

Preferred Products Catalog



BOSCH
Automation

BOSCH AUTOMATION TECHNOLOGY

For nearly 100 years, Bosch Automation Technology has provided the motion control industry with a complete line of high performance, high response, exceptionally durable components. Through our advanced technology and world class manufacturing capabilities, we offer high quality products that are utilized in both custom and standard applications.

Today's motion control market demands reliable product availability. In many cases, products need to be accessible "on-demand". Therefore, Bosch has developed a program which offers quick access to several product lines including: pumps, valves and accumulators.

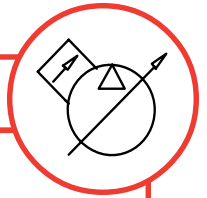
PREFERRED PRODUCT PROGRAM

The Bosch Preferred Product Program features more than 400 in-stock items available with reduced lead times. This program offers flexibility and assurance so you will have the products you need when you need them.

Our goal is to accelerate delivery of preferred product shipments from the Bosch factory to your facility, assisting you with product requests, applications and delivery information.

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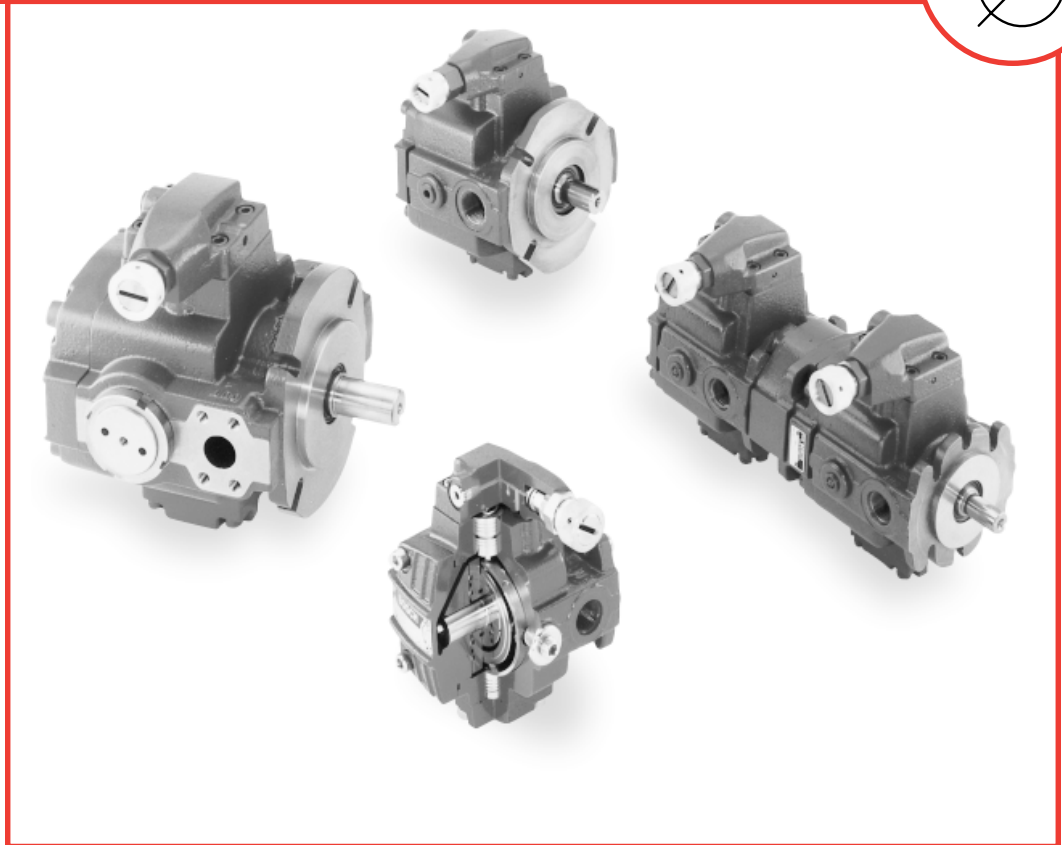
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VANE PUMPS

Bosch is leading the way in advanced variable vane pump technology.

Market conditions favor hydraulic components that operate at low noise levels without sacrificing efficiency or durability while keeping pricing competitive. VPV pumps feature an outstanding response to the needs of the market today and for the future.



Vane Pumps:

- Flows from 7.6 gpm to 75.8 gpm in single pumps.
- Available in combination with other VPV pumps and Bosch gear pumps.
- Through-drive horsepower transfer is 100% to the second pump.
- VPV pumps are available with through shaft versions for quick combinations.
- Pressures to 3000 psi continuous.
- Continuous speeds from 1000 to 1800 rpm.
- Overall efficiencies to 89%.
- A variety of fluids can be used: mineral oil, water glycol, phosphate ester and environmentally friendly fluids.
- Controls include standard pressure compensation, remote pressure compensation, load sense, solenoid 2-pressure, solenoid vented, proportional pressure control, torque limiting, and electronic proportional pressure and flow.

SAE									
Size – in ³ /rev (cc/rev)	1.0 (16)	1.5 (25)	2.0 (32)	2.75 (45)	3.84 (63)	4.88 (80)	6.0 (100)	7.93 (130)	10.0 (164)
Flow ¹⁾	7.6	11.4	15.1	20.8	29.1	37.0	45.4	60.0	75.8
Max. Continuous Pressure (psi)	3000	3000	3000	3000	3000	3000	3000	3000	3000
Speed range	950 to 1800 rpm								
Mounting	Flange to ISO 3019/1								
Mount Position	Any								
Rotation	RH								
Sound Pressure Level ²⁾	67	69	69	68	69	71	74	76	77

¹⁾ 1750 rpm in gpm.

²⁾ dB(A) at 3000 psi, 1750 rpm, full flow in a hemi-anechoic chamber with microphone placed 1 meter away at 7 discrete locations. Sound pressure levels are spatially and time weighted averaged.

VANE PUMPS

VPV "Whisper Pumps"™							
Size in ³ /rev (cc/rev)	Mount	Maximum Pressure (psi)	gpm @ 1750	Rotation	Description	Number	Weight
1.00 (16)	SAE A	3000	7.6	R	0513R18C3VPV16SM21HYB03	0 513 300 212	39.0
1.00 (16)	SAE A	3000	7.6	R	0513R18C3VPV16SM21HYB03P1	0 513 300 246	46.0
1.50 (25)	SAE B	3000	11.4	R	0513R18C3VPV25SM21HYB03	0 513 400 212	67.0
1.50 (25)	SAE B	3000	11.4	R	0513R18C3VPV25SM21HYB03P1	0 513 400 248	74.0
2.00 (32)	SAE B	3000	15.1	R	0513R18C3VPV32SM21HYB03	0 513 500 220	67.0
2.00 (32)	SAE B	3000	15.1	R	0513R18C3VPV32SM21HYB03P1	0 513 500 254	74.0
2.75 (45)	SAE C	3000	20.8	R	0513R18C3VPV45SM21HYB05	0 513 600 214	127.0
2.75 (45)	SAE C	3000	20.8	R	0513R18C3VPV45SM21HYB05P1	0 513 600 234	135.0
3.84 (63)	SAE C	3000	29.1	R	0513R18C3VPV63SM21HYB05	0 513 700 218	127.0
3.84 (63)	SAE C	3000	29.1	R	0513R18C3VPV63SM21HYB05P1	0 513 700 242	135.0
4.88 (80)	SAE C	3000	37.0	R	0513R18C3VPV80SM21HYB05	0 513 800 248	127.0
4.88 (80)	SAE C	3000	37.0	R	0513R18C3VPV80SM21HYB05P1	0 513 800 238	135.0
6.00 (100)	SAE D	3000	45.4	R	0513R18C3VPV100SM21HYB03	0 513 850 216	245.0
6.00 (100)	SAE D	3000	45.4	R	0513R18C3VPV100SM21HYB03P1	0 513 850 214	255.0
7.93 (130)	SAE D	3000	60.0	R	0513R18C3VPV130SM21HYB03	0 513 860 250	245.0
7.93 (130)	SAE D	3000	60.0	R	0513R18C3VPV130SM21HYB03P1	0 513 860 258	255.0
10.0 (164)	SAE D	3000	75.8	R	0513R18C3VPV164SM21HYB03	0 513 870 226	245.0
10.0 (164)	SAE D	3000	75.8	R	0513R18C3VPV164SM21HYB03P1	0 513 870 216	255.0

See catalog #9 535 233 724 for complete description and performance specifications.

Adaptor Kits for Combinations	Number
VPV 16 to VPV 16 SAE	9 511 230 518
VPV 16 to "F" Gear Pump SAE Key	9 511 230 521
VPV 25/32 to VPV 25/32 SAE	9 511 230 523
VPV 25/32 to VPV 16 SAE	9 511 230 525
VPV 45/63/80 to VPV 45/63/80 SAE	9 511 230 528
VPV 45/63/80 to VPV 16 SAE	9 511 230 532
VPV 45/63/80 to VPV 25/32	9 511 230 530
VPV 45/63/80 to "F" Gear Pump SAE Key	9 511 230 533
VPV 45/63/80 to "G" Gear Pump SAE Key	9 511 230 534
VPV 100/130/164 to VPV 100/130/164	9 511 230 536
VPV 100/130/164 to VPV 45/63/80	9 511 230 538
VPV 100/130/164 to VPV 25/32	9 511 230 540
VPV 100/130/164 to VPV 16	9 511 230 542
VPV 100/130/164 to "F" Gear Pump SAE Key	9 511 230 543
VPV 100/130/164 to "G" Gear Pump SAE Key	9 511 230 594

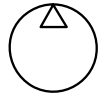
See catalog #9 535 233 724 for complete description and performance specifications.

VANE PUMPS (continued)

VPV "Whisper Pumps"™ (continued)	
Pump Repair Kits SAE 210 bar	Number
VPV 16 Standard Pump	9 511 230 606
VPV 16 "P1" Pump	9 511 230 608
VPV 25/32 Standard Pump	9 511 230 598
VPV 25/32 "P1" Pump	9 511 230 623
VPV 45/63 Standard Pump	9 511 230 639
VPV 45/63 "P1" Pump	9 511 230 642
VPV 80 Standard Pump	9 511 230 641
VPV 80 "P1" Pump	9 511 230 643
VPV 100/130 Standard Pump	9 511 230 650
VPV 100/130 "P1" Pump	9 511 230 652
VPV 164 Standard Pump	9 511 230 651
VPV 164 "P1" Pump	9 511 230 653

Seal Kits for VPV SAE	Number
VPV 16	9 511 230 605
VPV 25/32	9 511 230 597
VPV 45/63/80	9 511 230 658
VPV 100/130/164	9 511 230 659

See catalog #9 535 233 724 for complete description and performance specifications.



GEAR PUMPS

The gear pump is the most widely used design in hydraulic systems. It is simple in construction, reliable in operation, performs with a variety of fluids and is the most cost effective way of generating hydraulic pressure. Bosch has been involved in the design, development and manufacture of gear pumps for many years and is one of the largest manufacturers of quality gear pumps in the world. Proven designs, the use of specially developed materials, constant testing and sophisticated mass production techniques ensure products of the very highest quality.

Gear Pumps:

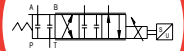
- Flows from 1.85 gpm to 10.38 gpm.
- Available in combination.
- Pressures to 3625 psi continuous.
- Continuous speeds from 500 rpm to 3500 rpm.
- Overall efficiencies from 85% to 92%.
- Pump bodies built from extruded aluminum with cast iron end covers form a very high strength unit.
- DU bearings are standard ensuring long life.
- Priority, hitch control, forklift and harvester valves for mobile applications are available on request.
- Special low noise version are available on request.



GEAR PUMPS							
Size (in ³ /rev)	Mounting	Maximum Pressure (psi)	gpm @ 1750	Rotation	Description	Number	Weight (lbs.)
0.244	SAE A	3625	1.84	R	HY/ZFS11/4R254	0 510 225 011	6.6
0.335	SAE A	3625	2.53	R	HY/ZFS11/5.5R254	0 510 325 011	6.8
0.488	SAE A	3625	3.70	R	HY/ZFS11/8R254	0 510 425 016	7.0
0.671	SAE A	3625	5.08	R	HY/ZFS11/11R254	0 510 525 032	7.5
0.854	SAE A	3335	6.47	R	HY/ZFS11/14R254	0 510 525 031	7.7
0.976	SAE A	2900	7.39	R	HY/ZFS11/16R254	0 510 625 021	7.9
1.159	SAE A	2465	8.78	R	HY/ZFS11/19R254	0 510 625 041	8.1
1.370	SAE A	2030	10.37	R	HY/ZFS11/22.5R254	0 510 725 059	8.4

See catalog #9 535 233 072 for complete description and performance specifications.

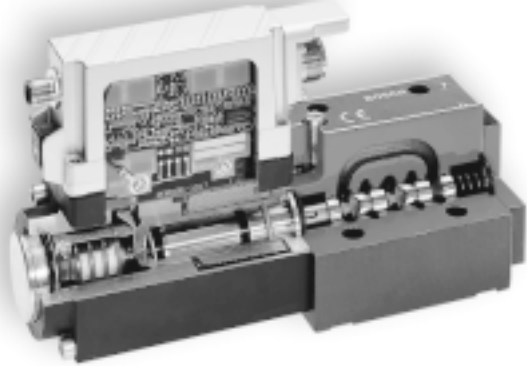
DIRECT OPERATED SERVO SOLENOID VALVES



The spool is directly operated by the solenoid thus eliminating the hydraulic amplifier of the conventional servo valve.

- Less than 0.1% repeatability.
- Available in NG6 (D03) and NG10 (D05) sizes.

- Flow rates up to 26 gpm (100 L/min).
- Up to 130 hZ frequency response.
- Defined fail-safe position.
- Zero lap.
- On-board electronics.



DIRECT OPERATED SERVO SOLENOID VALVES								
NG6 (D03)	Solenoid (A/W)	Pressure Rating (psi)	Flow (gpm)		Part Number	Approximate Weight	Amplifier	Page
		4570	1	$\Delta p = 500$ psi	0 811 404 600	6.0	OBE	11
			3		0 811 404 601			
		4570	6.3		0 811 404 602			
		4570	10.5		0 811 404 603			
		4570	1		0 811 404 631	6.0	OBE-mA	11
					3			
			6.3		0 811 404 633			
			10.5		0 811 404 634			
		4570	1		0 811 404 610	6.0	OBE	11
					3			
			6.3		0 811 404 612			
			10.5		0 811 404 613			
NG6 (D03): HRV								
	24V max 25 VA	4570	2.1	$\Delta p = 500$ psi	0 811 404 723	4.8	OBE 12 PIN	18
			10.5		0 811 404 720			
NG10 (D05)								
		4570	13.2	$\Delta p = 500$ psi	0 811 404 800	16.0	OBE OBE-mA	39
					26.4			
			26.4		0 811 404 817			
		4570	13.2		0 811 404 802	16.0	OBE	39
					26.4			
			47		0 811 404 552			
		4570	47			18.0	OBE	N/A
		4570	18		0 811 402 107	17.0	OBE	56

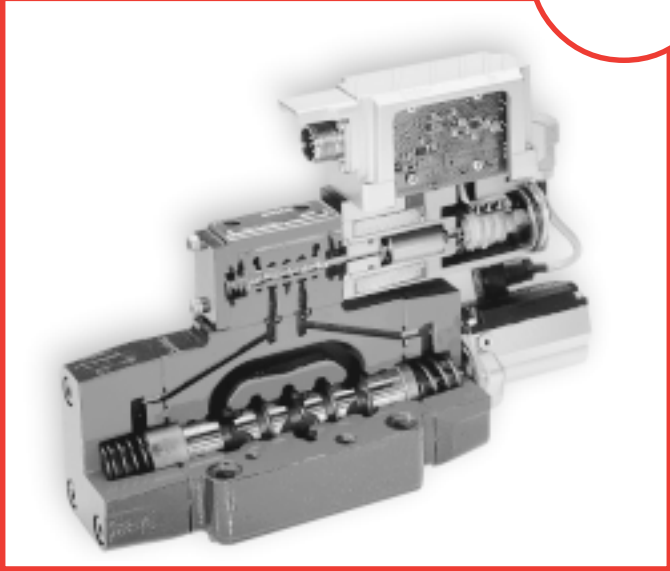
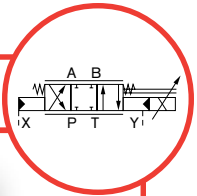
See catalog #AKY 013/2 for complete description and performance specifications.

PILOT OPERATED SERVO SOLENOID VALVES

The servo solenoid pilot valve drives a zero lap main stage thereby controlling greater flow rates.

- Sizes in NG10 (D05), NG16 (D07), NG25 (D08) and NG32 (D10).
- Flow rates up to 530 gpm (2000 L/min).

- Up to 62 hZ frequency response.
- Position feedback on mainstage.
- Zero lap.
- On-board electronics.

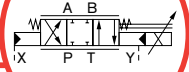


PILOT OPERATED SERVO SOLENOID VALVES									
Description	Flow Type	Pressure Rating (psi)	Flow (gpm)		Piloting	Part Number	Approximate Weight	Amplifier	Page
	NG10 (D05)								
	Linear	5000	14.5 22.4	$\Delta p = 73$ psi	PT PT	0 811 404 661 0 811 404 662	20.0	OBE 7 PIN	74
	NG 16 (D07)								
	Linear	5000	31.7 52.8	$\Delta p = 73$ psi	XY XY	0 811 404 250 0 811 404 251	24.0	OBE 7 PIN	74
	NG 25 (D08)								
	Linear	5000	97.7	$\Delta p = 73$ psi	XY	0 811 404 430	41.0	OBE 7 PIN	74
	NG10 (D05): HRV								
	Linear	5000	22.5	$\Delta p = 73$ psi	XY	0 811 404 691	17.6	OBE 12 PIN	85
	NG 16 (D07): HRV								
	Linear	5000	53	$\Delta p = 73$ psi	XY	0 811 404 291	23.0	OBE 12 PIN	85

¹⁾ Maximum pilot pressure (X Port) = 3600 psi.

²⁾ See catalog #ATUS AKY 013/2 US (4.96) for complete description and performance specifications.

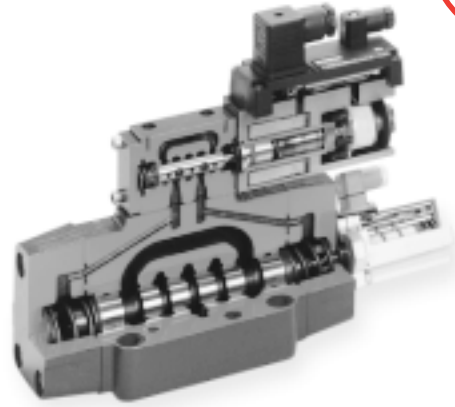
PILOT OPERATED PROPORTIONAL DIRECTIONAL VALVES



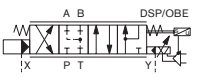
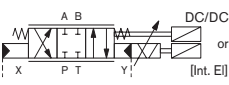
The proportional pilot valves drive a main stage with 20% overlap thereby providing open loop control for greater flow rates.

- Sizes in NG10 (D05), NG16 (D07), NG25 (D08) and NG32 (D10).
- Flow rates up to 530 gpm (2000 L/min).

- Regenerative and 2:1, flow curves available.
- Position feedback on mainstage.
- 20% overlap on main stage spool.
- On-board electronics.



PILOT OPERATED PROPORTIONAL DIRECTIONAL VALVES

Description	Flow Type	Pressure Rating (psi)	Flow (gpm)	Piloting	Part Number	Approximate Weight	Amplifier	Page						
 <p>DSP</p>	NG10 (D05)													
	Symmetric-01+L	5000	21:21	$\Delta p = 73$ psi	XY	0 811 404 915	19.0	OBE	16					
	Asymmetric-01+L		21:13		XY	0 811 404 916								
	Regen-01+L		21:13		XY	0 811 404 920								
	NG16 (D07)													
	Symmetric-01+L	5000	48:48	$\Delta p = 73$ psi	XY	0 811 404 930	24.0	OBE	16					
Asymmetric-01+L	48:29		XY		0 811 404 931									
Regen-01+L	48:29		XY		0 811 404 937									
NG25 (D08)														
Symmetric-01+L	4000	92:92	$\Delta p = 73$ psi	XY	0 811 404 958	41.0	OBE	16						
Asymmetric-01+L		92:61		XY	0 811 404 968									
 <p>HPP</p>	NG10 (D05)													
	Symmetric	5000	21:21	$\Delta p = 73$ psi	XY	0 811 404 700	19.3	OBE	32					
	NG16 (D07)													
	Symmetric		48:48		$\Delta p = 73$ psi	XY				0 811 404 305	24.0	OBE	32	
	NG25 (D08)													
	Symmetric	5000	92:92	$\Delta p = 73$ psi	XY	0 811 404 454	41.0	OBE	32					
NG10 (D05)														
Symmetric	5000	21:21	$\Delta p = 73$ psi	XY	0 811 404 702	19.3	OBE	32						
NG16 (D07)														
Symmetric		48:48		$\Delta p = 73$ psi	XY				0 811 404 307	24.0	OBE	32		
NG25 (D08)														
Symmetric	5000	92:92	$\Delta p = 73$ psi	XY	0 811 404 456	41.0	OBE	32						

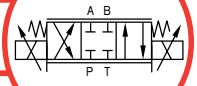
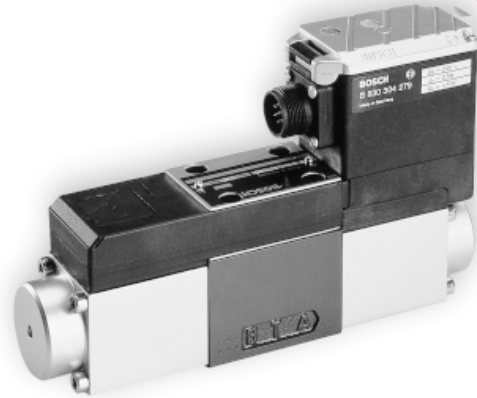
See catalog #AKY 013/2 for complete description and performance specifications.

PROPORTIONAL DIRECTIONAL & THROTTLE VALVES

A proportional solenoid actuates the valve's main spool directly thus providing accurate flow control.

- Available as throttle or directional valves.
- Available with or without LVDT feedback.

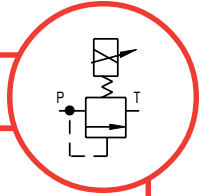
- NG6 (D03) and NG10 (D05) sizes.
- Flow rates up to 21 gpm (80L/min) at 72.5 psid.
- Up to 4570 psi (315 bar) operating pressure.
- 20% overlap on main stage spool.



PROPORTIONAL THROTTLE & DIRECTIONAL CONTROL VALVES								
NG6 (D03): Throttle	Flow Type	Solenoid (A/W)	Pressure Rating (psi)	Flow (gpm)		Part Number	Amplifier	Page ¹⁾
	NO	2.5 / 25 R _L =3Ω	4570	7.4	Δ p = 73 psi	0 811 403 108	0 811 405 143 0 811 405 145 0 811 405 079	88
	NC					0 811 403 104		
	NC	24 V max 30 VA	4570	8	Δ p = 73 psi	0 811 403 128	OBE	114
NG10 (D05): Throttle								
	NC	R _L =5.8Ω max 50 VA	4570	21 21	Δ p = 73 psi	0 811 404 750	OBE	120
Directional Control								
	NG6 (D03)	24V max 30 VA	4570	4.8 8.5	Δ p = 73 psi	0 811 404 151 0 811 404 150	OBE	156
	NG10 (D05)	24V max 50 VA		9.3 1.7		0 811 404 852 0 811 404 850		182
	NG6 (D03)	24V max 30 VA	4570	4.8 8.5	Δ p = 73 psi	0 811 404 140 0 811 404 141	OBE	168
	NG10 (D05)	24V max 50 VA		9.3 1.7		0 811 404 770 0 811 404 771		194
				9.3		0 811 404 778		OBE-mA
	NG6 (D03)	24V max 30 VA	4570	4.8 8.5	Δ p = 73 psi	0 811 404 153 0 811 404 152	OBE	156
	NG10 (D05)	24V max 50 VA		13.2 21		0 811 404 853 0 811 404 852		182
				NG6 (D03)		24V max 30 VA		4570
NG10 (D05)	24V max 50 VA	13.2 21	0 811 404 772 0 811 404 773	194				

¹⁾ See catalog #AKY 013/1 for complete description and performance specifications.

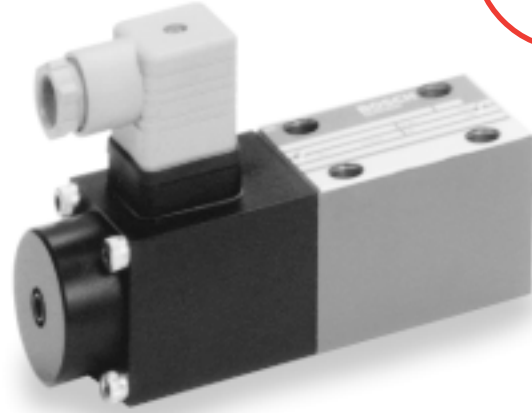
PROPORTIONAL PRESSURE RELIEF VALVES



A proportional solenoid provides force against a poppet to control pressure. These valves could be direct or pilot operated.

- Relief and/or reducing functions available.
- Available with or without LVDT feedback.

- Sizes in NG6 (D03) and NG10 (D05).
- Flow rates up to 31.7 gpm.
- Up to 4570 psi (315 bar) pressure range.
- Reducing/relieving valve will go to 0 psi.



PROPORTIONAL CONTROL VALVES

NG6 (D03): Direct Operated	Flow Type	Solenoid (A/W)	Pressure Rating (psi)	Flow (gpm)	Part Number	Amplifier	Page ¹⁾
	Relief	0.8/18 $R_L=20\Omega$	2610 3625 4570	0.26 0.4 max	0 811 402 017 0 811 402 019 0 811 402 016	0 811 405 144 0 811 405 081	10
	Relief	24 V max 30 VA	2610	0.26 0.4 max	0 811 402 071	OBE	25
			3625 4570		0 811 402 073 0 811 402 070		
	Relief	2.7 / 25	3625	0.26 0.8 max.	0 811 402 021	0 811 405 095 0 811 405 100	20
NG6 (D03): Pilot Operated							
	Relief	0.8/18 $R_L=22\Omega$	4570	10.6	0 811 402 043	0 811 405 144 0 811 405 081	32
	Relief	24 V max 30 VA	4570	10.6	0 811 402 076	OBE	37
			2610		0 811 402 079		
	Reducing/ Relieving	0.8/18 $R_L=22\Omega$	4570	10.6	0 811 402 058	0 811 405 144 0 811 405 081	42
	Reducing/ Relieving	24 V max 30 VA	4570	10.6	0 811 402 081	OBE	52
			2538		0 811 402 083		
NG10 (D05): Pilot Operated							
	Relief	0.8/18 $R_L=22\Omega$	4570	31.7	0 811 402 110	0 811 405 144 0 811 405 081	60
	Relief	24 V max 30 VA	4570	31.7	0 811 402 116	OBE	79
	Reducing/ Relieving	0.8/18 $R_L=22\Omega$	4570	31.7	0 811 402 154	0 811 405 144 0 811 405 081	66
	Reducing/ Relieving	24 V max 30 VA	4570	31.7	0 811 402 152	OBE	80

¹⁾ See catalog #AKY 013/1 for complete description and performance specifications.

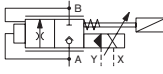
PROPORTIONAL THROTTLE CARTRIDGES

Cartridge type proportional throttle valves are actuated by a small servo pilot valve. This pilot valve is located on the cover with the position sensor.

These proportional throttle valves fit in the standard DIN cartridge cavities. The cover and cartridge are one piece.

- Up to 264 gpm.
- Repeatability less than 0.2%.
- On board electronics.



PROPORTIONAL VALVES NG16 - NG50							
Description	Size	Pressure Rating (psi)	Flow (gpm)		Part Number	Amplifier	Page ¹⁾
NC 	NG16	4600	48	$\Delta p = 73 \text{ psi}$	0 811 402 454	OBE	62
	NG25		55		0 811 402 517		
	NG32		85		0 811 402 616		
	NG40		132		0 811 402 622		
	NG50		264		0 811 402 642		

¹⁾ See catalog #ATUS AKY 013/3 (1/97) for complete description and performance specifications.

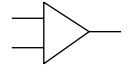
AMPLIFIER CARDS






The following amplifier cards convert voltage or current commands into the appropriate current signals to operate the associated hydraulic valve. Available card functionality: ramps, set points, failing outputs, etc.

Amplifier cards come in three forms:

- Euro-card (requires card holder).
- DIN module (mounted on standard DIN rail).
- Active plugs (mounts directly on the solenoid).

For further information check the catalog listed under the “Page” column.

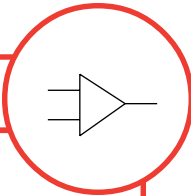


AMPLIFIERS				
Description	Ramp	Alpha Numeric	Part Number	Page
	without ramp with ramp	2 / 2 V 2 / 2 V - RGC1	0 811 405 076 0 811 405 074	137 ¹⁾ 142 ¹⁾
	with ramp	AS 2.5 - V AS 2.5 - mA	0 811 405 143 0 811 405 145	238 ²⁾
	without ramp	PL6 PL10 PL2STV	0 811 405 060 0 811 404 061 0 811 404 063	157 ³⁾ 157 ³⁾ 173 ³⁾
	with ramp	AS 0.8 - V AS 0.8 - mA	0 811 405 144 0 811 405 162	238 ²⁾
	with ramp with ramp with ramp	1 M 45 - 0.8 A 1 M 45 - 2.5 A PDL 1 - RGC1	0 811 405 081 0 811 405 079 0 811 405 100	260 ²⁾ 260 ²⁾ 276 ²⁾
	N/A	ISA-Adapter for DSP	1 834 484 245	31 ¹⁾

¹⁾ See catalog #AKY 13/3 for complete description and performance specifications.

²⁾ See catalog #AKY 13/1 for complete description and performance specifications.

³⁾ See catalog #AKY 13/2 for complete description and performance specifications.

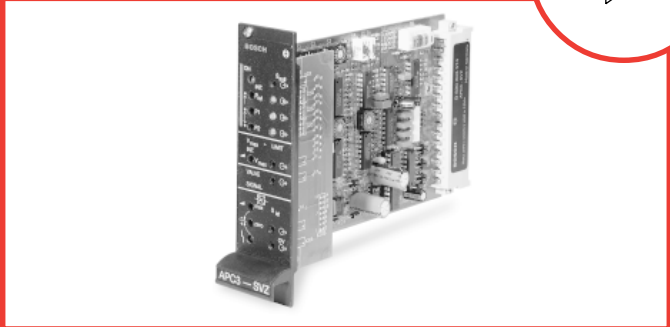


AUXILIARY CARDS & ACCESSORIES

The following auxiliary cards can be used with an on-board electronic valve or with a valve and amplifier combination. Several cards provide closed loop control

and others provide set point generation. These auxiliary cards come in two forms:

- Euro-card (requires card holder).
- DIN module (mounts on standard DIN rail).



AUXILIARY CARDS:				
	Alpha Numeric	Description	Part Number	Page ¹⁾
	AVPC-V	Analog Velocity & Position Control - voltage feedback	0 811 405 139	162
	AVPC-mA	Analog Velocity & Position Control - milli-amp feedback	0 811 405 140	162
	POTM-RAMP	Setpoint and Ramp Module	0 811 405 108	85
	POTM-CARD	Setpoint Signal Card	0 811 405 093	68
	RAMP-POTM	Setpoint and Ramp Card	0 811 405 094	72
	none	Analog Servo Summing Card	9 536 235 000	HPUS UBY - 013/2
	none	Servo Current Converter Card	9 536 235 002	HPUS UBT - 013/90
	PL6 - PQI	PQ Control Card for NG6 Servo-Solenoid Valves	0 811 405 152	114
	PL10 - PQI	PQ Control Card for NG10 Servo-Solenoid Valves	0 811 405 153	114
	PQI - 1	1 Channel PQ Control Card for Servo-Solenoid OBE Valves	0 811 405 157	124
	PQI - 2	2 Channel PQ Control Card for Servo-Solenoid OBE Valves	0 811 405 158	124

¹⁾ See catalog #AKY 013/4 for complete description and performance specifications.

The following accessories consist of card holders, card racks, power supplies, connectors and pressure

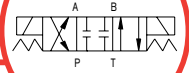
transducers. More information can be found in the catalog listed in the "Page" column.



ACCESSORIES:			
	Description	Part Number	Page ¹⁾
-	Card Holder	1 834 486 001	35
CH 20	Universal Chassis with 2 Slots	1 817 218 004	37
CH 40	Universal Chassis with 4 Slots	1 817 218 006	39
PS 01 - CH 20	Chassis with Power Supply and 2 Slots	1 817 218 007	51
PS 02	Power Supply - 24V, 4A - DIN Rail Module	0 811 405 109	55
-	Capacitor - 4700 uF	1 837 331 003	44
PG 11	7 Pin Connector for OBE - Plastic	1 834 482 022	26
MS	7 Pin Connector for OBE - MS	9 536 230 054	26
PG 16	12 Pin Connector for OBE - Metal	1 834 484 142	26
-	1/4" BSPP to 1/4" SAE Adapter for Transducer	465248	-
7Pin	3045 psi Pressure Transducer - 0 to 10 V	0 811 405 531	7
7Pin	5075 psi Pressure Transducer - 0 to 10 V	0 811 405 532	7
Small Cubic	2900 psi Pressure Transducer - 1 to 6 V	0 811 405 536	7
7Pin	3045 psi Pressure Transducer - 4..20mA	0 811 405 543	7
7Pin	5075 psi Pressure Transducer - 4..20mA	0 811 405 544	7

¹⁾ See catalog #AKY 013/4 for complete description and performance specifications.

DIRECTIONAL VALVES - NG6 (D03)




NG6 (D03) directional control valves are available in direct solenoid, pneumatic pilot, manual (lever) and hydraulic pilot operated configurations. These valves are rated for 4600 psi continuous operating pressures in P, A and B ports. T port is rated for 2300 psi with a maximum flow rate of 23 gpm. See catalog 9 535 233 717 for additional information.

Bosch offers a wide range of solenoid voltages with DIN style, spade, lead wire or wiring box and the new M12 central type connections. Our valves have viton seals, CSA approved and are available with manual overrides. Approximate weight is 4 lbs.

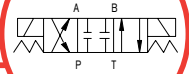


Directional Control Valves

DIRECTIONAL VALVES - NG6 (D03)						
Control Type	Spool Code	Wire Connection	Solenoid Voltage (V/Hz)	Part Number	Description	
Electrical	 000	Wire Box	115/60 AC	9 810 231 069	081WV06P1V1000KA115/60D51	
Electrical		M12 4 Pin Central Conn.	24/00 DC	9 810 230 400	081WV06P1V1000WC024/00E51	
Electrical		DIN 43650 / ISO4400	12/00 DC	9 810 231 397	081WV06P1V1000WS012/00D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 231 430	081WV06P1V1000WS024/00D51	
Electrical	 001	Wire Box	24/00 DC	9 810 231 511	081WV06P1V1001KA024/00E51	
Electrical		Wire Box	115/60 AC	9 810 231 070	081WV06P1V1001KA115/60D51	
Electrical		Wire Box + Sent Light	115/60 AC	9 810 231 136	081WV06P1V1001KL115/60D51	
Electrical		M12 4 Pin Central Conn.	24/00 DC	9 810 230 401	081WV06P1V1001WC024/00E51	
Electrical		DIN 43650 / ISO4400	12/00 DC	9 810 231 398	081WV06P1V1001WS012/00D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 231 431	081WV06P1V1001WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 231 004	081WV06P1V1001WS115/60D51	
Manual Lever				0 810 091 381	081WV06P1V7001D0	
Electrical		 002	Wire Box	115/60 AC	9 810 231 071	081WV06P1V1002KA115/60D51
Electrical			Wire Box + Sent Light	115/60 AC	9 810 231 137	081WV06P1V1002KL115/60D51
Electrical	DIN 43650 / ISO4400		12/00 DC	9 810 231 399	081WV06P1V1002WS012/00D51	
Electrical	DIN 43650 / ISO4400		24/00 DC	9 810 231 432	081WV06P1V1002WS024/00D51	
Electrical	DIN 43650 / ISO4400		115/60 AC	9 810 231 005	081WV06P1V1002WS115/60D51	
Pneumatic Pilot				0 810 091 367	081WV06P1V6002D0	
Manual Lever			0 810 091 383	081WV06P1V7002D0		
Electrical	 004	Wire Box	115/60 AC	9 810 231 072	081WV06P1V1004KA115/60D51	
Electrical		Wire Box + Sent Light	115/60 AC	9 810 231 138	081WV06P1V1004KL115/60D51	
Electrical		M12 4 Pin Central Conn.	24/00 DC	9 810 230 403	081WV06P1V1004WC024/00E51	
Electrical		DIN 43650 / ISO4400	12/00 DC	9 810 231 400	081WV06P1V1004WS012/00D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 231 433	081WV06P1V1004WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 231 006	081WV06P1V1004WS115/60D51	
Manual Lever			0 810 091 385	081WV06P1V7004D0		
Electrical	 010	Wire Box	115/60 AC	9 810 231 075	081WV06P1V1010KA115/60D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 231 436	081WV06P1V1010WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 231 009	081WV06P1V1010WS115/60D51	
Electrical	 012	Wire Box	115/60 AC	9 810 231 077	081WV06P1V1012KA115/60D51	
Electrical		Wire Box + Sent Light	115/60 AC	9 810 231 143	081WV06P1V1012KL115/60D51	
Electrical		M12 4 Pin Central Conn.	24/00 DC	9 810 230 406	081WV06P1V1012WC024/00E51	
Electrical		DIN 43650 / ISO4400	12/00 DC	9 810 231 405	081WV06P1V1012WS012/00D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 231 438	081WV06P1V1012WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 231 011	081WV06P1V1012WS115/60D51	
Mech. Roller				0 810 091 334	081WV06P1V4012D0	
Pneumatic Pilot				0 810 091 369	081WV06P1V6012D0	
Manual Lever			0 810 091 388	081WV06P1V7012GD0		
Electrical	 018	DIN 43650 / ISO4400	24/00 DC	9 810 231 441	081WV06P1V1018WS024/00D51	
Electrical	 020	Wire Box	115/60 AC	9 810 231 081	081WV06P1V1020KA115/60D51	
Electrical		M12 4 Pin Central Conn.	24/00 DC	9 810 230 410	081WV06P1V1020WC024/00E51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 231 442	081WV06P1V1020WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 231 015	081WV06P1V1020WS115/60D51	
Hydraulic Pilot				0 810 091 359	081WV06P1V2020D0	
Pneumatic Pilot				0 810 091 371	081WV06P1V6020D0	
Electrical	 033	DIN 43650 / ISO4400	24/00 DC	9 810 231 448	081WV06P1V1033WS024/00D51	

See catalog #9 535 233 717 (10.95) for complete description and performance specifications.

DIRECTIONAL VALVES - NG10 (D05)

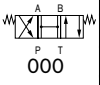
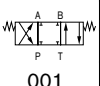
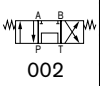


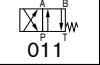

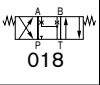
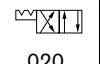


NG 10 (D05) directional control valves are available in direct solenoid, pneumatic pilot, manual (lever) and pilot operated configurations. These valves are rated for 4600 psi continuous operating pressures in ports P, A and B. T port is rated for 2300 psi, maximum flow rate of 34 gpm. See catalog 9 535 233 717 for additional information.

Bosch offers a wide range of solenoid voltages with DIN, wiring box and the new M12 central type connections. For applications requiring controlled spool shift over time we offer a "slow shift" option with both fixed and adjustable switching times. Our valves have viton seals, CSA approved and are available with manual overrides. Approximate weight is 17 lbs.

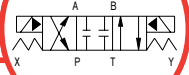


Directional Control Valves

DIRECTIONAL VALVES - NG10 (D05)						
Control Type	Spool Code	Wire Connection	Solenoid Voltage (V/Hz)	Part Number	Description	
Electrical	 000	Wire Box	115/60 AC	9 810 232 069	081WV10P1V1000KA115/60D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 232 430	081WV10P1V1000WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 232 003	081WV10P1V1000WS115/60D51	
Electrical		DIN 43650 / ISO4400	96/00 DC	9 810 232 484	081WV10P1V1000TWS096/00D51/11	
Electrical	 001	DIN 43650 / ISO4400	96/00 DC	9 810 232 485	081WV10P1V1001TWS096/00D51/11	
Electrical		Wire Box	115/60 AC	9 810 232 070	081WV10P1V1001KA115/60D51	
Electrical		Wire Box + Sent Light	115/60 AC	9 810 232 136	081WV10P1V1001KL115/60D51	
Electrical		DIN 43650 / ISO4400	12/00 DC	9 810 232 398	081WV10P1V1001WS012/00D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 232 431	081WV10P1V1001WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 232 004	081WV10P1V1001WS115/60D51	
Pneumatic Pilot					0 810 001 857	081WV10P1V6001D0
Manual Lever					0 810 001 905	081WV10P1V7001D0
Electrical		 002	Wire Box	115/60 AC	9 810 232 071	081WV10P1V1002KA115/60D51/11
Electrical ¹⁾			DIN 43650 / ISO4400	96/00 DC	9 810 232 480	081WV10P1V1002TWS096/00D51/11
Electrical	DIN 43650 / ISO4400		12/00 DC	9 810 232 399	081WV10P1V1002WS012/00D51/11	
Electrical	DIN 43650 / ISO4400		24/00 DC	9 810 232 432	081WV10P1V1002WS024/00D51/11	
Electrical	DIN 43650 / ISO4400		115/60 AC	9 810 232 005	081WV10P1V1002WS115/60D51/11	
Electrical	 004	Wire Box	115/60 AC	9 810 232 072	081WV10P1V1004KA115/60D51	
Electrical		Wire Box + Sent Light	115/60 AC	9 810 232 138	081WV10P1V1004KL115/60D51	
Electrical		M12 4 Pin Central Conn.	24/00 DC	9 810 230 502	081WV10P1V1004WC024/00E51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 232 433	081WV10P1V1004WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 232 006	081WV10P1V1004WS115/60D51	
Electrical	 010	DIN 43650 / ISO4400	24/00 DC	9 810 232 436	081WV10P1V1010WS024/00D51	
Electrical	 011	Wire Box	115/60 AC	9 810 232 076	081WV10P1V1011KA115/60D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 232 437	081WV10P1V1011WS024/00D51	
Electrical	 012	Wire Box	115/60 AC	9 810 232 077	081WV10P1V1012KA115/60D51	
Electrical		Wire Box + Sent Light	115/60 AC	9 810 232 143	081WV10P1V1012KL115/60D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 232 438	081WV10P1V1012WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 232 011	081WV10P1V1012WS115/60D51	
Mech. Roller					0 810 001 877	081WV10P1V4012D0
Pneumatic Pilot					0 810 001 856	081WV10P1V6012D0
Electrical		 018	Wire Box	115/60 AC	9 810 232 080	081WV10P1V1018KA115/60D51
Electrical	M12 4 Pin Central Conn.		24/00 DC	9 810 230 508	081WV10P1V1018WC024/00E51	
Electrical	DIN 43650 / ISO4400		24/00 DC	9 810 232 441	081WV10P1V1018WS024/00D51	
Electrical	Wire Box		115/60 AC	9 810 232 081	081WV10P1V1020KA115/60D51	
Electrical	 020	M12 4 Pin Central Conn.	24/00 DC	9 810 230 509	081WV10P1V1020WC024/00E51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 232 442	081WV10P1V1020WS024/00D51	
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 232 015	081WV10P1V1020WS115/60D51	

¹⁾ Spool code is soft shift.
See catalog #9 535 233 717 (10.95) for complete description and performance specifications.

PILOT OPERATED DIRECTIONAL VALVES - NG16 (D07)



NG16 (D07) directional control valves are available in solenoid or hydraulic operation with fixed or adjustable pilot chokes. These valves are rated for 4600 psi continuous operating pressures in ports P, A and B. T port is rated for 2300 psi. Maximum flow rate is 80 gpm. See catalog 9 535 233 717 for additional information.

Bosch offers a wide range of solenoid voltages with both DIN, wiring box and the new M12 central type connections.

Our valves have viton seals, CSA approved and are available with manual overrides. Approximate weight is 20 lbs.

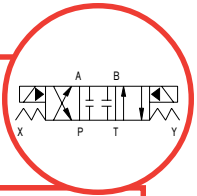


DIRECTIONAL VALVES - NG16 (D07)

Control Type	Spool Code	Wire Connection	Solenoid Voltage (V/Hz)	Part Number	Description
Electrical	 001	Wire Box	115/60 AC	9 810 234 035	081WV16P1V3001PTKA115/60D51
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 234 145	081WV16P1V3001FPTWS024/00D51
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 234 103	081WV16P1V3001FXTWS024/00D51
Electrical	 004	DIN 43650 / ISO4400	24/00 DC	9 810 234 149	081WV16P1V3004FPTWS024/00D51
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 234 150	081WV16P1V3004FXYWS024/00D51
Electrical		M12 4 Pin Central Conn.	24/00 DC	9 810 230 631	081WV16P1V3004TPTWC024/00E51
Electrical	 010	DIN 43650 / ISO4400	24/00 DC	9 810 234 148	081WV16P1V3010FPTWS024/00D51
Electrical	 020	DIN 43650 / ISO4400	24/00 DC	9 810 234 147	081WV16P1V3020FPTWS024/00D51

See catalog #9 535 233 717 (10.95) for complete description and performance specifications.

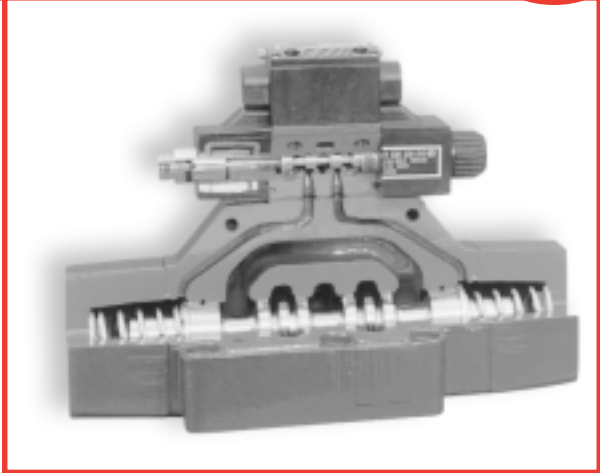
PILOT OPERATED DIRECTIONAL VALVES - NG25 (D08) 4600 PSI








NG25 (D08) directional control valves are available with fixed or adjustable pilot chokes and spool stops. These valves are rated for 4600 psi continuous operating pressures in ports P, A and B. T port is rated for 2300 psi. Maximum flow rate is 185 gpm. See catalog 9 535 233 717 for additional information.

Bosch offers a wide range of solenoid voltages with DIN, wiring box type and the new M12 central connections.

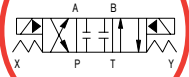
Our valves have viton seals, CSA approved and are available with manual overrides. Approximate weight is 38 lbs.



DIRECTIONAL VALVES - NG25 (D08) 4600 PSI					
Control Type	Spool Code	Wire Connection	Solenoid Voltage (V/Hz)	Part Number	Description
Electrical	 000	Wire Box	115/60 AC	9 810 235 033	081WV16P1V3000XYKA115/60D51
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 235 020	081WV25P1V3000XYWS024/00D51
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 235 005	081WV25P1V3000XYWS115/60D51
Electrical	 001	Wire Box	115/60 AC	9 810 235 035	081WV25P1V3001PTKA115/60D51
Electrical		Wire Box + Sent Light	115/60 AC	9 810 235 061	081WV25P1V3001PTKL115/60D51
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 235 022	081WV25P1V3001PTWS024/00D51
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 235 007	081WV25P1V3001PTWS115/60D51
Electrical	 002	Wire Box	115/60 AC	9 810 235 037	081WV16P1V3002XYKA115/60D51
Electrical		Wire Box	115/60 AC	9 810 235 082	081WV25P1V3002PYKA115/60D51
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 235 010	081WV16P1V3002ZXYWS115/60D51
Electrical	 004	DIN 43650 / ISO4400	115/60 AC	9 810 235 010	081WV25P1V3002XYWS115/60D51
Electrical		Wire Box	115/60 AC	9 810 235 039	081WV25P1V3004PTKAS024/00D51
Electrical		Wire Box + Sent Light	115/60 AC	9 810 235 064	081WV25P1V3004PTKLS024/00D51
Electrical	 010	DIN 43650 / ISO4400	24/00 DC	9 810 235 026	081WV25P1V3004PTWS024/00D51
Electrical		Wire Box	115/60 AC	9 810 235 043	081WV25P1V3010PTKA115/60D51

See catalog #9 535 233 717 (10.95) for complete description and performance specifications.

PILOT OPERATED LOW PRESSURE DIRECTIONAL VALVES - NG25/55 (D08) 3000 PSI



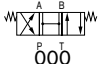

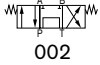
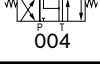

3000 psi, NG25 (D08) directional control valves are available as a pilot operated type valve. This main stage valve utilizes the NG6 (D03) valve as the pilot valve controlling oil into and out of each end of the main stage spool. This valve is rated for 3000 psi with maximum flow rate of 75 gpm and is available with several spool options. We offer a wide

range of solenoid voltages along with both wiring box and DIN style connectors. All of our pilot valves have viton seals, CSA approved and coils are offered in dual frequency design (50 or 60 Hz).

Optional load check in P-port and sandwich mounted pilot flow controls are available for control of the main spool switching time. Approximate weight is 27 lbs.



PILOT OPERATED LOW PRESSURE DIRECTIONAL VALVES - NG25/55 (D08)

Spool Code	Description	Part Number	Maximum Flow (gpm)	Maximum Pressure (psi)	Solenoid Voltage (V/Hz)	Solenoid Connections	Pilot Drain	Approximate Weight (lbs)
 000	081WV25P1V300XYKA115/60D51/55	9 810 235 583	75	3000	115/60	Wiring Box	INT/INT	27.3
	081WV25P1V300XYWS024/00D51/55	9 810 235 754	75	3000	24/00 DC	Din 43650	INT/EXT	27.3
 001	081WV25P1V301PTKA115/60D51/55	9 810 235 505	75	3000	115/60	Wiring Box	INT/INT	27.3
	081WV25P1V301PYKA115/60D51/55	9 810 235 553	75	3000	115/60	Wiring Box	INT/EXT	27.3
	081WV25P1V3010PTWS115/60D51/55	9 810 235 580	75	3000	115/60	Din 43650	INT/INT	27.3
 002	081WV25P1V302PYKA115/60D51/55	9 810 235 507	75	3000	115/60	Wiring Box	INT/EXT	27.3
 004	081WV25P1V304PTKA115/60D51/55	9 810 235 508	75	3000	115/60	Wiring Box	INT/INT	27.3
	081WV25P1V304PTKL115/60D51/55	9 810 235 544	75	3000	115/60	Wiring Box	INT/INT	27.3
 010	081WV25P1V310PTKA115/60D51/55	9 810 235 512	75	3000	115/60	Wiring Box	INT/INT	27.3

See catalog #9 535 233 717 (10.95) for complete description and performance specifications.

SUBPLATES

Ductile iron subplates are available with both SAE and NPT ports. All subplates are offered for directional valve sizes

NG6 (D03) to NG25 (D05). Side and bottom ported plates are available with pressure ratings of 4600 psi.



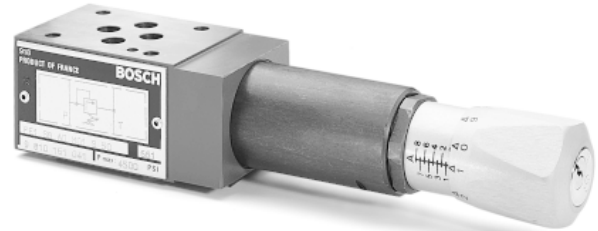
SUBPLATES				
Mounting Pattern	Port Size	Port Location	Valve Mounting Bolt Thread	Part Number
NG6 (D03)	3/8" NPTF	Side	#10-24 UNC	9 000 010 145
NG6 (D03)	3/8" NPTF	Bottom	#10-24 UNC	9 000 010 146
NG6 (D03)	1/2" NPTF	Side	#10-24 UNC	9 000 010 142
NG6 (D03)	-6 SAE Straight Thd.	Side	#10-24 UNC	9 000 010 143
NG6 (D03)	-8 SAE Straight Thd.	Side	#10-24 UNC	9 000 010 141
NG6 (D03)	-8 SAE Straight Thd.	Bottom	#10-24 UNC	9 000 010 140
NG10 (D05)	1/2" NPTF	Side	1/4-20 UNC	9 000 010 164
NG10 (D05)	1/2" NPTF	Bottom	1/4-20 UNC	9 000 010 172
NG10 (D05)	3/4" NPTF	Side	1/4-20 UNC	9 000 010 166
NG10 (D05)	-8 SAE Straight Thd.	Side	1/4-20 UNC	9 000 010 165
NG10 (D05)	-12 SAE Straight Thd.	Side	1/4-20 UNC	9 000 010 175
NG10 (D05)	-12 SAE Straight Thd.	Bottom	1/4-20 UNC	9 000 010 183
NG16 (D07)	-16 SAE Straight Thd.	Bottom	3/8-16 UNC	9 000 010 204
NG16 (D07)	-16 SAE Straight Thd.	Side	3/8-16 UNC	9 000 010 240
NG25 (D08)	1" NPTF	Bottom	1/2-13 UNC	9 000 010 216
NG25 (D08)	1-1/4" NPTF	Bottom	1/2-13 UNC	9 000 010 217
NG25 (D08)	1-1/2" NPTF	Bottom	1/2-13 UNC	9 000 010 218
NG25 (D08)	-20 SAE Straight Thd.	Bottom	1/2-13 UNC	9 000 010 220
NG25 (D08)	-24 SAE Straight Thd.	Bottom	1/2-13 UNC	9 000 010 221

See catalog #9 535 233 717 for complete description and performance specifications.

NG6 (D03) MODULAR VALVES

NG6 (D03) modular valves are provided with standard NFPA and ISO 4401 mounting. These are CETOP standard design valves supplied in steel bodies. The maximum pressure rating is 4600 psi with a flow range of 13.2 - 15.8 gpm.

Modules offered: pressure relief, pressure reducing, flow control and check valve. Viton seals come standard with all valves. Adjustment options include locknut or keylock.



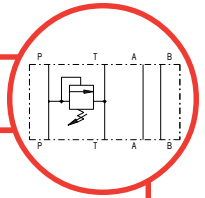
NG6 (D03) MODULAR VALVES							
Type	Symbol	Description	Part Number	Maximum Flow (gpm)	Maximum/Minimum Pressure (psi)	Valve Thickness (in)	Approximate Weight (lbs)
Relief		FE1 SBAD M01S-50	9 810 161 176	13.2	60/1160	1.57	3
		FE1 SEDH M01S-50	9 810 161 178	13.2	300/4500	1.57	3
		FE1 SBAE M01S-50	9 810 161 177	13.2	70/2300	1.57	3
		FE1 SBAE M01S-50	9 810 161 181	15.8	70/2300	1.57	3
		FE1 SBDH M01S-50	9 810 161 182	15.8	70/4600	1.57	3
Reducing		FE3 SBPC M01S-50	9 810 161 153	15.8	45/430	1.57	3.3
		FE3 SBPD M01S-50	9 810 161 154	15.8	60/1160	1.57	3.3
		FE3 SBDH M01P	9 810 161 156	15.8	300/3600	1.57	3.3
		FE3 SBDF M01S-50	9 810 161 155	15.8	300/2300	1.57	3.3
		FE3 SBPD M01A	9 810 161 158	15.8	60/1160	1.57	3.3
	FE3 SBPD M01B	9 810 161 162	15.8	60/1160	1.57	3.3	
Check		FB1 DDGM 101P 7	9 810 161 173	15.8	4600	1.6	2
		FB1 DDGM 101T 22	9 810 161 174	15.8	4600	1.6	2
		FB1 PDHM 101A	9 810 161 169	15.8	4600	1.6	2.8
		FB1 PDHM 101 A/B	9 810 161 171	15.8	4600	1.6	2.8
		FB1 PDHM 101 B	9 810 161 170	15.8	4600	1.6	2.8
Flow Control		FF1 SGML 01H	9 810 161 089	13.2	4600	1.6	3.3
		FF1 SGML 01S	9 810 161 088	13.2	4600	1.6	3.3

See catalog #9 535 233 167 for complete description and performance specifications.

NG10 (D05) MODULAR VALVES

NG10 (D05) modular valves are provided with standard NFPA and ISO 4401 mounting supplied in steel bodies. The pressure rating of these valves is 4600 psi with a maximum flow of 26 gpm.

Modules offered: pressure relief, pressure reducing, flow control and check valve. Viton seals are standard in all valves. Locknut and keylock adjustment options are available.



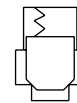
NG10 (D05) MODULAR VALVES							
Type	Symbol	Description	Part Number	Maximum Pressure (psi)	Pressure Range (psi)	Maximum Flow (gpm)	Approximate Weight (lbs)
P.O. Relief		Relief Valve Pilot Stem P-T	0 811 101 210	4600	100-1160	26	5.7
Direct Relief		Relief Valve DIR Stem P-T	0 811 101 252	4600	100-4600	26	6.4
		Relief Valve DIR Stem A-T	0 811 101 257	4600	100-4600	26	6.4
		Relief Valve DIR Stem A-T & B-T	0 811 101 267	4600	100-4600	26	7.7
		Relief Valve DIR Stem X	0 811 101 271	4600	100-2300	26	7.7
Reducing		Pressure Reducing Valve Stem P	0 811 145 116	4600	60-1160	26	6.0
		Pressure Reducing Valve Stem P	0 811 145 117	4600	120-2300	26	6.0
		Pressure Reducing Valve Stem P	0 811 145 118	4600	120-4600	26	6.0
		Pressure Reducing Valve Stem A W/CK	0 811 145 124	4600	60-1160	26	6.0
		Pressure Reducing Valve Stem B W/CK	0 811 145 132	4600	60-1160	26	6.0
Check		Check Valve Direct on P 7PSI	0 811 000 025	4600	-	26	4.0
		Check Valve Pilot 5.5:1 A	0 811 020 025	4600	-	26	6.6
		P.O. B Check Sence A	0 811 020 026	4600	-	26	6.6
		P.O. Check Module Double	0 811 020 027	4600	-	26	6.6
Flow Control (Throttle)		FF1 SGMN 02	0 811 300 025	4600	-	26	4.4
		FF1 SGMN 02 HMG	0 811 320 025	4600	-	26	4.4

See catalog #9 535 233 173 for complete description and performance specifications.

CARTRIDGE VALVE INSERTS

Cartridge valves are designed to insert into manifolds. These valves are offered with two area ratios, varying cracking pressures and with or without a damping nose. Sizes range from NG16 to

NG50 with a wide variety of covers. Covers have check valve, directional or flow control valve options. These valves can be combined with proportional pilot valves for proportional control.



CARTRIDGE VALVES INSERTS

Size	Description	Flow Ratio	Spring Force (cracking) Bar (psi)	Part Number	Maximum Flow gpm (lpm)	Approximate Weight (lbs)	Product Description
NG16	Directional Control	1:1	4 Bar (58 psi)	1 818 509 246	53 (200)	0.44	NG16 C.V. 1:1 4BAR
NG16	Directional Control	1:1	1 Bar (15 psi)	1 818 509 245	53 (200)	0.44	NG16 C.V. 1:1 1BAR
NG16	Metered Directional Control	1:1.6	4 Bar (58 psi)	1 818 509 243	53 (200)	0.44	NG16 C.V. 1:1.6 W/METER 4BAR
NG16	Metered Directional Control	1:1.6	1 Bar (15 psi)	1 818 509 242	53 (200)	0.44	NG16 C.V. 1:1.6 W/METER 1BAR
NG16	Directional Control	1:1.6	4 Bar (58 psi)	1 818 509 175	53 (200)	0.44	NG16 C.V. 1:1.6 4BAR
NG16	Directional Control	1:1.6	1 Bar (15 psi)	1 818 509 174	53 (200)	0.44	NG16 C.V. 1:1.6 1BAR
NG16	Check Valve	1:1.6	1 Bar (15 psi)	1 818 509 238	53 (200)	0.44	NG16 C.V. 1BAR
NG25	Pressure Control	1:1	3 Bar (44 psi)	1 818 509 303	116 (439)	0.88	NG25 C.V. RELIEF 1MM 1BAR
NG25	Directional Control	1:1	4 Bar (58 psi)	1 818 509 302	116 (439)	0.88	NG25 C.V. 1:1 4BAR
NG25	Directional Control	1:1	1 Bar (15 psi)	1 818 509 301	116 (439)	0.88	NG25 C.V. 1:1 1BAR
NG25	Metered Directional Control	1:1.6	1 Bar (15 psi)	1 818 509 298	116 (439)	0.88	NG25 C.V. 1:1.6 W/METER 1BAR
NG25	Directional Control	1:1.6	4 Bar (58 psi)	1 818 509 296	116 (439)	0.88	NG25 C.V. 1:1.6 4BAR
NG25	Directional Control	1:1.6	1 Bar (15 psi)	1 818 509 295	116 (439)	0.88	NG25 C.V. 1:1.6 1BAR
NG25	Directional Control	1:1.6	0.3 Bar (4 psi)	1 818 509 294	116 (439)	0.88	NG25 C.V. 1:1.6 .3BAR
NG32	Pressure Relief ¹⁾	1:1	3 Bar (44 psi)	1 818 509 234	162 (613)	2.0	NG32 C.V. RELIEF 1MM 3BAR
NG32	Directional Control	1:1.6	4 Bar (58 psi)	1 818 509 226	162 (613)	2.0	NG32 C.V. 1:1.6 4BAR
NG32	Directional Control	1:1.6	1 Bar (15 psi)	1 818 509 225	162 (613)	2.0	NG32 C.V. 1:1.6 1BAR
NG32	Directional Control	1:1.6	0.3 Bar (4 psi)	1 818 509 224	162 (613)	2.0	NG32 C.V. 1:1.6 3BAR
NG40	Metered Directional Control	1:1.6	1 Bar (15 psi)	1 818 509 210	317 (1200)	4.0	NG40 C.V. 1:1.6 W/METER 1BAR
NG40	Directional Control	1:1.6	1 Bar (15 psi)	1 818 509 207	317 (1200)	4.0	NG40 C.V. 1:1.6 1BAR
NG40	Check Valve	1:1.6	0.3 Bar (4 psi)	1 818 509 203	317 (1200)	4.0	NG40 C.V. .3BAR
NG40	Relief Valve	1:1	3 Bar (44 psi)	1 818 509 216	317 (1200)	4.0	NG40 C.V. 1.2MM
NG40	Directional Control	1:1.6	0.3 Bar (4 psi)	1 818 509 206	317 (1200)	4.0	NG40 C.V. 1:1.6 .3BAR
NG50	Directional Control	1:1.6	0.3 Bar (4 psi)	1 818 509 348	396 (1500)	7.0	NG50 C.V. 1:1.6 .3BAR
10mm	Check Valve	–	0.5 Bar (7 psi)	9 811 230 251	4 (16)	0.10	CV-C-R-10-F7/00
15mm	Check Valve	–	0.5 Bar (7 psi)	9 811 230 260	8 (32)	0.17	CV-C-R-15-F7/00
20mm	Check Valve	–	0.5 Bar (7 psi)	9 811 230 264	16 (60)	0.32	CV-C-R-20-F7/00
25mm	Check Valve	–	0.5 Bar (7 psi)	9 811 230 268	21 (80)	0.68	CV-C-R-25-F7/00

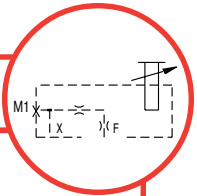
¹⁾ Metering notches.

See catalog #9 535 233 175 for complete description and performance specifications.

CARTRIDGE VALVE COVERS

Cartridge valve covers combined with the cartridge valve and manifold can offer several functions such as directional control, pressure control, counterbalance, flow control, check and proportional pressure

control. These covers are offered with built in orifice capabilities to control the main cartridge switching time. The valve cover mounting is per NFPA D03 standard for mounting to any standard pilot valve.



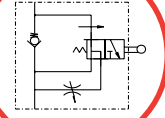
CARTRIDGE VALVES COVERS					
Size	Symbol	Description	Part Number	Maximum Pressure A, B, F (psi)	Approximate Weight (lbs)
NG16		Direct/Control	1 815 500 278	4600	2.0
NG25		Direct/Control	1 815 500 295	4600	3.08
NG32		Direct/Control	1 815 500 274	4600	5.5
NG40		Direct/Control	1 815 500 270	4600	10.78
NG16		Pressure Control	1 815 500 277	4600	2.0
NG25		Pressure Control	1 815 500 294	4600	3.08
NG16		Remote Pilot	1 815 500 276	4600	2.0
NG25		Remote Pilot	1 815 500 293	4600	3.08
NG32		Remote Pilot	1 815 500 272	4600	5.5
NG40		Remote Pilot	1 815 500 268	4600	10.78
NG32		Shuttle w/NG 6 Mounting	1 815 500 478	4600	10.08

Bolt kits included with covers.
See catalog #9 535 233 175 for complete description and performance specifications.

SUBPLATE MOUNTED 3/4" FEED VALVES

This valve is rated at 3000 psi and available in four sizes of traverse flow. Valve flow rates selected should be greater than the maximum flow required.

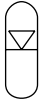
The integral return check valve consists of a two port feed panel valve. Feed control panel mounting is not restricted. Screw adjustment or lockable keyknob is offered in both direct and pilot operated design.



SUBPLATE MOUNTED 3/4" FEED VALVES

Part Number	Description	Maximum Pressure (psi)	Traverse Flow Rate (gpm)	Approximate Weight (lbs)
972 850	FC3 RAHS 206H KGN	3000	10	20
972 851	FC3 RAHS 206H LGN	3000	15	20
972 852	FC3 RAHS 206H MGN	3000	20	20
972 853	FC3 RAHS 206H PGN	3000	30	20

Engineering data F-35.
See catalog # 9 535 233 158 for complete description and performance specifications.



BLADDER ACCUMULATORS

Hydraulic bladder accumulators can be used in a variety of applications such as energy storage, emergency power source, compensation for losses due to leakage, damping of periodic shocks and volume variations.

- 3000 psi (207 bar) and 5000 psi (330 bar) rated.
- 1/4 gallon to 15 gallon sizes.
- 3000 psi (207 bar) has ASME approval.
- 5000 psi (330 bar) has TUV approval.



BLADDER ACCUMULATORS					
Liquid Volume gal (liter)	Maximum Pressure psi/bar	Fluid Connection	Bladder Material	Part Number	Description
14 (50)	3000/207	SAE 1-7/8 12UN 2B	Buna N	0 531 116 640	HYAB 50/207/SAE(1-7/8-12UN-2B)1/BN/1
10 (35)	3000/207	SAE 1-7/8 12UN 2B	Buna N	0 531 115 650	HYAB 35/207/SAE(1-7/8-12UN-2B)1/BN
5 (20)	3000/207	SAE 1-7/8 12UN 2B	Buna N	0 531 115 640	HYAB 20/207/SAE(1-7/8-12UN-2B)1/BN
2.5 (10)	3000/207	SAE 1-5/8 12UN 2B	Buna N	0 531 114 640	HYAB 10/207/SAE(1-5/8-12UN-2B)1/BN
1 (4)	3000/207	SAE 1-5/8 12UN 2B	Buna N	0 531 113 640	HYAB 4/207/SAE(1-5/8-12UN-2B)1/BN/1
.25 (1)	3000/207	SAE 1-3/16 12UN 2B	Buna N	0 531 112 640	HYAB 1/207/SAE(1-3/16-12UN-2B)1/BN/1

See catalog #9 535 233 184 for complete description and performance specifications.

ACCUMULATOR BRACKETS

Brackets allow secure, easy installation of accumulator in either vertical position for bladder type or unrestricted orientation for diaphragm type.

Brackets can be bolted or welded to the supporting structure.

Rubber cushioning on straps helps prevent noise from being transmitted through metal to metal contact.

Base bracket available for support of vertical mounting of large sizes.



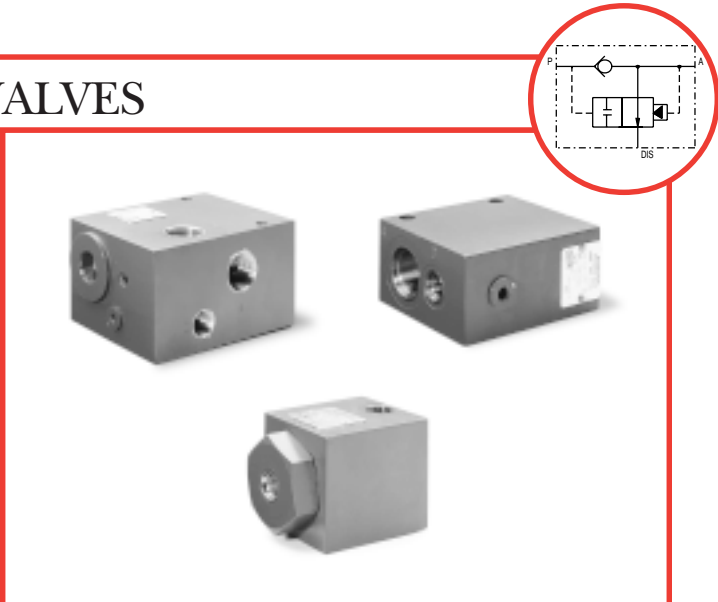
ACCUMULATOR BRACKETS			
Part Number	Description	Accumulator Size	For Use Up to psi
1 531 316 017	Bracket	21 in ³	N/A
1 531 316 016	Bracket	85 - 122 in ³	2000
1 531 316 020	Bracket	170 in ³	3600
1 531 316 005	Bracket	2 1/2 14 gal.	N/A

See catalog #9 535 233 184 for complete description and performance specifications.

ACCUMULATOR DISCHARGE VALVES

Accumulator discharge valves allow for the safe and efficient discharge of Bosch accumulators.

- 3000 psi rating.
- 12 to 80 gpm.



ACCUMULATOR DISCHARGE VALVES					
Part Number	Description	Pressure Rating (psi)	Maximum Flow (gpm)	Port Size	Approximate Weight (lbs)
982 378	AD P1 51F 10	3000	12	#6 SAE	4
982 285	AD C3 54F 10	3000	40	#12 SAE	6
982 379	AD C4 58F 10	3000	80	#20 SAE	12

Engineering data G-95, G-100, G-105.
See catalog #9 535 233 184 for complete description and performance specifications.

Bosch Automation Technology

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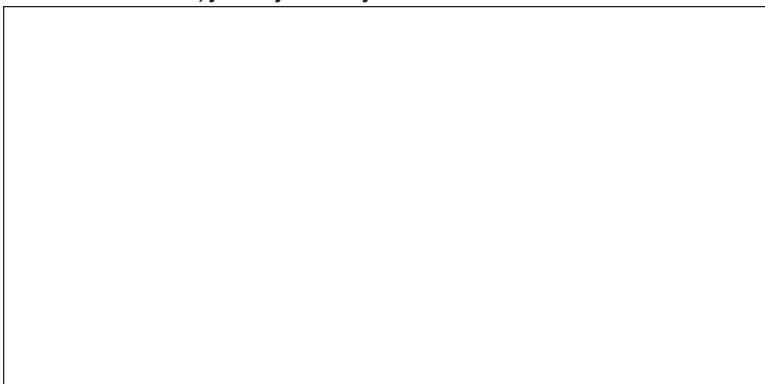
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