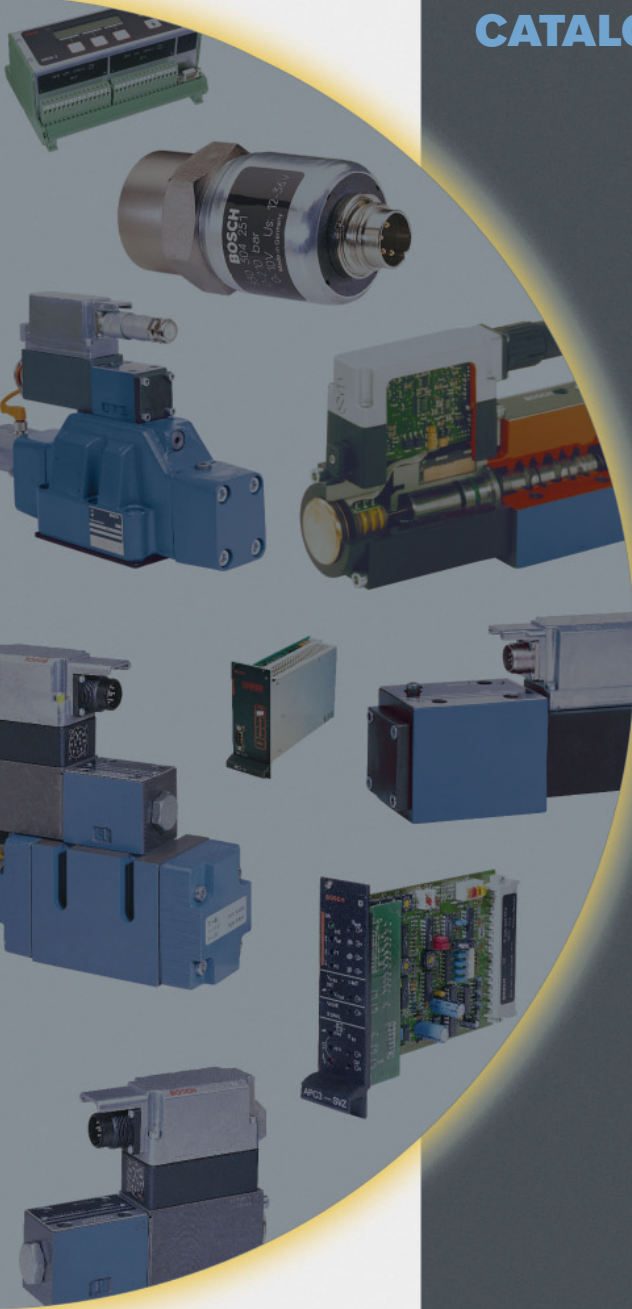




BOSCH®

**CORE
PRODUCTS
CATALOG**



Robert Bosch Fluid Power Corporation

Infinite Solutions...Ultimate Performance

ROBERT BOSCH FLUID POWER CORPORATION

For nearly 100 years, Robert Bosch Fluid Power Corporation has provided the industry with a complete line of high performance, high response, exceptionally durable hydraulic 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 fluid power market demands reliable product availability. In many cases, fluid power products need to be accessible "on-demand". Therefore, we have developed a program which offers quick access to several product lines, including pumps, valves and accumulators.

CORE PRODUCTS PROGRAM

Our Core Products program features more than 400 in-stock items, available with shorter lead times. This program offers you flexibility and assurance that you will have the products you need, when you need them.

Our goal is to accelerate delivery of core product shipments from our factory, to your facility. To assist you with product requests, applications, and delivery information, you may contact your local Bosch distributor, who also stocks many of the products listed in this catalog. To locate the distributor in your area, you may refer to the distributor listing and map on pages 34 - 37, or see the information below.

Authorized Bosch Distributor:

For complete warranty information, please refer to the last page of this catalog.

Robert Bosch Fluid Power Corporation
P.O. Box 2025
Racine, Wisconsin 53401-2025 USA

Phone: (414) 554-7100
Fax: (414) 554-8103

Web site: www.boschfluidpower.com
email address: solution@boschfluidpower.com

WARRANTY

Robert Bosch Fluid Power Corporation, (“Bosch”) warrants that all fluid products (“Products”) sold by Bosch or an authorized Bosch distributor are free from defects in material and workmanship for a period of twelve (12) months after the date of delivery to the Purchaser or a period twenty-four (24) months after the date on the nameplate, which ever date occurs first. Within said warranty period Bosch will repair or replace, at its sole option, any Product that proves to have been defective under conditions of normal use without charge to the Purchaser. This warranty to repair or replace shall be limited to the first using purchaser (“Purchaser”) and shall apply only to new and unused Products which after shipment from Bosch’s factory have not been altered, changed, or repaired in any manner.

To obtain performance of this warranty, the Purchaser should contact a local authorized Bosch service facility or Bosch’s factory located at 7505 Durand Avenue, Racine, Wisconsin. A dated purchase receipt or other valid proof that the Product is covered by this warranty will be required in order to honor any claim hereunder. Claims not submitted within thirty (30) days of the failure to an authorized Bosch service facility or Bosch’s factory may be rejected.

Bosch will repair or replace any Product covered by this warranty without charge to the Purchaser at an authorized Bosch service facility or Bosch’s factory located at 7505 Durand Avenue, Racine, Wisconsin. If the Purchaser requests that Bosch repair or replace the defective product at the Purchaser’s facility, then Bosch will charge the Purchaser for all travel expenses and labor expenses incurred as a result of the services performed at such location. Notwithstanding the above, this warranty shall not cover any expenses incurred in the removal and reinstallation of any product, or in the shipment of the Product to Bosch’s factory, whether or not the product is proven defective. Replaced parts and or repair work shall not be extended with respect to such parts.

This warranty shall not apply to any Product, or any part thereof, which has been subject to misuse, neglect, accident, alteration, abuse, modification, improper installation or operation, unauthorized repair or replacement of parts, flood, fire, acts of God or other circumstances beyond Bosch’s control, or to any Product on which the serial numbers have been altered, defaced or removed. Also excluded from this warranty are failures due to ordinary wear and tear of the Product.

Neither Bosch nor its affiliated companies, their officers, directors, agents or representatives shall be liable for (a) any other obligations or liabilities arising under breach of contract or warranty, (b) any other obligations or liabilities arising from Tort Claims (including Negligence or Strict Liability) or arising under other theories of law with respect to products sold or services rendered by Bosch or, (c) any special, indirect or consequential, or punitive damages or other damages arising out of any cause of action whatsoever, including but not limited to loss of anticipated profits, losses by reasons of plant shutdown, nonoperation, loss of use of the Product or any part thereof, or for any other type of economic loss, or for claims or Purchaser’s customers or any third party for any such damages or losses. **THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES FOR BREACH OF THE WARRANTIES SET FORTH HEREIN SHALL BE THE SOLE AND EXCLUSIVE REMEDY OF BUYER FOR BREACH OF THE WARRANTIES HEREUNDER.**

ROBERT BOSCH FLUID POWER CORPORATION
7505 DURAND AVENUE
RACINE, WISCONSIN 53406
JANUARY 1, 1997

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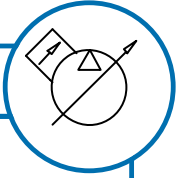
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Bosch Sales Network Map

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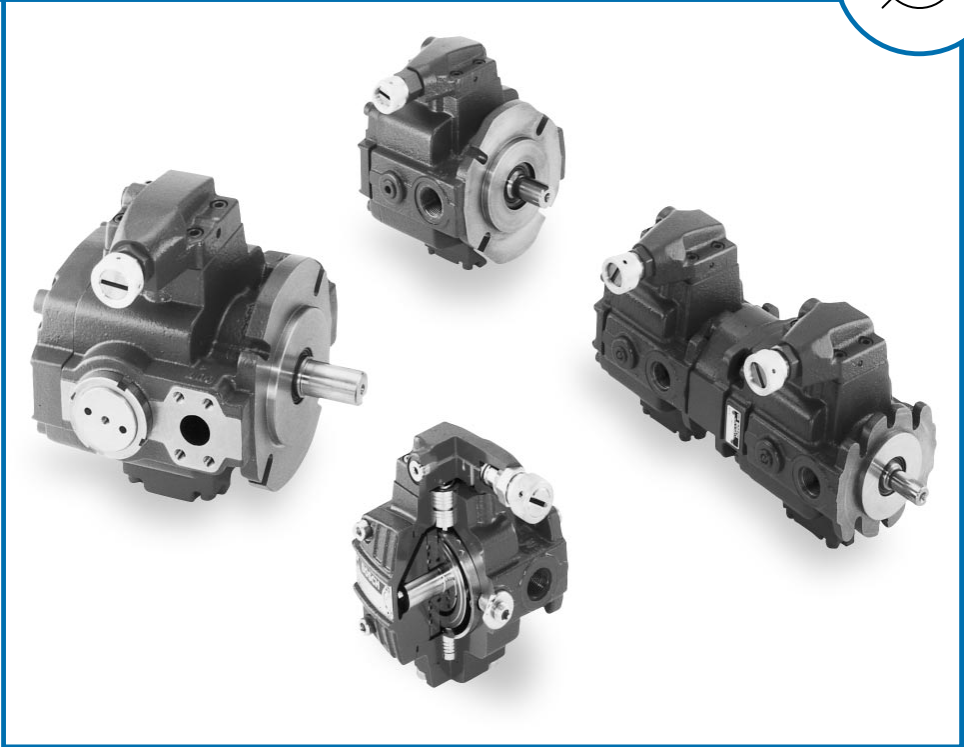
Distributor Listing

36-37



VANE PUMPS

Bosch is leading the way in advancing variable vane pump technology. Operating from a very solid basis with the world renowned SV variable vane pump, the way to the future is clearly marked with the introduction of the VPV Whisper™ pump. Market conditions favor hydraulic components that operate at low noise levels without sacrificing efficiency, durability, and competitive pricing. VPV features an outstanding response to the needs of the market today and for the future.



Vane Pumps:

- Flows from 7.5 gpm to 75.76 gpm in single pumps
- Available in combination with themselves, gear pumps and Bosch radial piston pumps
- Through-drive horsepower transfer is 100% to the second pump
- Both VPV and SV are available with through shaft versions for "quick combinations"
- Pressures to 3000 psi continuous
- Continuous speeds from 1200 to 1800 rpm
- Overall efficiencies to 88%
- A variety of fluids can be used in addition to mineral oil. Water glycol, phosphate ester and environmentally friendly fluids can be applied with factory approval.
- Controls include standard pressure compensation, remote pressure comp., load sense, solenoid 2-pressure, solenoid vented, proportional pressure control and torque limiting.

| VANE PUMPS | | | | | | | | |
|-----------------------------|-----------------|---------------------------|------------------------------------|----------|---------------------------|---------------|----------------------|------------|
| Size (in ³ /rev) | Mounting Flange | Max. Cont. Pressure (psi) | Flow@ 1750 rpm (Theoretical) (gpm) | Rotation | Description | Part Number | Approx. Weight (lbs) | List Price |
| SV PUMPS | | | | | | | | |
| 1.000 | SAE A | 2000 | 7.50 | R | PSV PSSF 10 HRM 52 | 5 928 714 | 40.0 | |
| 1.000 | SAE A | 2000 | 7.50 | R | PSV PNSF 10 HRM 52 | 5 928 715 | 40.0 | |
| 1.500 | SAE A | 1500 | 11.00 | R | PSV PSSF 15 ERM 52 | 5 928 763 | 40.0 | |
| 2.000 | SAE B | 2000 | 15.00 | R | PSV PSSF 20 HRM 52 | 5 925 746 | 65.0 | |
| 2.000 | SAE B | 2000 | 15.00 | R | PSV PNSF 20 HRM 52 | 5 925 790 | 65.0 | |
| 2.000 | SAE B | 2000 | 15.00 | R | PSV PNCF 20 HRM 62 | 6 925 846 | 65.0 | |
| 4.000 | SAE C | 2000 | 30.00 | R | PSV PSCF 40 HRM 64 | 6 915 336 | 106.0 | |
| 4.000 | SAE C | 2000 | 30.00 | R | PSV PNCF 40 HRM 64 | 6 915 343 | 106.0 | |
| 8.000 | SAE D | 1500 | 62.00 | R | PSV PNCF 80 GRM 62 | 6 915 102 | 182.0 | |
| 8.000 | SAE D | 1500 | 62.00 | R | PSV PSCF 80 GRM 62 | 6 915 103 | 182.0 | |
| VPV PUMPS | | | | | | | | |
| 1.000 | SAE A | 2000 | 7.63 | R | 0513R18C3VPV16SM14HYA01 | 0 513 300 213 | 38.0 | |
| 1.000 | SAE A | 2000 | 7.63 | R | 0513R18C3VPV16SM14FYA01 | 0 513 300 209 | 38.0 | |
| 1.000 | SAE C | 2000 | 7.63 | R | 0513R18C3VPV16SM14HYA01P1 | 0 513 300 247 | 45.0 | |
| 1.000 | SAE A | 2000 | 7.63 | R | 0513R18C3VPV16SM14FZA01 | 0 513 300 203 | 34.0 | |
| 1.000 | SAE A | 2000 | 7.63 | R | 0513R18C3VPV16SM14HZA01 | 0 513 300 211 | 38.0 | |
| 1.660 | SAE B | 2000 | 11.95 | R | 0513R18C3VPV25SM14FYA01 | 0 513 400 209 | 65.0 | |
| 1.660 | SAE B | 2000 | 11.95 | R | 0513R18C3VPV25SM14HYA01 | 0 513 400 213 | 65.0 | |
| 1.660 | SAE A | 2000 | 11.95 | R | 0513R18C3VPV25SM14HYA01P1 | 0 513 400 249 | 71.0 | |
| 1.660 | SAE B | 2000 | 11.95 | R | 0513R18C3VPV25SM14FZA01 | 0 513 400 207 | 61.0 | |
| 1.660 | SAE B | 2000 | 11.95 | R | 0513R18C3VPV25SM14HZA01 | 0 513 400 211 | 65.0 | |
| 2.000 | SAE B | 2000 | 14.70 | R | 0513R18C3VPV32SM14FYA01 | 0 513 500 217 | 65.0 | |
| 2.000 | SAE B | 2000 | 14.70 | R | 0513R18C3VPV32SM14HYA01 | 0 513 500 221 | 65.0 | |
| 2.000 | SAE B | 2000 | 14.70 | R | 0513R18C3VPV32SM14HYA01P1 | 0 513 500 255 | 71.0 | |
| 2.000 | SAE B | 2000 | 14.70 | R | 0513R18C3VPV32SM14FZA01 | 0 513 500 207 | 61.0 | |
| 2.000 | SAE B | 2000 | 14.70 | R | 0513R18C3VPV32SM14HZA01 | 0 513 500 219 | 65.0 | |
| 2.740 | SAE C | 2000 | 20.70 | R | 0513R18C3VPV45SM14FYA01 | 0 513 600 207 | 120.0 | |
| 2.740 | SAE C | 2000 | 20.70 | R | 0513R18C3VPV45SM14HYA01 | 0 513 600 215 | 120.0 | |
| 2.740 | SAE C | 2000 | 20.70 | R | 0513R18C3VPV45SM14HYA01P1 | 0 513 600 235 | 128.0 | |
| 2.740 | SAE C | 2000 | 20.70 | R | 0513R18C3VPV45SM14FZA01 | 0 513 600 203 | 120.0 | |
| 2.740 | SAE C | 2000 | 20.70 | R | 0513R18C3VPV45SM14HZA01 | 0 513 600 241 | 120.0 | |
| 2.740 | SAE C | 2000 | 20.70 | R | 0513R18C3VPV45SM14FYA01P1 | 0 513 600 229 | 128.0 | |
| 3.840 | SAE C | 2000 | 28.30 | R | 0513R18C3VPV63SM14FYA01 | 0 513 700 211 | 120.0 | |
| 3.840 | SAE C | 2000 | 28.30 | R | 0513R18C3VPV63SM14HYA01 | 0 513 700 219 | 120.0 | |
| 3.840 | SAE C | 2000 | 28.30 | R | 0513R18C3VPV63SM14HYA01P1 | 0 513 700 243 | 128.0 | |
| 3.840 | SAE C | 2000 | 28.30 | R | 0513R18C3VPV63SM14FZA01 | 0 513 700 207 | 120.0 | |
| 3.840 | SAE C | 2000 | 28.30 | R | 0513R18C3VPV63SM14HZA01 | 0 513 700 215 | 120.0 | |
| 3.840 | SAE C | 2000 | 28.30 | R | 0513R18C3VPV63SM14FYA01P1 | 0 513 700 241 | 128.0 | |
| 4.880 | SAE C | 2000 | 36.10 | R | 0513R18C3VPV80SM14FYA01 | 0 513 800 207 | 120.0 | |
| 4.880 | SAE C | 2000 | 36.10 | R | 0513R18C3VPV80SM14FYA01P1 | 0 513 800 233 | 128.0 | |
| 4.880 | SAE C | 2000 | 36.10 | R | 0513R18C3VPV80SM14FZA01 | 0 513 800 203 | 120.0 | |
| 4.880 | SAE C | 2000 | 36.10 | R | 0513R18C3VPV80SM14HZA01 | 0 513 800 237 | 120.0 | |
| 4.880 | SAE C | 2000 | 36.10 | R | 0513R18C3VPV80SM14HYA01P1 | 0 513 800 239 | 128.0 | |
| 6.100 | SAE D | 2000 | 46.21 | R | 0513R18C3VPV100SM14FZ00 | 0 513 850 203 | 240.0 | |
| 6.100 | SAE D | 2000 | 46.21 | R | 0513R18C3VPV100SM14FY00 | 0 513 850 209 | 245.0 | |
| 6.100 | SAE D | 2000 | 46.21 | R | 0513R18C3VPV100SM14HY00P1 | 0 513 850 215 | 245.0 | |
| 6.100 | SAE D | 2000 | 46.21 | R | 0513R18C3VPV100SM14FY00P1 | 0 513 850 219 | 245.0 | |
| 7.930 | SAE D | 2000 | 60.07 | R | 0513R18C3VPV130SM14FY00 | 0 513 860 237 | 245.0 | |
| 7.930 | SAE D | 2000 | 60.07 | R | 0513R18C3VPV130SM14HY00P1 | 0 513 860 229 | 255.0 | |
| 7.930 | SAE D | 2000 | 60.07 | R | 0513R18C3VPV130SM14HY00 | 0 513 860 251 | 240.0 | |
| 7.930 | SAE D | 2000 | 60.07 | R | 0513R18C3VPV130SM14FZ00P1 | 0 513 860 241 | 245.0 | |
| 10.000 | SAE D | 2000 | 75.76 | R | 0513R18C3VPV164SM14FY00 | 0 513 870 215 | 245.0 | |
| 10.000 | SAE D | 2000 | 75.76 | R | 0513R18C3VPV164SM14HY00P1 | 0 513 870 217 | 245.0 | |
| 10.000 | SAE D | 2000 | 75.76 | R | 0513R18C3VPV164SM14FZ00 | 0 513 870 211 | 240.0 | |
| 10.000 | SAE D | 2000 | 75.76 | R | 0513R18C3VPV164SM14FY00P1 | 0 513 870 219 | 245.0 | |
| 1.000 | SAE A | 2000 | 7.63 | R | 0513R18C3VPV16SM14FYA01P1 | 0 513 300 243 | 45.0 | |
| 1.660 | SAE B | 2000 | 11.95 | R | 0513R18C3VPV25SM14FYA01P1 | 0 513 400 245 | 71.0 | |
| 2.000 | SAE B | 2000 | 14.7 | R | 0513R18C3VPV32SM14FYA01P1 | 0 513 500 251 | 71.0 | |

Adaptor Kits for VPV Combinations

| List Number | Description | List Price |
|-------------|--------------------------------------|------------|
| 9511230518 | VPV 16 to VPV 16 SAE | |
| 9511230521 | VPV 16 to SAE F gear | |
| 9511230523 | VPV 25/32 to VPV 25/32 SAE | |
| 9511230525 | VPV 25/32 to VPV 16 SAE | |
| 9511230526 | VPV Metric/SAE 25/32 to SAE F | |
| 9511230528 | VPV 45/63/80 to VPV 45/63/80 SAE | |
| 9511230530 | VPV 45/63/80 to VPV 25/32 SAE | |
| 9511230532 | VPV 45/63/80 to VPV 16 SAE | |
| 9511230533 | VPV Metric/SAE 45/63/80 to SAE F | |
| 9511230534 | VPV Metric/SAE 45/63/80 to SAE G | |
| 9511230536 | VPV SAE 100/130/164 to same | |
| 9511230538 | VPV SAE 100/130/164 to 45/63/80 | |
| 9511230540 | VPV SAE 100/130/164 to 25/32 | |
| 9511230542 | VPV SAE 100/130/164 to VPV 16 | |
| 9511230543 | VPV Metric/SAE 100/130/164 to F gear | |

Pump Repair Kits for the Core Products List (SAE only)*

| Displacement | Kit Number | List Price |
|--------------|---------------|------------|
| VPV 16 | 9 511 230 504 | |
| VPV 25 | 9 511 230 506 | |
| VPV 32 | 9 511 230 506 | |
| VPV 45 | 9 511 230 559 | |
| VPV 63 | 9 511 230 562 | |
| VPV 80 | 9 511 230 563 | |
| VPV 100 | 9 511 230 568 | |
| VPV 130 | 9 511 230 571 | |
| VPV 164 | 9 511 230 572 | |

Pump Seal Kits Core Products*

| Displacement | Seal Kit Number | List Price |
|--------------|-----------------|------------|
| VPV 16 | 9 511 230 500 | |
| VPV 25 | 9 511 230 501 | |
| VPV 32 | 9 511 230 501 | |
| VPV 45 | 9 511 230 544 | |
| VPV 63 | 9 511 230 544 | |
| VPV 80 | 9 511 230 544 | |
| VPV 100 | 9 511 230 547 | |
| VPV 130 | 9 511 230 547 | |
| VPV 164 | 9 511 230 547 | |

*140 Bar Pumps only. 210 Bar Kits to be announced.

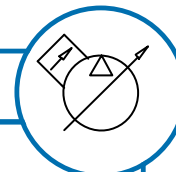
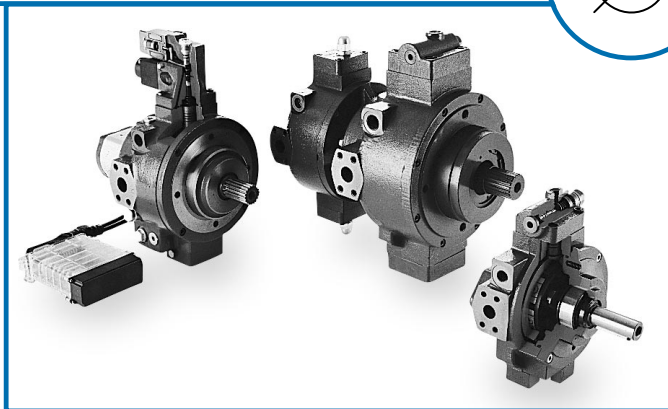
RKP PUMPS

The Bosch radial piston pumps (RKP) are some of the most robust hydraulic components available in the world today. Hydrostatic balancing and the lack of limited-life roller bearings in the drive unit contribute to a long service life of at least 10,000 hours. Low noise levels are also a keynote, particularly when compared to axial piston pumps. The short stroke, low vibration radial design assures excellent performance in the suppression of noise. The user can look forward to rapid response as well, due to the short stroke and high pressure actuating mechanism. In the area of special fluids, RKP

has a remarkable ability to handle HFA, HFB, HFC and HFD fluids, and at pressures above competitive pumps.

RKP Pumps:

- Flows from 8.78 gpm to 64.7 gpm in single pumps
- Available in combination with themselves, gear pumps and fixed or variable vane pumps
- 4060 psi continuous pressures
- High pressure versions to 5075 psi continuous
- SAE and metric mounting
- Continuous speeds from 1200 to 1800 rpm
- Overall efficiencies from 88 to 90%

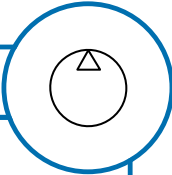


- A variety of fluids can be used in addition to mineral oil. Water glycol, phosphate ester, 95/5, 90/10, 60/40 and environmentally friendly fluids can be applied with factory approval.
- Controls include adjustable pressure compensation, remote pressure comp., load sense, solenoid, proportional flow control, horsepower limiting and a combined flow control with electronically controlled pressure, leakage compensation, speed control and horsepower control with automatic case flushing.

| VANE PUMPS | | | | | | | | |
|-----------------------------|-----------------|---------------------------|-----------------------------------|----------|-------------------------|---------------|----------------------|------------|
| Size (in ³ /rev) | Mounting Flange | Max. Cont. Pressure (psi) | Flow@1750 rpm (Theoretical) (gpm) | Rotation | Description | Part Number | Approx. Weight (lbs) | List Price |
| 2.000 | SAE C | 4060 | 15.15 | R | 0514R18C3RPV32SM28FY28 | 0 514 500 391 | 60.0 | |
| 2.000 | SAE C | 4060 | 15.15 | R | 0514R18C3RPV32SM28FZ28 | 0 514 500 311 | 60.0 | |
| 2.740 | SAE C | 4060 | 20.75 | R | 0514R18C3RPV45SM28FY28 | 0 514 600 043 | 70.0 | |
| 3.840 | SAE C | 4060 | 29.10 | R | 0514R18C3RPV63SM28HY | 0 514 700 337 | 140.0 | |
| 3.840 | SAE C | 4060 | 29.10 | R | 0514R18C3RPV63SM28FY28 | 0 514 700 375 | 140.0 | |
| 4.880 | SAE C | 4060 | 37.00 | R | 0514R18C3RPV80SM28HY | 0 514 800 299 | 140.0 | |
| 4.880 | SAE C | 3045 | 37.00 | R | 0514R18C3RPV80SM21FZ21 | 0 514 800 335 | 140.0 | |
| 6.100 | SAE C | 4060 | 46.21 | R | 0514R18C3RPV100SM28FY28 | 0 514 900 225 | 145.0 | |
| 8.540 | SAE C | 4060 | 64.70 | R | 0514R18C3RPV140SM28RZ28 | 0 514 950 003 | 200.0 | |

Radial Piston Pump Catalog (# 9 535 233 075)

GEAR PUMPS



The gear type 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:

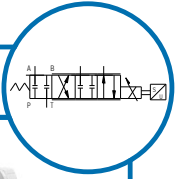
- Flows from 1.85 gpm to 10.38 gpm
- Available in combination
- Pressures to 3625 psi continuous
- Continuous speeds from 500 to 3500 rpm
- Overall efficiencies from 85 to 92%
- Pump bodies built from extruded aluminum with cast iron end covers form a very high strength unit
- DU bearings are standard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



| GEAR PUMPS | | | | | | | | |
|-----------------------------|-----------------|---------------------------|------------------------------------|----------|-------------------|---------------|----------------------|------------|
| Size (in ³ /rev) | Mounting Flange | Max. Cont. Pressure (psi) | Flow @1750 rpm (Theoretical) (gpm) | Rotation | Description | Part Number | Approx. Weight (lbs) | List Price |
| 0.244 | SAE A | 3625 | 1.85 | R | HY/ZFS11/4R254 | 0 510 225 011 | 6.6 | |
| 0.335 | SAE A | 3625 | 2.54 | 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 | 3625 | 6.47 | R | HY/ZFS11/14R254 | 0 510 525 031 | 7.7 | |
| 0.976 | SAE A | 3625 | 7.39 | R | HY/ZFS11/16R254 | 0 510 625 021 | 7.9 | |
| 1.159 | SAE A | 3045 | 8.78 | R | HY/ZFS11/19R254 | 0 510 625 041 | 8.1 | |
| 1.370 | SAE A | 2610 | 10.38 | R | HY/ZFS11/22.5R254 | 0 510 725 059 | 8.4 | |

Gear Pump Catalog (# 9 535 233 072)

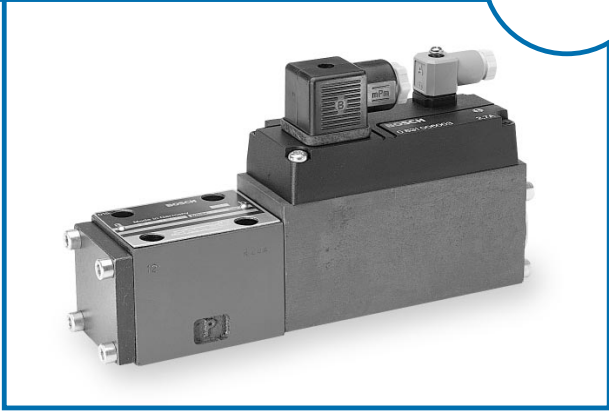
DIRECT OPERATED SERVO SOLENOID VALVES



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

- Repeatability less than 0.1%
- Available in D03 (NG6) and D05 (NG10) Sizes

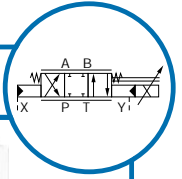
- Flow rates up to 26 GPM (100 L/min)
- Up to 130 hZ frequency response
- Defined fail-safe position
- Zero Lap



| DIRECT OPERATED SERVO SOLENOID VALVES | | | | | | | | |
|---------------------------------------|--------------|-----------------------|--------------------------|---------------|---------------|--------------|----------------------------|------------|
| Size | Spool Symbol | Pressure Rating (psi) | Flow (gpm) ¹⁾ | Electronics | Part Number | Weight (lbs) | Catalog Page ²⁾ | List Price |
| D03 | | 4600 | 0.5 | 0 811 405 060 | 0 811 404 041 | 5.0 | 6 | |
| | | | 1 | | 0 811 404 033 | | | |
| | | | 3 | | 0 811 404 034 | | | |
| | | | 6.3 | | 0 811 404 035 | | | |
| | | | 10.5 | | 0 811 404 036 | | | |
| D03 | | 4600 | 3 | 0 811 405 060 | 0 811 404 037 | 5.0 | 6 | |
| | | | 6.3 | | 0 811 404 038 | | | |
| | | | 10.5 | | 0 811 404 039 | | | |
| D03 | | 4600 | 1 | OBE | 0 811 404 600 | 6.0 | 21 | |
| | | | 3 | | 0 811 404 601 | | | |
| | | | 6.3 | | 0 811 404 602 | | | |
| | | | 10.5 | | 0 811 404 603 | | | |
| D03 | | 4600 | 1 | OBE | 0 811 404 610 | 6.0 | 21 | |
| | | | 3 | | 0 811 404 611 | | | |
| | | | 6.3 | | 0 811 404 612 | | | |
| | | | 10.5 | | 0 811 404 613 | | | |
| D05 | | 4600 | 26.4 | 0 811 405 061 | 0 811 404 059 | 15.0 | 11 | |
| | | | 13.2 | | 0 811 404 060 | | | |
| | | | 26.4 | | 0 811 404 061 | | | |
| | | | 13.2 | | | | | |
| D05 | | 4600 | 13.2 | OBE | 0 811 404 800 | 16.0 | 26 | |
| | | | 26.4 | | 0 811 404 801 | | | |
| | | | 13.2 | | 0 811 404 802 | | | |
| | | | 26.4 | | 0 811 404 803 | | | |

1) At Δp= 500 psi per Flow Path (1000 psi Total Valve Pressure Drop)
 2) ATUS AKY 013/2 US (4.96)

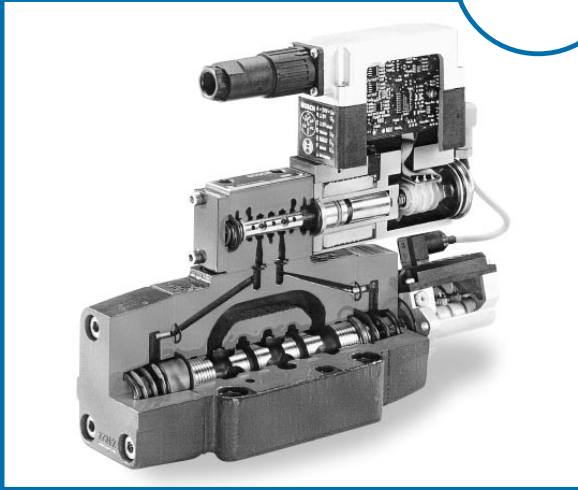
PILOT OPERATED SERVO SOLENOID VALVES



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

- Either amplifier card version or on-board electronics available
- Sizes in D05 (NG10), D07 (NG16), D08 (NG25) and D10 (NG32)

- Flow rates up to 530 GPM (2000 L/min)
- Up to 62 hZ frequency response
- Position feedback on mainstage
- Zero lap

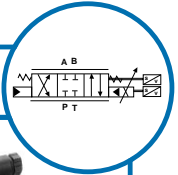


| PILOT OPERATED SERVO SOLENOID VALVES | | | | | | | | | |
|--------------------------------------|--------------|-----------------------|--------------------------------|---------------|----------|---------------|--------------|----------------------------|------------|
| Size | Spool Symbol | Pressure Rating (psi) | Rated Flow (gpm) ¹⁾ | Electronics | Piloting | Part Number | Weight (lbs) | Catalog Page ²⁾ | List Price |
| D05 HE | | 5075 ¹⁾ | 22.5 | 0 811 405 063 | EXT/EXT | 0 811 404 094 | 16.0 | 50 | |
| | | 3600 | 14.5 | OBE | INT/INT | 0 811 404 661 | 17.0 | 59 | |
| | | 3600 | 22.5 | OBE | INT/INT | 0 811 404 662 | 17.0 | 59 | |
| D07 | | 5075 ¹⁾ | 53 | 0 811 405 063 | EXT/EXT | 0 811 404 207 | 20.0 | 50 | |
| | | | 32 | OBE | EXT/EXT | 0 811 404 250 | 23.5 | 59 | |
| | | | 53 | OBE | EXT/EXT | 0 811 404 251 | 23.5 | 59 | |
| D08 | | 5075 | 98 | 0 811 405 063 | EXT/EXT | 0 811 404 405 | 39.6 | 50 | |
| | | | 98 | OBE | EXT/EXT | 0 811 404 430 | 40.6 | 59 | |

1) Maximum Pilot Pressure (X Port) = 3600 psi

2) ATUS AKY 013/2 US (4.96)

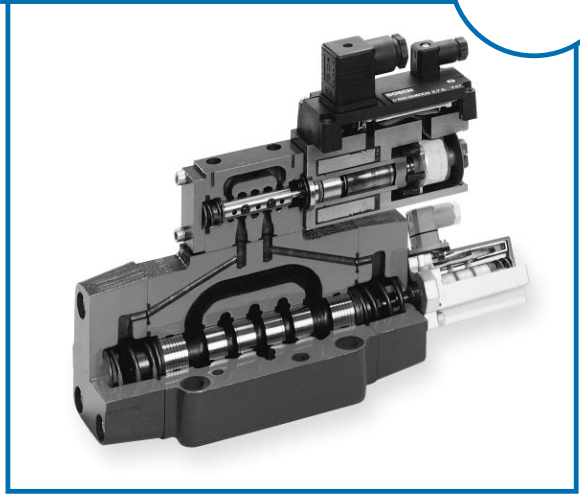
PILOT OPERATED PROPORTIONAL DIRECTIONAL VALVES



A servo solenoid pilot valve drives a main stage with 20% overlap, thereby providing open loop control for greater flow rates.

- Either amplifier card version or on-board electronics available
- Sizes in D05 (NG10), D07 (NG16), D08 (NG25) and D10 (NG32)

- 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

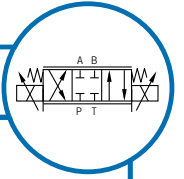


| PILOT OPERATED PROPORTIONAL DIRECTIONAL VALVES | | | | | | | | | |
|--|--------------|----------------------------|--------------------|-------------|--------------------|------------------------------|--------------|----------------------------|------------|
| Size | Spool Symbol | Pressure Rating (psi) | Nominal Flow (gpm) | Electronics | Piloting | Part Number | Weight (lbs) | Catalog Page ²⁾ | List Price |
| NG10 | | 5075 ¹⁾ | 80:80 80:50 | OBE | EXT/EXT EXT/EXT | 0811 404 700 0811 404 701 | 19.3 | 20 | |
| | | 3600 5075 ¹⁾ | 80:80 80:50 | | INT/INT EXT/EXT | 0811 404 707 0811 404 703 | | | |
| NG16 | | 5075 ¹⁾ | 180:180 180:120 | OBE | EXT/EXT EXT/EXT | 0811 404 305 0811 404 306 | 23.4 | 20 | |
| | | 5075 ¹⁾ | 180:180 180:120 | | EXT/EXT EXT/EXT | 0811 404 307 0811 404 308 | | | |
| NG25 | | 5075 ¹⁾ | 350:350 350:230 | OBE | EXT/EXT EXT/EXT | 0811 404 454 0811 404 455 | 40.0 | 20 | |
| | | 5075 ¹⁾ | 350:350 180:230 | | EXT/EXT EXT/EXT | 0811 404 456 0811 404 457 | | | |

1) Maximum Pilot Pressure (X Port) = 3600 psi

2) ATUS AKY 013/3 (1.97)

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
- With AC LVDT, on board electronics or without feedback

- D03 (NG6) and D05 (NG10) sizes
- Flow rates up to 21 gpm (80L/min) at 72.5 psi DP
- Up to 4570 psi (315 bar) operating pressure
- 2:1 flow curves available



PROPORTIONAL DIRECTIONAL & THROTTLE VALVES

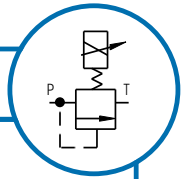
| Size | Spool Symbol | Pressure Rating (psi) | Nominal Flow (gpm) | Solenoid (A/W) | LVDT | Electronics | Part Number | Weight (lbs) | Catalog Page ⁴⁾ | List Price |
|-------------------|--------------|-----------------------|--------------------------------|-----------------|-------|--------------------------------|---|--------------|----------------------------|------------|
| D03 | | 4570 | 2.6 ² 5.3 9 | 2.7/25 | AC/AC | 0 811 405 098 0 811 405 103 | 0 811 403 100 0 811 403 101 0 811 403 126 | 4.8 | 47 | |
| D05 ¹⁾ | | 4570 | 21 ² | 2.7/25 | AC/AC | 0 811 405 099 0 811 405 104 | 0 811 403 001 | 14.5 | 51 | |
| D03 | | 4570 | 2 ² 4.75 9.25 | 2.5/25 | NONE | 0 811 405 080 0 811 405 106 | 0 811 404 123 0 811 404 115 0 811 404 114 | 5.7 | 72 | |
| | | | 2 ² 4.75 9.25 | | | | 0 811 405 080 0 811 405 106 | | | |
| D03 | | 4570 | 4.7 ³ 8.5 | 24 VDC/ 30 W | OBE | OBE | 0 811 404 140 0 811 404 141 | 8.6 | 88 | |
| | | | 4.7 ³ 8.5 | | | | 0 811 404 142 0 811 404 143 | | | |
| D05 | | 4570 | 10 ² 20 | 2.5/50 | NONE | 0 811 405 080 0 811 405 106 | 0 811 404 830 0 811 404 832 | 17.0 | 76 | |
| | | | 10 ² 20 | | | | 0 811 405 080 0 811 405 106 | | | |
| D05 | | 4570 | 13 ³ 21 | 24 V/ 50 VA | OBE | OBE | 0 811 404 770 0 811 404 771 | 19.5 | 92 | |
| | | | 13 ³ 21 | | | | 0 811 404 772 0 811 404 773 | | | |

1) With L Ports

2) 8 bar Δp per Flow Path3) 5 bar Δp per Flow Path

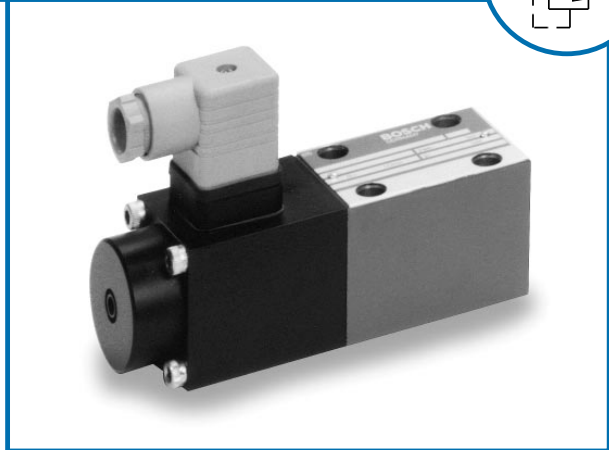
4) ATUS AKY 013/1 US (12.9€)

PROPORTIONAL PRESSURE RELIEF VALVES



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

- Relief and/or reducing functions available
- With AC/AC LVDT, on without feedback
- Sizes in D03 (NG6) and D05 (NG10)
- Flow rates up to 31.7 gpm
- Up to 4570 psi (315 bar) pressure range
- Reducing/relieving valve will go to 0 psi.



| PROPORTIONAL PRESSURE CONTROL VALVES | | | | | | | | | | |
|--------------------------------------|--------------------|--------------------|----------------------|----------------|-------|--------------------------------|--------------------------------|--------------|----------------------------|------------|
| Size | Function | Nominal Flow (gpm) | Pressure Range (psi) | Solenoid (A/W) | LVDT | Electronics | Part Number | Weight (lbs) | Catalog Page ¹⁾ | List Price |
| D03 | Relief | 0.26 0.4 max | 1160 | 800 mA | NONE | 0 811 405 081 | 0 811 402 018 | 4.2 | 8 | |
| | | | 2610 | 18 W | | 0 811 405 126 | 0 811 402 017 | | | |
| | | | 3625 | | | 0 811 405 144 | 0 811 402 019 | | | |
| | | | 4570 | | | | 0 811 402 016 | | | |
| D03 | Relief | 10.6 | 4570 | 800 mA 18 W | NONE | 0 811 405 081 0 811 405 144 | 0 811 402 043 | 4.8 | 11 | |
| D05 | Relief | 31.7 | 4570 | 800 mA 18 W | NONE | 0 811 405 081 0 811 405 144 | 0 811 402 110 | 14.3 | 14 | |
| D03 | Linear Relief | 0.26 0.4 max | 1160 | 2.5/25 | AC/AC | 0 811 405 095 | 0 811 402 023 | 5.0 | 25 | |
| | | | 2610 | | | 0 811 405 100 | 0 811 402 022 | | | |
| | | | 3625 | | | | 0 811 402 021 | | | |
| | | | 4570 | | | | 0 811 402 020 | | | |
| D05 | Relief | 31.7 | 2610 4570 | 3.7/50 | AC/AC | 0 811 405 097 0 811 405 102 | 0 811 402 100 0 811 402 101 | 21.0 | 28 | |
| D05 | Reducing | 31.7 | 2610 4570 | 3.7/50 | AC/AC | 0 811 405 097 0 811 405 102 | 0 811 402 150 0 811 402 151 | 21.0 | 29 | |
| D03 | Reducing/Relieving | 10.6 | 1090 | 2.5/25 | AC/AC | 0 811 405 096 | 0 811 402 050 | 5.3 | 36 | |
| | | | 2540 | | | 0 811 405 101 | 0 811 402 051 | | | |
| | | | 4500 | | | | 0 811 402 052 | | | |

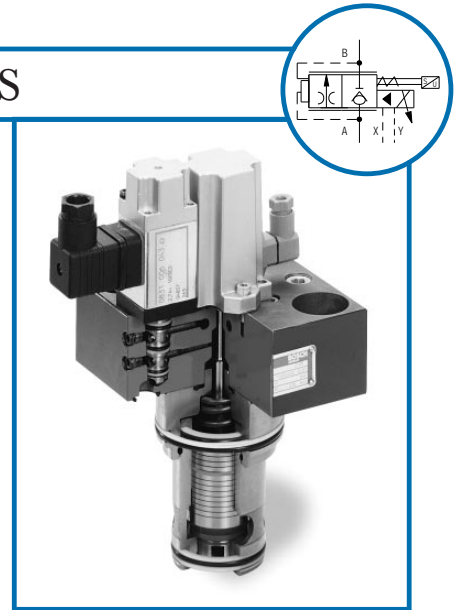
1) ATUS AKY 013/1 US (1.97)

PROPORTIONAL THROTTLE CARTRIDGES

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

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

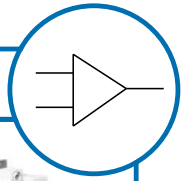
- Up to 264 gpm
- Repeatability less than 0.2%



| PROPORTIONAL THROTTLE CARTRIDGES | | | | | | | |
|----------------------------------|-----------------------|--------------------|---------------|---------------|--------------|----------------------------|------------|
| Size | Pressure Rating (psi) | Nominal Flow (gpm) | Electronics | Part Number | Weight (lbs) | Catalog Page ¹⁾ | List Price |
| NG25 | 4600 | 55 | 0 811 405 076 | 0 811 402 503 | 8.6 | 55 | |
| NG32 | 4600 | 85 | 0 811 405 074 | 0 811 402 602 | 11.0 | | |
| NG40 | 4600 | 132 | | 0 811 402 620 | 14.6 | | |
| NG50 | 4600 | 264 | | 0 811 402 633 | 24.5 | | |

1) ATUS AKY 013/3 (1.97)

AMPLIFIER CARDS



The following amplifier cards convert voltage or current commands into the appropriate current signals to operate the associated hydraulic valve. These cards usually require a power supply, command and sometimes an enabler as minimum of wiring. Some cards have added functionality such as ramps, set points, failing

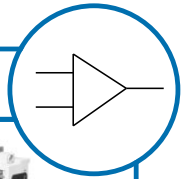
outputs, etc. The Amplifier Cards come in 3 forms: Euro-card (requires card holder), DIN Module (mounted on standard DIN Rail) and Active Plugs (mounts directly on the Solenoid). For further information, check the catalog listed under “Catalog Page.”



| AMPLIFIER CARDS | | | | | | |
|-----------------|---------------------------|-------|-------------------------|--------------|-------------------|------------|
| Part Number | Description | Ramps | Valve Type | Weight (lbs) | Catalog Page | List Price |
| 0 811 405 060 | PL6 Amplifier Card | No | NG6 Servo Solenoid | 0.6 | 41 ²⁾ | |
| 0 811 405 061 | PL10 Amplifier Card | No | NG10 Servo Solenoid | 0.6 | 41 ²⁾ | |
| 0 811 405 063 | 2 STV Amplifier Card | No | 2 Stage Servo Solenoid | 0.6 | 84 ²⁾ | |
| 0 811 405 073 | 2STV-RGC2 Amplifier Card | Yes | 2 Stage Prop. Dir. | 0.6 | 48 ³⁾ | |
| 0 811 405 076 | 2/2V Amplifier Card | No | Prop. Cartridge | 0.6 | 63 ³⁾ | |
| 0 811 405 074 | 2/2V-RGC1 Amplifier Card | Yes | Prop. Cartridge | 0.6 | 67 ³⁾ | |
| 0 811 405 098 | QV45 Amplifier Card | No | Prop. Throttle | 0.6 | 130 ¹⁾ | |
| 0 811 405 103 | QV45-RGC1 Amplifier Card | Yes | Prop. Throttle | 0.6 | 133 ¹⁾ | |
| 0 811 405 099 | QV60 Amplifier Card | No | Prop. Throttle | 0.6 | 130 ¹⁾ | |
| 0 811 405 104 | QV60-RGC1 Amplifier Card | Yes | Prop. Throttle | 0.6 | 133 ¹⁾ | |
| 0 811 405 080 | 2M45-2.5A Amplifier Card | Yes | NG6&10 Dir. w/o LVDT | 0.6 | 126 ¹⁾ | |
| 0 811 405 106 | 2M2.5-RGC2 Module | Yes | NG6&10 Dir. w/o LVDT | 0.6 | 120 ¹⁾ | |
| 0 811 405 081 | 1M45-0.8A Card | Yes | 800 mA/18 W Coil | 0.6 | 123 ¹⁾ | |
| 0 811 405 126 | 1M0.8-RGC1 Module | Yes | 800 mA/18 W Coil | 0.6 | 117 ¹⁾ | |
| 0 811 405 144 | AS0.8-V Active Plug | Yes | 800 mA/18 W Coil | 0.3 | 110 ¹⁾ | |
| 0 811 405 095 | PDL1 Amplifier Card | No | PDL Valve | 0.6 | 130 ¹⁾ | |
| 0 811 405 100 | PDL1 -RGC1 Amplifier Card | Yes | PDL Valve | 0.6 | 133 ¹⁾ | |
| 0 811 405 097 | PV60 Amplifier Card | No | Pressure Control w/LVDT | 0.6 | 130 ¹⁾ | |
| 0 811 405 102 | PV60-RGC1 Amplifier Card | Yes | Pressure Control w/LVDT | 0.6 | 133 ¹⁾ | |
| 0 811 405 096 | PV45 Amplifier Card | No | Pressure Reducing Valve | 0.6 | 130 ¹⁾ | |
| 0 811 405 101 | PV45-RGC1 Amplifier Card | Yes | Pressure Reducing Valve | 0.6 | 133 ¹⁾ | |
| 0 811 405 084 | PL6-PQ | No | PQ for NG6 Servo | 0.6 | 103 ⁴⁾ | |
| 0 811 405 085 | PL10-PQ | No | PQ for NG10 Servo | 0.6 | 103 ⁴⁾ | |
| 0 811 405 087 | 2STV-PQ | No | PQ for 2 Stage Servo | 0.6 | 103 ⁴⁾ | |
| 0 811 405 149 | PQ 1/2 2 Channel PQ Card | No | OBE Valve | 0.6 | 114 ⁴⁾ | |

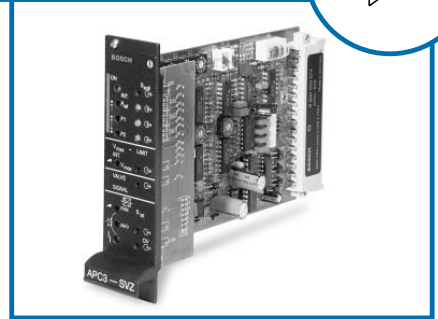
1) ATUS AKY 013/1 (1.97)
 2) ATUS AKY 013/2 (4.96)
 3) ATUS AKY 013/3 (1.97)
 4) HP/VHI - AKY 013/4 (1.95)

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 other cards

provide set point generation. These cards come in 2 forms, Euro-card (requires card holder) and DIN Module (mounts on standard DIN rail.)



| AUXILIARY CARDS | | | | |
|-----------------|---------------------------------|--------------|-----------------------------------|------------|
| Part Number | Auxiliary Card | Weight (lbs) | Catalog | List Price |
| B 830 303 574 | APC3-LVAR Position Control Card | 0.7 | HP/VHI - AKY 013/4 (1.95), P. 135 | |
| 9 536 235 000 | Servo Summing Card | 0.6 | HPUS - UBY 013/2 US (4.92) | |
| 0 811 405 093 | Setpoint Card | 0.6 | HP/VHI - AKY 013/4 (1.95), P.35 | |
| 0 811 405 108 | Setpoint Module with Ramp | 0.3 | HP/VHI - AKY 013/4 (1.95), P.54 | |
| 0 811 405 131 | Digital Position Control Card | 0.6 | HP/VHI - BEY 017/5 (3.95) | |
| 9 536 235 002 | Servo Current Converter | 0.5 | HPUS - UBY 013/90 (4.95) | |
| 0 811 405 139 | Position Control Module | 0.3 | HP/VHI - UBY 013/117 | |

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

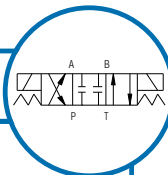
transducers. More information can be found in the catalog mentioned in the “catalog” page column.



| ACCESSORIES | | | | |
|---------------|--|--------------|-------------------|------------|
| Part Number | Description | Weight (lbs) | Catalog Page | List Price |
| 1 834 486 001 | Card Holder | 0.5 | 103 ²⁾ | |
| 1 817 218 004 | CH20 2 Slot Card Rack | 2.6 | 14 ¹⁾ | |
| 1 817 218 006 | CH20 4 Slot Card Rack | 4.4 | 16 ¹⁾ | |
| 1 817 218 007 | PS01 + CH20 Powersupply & 2 Slot Rack | 8.2 | 26 ¹⁾ | |
| B 830 303 656 | Power Supply 24V 4A (DIN Rail) | 6.6 | ³⁾ | |
| 1 837 331 003 | Capacitor | 0.4 | 19 ¹⁾ | |
| 1 834 482 022 | Plastic Connector for OBE | 0.2 | 99 ²⁾ | |
| 9 536 230 054 | MS Type Connector for OBE | 0.2 | 99 ²⁾ | |
| 1 834 484 040 | Connector AC/AC LVDT (3 PIN) | 0.2 | 8 ¹⁾ | |
| 1 834 484 061 | Connector DC/DC LVDT | 0.1 | 102 ²⁾ | |
| 1 834 484 063 | Connector DC/DC LVDT | 0.1 | 102 ²⁾ | |
| 1 834 484 141 | Connector for Pressure Transducer IP40 | 0.2 | 8 ¹⁾ | |
| 1 834 484 140 | Connector for Pressure Transducer IP67 | 0.2 | 8 ¹⁾ | |
| 0 811 405 519 | 3045 psi Pressure Transducer | 0.5 | - | |
| 0 811 405 520 | 5075 psi Pressure Transducer | 0.5 | - | |

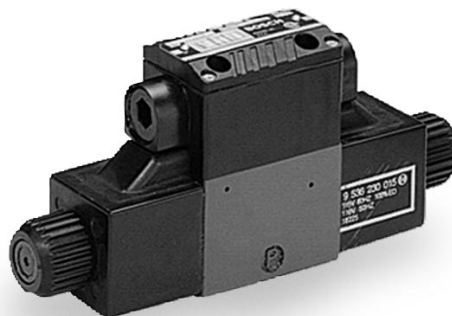
1) HP/VHI - AKY 013/4 (1.95) 2) ATUS AKY 013/2 US (4.96) 3) AT/VHP BEY 013/45 (9.96)

DIRECTIONAL VALVES - D03 (NG6)



The D03 (NG6) size directional control valves are available in direct solenoid operated, pneumatic operated, manual (lever) operated, 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. See catalog for more information.

In addition, we offer a wide range of solenoid voltages with both DIN style, spade lead wire and wiring box type connections. Also our valves are CSA approved and are available with manual overrides.



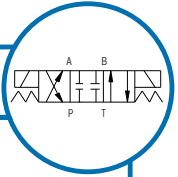
| DIRECTIONAL VALVES-D03 (NG6) | | | | | | | | |
|------------------------------|---------------------------|------------|-------------------------------|---------------------|-------------------------|----------------------|----------------------|------------|
| Part Number | Description | Spool Code | Max. Flow ¹⁾ (gpm) | Max. Pressure (psi) | Solenoid Voltage (V/Hz) | Solenoid Connections | Approx. Weight (lbs) | List Price |
| 9 810 231 077 | 081WV06P1V1012KA115/60D51 | 012 | 4 | 4600 | 115/60 | Wiring Box | 3.1 | |
| 9 810 231 004 | 081WV06P1V1001WS115/60D51 | 001 | 23 | 4600 | 115/60 | DIN 43650 | 3.8 | |
| 9 810 231 005 | 081WV06P1V1002WS115/60D51 | 002 | 3 | 4600 | 115/60 | DIN 43650 | 3.8 | |
| 9 810 231 006 | 081WV06P1V1004WS115/60D51 | 004 | 3 | 4600 | 115/60 | DIN 43650 | 3.8 | |
| 9 810 231 009 | 081WV06P1V1010WS115/60D51 | 010 | 5 | 4600 | 115/60 | DIN 43650 | 3.1 | |
| 9 810 231 011 | 081WV06P1V1012WS115/60D51 | 012 | 5 | 4600 | 115/60 | DIN 43650 | 3.1 | |
| 9 810 231 015 | 081WV06P1V1020WS115/60D51 | 020 | 23 | 4600 | 115/60 | DIN 43650 | 3.1 | |
| 9 810 231 070 | 081WV06P1V1001KA115/60D51 | 001 | 23 | 4600 | 115/60 | Wiring Box | 3.8 | |
| 9 810 231 071 | 081WV06P1V1002KA115/60D51 | 002 | 3 | 4600 | 115/60 | Wiring Box | 3.8 | |
| 9 810 231 072 | 081WV06P1V1004KA115/60D51 | 004 | 3 | 4600 | 115/60 | Wiring Box | 3.8 | |
| 9 810 231 136 | 081WV06P1V1001KL115/60D51 | 001 | 23 | 4600 | 115/60 | W/B + lights | 3.8 | |
| 9 810 231 138 | 081WV06P1V1004KL115/60D51 | 004 | 3 | 4600 | 115/60 | W/B + lights | 3.8 | |
| 9 810 231 270 | 081WV06P1V1004KE115/60D51 | 004 | 3 | 4600 | 115/60 | W/B+QC+lights | 3.8 | |
| 9 810 231 400 | 081WV06P1V1004WS012/00D51 | 004 | 11 | 4600 | 12 VDC | DIN 43650 | 4.2 | |
| 9 810 231 431 | 081WV06P1V1001WS024/00D51 | 001 | 23 | 4600 | 24 VDC | DIN 43650 | 4.2 | |
| 9 810 231 433 | 081WV06P1V1004WS024/00D51 | 004 | 11 | 4600 | 24 VDC | DIN 43650 | 4.2 | |
| 9 810 231 436 | 081WV06P1V1010WS024/00D51 | 010 | 23 | 4600 | 24 VDC | DIN 43650 | 3.3 | |
| 9 810 231 438 | 081WV06P1V1012WS024/00D51 | 012 | 23 | 4600 | 24 VDC | DIN 43650 | 3.3 | |
| 9 810 231 441 | 081WV06P1V1018WS024/00D51 | 018 | 23 | 4600 | 24 VDC | DIN 43650 | 4.2 | |
| 9 810 231398 | 081WV06P1V1001WS012/00D51 | 001 | 23 | 4600 | 12 VDC | DIN 43650 | 3.8 | |
| 9 810 231399 | 081WV06P1V1002WS012/00D51 | 002 | 3 | 4600 | 12 VDC | DIN 43650 | 3.8 | |
| 9 810 231454 | 081WV06P1V1068WS024/00D51 | 068 | | 4600 | 24 VDC | DIN 43650 | 3.1 | |
| 9 810 231081 | 081WV06P1V1020KA115/60D51 | 020 | 23 | 4600 | 115/60 | Wiring Box | 3.1 | |
| 9 810 231137 | 081WV06P1V1002KL115/60D51 | 002 | 3 | 4600 | 115/60 | W/B + lights | 3.8 | |
| 9 810 231143 | 081WV06P1V1012KL115/60D51 | 012 | 5 | 4600 | 115/60 | W/B + lights | 3.1 | |
| 9 810 231147 | 081WV06P1V1020KL115/60D51 | 020 | 23 | 4600 | 115/60 | W/B + lights | 3.1 | |
| 9 810 231268 | 081WV06P1V1001KE115/60D51 | 001 | 23 | 4600 | 115/60 | W/B+QC+ lights | 3.8 | |
| 9 810 231275 | 081WV06P1V1012KE115/60D51 | 012 | 5 | 4600 | 115/60 | W/B+QC+ lights | 3.1 | |
| 9 810 231279 | 081WV06P1V1020KE115/60D51 | 020 | 23 | 4600 | 115/60 | W/B+QC+ lights | 3.8 | |
| 9 810 231367 | 081WV06P1V1012KM115/60D51 | 012 | 5 | 4600 | 115/60 | W/B+QC+ lights | 3.1 | |
| 0 810 091383 | 081WV06P1V700200 | 002 | 3 | 4600 | N/A | Lever Operated | 4.4 | |

1) At 4600 psi

AC Coils: Dual Frequency

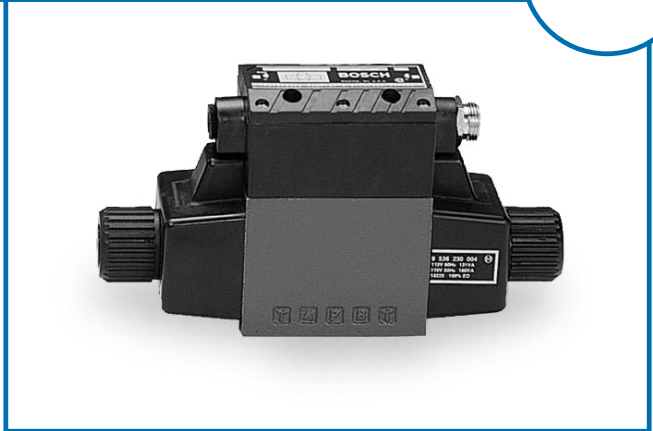
Catalog #: 9 535 233 717

DIRECTIONAL VALVES - D05 (NG10)



The D05 (NG 10) size directional control valves are available in direct solenoid operated, pneumatic operated, manual (lever) operated, 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. See catalog for added information.

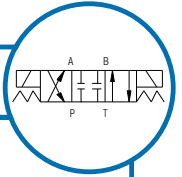
In addition, we offer a wide range of solenoid voltages with both DIN style and wiring box type connections. For applications requiring controlled spool shift over time we offer a “slow shift” option with both fixed and adjustable switching times. Also our valves are CSA approved and are available with manual overrides.



| DIRECTIONAL VALVES-D05 (NG10) | | | | | | | | |
|-------------------------------|--------------------------------|------------|-------------------------------|---------------------|-------------------------|----------------------|----------------------|------------|
| Part Number | Description | Spool Code | Max. Flow ¹⁾ (gpm) | Max. Pressure (psi) | Solenoid Voltage (V/Hz) | Solenoid Connections | Approx. Weight (lbs) | List Price |
| 9 810 232 004 | 081WV10P1V1001WS115/60 D51 | 001 | 21 | 4600 | 115/60 | DIN 43650 | 14.8 | |
| 9 810 232 006 | 081WV10P1V1004WS115/60 D51 | 004 | 21 | 4600 | 115/60 | DIN 43650 | 14.8 | |
| 9 810 232 011 | 081WV10P1V1012WS115/60 D51 | 012 | 34 | 4600 | 115/60 | DIN 43650 | 12.3 | |
| 9 810 232 070 | 081WV10P1V1001KA115/60 D51 | 001 | 4 | 4600 | 115/60 | Wiring Box | 14.8 | |
| 9 810 232 071 | 081WV10P1V1002KA115/60 D51/11 | 002 | 14 | 4600 | 115/60 | Wiring Box | 14.8 | |
| 9 810 232 072 | 081WV10P1V1004KA115/60 D51 | 004 | 21 | 4600 | 115/60 | Wiring Box | 14.8 | |
| 9 810 232 077 | 081WV10P1V1010KA115/60 D51 | 010 | 34 | 4600 | 115/60 | Wiring Box | 12.3 | |
| 9 810 232 080 | 081WV10P1V1018KA115/60 D51 | 018 | 14 | 4600 | 115/60 | Wiring Box | 14.8 | |
| 9 810 232 081 | 081WV10P1V1011KA115/60 D51 | 011 | 34 | 4600 | 115/60 | Wiring Box | 12.3 | |
| 9 810 232 136 | 081WV10P1V1001KL115/60 D51 | 001 | 4 | 4600 | 115/60 | W/B + lights | 14.8 | |
| 9 810 232 137 | 081WV10P1V1002KL115/60 D51 | 002 | 14 | 4600 | 115/60 | W/B + lights | 14.8 | |
| 9 810 232 138 | 081WV10P1V1004KL115/60 D51 | 004 | 21 | 4600 | 115/60 | W/B + lights | 14.8 | |
| 9 810 232 143 | 081WV10P1V1012KL115/60 D51 | 012 | 34 | 4600 | 115/60 | W/B + lights | 12.3 | |
| 9 810 232 147 | 081WV10P1V1020KL115/60 D51 | 020 | 34 | 4600 | 115/60 | W/B + lights | 12.3 | |
| 9 810 232 268 | 081WV10P1V1001KE115/60 D51 | 001 | 21 | 4600 | 115/60 | W/B+Q.C.+lights | 14.8 | |
| 9 810 232 270 | 081WV10P1V1004KE115/60 D51 | 004 | 21 | 4600 | 115/60 | W/B+Q.C.+lights | 14.8 | |
| 9 810 232 279 | 081WV10P1V1020KE115/60 D51 | 020 | 34 | 4600 | 115/60 | W/B+Q.C.+lights | 12.3 | |
| 9 810 232 399 | 081WV10P1V1002WS012/00 D51 | 002 | 14 | 4600 | 12 VDC | DIN 43650 | 17 | |
| 9 810 232 431 | 081WV10P1V1001WS024/00 D51 | 001 | 21 | 4600 | 24 VDC | DIN 43650 | 17 | |
| 9 810 232 433 | 081WV10P1V1004WS024/00 D51 | 004 | 21 | 4600 | 24 VDC | DIN 43650 | 17 | |
| 9 810 232 437 | 081WV10P1V1011WS024/00 D51 | 011 | 34 | 4600 | 24 VDC | DIN 43650 | 13.4 | |
| 9 810 232 438 | 081WV10P1V1012WS024/00 D51 | 012 | 34 | 4600 | 24 VDC | DIN 43650 | 13.4 | |
| 9 810 232 441 | 081WV10P1V1018WS024/00 D51 | 018 | 14 | 4600 | 24 VDC | DIN 43650 | 17 | |
| 9 810 232 459 | 081WV10P1V1091WS024/00 D51 | 091 | 14 | 4600 | 24 VDC | DIN 43650 | 17 | |
| 9 810 232 480 | 081WV10P1V1002TWS096/00 D51/11 | 002 | 14 | 4600 | 96 VDC | DIN 43650 | 17 | |
| 9 810 232 069 | 081WV10P1V1000KA115/60D51 | 000 | 2 | 4600 | 115/60 | Wiring Box | 14.8 | |

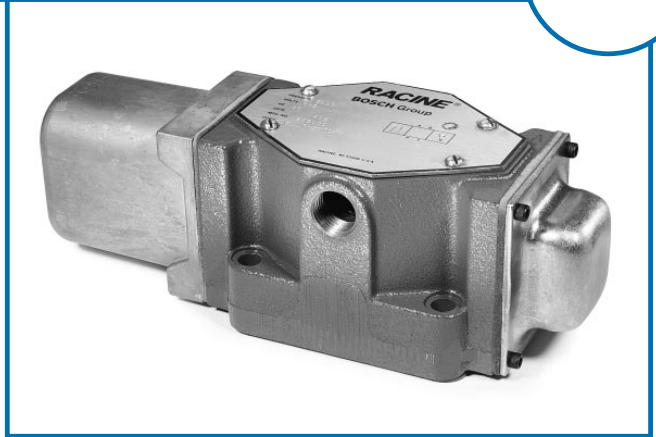
1) At 4600 psi

DIRECTIONAL VALVES - 1/2"



The 1/2" size directional control valves are available in the direct solenoid operated configuration. These valves are rated for 3000 psi continuous

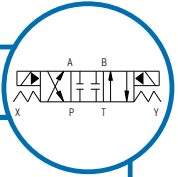
operating pressures. In addition, we offer a wide range of solenoid voltages with wiring box type connections.



| PILOT OPERATED DIRECTIONAL VALVES - 1/2" | | | | | | | | |
|--|----------------------|------------|-----------------|---------------------|-------------------------|----------------------|----------------------|------------|
| Part Number | Description | Spool Code | Max. Flow (gpm) | Max. Pressure (psi) | Solenoid Voltage (V/Hz) | Solenoid Connections | Approx. Weight (lbs) | List Price |
| 653 000 | FD4 DSHS 104S 115/60 | 001 | 32 | 3000 | 115/60 | Wiring Box | 14.5 | |
| 653 025 | FD4 DSHS 304S 115/60 | 002 | 20 | 3000 | 115/60 | Wiring Box | 14.5 | |
| 653 010 | FD4 DTHS 104S 115/60 | 012 | 32 | 3000 | 115/60 | Wiring Box | 13.2 | |
| 653 007 | FD4 DNHS 104S 115/60 | 060 | 23 | 3000 | 115/60 | Wiring Box | 14.5 | |

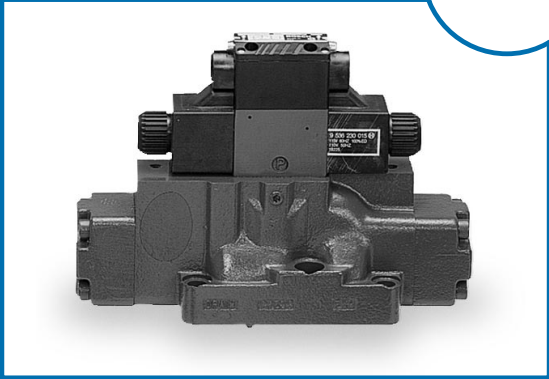
Non-Standard NFPA Mount,
Solenoid Connections (Wiring Cavity 1/2" NPT)
Catalog #: 9 535 233 116

PILOT OPERATED DIRECTIONAL VALVES - D08 (NG25)



The D08 (NG25) size directional control valve is available as a pilot operated type valve. This main stage valve utilizes the D03 (NG6) valve as the pilot valve controlling pilot oil into and out of each end of the main stage spool. This valve is rated for 3000 psi and is available with several spool options. We offer a wide range of

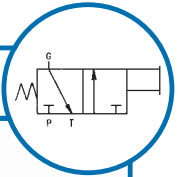
solenoid voltages along with both wiring box and DIN style connectors. All of our pilot valves are CSA approved and in addition our coils are offered in dual frequency design (50 or 60 Hz). Optional load check in P-Port and sandwich mounted pilot flow controls are available for control of the main spool switching time.



| PILOT OPERATED DIRECTIONAL VALVES - D08 (NG25) | | | | | | | | | |
|--|-------------------------------|------------|-----------------|---------------------|-------------------------|----------------------|--------------|----------------------|------------|
| Part Number | Description | Spool Code | Max. Flow (gpm) | Max. Pressure (psi) | Solenoid Voltage (V/Hz) | Solenoid Connections | Pilot/ Drain | Approx. Weight (lbs) | List Price |
| 9 810 235 505 | 081WV25P1V301PTKA115/60D51/55 | 001 | 75 | 3000 | 115/60 | Wiring Box | INT/INT | 27.3 | |
| 9 810 235 507 | 081WV25P1V302PYKA115/60D51/55 | 002 | 75 | 3000 | 115/60 | Wiring Box | INT/EXT | 27.3 | |
| 9 810 235 508 | 081WV25P1V304PTKA115/60D51/55 | 004 | 75 | 3000 | 115/60 | Wiring Box | INT/INT | 27.3 | |
| 9 810 235 512 | 081WV25P1V310PTKA115/60D51/55 | 010 | 75 | 3000 | 115/60 | Wiring Box | INT/INT | 27.3 | |
| 9 810 235 544 | 081WV25P1V304PTKL115/60D51/55 | 004 | 75 | 3000 | 115/60 | Wiring Box | INT/INT | 27.3 | |
| 9 810 235 547 | 081WV25P1V301PTKL115/60D51/55 | 001 | 75 | 3000 | 115/60 | W. B. + Lights | INT/INT | 27.3 | |
| 9 810 235 553 | 081WV25P1V301PYKA115/60D51/55 | 001 | 75 | 3000 | 115/60 | Wiring Box | INT/EXT | 27.3 | |

Catalog #: 9 535 233 717

GAGE ISOLATORS/3-WAY VALVES



Pressure Rating:

- 5000 psi gage and pressure ports
- 3000 psi tank port
- 3000 psi on all ports of stackable valves

Orifice Size:

- 0.020 in. Gage Isolator
- 0.025 in. 3-way valve

Detent: A detented version of the valve is available. The button must be depressed and turned to engage the detent.

Temperature: Under normal conditions of continuous operation fluid temperature should not exceed 180°F (82°C). In no instance, should temperature exceed 200°F (93°C). Gage isolators are used to isolate the pressure gage from the circuit to prolong its accuracy and life. A 0.020 inch orifice is placed in the gage port to act as a snubber and prevent shock damage to the gage. The optional three-way valve does not have a snubber and should only be used with gages that have snubber built in or are liquid filled.

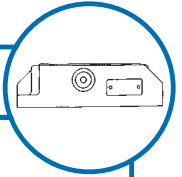


| GAGE ISOLATORS/3-WAY VALVES | | | | | | |
|-----------------------------|---------------|---------------------|------------------|-----------|----------------|------------|
| Part Number | Description | Max. Pressure (psi) | Port Arrangement | Port Size | Approx. Weight | List Price |
| 651 204 | FD6 STKT 102S | 5000 | 90° Ports | 1/4" NPT | 2 lbs, 10 oz | |
| 651 216 | FD3 STKT 102S | 5000 | 90° Ports | 1/4" NPT | 2 lbs, 10 oz | |
| 651 314 | FD6 STKD 102S | 5000 | 180° Ports | 1/4" NPT | 2 lbs, 10 oz | |
| 987 635 | FD6 STKD 151S | 5000 | 180° Ports | #6 SAE | 2 lbs, 10 oz | |
| 987 578 | FD6 STKT 151S | 5000 | 90° Ports | #6 SAE | 2 lbs, 10 oz | |

SUBPLATES

Our ductile iron subplates are available with Both SAE and NPT ports. All valve sizes from the D03 to the D08 directional valve are

offered. Side ported and bottom ported valves are both available with pressure ratings of 4600 psi.



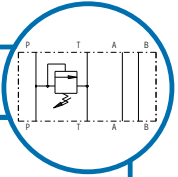
| SUBPLATES | | | | |
|---------------|------------------|------------|---------------|------------|
| Part Number | Mounting Pattern | Port Size | Port Position | List Price |
| 9 000 010 146 | D03 (NG6) | 3/8" NPT | Bottom | |
| 9 000 010 144 | D03 (NG6) | #6 SAE | Bottom | |
| 9 000 010 140 | D03 (NG6) | #8 SAE | Bottom | |
| 9 000 010 145 | D03 (NG6) | 3/8" NPT | Side | |
| 9 000 010 143 | D03 (NG6) | #6 SAE | Side | |
| 9 000 010 141 | D03 (NG6) | #8 SAE | Side | |
| 9 000 010 172 | D05 (NG10) | 1/2" NPT | Bottom | |
| 9 000 010 181 | D05 (NG10) | 3/4" NPT | Bottom | |
| 9 000 010 183 | D05 (NG10) | #12 SAE | Bottom | |
| 9 000 010 164 | D05 (NG10) | 1/2" NPT | Side | |
| 9 000 010 166 | D05 (NG10) | 3/4" NPT | Side | |
| 9 000 010 165 | D05 (NG10) | #8 SAE | Side | |
| 9 000 010 175 | D05 (NG10) | #12 SAE | Side | |
| 9 000 010 217 | D08 (NG25) | 1 1/4" NPT | Bottom | |
| 9 000 010 218 | D08 (NG25) | 1 1/2" NPT | Bottom | |
| 9 000 010 220 | D08 (NG25) | #20 SAE | Bottom | |
| 9 000 010 221 | D08 (NG25) | #24 SAE | Bottom | |

Catalog #: 9 535 233 717

D03 MODULAR VALVES

The D03 (NG6) modular valves are provided with standard NFPA and ISO mounting. These are CETOP standard designed valves supplied in steel bodies. The pressure rating of these valves is 4600 psi

with flow ratings to 13.2 - 158 GPM. Modules are offered as pressure relief, pressure reducing relieving, flow control, and check valve designs. All valves are supplied with viton seals as standard.



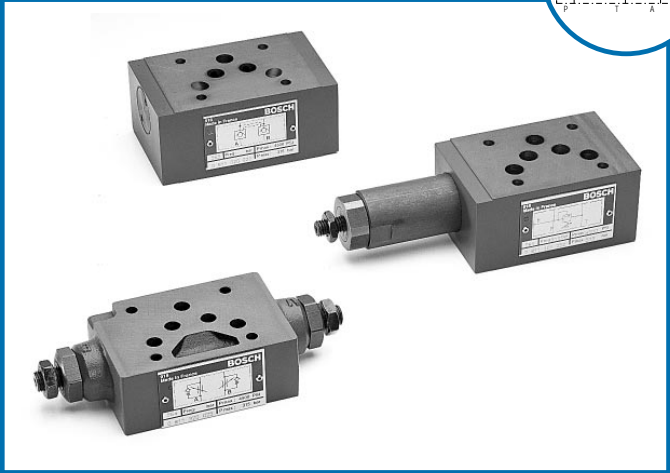
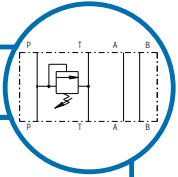
| D03 MODULAR VALVES | | | | | | |
|--------------------|----------------------------|-----------------|--------------------------|----------------------|----------------------|------------|
| Part Number | Description | Max. Flow (gpm) | Max./Min. Pressure (psi) | Valve Thickness (in) | Approx. Weight (lbs) | List Price |
| 9 810 161 177 | FE1 SEAE M01S 50 | 13.2 | 2300 | 1.57 | 3 | |
| 9 810 161 178 | FE1 SEDH M01S 50 | 13.2 | 4500 | 1.57 | 3 | |
| 9 810 161 186 | FE1 SEDH M01B 50 | 13.2 | 4500 | 1.57 | 3 | |
| 9 810 161 193 | FE1 SBAE M01AB 40 | 13.2 | 2300 | 1.57 | 3.9 | |
| 9 810 161 153 | FE3 SBPC M01S 50 | 15.8 | 45/430 | 1.96 | 3.3 | |
| 9 810 161 154 | FE3 SBPD M01S 50 | 15.8 | 60/1160 | 1.96 | 3.3 | |
| 9 810 161 155 | FE3 SBDF M01S 50 | 15.8 | 725/2300 | 1.96 | 3.3 | |
| 9 810 161 156 | FE3 SBDH M01S 50 | 15.8 | 725/3600 | 1.96 | 3.3 | |
| 9 810 161 158 | FE3 SBPD M01S 50 | 15.8 | 60/1160 | 1.96 | 3.3 | |
| 9 810 161 162 | FE3 SBPD M01BS 50 | 15.8 | 60/1160 | 1.96 | 3.3 | |
| 9 810 161 173 | Check Valve Dir on P 7 PSI | 15.8 | 4600 | 1.96 | 2 | |
| 9 810 161 174 | Check Valve Dir on T 22PSI | 15.8 | 4600 | 1.96 | 2 | |
| 9 810 161 169 | FB1 PDHM 101A 50 | 15.8 | 4600 | 1.96 | 2.9 | |
| 9 810 161 171 | FB1 PDHM 101N 50 | 15.8 | 4600 | 1.96 | 2.9 | |
| 9 810 161 089 | FF1 SHMH 01H 50 | 15.8 | 4600 | 1.96 | 3.3 | |

Catalog #: 9 535 233 167

D05 MODULAR VALVES

The D05 (NG10) modular valves are provided with standard NFPA and ISO mounting. These are CETOP standard designed valves supplied in steel bodies. The pressure rating of these valves

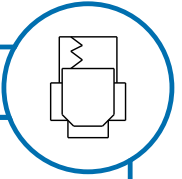
is 4600 psi with flow ratings to 26 GPM. Modules are offered as pressure relief, pressure reducing relieving, flow control, and check valve designs. All valves are supplied with viton seals as standard.



| D05 MODULAR VALVES | | | | | | |
|--------------------|-----------------------------|---------------------|----------------------|-----------------|----------------------|------------|
| Part Number | Description | Max. Pressure (psi) | Pressure Range (psi) | Max. Flow (gpm) | Approx. Weight (lbs) | List Price |
| 0 811 000 025 | CHK VLV DIRECT ON P 7PSI | 4600 | - | 26 | 4.0 | |
| 0 811 020 025 | CHK VLV PILOT 5.5:1 A | 4600 | - | 26 | 6.6 | |
| 0 811 020 027 | P.O. CHECK MODULE DBLE | 4600 | - | 26 | 6.6 | |
| 0 811 101 210 | REL VLV PILOT STEM P-T | 4600 | 100-1200 | 26 | 5.7 | |
| 0 811 101 211 | REL VLV DIR STEM P-T | 4600 | 100-2300 | 26 | 5.7 | |
| 0 811 101 212 | REL VLV DIR STEM P-T | 4600 | 100-4600 | 26 | 5.7 | |
| 0 811 101 257 | REL VLV DIR STEM A-T | 4600 | 100-4600 | 26 | 6.4 | |
| 0 811 101 271 | REL VLV DIR STEM X | 4600 | 100-2300 | 26 | 7.7 | |
| 0 811 145 116 | PRE RED VLV STEM P | 1740 | 60-1200 | 26 | 6.0 | |
| 0 811 145 117 | PRE RED VLV STEM P | 4600 | 115-2300 | 26 | 6.0 | |
| 0 811 145 118 | PRE RED VLV STEM P | 4600 | 115-4600 | 26 | 6.0 | |
| 0 811 145 124 | PR RED VLV STEM A W/CK | 1740 | 60-1200 | 26 | 6.0 | |
| 0 811 145 131 | PR RED VLV STEM B W/CK | 1740 | 60-430 | 26 | 6.0 | |
| 0 811 145 132 | PR RED VLV STEM B W/CK | 1740 | 60-1200 | 26 | 6.0 | |
| 0 811 320 025 | NG10 MODULAR THROTTLE CHECK | 4600 | - | 26 | 4.4 | |

Catalog #: 9 535 233 173

CARTRIDGE VALVE INSERTS



The cartridge valve is designed and inserts into a manifold. These valves are offered with or without a damping nose, 2 different area ratios, interchangeable springs for varying cracking pressures, sizes 16 to

50 mm, and a wide variety of covers for implementation as a check valve, directional, flow control, etc. These valves can be combined with proportional pilot valves for proportional control.



| CARTRIDGE VALVE INSERTS | | | | | | | |
|-------------------------|------|---------------------------|---------|-----------------|-----------------------------|----------------------|------------|
| Part Number | Size | Description | Spring | Max. Flow (gpm) | Max. Pressure A, B, F (psi) | Approx. Weight (lbs) | List Price |
| 1 818 509 244 | NG16 | C.V.1:1 | 0.3 Bar | 53 | 4600 | 0.44 | |
| 1 818 509 174 | NG16 | C.V.1:1.6 | 1 Bar | 53 | 4600 | 0.44 | |
| 1 818 509 175 | NG16 | C.V.1:1.6 | 4 Bar | 53 | 4600 | 0.44 | |
| 1 818 509 246 | NG16 | C.V.1:1 | 4 Bar | 53 | 4600 | 0.44 | |
| 1 818 509 243 | NG16 | C.V.1:16 ¹⁾ | 1 Bar | 53 | 4600 | 0.44 | |
| 1 818 509 245 | NG16 | C.V.1:16 ¹⁾ | 4 Bar | 53 | 4600 | 0.44 | |
| 1 818 509 301 | NG25 | C.V.1:1 | 1 Bar | 116 | 4600 | 0.88 | |
| 1 818 509 302 | NG25 | C.V.1:1 | 1 Bar | 116 | 4600 | 0.88 | |
| 1 818 509 417 | NG25 | C.V.1:1 | 8 Bar | 116 | 4600 | 0.88 | |
| 1 818 509 295 | NG25 | C.V.1:1 | 1 Bar | 116 | 4600 | 0.88 | |
| 1 818 509 292 | NG25 | C.V. Check | 1 Bar | 116 | 4600 | 0.88 | |
| 1 818 509 224 | NG32 | C.V.1:16 | 0.3 Bar | 162 | 4600 | 2.0 | |
| 1 818 509 226 | NG32 | C.V.1:16 | 4 Bar | 162 | 4600 | 2.0 | |
| 1 818 509 225 | NG32 | C.V.1:16 | 1 Bar | 162 | 4600 | 2.0 | |
| 1 818 509 234 | NG32 | C.V. Relief ²⁾ | 3 Bar | 162 | 4600 | 2.0 | |
| 1 818 509 207 | NG40 | C.V.1:16 | 1 Bar | 317 | 4600 | 4.0 | |
| 1 818 509 203 | NG40 | C.V. Check | 0.3 Bar | 317 | 4600 | 4.0 | |
| 1 818 509 348 | NG50 | C.V.1:16 | 0.3 Bar | 396 | 4600 | 7.0 | |

1) with metering notches

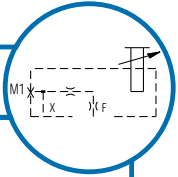
2) with 1mm orifice

Catalog #: 9 535 233 175

CARTRIDGE VALVE COVERS

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

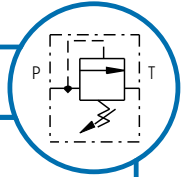
These covers are offered with built in orifice capabilities to control the switching time of the main cartridge. The mounting on the valve cover is a standard NFPA D03 for mounting of any standard pilot valve.



| CARTRIDGE VALVE COVERS | | | | | |
|------------------------|---------------|----------------------|-----------------------------|----------------------|------------|
| Size | Part Number | Description | Max. Pressure A, B, F (psi) | Approx. Weight (lbs) | List Price |
| NG40 | 1 815 500 268 | COVER REMOTE PILOT | 4600 | 10.78 | |
| NG40 | 1 815 500 270 | COVER DIRECT/CONTROL | 4600 | 10.78 | |
| NG32 | 1 815 500 271 | COVER CHECK VALVE | 4600 | 5.5 | |
| NG32 | 1 815 500 272 | COVER REMOTE PILOT | 4600 | 5.5 | |
| NG32 | 1 815 500 274 | COVER DIRECT/CONTROL | 4600 | 5.5 | |
| NG16 | 1 815 500 276 | COVER REMOTE PILOT | 4600 | 2.0 | |
| NG16 | 1 815 500 277 | COVER PRESS VALVES | 4600 | 2.0 | |
| NG16 | 1 815 500 278 | COVER DIRECT/CONTROL | 4600 | 2.0 | |
| NG25 | 1 815 500 292 | COVER CHECK VALVE | 4600 | 3.08 | |
| NG25 | 1 815 500 293 | COVER REMOTE PILOT | 4600 | 3.08 | |
| NG25 | 1 815 500 294 | COVER PRESS/VALVES | 4600 | 3.08 | |
| NG25 | 1 815 500 295 | COVER DIRECT/CONTROL | 4600 | 3.08 | |
| NG32 | 1 815 500 478 | COVER W/SHUTTLE NGS | 4600 | 10.08 | |

Bolt Kits included with Covers
 Catalog #: 9 535 233 175

PANEL MOUNTED RELIEF VALVES



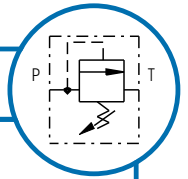
This pressure relief valve is designed to be panel mounted directly into a operators panel. This valve is rated up to 5000 psi with flow rates of 6 gpm. Standard valve ports are NPT.



| PANEL MOUNTED RELIEF VALVES | | | | | | |
|-----------------------------|----------------|----------------------|----------|----------------------|-----------|------------|
| Part Number | Description | Pressure Range (psi) | Max Flow | Approx. Weight (lbs) | Port Size | List Price |
| 977 834 | FE1 SBAD CO 2S | 100-1000 | 200 CIPM | 4.5 | 1/4" NPT | |
| 977 835 | FE1 SBAH CO 2S | 100-3000 | 200 CIPM | 4.5 | 1/4" NPT | |
| 977 880 | FE1 SBAK CO 2S | 100-5000 | 200 CIPM | 4.5 | 1/4" NPT | |
| 977 638 | FE1 SBAH CO 2A | 100-3000 | 6 GPM | 4.5 | 1/4" NPT | |
| 977 676 | FE1 SBAK CO 2A | 100-5000 | 6 GPM | 4.5 | 1/4" NPT | |

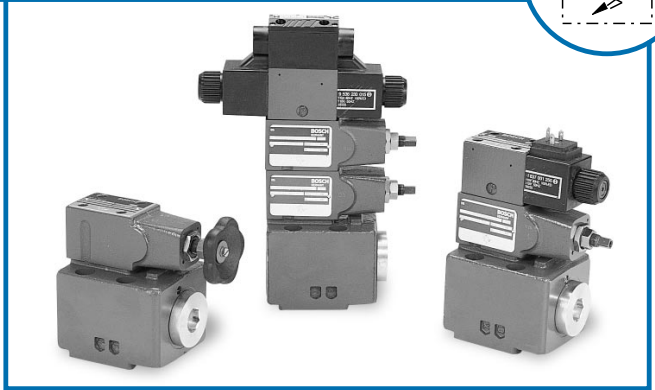
Catalog #: 9 535 233 718

SUBPLATE MOUNTED RELIEF VALVES



This pressure relief valve is offered as a subplate mounted valve to be mounted on a standard NFPA D05 and D08 mounting pattern. This valve has a pressure rating of 4600 psi and is available with

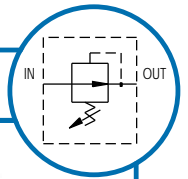
standard screw adjustment or lock-able keyknob and is offered in both direct and pilot operated design. This valve is also available with the solenoid unloading feature with both AC and DC coils.



| SUBPLATE MOUNTED RELIEF VALVES | | | | | | |
|--------------------------------|--------------------------|----------------------|---------|-------|----------------------|------------|
| Part Number | Description | Pressure Range (psi) | Voltage | Size | Weight Approx. (lbs) | List Price |
| 9 811 230 007 | 081DV10P109V513K | 100-4600 | NA | NG-10 | 19 | |
| 9 811 230 107 | 081DV25P109V513K | 100-4600 | NA | NG-25 | 19 | |
| 9 811 230 009 | 081DV10P110V513KWS024/00 | 100-4600 | 24VDC | NG-10 | 23 | |
| 9 811 230 109 | 081DV25P110V513KWS024/01 | 100-4600 | 24VDC | NG-25 | 23 | |
| 9 811 230 010 | 081DV10P110V513KWS115/60 | 100-4600 | 115VAC | NG-10 | 23 | |
| 9 811 230 110 | 081DV25P110V513KWS115/60 | 100-4600 | 115VAC | NG-25 | 23 | |

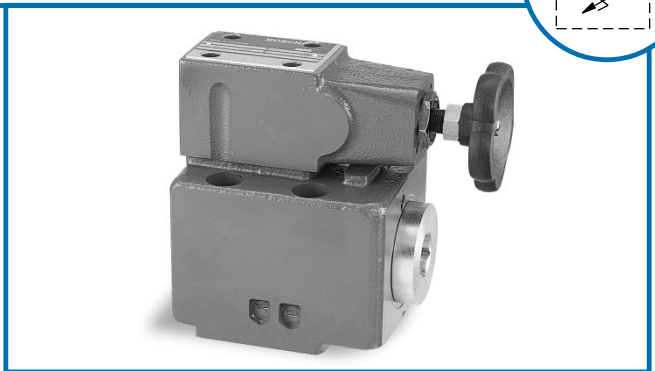
Catalog #: 9 535 233 718

SUBPLATE MOUNTED REDUCING VALVES



This pressure reducing valve is offered as a subplate mounted valve to be mounted on a standard NFPA D05 and D08 mounting pattern. This valve has a pressure rating of 3600

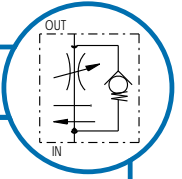
psi and is available with standard screw adjustment or lockable keyknob and is offered in both direct and pilot operated design.



| SUBPLATE MOUNTED REDUCING VALVES | | | | | | |
|----------------------------------|-------------------|----------------|---------|-------|----------------------|------------|
| Part Number | Description | Pressure Range | Voltage | Size | Approx. Weight (lbs) | List Price |
| 9 811 230 201 | 081DMV10P131V502K | 50-2400 | NA | NG-10 | 19 | |
| 9 811 230 202 | 081DMV10P131V513K | 100-4600 | NA | NG-10 | 19 | |
| 9 811 230 301 | 081DMV25P131V502K | 50-2400 | NA | NG-25 | 19 | |
| 9 811 230 302 | 081DMV25P131V513K | 100-4600 | NA | NG-25 | 19 | |

Catalog #: 9 535 233 718

ACCU-TRIM-ADJUSTABLE FLOW CONTROL VALVES



Pressure rating: 3000psi

Flow Ranges:

- 5 - 400 in³/min
- 5 - 925 in³/min
- 5 - 1850 in³/min

Temperature Compensated:

will maintain a constant flow rate over a wide change in fluid temperatures and viscosity.

Pressure compensated:

Will maintain a constant flow rate with a changing outlet and/or inlet pressure. Minimum pressure drop to assure pressure compensation is 80 psi.

Accu-Trim: To provide finer adjustment, a 6:1 gear reduction is built into the valve. Three turns of the adjusting knob are required to go from the fully closed to the fully open position. A pointer is placed on the knob and reference numbers on the nameplate to enable the operator to repeat settings.

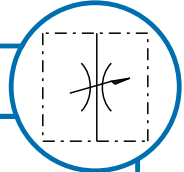
Locking Device: Valve is supplied with a dial key lock as standard. When the desired valve setting is reached, the dial can be locked in place with the key. All locks use the same key.



| ACCU-TRIM-ADJUSTABLE FLOW CONTROL VALVES | | | | | |
|--|--------------|---------------------|------------------|----------------|------------|
| Part Number | Description | Max. Pressure (psi) | Max. Flow (cipm) | Integral Check | List Price |
| 977 706 | FF2 AHSG 02K | 3000 | 400 | Yes | |
| 977 707 | FF2 AHSG 02L | 3000 | 400 | No | |
| 977 710 | FF2 AHSJ 02K | 3000 | 925 | Yes | |
| 977 711 | FF2 AHSG 02K | 3000 | 925 | No | |
| 977 714 | FF2 AHSJ 02K | 3000 | 1850 | Yes | |
| 977 715 | FF2 AHSJ 02L | 3000 | 1850 | No | |

Engineering Data F-10

INLINE MOUNTED FLOW CONTROL VALVES



Pressure Rating: 3000psi

Optional Integral Return Check Valve: A flow control with integral return check valve is available. This device allows free flow in the direction opposite the controlled flow pattern.

Temperature: Under normal conditions of continuous operation fluid temperature should not exceed 130°F (54°C). In no instant should the temperature exceed 160° F (71°C).

Mounting Position: Not restricted

Application: This series of flow control valves can be used to control the speed of actuators. They are not pressure compensated, therefore, flow rate will vary as the pressure drop changes. Integral return check valve is normally used when the flow control is mounted between the actuator and its directional control valve.

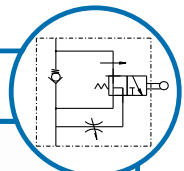
Flow: 3 to 200 gpm



| INLINE MOUNTED FLOW CONTROL VALVES | | | | | | |
|------------------------------------|--------------|---------------------|-----------------|-----------|----------------------|------------|
| Part Number | Description | Max. Pressure (psi) | Max. Flow (gpm) | Port Size | Approx. Weight (lbs) | List Price |
| 975 019 | FF1 SHPO 52H | 3000 | 14 | #8 SAE | 6.1 | |
| 975 864 | FF1 SHPO 51H | 3000 | 10 | #6 SAE | 3.3 | |

Engineering Data F-10

SUBPLATE MOUNTED 3/4" FEED VALVES



Pressure Rating: 3000 psi

Flow Rating: This valve is available with four sizes of traverse flow rate spools. The spool rated just above the maximum flow rate needed should be used. This insures maximum benefit for the pressure compensated deceleration action. The traverse spool flow rates available are:

- K10 gpm
- L15 gpm
- M20 gpm
- P30 gpm

Integral Return Check Valve:

Two port feed panel has integral return check valve built-in as standard.

Temperature: Under normal conditions of continuous operation, fluid temperature should not exceed 130°F (54°C). In no instance should the temperature exceed 160°F (71°C).

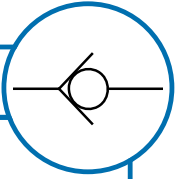
Mounting position: Not Restricted (For Feed Control panel)



| SUBPLATE MOUNTED 3/4" FEED VALVES | | | | | |
|-----------------------------------|-------------------|---------------------|--------------------------|----------------------|------------|
| Part Number | Description | Max. Pressure (psi) | Traverse Flow Rate (gpm) | Approx. Weight (lbs) | List Price |
| 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

Y BODY CHECK VALVES



Poppet Style Check Valve

- Mounting type: Inline and Subplate Mounting, position is not restricted
- Fluid: Compatible with mineral oil or HFA/B/C/D
- Fluid-temperature capability: -13 to 176°F (-25 to 80°C)
- Cracking pressure: 3, 7, 65 psi
- Maximum operating pressure: 3000 psi
- Max flow: 15 - 250 gpm dependent on frame and port size



| Y BODY CHECK VALVES | | | | | | | |
|---------------------|------------------|-------------|---------------------|-----------------|-----------|----------------------|------------|
| Part Number | Description | Spring Rate | Max. Pressure (psi) | Max. Flow (gpm) | Port Size | Approx. Weight (lbs) | List Price |
| 975 847 | FB1 XOHP 151N | 3 | 3000 | 25 | #6 SAE | 1.5 | |
| 975 025 | FB1 XOHP 152N 01 | 3 | 3000 | 70 | #8 SAE | 3.3 | |
| 975 276 | FB1 XOHP 154N 02 | 3 | 3000 | 70 | #12 SAE | 3.3 | |
| 975 850 | FB1 XOHP 153N 01 | 3 | 3000 | 70 | #10 SAE | 3.3 | |

Catalog #: 9 535 233 163

Hydraulic accumulators can be used in a variety of applications such as energy storage for economizing on pump drive power in systems which are operated intermittently, as an emergency power source in case of pump failure, as compensation for losses due to leakage, damping of periodic shocks, and volume compensation when temperature and pressure are highly variable.

Bladder Accumulators:

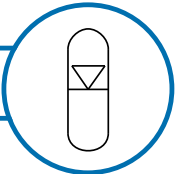
- 3000 and 5000 psi rated
- 1/4 gallon to 15 gallon sizes

Diaphragm Accumulators:

- 2320 to 3625 psi rated
- 4 1/2 in³ to 170 in³



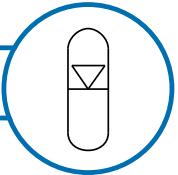
BLADDER ACCUMULATORS



| BLADDER ACCUMULATORS | | | | | | | | | |
|----------------------|---------------------------|------------------------|------------------|---------------------|---------------|---------------------|----------------------|-----------|------------|
| Part Number | Description | Nominal Size (Gallons) | Bladder Material | Max. Pressure (psi) | Diameter (in) | Overall Length (in) | Approx. Weight (lbs) | Port Size | List Price |
| 0 531 112 610 | ACCUM 1/4 ASME BUN NPT | 1/4 | Buna | 3000 | 4.5 | 11.7 | 11 | 3/4" NPT | |
| 0 531 112 640 | ACCUM 1/4 ASME BUN SAE | 1/4 | Buna | 3000 | 4.5 | 11.7 | 11 | #14 SAE | |
| 0 531 113 640 | ACCUM 1 GAL ASME BUN SAE | 1 | Buna | 3000 | 6.8 | 16.8 | 32 | #20 SAE | |
| 0 531 114 640 | ACCUM 2.5 ASME BUN SAE | 2 1/2 | Buna | 3000 | 9 | 21.5 | 72 | #24 SAE | |
| 0 531 115 640 | ACCUM 5 GAL ASME BUN SAE | 5 | Buna | 3000 | 9 | 33.8 | 118 | #24 SAE | |
| 0 531 115 650 | ACCUM 10 GAL ASME BUN SAE | 10 | Buna | 3000 | 9 | 54.3 | 196 | #24 SAE | |
| 0 531 116 640 | ACCUM 14 GAL ASME BUN SAE | 14 | Buna | 3000 | 9 | 74 | 320 | #24 SAE | |

Brackets for 0 531 6 - - Series
 Catalog #: 9 535 233 184

DIAPHRAGM ACCUMULATORS

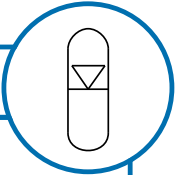


| DIAPHRAGM ACCUMULATORS | | | | | | | |
|------------------------|------------------------|------------------|---------------------|----------------|----------------------|-----------|------------|
| Part Number | Nominal Size (cu. in.) | Bladder Material | Max. Pressure (psi) | Diameter (in.) | Overall Length (in.) | Port Size | List Price |
| 0 531 600 611 | 10 | Buna | 3625 | 2.95 | 5.43 | #6 SAE | |
| 0 531 601 549 | 21 | Buna | 2320 | 3.62 | 6.02 | #8 SAE | |
| 0 531 602 560 | 43 | Buna | 2610 | 4.76 | 7.44 | #8 SAE | |
| 0 531 602 588 | 43 | Buna | 3000 | 4.76 | 7.44 | #8 SAE | |
| 0 531 603 501 | 85 | Buna | 3000 | 6.10 | 8.70 | #8 SAE | |
| 0 531 623 500 | 122 | Buna | 3000 | 6.10 | 10.78 | #8 SAE | |
| 0 531 613 503 | 170 | Buna | 3000 | 6.85 | 11.50 | #8 SAE | |

Catalog #: 9 535 233 184

ACCUMULATOR BRACKETS

- Allows 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

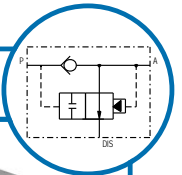


| ACCUMULATOR BRACKETS | | | |
|----------------------|-------------|---------------------|------------|
| Part Number | Description | Accumulator Size | List Price |
| 1 531 316 007 | Bracket | 21 in ³ | |
| 1 531 316 008 | Bracket | 43 in ³ | |
| 1 531 316 011 | Bracket | 85 in ³ | |
| 1 531 316 002 | Bracket | 122 in ³ | |
| 1 531 316 004 | Bracket | 170 in ³ | |
| 1 531 316 005 | Bracket | 2 1/2 14 gal. | |

Catalog #: 9 535 233 184

ACCUMULATOR DISCHARGE VALVES

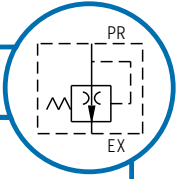
- For the safe and efficient discharge of Bosch accumulators
- 3000 psi rating
- 12 to 80 gpm



| ACCUMULATOR DISCHARGE VALVES | | | | | | |
|------------------------------|--------------|-----------------------|-----------------|-----------|----------------------|------------|
| Part Number | Description | Pressure Rating (psi) | Max. Flow (gpm) | Port Size | Approx. Weight (lbs) | List Price |
| 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
 Catalog #: 9 535 233 184

AIR BLEED VALVES



Pressure: 3000 psi

Closing Pressure: 6 psi is required to hold valve closed.

Closing Time: Approximately 8 seconds with 1000 psi pump outlet pressure to 18 seconds with 250 psi pump outlet pressure.

Opening Time: Approximately 10 minutes after pump shutdown.

Flow rate to close:

- Size N: 1.3 gpm
- Size Q: 2.5 gpm
- Size S: 4.0 gpm

Temperature: Under normal conditions of continuous operation, fluid temperature should not exceed 130° F (54°C). In no instance, should the temperature exceed 160° F (71°C).

The function of the automatic air bleed valve is to allow a pump to prime when starting against a closed system with air trapped in the suction side.



| AIR BLEED VALVES | | | | | | |
|------------------|--------------|---------------------|---------------------|-----------|----------------------|------------|
| Part Number | Description | Max. Pressure (psi) | Flow To Close (gpm) | Port Size | Approx. Weight (lbs) | List Price |
| 985 104 | FF5 NHPN 51S | 3000 | 1.3 | #6 SAE | 1.5 | |
| 985 105 | FF5 NHPS 51S | 3000 | 4.0 | #6 SAE | 1.5 | |
| 985 106 | FF5 NHPQ 51S | 3000 | 2.5 | #6 SAE | 1.5 | |

Engineering Data J-34

