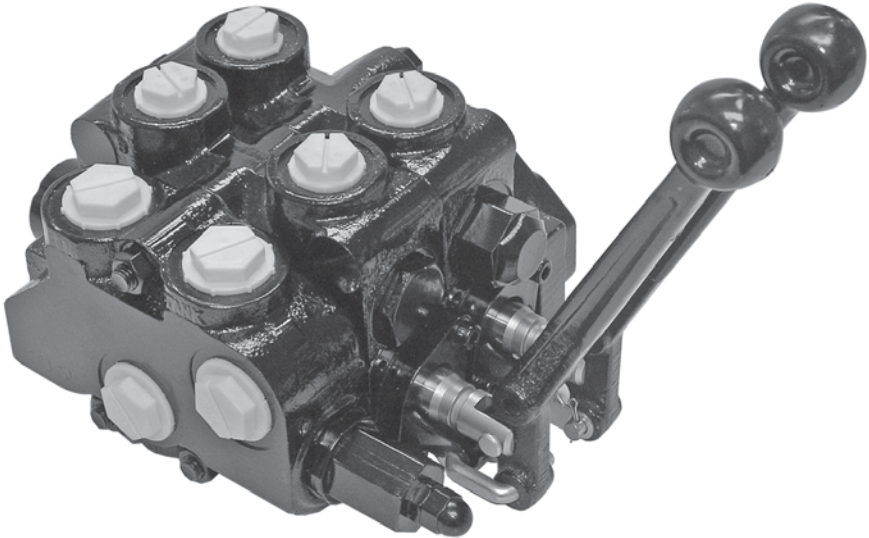


SECTIONAL BODY



Series "20"

VALVES

STANDARD FEATURES

- 1 -10 Work Sections
- Power Beyond Capability
- Load Checks on Each Work Port
- A Float Section can be Installed in any Location in Valve Assembly
- Interchangeable Mounting With Other Popular "20" gpm Stack Valves
- Optional Work Section with Pilot Operated Checks
- Extra Fine Spool Metering
- Reversible Handle
- Hard Chrome Plated Spools

SPECIFICATIONS

Parallel or Tandem Circuit Pressure Rating

Maximum Operating Pressure 3500 psi
Maximum Tank Pressure..... 500 psi

Nominal Flow Rating 20 gpm

Please Refer to Pressure Drop Charts.
Allowable Pressure Loss thru Valve
Determines the Maximum flow.

Foot Mounting Weight

Inlet Cover Approx 6 lbs
Outlet Cover Approx 3.5 lbs
Work Section Approx 9 lbs

Maximum Operating Temp 180°F

Filtration: For general purpose valves, fluid cleanliness should meet the ISO 4406 19/17/14 level . For extended life or for pilot operated valves, the 18/16/13 fluid cleanliness level is recommended.

ORDERING INFORMATION:

The following is a listing of valve sections available from stock on a standard basis.

STANDARD SECTIONS AVAILABLE:

STANDARD INLET SECTIONS

ALL SECTIONS HAVE BOTH TOP AND SIDE INLET AND TANK PORTS

| PART NO. | RELIEF TYPE AND SETTING | PORT SIZE |
|----------|---|-------------|
| 2012A | NO RELIEF | #12 SAE ORB |
| 2012C | SHIM ADJUSTABLE 1351-1750 PSI, SET AT 1750 PSI @ 10 GPM | #12 SAE ORB |
| 2012D | SHIM ADJUSTABLE 1751-2200 PSI, SET AT 2200 PSI @ 10 GPM | #12 SAE ORB |
| 2012E | SHIM ADJUSTABLE 2201-3000 PSI, SET AT 2500 PSI @ 10 GPM | #12 SAE ORB |
| 2012G | ADJUSTABLE 1351-1750 PSI, SET AT 1750 PSI @ 10 GPM | #12 SAE ORB |
| 2012H | ADJUSTABLE 1750-2200 PSI, SET AT 2200 PSI @ 10 GPM | #12 SAE ORB |
| 2012J | ADJUSTABLE 2201-3000 PSI, SET AT 2500 PSI @ 10 GPM | #12 SAE ORB |

STANDARD PARALLEL CIRCUIT WORK SECTIONS

ALL WORK SECTIONS HAVE #10 SAE ORB PORTS, LOAD CHECKS, AND STANDARD LEVER HANDLES.

MODELS WITH PORT RELIEFS ARE SHIM ADJUSTABLE.

| PART NO. | SPOOL TYPE AND ACTION | PORT RELIEFS |
|----------------|--|--------------|
| 20P1AA1AA | 3-WAY SINGLE ACTING W/SPRING CENTER | PLUGGED |
| 20P1BA1AA | 4-WAY DOUBLE ACTING W/SPRING CENTER (WORK PORTS BLOCKED IN NEUTRAL) | PLUGGED |
| 20P1BA5AA-S12Q | 4-WAY DOUBLE ACTING W/SPRING CENTER, 12VDC SOLENOID OPERATED | PLUGGED |
| 20P1BA6AA-S12Q | 4-WAY DOUBLE ACTING W/SPRING CENTER, 12VDC SOLENOID OPERATED W/LEVER HANDLE | PLUGGED |
| 20P1BB1AA | 4-WAY DOUBLE ACTING W/3 POSITION DETENT (WORK PORTS BLOCKED IN NEUTRAL) | PLUGGED |
| 20P1CA1AA | 4-WAY FREE FLOW MOTOR W/SPRING CENTER (WORK PORTS OPEN TO TANK IN NEUTRAL) | PLUGGED |
| 20P1CB1AA | 4-WAY FREE FLOW MOTOR W/3 POSITION DETENT (WORK PORTS OPEN TO TANK IN NEUTRAL) | PLUGGED |
| 20P1DD1AA | 4-WAY 4 POSITION FLOAT W/SPRING CENTER AND FLOAT DETENT | PLUGGED |
| 20P1BA1DD | 4-WAY DOUBLE ACTING W/SPRING CENTER (WORK PORTS BLOCKED IN NEUTRAL) | 2200 PSI |
| 20P1DD1DD | 4-WAY 4 POSITION FLOAT W/SPRING CENTER AND FLOAT DETENT | 2200 PSI |
| 20L1CA1 | 4-WAY 3 POSITION W/SPRING CENTER AND P.O. CHECKS | NONE |
| 20LP1JA1AA | LOAD SENSE 4-WAY DOUBLE ACTING WITH SPRING CENTER | PLUGGED |

STANDARD TANDEM CIRCUIT WORK SECTIONS

| PART NO. | SPOOL TYPE AND ACTION | PORT RELIEFS |
|-----------|---|--------------|
| 20T1BA1AA | 4-WAY DOUBLE ACTING W/ SPRING CENTER (WORK PORTS BLOCKED IN NEUTRAL) | PLUGGED |
| 20T1BA1DD | 4-WAY DOUBLE ACTING W/ SPRING CENTER (WORK PORTS BLOCKED IN NEUTRAL) | 2200 PSI |
| 20T1CA1AA | 4-WAY FREE FLOW MOTOR W/ SPRING CENTER (WORK PORTS OPEN TO TANK IN NEUTRAL) | PLUGGED |

STANDARD OUTLET SECTIONS

ALL SECTIONS HAVE SIDE OUTLET

| PART NO. | EXHAUST OPTION | PORT SIZE |
|----------|---|-------------|
| 20E21 | OPEN CENTER OUTLET W/ CONVERSION PLUG | #12 SAE ORB |
| 20E22 | POWER BEYOND OUTLET W/ #10 SAE POWER BEYOND PORT | #12 SAE ORB |
| 20E23 | CLOSED CENTER OUTLET | #12 SAE ORB |
| 20LE21 | LOAD SENSE OUTLET WITH #4 LOAD SENSE PORT AND BLEED ORIFICE | #12 SAE ORB |

TIE-ROD KITS

| TIE-ROD TORQUE | PART NO. | WORK SECTIONS | PART NO. | WORK SECTIONS |
|----------------|-----------|---------------|-----------|---------------|
| 30-32 ft-lbs | 660402001 | 1 SECTION | 660402006 | 6 SECTION |
| | 660402002 | 2 SECTION | 660402007 | 7 SECTION |
| | 660402003 | 3 SECTION | 660402008 | 8 SECTION |
| | 660402004 | 4 SECTION | 660402009 | 9 SECTION |
| | 660402005 | 5 SECTION | 660402010 | 10 SECTION |

SERIES 20 HARDWARE AND SEAL KITS

| | |
|-----------|---------------------------------------|
| 660190003 | SPRING CENTER KIT |
| 660190004 | 3 POSITION DETENT KIT |
| 660190005 | FRICTION DETENT KIT |
| 660190028 | SPRING CTR PNEUMATIC ACTUATOR KIT |
| 660190001 | VERTICAL HANDLE, LINK & PINS |
| 660190002 | STD. HANDLE, LINK & PINS |
| 660190006 | COMPLETE VERT. HANDLE KIT |
| 660190007 | COMPLETE STD. HANDLE KIT |
| 660190025 | SEAL RETAINER PLATE |
| 660190026 | HANDLE CLEVIS |
| 660290004 | POWER BEYOND PLUG #10 SAE |
| 660290017 | POWER BEYOND PLUG 3/4" NPTF |
| 660290005 | CLOSED CENTER PLUG |
| 660290006 | OPEN CENTER OUTLET PLUG |
| 660585001 | WORK SECTION SEAL KIT |
| 660585008 | LOCK SECTION SEAL KIT |
| 660590030 | SOLENOID OPERATED SECTION SEAL KIT |
| 660585002 | INLET SECTION SEAL KIT |
| 660585003 | OUTLET SECTION SEAL KIT |
| 660585004 | SEAL KIT O-RINGS BETWEEN SECTION ONLY |

| | |
|-----------|---|
| 660585006 | SOLENOID PILOT PASSAGE SEAL KIT |
| 660390103 | 20 WORK SECT COIL & CART ASSY 12VDC/LEADS |
| 660390107 | 20 WORK SECT COIL & CART ASSY 24VDC/LEADS |
| 660290010 | 20 UTIL SECT CONTINUOUS ON PBU CART |
| 660390153 | 20 UTIL SECT PBU COIL & CART ASSY 12VDC/LEADS |
| 660390157 | 20 UTIL SECT PBU COIL & CART ASSY 24VDC/LEADS |
| 270006092 | 20 UTIL SECT PRESSURE REDUCING CART |
| 660290012 | 20 UTIL SECT POWER BEYOND PLUG #10 SAE |

PORT RELIEF KITS

| | |
|-----------|----------------------------|
| 660290002 | NO RELIEF LOAD CHECK PLUG |
| 660290301 | SHIM ADJ. 500 - 1350 PSI |
| 660290303 | SHIM ADJ. 1351 - 1750 PSI |
| 660290305 | SHIM ADJ. 1751 - 2200 PSI |
| 660290307 | SHIM ADJ. 2201 - 3000 PSI |
| 660290401 | ADJUSTABLE 500 - 1350 PSI |
| 660290403 | ADJUSTABLE 1351 - 1750 PSI |
| 660290405 | ADJUSTABLE 1751 - 2200 PSI |
| 660290407 | ADJUSTABLE 2201 - 3000 PSI |
| 660290003 | ANTI-CAVITATION CARTRIDGE |

INLET RELIEF KITS

| | |
|-----------|----------------------------|
| 660290001 | NO RELIEF PLUG |
| 660290101 | SHIM ADJ. 500 - 1350 PSI |
| 660290103 | SHIM ADJ. 1351 - 1750 PSI |
| 660290105 | SHIM ADJ. 1751 - 2200 PSI |
| 660290107 | SHIM ADJ. 2201 - 3000 PSI |
| 660290201 | ADJUSTABLE 500 - 1350 PSI |
| 660290203 | ADJUSTABLE 1351 - 1750 PSI |
| 660290205 | ADJUSTABLE 1751 - 2200 PSI |
| 660290207 | ADJUSTABLE 2201 - 3000 PSI |

RELIEF HARDWARE KITS

| | |
|-----------|--|
| 660190024 | SHIM STYLE TO ADJ STYLE CONVERSION KIT |
| 672000201 | .006 SHIM FOR RELIEF |
| 672000202 | .010 SHIM FOR RELIEF |
| 672000203 | .018 SHIM FOR RELIEF |
| 672000205 | .041 SHIM FOR RELIEF |

LOAD SENSE KITS

| | |
|-----------|-----------------------------------|
| 660290018 | LOAD SENSE PLUG W/DRAIN ORIFICE |
| 660290019 | LOAD SENSE PLUG W/O DRAIN ORIFICE |

SPECIAL SECTIONS AVAILABLE:

Valves other than standard models listed can be made to order. Use order code Matrix below to generate a model number that meets your requirements. If you prefer, contact your Sales Representative with your specific requirements and a model number will be assigned for you. This model number can then be used for future orders. A minimum order quantity will apply to special valves. Please consult Sales Representative.

WORK SECTION

WORK SECTION TYPE

- P-STANDARD PARALLEL
- T-TANDEM CENTER
- L-PARALLEL WITH BUILT IN PILOT OPERATED CHECKS**

PORT SIZE

1. #10 SAE (7/8-14 THREAD)
2. #8 SAE (3/4-16 THREAD)
3. #12 SAE (1 1/16-12 THREAD)
4. 1/2 NPTF (2000 PSI MAX)
5. 3/8 NPTF (2000 PSI MAX)

SPOOL TYPE

- A - 3 WAY 3 POSITION
- B - 4 WAY 3 POSITION
- C - 4 WAY 3 POSITION FREE FLOW MOTOR
- D - 4 WAY 4 POSITION FLOAT
- E - 3 WAY 3 POSITION FREE FLOW MOTOR

SPOOL ACTIONS

- A - SPRING CENTER TO NEUTRAL
- B - 3 POSITION DETENT
- C - FRICTION DETENT
- D - FLOAT DETENT
- E - SPRING CENTER PNEUMATIC ACTUATOR
- F - 2 POSITION DETENT NEUTRAL & OUT (NO IN POSITION)
- J - SPRING CENTER W/ MICROSWITCH (SWITCHES ON IN OR OUT)***
- K - SPRING CENTER W/ MICROSWITCH (SWITCHES ON SPOOL IN ONLY)***
- N - SPRING CENTER DETENT OUT
- M - SPRING CENTER DETENT IN
- P - 2 POSITION DETENT NEUTRAL & IN (NO OUT POSITION)

HANDLE OPTIONS

- 1 - STANDARD LEVER HANDLE*
- 2 - LESS HANDLE ONLY
- 3 - LESS COMPLETE HANDLE
- 4 - VERTICAL LEVER HANDLE*
- 7 - BLANK FOR OPTIONAL JOYSTICK HANDLE

2 0 X X X X X X X

PORT RELIEF "B"

PORT RELIEF "A"

- A - NO RELIEF
- B - SHIM ADJUSTABLE RELIEF 500-1350 PSI SET AT 1350
- C - SHIM ADJUSTABLE RELIEF 1351-1750 PSI SET AT 1750
- D - SHIM ADJUSTABLE RELIEF 1751-2200 PSI SET AT 2200
- E - SHIM ADJUSTABLE RELIEF 2201-3000 PSI SET AT 2500
- F - ADJUSTABLE RELIEF 500-1350 PSI SET AT 1350*
- G - ADJUSTABLE RELIEF 1351-1750 PSI SET AT 1750*
- H - ADJUSTABLE RELIEF 1751-2200 PSI SET AT 2200*
- J - ADJUSTABLE RELIEF 2201-3000 PSI SET AT 2500*
- K - ANTI-CAVITATION CHECK
- L - PORT RELIEF/ANTI-CAV SHIM ADJ 500-1350 PSI SET AT 1350
- M - PORT RELIEF/ANTI-CAV SHIM ADJ 1351-1750 PSI SET AT 1750
- N - PORT RELIEF/ANTI-CAV SHIM ADJ 1751-2200 PSI SET AT 2200
- R - PORT RELIEF/ANTI-CAV SHIM ADJ 2201-3000 PSI SET AT 2500
- S - PORT RELIEF/ANTI-CAV ADJUSTABLE 500-1350 PSI SET AT 1350*
- T - PORT RELIEF/ANTI-CAV ADJUSTABLE 1351-1750 PSI SET AT 1750*
- W - PORT RELIEF/ANTI-CAV ADJUSTABLE 1751-2200 PSI SET AT 2200*
- Y - PORT RELIEF/ANTI-CAV ADJUSTABLE 2201-3000 PSI SET AT 2500*

*ADJUSTABLE PORT RELIEF CARTRIDGES CANNOT BE USED ON THE "A" PORT END OF WORK SECTION WHEN THE STANDARD LEVER HANDLE IS USED BECAUSE OF INTERFERENCE

FOR WORK PORT RELIEF SETTING OTHER THAN STANDARD

20P1BA1DH-18-20

"B" PORT RELIEF PRESSURE IN HUNDREDS
EXAMPLE: 20=2000 PSI
"A" PORT RELIEF PRESSURE IN HUNDREDS
EXAMPLE: 18=1800 PSI

- * LEVERS ARE COATED WITH BLACK RUBBER
- ** L WORK SECTION REQUIRES SPOOL TYPE C & PORT RELIEFS NOT AVAILABLE
- *** MICROSWITCH INCLUDED.

INLET SECTION

INLET TYPE

- I - STANDARD INLET

PORT SIZE

1. #10 SAE (7/8-14 THREAD)
2. #12 SAE (1 1/16-12 THREAD)
3. 3/4 NPTF (2000 PSI MAX)

RELIEF OPTION

- Blank - LEAVE BLANK FOR INLET WITHOUT RELIEF OR RELIEF PLUG
- A - NO RELIEF PLUG
- B - SHIM ADJUSTABLE RELIEF 500-1350 PSI
- C - SHIM ADJUSTABLE RELIEF 1351-1750 PSI
- D - SHIM ADJUSTABLE RELIEF 1751-2200 PSI
- E - SHIM ADJUSTABLE RELIEF 2201-3000 PSI
- F - ADJUSTABLE RELIEF 500-1350 PSI
- G - ADJUSTABLE RELIEF 1351-1750 PSI
- H - ADJUSTABLE RELIEF 1751-2200 PSI
- J - ADJUSTABLE RELIEF 2201-3000 PSI
- K - ADJUSTABLE RELIEF 3001-3500

RELIEF SETTINGS: THE LAST FOUR DIGITS REPRESENT THE RELIEF SETTING IN PSI

2 0 I X X - X X X X

OUTLET SECTION

OUTLET TYPE

- E - STANDARD OUTLET

PORT SIZE

1. #10 SAE (7/8-14 THREAD)
2. #12 SAE (1 1/16-12 THREAD)
3. 3/4 NPTF (2000 PSI MAX)

EXHAUST OPTIONS

- 1-STANDARD OPEN CENTER OUTLET WITH CONVERSION PLUG
- 2-POWER BEYOND OUTLET WITH #10 SAE POWER BEYOND PORT
- 3-CLOSED CENTER OUTLET °

° Often used with no relief. Review application

2 0 E X X

VALVE ASSEMBLIES

The Series 20 sectional body directional control valve can be ordered as separate sections as outlined or as a complete factory tested assembly. This will need to be specified with each order. An assembly model number will be assigned at the time of the order. This assembly number can then be used for future orders.

ASSEMBLY MODEL NUMBER 20A - X X X X

XXXX = Sequence of Numbers. This number will be assigned to final valve to be assembled and tested at the factory. Each new order or quote will be assigned a new assembly model number.