



# APV-20 Product Catalog

*Sectional Directional Control Valve*



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Product Catalog: APV-20-PC  
Release Date: 6-30-2021

## HELPFUL INFORMATION

**ORDERING** – Orders can be placed with us by phone, fax or email at [sales@apscopower.com](mailto:sales@apscopower.com)

**SHIPPING** – All orders will be shipped via APSCO’s default method, UPS ground, with freight invoiced to the customer unless otherwise specified at the time of order. APSCO facilitates drop shipments at no extra charge.

**RETURNS** – Unused, standard products may be returned to APSCO for full credit within 30 days of purchase. A 20% restocking fee is charged thereafter.

*An RMA is required for all returns.*

**QUALITY** – APSCO commitment to quality was recognized by becoming certified to ISO 9001:2000 in 2004. Our continued commitment to quality in all of our processes is reflected by our current certification ISO 9001:2015.

**WARRANTY** – All APSCO products are warranted for 1 year of service, but in no case more than 2 years beyond the original date of purchase. See page 13 for our warranty terms and conditions.

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Management System Certification



|                                       |    |
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## TECHNICAL SPECIFICATIONS

|                               |  |
|-------------------------------|--|
| Construction                  | Sectional  |
| Circuit                       | Parallel / Open Center / Closed Center   |
| Nominal Flow Rating           | Up To 25 GPM<br><ul style="list-style-type: none"> <li>• <a href="#">Please refer to Pressure Drop Charts.</a></li> <li>• Allowable pressure loss through valve, determines the maximum flow.</li> </ul> |
| Maximum Operating Pressure    | 3500 psi   |
| Maximum Tank Pressure         | <ul style="list-style-type: none"> <li>• 500 psi with handle bracket installed.</li> <li>• 200 psi, if handle bracket is removed and a spool boot assembly is installed.</li> </ul>                      |
| Maximum Operating Temperature | 180°F  |
| Filtration                    | <ul style="list-style-type: none"> <li>• General Purpose Valves :<br/>ISO 4406 19/17/14 fluid cleanliness level is recommended.</li> </ul>   |
| Spool Force                   | 50 lbs max   |
| Seal Type                     | Buna-N   |

## VALVE FEATURES

|  |   |
|--|---|
| Replaces Parker/Gresen® V20  | Extra fine spool metering.  |
| Weight: <ul style="list-style-type: none"> <li>• Inlet Cover: Approx 6 lbs.</li> <li>• Outlet Cover: Approx 3.5 lbs.</li> <li>• Work Section: Approx 9 lbs.</li> </ul> | <ul style="list-style-type: none"> <li>• Relief Valve: Differential type</li> <li>• Main RV: Externally adjustable 500-3500 psi.</li> <li>• Factory set at 3000 psi.</li> <li>• Port RV: Internally shim adjustable.</li> </ul> |
| Each work port is available with optional independent relief valve protection.   | Material: <ul style="list-style-type: none"> <li>• Compacted Graphite Cast Construction</li> <li>• Hard Chrome Plated Spools</li> <li>• Black Phosphate Surface Treatment</li> </ul>  |
| Reversible Handle  | 1-10 Work Sections  |
| Power Beyond Capability  | Load Checks- Each Work Port   |

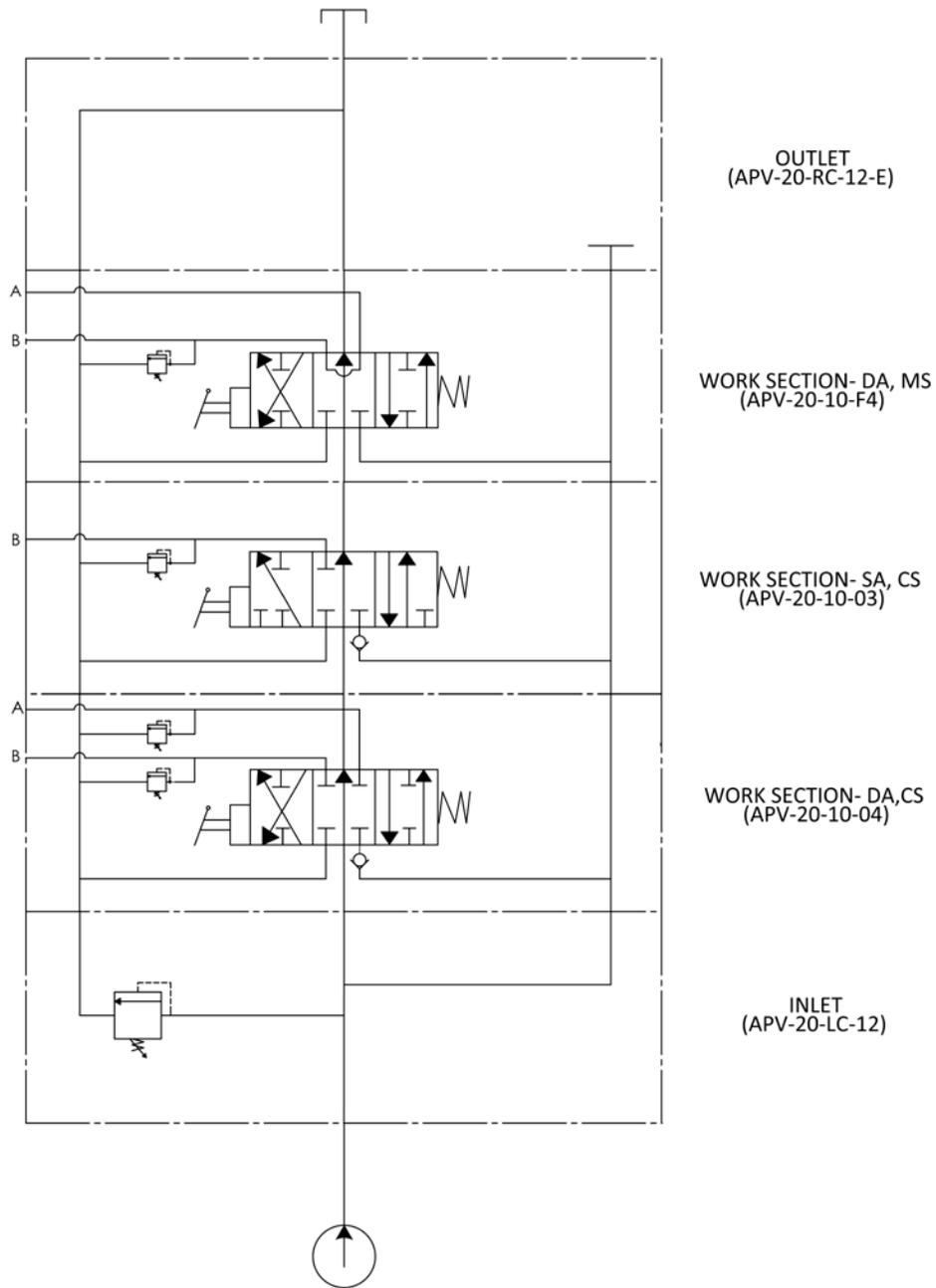
**Note: We have used other manufacturer's name, part numbers, descriptions or trademarks for reference purpose only. All supplied parts are APSCO®.**

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at anytime.

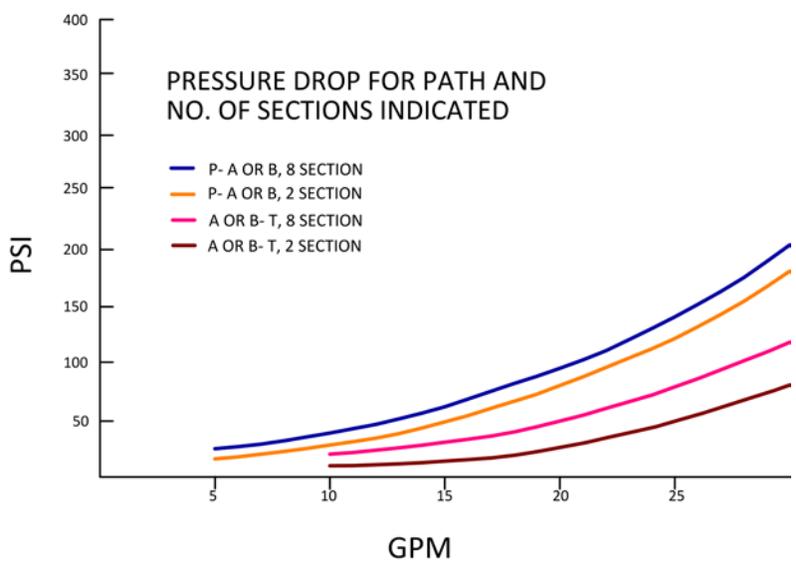
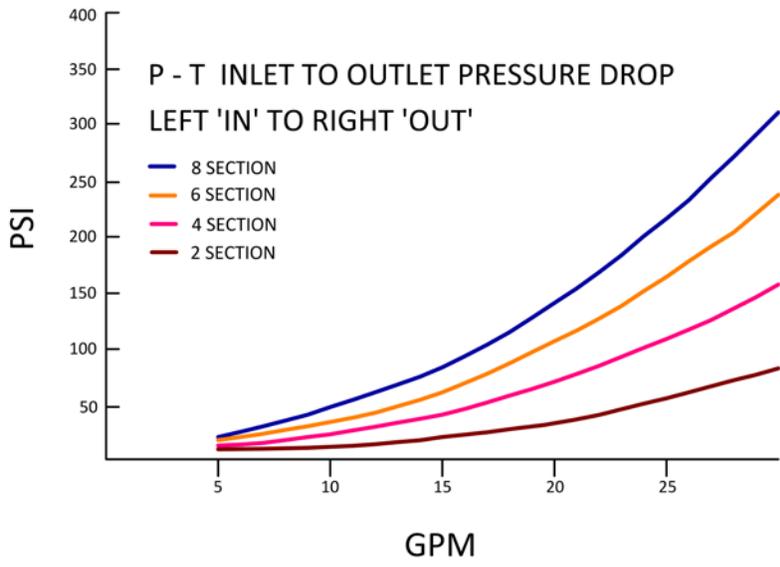
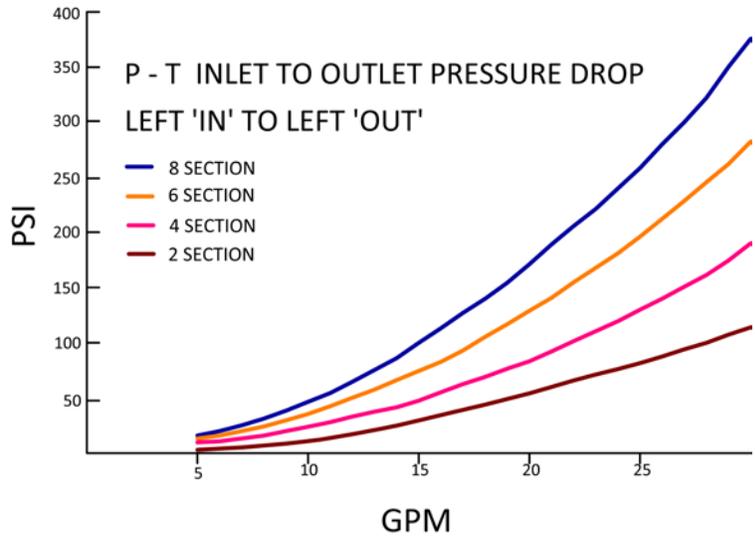
## CROSS REFERENCE

| APSCO® | Parker® / Gresen® |
|--------|-------------------|
| APV20  | V20P (Parallel)   |

## APV20 VALVE SCHEMATIC DIAGRAM



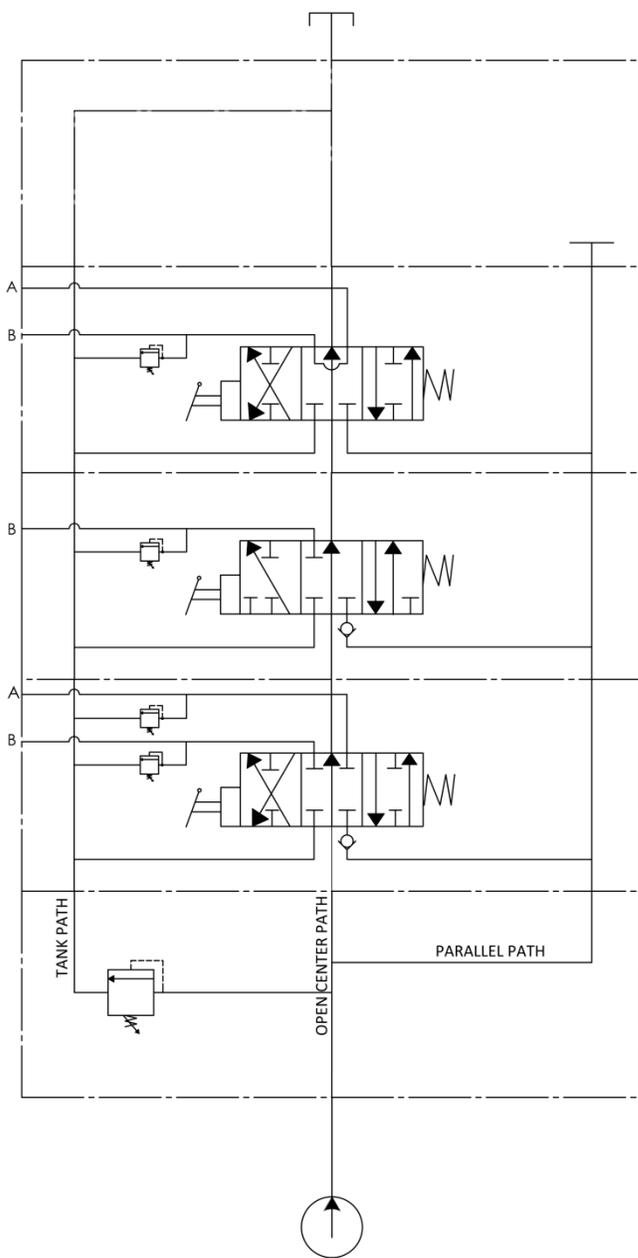
# PERFORMANCE CHARTS



## VALVE ASSEMBLIES

The APV 20 sectional body directional control valve can be ordered in separate sections, or as a complete factory tested assembly. When the APV 20 is ordered as an assembly, APSCO will assign the assembly a part number at the time of the order. This part number can be used for future orders.

### APV20 PARALLEL CIRCUIT



THE PARALLEL PATH PROVIDES FLOW TO ALL WORK SECTIONS ALL THE TIME. THIS ALLOWS DOWNSTREAM WORK SECTIONS TO FUNCTION EVEN WHEN UPSTREAM WORK SECTIONS ARE ACTUATED, BLOCKING THE OPEN CENTER PATH.

In a parallel circuit, oil from the pump is supplied to all work sections in the valve assembly in parallel simultaneously. Each work section can be operated independently. When multiple work sections are operated at the same time, the lowest pressure circuit will receive the most flow. By adjusting the spools, it is possible to meter these circuits simultaneously.

**Load Check:** Each work port of the APV 20 stack valve has a separate load check. When the spool is shifted, the load check prevents the fall of a load and back-flow of oil from the work port to the inlet. The pump must build enough pressure to overcome the pressure exerted by the weight of the load on the work port before the load can move.

**Note:** The load check is functional only when the spool is shifted. The function of the load check is not to hold a load when the spool is in neutral.

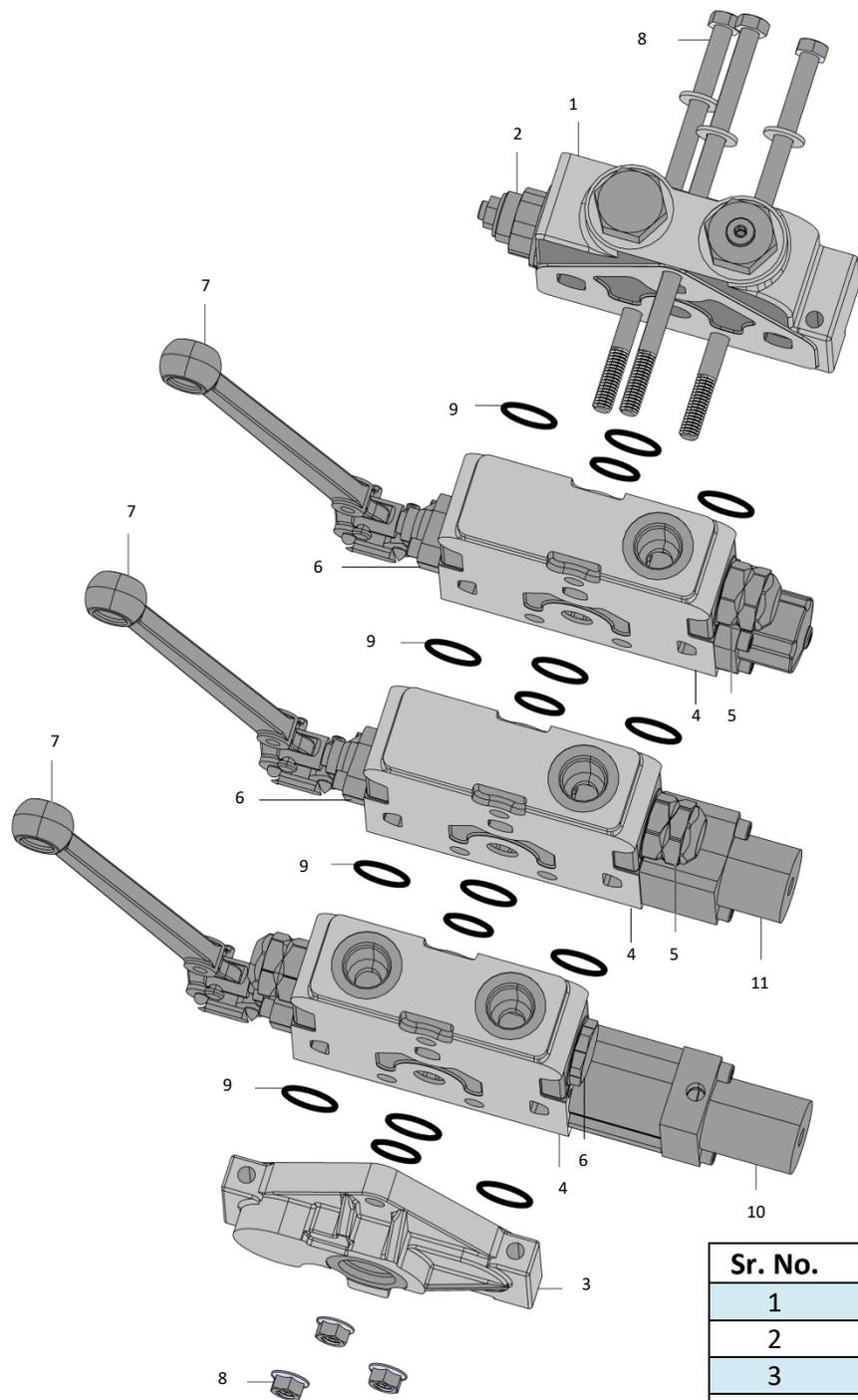
**Open Center Applications:** The standard APV 20 stack valve is open center. When the spools are in neutral, hydraulic oil is directed from the inlet to the outlet (or power beyond) through the open center path. Moving one or more spools closes off the open center path and directs oil to the work ports. Open center systems usually contain fixed displacement pumps. Maximum circuit pressure is limited by the main relief valve. In the neutral position, open center valve assemblies operate at full flow and at low pressure.

**Note:** The main relief valve controls the maximum pressure in an open center system. The APV 20 inlet sections come with a main relief valve port for this purpose.

**Closed Center Applications:** When the appropriate closed center plug is added, the APV 20 stack valve will convert to a closed center valve. The closed center plug blocks off the open center path. When valve spools are in neutral, system pressure is maintained at inlet of the valve. Closed center systems often use a variable displacement pressure compensated pump that limits the maximum pressure. A relief is normally not required or must be set at a higher pressure than the pump compensator. In the neutral position, closed center valve assemblies operate at full pressure with minimum flow.

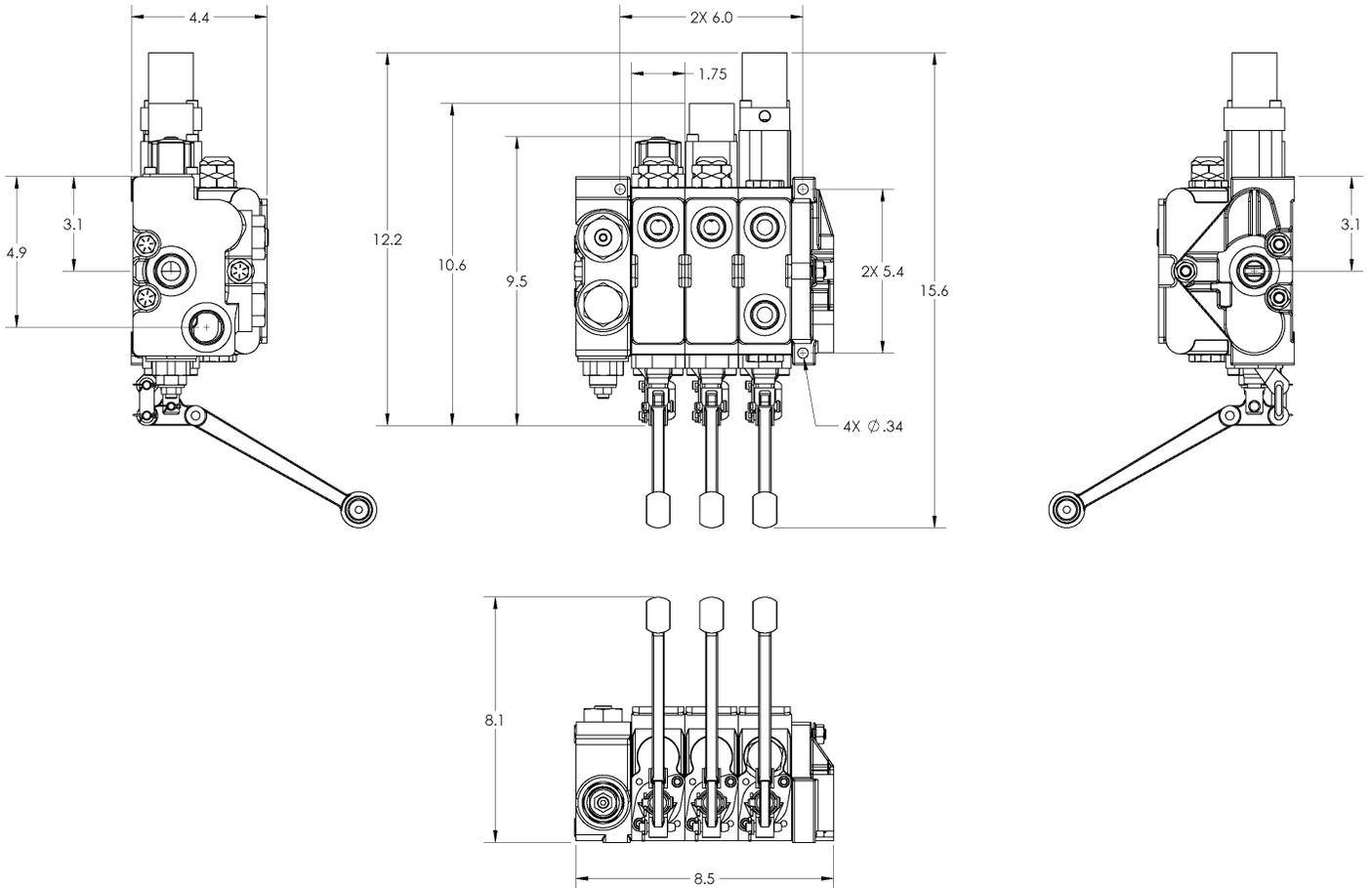
**Note:** This closed center option does not provide for the drain off of standby spool leakage. When in neutral, it allows a very small amount of oil to enter the work ports.

# VALVE EXPLODED VIEW



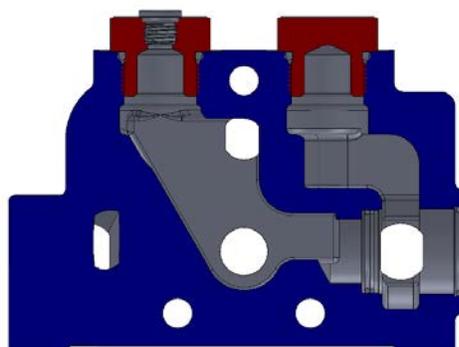
| Sr. No. | Part Name                                  | Page No. |
|---------|--|----------|
| 1       | <u>Inlet</u>                               | 8        |
| 2       | <u>Inlet Relief Valve</u>                  | 8        |
| 3       | <u>Outlet</u>                              | 8        |
| 4       | <u>Work-Section</u>                        | 9        |
| 5       | <u>Port Relief Valve</u>                   | 10       |
| 6       | <u>Load Check</u>                          | 4        |
| 7       | <u>Handle</u>                              | 11       |
| 8       | <u>Stud Kit</u>                            | 11       |
| 9       | <u>Seal Kit</u>                            | 12       |
| 10      | <u>Air Actuator Kit<br/>(Metering)</u>     | 12       |
| 11      | <u>Air Actuator Kit<br/>(Non-Metering)</u> | 12       |

## VALVE DIMENSIONS



Note: All dimensions are in inches.

## INLET



| Part Number  | Parker/Gresen cross reference |          | End Inlet | End Outlet | Top Inlet | Top Outlet |
|--------------|-------------------------------|----------|-----------|------------|-----------|------------|
|              | Casting No.                   | Model    |           |            |           |            |
| APV-20-LC-12 | 8398                          | 20-LC-12 | SAE 12    | SAE 12     | SAE 12    | SAE 12     |

\*Two port plugs are finished loose with each cover; one is machined for 1/4" NPT.  
 \*Inlet Relief Valve sold separately.

## INLET RELIEF VALVE

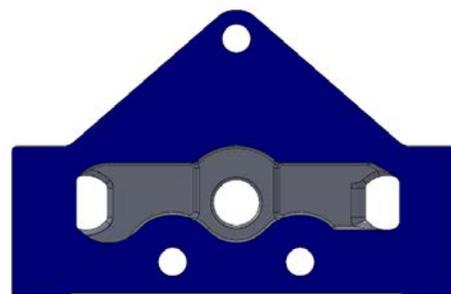


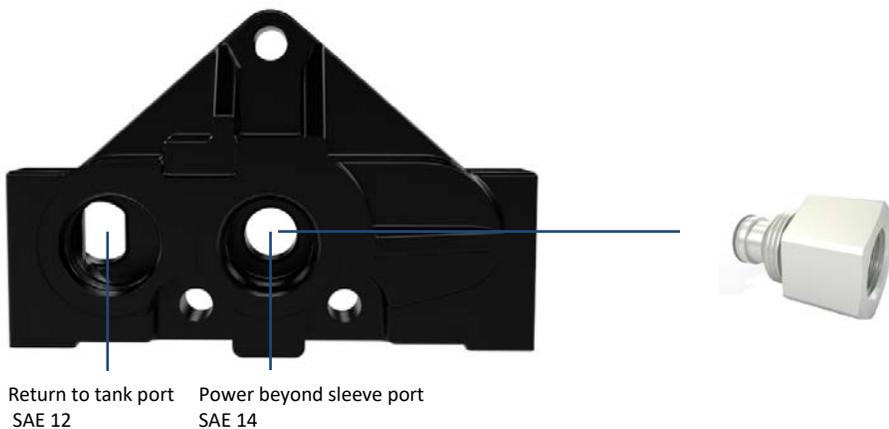
**No Relief:** When a main inlet relief valve is not required, a relief plug must be installed. All inlet sections have the relief port machined so an inlet relief can be installed in the field.

**Adjustable Relief:** Inlet relief valve is externally adjustable from 500-3500 psi. Factory set at 3000 psi.

| Part Number    | Parker/Gresen cross reference |             |            | Description   |
|----------------|-------------------------------|-------------|------------|---|
|                | Product Code                  | Part Number | Model      |   |
| APV-RP51A-3000 | RP51-A                        | 8950005     | RP51A-3000 | Inlet relief 500-3500 psi. Screw Adjustable Set @ 3000 psi. |
| APV-20-K-NR    | CK-6132                       | 12797001    | K-20-NR    | Relief Plug   |

## OUTLET





**Power beyond outlet:**

1. Outlet includes a high pressure power beyond port.
2. Outlet can be used to power an additional downstream valve assembly.
3. The power beyond outlet tank port must be connected to tank.
4. The power beyond outlet must be used with the power beyond sleeve to function properly.

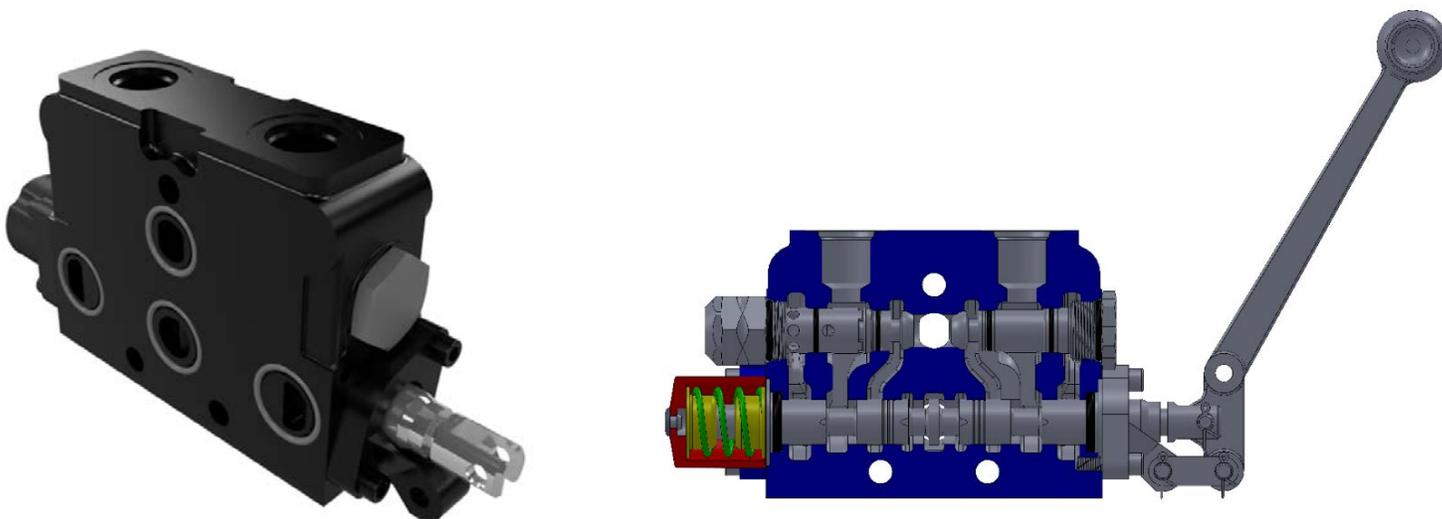
**\*Sold separately.**

| APSCO Part      | Parker/Gresen cross reference |               | Description                                       |
|-----------------|-------------------------------|---------------|---|
|                 | Casting No.                   | Model         |   |
| APV-20-RC-12-E  | 7770                          | 20-RC-12-E    | SAE 12 end outlet.                                |
| APV-20-RC-12-EM | 6770                          | 20-RC-12-E-MY | SAE 12 end outlet, machined for end power beyond. |
| APV-20-12-Y     | -                             | K-20-12-Y     | SAE 12 power beyond sleeve.                       |
| APV-20-CK-6015  | -                             | CK-6015       | Closed Center Plug                                |

\*Outlet includes assembly seal kit.

Note: Please contact us if you have any questions about assembly instruction and specification.

## WORK-SECTION



| Part Number   | Parker/Gresen cross reference | 4 Way 3 Position (Double Acting Cylinder Spool) | 3 Way 3 Position (Single Acting Cylinder Spool) | 4 Way 3 Position (Double Acting Motor Spool) | SAE 10 Work Ports | Spring Return to Neutral | 3 Position Detent |
|---------------|-------------------------------|---|---|--|-------------------|--------------------------|-------------------|
| APV-20-10-03  | 20-10-03                      |   | ✓   |  | ✓                 | ✓                        |                   |
| APV-20-10-04  | 20-10-04                      | ✓   |   |  | ✓                 | ✓                        |                   |
| APV-20-10-F4  | 20-10-F4                      |   |   | ✓  | ✓                 | ✓                        |                   |
| APV-20-10-DF4 | 20-10-DF4                     |   |   | ✓  | ✓                 |                          | ✓                 |

\*Work- section includes assembly seal kit.

\*Standard work-section comes with handle bracket installed. Handle assembly is purchased separately.

## PORT RELIEF VALVE

### Anti-Cavitation Check:

- Anti-Cavitation check allows oil to be drawn from the tank path into the work port if there is a vacuum on the work port.
- The check will open whenever the pressure in the tank path is higher than the work port pressure.



**Shim Adjustable Port Relief:** A port relief can be installed,

- To limit the pressure at the work port to less than the system pressure.
  - To provide spike pressure protection when the spool is in the neutral position.
- The pressure of these reliefs can be changed by changing shims.

**Port Relief Valve Torque: 15-20 ft-lbs.**

| APSCO Part      | Parker/Gresen cross reference | Relief & Anti-Cavitation Check | 500-1249 set @ 1200 PSI | 1250-1749 set @ 1700 PSI | 1750-1999 set @ 1950 PSI | 2000-2599 set @ 2550 PSI |
|-----------------|-------------------------------|--------------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| APV-20-CRA-1200 | CRA-1200                      | ✓                              | ✓                       |                          |                          |                          |
| APV-20-CRA-1700 | CRA-1700                      | ✓                              |                         | ✓                        |                          |                          |
| APV-20-CRA-1950 | CRA-1950                      | ✓                              |                         |                          | ✓                        |                          |
| APV-20-CRA-2550 | CRA-2550                      | ✓                              |                         |                          |                          | ✓                        |
| APV-20-K-CP     | K-6030-C                      | Load-check Assembly            |                         |                          |                          |                          |
| APV-20-CRA-K-S  | -                             | Shim Kit                       |                         |                          |                          |                          |

## HANDLE



Vertical Handle

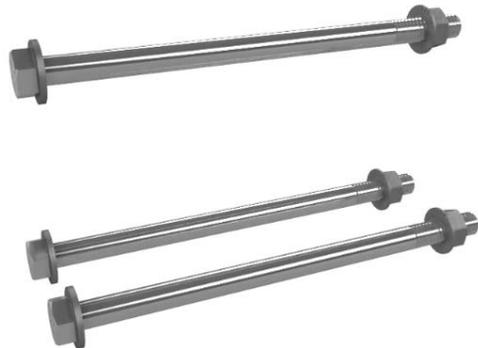


Horizontal Handle

| Part Number | Parker/Gresen cross reference | Description               |
|-------------|-------------------------------|---------------------------|
| APV-20-VH-B | K-20-VH-B                     | Vertical Handle (Black)   |
| APV-20-HH-B | K-20-HH-B                     | Horizontal Handle (Black) |
| APV-20-BOOT | K-20-boot                     | Spool Boot Assembly       |

## STUD KIT

Tie Rod Torque: 28 ft-lbs.



| Part Number | Parker/Gresen cross reference |             | Description    |
|-------------|-------------------------------|-------------|----------------|
|             | Kit No.                       | Part Number |                |
| APV-20-SK-1 | K-6104                        | 12807001    | 1 work section |
| APV-20-SK-2 | K-6105                        | 12808001    | 2 work section |
| APV-20-SK-3 | K-6106                        | 12809001    | 3 work section |
| APV-20-SK-4 | K-6107                        | 12810001    | 4 work section |
| APV-20-SK-5 | K-6108                        | 12811001    | 5 work section |
| APV-20-SK-6 | K-6109                        | 12812001    | 6 work section |
| APV-20-SK-7 | K-6110                        | 12813001    | 7 work section |
| APV-20-SK-8 | K-6111                        | 12814001    | 8 work section |

\*Seals are not included.

## SEAL KIT

| Part Number | Parker/Gresen cross reference | Description  |
|-------------|-------------------------------|--|
| APV-20-K-S1 | K-6121                        | Open Center Section Seal Kit<br>• 4 pcs.   |
| APV-20-K-S3 | K-6035+K-6121                 | Standard Section Repair Seal Kit<br>• 4 Assembly Seal + 2 Spool Seals + 2 Spool Seal Backup Washers. |
| APV-20-K-S4 | K-6032                        | Standard Load Check Assembly Seals<br>• 3 O-Rings + 3 Backup Rings.                                  |

## AIR ACTUATOR KIT



Metering Air Shift



Non-Metering Air Shift

| Part Number | Description                |
|-------------|----------------------------|
| C-3826-DM   | Metering Air Shift Kit     |
| C-3526-DM   | Non-Metering Air Shift Kit |

## ACTUATOR KIT



3-Position Detent Kit



Spring Return to Neutral

| Part Number | Parker/Gresen cross reference | Description                  |
|-------------|-------------------------------|------------------------------|
| APV-20-K-D  | K-6153                        | 3-Position Detent Kit        |
| APV-20-K-SR | K-6207                        | Spring Return to Neutral Kit |

\*Spool not included with actuator kit.

## WARRANTY- TERMS AND CONDITIONS OF SALE

Buyer's assent to these terms and conditions of sale shall be conclusively presumed from Buyer's execution of a Sales Contract, submission of an Order Receipt of any material ordered or services rendered or from APSCO's commencement of work on the goods. Acceptance of Buyer's order shall be conditioned upon and subject to these terms and conditions. No other term that purports to vary these terms and conditions, shall be binding upon APSCO unless set forth in writing signed by APSCO. Additional terms listed on the reverse side hereof. If inconsistent herewith, shall control and be deemed a part hereof: All negotiations, proposals and representations, if any, made prior and with reference hereto are incorporated herein. This writing shall constitute a complete and exclusive statement of the terms of the agreement between Buyer and APSCO.

1. Prices and shipping terms are F.O.B. APSCO's dock Tulsa, Oklahoma. Payment is due net thirty (30) days after the rendering of this invoice and is to be made in the U.S. funds or their equivalent. Buyer agrees to pay a sum equal to 18% per annum until paid and all cost of collection, including attorney's fees, on any sums not paid when due.
2. Dates of delivery are determined from the date of APSCO's acceptance of any order by Buyer and are estimates of approximate dates of delivery, not a guaranty of a particular day of delivery. APSCO shall not be liable for failure or delay in shipping goods if such failure or delay is due to an act of God, War, Labor difficulties, Accident, inability to obtain containers or raw materials, or any other causes of any kind whatever beyond the control of APSCO.
3. Prices do not include, and Buyer agrees to pay any tax, duty, tariff, or other assessment imposed by federal, state or other governmental authority on the sale of the merchandise and service shall be paid by Buyer in addition to the purchase price.
4. Buyer hereby indemnifies, agrees to hold harmless and defend APSCO, its officers, directors, employees, agents, divisions, subsidiaries and affiliates from and against any, and all liabilities, claims, losses, damages, costs and expenses (including without limitation, special and consequential damages, damages for patent infringement or similar cause of action) resulting from Buyer's use, furnishing of any specification, plan, design, or modification of the goods; omission, neglect, or Buyer's misapplication of proprietary or other information furnished regarding the goods sold by APSCO; and further from any, and all, damage to property or personal injury or death arising out of or attributable to the goods, including but not limited to any part not manufactured by APSCO. Buyer accepts all responsibility for the installation and use of adequate safety guards and devices and agrees to hold APSCO harmless in the event of personal injury resulting from inadequate safety guards or devices.

APSCO warrants to the original Buyer only, the goods sold conform to the specifications set forth on the invoice and shall be tested to indicate that the same are free from defects in materials and workmanship under normal recommended use for 1 year of service, but in no case more than 2 years beyond the original date of purchase. Except for the warranty that the goods are made in a workmanlike manner and in accordance with the specifications therefore supplied or agreed to by buyer and are made or packaged pursuant to the customary manufacturing procedures of APSCO. TO THE EXTENT IMPERMISSIBLE UNDER APPLICABLE LAW THIS WARRANTY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED; INCLUDING ANY

IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHETHER ARISING BY LAW, CUSTOM OR CONDUCT. THE FOREGOING RIGHTS AND REMEDIES ARE EXCLUSIVE AND IN LIEU OF OTHER CLAIMS, RIGHT OR REMEDIES WHATSOEVER, WHETHER STATUTORY OR BASED ON CONTRACT, TORT OR OTHERWISE.

5. APSCO's obligation under this warranty is limited to repair or replacement of any part judged defective by APSCO at a point designated by APSCO. APSCO will not be liable for any consequential damages, loss or expense arising in connection with the inability to use its good for any purpose whatever. APSCO's maximum liability shall not in any case exceed the contract price for the goods claimed to be defective or unsuitable. This warranty does not apply to any goods manufactured by manufacturers other than APSCO, which are separately warranted by such other manufacturers (appropriate adjustments therefore being provided by their respective manufacturers); and any of the goods which have been altered, subjected to misuse, negligence or accident.
6. The products covered hereby shall be deemed finally inspected and accepted within ten (10) days after delivery thereof, unless notice of non-conformity is given in writing to APSCO within said period. Acceptance as aforesaid shall be deemed full performance of APSCO's obligation hereunder.
7. APSCO shall not be responsible for products that have been modified in any way after leaving APSCO's facility, and APSCO does not assume responsibility for any rework applied to parts without its consent. No goods shall be returned without APSCO's permission. Defective material will be replaced or credited, whichever APSCO elects.
8. This Agreement shall be governed by the laws of the State of Oklahoma, United States of America, without regard to its provisions for conflict of laws. The parties specifically exclude application of the United Nations Convention on Contracts for the Sale of Goods. The parties agree that each will in good faith attempt to resolve any controversy or claim arising out or related to this agreement promptly through negotiations between authorized representatives of APSCO and Buyer within ninety (90) days of such claim or written notice of dispute. Should such negotiations not resolve such claim or dispute within such period, such claim or dispute shall be finally settled under the Rules of the American Arbitration Association by one or more arbitrators appointed in accordance with the rules thereof, and whose decision will be binding upon both parties. The arbitration proceedings, if any, shall be conducted solely in the English language, including any documentation supplied by the parties in connection therewith. Application may be made to any court for confirmation of any award rendered in any arbitration proceeding having jurisdiction over the parties for a judicial acceptance of such award and for an order of enforcement or other legal remedy as the case may be. The arbitration proceedings shall be conducted in the City of Tulsa, Oklahoma, United States of America. Consent is hereby given to the jurisdiction of any court regarding any matter arising out of such arbitration or the enforcement of any such award. The arbitral award shall be final and binding upon both parties. Application may be made to any court for confirmation or enforcement of any such award having jurisdiction over the party against whom such enforcement is sought. Each party represents that any such arbitral award shall be enforceable against it under the laws of its domicile.



**DUMP**



**BULKTRANSFER**



**SNOW & ICE**



**REFUSE & WASTE**



**REFUSE & WASTE**



**OIL & GAS**

Product Catalog: APV-20-PC  
Release Date: 6-30-2021

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