110V/60Hz		1.90A	0.39A	19.1W	
	SLH3-025-A2 SLH3-025-A2-D	200V/50Hz	180 ~ 220 V	1.0 A	0.23A	18.5W	HD3-025A-WYA2 HD3-025A-WDA2
		200V/60Hz	180 ~ 242 V	0.90A	0.16A	14.8W	
		220V/60Hz		0.95A	0.20A	19.1W	
	SLH3-025-A3 SLH3-025-A3-D	110V/50Hz	99 ~ 121 V	1.8 A	0.43A	18.5W	HD3-025A-WYA3 HD3-025A-WDA3
		110V/60Hz	99 ~ 133 V	1.60A	0.29A	14.8W	
		121V/60Hz		1.70A	0.36A	19.1W	
	SLH3-025-A4 SLH3-025-A4-D	220V/50Hz	198 ~ 242 V	0.9 A	0.22A	18.5W	HD3-025A-WYA4 HD3-025A-WDA4
		220V/60Hz	198 ~ 266 V	0.80A	0.15A	14.8W	
		242V/60Hz		0.85A	0.18A	19.1W	
DC	SLH3-025-D1 SLH3-025-D1-D	12V	10.8~ 13.2V	—	2.45A	29.3W	HD3-025A-WYD1 HD3-025A-WDD1
	SLH3-025-D2 SLH3-025-D2-D	24V	21.6~ 26.4V	—	1.22A	29.3W	HD3-025A-WYD2 HD3-025A-WDD2
AC	SLH3-L3-A1 SLH3-L3-A1-D	100V/50Hz	90 ~ 110 V	0.29A	0.19A	6.1W	HD3-025A-LYA1 HD3-025A-LDA1
		100V/60Hz	90 ~ 121 V	0.24A	0.135A	4.1W	
		110V/60Hz		0.265A	0.165A	5.3W	
	SLH3-L3-A2 SLH3-L3-A2-D	200V/50Hz	180 ~ 220 V	0.145A	0.095A	6.1W	HD3-025A-LYA2 HD3-025A-LDA2
		200V/60Hz	180 ~ 242 V	0.12A	0.07A	4.1W	
		220V/60Hz		0.135A	0.085A	5.3W	
	SLH3-L3-A3 SLH3-L3-A3-D	110V/50Hz	99 ~ 121 V	0.26A	0.17A	6.1W	HD3-025A-LYA3 HD3-025A-LDA3
		110V/60Hz	99 ~ 133 V	0.22A	0.13A	4.1W	
		121V/60Hz		0.25A	0.15A	5.3W	
	SLH3-L3-A4 SLH3-L3-A4-D	220V/50Hz	198 ~ 242 V	0.14A	0.09A	6.1W	HD3-025A-LYA4 HD3-025A-LDA4
		220V/60Hz	198 ~ 266 V	0.11A	0.06A	4.1W	
		242V/60Hz		0.13A	0.08A	5.3W	
DC	SLH3-L3-D1 SLH3-L3-D1-D	12V	10.8~ 13.2V	—	0.4 A	4.8W	HD3-025A-LYD1 HD3-025A-LDD1
	SLH3-L3-D2 SLH3-L3-D2-D	24V	21.6~ 26.4V	—	0.2 A	4.8W	HD3-025A-LYD2 HD3-025A-LDD2
RF (AC→DC)	HSOLC-12A-RF-A	100V	90 ~ 110 V	—	0.25A	22 W	HD3C-025C-R1
	HSOLC-12A-RF-B	200V	180 ~ 220 V	—	0.13A	22 W	HD3C-025C-R2
	HSOLC-12A-RF-G	110V	99 ~ 121 V	—	0.23A	22 W	HD3C-025C-R3
	HSOLC-12A-RF-L	220V	198 ~ 242 V	—	0.11A	22 W	HD3C-025C-R4
DC	HSOLC-12A-DC-C	12V	10.8~ 13.2V	—	1.83A	22 W	HD3C-025C-D1
	HSOLC-12A-DC-D	24V	21.6~ 26.4V	—	0.92A	22 W	HD3C-025C-D2

● For 03 type solenoid valve

Electric source	Solenoid block model	Rated voltage	Permissible range of voltage variation	Starting current	Holding current	Consumed power	Solenoid valve
AC	SLH3-03-A1 SLH3-03-A1-D	100V/50Hz	90 ~ 110 V	4.7A	0.78A	31 W	HD3-03A-WYA1 HD3-03A-WDA1
		100V/60Hz	90 ~ 121 V	4.0A	0.57A	27.0W	
		100V/60Hz		4.4A	0.64A	34.0W	
	SLH3-03-A2 SLH3-03-A2-D	200V/50Hz	180 ~ 220 V	2.4A	0.39A	31 W	HD3-03A-WYA2 HD3-03A-WDA2
		200V/60Hz	180 ~ 242 V	2.0A	0.29A	27.0W	
		220V/60Hz		2.2A	0.32A	34.0W	
	SLH3-03-A3 SLH3-03-A3-D	110V/50Hz	99 ~ 121 V	4.3A	0.71A	31.0W	HD3-03A-WYA3 HD3-03A-WDA3
		110V/60Hz	99 ~ 133 V	3.6A	0.52A	27.0W	
		121V/60Hz		4.0A	0.58A	34.0W	
	SLH3-03-A4 SLH3-03-A4-D	220V/50Hz	198 ~ 242 V	2.2A	0.36A	31.0W	HD3-03A-WYA4 HD3-03A-WDA4
		220V/60Hz	198 ~ 266 V	1.8A	0.26A	27.0W	
		242V/60Hz		2.0A	0.29A	34.0W	
DC	SLH3-03-D1 SLH3-03-D1-D	12V	10.8~ 13.2V	—	3.2 A	38.4W	HD3-03A-WYD1 HD3-03A-WDD2
	SLH3-03-D2 SLH3-03-D2-D	24V	21.6~ 26.4V	—	1.6 A	38.4W	HD3-03A-WYD2 HD3-03A-WDD2
AC	For solenoid blocks for HD3-03A-LYA*(HD3-03A-LDA*), please refer to SLH3-L3-A* (SLH3-L3-A*-D) which are shown in 025 type. The same types of solenoid blocks are used both for 025 and 03 type solenoid valves.						HD3-03A-LYA*
DC	For solenoid blocks for HD3-03A-LYD*(HD3-03A-LDD*), please refer to SLH3-L3-D* (SLH3-D3-D*-D) which are shown in 025 type. The same types of solenoid blocks are used both for 025 and 03 type solenoid valves.						HD3-03A-LYD*
RF (AC→DC)	HSOL-35B-RF-A	100V	90 ~ 110 V	—	0.41A	38 W	HD3(C)-03C-R1
	HSOL-35B-RF-B	200V	180 ~ 220 V	—	0.21A	38 W	HD3(C)-03C-R2
	HSOL-35B-RF-G	110V	99 ~ 121 V	—	0.37A	38 W	HD3(C)-03C-R3
	HSOL-35B-RF-L	220V	198 ~ 242 V	—	0.19A	38 W	HD3(C)-03C-R4
DC	HSOL-35B-DC-C	12V	10.8~ 13.2V	—	3.08A	37 W	HD3(C)-03C-D1
	HSOL-35B-DC-D	24V	21.6~ 26.4V	—	1.54A	37 W	HD3(C)-03C-D2
RF (AC→DC)	HSOL-35B-RF-A-010	100V	90 ~ 110 V	—	0.39A	35 W	HD1(C)-03C-R1
	HSOL-35B-RF-B-010	200V	180 ~ 220 V	—	0.20A	35 W	HD1(C)-03C-R2
	HSOL-35B-RF-G-010	110V	99 ~ 121 V	—	0.35A	35 W	HD1(C)-03C-R3
	HSOL-35B-RF-L-010	220V	198 ~ 242 V	—	0.18A	35 W	HD1(C)-03C-R4
DC	HSOL-35B-DC-C-010	12V	10.8~ 13.2V	—	2.91A	35 W	HD1(C)-03C-D1
	HSOL-35B-DC-D-010	24V	21.6~ 26.4V	—	1.46A	35 W	HD1(C)-03C-D2

Directional control valves

Solenoid operated directional control valves (Series HD3-025)

• Oil-immersed type

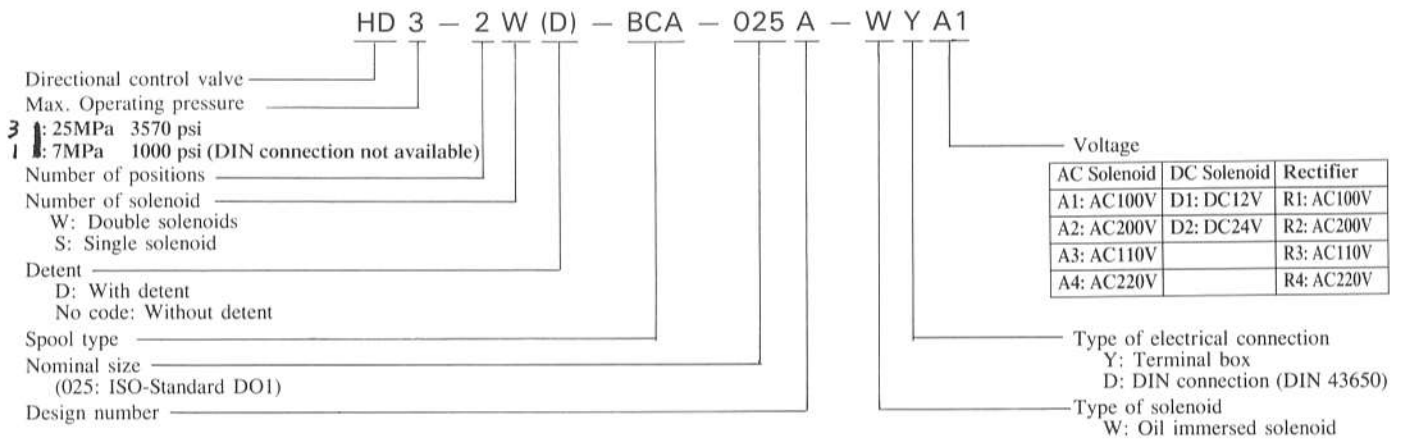


• Features

With its solenoid core immersed in the oil, this valve can greatly reduce the switching noise.



• Model coding



Sub-plate should be separately ordered.

• Model

Type	Spring centered		No spring	Spring offset	
Model	HD* -3W- *-025A-W**		HD* -2W(D)- *-025A-W**	HD* -2S- *-025A-W**	
Symbol					

Spool symbols in are available to HD3 type only

● Specifications

Pipe size	Rated flow		Max. flow		Max. operating pressure		Permissible back pressure		Switching frequency	Spring arrangement	Model
	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	MPa	psi			
1/4	27	7.2	50 (40)*1 (30)*2	13/7 (10.6) (7.9)	25	3,570	16	2,285	3 times/sec or less	Spring centered	HD3-3W- *-025A-W**
										No spring	HD3-2W(D)- *-025A-W**
										Spring offset	HD3-2S- *-025A-W**
	27	5.3	40	7.9	7	1,000	7	1,000	3 times/sec or less	Spring centered	HD1-3W- *-025A-W**
										No spring	HD1-2W(D)- *-025A-W**
										Spring offset	HD1-2S- *-025A-W**

Values in () *1 and () *2 are respectively for spool type BDA and AEB.

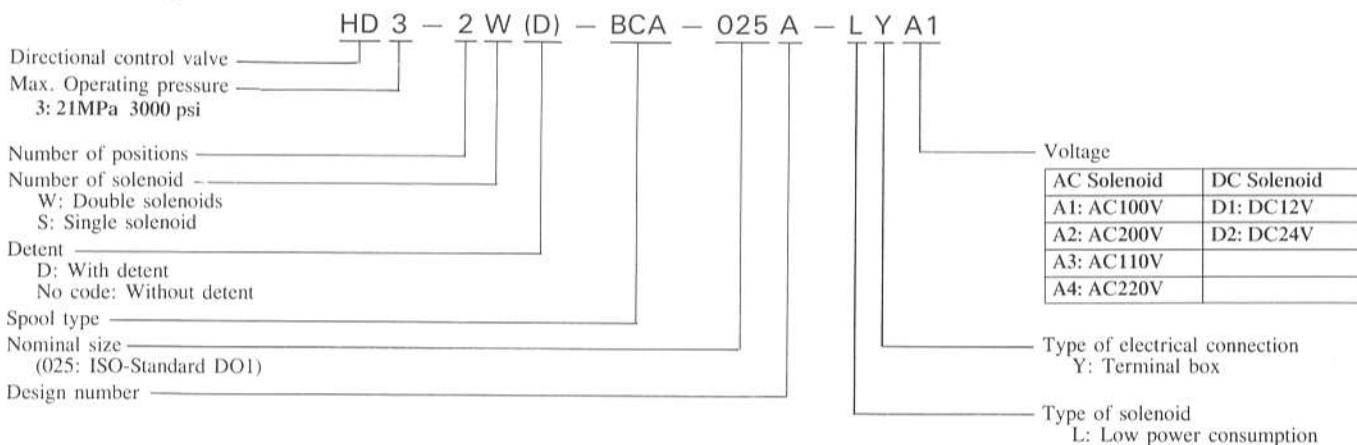
● Low power consumption type



● Features

This valve, which consumes almost as little power as a pilot lamp does, can be driven even with micro relay.
Neither of double solenoids in AC voltage does burn even if they are accidentally powered at the same time.

● Model coding



Sup-plate should be separately ordered.

● Model

Type	Spring centered		No spring	Spring offset	
Model	HD *-3W- *-025A-L**		HD *-2W(D)- *-025A-L**	HD *-2S- *-025A-L**	
Symbol	3W-BCA	3W-AEB	2W-BcA	2S-BcA	2S-BC
	3W-BDA	3W-BMA	2W-BdA	2S-BdA	2S-BG
	3W-BGA	3W-BM1A	2W-BgA	2S-BgA	2S-CA
	3W-BG1A	3W-BNA	2WD-BcA	2S-KcP	
		3W-BN1A			

● Specifications

Pipe size	Rated flow		Max. flow		Max. operating pressure		Permissible back pressure		Switching frequency	Switching frequency	Model
	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	MPa	psi			
1/4	20 (12)	5.3 (3.2)	40 (30)	10.6 (7.9)	21	3,000	7	1,000	2 time/sec or less	Spring centered	HD3-3W-**-025A-***
										No spring	HD3-2W(D)-**-025A-L-***
										Spring offset	HD3-2S-**-025A-L-***

Values in () are for BDA and AEB.

● Shockless type



● Features

This valve greatly reduces shocks, surge pressure and noise in the circuits when its solenoid is switched on and off.

Its solenoid generates no starting current to avoid burning of coil.

● Model coding

HD 3 C - 2 W (D)-BCA - 025 C - D1 (S)

Directional control valve
Max. operating pressure
3: 21MPa 3000 psi
Shockless type

Number of positions

Number of solenoid
W: Double solenoids
S: Single solenoid

Detent
D: With detent
No code: Without detent

Spool type

Surge killer
S: With surge killer (DC solenoid only)
No code: Without surge killer

Voltage

Rectifier	DC Solenoid
R1: AC100V	D1: DC12V
R2: AC200V	D2: DC24V
R3: AC110V	
R4: AC220V	

Design number

Nominal size
(025: ISO-Standard DO1)

Sub-plate should be separately ordered

● Model

Type	Spring centered	No spring	Spring offset
Model	HD3C-3W-**-025C-*	HD3C-2W(D)-**-025C-*	HD3C-2S-**-025C-*
Symbol	3W-BCA	3W-AEB	2W-BcA
	3W-BDA	3W-BMA	2S-BdA
	3W-BGA		2S-KcP

● Specifications

Pipe size	Rated flow		Max. flow		Max. operating pressure		Permissible back pressure		Switching frequency	Spring arrangement	Model
	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	MPa	psi			
1/4	15	4	35 (15)	9.3 (4.0)	21	3,000	1	143	2 times/sec or less	Spring centered	HD3-3W-**-025A-***
										No spring	HD3-2W(D)-**-025A-L-***
										Spring offset	HD3-2S-**-025A-L-***

Values in () are for spool type AEB, BcA and KcP.

Solenoid operated directional control valves (Series HD3-03)

• Oil-immersed type

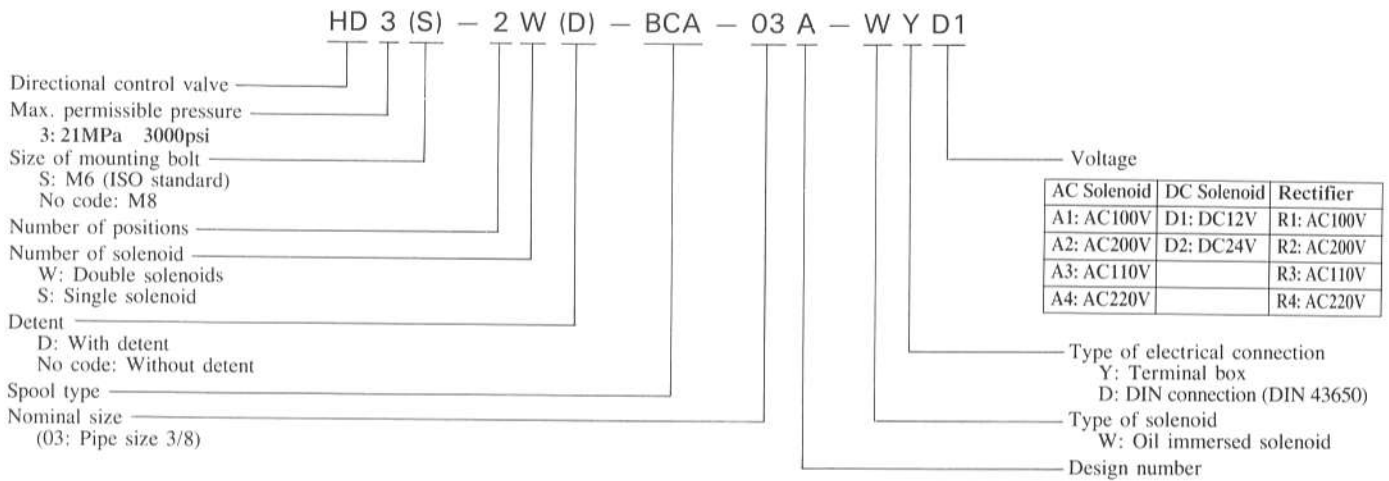


• Features

With its solenoid core immersed in the oil, this valve can greatly reduce the switching noise.



• Model coding



Sub-plate should be separately ordered.

• Model

Type	Spring centered		No spring	Spring offset
Model	HD3 (S)-3W-#-03A-W**		HD3 (S)-2W(D)-#-03A-W**	HD3 (S)-2S-#-03A-W**
Symbol				

• Specifications

Pipe size	Rated flow		Max. flow		Max. operating pressure		Permissible back pressure		Switching frequency	Switching frequency	Model
	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	MPa	psi			
3/8	55	10.6	120	21.2	25	3,000	16	1,000	3 time/sec or less	Spring centered	HD3(S)-3W-#-03A-W**
										No spring	HD3(S)-2W(D)-#-03A-W**
										Spring offset	HD3(S)-2S-#-03A-W**
	40	10.6	60	21.2	7	3,000	7	1,000		Spring centered	HD1(S)-3W-#-03A-W**
										No spring	HD1(S)-2W(D)-#-03A-W**
										Spring offset	HD1(S)-2S-#-03A-W**

Values in () are for spool type AEB.

● Low power consumptive type

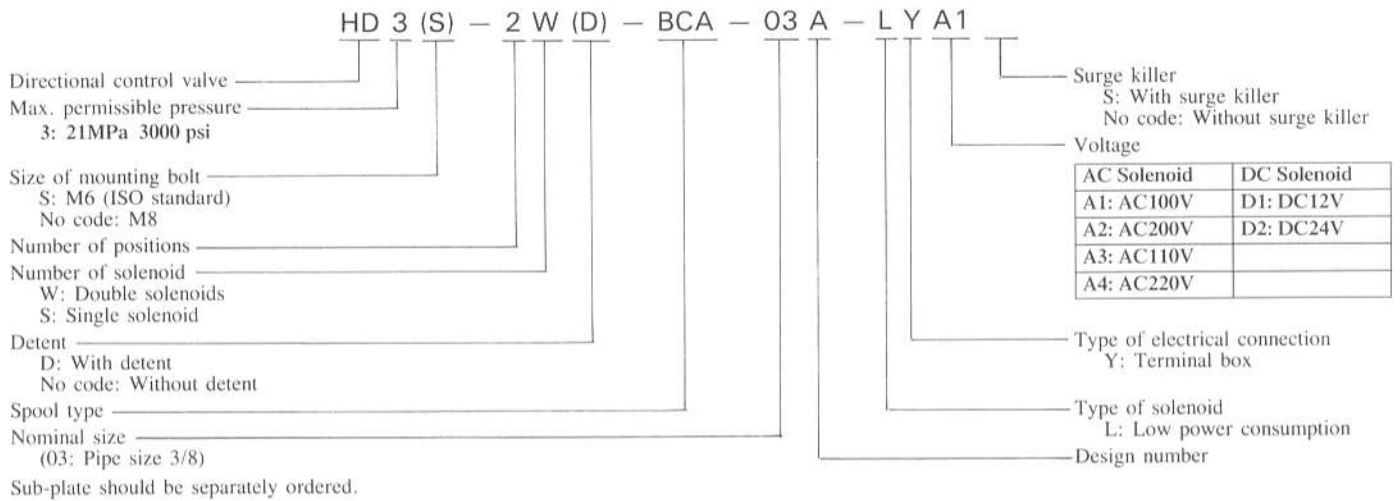


HD3-3W-BGA-03A-LYA2

● Features

This valve, which consumes almost as little power as a pilot lamp does, can be driven even with micro relay.
Neither of double solenoids in AC voltage does burn even if they are accidentally powered at the same time.

● Model coding



● Model

Type	Spring centered		No spring		Spring offset
Model	HD (S)-3W-03A-L		HD (S)-2W(D)-03A-L		HD (S)-2S-03A-L
Symbol					

● Specifications

Pipe size	Rated flow		Max. flow		Max. operating pressure		Permissible back pressure		Min. pilot pressure		Switching frequency	Switching frequency	Model
	ℓ /min	gpm	ℓ /min	gpm	MPa	psi	MPa	psi	MPa	psi			
3/8	40 (20)	10.6 (5.3)	100 (40)	26.5 (7.9)	21	3,000	7	1,000	0.4	57	2 time/sec or less	Spring centered	HD3(S)-3W-03A-L
												No spring	HD3(S)-2W(D)-03A-L
												Spring offset	HD3(S)-2S-03A-L

Value in () are for spool type BDA and AEB.

Solenoid controlled pilot operated directional control valves (Series HDD3-04 ~ 10)

• Standard type



This valve, composed of solenoid operated directional control valve as a pilot valve and hydraulic operated directional control valve (main valve), serves to control the direction of flow by operating the main valve by the pilot pressure.

• Model coding

HDD3 - 2 W (D) - BCA - 2 - 10 A - W Y A1

- Directional control valve
- Max. operating pressure
3: 21MPa 3000 psi
- Number of position
- No. of solenoid
W: Double solenoids
S: Single solenoid
- Detent
D: With detent
No code: Without detent
- Spool symbol (Please refer to the list of spool symbol.)
2: Internal pilot, External drain
4: Internal pilot, External drain, with choke
6: External pilot, External drain
8: External pilot, External drain, with choke
- Nominal size
- Design number
- Type of solenoid
W: Oil immersed solenoid
L: Low power consumption
- Type of electrical connection
Y: Terminal box
D: DIN connection (DIN43650)
- Voltage


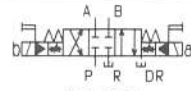
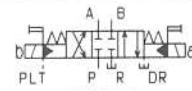
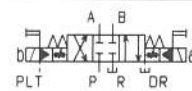

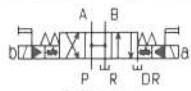

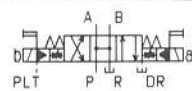
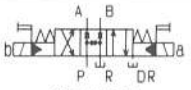

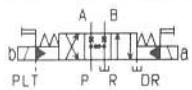
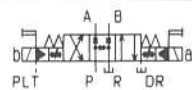



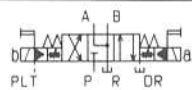
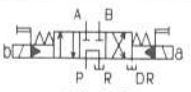
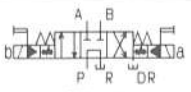
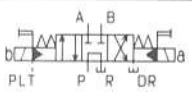
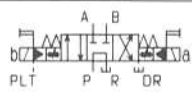



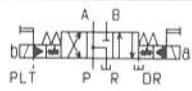
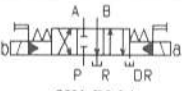



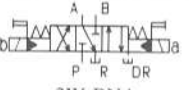



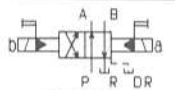
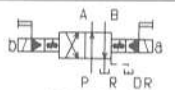
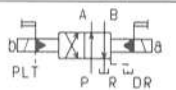
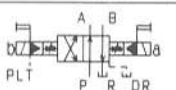
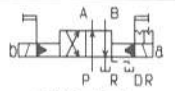
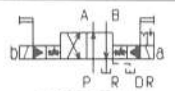
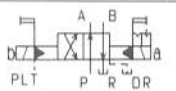
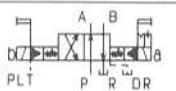
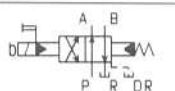
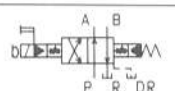
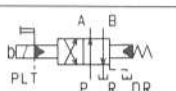
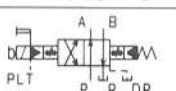
AC Solenoid	DC Solenoid
A1: AC100V	D1: DC12V
A2: AC200V	D2: DC24V
A3: AC110V	
A4: AC220V	

- Solenoid operated directional control valve 025 type (oil-immersed or low power consumption type) is mounted as a pilot valve. For its specification, please refer to the series HD3-025.

• Specifications

Pipe size	Rated flow		Max. flow		Max. operating pressure		Permissible back press.				Mini pilot press. MPa psi				Voltage range	Model
	ℓ/min	gpm	ℓ/min	gpm	MPa	gpm	MPa		psi		MPa		psi			
							int.	drain	ext.	drain	int.	pilot	ext.	pilot		
1/2	75	19.8	120	31.7	21	3,000	7	1,000	21	3,000	0.4	57	0.5	71	Rated voltage ± 10%	HDD3- ^W / _S -*-04A-***
3/4	120	31.7	190	50.3												HDD3- ^W / _S -*-06A-***
1-1/4	320	84.6	500	132.3												HDD3- ^W / _S -*-10A-***

● Models

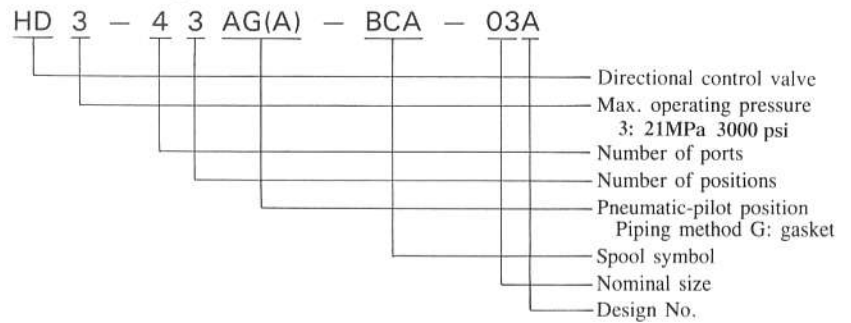
Type	Spring centered			
Model	HDD3-3W-※-2-※	HDD3-3W-※-4-※	HDD3-3W-※-6-※	HDD3-3W-※-8-※
Symbol	 3W-BCA	 3W-BCA	 3W-BCA	 3W-BCA
	 3W-BDA	 3W-BDA	 3W-BDA	 3W-BDA
	 3W-BD1A	 3W-BD1A	 3W-BD1A	 3W-BD1A
	 3W-BGA	 3W-BGA	 3W-BGA	 3W-BGA
	 3W-AEB	 3W-AEB	 3W-AEB	 3W-AEB
	 3W-BHA	 3W-BHA	 3W-BHA	 3W-BHA
	 3W-BMA	 3W-BMA	 3W-BMA	 3W-BMA
	 3W-BNA	 3W-BNA	 3W-BNA	 3W-BNA
Type	No spring			
Model	HDD3-2W(D)-※-2-※	HDD3-2W(D)-※-4-※	HDD3-2W(D)-※-6-※	HDD3-2W(D)-※-8-※
Symbol	 2W-BCA	 2W-BCA	 2W-BCA	 2W-BCA
	 2WD-BCA	 2WD-BCA	 2WD-BCA	 2WD-BCA
Type	Spring offset			
Model	HDD3-2S-※-2-※	HDD3-2S-※-4-※	HDD3-2S-※-6-※	HDD3-2S-※-8-※
Symbol	 2S-B※A	 2S-B※A	 2S-B※A	 2S-B※A

Pneumatic-pilot operated directional control valves (Series HD3-AG)

Pneumatic pilot pressure is used for the directional control of flow.



• Model coding



• This valve is interchangeable with solenoid operated valve (HD-03A) in mounting size.

• Models

Spring arrangement	Spring centered	No spring	Spring offset
Model coding	HD3-43AGA-※-03A	HD3-42AGA-※-03A	HD3-42AG-※-03A
Models	<p>43AGA-BCA</p>	<p>43AGA-AEB</p>	<p>42AGA-BcA</p>
	<p>43AGA-BDA</p>	<p>43AGA-BMA</p>	<p>42AGA-BdA</p>
	<p>43AGA-BGA</p>	<p>43AGA-BM1A</p>	<p>42AGA-BgA</p>
	<p>43AGA-BH1A</p>		

• Specifications

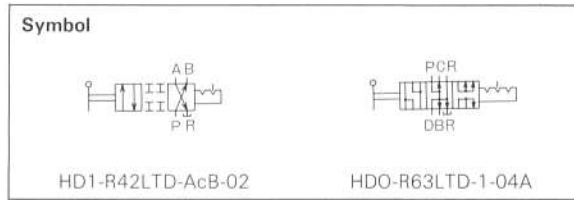
Pipe size	Rated flow		Max. operating pressure		Pilot pressure		Permissible back pressure		Model
	ℓ/min	gpm	MPa	psi	MPa	psi	MPa	psi	
3/8	40	10.6	21	3,000	0.15 ~ 0.7	21 ~ 100	7	1,000	HD3-4※AG(A)-※-03A※

Sub-plate should be separately ordered.

Manual operated directional control valves rotary type (Series HD※-R)

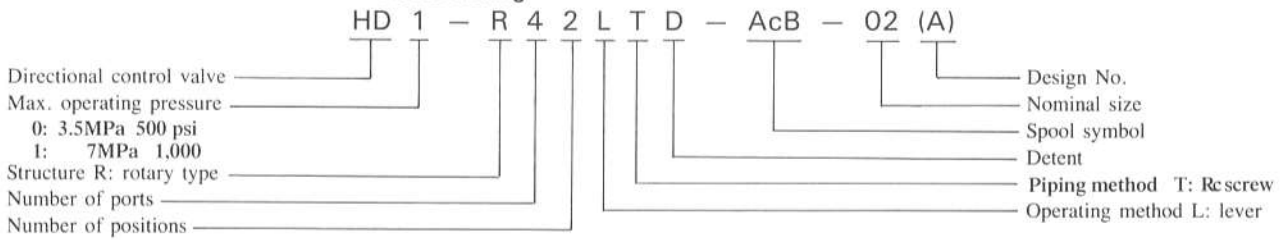


Manual operation by rotary lever is used for directional control of flow.



*Each position is held by the built-in detent.

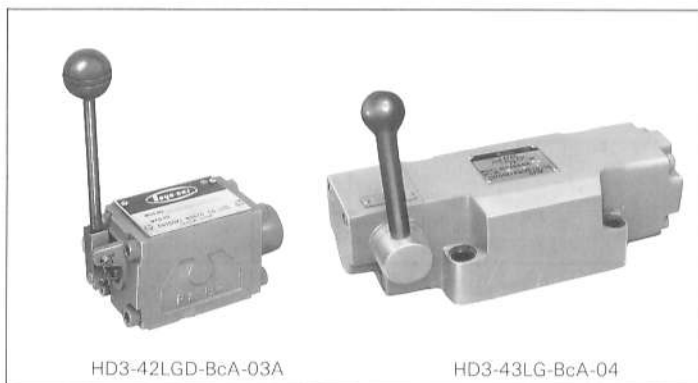
• Model coding



• Specifications

Pipe size	Rated flow		Max. operating pressure		Permissible back pressure		Model
	ℓ/min	gpm	MPa	psi	MPa	psi	
1/4	11	2.9	7	1,000	0.04	5.7	HD1-R42LTD-AcB-02
1/2	40	10.6	3.5	500	0.04	5.7	HD0-R63LTD-1-04A

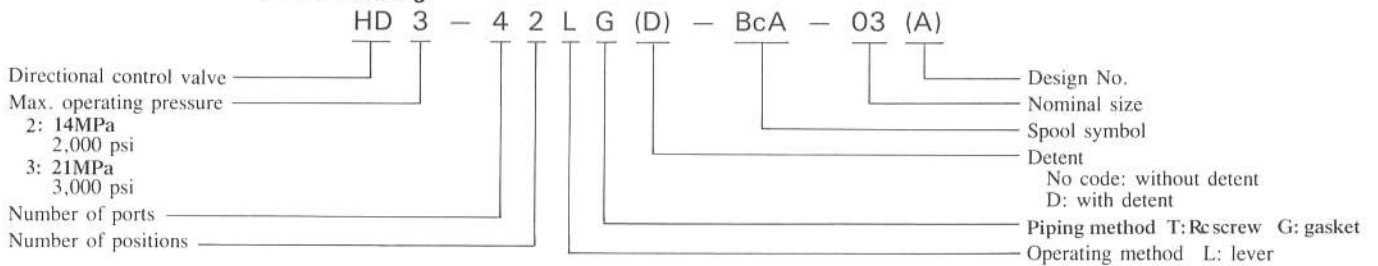
Manual operated directional control valves spool type (Series HD※-L)



Manual operation by slide lever is used for directional control of flow.




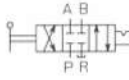
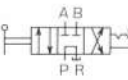




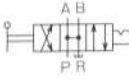
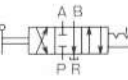



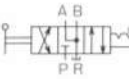



• 025 and 03A type is interchangeable with solenoid operated valve (HD-025A) and (HD-03A) respectively in mounting size.

• Model coding



● **Models**

Size: 025 & 03 type

Spring centered		Spring offset		No spring (with detent)	
 43LG-BCA	 43LG-AEB	 42LG-BcA	 43LGD-BCA	 43LGD-AEB	 42LGD-BcA
 43LG-BDA	 43LG-BMA	 42LG-BdA	 43LGD-BDA	 43LGD-BMA	 42LGD-BdA
 43LG-BGA		★  42LG-KcP	 43LGD-BGA		★  42LGD-KcP
		★★  42LG-BgA			★★  42LGD-BgA







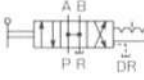






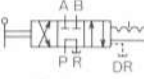
Mark ★ is for 025 type. Mark ★★ is for 03A type.

● **Specifications**

Pipe size	Rated flow		Max. operating pressure		Permissible back pressure		Model
	ℓ/min	gpm	MPa	psi	kgf/cm ²	psi	
1/4	20	5.3	21	3,000	7	1,000	HD3-4 * LG(D)- * -025A
3/8	40	10.6			1	143	HD3-4 * LG(D)- * -03A

● **Models**

Size: 04 & 06 type

Spring centered		Spring offset		No spring (with detent)	
 43LG-ACB	 42LG-AcB	 43LGD-ACB	 42LGD-AcB		
 43LG-ADB	 42LG-AcB	 43LGD-ADB	 42LGD-AdB		
 43LG-AGB	 42LG-Ad1B	 43LGD-AGB	 42LGD-Ad1B		
 43LG-BEA		 43LGD-BEA			

Model codes in the above tables indicate the gasket connection type.

Model coding T instead of G is for thread connection type which has no use for drain.

● **Specifications**

Pipe size	Rated flow		Max. operating pressure		Permissible back pressure		Model
	ℓ/min	gpm	MPa	psi	MPa	psi	
1/2	40	10.6	21	3,000	21	3,000	HD3-4 * LG(D)- * -04
3/4	75	19.8					HD3-4 * LG(D)- * -06
1/2	40	10.6	14	2,000	1	143	HD2-4 * LT(D)- * -04
3/4	75	19.8					HD2-4 * LT(D)- * -06

Mechanical operated directional control valves (Series HD ※ -M)



These valves switch the direction of fluid flow by depressing a cam plunger.

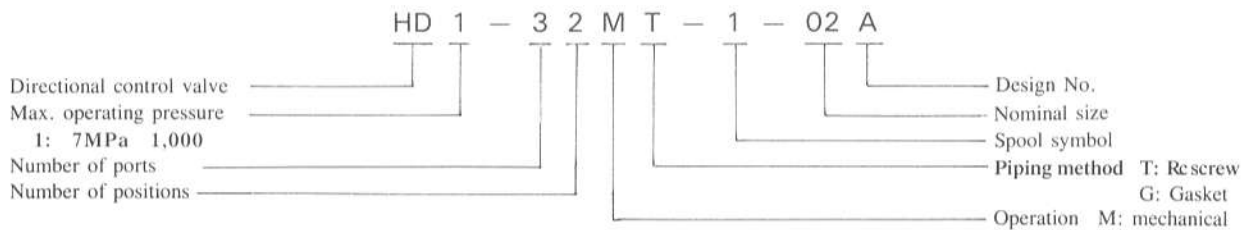
- Please use with a dock (cam) tip angle of 30° or less.



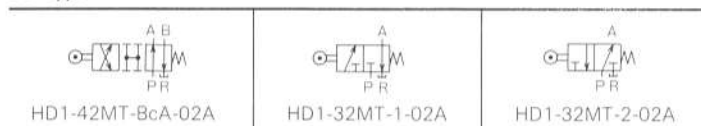
These valves switch the direction of fluid flow by depressing a cam plunger, instead of actuating a solenoid.

- This valve is interchangeable with HD3-03 series solenoid operated directional control valves in mounting size.
- Sub-plate should be separately ordered.
- Please use with a dock (cam) tip angle of 30° or less.

• Model coding



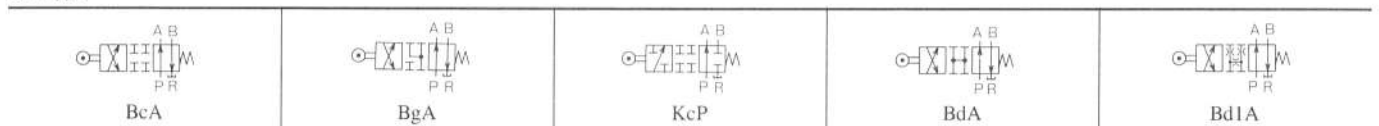
02 Type



• Specifications

Pipe size	Rated flow		Max. operating pressure		Permissible back pressure		Push-down force		Model
	ℓ/min	gpm	MPa	psi	MPa	psi	N	lb	
1/4	6	1.6	7	1,000	0.2	5.7	120	26	HD1-※2MT-※-02A

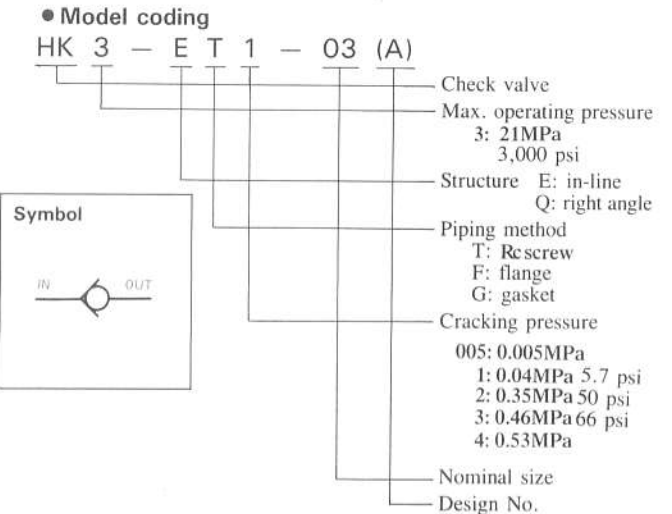
03 Type



• Specifications

Pipe size	Rated flow		Max. flow		Max. operating pressure		Permissible back pressure		Push-down force		Model
	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	MPa	psi	N	lb	
3/8	40	10.6	50	13.2	2.1	3,000	3	430	180	40	HD3-42MG-※-03A

Check valves (Series HK3)



● Specifications

Pipe size	Rated flow		Max. operating pressure		Model			
	ℓ/min	gpm	MPa	psi	In-line valves		Right angle check valves	
					Thread connection	Flange connection	Thread connection	Gasket connection type
1/4	12	3.2 (1.3)	21	3,000	HK3-ET # -02A	—	—	HK3-QG # -02A
3/8	40	10.6			HK3-ET # -03A	—	—	HK3-QG # -03A
1/2	75	19.8			HK3-ET # -04A	HK3-EF # -04A	—	—
3/4	120	31.7			HK3-ET # -06A	HK3-EF # -06A	HK3-QT # -06A	HK3-QG # -06A
1-1/4	320	84.6			HK3-ET # -10A	HK3-EF # -10A	HK3-QT # -10A	HK3-QG # -10A
2	500	132.3			—	HK3-EF # -16	—	HK3-QG # -16

(Note) Please indicate the flange connection type, if necessary.

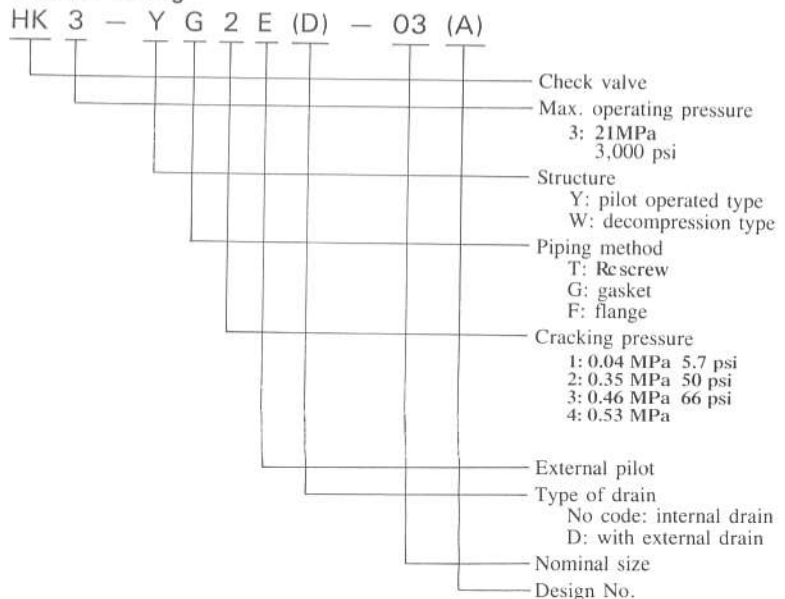
Pilot operated check valves (Series HK3-Y)



This valve normally allows hydraulic fluid to flow only in one direction with a specified cracking pressure and completely block flow in the opposite direction. However, there is return free flow through the application of external pilot pressure.

- Pilot pressure of at least 40% of the OUT pressure is required.

● Model coding



● Specifications

Pipe size	Rated flow		Max. operating pressure		Model		
	ℓ/min	gpm	MPa	psi	Thread connection	Gasket connection type	Flange connection type
1/4	12	3.2	21	3,000	—	HK3-Y(W)G#E(D)-02B	—
3/8	40	10.6			HK3-Y(W)T#E(D)-03A	HK3-Y(W)G#E(D)-03A	—
1/2	75	19.8			—	—	HK3-Y(W)F#E(D)-04A
3/4	120	31.7			HK3-Y(W)T#E(D)-06A	HK3-Y(W)G#E(D)-06A	HK3-Y(W)F#E(D)-06A
1-1/4	320	84.6			HK3-Y(W)T#E(D)-10A	HK3-Y(W)G#E(D)-10A	HK3-Y(W)F#E(D)-10A

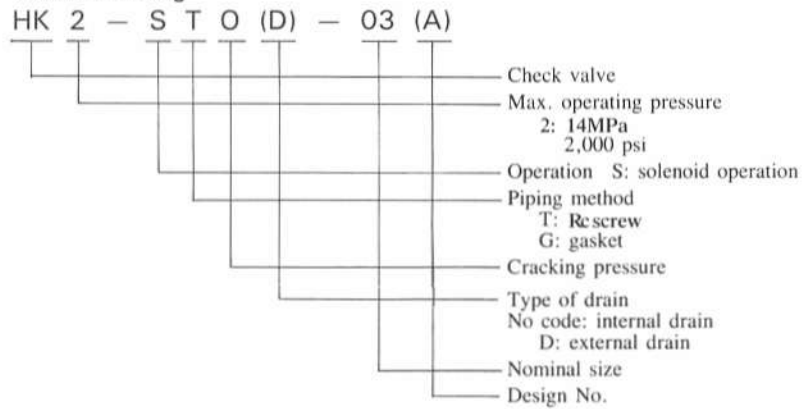
Sub-plate and piping flange should be separately ordered.

Solenoid operated check valves (Series HK2-S)

This valve serves to completely block flow from one direction and permits flow from IN port to OUT port with its solenoid on. It also serves to prevent cylinder from falling by its weight. Unlike other check valves, this valve is not suited for having flow in the opposite direction with its cracking pressure held.



● Model coding



● Specifications

Pipe size	Rated flow		Max. operating pressure		Permissible back pressure		Switching frequency	Model		
	ℓ/min	gpm	MPa	psi	MPa	psi		Internal drain type		External drain type
								Thread connection	Gasket connection	Gasket connection
1/4	20	5.3	14	2,000	0.25	36	1 time/sec or less	HS2-STO-02A	—	—
3/8	30	7.9						HK2-STO-03A	—	—
					—	HK2-SGO-03		—	—	
			10	1429	—	—	—	—	HK2-SGOD-03A	

Sub-plate is should be separately ordered.

Deceleration valves with check valve (Series HL1)



● Model coding

HL 1 - 1 C M G 75 K (D) - 06

- Deceleration valve
- Max. operating pressure
1: 7MPa
1,000 psi
- Normal position
1: normal open type
2: normal close type
- Function C: throttle
- Operation M: mechanical type
- Piping method
T: Rescrew G: gasket
- Max. controllable flow
- Check valve built-in
- External drain or throttle valve
D: with external drain
C: with throttle valve
- Nominal size

Symbol

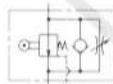


Normal open type



Normal close type

Throttle valve type



Normal open type

● Specifications

without throttle valve

Pipe size	Rated flow		Max. operating pressure		Push-down force		Model		Normal position
	ℓ/min	gpm	MPa	psi	N	lb	Thread connection	Gasket connection type	
3/8	30	7.9	7	1,000	180	40	HL1-1CMT30KD-03	HL1-1CMG30KD-03	Normally open
							HL1-2CMT30KD-03	HL1-2CMG30KD-03	Normally closed
3/4	75	19.8	7	1,000	300	67	HL1-1CMT75KD-06	HL1-1CMG75KD-06	Normally open
							HL1-2CMT75KD-06	HD1-2CMG75KD-06	Normally closed

with throttle valve

Pipe size	Rated flow		Throttle valve max. flow		Max. operating pressure		Push-down force		Model	
	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	N	lb	Thread connection	Gasket connection type
3/8	30	7.9	5	1.3	7	1,000	170	38	HL1-1CMT30KC-03	HL1-1CMG30KC-03
3/4	75	19.8	5	1.3			210	47	HL1-1CMT75KC-06	HL1-1CMG75KC-06

Solenoid operated deceleration valves (Series HLD)

This valve serves to perform smooth start and stop by buffering the shock generated in acceleration and deceleration of the actuators with large inertia.



● Features

1. Actuators having large inertia can be smoothly started and stopped.
2. Actuator can be controlled at any desired position without changing the valve position.
3. Acceleration, deceleration, max. and min. flow can be controlled by adjusting switching speed adjusting dial and stroke adjusting screw of the main valve.
4. Models with built-in pressure reducing valve in the pilot circuit and of internal drain type are also available.

● Model coding

HLD3-C S1-(G) 2-06A-W Y ※

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

- ① Solenoid operated deceleration valve
- ② Max. operating pressure
3: 21MPa 3,000 psi
- ③ Function
C: Throttle
- ④ Number of solenoid
W: Double solenoids
S: Single solenoid
- ⑤ Valve normal positions
0: Code for double solenoids only
1: Normally open
2: Normally closed
- ⑥ Pilot operated pressure reducing valve
G: With pilot operated pressure reducing valve
No code: Without pilot operated pressure reducing valve
- ⑦ Type of drain
2: Internal drain
1: External drain
- ⑧ Nominal size
- ⑨ Design number
- ⑩ Type of solenoid
W: Oil immersed
L: Low power consumption
- ⑪ Type of electrical connection
Y: Terminal box
D: DIN connection (DIN 43650)
- ⑫ Voltage

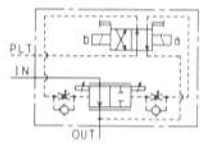
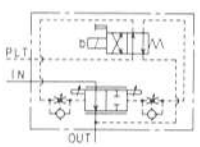
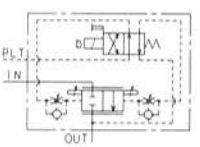
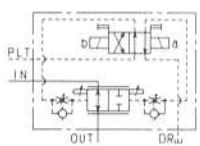
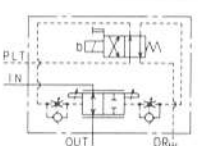
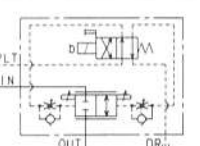
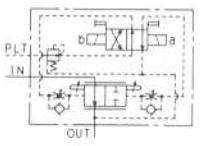
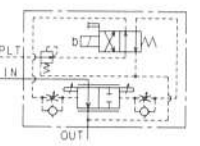
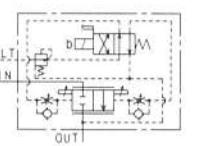
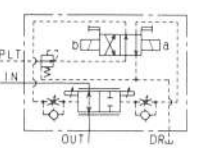
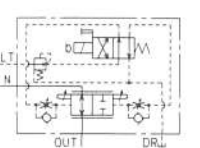
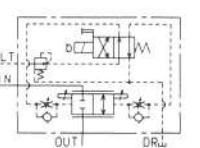
AC Solenoid	DC Solenoid
A1: AC100V	D1: DC12V
A2: AC200V	D2: DC24V
A3: AC110V	
A4: AC220V	

● Models

Pipe size	Rated flow ℓ/min gpm	Max. Operating pressure MPa psi	Max. pilot pressure		Model coding
			With pressure reducing valve MPa psi	With pressure reducing valve MPa psi	
1/2	40 10.6	21 3,000	21 3,000	—	HLD3-CS1-G※-04A-※※※
					HLD3-CS2-G※-04A-※※※
					HLD3-CWO-G※-04A-※※※
			—	3.5 500	HLD3-CS1-G※-04A-※※※
					HLD3-CS2-G※-04A-※※※
					HLD3-CWO-※-04A-※※※
3/4	75 19.8	21 3,000	21 3,000	—	HLD3-CS1-G※-06A-※※※
					HLD3-CS2-G※-06A-※※※
					HLD3-CWO-G※-06A-※※※
			—	3.5 500	HLD3-CS1-G※-06A-※※※
					HLD3-CS2-G※-06A-※※※
					HLD3-CWO-※-06A-※※※
1-1/4	190 50.3	21 3,000	21 3,000	—	HLD3-CS1-G※-10A-※※※
					HLD3-CS2-G※-10A-※※※
					HLD3-CWO-G※-10A-※※※
			—	3.5 500	HLD3-CS1-G※-10A-※※※
					HLD3-CS2-G※-10A-※※※
					HLD3-CWO-※-10A-※※※

Sub-plate should be separately ordered.

● Models

Type	Normally open	Normally open	Normally closed
Without pilot operated pressure reducing valve	HLD3-CWO-1-※A-※ 	HLD3-CS1-1-※A-※ 	HLD3-CS2-1-※A-※ 
	HLD3-CWO-2-※A-※ 	HLD3-CS1-2-※A-※ 	HLD3-CS2-2-※A-※ 
Without pilot operated pressure reducing valve	HLD3-CWO-G1-※A-※ 	HLD3-CS1-G1-※A-※ 	HLD3-CS2-G1-※A-※ 
	HLD3-CWO-G2-※A-※ 	HLD3-CS1-G2-※A-※ 	HLD3-CS2-G2-※A-※ 
Pilot valve	HD3-2W-BcA-025A-※※※	HD3-2S-BcA-025A-※※※	