

SERIES 21 SECTIONAL DIRECTIONAL CONTROL VALVES INSTALLATION & USER GUIDE

SPECIFICATIONS:

- Rated for 0-6 gpm (0 - 23 lpm).
- Rated for 4000 psi (272 bar) parallel or 3000 psi (207 bar) series.
- Std. port sizes (consult factory for others).
 - #6 SAE (9/16-18) all ports.
- 400 psi (27 bar) max tank back-pressure
- Spool Leakage: Less than 2.0 in³ (33 cc) @1000psi (69 bar) per minute.
- Weights:
 - Inlet: 2.6 lbs (1.2 kg).
 - Work section: 4.4 lbs (2.0 kg), 6 sections max.
 - Outlet: 2.2 lbs (1.0 kg).
- 10-Micron filtration recommended.
- 85 inch-lbs tie-rod torque

MOUNTING & ADJUSTMENT INSTRUCTIONS:

- **Mounting** – Valve can be mounted in any orientation. Valve must be mounted on a flat surface. Special attention should be paid to not bend or twist the casting when mounting. Doing so may cause the valve to fail.
- **Relief Adjustment** – Relief setting is factory preset to 2000 psi, unless otherwise noted within model code. Relief valve can be set anywhere within the range of 500 psi to 4000 psi by switching out the relief spring to one of the following:
 - **500-1100 psi (34-76 bar)** – Use spring P/N: S065 (Silver)
 - **1200-3000 psi (83-207 bar)** – Use spring P/N: S059 (Brown, Standard Option)
 - **3100-4000 psi (214-276 bar)** – Use spring P/N: S064 (Blue)

To adjust relief pressure: First, remove the acorn nut with a 1/2" wrench and loosen the hex jam nut. Using a 5/32" allen wrench on the relief adjustment screw one full turn clockwise will increase pressure by 200 psi.

FREQUENTLY ASKED QUESTIONS (FAQ):

Q: Can I plumb another valve downstream from this valve, using the outlet of this valve?

A: No. The outlet of this valve should be plumbed back to tank. If the valve is equipped with power beyond, a separate port will be available on the outlet section for downstream functions.

Q: Can I convert my valve to utilize "Power Beyond"?

A: Yes, if you have a field convertible outlet section. To do so, remove the side conversion plug out of the valve, if applicable. Then install the 20-AGPB cartridge using a 3/4" [19mm] wrench. Finally, plumb either the Top or End port back to tank as the low pressure return. See Figure 1 for more information.

Q: Can I convert my valve to operate in a "Closed" system?

A: Yes, if you have a field convertible outlet section. To do so, remove the side conversion plug out of the valve, if applicable. Then install the 20-AGCC cartridge using a 3/4" [19mm] wrench. Finally, plumb either the Top or End port back to tank as the low pressure return.

Q: Can non-electric Series 20 sections be mixed with solenoid operated Series 21 Sections?

A: Yes, Series 21 work sections are designed from the Series 20 valve family which allows for solenoid and manual sections to be assembled in the same stack valve. Maximum 6 sections still apply.

Q: Can I paint the valve?

A: Painting valves is acceptable as long as the following precautions are taken:

- 1- All ports must be plugged
- 2- Manual override pins and solenoid cartridges must be masked or taped off completely.

Any paint on the manual override pins will cause leakage when it chips off. Paint on the solenoid cartridges may prevent proper installation and operation of the coil/solenoid assembly. Warranty is void if any valve is returned with paint on the manual override pins or solenoid cartridges.

Q: What is the correct torque for the tie rod nuts?

A: The correct torque spec on the tie rod nuts is 85 inch pounds [9.6Nm]. Using a 1/2" socket and wrench, both nuts on each rod should be tightened at the same time to prevent bind in the section.

FREQUENTLY ASKED QUESTIONS cont'd:

Q: Can I rotate my handle(s) (if equipped)?

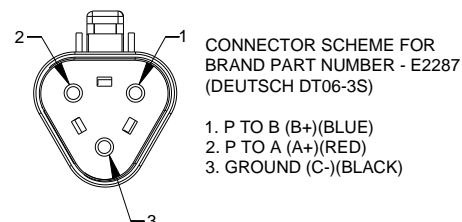
A: Yes, the manual handle on Series 21 sections with the “L” manual handle option may be rotated 180°. Using two 1/2” wrenches, remove the tie-rod nuts and washers from one end. Keeping track of all shims and o-rings, remove each section from the “stack” until the desired section is removed. Remove the two retaining socket head cap screws attaching the handle block to the valve using a 5/32” Allen wrench. **DO NOT PULL THE HANDLE ASSEMBLY AWAY FROM THE VALVE.** Simply rotate the handle block 180° and reinstall the socket head cap screws. Reassemble the valve in the reverse order of disassembly or following the “STACK VALVE ASSEMBLY GUIDE”. Torque the tie-rod nuts to 85 inch-lbs.

Q: How do I convert my Inlet & Outlet section porting?

A: Field convertible Inlets & Outlets will have two -6 SAE plugs in them. To convert them, remove the plug from the desired Inlet/Outlet with a 1/4” allen wrench and reinstall it the undesired Inlet/Outlet port.

Q: What is the pin-out on standard coils?

A: Standard coils use 3 pin DEUTSCH (DT06-3S) connectors. See Figure 1 for the DEUTSCH pin-out.



**Figure 1: Standard DEUTSCH
(DT06-3S) pin-out**

Q: Which direction is the coil installed?

A: To achieve the functionality of the pin-out in figure 1, refer to the Dimensional Data in figure 2. The “V” shape of the DEUTSCH connector should point toward the outlet section.

STACK VALVE ASSEMBLY GUIDE:

Inlet Section:

Check the machined mounting surfaces of the sections, the section washers and o-rings are clean of contaminants. Install one split washer and 5/16” nut to each of the three tie rods. Install the three tie rods into the mating holes in the Inlet valve section with the washers and nuts on the outside end of the Inlet section.

Work Sections:

Install the three thin washers [shims] packaged with the Work Section, on to the tie rods. Slide these shims against the machined side of the Inlet section. Check the work section o-rings are clean and free of contamination and installed into the Work Section. Slide the entire Work Section down the tie rods with the o-rings facing the machined side of the Inlet section. Repeat for the remaining Work Sections.

Outlet Sections:

Install the Outlet section following the same procedure as the Work Sections. Install the remaining split washers and nuts, then hand tighten.

Tighten the tie rod nuts to the correct torque setting: see “[What is the correct torque for the tie rod nuts?](#)” in the FAQ section. Be sure the mounting feet are flat against the table while the nuts are tightened to the torque setting.

If your Outlet section came ordered with the Power Beyond, i.e. the “W” model callout, install the power beyond cartridge per “[Can I convert my valve to utilize “Power Beyond?”](#)” in the FAQ section.

SAFETY PRECAUTIONS:

- It is the purchaser’s responsibility to determine the suitability of any Brand Hydraulics Co. product for an intended application, and to ensure that it is installed in accordance with all federal, state, local, private safety and health regulations, codes and standards. Due to the unlimited variety of machines, vehicles and equipment on which our products can be used, it is impossible for Brand Hydraulics Co. to offer expert advice on the suitability of a product for a specific application. It is our customer’s responsibility to undertake the appropriate precautions, testing and evaluation to prevent injury to the end-user.
- Overpressure may cause sudden and unexpected failure of a component in the hydraulic system, resulting in serious personal injury or death. Always use a gauge when adjusting a relief valve.

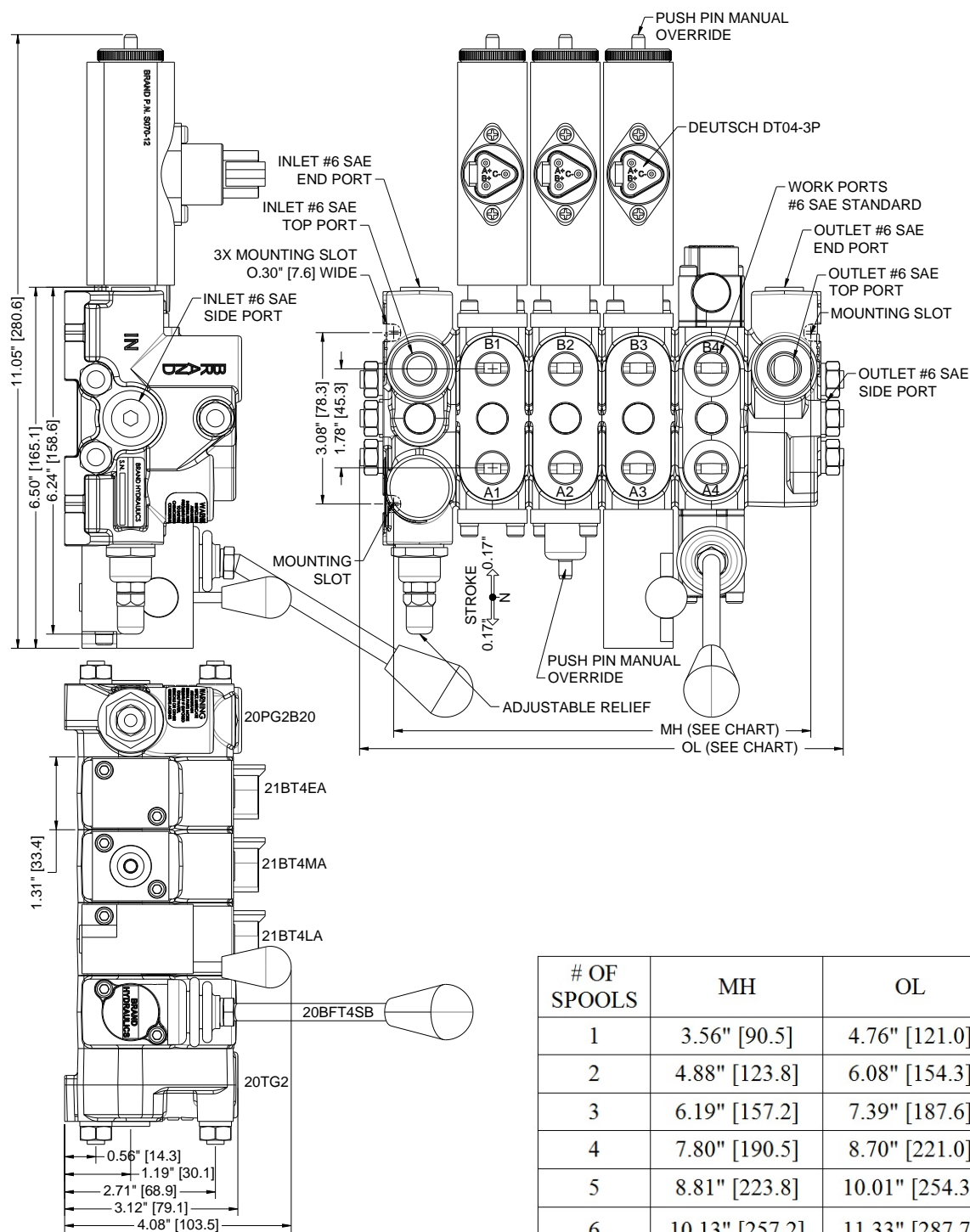


Figure 2: DIMENSIONAL DATA
INCHES [MILLIMETERS]