

Bosch Core Products Catalog

The Drive & Control Company

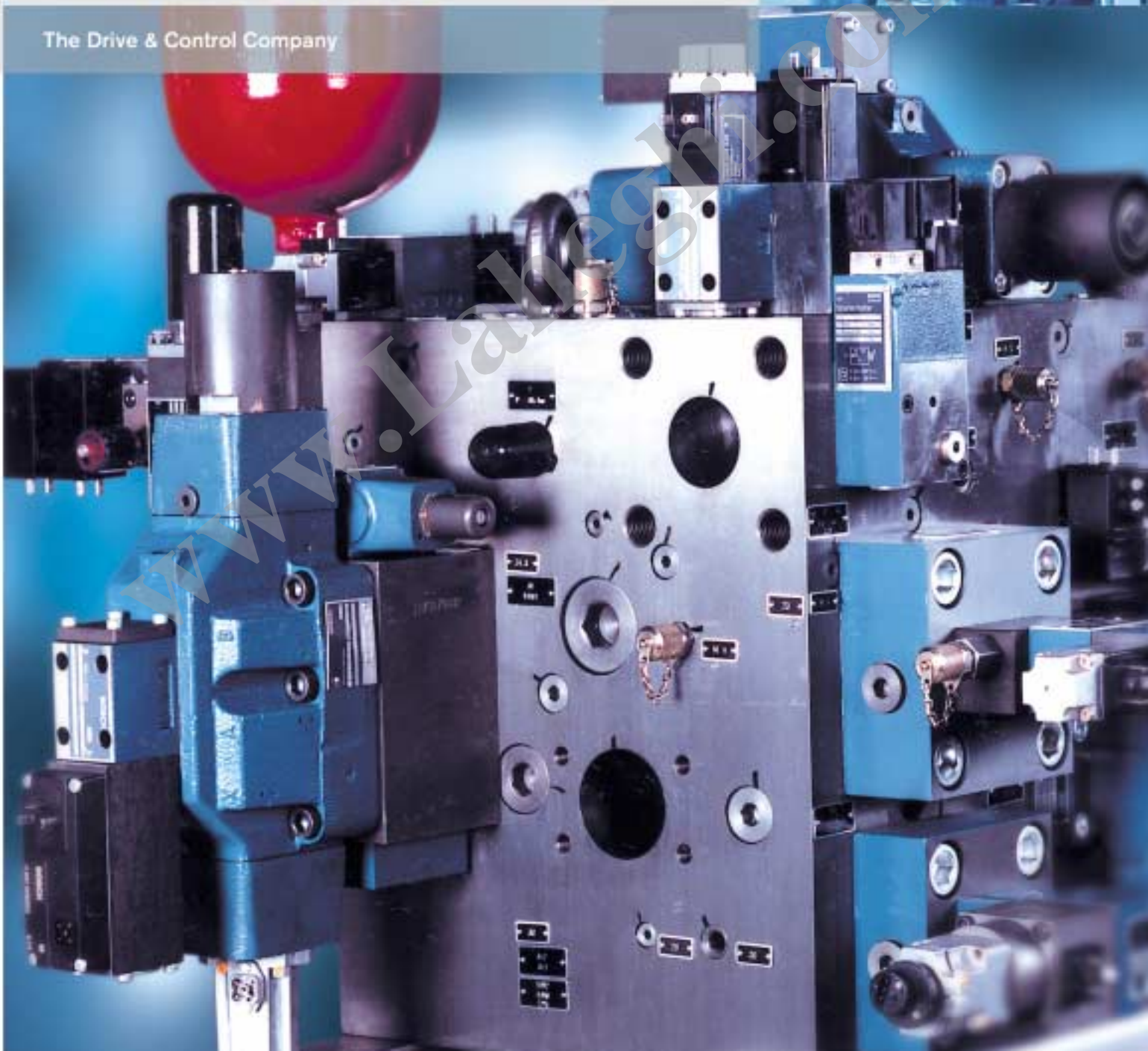
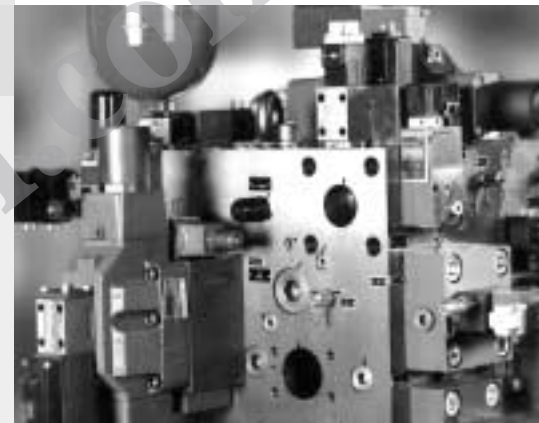


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The Drive & Control Company

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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.

- 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 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, and solenoid vented



w 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. 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 and pressure levels are spacially and time weighted averaged.

VPV Whisper Pumps™							
Size in ³ /rev (cc/rev)	Mount	Maximum Pressure (psi)	gpm @ 1750	Rotation	Description	Material No.	Weight (lbs)
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		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		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		0 513 700 242	135.0
4.88 (80)	SAE C	3000	37.0	R		0 513 800 248	127.0
4.88 (80)	SAE C	3000	37.0	R		0 513 800 238	135.0
6.00 (100)	SAE D	3000	45.4	R		0 513 850 216	245.0
6.00 (100)	SAE D	3000	45.4	R		0 513 850 214	255.0
7.93 (130)	SAE D	3000	60.0	R		0 513 860 250	245.0
7.93 (130)	SAE D	3000	60.0	R		0 513 860 258	255.0
10.0 (164)	SAE D	3000	75.8	R		0 513 870 226	245.0
10.0 (164)	SAE D	3000	75.8	R	0513R18C3VPV164SM21HYB04P1	0 513 870 216	255.0

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

Adaptor Kits for Combinations	Old Number	Material No.
VPV 16 to VPV 16 SAE	9 511 230 518	9 511 230 518
VPV 16 to "F" Gear Pump SAE Key	9 511 230 521	R978711779
VPV 25/32 to VPV 25/32 SAE	9 511 230 523	9 511 230 523
VPV 25/32 to VPV 16 SAE	9 511 230 525	9 511 230 525
VPV 45/63/80 to VPV 45/63/80 SAE	9 511 230 528	9 511 230 528
VPV 45/63/80 to VPV 16 SAE	9 511 230 532	9 511 230 532
VPV 45/63/80 to VPV 25/32	9 511 230 530	9 511 230 530
VPV 45/63/80 to "F" Gear Pump SAE Key	9 511 230 533	R978711781
VPV 45/63/80 to "G" Gear Pump SAE Key	9 511 230 534	R978711782
VPV 100/130/164 to VPV 100/130/164	9 511 230 536	9 511 230 536
VPV 100/130/164 to VPV 45/63/80	9 511 230 538	9 511 230 538
VPV 100/130/164 to VPV 25/32	9 511 230 540	9 511 230 540
VPV 100/130/164 to VPV 16	9 511 230 542	9 511 230 542
VPV 100/130/164 to "F" Gear Pump SAE Key	9 511 230 543	R978711783
VPV 100/130/164 to "G" Gear Pump SAE Key	9 511 230 594	R978711808

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

VPV Whisper Pumps™ (continued)		
Pump Repair Kits SAE 210 bar	Old Number	Material No.
VPV 16 Standard Pump	9 511 230 606	R978711812
VPV 16 "P1" Pump	9 511 230 608	R978711814
VPV 25/32 Standard Pump	9 511 230 598	R978711809
VPV 25/32 "P1" Pump	9 511 230 623	R978711825
VPV 45/63 Standard Pump	9 511 230 639	R978711838
VPV 45/63 "P1" Pump	9 511 230 642	R978711841
VPV 80 Standard Pump	9 511 230 641	R978711840
VPV 80 "P1" Pump	9 511 230 643	R978711842
VPV 100/130 Standard Pump	9 511 230 650	R978711849
VPV 100/130 "P1" Pump	9 511 230 652	R978711851
VPV 164 Standard Pump	9 511 230 651	R978711850
VPV 164 "P1" Pump	9 511 230 653	R978711852

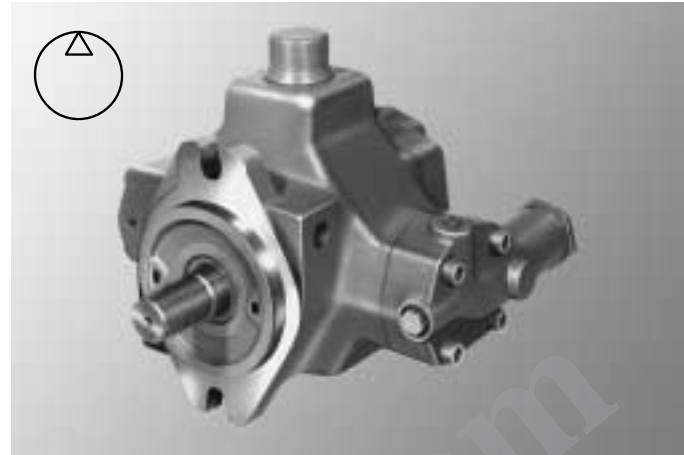
Seal Kits for VPV SAE	Old Number	Material No.
VPV 16	9 511 230 605	9 511 230 605
VPV 25/32	9 511 230 597	9 511 230 597
VPV 45/63/80	9 511 230 658	9 511 230 658
VPV 100/130/164	9 511 230 659	9 511 230 659

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

SV Pumps

The Bosch line of SV variable displacement vane pumps has been a workhouse variable vane pump in the hydraulic industry for many years. The SV product offering dates back to the early 1970's and continues to satisfy customers in many old and new applications.

The SV product line is available in sizes 1 in³/rev. through 8 in³/rev., with 10 in³/rev. available on demand, and is available in both subplate and flange mounted versions in many sizes. Maximum pressure of SV pumps vary between 1000 and 2000 psi depending on size, while speed range is restricted to 1000 to 1800 RPM. The SV product line is only available in right hand rotation, and can accommodate special fluids such as phosphate esters and water glycol on demand.



SV PUMPS								
Size	Mount	Max. Press. (psi)	gpm @ 1750	Rotation	Description	Old Number	Material No.	Wt. (lbs)
1.000	SAE A	2000	7.57	R	PSV PSSF 10HRM 56	5 928 714	R978709254	40.0
1.000	SAE A	2000	7.57	R	PSV PSAF 10HRM 66	6 928 904	R978709511	40.0
1.500	SAE A	1000	11.40	R	PSV PSSF 15ERM 56	5 928 763	R978709263	40.0
1.500	SAE A	1000	11.40	R	PSV PSAF 15ERM 66	6 928 912	R978709514	40.0
2.000	SAE B	2000	15.10	R	PSV PSSF 20HRM 56	5 925 746	R978709222	65.0
2.000	SAE B	2000	15.10	R	PSV PSCF 20HRM 66	6 925 750	R978709462	65.0
2.500	SAE B	1000	18.94	R	PSV PSSF 25ERM 56	5 925 875	R978709232	65.0
2.500	SAE B	1000	18.94	R	PSV PSCF 25ERM 66	6 925 901	R978709482	65.0
4.000	SAE C	2000	30.3	R	PSV PSCF 40HRM 66	6 915 336	R978709438	106.0
8.000	SAE D	1500	60.6	R	PSV PSCF 80GRM 65	6 915 103	R978709408	182.0

SV Pumps (continued)

Repair Kits for SV Pumps*

Pump Size	Mounting	Shaft Type	Design Digit	Old Number	Material No.
SV10	Subplate (S)	Medium Single Ended Shaft	-50 thru -56	KIT-794107	R978700362
SV10	Flange, Rear Ported (B)	Medium Single Ended Shaft	-60 thru -66	KIT-794107	R978700362
SV10	Flange, Side Ported (A)	Combination Shaft	-60 thru -66	KIT-794395	R978700414
SV15	Subplate (S)	Medium Single Ended Shaft	-50 thru -56	KIT-794110	R978700364
SV15	Flange, Rear Ported (B)	Medium Single Ended Shaft	-60 thru -66	KIT-794110	R978700364
SV15	Flange, Side Ported (A)	Combination Shaft	-60 thru -66	KIT-794397	R978700415
SV20	Subplate (S)	Medium Single Ended Shaft	-50 thru -56	KIT-794133	R978700373
SV20	Flange, Rear Ported (B)	Medium Single Ended Shaft	-50 thru -66	KIT-794133	R978700373
SV20	Flange, Side Ported (C)**	Medium Single Ended Shaft	-50 thru -56	KIT-794133	R978700373
SV20	Flange, Side Ported (A)**	Combination Shaft	-60 thru -66	KIT-794399	R978700416
SV20	Flange, Side Ported (C)**	Combination Shaft	-60 thru -66	KIT-794399	R978700416
SV25	Subplate (S)	Medium Single Ended Shaft	-50 thru -56	KIT-794144	R978700378
SV25	Flange, Rear Ported (B)	Medium Single Ended Shaft	-50 thru -66	KIT-794144	R978700378
SV25	Flange, Side Ported (C)**	Medium Single Ended Shaft	-50 thru -56	KIT-794144	R978700378
SV25	Flange, Side Ported (A)**	Combination Shaft	-60 thru -66	KIT-794401	R978700417
SV25	Flange, Side Ported (C)**	Combination Shaft	-60 thru -66	KIT-794401	R978700417
SV40	Flange, Side Ported (C)	Medium Single Ended Shaft	-50 thru -55	KIT-794121	R978700369
SV40	Flange, Rear Ported (R)	Medium Single Ended Shaft	-50 thru -66	KIT-794121	R978700369
SV40	Flange, Side Ported (C)	Combination Shaft	-60 thru -66	KIT-794403	R978700418
SV80	Flange, Rear Ported (R)	Medium Single Ended Shaft	-50 thru -65	KIT-794101	R978700359
SV80	Flange, Side Ported (C)	Medium Single Ended Shaft	-50 thru -55	KIT-794101	R978700359
SV80	Flange, Side Ported (C)	Combination Shaft	-60 thru -65	KIT-794405	R978700419
SV100	Flange, Rear Ported (R)	Medium Single Ended Shaft	-50 thru -65	KIT-794105	R978700361
SV100	Flange, Side Ported (C)	Medium Single Ended Shaft	-50 thru -55	KIT-794105	R978700361
SV100	Flange, Side Ported (C)	Combination Shaft	-60 thru -65	KIT-794407	R978700420

Seal Kits for SV Pumps

Pump Size	Mounting	Shaft Type	Design Digit	Old Number	Material No.
SV10/15	Subplate and Flange	Medium Single / Combination	-50 thru -66	KIT-778358	R978700357
SV20/25	Subplate and Flange	Medium Single / Combination	-50 thru -66	KIT-723724	R978700289
SV40	Subplate and Flange	Medium Single / Combination	-50 thru -66	KIT-723731	R978700292
SV80/100	Subplate and Flange	Medium Single / Combination	-50 thru -66	KIT-723733	R978700293

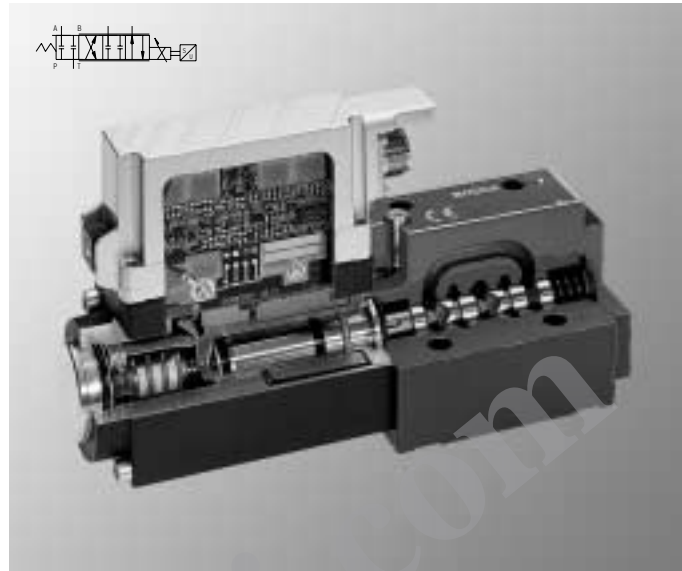
* Repair and seal kits are for medium and combination shafts only with the design digits shown and viton seals. For other shaft styles (double ended, short single, etc.) and other design digits, repair and seal kit part numbers will be different. Please review the appropriate product literature in these cases to obtain the correct service kit part numbers.

** SV20/25 pumps with mounting code 'A' are side ported with SAE straight thread connections. SV20/25 pumps with mounting code 'C' are side ported with 4 bolt flange connections.

Direct Operated Servo Solenoid Valves

The spool is directly operated by the solenoid thus eliminating the hydraulic amplifier card 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 (except for 0 811 404 552)
- Zero lap
- On-board electronics



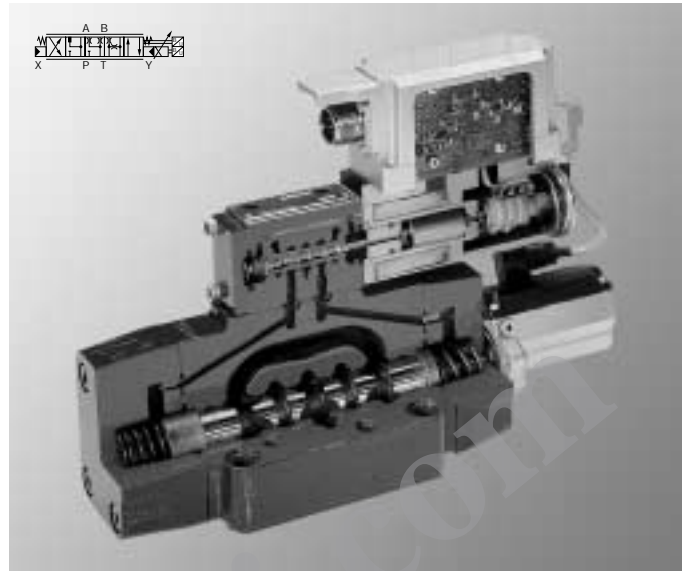
Servo Solenoid Valves							
NG6 (D03)	Pressure Rating (psi)	Flow		Material No.	Weight (lbs)	Amplifier	
		GPM	l/min				
	4570	1 3 6.3 10.5	4 12 24 40	500 psi	6.0	OBE 7 PIN	0 811 404 600 0 811 404 601 0 811 404 602 0 811 404 603
							0 811 404 631
	4570	1 3 6.3 10.5	4 12 24 40	500 psi	6.0	OBE 7 PIN	0 811 404 632 0 811 404 633 0 811 404 634
							0 811 404 610 0 811 404 611 0 811 404 612 0 811 404 613
NG10 (D05)							
	4570	13.2 26.4 26.4	50 100 100	500 psi	16.0	OBE 7 PIN	0 811 404 800 0 811 404 801
							0 811 404 817
	4570	13.2 26.4	50 100	500 psi	16.0	OBE 7 PIN	0 811 404 802 0 811 404 803
	4570	21.1	80	73 psi	16.0	OBE 7 PIN	0 811 404 552
	4570	37*	140*	160 psi	16.0	OBE 7 PIN	0 811 402 107
Connectors					Old Number	Material No.	
MATING CONNECTOR FOR OBE – 7 PIN PLASTIC SOLDER TYPE					1 834 482 022	1 834 482 022	
MATING CONNECTOR FOR OBE – 7 PIN PLASTIC CRIMPED TYPE					1 834 482 026	1 834 482 026	
MATING CONNECTOR FOR OBE – 7 PIN MS SOLDER TYPE					9 536 230 054	R978713598	

*P₁ → A + P₂ → B
See catalog #1 987 761 323 AKY 013/2 for complete description and performance specifications.

Injection Valves

The injection valve was designed for plastic injection molding applications.

- Less than 0.1% repeatability
- Sizes in NG10 (D05), NG16 (D07), NG25 (D08) and NG32 (D10)
- Nominal flow rates up to 264 gpm (1000 L/min)
- Up to 62 Hz frequency response
- Position feedback on mainstage
- On-board electronics



Injection Valves									
Description	Flow Type	Pressure Rating (psi)	Flow		Piloting	Old Number	Material No.	Weight (lbs)	Amplifier
			GPM	l/min					
NG10	Injection	5000	22.5	85	XT	0 811 404 668	0 811 404 668	20.0	OBE 7 PIN
NG10	Injection	5000	22.5	85	PT	0 811 404 670	0 811 404 670	20.0	OBE 7 PIN
NG10	Injection	5000	22.5	85	XY	9 811 232 135	R978714489	20.0	OBE 7 PIN
NG16	Injection	5000	53	200	XY	0 811 404 276	0 811 404 276	24.0	OBE 7 PIN
NG16	Injection	5000	53	200	XT	0 811 404 275	0 811 404 275	24.0	OBE 7 PIN
NG16	Injection	5000	53	200	PT	0 811 404 270	0 811 404 270	24.0	OBE 7 PIN
NG16	Injection	5000	53	200	PY	9 811 232 120	R978714476	24.0	OBE 7 PIN
NG25	Injection	5000	98	370	PT	0 811 404 434	0 811 404 434	41.0	OBE 7 PIN
NG25	Injection	5000	98	370	PY	0 811 404 435	0 811 404 435	41.0	OBE 7 PIN
NG25/32	Injection	5000	117	430	XY	0 811 404 441	0 811 404 441	41.0	OBE 7 PIN
NG25/32	Injection	5000	117	430	XT	0 811 404 442	0 811 404 442	41.0	OBE 7 PIN
Connectors									
MATING CONNECTOR FOR OBE – 7 PIN PLASTIC SOLDER TYPE						1 834 482 022	1 834 482 022		
MATING CONNECTOR FOR OBE – 7 PIN PLASTIC CRIMPED TYPE						1 834 482 026	1 834 482 026		
MATING CONNECTOR FOR OBE – 7 PIN MS SOLDER TYPE						9 536 230 054	R978713598		

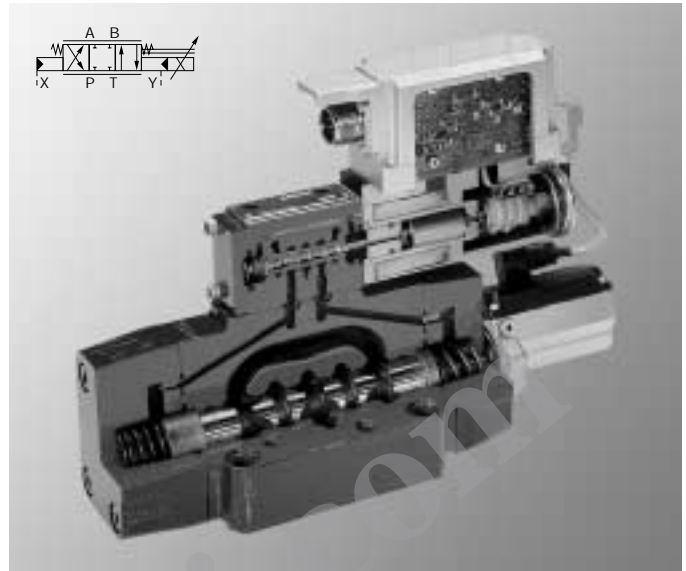
¹⁾ NG32 Injection valves available upon request.

See catalog #9 535 233 789 and also 1 987 761 323 AKY 013/2 or 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.

- Less than 0.1% repeatability
- Sizes in NG10 (D05), NG16 (D07), NG25 (D08) and NG32 (D10)
- Nominal flow rates up to 291 gpm (1100 L/min)
- Regenerative and 2:1, flow curves available
- Position feedback on mainstage
- 20% overlap on main stage spool
- On-board electronics



Directional Control Valves										
Description	Flow Type	Pressure Rating (psi)	Flow			Piloting	Material No.	Weight (lbs)	Amplifier	
			GPM	l/min						
<p>HPP</p>	NG10 (D05)									
	Symmetric	5000	21:21	80:80	$\Delta p = 73 \text{ psi}$	XY PT	0 811 404 700 0 811 404 713	19.3	OBE 7 PIN	
	NG16 (D07)									
	Symmetric	5000	48:48	180:180	$\Delta p = 73 \text{ psi}$	XY PT	0 811 404 305 0 811 404 319	24.0	OBE 7 PIN	
NG25 (D08)										
	Symmetric	5000	92:92	350:350	$\Delta p = 73 \text{ psi}$	XY	0 811 404 454	41.0	OBE 7 PIN	
<p>HPP</p>	NG10 (D05)									
	Symmetric	5000	21:21	80:80	$\Delta p = 73 \text{ psi}$	XY PT	0 811 404 702 0 811 404 707	19.3	OBE 7 PIN	
	NG16 (D07)									
	Symmetric	5000	48:48	180:180	$\Delta p = 73 \text{ psi}$	XY	0 811 404 307	24.0	OBE 7 PIN	
NG25 (D08)										
	Symmetric	5000	92:92	350:350	$\Delta p = 73 \text{ psi}$	XY	0 811 404 456	41.0	OBE 7 PIN	
<p>HPP</p>	NG10 (D05)									
	2:1 Differential	5000	21:13	80:50	$\Delta p = 73 \text{ psi}$	XY	0 811 404 711	19.3	OBE 7 PIN	
	NG16 (D07)									
	2:1 Differential	5000	48:29	180:110	$\Delta p = 73 \text{ psi}$	XY	0 811 404 320	24.0	OBE 7 PIN	
NG25 (D08)										
	2:1 Differential	5000	92:61	350:230	$\Delta p = 73 \text{ psi}$	XY	0 811 404 472	41.0	OBE 7 PIN	
Connectors							Old Number	Material No.		
MATING CONNECTOR FOR OBE – 7 PIN PLASTIC SOLDER TYPE							1 834 482 022	1 834 482 022		
MATING CONNECTOR FOR OBE – 7 PIN CRIMPED TYPE							1 834 482 026	1 834 482 026		
MATING CONNECTOR FOR OBE – 7 PIN MS SOLDER TYPE							9 536 230 054	R978713598		

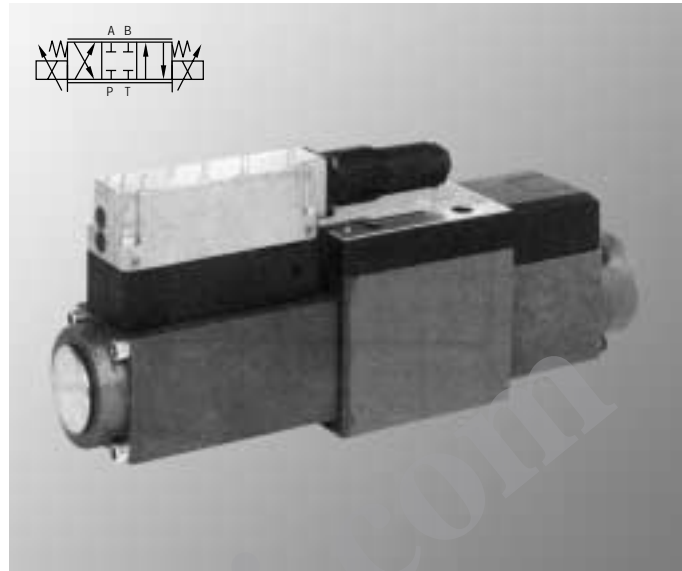
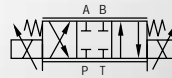
1) NG32 additional servo solenoid valves available upon request.

See catalog #1 987 761 328 AKY 013/3 for complete description and performance specifications.

Proportional Throttle & Directional 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
- Nominal flow rates up to 21 gpm (80L/min)
- Up to 4570 psi (315 bar) operating pressure
- 20% overlap on spool



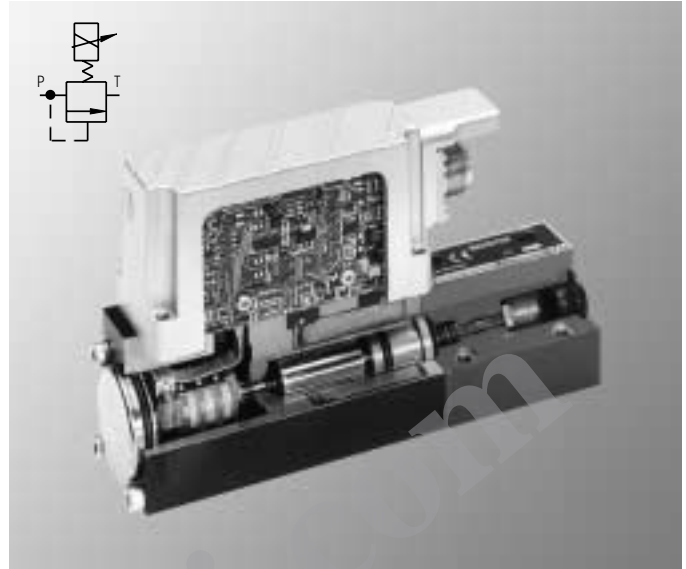
Directional Control Valves									
NG6 (D03)	Flow Type	Solenoid (A/W)	Pressure Rating (psi)	Flow			Material No.	Weight (lbs)	Amplifier
				GPM	l/min	$\Delta p =$			
	NO	2.5 / 25 $R_L=3\Omega$	4570	7.4	28	$\Delta p =$ 73 psi	0 811 403 108	4.5	0 811 405 143
	NC						0 811 403 104	6.7	
	NC	24 V max 30 VA	4570	8	30	$\Delta p =$ 73 psi	0 811 403 128		OBE 7 PIN
NG10 (D05)									
	NC	$R_L=5.8\Omega$ max 50 VA	4570	21	80	$\Delta p =$ 73 psi	0 811 404 750	16	OBE 7 PIN
							0 811 403 001	15.5	0 811 405 099
Directional Control									
	NG6 (D03)	24V max 30 VA	4570	4.8	18	$\Delta p =$ 73 psi	0 811 404 151	7	OBE 7 PIN
	NG10 (D05)	24V max 50 VA		8.5	32		0 811 404 150		
	NG6 (D03)	24V max 30 VA	4570	9.3	35	$\Delta p =$ 73 psi	0 811 404 852	18.5	OBE 7 PIN
	NG10 (D05)	24V max 50 VA		17	65		0 811 404 850		
	NG6 (D03)	24V max 30 VA	4570	4.8	18	$\Delta p =$ 73 psi	0 811 404 140	9	OBE 7 PIN
	NG10 (D05)	24V max 50 VA		8.5	32		0 811 404 141		
	NG6 (D03)	24V max 30 VA	4570	13.2	50	$\Delta p =$ 73 psi	0 811 404 770	18.5	OBE 7 PIN
	NG10 (D05)	24V max 50 VA		21	80		0 811 404 771		
	NG6 (D03)	24V max 30 VA	4570	4.8	18	$\Delta p =$ 73 psi	0 811 404 142	9	OBE 7 PIN
	NG10 (D05)	24V max 50 VA		8.5	32		0 811 404 143		
	NG6 (D03)	24V max 30 VA	4570	13.2	50	$\Delta p =$ 73 psi	0 811 404 772	18.5	OBE 7 PIN
	NG10 (D05)	24V max 50 VA		21	80		0 811 404 773		
	NG6 (D03)	24V max 30 VA	4570	17.2	65	$\Delta p =$ 73 psi	0 811 404 851	18.5	OBE 7 PIN
	NG10 (D05)	24V max 50 VA		13.2	50		0 811 404 778		
	NG10 (D05)	24V max 50 VA	4570	16.6	63	$\Delta p =$ 73 psi	0 811 404 001	17.6	0 811 405 120
Connectors							Old Number	Material No.	
MATING CONNECTOR FOR OBE - 7 PIN PLASTIC SOLDER TYPE							1 834 482 022	1 834 482 022	
MATING CONNECTOR FOR OBE - 7 PIN PLASTIC CRIMPED TYPE							1 834 482 026	1 834 482 026	
MATING CONNECTOR FOR OBE - 7 PIN MS SOLDER TYPE							9 536 230 054	R978713598	

See catalog #1 987 761 317 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)
- Nominal flow rates up to 31.7 gpm (120 L/min)
- Up to 4570 psi (315 bar) pressure range
- Reducing/relieving valve will go to 0 psi



Proportional Control Valves							
NG6 (D03)	Flow Type	Solenoid (A/W)	Pressure Rating (psi)	Flow (gpm)	Material No.	Weight (lbs)	Amplifier
	Relief	0.8/18 $R_L=20\Omega$	3625	0.26 0.4 max	0 811 402 019	4.2	0 811 405 144
	Relief	24 V max 30 VA	3625	0.26 0.4 max	0 811 402 073	6	OBE 7 PIN
NG6 (D03)							
	Relief	2.7 / 25	3625	0.26 0.8 max.	0 811 402 021	5	0 811 405 095
NG6 (D03)							
	Relief	0.8/18 $R_L=22\Omega$	4570	10.6	0 811 402 043	5	0 811 405 144
	Relief	24 V max 30 VA	4570	10.6	0 811 402 076	7.5	OBE 7 PIN
			2610		0 811 402 079		OBE-mA 7 PIN
	Reducing/ Relieving	24 V max 30 VA	4570	10.6	0 811 402 081	7.5	OBE 7 PIN
			2538		0 811 402 080		OBE-mA 7 PIN
					Old Number	Material No.	
MATING CONNECTOR FOR OBE – 7 PIN PLASTIC SOLDER TYPE					1 834 482 022	1 834 482 022	
MATING CONNECTOR FOR OBE – 7 PIN CRIMPED TYPE					1 834 482 026	1 834 482 026	
MATING CONNECTOR FOR OBE – 7 PIN MS SOLDER TYPE					9 536 230 054	R978713598	

See catalog #1 987 761 317 AKY 013/1 for complete description and performance specifications.

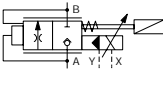
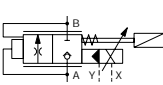
Proportional Throttle Cartridges

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.

- Nominal flow rates up to 264 gpm (1000 L/min)
- Repeatability less than 0.2%
- On board electronics



Proportional Valves NG16 - NG50							
	Size	Pressure Rating (psi)	Flow (gpm)		Material No.	Weight (lbs)	Amplifier
NC 	NG16 NG25 NG32 NG40 NG50	4600	48 55 85 132 264	$\Delta p = 73$ psi	0 811 402 452 0 811 402 515 0 811 402 614 0 811 402 620 0 811 402 633	8 11 13 18 24	0 811 405 076
NC 	NG16 NG25 NG32 NG40 NG50	4600	48 55 85 132 264	$\Delta p = 73$ psi	0 811 402 454 0 811 402 517 0 811 402 616 0 811 402 622 0 811 402 642	7 10 12 17 23	OBE
Connectors					Old Number	Material No.	
MATING CONNECTOR FOR OBE – 7 PIN PLASTIC SOLDER TYPE					1 834 482 022	1 834 482 022	
MATING CONNECTOR FOR OBE – 7 PIN CRIMPED TYPE					1 834 482 026	1 834 482 026	
MATING CONNECTOR FOR OBE – 7 PIN MS SOLDER TYPE					9 536 230 054	R978713598	

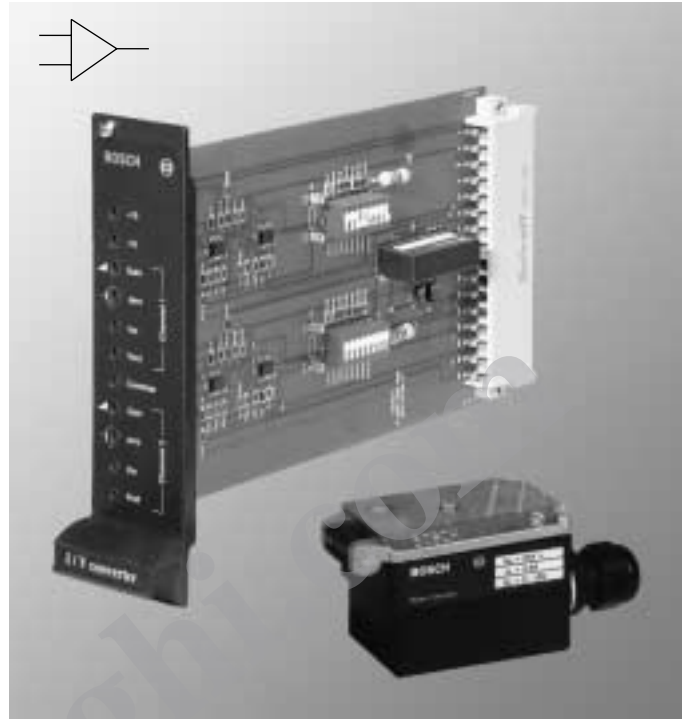
See catalog #1 987 761 328 AKY 013/3 for complete description and performance specifications.




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)
- Active plugs (mounts directly on the solenoid)



Amplifier Cards				
Type	Ramp	Old Alpha Numeric	Material Description	Material No.
 Euro-card	without ramp	PV60 QV60 2/2V	VT-VRPA1-537-10/V0/PV VT-VRPA1-537-10-VO-QV VT-VRPA1-527-20-VO-2/2V	0 811 405 097 0 811 405 099 0 811 405 076
	with ramp	PV60-RGC1	VT-VRPA1-537-10/V0/PV-RTP	0 811 405 102
 Active plug	with ramp	AS 2.5 - V AS 2.5 - mA	VT-SSPA1-525-20/V0 VT-SSPA1-525-20/V0/I	0 811 405 143 0 811 405 145
	with ramp	AS 0.8 - V AS 0.8 - mA	VT-SSPA1-508-20/V0 VT-SSPA1-508-20/V0/I	0 811 405 144 0 811 405 162
 Euro-card	with ramp	PDL 1 - RGC1 WV60-RGC2	VT-VRPA1-527-10/V0/RTP VT-VRPA2-537-10-V0-RTP	0 811 405 100 0 811 405 120

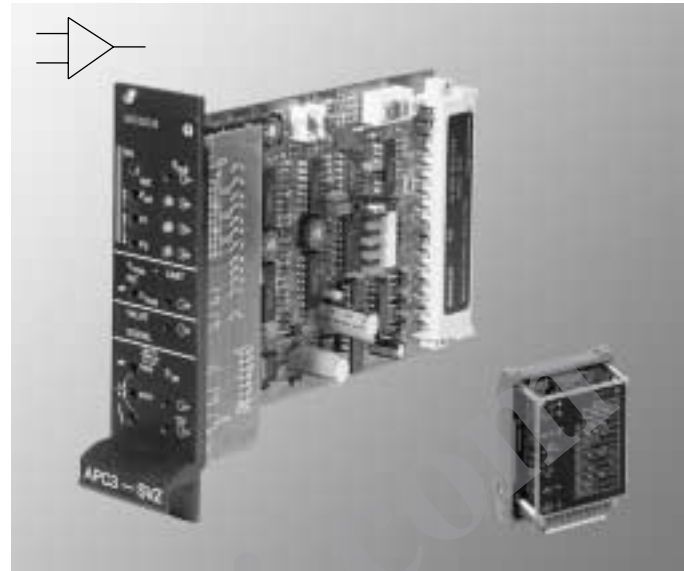
See catalog #1 987 761 317 AKY 013/1 for complete description and performance specifications.



For 0 811 405 076, see catalog # 1 987 761 328 AKY 013/3 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:

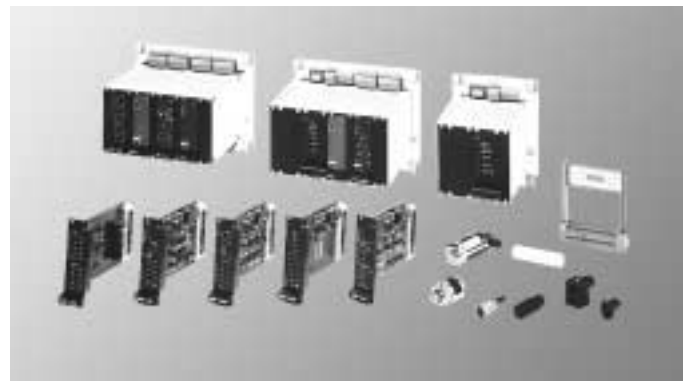
- Euro-card (requires card holder).
- DIN module (mounts on standard DIN rail).



Auxiliary Cards				
Type	Old Alpha Numeric	Description	Material Descrip.	Material No.
 DIN module	AVPC-V POTM-RAMP	Analog Velocity & Position Control - voltage feedback Setpoint and Ramp Module	VT-MACAS-500-10/V0 SOLLWERT-UND RAMPEN-MODUL	0 811 405 139 0 811 405 108
 Euro-card	PL6 - PQI PL10 - PQI PQI - 1	PQ Control Card for NG6 Servo-Solenoid Valves PQ Control Card for NG10 Servo-Solenoid Valves 1 Channel PQ Control Card for Servo-Solenoid OBE Valves	VT-VARAP1-527-20/V0 VT-VARAP1-537-20/V0 VT-VACAP-500-20/V0	0 811 405 152 0 811 405 153 0 811 405 157

See catalog #1 987 761 317 AKY 013/4 for complete description and performance specifications.

Accessories consist of card holders, card racks, power supplies, and connectors.



Accessories			
Old Alpha Numeric	Description	Material Description	Material No.
	Card Holder	CARD HOLDER	1 834 486 001
CH 20	Universal Chassis with 2 S bts	CH 20 2S LOT UNIVERSAL RACK	1 817 218 004
CH 40	Universal Chassis with 4 S bts	CH 40 4S LOT UNIVERSAL RACK	1 817 218 006
PS 01 - CH 20	Chassis with Power Supply and 2 S bts	PS01 CH20 2S LOT RACK + POWER SUPPLY	1 817 218 007
PS 02	Power Supply - 24V, 4A - DIN Rail Module	NETZ FILTER	0 811 405 109
1837331003	Capacitor - 4700 uF	CAPACITOR 4700UF, 63 VDC	1 837 331 007

See catalog #1 987 761 327 AKY 013/4 for complete description and performance specifications.

Pressure Transducers

The following pressure transducers are suitable for monitoring and regulating pressure in machine construction, plastic injection molding, presses and many other fields.

The most important features of these sensors are:

- Stainless-steel membrane (spring material) with thin layer strain gauge sensor
- Integrated electronics with temperature compensation
- Signal output proportional to pressure
- Precise balance adjustment for zero point and sensitivity set by manufacturer (no user access)



Pressure Transducers					
Output	Range	Connection Method	Description	Material Description	Material No.
0-10V	0-3045 PSI	Small DIN Plug	Pressure Transducer	HM18-1X/210-V-S/V0/0	0 811 405 540
0-10V	0-5075 PSI	Small DIN Plug	Pressure Transducer	HM18-1X/350-V-S/V0/0	0 811 405 547
0-10V	0-3045 PSI	7-PIN Plug	Pressure Transducer	HM18-1X/210-V-R/V0/0	0 811 405 531
0-10V	0-5075 PSI	7-PIN Plug	Pressure Transducer	HM18-1X/350-V-R/V0/0	0 811 405 532
4-20 mA	0-3045 PSI	Large DIN Plug	Pressure Transducer	HM18-1X/210-C-B/V0/0	0 811 405 545
4-20 mA	0-5075 PSI	Large DIN Plug	Pressure Transducer	HM18-1X/350-C-B/V0/0	0 811 405 546
				Old Number	Material No.
BSPP to SAE-4 (male) Adapter for Transducer				465 248	R978706950

See catalog #1 987 761 327 AKY 013/4 for complete description and performance specifications.

Part number for small black DIN connector is: 1 834 484 063 (supplied with sensor)

Part number for large black DIN connector is: 1 834 484 060 (supplied with sensor)

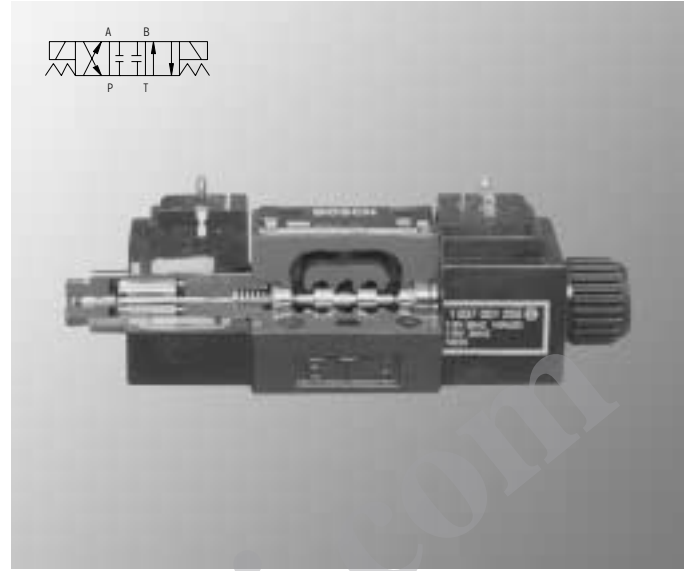
Part number for 7-pin plug IP40 connector is: 1 834 484 141 (not supplied with sensor)

Part number for 7-pin plug IP67 connector is: 1 834 484 140 (not supplied with sensor)

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, or wiring box connections. Our valves have viton seals, CSA approved and are available with manual overrides. Approximate weight is 4 lbs.



Directional Valves - NG6 (D03)

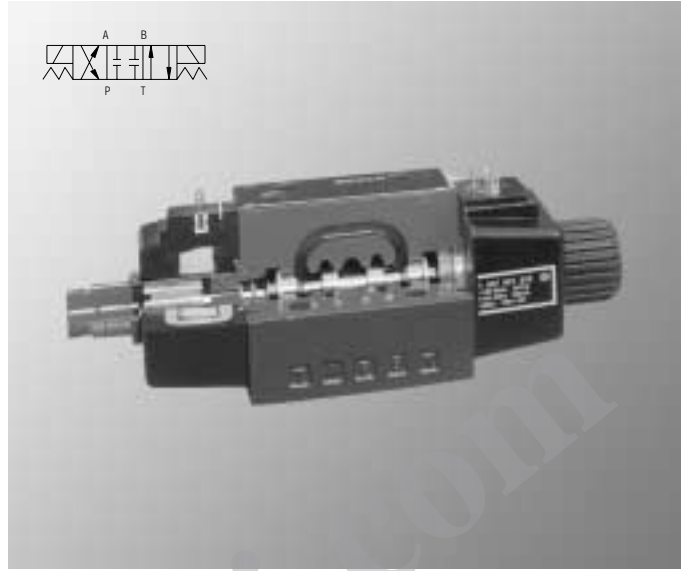
Control Type	Spool Code	Wire Connection	Solenoid Voltage (V/Hz)	Material No.	Description	
Electrical		Wire Box	115/60 AC	9 810 231 069	081WV06P1V1000KA115/60D51	
Electrical		DIN 43650 / ISO4400	12/00 DC	9 810 231 397	081WV06P1V1000WS012/00D51	
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 231 430	081WV06P1V1000WS024/00D51	
Electrical		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		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			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		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		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		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		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		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		DIN 43650 / ISO4400	24/00 DC	9 810 231 441	081WV06P1V1018WS024/00D51	
Electrical		Wire Box	115/60 AC	9 810 231 081	081WV06P1V1020KA115/60D51	
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		DIN 43650 / ISO4400	24/00 DC	9 810 231 448	081WV06P1V1033WS024/00D51	

See catalog #9 535 233 717 or 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 or wiring box 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 Valves - NG10 (D05)

Control Type	Spool Code	Wire Connection	Solenoid Voltage (V/Hz)	Material No.	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		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		DIN 43650 / ISO4400	24/00 DC	9 810 232 441	081WV10P1V1018WS024/00D51	
Electrical	 020	Wire Box	115/60 AC	9 810 232 081	081WV10P1V1020KA115/60D51	
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.

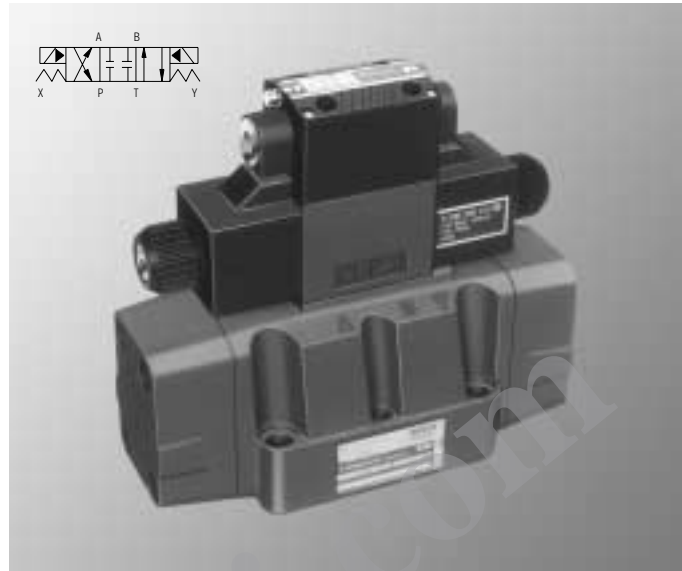
See catalog #9 535 233 717 for complete description and performance specifications.

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 or wiring box 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)	Material No.	Description
Electrical		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		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		DIN 43650 / ISO4400	24/00 DC	9 810 234 148	081WV16P1V3010FPTWS024/00D51
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 234 147	081WV16P1V3020FPTWS024/00D51

See catalog #9 535 233 717 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 or wiring box 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

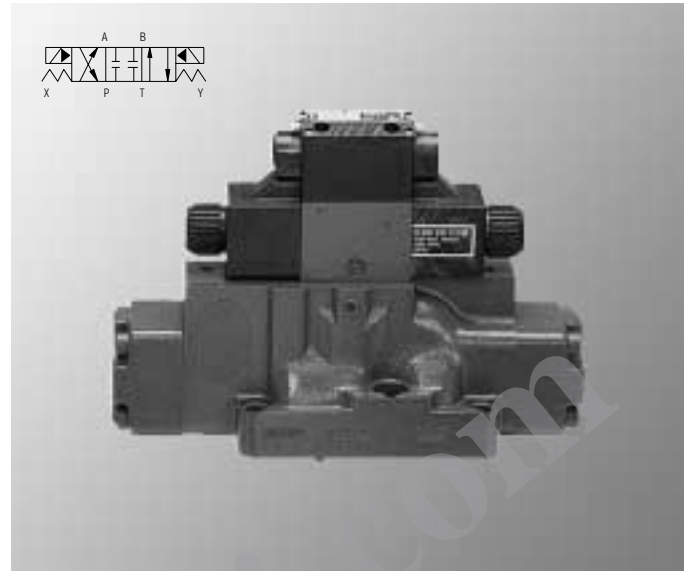
Control Type	Spool Code	Wire Connection	Solenoid Voltage (V/Hz)	Material No.	Description
Electrical		Wire Box	115/60 AC	9 810 235 033	081WV16P1V3000XYKA115/60D51
Electrical		DIN 43650 / ISO4400	24/00 DC	9 810 235 020	081WV25P1V3000XYWS024/00D51
Electrical		DIN 43650 / ISO4400	115/60 AC	9 810 235 005	081WV25P1V3000XYWS115/60D51
Electrical		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		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	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		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 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 are available with manual overrides.

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 Lower Pressure Directional Valves – NG25/55 (D08)						
Control Type	Spool Code	Solenoid Connections	Solenoid Voltage (V/Hz)	Material No.	Description	Maximum Pressure (psi)
Electrical	 000	Wiring Box	115/60	9 810 235 583	081WV25P1V300XYKA115/60D51/55	3000
		Din 43650	24/00 DC	9 810 235 754	081WV25P1V300XYWS024/00D51/55	3000
Electrical	 001	Wiring Box	115/60	9 810 235 505	081WV25P1V301PTKA115/60D51/55	3000
		Wiring Box	115/60	9 810 235 553	081WV25P1V301PYKA115/60D51/55	3000
		Din 43650	115/60	9 810 235 580	081WV25P1V301PTWS115/60D51/55	3000
Electrical	 002	Wiring Box	115/60	9 810 235 507	081WV25P1V302PYKA115/60D51/55	3000
Electrical	 004	Wiring Box	115/60	9 810 235 508	081WV25P1V304PTKA115/60D51/55	3000
		Wiring Box	115/60	9 810 235 544	081WV25P1V304PTKL115/60D51/55	3000
Electrical	 010	Wiring Box	115/60	9 810 235 512	081WV25P1V310PTKA115/60D51/55	3000

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

Subplates

Ductile iron subplates are available with both SAE and NPTF 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.



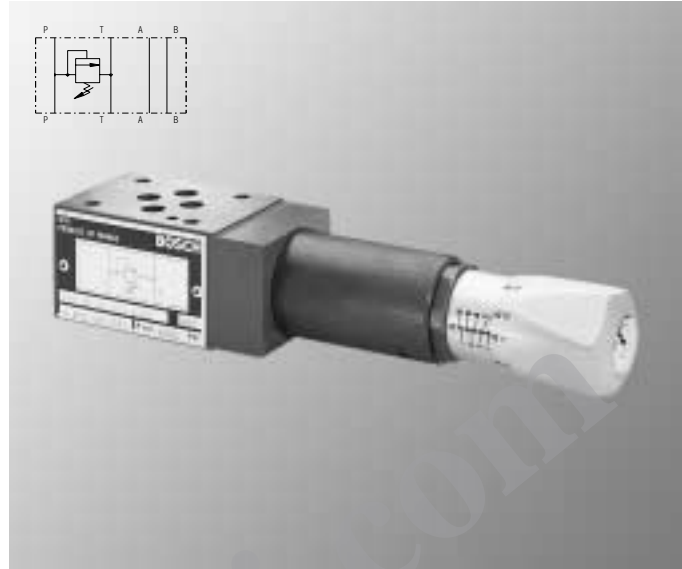
Subplates					
Mounting Pattern	Port Size	Port Location	Valve Mounting Bolt Thread	Old Number	Material No.
NG6 (D03)	3/8" NPTF	Side	#10-24 UNC	9 000 010 145	R978710537
NG6 (D03)	3/8" NPTF	Bottom	#10-24 UNC	9 000 010 146	R978710538
NG6 (D03)	1/2" NPTF	Side	#10-24 UNC	9 000 010 142	R978710534
NG6 (D03)	-6 SAE Straight Thd.	Side	#10-24 UNC	9 000 010 143	R978710535
NG6 (D03)	-8 SAE Straight Thd.	Side	#10-24 UNC	9 000 010 141	R978710533
NG6 (D03)	-8 SAE Straight Thd.	Bottom	#10-24 UNC	9 000 010 140	R978710532
NG10 (D05)	1/2" NPTF	Side	1/4-20 UNC	9 000 010 164	R978710546
NG10 (D05)	1/2" NPTF	Bottom	1/4-20 UNC	9 000 010 172	R978710552
NG10 (D05)	3/4" NPTF	Side	1/4-20 UNC	9 000 010 166	R978710548
NG10 (D05)	-8 SAE Straight Thd.	Side	1/4-20 UNC	9 000 010 165	R978710547
NG10 (D05)	-12 SAE Straight Thd.	Side	1/4-20 UNC	9 000 010 175	R978710555
NG10 (D05)	-12 SAE Straight Thd.	Bottom	1/4-20 UNC	9 000 010 183	R978710561

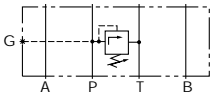
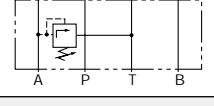
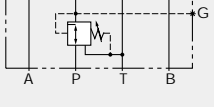
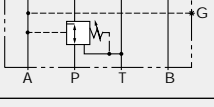
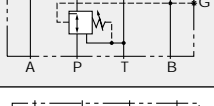
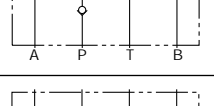
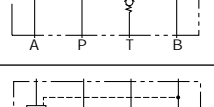
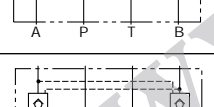

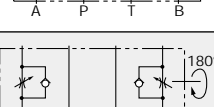
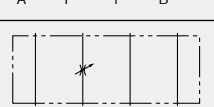
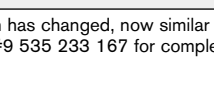
See catalog #9 535 233 717 for complete description and performance specifications.

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.



Modular Valves NG6 (D03)								
Type	Symbol	Description	Old Number	Material No.	Maximum Flow (gpm)	Maximum/Minimum Pressure (psi)	Valve Thickness (in)	Approx. Weight (lbs)
Relief		FE1 SBAD M01S-50	9 810 161 176	9 810 161 176	13.2	60/1160	1.57	3
		FE1 SEDH M01S-50	9 810 161 178	9 810 161 178	13.2	300/4500	1.57	3
		FE1 SBAE M01S-50	9 810 161 177	9 810 161 177	13.2	70/2300	1.57	3
		FE1 SBAE M01S-50	9 810 161 181	9 810 161 181	15.8	70/2300	1.57	3
		FE1 SBDH M01S-50	9 810 161 182	9 810 161 182	15.8	70/4600	1.57	3
Reducing		FE3 SBPC M01S-50	9 810 161 153	7 472 857 508	15.8	45/430	1.57	3.3
		FE3 SBPD M01S-50	9 810 161 154	7 472 857 509	15.8	60/1160	1.57	3.3
		FE3 SBDH M01P	9 810 161 156	9 810 161 156	15.8	300/3600	1.57	3.3
		FE3 SBDF M01S-50	9 810 161 155	7 472 857 510	15.8	300/2300	1.57	3.3
		FE3 SBPD M01A	9 810 161 158	7 472 857 512	15.8	60/1160	1.57	3.3
	FE3 SBPD M01B	9 810 161 162	7 472 857 514	15.8	60/1160	1.57	3.3	
Check		FB1 DDGM 101P 7	9 810 161 173	9 810 161 173	15.8	4600	1.6	2
		FB1 DDGM 101T 22	9 810 161 174	9 810 161 174	15.8	4600	1.6	2
		FB1 PDHM 101A	9 810 161 169	9 810 161 169	15.8	4600	1.6	2.8
		FB1 PDHM 101 A/B	9 810 161 171	9 810 161 171	15.8	4600	1.6	2.8
		FB1 PDHM 101 B	9 810 161 170	9 810 161 170	15.8	4600	1.6	2.8
Flow Control		FF1 SGML 01H	9 810 161 089	7 472 857 531*	13.2	4600	1.6	3.3
		FF1 SGML 01S	9 810 161 088	7 472 857 530*	13.2	4600	1.6	2.2

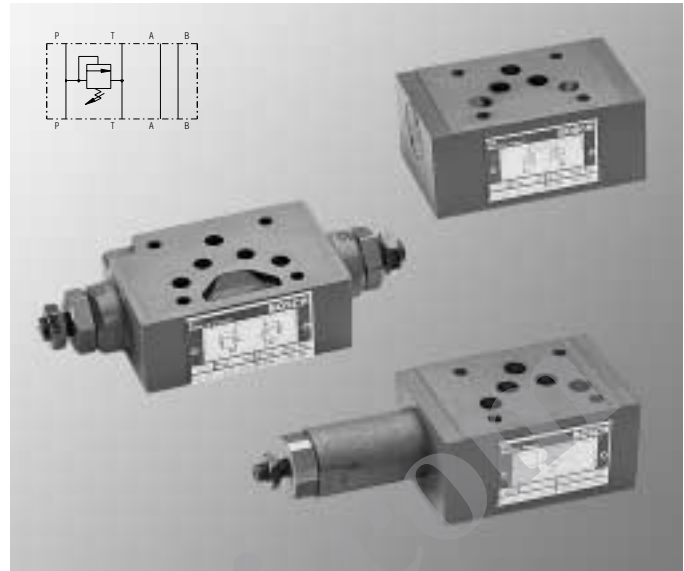
* Body design has changed, now similar to 9 810 161 168.

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.



Modular Valves NG10 (D05)								
Type	Symbol	Description	Old Number	Material No.	Max. Press. (psi)	Press. Range (psi)	Max. Flow (gpm)	Approx. Weight (lbs)
P.O. Relief		Relief Valve Pilot Stem P-T	0 811 101 210	0 811 101 216	4600	100-1160	26	5.7
Direct Relief		Relief Valve DIR Stem P-T	0 811 101 252	0 811 101 277	4600	100-4600	26	6.4
		Relief Valve DIR Stem A-T	0 811 101 257	0 811 101 282	4600	100-4600	26	6.4
		Relief Valve DIR Stem A-T & B-T	0 811 101 267	0 811 101 292	4600	100-4600	26	7.7
		Relief Valve DIR Stem X	0 811 101 271	0 811 101 296	4600	100-2300	26	7.7
Reducing		Pressure Reducing Valve Stem P	0 811 145 116	0 811 145 176	4600	60-1160	26	6.0
		Pressure Reducing Valve Stem P	0 811 145 117	0 811 145 177	4600	120-2300	26	6.0
		Pressure Reducing Valve Stem P	0 811 145 118	0 811 145 178	4600	120-4600	26	6.0
		Stem A W/CK	0 811 145 124	0 811 145 184	4600	60-1160	26	6.0
		Stem B W/CK	0 811 145 132	0 811 145 192	4600	60-1160	26	6.0
Check		Check Valve Direct on P 7PSI	0 811 000 025	0 811 000 028	4600	-	26	4.0
		Check Valve Pilot 5.5:1 A	0 811 020 025	0 811 020 028	4600	-	26	6.6
		P.O. B Check Sence A	0 811 020 026	0 811 020 029	4600	-	26	6.6
		P.O. Check Module Double	0 811 020 027	0 811 020 030	4600	-	26	6.6
Flow Control (Throttle)		FF1 SGMN 02	0 811 300 025	0 811 300 026	4600	-	26	4.4
		FF1 SGMN 02 HMG	0 811 320 025	0 811 320 029	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 Valve Inserts							
Size	Description	Flow Ratio	Spring Force (cracking) bar (psi)	Material No.	Maximum Flow gpm (lpm)	Approximate Weight (lbs)	Material Description
NG16	Directional Control	1:1	4 bar (58 psi)	1 818 509 246	53 (200)	0.44	LR16DB40E1X/Z
NG16	Directional Control	1:1	1 bar (15 psi)	1 818 509 245	53 (200)	0.44	LR16DB10E1X/Z
NG16	Metered Directional Control	1:1.6	4 bar (58 psi)	1 818 509 243	53 (200)	0.44	LR16F40D1X/Z
NG16	Metered Directional Control	1:1.6	1 bar (15 psi)	1 818 509 242	53 (200)	0.44	LR16F10D1X/Z
NG16	Directional Control	1:1.6	4 bar (58 psi)	1 818 509 175	53 (200)	0.44	LR16F40E1X/Z
NG16	Directional Control	1:1.6	1 bar (15 psi)	1 818 509 174	53 (200)	0.44	LR16F10E1X/Z
NG16	Check Valve	1:1.6	1 bar (15 psi)	1 818 509 238	53 (200)	0.44	LR16F10E1X/B30
NG25	Pressure Control	1:1	3 bar (44 psi)	1 818 509 303	116 (439)	0.88	LR25DB25E1X/A10
NG25	Directional Control	1:1	4 bar (58 psi)	1 818 509 302	116 (439)	0.88	LR25DB40E1X/Z
NG25	Directional Control	1:1	1 bar (15 psi)	1 818 509 301	116 (439)	0.88	LR25DB10E1X/Z
NG25	Metered Directional Control	1:1.6	1 bar (15 psi)	1 818 509 298	116 (439)	0.88	LR25F10D1X/Z
NG25	Directional Control	1:1.6	4 bar (58 psi)	1 818 509 296	116 (439)	0.88	LR25F40E1X/Z
NG25	Directional Control	1:1.6	1 bar (15 psi)	1 818 509 295	116 (439)	0.88	LR25F10E1X/Z
NG25	Directional Control	1:1.6	0.3 bar (4 psi)	1 818 509 294	116 (439)	0.88	LR25F03E1X/Z
NG32	Pressure Relief ¹⁾	1:1	3 bar (44 psi)	1 818 509 234	162 (613)	2.0	LR32DB30E1X/A10
NG32	Directional Control	1:1.6	4 bar (58 psi)	1 818 509 226	162 (613)	2.0	LR32F40E1X/TZ
NG32	Directional Control	1:1.6	1 bar (15 psi)	1 818 509 225	162 (613)	2.0	LR32F10E1X/TZ
NG32	Directional Control	1:1.6	0.3 bar (4 psi)	1 818 509 224	162 (613)	2.0	LR32F03E1X/TZ
NG40	Metered Directional Control	1:1.6	1 bar (15 psi)	1 818 509 210	317 (1200)	4.0	LR40F10D1X/Z
NG40	Directional Control	1:1.6	1 bar (15 psi)	1 818 509 207	317 (1200)	4.0	LR40F10E1X/TZ
NG40	Check Valve	1:1.6	0.3 bar (4 psi)	1 818 509 203	317 (1200)	4.0	LR40F03E1X/B40
NG40	Relief Valve	1:1	3 bar (44 psi)	1 818 509 216	317 (1200)	4.0	LR40DB30E1X/A12
NG40	Directional Control	1:1.6	0.3 bar (4 psi)	1 818 509 206	317 (1200)	4.0	LR40F03E1X/TZ
NG50	Directional Control	1:1.6	0.3 bar (4 psi)	1 818 509 348	396 (1500)	7.0	LR50F03E1X/TZ

¹⁾ Metering notches.

See catalog #1 987 761 105 for complete description and performance specifications.

Right Angle Cartridge Check Valves

Right angle cartridge check valves are used for installation and manifold blocks.

Leak free closure in checked direction.

- Various cracking pressure options
- Up to 4600 psi (315 bar)
- Up to 106 GPM (400 l/min)



Cartridge Valve Inserts							
Size	Description	Spring Force (cracking) Bar (psi)	Old Number	Material No.	Flow @ 20 psi drop gpm (lpm)	Approximate Weight (lbs)	Product Description
10mm	Check Valve	0.5 Bar (7 psi)	9 811 230 512	R978714370	7.89 (30)	0.11	CVCR10F7/00
15mm	Check Valve	0.5 Bar (7 psi)	9 811 230 520	R978714371	21.1 (80)	0.18	CVCR15F7/00
20mm	Check Valve	0.5 Bar (7 psi)	9 811 230 528	R978714372	36.8 (140)	0.31	CVCR20F7/00
25mm	Check Valve	0.5 Bar (7 psi)	9 811 230 536	R978714373	47.6 (180)	0.70	CVCR25F7/00
30mm	Check Valve	0.5 Bar (7 psi)	9 811 230 544	R978714375	60.5 (230)	1.03	CVCR30F7/00

See catalog #9 535 233 775 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.



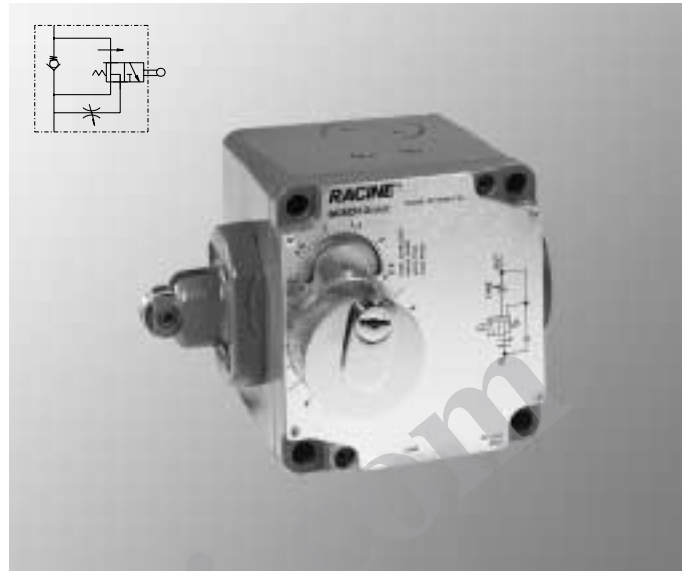
Cartridge Valve Covers					
Size	Symbol	Description	Material No.	Maximum Pressure A, B, F (psi)	Approximate Weight (lbs)
NG16		Direct/Control	1 815 500 278	4600	2.0
NG25		Direct/Control	1 815 500 295	4600	3.08
NG32		Direct/Control	1 815 500 274	4600	5.5
NG40		Direct/Control	1 815 500 270	4600	10.78
NG16		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

¹⁾ Bolt kits included with covers.
See catalog #1 987 761 105 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. Direct operated, lockable keyknob.



Subplate Mounted 3/4" Feed Valves

Old Number	Material No.	Description	Maximum Pressure (psi)	Traverse Flow Rate (gpm)	Approximate Weight (lbs)
972 850	R978714125	FC3 RAHS 206H KGN	3000	10	20
972 851	R978714126	FC3 RAHS 206H LGN	3000	15	20
972 852	R978714127	FC3 RAHS 206H MGN	3000	20	20
972 853	R978714128	FC3 RAHS 206H PGN	3000	30	20

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 4800 psi (330 bar) rated
- 1/4 gallon to 14 gallon sizes
- 3000 psi (207 bar) has ASME approval
- 4800 psi (330 bar) has CE approval



Accumulators						
Liquid Volume gal (liter)	Max Pressure psi/bar	Fluid Connection	Bladder Material	Old Number	Material No.	Description
.25 (1)	3000/207	SAE 1-3/16 12UN 2B	Buna N	0 531 112 640	R978700573	HAB1-207-2X/5U12G-2N111-ASME
1 (4)	3000/207	SAE 1-5/8 12UN 2B	Buna N	0 531 113 640	R978700584	HAB4-207-2X/5U08G-2N111-ASME
2.5 (10)	3000/207	SAE 1-7/8 12UN 2B	Buna N	0 531 114 640	R978700595	HAB10-207-2X/5U09G-2N111-ASME
5 (20)	3000/207	SAE 1-7/8 12UN 2B	Buna N	0 531 115 640	R978700612	HAB20-207-2X/5U09G-2N111-ASME
10 (35)	3000/207	SAE 1-7/8 12UN 2B	Buna N	0 531 115 650	R978700617	HAB35-207-2X/5U09G-2N111-ASME
14 (50)	3000/207	SAE 1-7/8 12UN 2B	Buna N	0 531 116 640	R978700627	HAB50-207-2X/5U09G-2N111-ASME

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

Diaphragm Accumulators

Hydraulic diaphragm 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.

- 4.6 in.³ to 170 in.³ sizes
- Pressures up to 3600 psi (250 bar)
- Available in CE and ASME certification



Accumulators					
Liquid Volume	Max Pressure psi/bar	Fluid Connection	Bladder Material	Material No.	Description
4.6 in ³ (0.075L)	3623/250	SAE 9/16-18UNF-2B	Buna N	0 531 610 632	HAD0.075-250-1X/0U12S2N111-USA
10 in ³ (0.16L)	3623/250	SAE 9/16-18UNF-2B	Buna N	0 531 600 611	HAD0.16-250-1X/0U12S2N111-USA
10 in ³ (0.16L)	3623/250	3/8-18 NPTF	Buna N	0 531 600 600	HAD0.16-250-1X/0F02A2N111-USA
21 in ³ (0.35L)	2320/160	SAE 3/4-16 UNF-2B	Buna N	0 531 601 549	HAD0.35-160-1X/0U04A2N111-USA
21 in ³ (0.35L)	3000/207	SAE 3/4-16 UNF-2B	Buna N	0 531 601 572	HAD0.35-207-1X/0U04A2N111-USA
21 in ³ (0.35L)	2320/160	1/2-14 NPTF	Buna N	0 531 601 533	HAD0.35-160-1X/0F08A2N111-USA
31 in ³ (0.50L)	2320/160	SAE 3/4-16 UNF-2B	Buna N	0 531 611 527	HAD0.5-180-1X/0U04A2N111-USA
31 in ³ (0.50L)	3058/211	SAE 3/4-16 UNF-2B	Buna N	0 531 611 603	HAD0.5-207-1X/0U04A2N111-USA
43 in ³ (0.70L)	2610/180	SAE 3/4-16 UNF-2B	Buna N	0 531 602 560	HAD0.7-180-1X/0U04A2N111-USA
43 in ³ (0.70L)	2610/180	1/2-14 NPTF	Buna N	0 531 602 581	HAD0.7-207-1X/0F08A2N111-USA
43 in ³ (0.70L)	3000/207	SAE 3/4-16 UNF-2B	Buna N	0 531 602 588	HAD0.7-207-1X/0U04C2N111-USA
43 in ³ (0.70L)	2610/180	1/2-14 NPTF	Buna N	0 531 602 553	HAD0.7-180-1X/0F08C2N111-USA
85 in ³ (1.4L)	3000/207	SAE 3/4-16 UNF-2B	Buna N	0 531 603 501	HAD1.4-207-1X/0U08C2N111-USA
85 in ³ (1.4L)	3000/207	SAE 3/4-16 UNF-2B	ECO	0 531 603 502	
85 in ³ (1.4L)	3000/207	1/2-14 NPTF	Buna N	0 531 603 500	HAD1.4-207-1X/0F08C2N111-USA
122 in ³ (2.0L)	3000/207	SAE 3/4-16 UNF-2B	Buna N	0 531 623 500	HAD2.0-207-1X/0U04C2N111-USA
170 in ³ (2.8L)	3000/207	1/2-14 NPTF	Buna N	0 531 613 500	HAD2.8-207-1X/0F08C2N111-USA
170 in ³ (2.8L)	3000/207	SAE 3/4-16 UNF-2B	Buna N	0 531 613 503	HAD2.8-207-1X/0U04C2N111-USA

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

Safety and Shut-Off Blocks

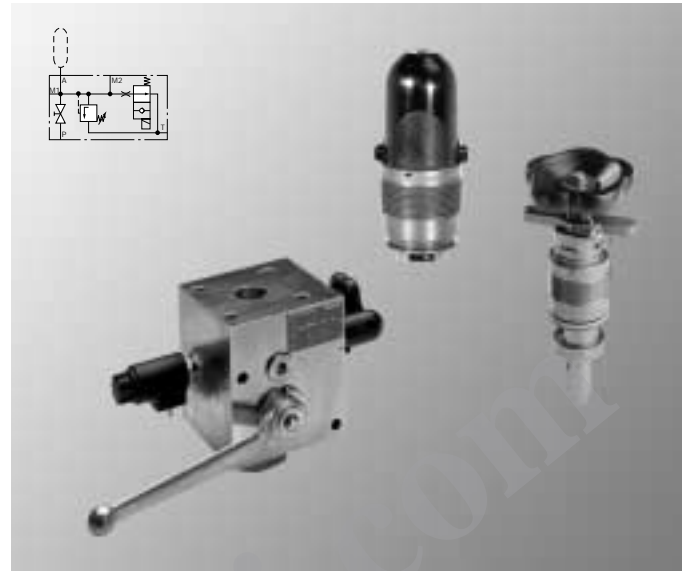
The Bosch Rexroth safety and shut-off block is a hydraulic element for the purpose of shutting off and discharging, preferably for use with hydro-pneumatic bladder-type accumulators.

The manifold and accumulator are connected via an adapter fitting or flange.

Approval: DIN 24 552 (TRB 403 and 404)

The pressure-relief valve block is tested and sealed by CE representatives.

- Optional electrically operated 2-way directional control valve



Safety and Shut-Off Blocks					
Description	Max. Pressure bar (psi)	Max. Flow gpm (lpm)	V/Hz	Approx. Weight (lbs)	Material No.
NG 20					
0 532 VAW/20/1/FPM/D/Z/03/G/24/00/A1	–	–	24/00	12.34	0 532 015 121
0 532 VAW/20/1/FPM/D/Z/03/G/MANUAL/A1	–	–	manual	12.56	0 532 015 139
0 532 VAW/20/1/FPM/70/50/D/Z/03/G/24/00/A1	70 (1015)	13.21 (50)	24/00	13.22	0 532 015 122
0 532 VAW/20/1/FPM/100/100/D/Z/03/G/24/00/A1	100 (1450)	26.42 (100)	24/00	13.22	0 532 015 124
0 532 VAW/20/1/FPM/160/100/D/Z/03/G/24/00/A1	160 (2321)	26.42 (100)	24/00	13.22	0 532 015 126
0 532 VAW/20/1/FPM/211/130/D/Z/03/G/24/00/A1	211 (3060)	34.34 (130)	24/00	13.22	0 532 015 128
0 532 VAW/20/1/FPM/250/130/D/Z/03/G/24/00/A1	250 (3626)	34.34 (130)	24/00	13.22	0 532 015 130
0 532 VAW/20/1/FPM/280/130/D/Z/03/G/24/00/A1	280 (4061)	34.34 (130)	24/00	13.22	0 532 015 134
0 532 VAW/20/1/FPM/330/150/D/Z/03/G/24/00/A1	330 (4786)	39.63 (150)	24/00	13.22	0 532 015 132
NG 32					
0 532 VAW/32/1/FPM/D/Z/03/G/MANUAL/A1	–	–	manual	31.74	0 532 016 061
0 532 VAW/32/1/FPM/160/100/D/Z/03/G/24/00/A1	160 (2320)	26.42 (100)	24/00	32.40	0 532 016 054
0 532 VAW/32/1/FPM/211/100/D/Z/03/G/24/00/A1	211 (3060)	26.42 (100)	24/00	32.40	0 532 016 056
0 532 VAW/32/1/FPM/330/150/D/Z/03/G/24/00/A1	330 (4786)	39.63 (150)	24/00	32.40	0 532 016 058
0 532 VAW/32/1/FPM/330/150/D/Z/03/G/24/00/A1	330 (4786)	39.63 (150)	24/00	30.64	0 532 016 060
0 532 VAW/32/2/FPM/280/260/DK/Z/03/G/A1	280 (4061)	68.68 (260)	–	32.40	0 532 016 057

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.



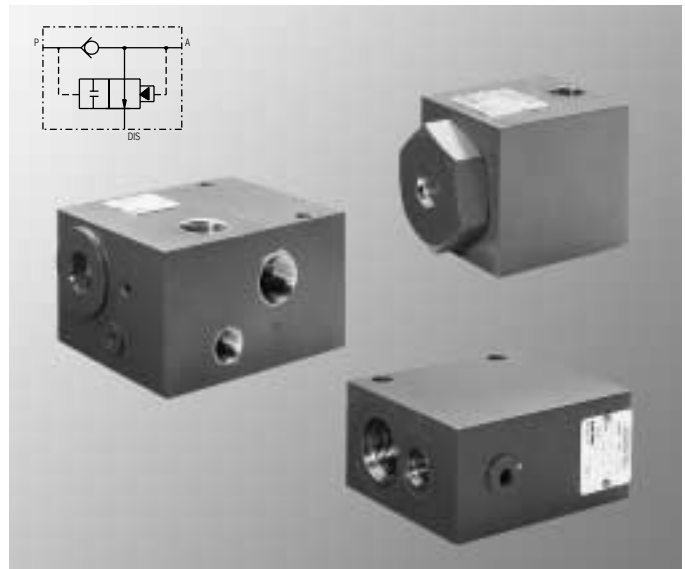
Accumulator Brackets			
Material No.	Description	Accumulator Size	For Use Up to psi
1 531 316 017	ACCUM CLAMP FOR DIA. 92-97 M6	21 in ³	N/A
1 531 316 016	ACCUM CLAMP FOR DIA. 145-155 M8	85 – 122 in ³	2000
1 531 316 020	ACCUM CLAMP FOR DIA. 170-180 M8	170 in ³	3600
1 531 316 005	ACCUM CLAMP FOR DIA. 224-230 M12 50L	2½- 14 gal.	N/A

See catalog #9 535 233 184 for complete description, performance specifications and charge & test units.

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						
Old Number	Material No.	Description	Pressure Rating (psi)	Maximum Flow (gpm)	Port Size	Approximate Weight (lbs)
982 378	R978715257	AD P1 51F 10	3000	12	#6 SAE	4
982 285	R978715255	AD C3 54F 10	3000	40	#12 SAE	6
982 379	R978715258	AD C4 58F 10	3000	80	#20 SAE	12

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

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