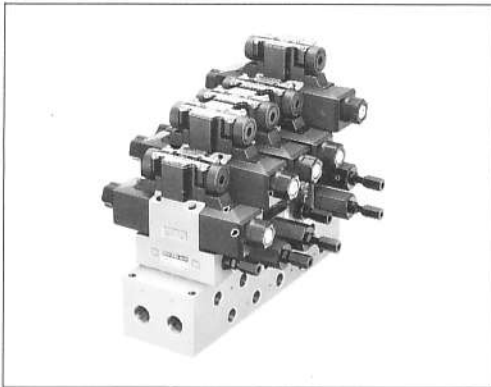


Hy-tegra systems (Stack valve systems)

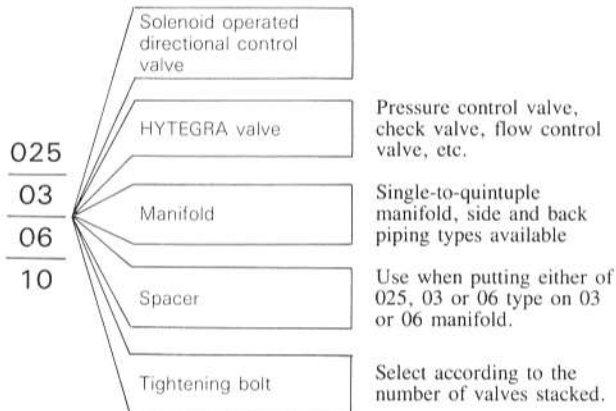
Hytegra system, which stands for hydraulic integration, comprises basically of solenoid operated valve atop and various kinds of spacer type valves vertically or horizontally stacked on a manifold and constructs a unit hydraulic circuit.



• Features

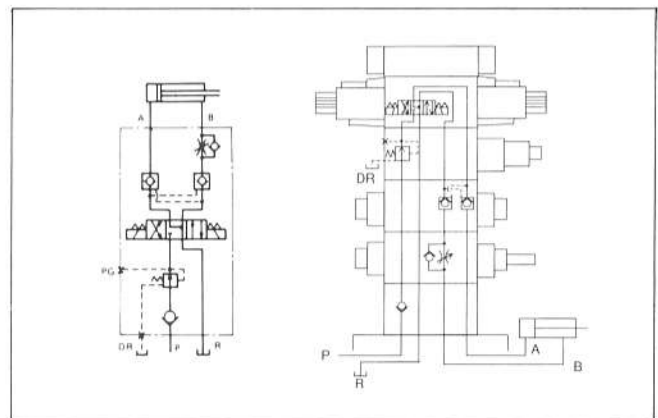
1. A hydraulic device can be made only by mounting a solenoid operated valve and a stack valve on a manifold.
2. Valves are mounted to the manifold with bolts, resulting in rearranging the circuit with ease.
3. Since the circuit is made simply, no internal piping is necessary.
External piping is neatly done from the cylinder port for the manifold provided for back piping and side piping.
4. Its stacking construction (max 5 tiers) needs no piping and occupies a small space so that the system can be compactly designed.
5. Oil leakage is eliminated. Valve replacement is easy.

• Construction

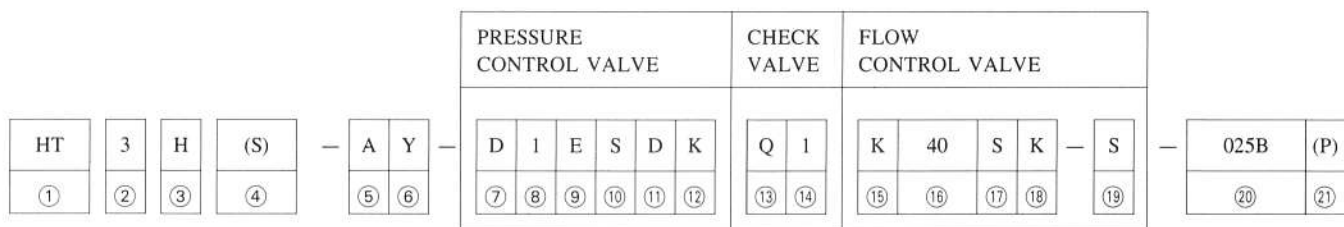


• Specification

Nominal size	Pipe size	Max. operating pressure		Rated flow		Max flow	
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm
025	1/4	25	3,570	20	5.3	40	10.6
03	3/8	21	3,000	40	10.6	80	21.2
06	3/4			120	31.7	190	50.3
10	1-1/4			320	84.6	500	132.3



● Model coding



①	Type of valve	Relief valve	HT HR	②	Max. operating pressure 1: 7MPa 1,000 psi 2: 14MPa 2,000 psi 3: 21MPa 3,000 psi (3: 25MPa 3,570 psi for 025 type only)
		Pressure reducing valve	HG		
		Sequence valve	HQ		
		Counter balance valve	HB		
		Brake valve	HRB		
		Check valve	HK	③	Hy-tegra system valve
		Flow control valve	HF		
		Dual-function valve	H**		
		Pressure switch	HW		
		Brake valve	HLD		
④	Size of mounting bolt (For 03 type valve only) S: M6 (ISO standard) No code: M8				

⑤	Controlled port(s) (Excl. HG**H-03 type) A: A port B: B port W: A and B ports P: P port R: R port
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⑥	Control system (For Flow control valve only) Y: Meter-in No code: Meter-out	⑦	Structure D: Direct type B: Balance piston typ
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⑧	Pressure adjusting range	⑨	Type of pilot E: External pilot No code: Internal pilot
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⑩	Port block (For HT3H-025B type only) S: A or B port blocked No code: A or B port connected	⑪	Type of drain D: External drain No code: Internal drain
---	---	---	---

⑫	Check valve K: With check valve No code: Without check valve	⑬	Structure Q: Right-angle Y: Pilot-operated W: Decompression
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⑭	Cracking pressure	⑮	Structure K: Pressure-temperature compensation No code: Throttle valve
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⑯	Flow adjusting range	⑰	Flow adjusting dial S: With dial No code: Without dial
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⑱	Check valve K: With check valve No code: Without check valve	⑲	Solenoid-operated S: Solenoid-operated
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⑳	Nominal size	㉑	Controlled port (For HG**H-03 type only) (A): A port (B): B port (P): P port
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Pilot-type relief valves



HT3H-A-D1-025B

● Specifications

Control port	Model	Max. operating pressure		Rated flow		Symbol	Pressure adjusting range	
		MPa	psi	ℓ/min	gpm		MPa	psi
A	HT3H-A-D⊕-025B	25	3570	1.5	0.4		Symbol ⊕ 1: 0.7 ~ 7 100 ~ 1,000 2: 3.5 ~ 14 500 ~ 2,000 3: 10.5 ~ 25 1,500 ~ 3,570	
	HT3H-A-D⊕S-025B							
	HT3H-A-D⊕E-025B							
	HT3H-A-D⊕ES-025B							
B	HT3H-B-D⊕-025B	25	3570	1.5	0.4		Symbol ⊕ 1: 0.7 ~ 7 100 ~ 1,000 2: 3.5 ~ 14 500 ~ 2,000 3: 10.5 ~ 25 1,500 ~ 3,570	
	HT3H-B-D⊕S-025B							
	HT3H-B-D⊕E-025B							
	HT3H-B-D⊕ES-025B							
A·B	HT3H-W-D⊕-025B	25	3570	1.5	0.4		Please refer to the specification shown as below.	

A·B port control valve

Model	Pressure adjusting range		MPa	psi		
	A port	B port				
HT3H-W-D11-025B	0.7 ~ 7	100 ~ 1,000	3.5 ~ 14	500 ~ 2,000		
HT3H-W-D12-025B					0.7 ~ 7	100 ~ 1,000
HT3H-W-D13-025B					10.5 ~ 25	1,500 ~ 3,570
HT3H-W-D22-025B	3.5 ~ 14	500 ~ 2,000	10.5 ~ 25	1,500 ~ 3,570		
HT3H-W-D23-025B					3.5 ~ 14	500 ~ 2,000
HT3H-W-D33-025B					10.5 ~ 25	1,500 ~ 3,570

Relief valves

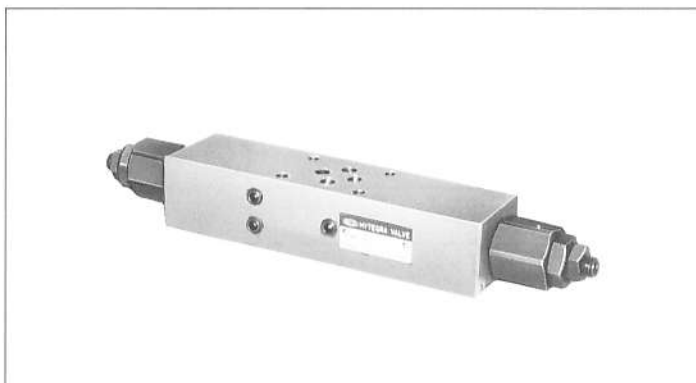


HR3H-P-B1-03

● Specifications

Control port	Structure	Model	Max. operating pressure		Rated flow		Max. flow		Symbol	Pressure adjusting range	
			MPa	psi	ℓ/min	gpm	ℓ/min	gpm		MPa	psi
P	Balance piston type	HR3H-P-B※-025B	25	3,570	20	5.3	40	10.6		Symbol ※	
		HR3H(S)-P-B※-03	21	3,000	40	10.6	80	21.2		025 type	
		HR3H-P-B※-06			120	31.7	190	50.3		1: 0.7~7 100~1,000	
		HR3H-P-B※-10	320	84.6	500	132.3		2: 3.5~14 500~2,000			
A	Direct type	HR3H-A-D※-025B	25	3,570	12	3.2		40	10.6		3: 10.5~25 1,500~3,570
		HR3H(S)-A-D※-03	21	3,000	12	3.2	80	21.2	03, 06 & 10 type		
B	Direct type	HR3H-B-D※-025B	25	3,570	12	3.2	40	10.6		1: 0.7~7 100~1,000	
		HR3H(S)-B-D※-03	21	3,000	12	3.2	80	21.2		2: 3.5~14 500~2,000	
									3: 10.5~21 1,500~3,000		

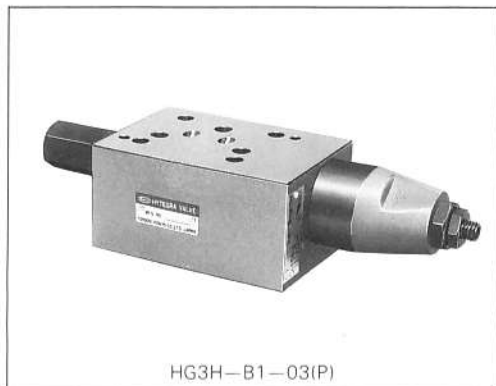
Brake valve



● Specifications

Control port	Model	Max. operating pressure		Rated flow		Pressure adjusting range		Symbol
		MPa	psi	ℓ/min	gpm	MPa	psi	
A·B	HRB3H-W-B※-025B	25	3,570	20	5.3	symbol※: 1: 0.7~7 100~1,000 2: 3.5~14 500~2,000 3: 10.5~25 1,500~3,570		

Pressure reducing valves



● Feature







Control port of 03 type valves can be chosen by changing the direction of side plug, and that of 06 and 10 type valves, by changing the position of plugs as desired among P, A and B ports.

● Specifications

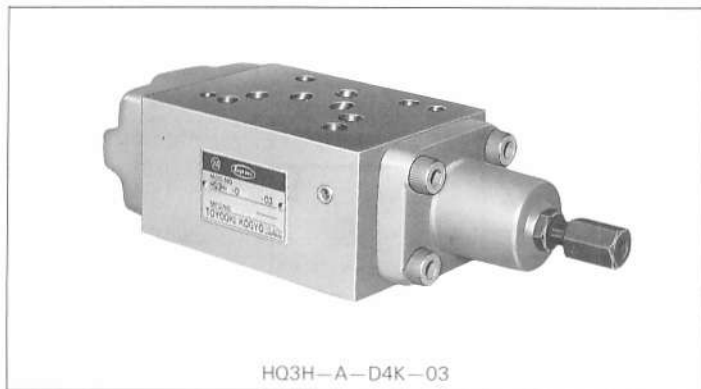
HG3H type

Control port	Drain type	Model	Max. operating pressure		Rated flow		Max. flow		Symbol	Pressure adjusting range	
			MPa	psi	ℓ /min	gpm	ℓ /min	gpm		MPa	psi
P	Internal drain	HG3H-P-D ※-025B	25	3,570	20	5.3	40	10.6		Symbol ※ 025 type 4: 0.7~7 100~1,000 3: 3.5~14 500~2,000 03, 06 & 10 type 4: 0.7~7 100~1,000 5: 3.5~14 500~2,000 6: 10.5~21 1,500~3,000	
		HG3H(S)-B ※-03(P)	21	3,000	40	10.6	80	21.2			
		HG3H-P-B ※-06			120	31.7	190	50.3			
		HG3H-P-B ※-10			320	84.6	500	132.3			
	External drain	HG3H-P-D ※ D-025B	25	3,570	20	5.3	40	10.6			
		HG3H(S)-B ※ D-03(P)	21	3,000	40	10.6	80	21.2			
		HG3H-P-B ※ D-06			120	31.7	190	50.3			
		HG3H-P-B ※ D-10			320	84.6	500	132.3			
A	Internal drain	HG3H-A-D ※-025B	25	3,000	20	5.3	40	10.6			
		HG3H(S)-B ※-03(A)	21	3,000	40	10.6	80	21.2			
		HG3H-A-B ※-06			120	31.7	190	50.3			
		HG3H-A-B ※-10			320	84.6	500	132.3			
	External drain	HG3H-A-D ※ D-025B	25	3,570	20	5.3	40	10.6			
		HG3H(S)-B ※ D-03(A)	21	3,000	40	10.6	80	21.2			
		HG3H-A-B ※ D-06			120	31.7	190	50.3			
		HG3H-A-B ※ D-10			320	84.6	500	132.3			
B	Internal drain	HG3H-B-D ※-025B	25	3,570	20	5.3	40	10.6			
		HG3H(S)-B ※-03(B)	21	3,000	40	10.6	80	21.2			
		HG3H-B-B ※-06			120	31.7	190	50.3			
		HG3H-B-B ※-10			320	84.6	500	132.3			
	External drain	HG3H-B-D ※ D-025B	25	3,570	20	5.3	40	10.6			
		HG3H(S)-B ※ D-03(B)	21	3,000	40	10.6	80	21.2			
		HG3H-B-B ※ D-06			120	31.7	190	50.3			
		HG3H-B-B ※ D-10			320	84.6	500	132.3			

HG1H type

Control port	Drain type	Model	Max. operating pressure		Rated flow		Max. flow		Symbol	Pressure adjusting range	
			MPa	psi	ℓ/min	gpm	ℓ/min	gpm		MPa	psi
P	Internal drain	HG1H-P-D※-025B	7	1,000	20	5.3	40	10.6		Symbol ※ 1: 0.3~0.85 43~121 2: 0.5~1.75 71~250 3: 0.85~3.5 121~500	
		HG1H(S)-D※-03(P)			40	10.6	80	21.2			
	External drain	HG1H-P-D※D-025			20	5.3	40	10.6			
		HG1H(S)-D※D-03(P)			40	10.6	80	21.2			
A	Internal drain	HG1H-A-D※-025B			20	5.3	40	10.6			
		HG1H(S)-D※-03(A)			40	10.6	80	21.2			
	External drain	HG1H-A-D※D-025B			20	5.3	40	10.6			
		HG1H(S)-D※D-03(A)			40	10.6	80	21.2			
B	Internal drain	HG1H-B-D※-025B	20	5.3	40	10.6					
		HG1H(S)-B-D※-03(B)	40	10.6	80	21.2					
	External drain	HG1H-B-D※D-025B	20	5.3	40	10.6					
		HG1H(S)-D※D-03(B)	40	10.6	80	21.2					

Sequence valves



HQ3H—A—D4K—03

● Specifications

Control port	Pilot type	Drain type	Model	Max. operating pressure		Rated flow		Max. flow		Symbol	Pressure adjusting range	
				MPa	psi	ℓ/min	gpm	ℓ/min	gpm		MPa	psi
P	Internal pilot	Internal drain	HQ3H-P-D※-025B	25	3,570	20	5.3	40	10.6		Symbol ※ Pressure adjusting range 025 type 4: 0.7~7 100~1,000 5: 3.5~14 500~2,000 03, 06 type 4: 0.7~7 100~1,000 5: 3.5~14 500~2,000 6: 10.5~21 1,500~3,000	
			HQ3H(S)-P-D※-03	21	3,000	40	10.6	80	21.2			
			HQ3H-P-D※-06			120	31.7	190	50.3			
		External drain	HQ3H(S)-P-D※D-03	40	10.6	80	21.2					
			HQ3H-P-D※D-06	120	31.7	190	50.3					
			External pilot	Internal drain	HQ3H-P-D※E-025B	25	3,570	20	5.3	40		10.6
	HQ3H(S)-P-D※E-03	21			3,000	40	10.6	80	21.2			
	HQ3H-P-D※E-06					120	31.7	190	50.3			
	External drain	HQ3H(S)-P-D※ED-03		40	10.6	80	21.2					
		HQ3H-P-D※ED-06		120	31.7	190	50.3					
		A		Internal pilot	Internal drain	HQ3H-A-D※K-025B	25	3,570	20	5.3		40
	HQ3H(S)-A-D※K-03		21			3,000	40	10.6	80	21.2		
HQ3H-A-D※K-06	120						31.7	190	50.3			
External drain	HQ3H(S)-A-D※DK-03		40		10.6	80	21.2					
	HQ3H-A-D※DK-06		120		31.7	190	50.3					
	External pilot		Internal drain		HQ3H-A-D※EK-025B	25	3,570	20	5.3	40	10.6	
HQ3H(S)-A-D※EK-03		21		3,000	40	10.6	80	21.2				
HQ3H-A-D※EK-06					120	31.7	190	50.3				
External drain		HQ3H(S)-A-D※EDK-03	40	10.6	80	21.2						
		HQ3H-A-D※EDK-06	120	31.7	190	50.3						

Note: Cracking pressure of check valve 0.04 MPa 5.7 psi

● Specifications

Control port	Pilot type	Drain type	Model	Max. operating pressure		Rated flow		Max. flow		Symbol	Pressure adjusting range	
				MPa	psi	ℓ/min	gpm	ℓ/min	gpm		MPa	psi
B	Internal pilot	Internal drain	HQ3H-B-D※K-025B	25	3,570	20	5.3	40	10.6		Symbol ※ Pressure adjusting range 025 type 4: 0.7~7 100~1,000 5: 3.5~14 500~2,000 03, 06 & 10 type 4: 0.7~7 100~1,000 5: 3.5~14 500~2,000 6: 10.5~21 1,500~3,000	
			HQ3H(S)-B-D※K-03	21	3,000	40	10.6	80	21.2			
			HQ3H-B-D※K-06			120	31.7	190	50.3			
		External drain	HQ3H(S)-B-D※DK-03	40	10.6	80	21.2					
			HQ3H-B-D※DK-06	120	31.7	190	50.3					
			External pilot	Internal drain	HQ3H-B-D※EK-025B	25	3,570	20	5.3	40		10.6
	HQ3H(S)-B-D※EK-03	21			3,000	40	10.6	80	21.2			
	HQ3H-B-D※EK-06					120	31.7	190	50.3			
	External drain	HQ3H(S)-B-D※EDK-03		40	10.6	80	21.2					
		HQ3H-B-D※EDK-06	120	31.7	190	50.3						

Note: Cracking pressure of check valve 0.04 MPa 5.7 psi

Counterbalance valves



HB3H-B-D4K-03

● Specifications

Control port	Pilot type	Model	Max. operating pressure		Rated flow		Max. flow		Symbol	Pressure adjusting range	
			MPa	psi	ℓ/min	gpm	ℓ/min	gpm		MPa	psi
A	Internal pilot	HB3H-A-D * K-025B	25	3,570	20	5.3	40	10.6		Symbol ※ Pressure adjusting range 025 type 4: 0.7 ~ 7 100 ~ 1,000 5: 3.5 ~ 14 500 ~ 2,000 03, 06 type 4: 0.7 ~ 7 100 ~ 1,000 5: 3.5 ~ 14 500 ~ 2,000 6: 10.5 ~ 21 1,500 ~ 3,000	
		HB3H(S)-A-D * K-03	21	3,000	40	10.6	80	21.2			
		HB3H-A-D * K-06			120	31.7	190	50.3			
		HB3H-A-D * K-10			320	84.6	500	132.3			
	External pilot	HB3H-A-D * EK-025B	25	3,570	20	5.3	40	10.6			
		HB3H(S)-A-D * EK-03	21	3,000	40	10.6	80	21.2			
		HB3H-A-D * EK-06			120	31.7	190	50.3			
		HB3H-A-D * EK-10			320	84.6	500	132.3			
B	Internal pilot	HB3H-B-D * K-025B	25	3,570	20	5.3	40	10.6			
		HB3H(S)-B-D * K-03	21	3,000	40	10.6	80	21.2			
		HB3H-B-D * K-06			120	31.7	190	50.3			
		HB3H-B-D * K-10			320	84.6	500	132.3			
	External pilot	HB3H-B-D * EK-025B	25	3,570	20	5.3	40	10.6			
		HB3H(S)-B-D * EK-03	21	3,000	40	10.6	80	21.2			
		HB3H-B-D * EK-06			120	31.7	190	50.3			
		HB3H-B-D * EK-10			320	84.6	500	132.3			

Note: Cracking pressure of check valve 0.04 MPa 5.7 psi

Check valves



HK3H-P-Q1-03

● Specifications

Port	Model	Max. operating pressure		Rated flow		Max. flow		Cracking pressure		Symbol
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	
P	HK3H-P-Q # -025B	25	3,570	20	5.3	40	10.6	Symbol ※ 025 type 1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7 4: 0.53 75.7 03, 06 & 10 type 1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7		
	HK3H(S)-P-Q # -03	21	3,000	40	10.6	80	21.2			
	HK3H-P-Q # -06			120	31.7	190	50.3			
	HK3H-P-Q # -10			320	84.6	500	132.3			
R	HK3H-R-Q # -025B	25	3,570	20	5.3	40	10.6			
	HK3H(S)-R-Q # -03	21	3,000	40	10.6	80	21.2			
	HK3H-R-Q # -06			120	31.7	190	50.3			
	HK3H-R-Q # -10			320	84.6	500	132.3			
A	HK3H-A-Q # -025B	25	3,570	20	5.3	40	10.6			
	HK3H(S)-A-Q # -03	21	3,000	40	10.6	80	21.2			
	HK3H-A-Q # -06			120	31.7	190	50.3			
B	HK3H-B-Q # -025B	25	3,570	20	5.3	40	10.6			
	HK3H(S)-B-Q # -03	21	3,000	40	10.6	80	21.2			
	HK3H-B-Q # -06			120	31.7	190	50.3			
A·B	HK3H-W-Q # -025B	25	3,570	20	5.3	40	10.6			
	HK3H(S)-W-Q # -03	21	3,000	40	10.6	80	21.2			
	HK3H-W-Q # -06			120	31.7	190	50.3			

Pilot operated check valves



• Specifications

Port	Model	Max. operating pressure		Rated flow		Max. flow		Cracking pressure		Symbol
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	
A	HK3H-A-Y※-025B	25	3,570	20	5.3	40	10.6	Symbol ※ 025 type 1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7 4: 0.53 75.7 03, 06 & 10 type 1: 0.04 5.7 2: 0.35 50		
	HK3H(S)-A-Y※-03			40	10.6	80	21.2			
	HK3H-A-Y※-06	21	3,000	120	31.7	190	50.3			
	HK3H-A-Y※-10			320	84.6	500	132.3			
B	HK3H-B-Y※-025B	25	3,570	20	5.3	40	10.6			
	HK3H(S)-B-Y※-03			40	10.6	80	21.2			
	HK3H-B-Y※-06	21	3,000	120	31.7	190	50.3			
	HK3H-B-Y※-10			320	84.6	500	132.3			
A·B	HK3H-W-Y※-025B	25	3,570	20	5.3	40	10.6			
	HK3H(S)-W-Y※-03			40	10.6	80	21.2			
	HK3H-W-Y※-06	21	3,000	120	31.7	190	50.3			
	HK3H-W-Y※-10			320	84.6	500	132.3			


Decompression type

Port	Model	Max. operating pressure		Rated flow		Max. flow		Cracking pressure		Symbol
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	
A	HK3H(S)-A-W※-03	21	3,000	40	10.6	80	21.2	Symbol ※ 1: 0.04 5.7 2: 0.35 50		
	HK3H-A-W※-06			120	31.7	190	50.3			
B	HK3H(S)-B-W※-03			40	10.6	80	21.2			
	HK3H-B-W※-06			120	31.7	190	50.3			
A·B	HK3H(S)-W-W※-03			40	10.6	80	21.2			
	HK3H-W-W※-06			120	31.7	190	50.3			

Anti-cavitation valve



• Specifications

Port	Model	Max. operating pressure		Rated flow		Max. flow		Cracking pressure		Symbol
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi	
A·B	HK3H-W-V0-025B	25	3,570	20	5.3	40	10.6	0.01	1.42	

Throttle valves



• Specifications

Control port	Classification	Model	Max. operating pressure		Flow adjusting range		Cracking pressure of check valve		Symbol
			MPa	psi	ℓ/min	gpm	MPa	psi	
P	—	HF3H-P-40-025B	25	3,570	0.5 ~ 40	0.13 ~ 10.6	—	—	
		HF3H(S)-P-80-03	21	3,000	0.5 ~ 80	0.13 ~ 21.2			
		HF3H-P-190-06			1.0 ~ 190	0.26 ~ 50.3			
		HF3H-P-500-10			2.0 ~ 500	0.52 ~ 132.3			
R	—	HF3H-R-40-025B	25	3,570	0.5 ~ 40	0.13 ~ 10.6	—		
A	Meter out	HF3H-A-40K-025B	25	3,570	0.5 ~ 40	0.13 ~ 10.6	0.04	5.7	
		HF3H(S)-A-80K-03	21	3,000	0.5 ~ 80	0.13 ~ 21.2			
		HF3H-A-190K-06			1.0 ~ 190	0.26 ~ 50.3			
		HF3H-A-500K-10			2.0 ~ 500	0.52 ~ 132.3			
	Meter in	HF3H-AY-40K-025B	25	3,570	0.5 ~ 40	0.13 ~ 10.6			
		HF3H(S)-AY-80K-03	21	3,000	0.5 ~ 80	0.13 ~ 21.2			
		HF3H-AY-190K-06			1.0 ~ 190	0.26 ~ 50.3			
		HF3H-AY-500K-10			2.0 ~ 500	0.52 ~ 132.3			
B	Meter out	HF3H-B-40K-025B	25	3,570	0.5 ~ 40	0.13 ~ 10.6	0.04	5.7	
		HF3H(S)-B-80K-03	21	3,000	0.5 ~ 80	0.13 ~ 21.2			
		HF3H-B-190K-06			1.0 ~ 190	0.26 ~ 50.3			
		HF3H-B-500K-10			2.0 ~ 500	0.52 ~ 132.3			
	Meter in	HF3H-BY-40K-025B	25	3,570	0.5 ~ 40	0.13 ~ 10.6			
		HF3H(S)-BY-80K-03	21	3,000	0.5 ~ 80	0.13 ~ 21.2			
		HF3H-BY-190K-06			1.0 ~ 190	0.26 ~ 50.3			
		HF3H-BY-500K-10			2.0 ~ 500	0.52 ~ 132.3			

● Specifications

Control port	Classification	Model	Max. operating pressure		Flow adjusting range		Cracking pressure of check valve		Symbol
			MPa	psi	ℓ/min	gpm	MPa	psi	
A·B	Meter out	HF3H-W-40K-025B	25	3,570	0.5 ~ 40	0.13 ~ 10.6	0.04	5.7	
		HF3H(S)-W-80K-03	21	3,000	0.5 ~ 80	0.13 ~ 21.2			
		HF3H-W-190K-06			1.0 ~ 190	0.26 ~ 50.3			
		HF3H-W-500K-10			2.0 ~ 500	0.52 ~ 132.3			
	Meter in	HF3H-WY-40K-025B			25	3,570			0.5 ~ 40
		HF3H(S)-WY-80K-03	21	3,000	0.5 ~ 80	0.13 ~ 21.2			
		HF3H-WY-190K-06			1.0 ~ 190	0.26 ~ 50.3			
		HF3H-WY-500K-10			2.0 ~ 500	0.52 ~ 132.3			

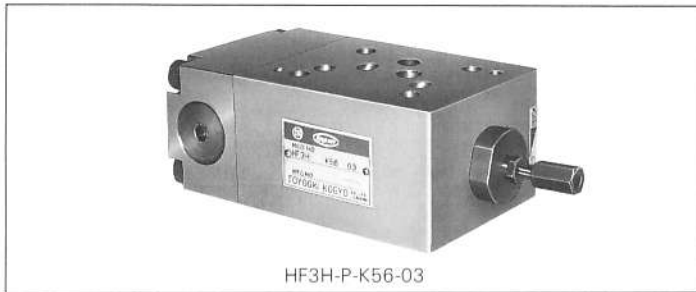
Throttle valves with dial



● Specifications

Control port	Classification	Model	Max. operating pressure		Flow adjusting range		Cracking pressure of check valve		Symbol
			MPa	psi	ℓ/min	gpm	MPa	psi	
P	—	HF3H-P-40S-025B	25	3,570	0.05 ~ 4	0.13 ~ 21.2	0.04	5.7	
R		HF3H-R-40S-025B							
A	Meter out	HF3H-A-40SK-025B							
	Meter in	HF3H-AY-40SK-025B							
B	Meter out	HF3H-B-40SK-025B							
	Meter in	HF3H-BY-40SK-025B							
A·B	Meter out	HF3H-W-40SK-025B							
	Meter in	HF3H-WY-40SK-025B							

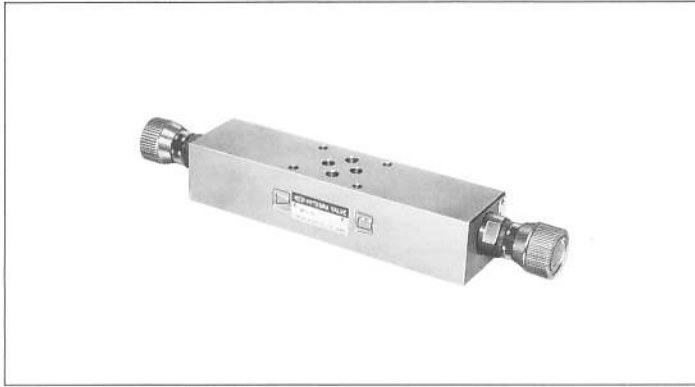
Flow control valves with pressure and temperature compensation



● Specifications

Control port	Classification	Model	Max. operating pressure		Flow adjusting range		Cracking pressure of check valve		Symbol
			MPa	psi	ℓ/min	gpm	MPa	psi	
P	—	HF3H-P-K24-025B	25	3,570	0.3 ~ 24	1.08 ~ 6.35	—	—	
		HF3H-P-K6-025B			0.3 ~ 6	0.08 ~ 1.6			
		HF3H(S)-P-K56-03	21	3,000	0.5 ~ 56	0.13 ~ 14.8			
		HF3H-P-K106-06			2.0 ~ 106	0.5 ~ 28			
A	Meter out	HF3H-A-K24K-025B	25	3,570	0.3 ~ 24	1.08 ~ 6.35	0.04	5.7	
		HF3H-A-K6K-025B			0.3 ~ 6	0.08 ~ 1.6			
		HF3H(S)-A-K56K-03	21	3,000	0.5 ~ 56	0.13 ~ 14.8			
		HF3H-A-K106K-06			2.0 ~ 106	0.5 ~ 28			
	Meter in	HF3H-AY-K24K-025B	25	3,570	0.3 ~ 24	1.08 ~ 6.35			
		HF3H-AY-K6K-025B			0.3 ~ 6	0.08 ~ 1.6			
		HF3H(S)-AY-K56K-03	21	3,000	0.5 ~ 56	0.13 ~ 14.8			
		HF3H-AY-K106K-06			2.0 ~ 106	0.5 ~ 28			
B	Meter out	HF3H-B-K24K-025B	25	3,570	0.3 ~ 24	1.08 ~ 6.35	0.04	5.7	
		HF3H-B-K6K-025B			0.3 ~ 6	0.08 ~ 1.6			
		HF3H(S)-B-K56K-03	21	3,000	0.5 ~ 56	0.13 ~ 14.8			
		HF3H-B-K106K-06			2.0 ~ 106	0.5 ~ 28			
	Meter in	HF3H-BY-K24K-025B	25	3,570	0.3 ~ 24	1.08 ~ 6.35			
		HF3H-BY-K6K-025B			0.3 ~ 6	0.08 ~ 1.6			
		HF3H(S)-BY-K56K-03	21	3,000	0.5 ~ 56	0.13 ~ 14.8			
		HF3H-BY-K106K-06			2.0 ~ 106	0.5 ~ 28			
A·B	Meter out	HF3H-W-K24K-025B	25	3,570	0.3 ~ 24	0.08 ~ 6.35	0.04	5.7	
		HF3H-W-K6K-025B			0.3 ~ 6	0.08 ~ 1.6			
	Meter in	HF3H-WY-K24K-025B			0.3 ~ 24	0.08 ~ 6.35			
		HF3H-WY-K6K-025B			0.3 ~ 6	0.08 ~ 1.6			

Flow control valves with dial



● Specifications

Control port	Classification	Model	Max. operating pressure		Flow adjusting range		Cracking pressure of check valve		Symbol								
			MPa	psi	ℓ/min	gpm	MPa	psi									
P	—	HF3H-P-K24S-025B	25	3,570	0.3 ~ 24	0.08 ~ 6.35	0.04	5.7									
		A			Meter out	HF3H-A-K24SK-025B				25	3,570	0.3 ~ 24	0.08 ~ 6.35	0.04	5.7		
HF3H-A-K6SK-025B	0.3 ~ 6					0.08 ~ 1.6											
Meter in	HF3H-AY-K24SK-025B				0.3 ~ 24	0.08 ~ 6.35											
	HF3H-AY-K6SK-025B				0.3 ~ 6	0.08 ~ 1.6											
B	Meter out	HF3H-B-K24SK-025B			25	3,570			0.3 ~ 24			0.08 ~ 6.35	0.04			5.7	

Pressure switches



● Model coding

HW 3 H - 1 1 (S) - 025B

- Pressure switch
- Max. operating pressure
3: 21 MPa 3,000 psi
- Hy-tegra system valve
- Structure
- Pressure adjusting range
(Please refer to the code in the specifications as below.)
- S: With scale
- No code: Without scale
- Nominal size

● Symbol

P port	A port	B port

● Specifications

025 type

Control port	Model	Max. operating pressure		Rated flow		Max. flow		Pressure adjusting range	
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi
P	HW3H-P-1 ※ -025B	25	3,570	20	5.3	40	10.6	Symbol ※ 0: 0.7 ~ 2 100 ~ 285 1: 1 ~ 7 142 ~ 1,000 2: 3.5 ~ 14 500 ~ 2,000 3: 10 ~ 25 1,428 ~ 3,570	
	HW3H-P-1 S-025B								
A	HW3H-A-1 ※ -025B								
	HW3H-A-1 S-025B								
B	HW3H-B-1 ※ -025B								
	HW3H-B-1 S-025B								

•Please specify the model together with its operating voltage in case of order.

03 type

Control port	Model	Max. operating pressure		Rated flow		Max. flow		Pressure adjusting range	
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi
(*1) P·A·B	HW3H(S)-1 ※ -03	21	3,000	40	10.6	80	21.2	Symbol ※ 0: 0.7 ~ 2 100 ~ 285 1: 1.5 ~ 5.5 214 ~ 786 2: 5 ~ 9.5 714 ~ 2,000 3: 9 ~ 15.5 1,286 ~ 2,214 4: 15 ~ 21 2,143 ~ 3,000	
	HW3H(S)-1 S-03								

Note (*1) •Only turning the direction of plug, you can take an optional port where pressure is monitored among P,A, and B ports.

•Please indicate A or B port for monitoring pressure, if necessary. Without your indication, the valve will be delivered for P port control.

•Please also indicate the operating voltage in case of order.

● Range of voltage

Range of voltage available is as follows.

AC	100 ~ 240 V
DC	12 ~ 24 V

Dual function valves



● Features

1. This dual function valve, designed to be as thick as HYTEGRA single function valve, serves to reduce the total height of mounting valves by half compared with single function valves when the same circuit is built.
2. Two functions are incorporated into one block, which reduces length of oil passage by half and minimizes power loss due to pressure drop.
3. Designed for easy maintenance and operation.

Picture shows the difference in height when the same circuit is built by dual function valves and single function valve respectively.

● Specifications

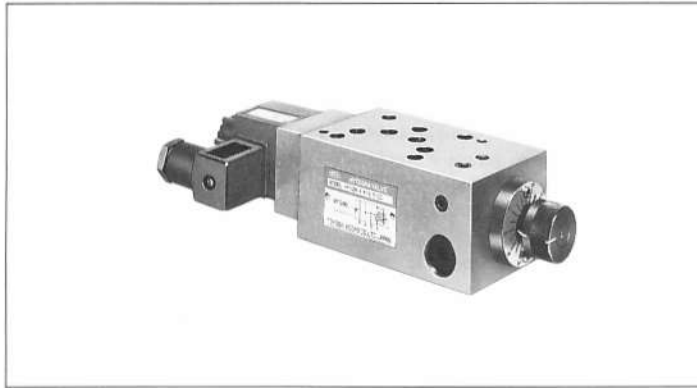
025 type

Model	Symbol	Max. operating pressure		Flow adjusting range		Cracking pressure of check valve		Pressure adjusting range				
		MPa	psi	ℓ/min	gpm	MPa	psi	MPa	psi			
HKF3H-P-Q ※ -40-025B		25	3,570	0.5 ~ 40 0.13 ~ 10.6	Symbol ※		—		—			
HFG3H-P-40-D ※ -025B					1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7		—		Symbol ※		—	
HKF3H-W-Y ※ -40K-025B					1: 0.04 5.7 2: 0.35 50		—		4: 0.7 ~ 7 100 ~ 1,000 5: 3.5 ~ 4 142 ~ 2,000		—	
HKF3H-PW-Q ※ -40-025B					1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7		—		—		—	

03 type

Model	Symbol	Max. operating pressure		Flow adjusting range		Cracking pressure of check valve		Pressure adjusting range							
		MPa	psi	ℓ/min	gpm	MPa	psi	MPa	psi						
HKF3H(S)-P-Q ※ -80-03		21	3,000	0.5 ~ 80 0.13 ~ 21.2	Symbol ※		—		—						
HKF3H(S)-P-Q ※ -K56-03					Max. controllable flow 56 14.8		1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7		—		—				
HKG3H(S)-P-Q ※ -B ※ -03				—		—		—		Symbol ※		—			
HFG3H(S)-P-80-B ※ -03				—		—		—		1: 0.7 ~ 7 100 ~ 1,000 2: 3.5 ~ 4 500 ~ 2,000 3: 10.5 ~ 21 1,500 ~ 3,000		—			
HKF3H(S)-W-Y ※ -80K-03				—		0.05 ~ 8 0.13 ~ 21.2		1: 0.04 5.7 2: 0.35 50		—		—			
HKF3H(S)-PW-Q ※ -80K-03				—		—		1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7		—		—			
HGF3H(S)-AW-B ※ -80K-03				—		—		—		—		Symbol ※		—	
HGF3H(S)-BW-B ※ -80K-03				—		—		—		—		1: 0.7 ~ 7 100 ~ 1,000 2: 3.5 ~ 14 500 ~ 2,000 3: 10.5 ~ 21 1,500 ~ 3,000		—	

Flow control valves with solenoid operated check valve



● Specifications

Throttle valve

Control port	Model	Max. operating pressure		Rated flow		Flow adjusting range		Min. necessary flow at the quick feed (*1)		Symbol					
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	ℓ/min	gpm						
A	HFK2H-A-40-S-025B-A※	14	2,000	20	5.3	0.5 ~ 40	5	1.33	0.13 ~ 10.6						
	HFK2H(S)-A-80-S-03-A※			30	7.9	0.5 ~ 80					0.13 ~ 21.2				
	HFK2H-A-190-S-06-A※			120	31.8	1 ~ 190							0.26 ~ 50.4		
B	HFK2H-B-40-S-025B-A※			20	5.3	0.5 ~ 40				5	1.33	0.13 ~ 10.6			
	HFK2H(S)-B-80-S-03-A※			30	7.9	0.5 ~ 80								0.13 ~ 21.2	
	HFK2H-B-190-S-06-A※			120	31.8	1 ~ 190									
R	HFK2H-R-40-S-025B-A※			20	5.3	0.5 ~ 40						5	1.33	0.13 ~ 10.6	
	HFK2H(S)-R-80-S-03-A※			30	7.9	0.5 ~ 80									

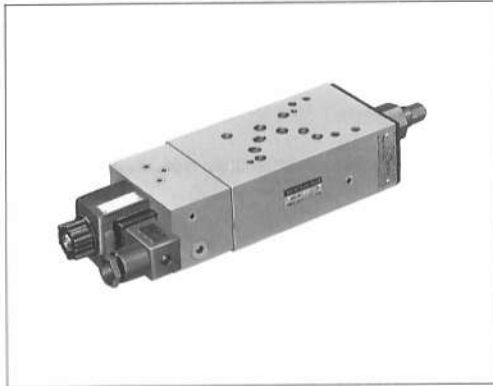
Pressure and temperature compensation

Control port	Model	Max. operating pressure		Rated flow		Flow adjusting range		Min. necessary flow at the quick feed (*1)		Symbol						
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	ℓ/min	gpm							
A	HFK2H-A-K6-S-025B-A※	14	2,000	20	5.3	0.3 ~ 6	5	1.33	0.08 ~ 1.6							
	HFK2H(S)-A-K12-S-03-A※			30	7.9	0.1 ~ 12					0.03 ~ 3.2					
B	HFK2H-B-K6-S-025B-A※			20	5.3	0.3 ~ 6				5			1.33	0.08 ~ 1.6		
	HFK2H(S)-B-K12-S-03-A※			30	7.9	0.1 ~ 12					0.03 ~ 3.2					
R	HFK2H-R-K6-S-025B-A※			20	5.3	0.3 ~ 6									5	1.33
	HFK2H(S)-R-K12-S-03-A※			30	7.9	0.1 ~ 12					0.03 ~ 3.2					

Note: (*1) When the solenoid is switched off to shift quick feed to slow with a smaller amount of flow than that herewith indicated, a poppet takes much more time to close the connection for quick feed than designed, causing a great delay in responding to the command.

Solenoid-operated Brake valves

This valve is used to make actuators with a large inertia start and stop smoothly by reducing the shock which may generate when they are accelerated and decelerated. This valve, such a conventional solenoid-operated brake valve as changed to stack type including a pressure reducing valve in the pilot circuit as standard equipment, can control precise and smooth start and stop of actuators even when the circuit pressure varies extremely.

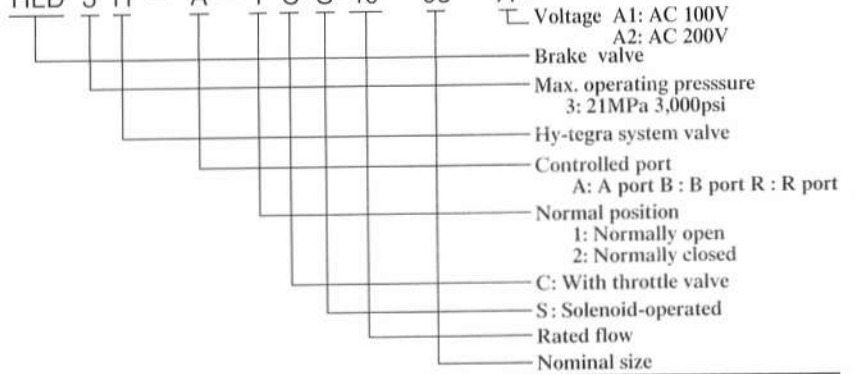


● Features

1. This valve is free from internal piping because of its direct stacking onto manifold.
2. This valve does not take up space because of stacking type.

● Model coding

HLD 3 H - A - 1 C S 40 - 03 - A※



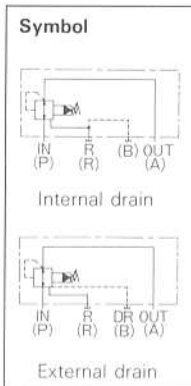
● Specifications

Port	Valve normal position	Model	Max. operating pressure		Rated flow		Permissible back pressure		Symbol						
			MPa	psi	ℓ/min	gpm	MPa	psi							
A	Normally open	HLD3H(S)-A-1CS40-03-A※	21	3,000	40	10.6	1	143							
	Normally closed	HLD3H(S)-A-2CS40-03-A※													
	Normally open	HLD3H-A-1CS75-06-A※							75	19.9	21	3,000			
	Normally closed	HLD3H-A-2CS75-06-A※													
B	Normally open	HLD3H(S)-B-1CS40-03-A※			21	3,000	40	10.6	1	143					
	Normally closed	HLD3H(S)-B-2CS40-03-A※													
	Normally open	HLD3H-B-1CS75-06-A※									75	19.9	21	3,000	
	Normally closed	HLD3H-B-2CS75-06-A※													
R	Normally open	HLD3H(S)-R-1CS40-03-A※	21	3,000			40	10.6	1	143					
	Normally closed	HLD3H(S)-R-2CS40-03-A※													
	Normally open	HLD3H-R-1CS75-06-A※									75	19.9	21	3,000	
	Normally closed	HLD3H-R-2CS75-06-A※													

Balancing valves

This valve, hytegra manifold mounting balancing valve, supplies optional balancing pressure in order to operate a smooth vertical drive of a spindle head with a large load.

Equipped with the functions of pressure reducing valve, relief valve and check valve, it can control optional balancing pressure with an adjustment screw only.

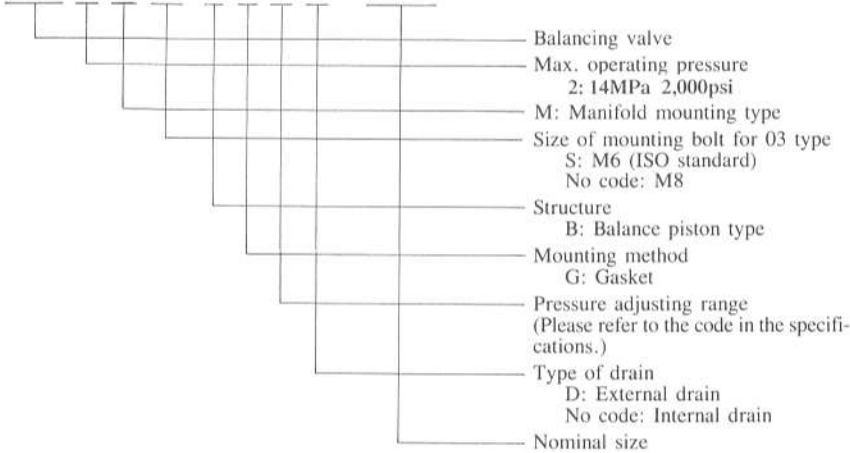


● **Features**

1. This valve makes the hydraulic system compact because of its multiple pressure control structure.
2. This valve can control pressure with an easy drive of an adjustment screw.
3. There are two types in this kind: internal drain type and external drain type.

● **Model coding**

HGR 2 M (S) - B G ※ (D) - 025B



● **Specifications**

Drain type	Model	Max. operating pressure		Rated flow		Max. flow		Pressure adjusting range	
		MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi
Internal drain	HGR2M-BG ※ -025B	14	2,000	20	5.3	40	10.6	Symbol ※ 4: 1.2 ~ 7 171 ~ 1,000 5: 3.5 ~ 14 500 ~ 2,000	
	HGR2M(S)-BG ※ -03			40	10.6	80	21.2		
External drain	HGR2M-BG ※ D-025B			20	5.3	40	10.6		
	HGR2M(S)-BG ※ D-03			40	10.6	80	21.2		

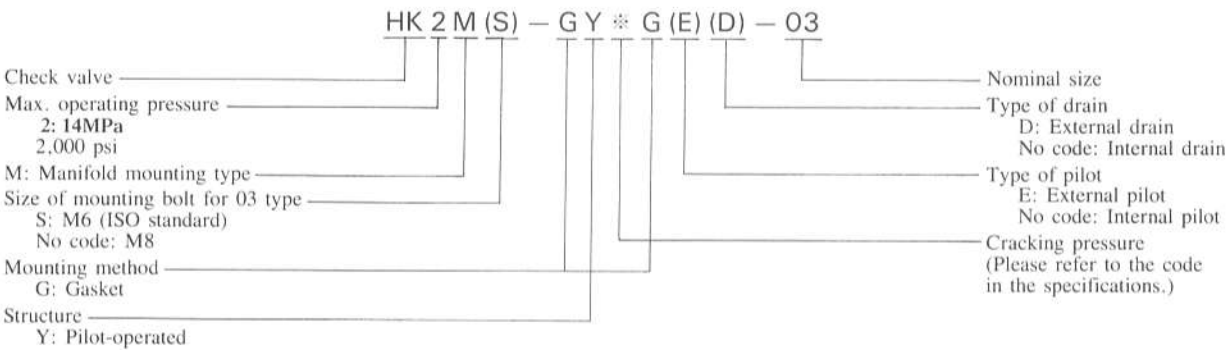
Pilot-operated check valves for Balancing valve

This valve is used for the protection of a balance cylinder from its fall with servo motor and ball screw considered in the balancer circuit with balancing valve.



- HK2M(S)-GY*G(E)-* is to be combined with HGR2M(S)-BG*-* (Internal drain).
- When HK2M(S)-GY*G(E)-* (Internal drain) is used, please plug in B port of manifold or sub-plate.
- HK2M(S)-GY*G(E)D-* is to be combined with HGR2M-BG*D-* (External drain).
- Considered used in combination with HGR2M(S)-BG*(D)-*, this valve is delivered along with its mounting bolts (M5 × 115 for 025B Type, M8 × 120 for 03 Type or M6 × 120 for 03 Type ISO standard).

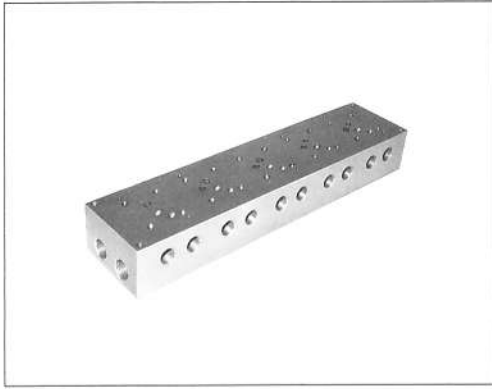
Model coding



Specifications

Pilot type	Drain type	Model	Max. operating pressure		Rated flow		Max. flow		Cracking pressure of check valve		Symbol		
			MPa	psi	ℓ/min	gpm	ℓ/min	gpm	MPa	psi			
Internal pilot	Internal drain	HK2M-GY*G-025B	14	2,000	20	5.3	40	10.6	Symbol * 1: 0.04 5.7 2: 0.35 50 3: 0.46 65.7 4: 0.53 75.7				
		HK2M(S)-GY*G-03			40	10.6	80	21.2					
	External drain	HK2M-GY*GD-025B			20	5.3	40	10.6					
		HK2M(S)-GY*GD-03			40	10.6	80	21.2					
External pilot	Internal drain	HK2M-GY*GE-025B			20	5.3	40	10.6					
		HK2M(S)-GY*GE-03			40	10.6	80	21.2					
	External drain	HK2M-GY*GED-025B			20	5.3	40	10.6					
		HK2M(S)-GY*GED-03			40	10.6	80	21.2					

Manifold for stack valve



● Model coding

HMD (S) — 2 (E) — 025 — 03 T1

- Manifold
- HMD: For 025 and 03 type valve
- HMC: For 06 type valve
- Size of mounting bolt for 03 type valve only
- S: M6 (ISO standard)
- No code: M8
- Number of stations
- E: For 06 type external pilot type solenoid operated valve only
- Nominal size of valve in reference
- 025, 03, 06
- Piping size
- 03: 3/8 04: 1/2 08: 1
- Type of piping
- T1: Thread connection back piping
- T2: Thread connection side piping
- TY2: Thread connection side piping

● Specifications

Kind	Type of connection	Model	Max. operating pressure MPa psi	Symbol	Remarks
Back piping	Thread connection	HMD-※-025-03T1	21 3,000		●Symbol ※ Number of stations 1: 1 station 2: 2 stations 3: 3 stations 4: 4 stations 5: 5 stations
		HMD(S)-※-03-04T1			
		HMC-※(E)-06-08T1			
Side piping		HMD-※-025-03T2			
		HMD(S)-※-03-04T2			
		HMC-※(E)-06-08T2			
	HMD-※-025-03TY2	●Symbol ※ Number of stations 1 ~ 11 stations			

● Mounting bolts

Stacking tier	Size	03		06	10
		M8	M6		
2	HKS-NA-5 × 80	HKS-NA-8 × 115	HKS-NA-6 × 115	HKS-NA-12 × 145	HKS-NA-20 × 195
3	HKS-NA-5 × 115	HKS-NA-8 × 170	HKS-NA-6 × 170	HKS-NA-12 × 230	HKS-NA-20 × 315
4	HKS-NA-5 × 150	HKS-NA-8 × 225	HKS-NA-6 × 225	HKS-NA-12 × 315	HKS-NA-20 × 435
5	HKS-NA-5 × 185	HKS-NA-8 × 280	HKS-NA-6 × 280	HKS-NA-12 × 400	HKS-NA-20 × 555

10 type valves can be mounted in max. 4 tiers for horizontal stacking system.
Other sizes than 03 type conform to ISO standard mounting dimensions.

● Pins

Stacking tier	Size		
	03	06	10
2	—	HKS-NB-12 × 167	HKS-NB-20 × 125
3	HKS-NP-5 × 90	HKS-NB-12 × 252	HKS-NB-20 × 245
4	HKS-NP-5 × 145	HKS-NB-12 × 337	HKS-NB-20 × 365
5	HKS-NP-5 × 200	HKS-NB-12 × 442	—