HYDROPLEX

High Pressure Pump and System Specialists

INSTRUCTION AND SERVICE MANUAL

HR2-20 HAND REGULATOR

I. GENERAL INSTRUCTIONS

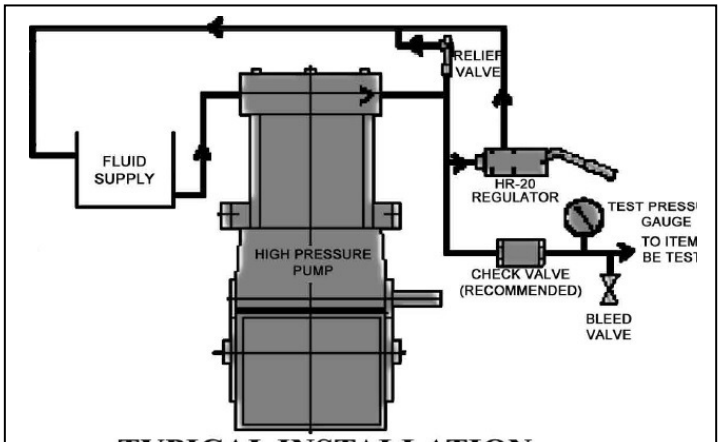
The Hydroplex model HR2-20 hand regulator is a precision designed and manufactured product, which, if properly operated, will give safe, reliable operation. Due to its high pressure capabilities care must be taken in its application, installation and operation. All personnel operating or maintaining this equipment should study this manual.

The purpose of the HR2-20 hand regulator is to manually regulate the discharge pressure from a high pressure source. The valve is spring loaded and normally open to automatically divert liquid at a very low pressure from the source back to a low pressure location when the handle is not activated. When the operating arm is moved by an operator, system pressure will be increased in proportion to the movement of the arm. Releasing of the arm will immediately drop the pump pressure back to a minimal level, while holding pressure past the downstream check valve.

A. Installation

CAUTION

THE HR2-20 HAND REGULATOR CAN PRODUCE VERY HIGH PRESSURES AND MUST BE PROTECTED BY A PROPERLY SIZED AND OPERABLE PRESSURE RELIEF DEVICE PIPED INTO THE DISCHARGE LINE. THIS IS MANDATORY TO PREVENT DAMAGE TO THE PUMP OR CONNECTED EQUIPMENT, OR POSSIBLE INJURY TO PERSONNEL. DO NOT INSTALL ANY VALVES OR SHUTOFF DEVICES BETWEEN THE PUMP, RELIEF VALVE AND THE HR2-20 HAND REGULATOR VALVE.



TYPICAL INSTALLATION

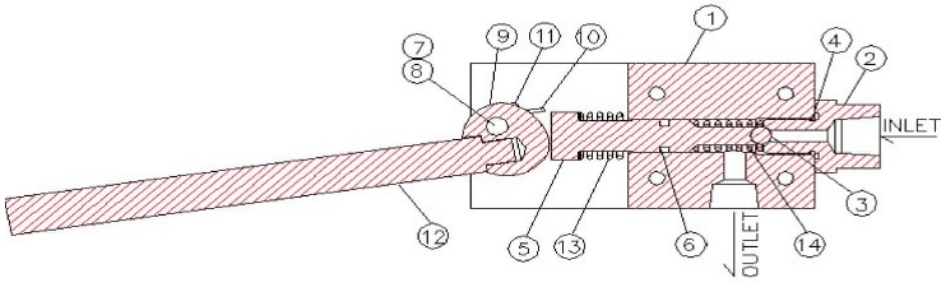
1. Install a properly sized and pressure rated tee in the pump discharge line upstream of any block or check valves (see Typical Installation at right).
2. Securely mount the HR2-20 hand regulator in a location that will be convenient to the operator and able to withstand significant loading from the force that will be applied to the regulator handle. **Waist high mounting provides best leverage for down force on the lever.** Four (4) holes sized for ¼" bolts are provided in the side of the HR2-20 for this purpose.

3. Pipe the branch connection of the tee into the inlet connection of the HR2-20. The piping should be sized to be capable of handling the full amount of the pump flow rating and should be rated for the maximum discharge pressure rating of the system.
4. Pipe from the outlet connection of the HR2-20 to a low pressure location, preferably the original source of supply to the pump below the liquid line. It is not recommended that this piping be directly into the pump suction line, but should be back to a high volume location. This piping can be of a lower pressure rating, but not less than 1000 psi working pressure.
5. The opposite end of the branch tee should be piped to the main system, using properly sized and pressure rated piping. If the system will be used for hydrostatic testing, a check valve should be included in this line, with a bleed or dump valve installed downstream of the check valve (see Typical Installation on previous page). A pressure gauge should also be installed downstream of the check. Install all high pressure fittings and equipment directed away from areas accessible by personnel to prevent injury in the event of accidental equipment or system failure.
6. Insure that operating personnel are provided with OSHA approved safety wear and gear to prevent injury from high pressure equipment.

B. Operation

1. Read all instructions carefully
2. Inspect safety relief devices
3. Check tightness of all connections
4. Open all block valves
5. Start the pump and check for proper operation
6. While monitoring system pressure gauge, move the arm of the HR2-20 hand regulator. System pressure will rise as the arm is moved. For hydrostatic testing, once the desired pressure is reached the arm can be released. The pump discharge pressure will drop to a minimal level, while the hydrostatic pressure will be maintained by the discharge check valve. Upon completion of testing, open the pressure bleed or dump valve to drop the test pressure back to atmospheric pressure.

II. SERVICE



ITEM	DESCRIPTION	QUANTITY	PART NO.
1	VALVE BODY	1	0175R
2	INLET VALVE SEAT	1	0580 , AUTOCLAVE 9/16" MP *
		1	0580-HP, AUTOCLAVE 9/16 HP *
3	VALVE BALL	1	0173B*
4	VALVE SEAT O-RING	1	0373*
5	VALVE STEM	1	0173R
6	POLYPAK, VALVE STEM	1	0824*
7	CAM BOLT	1	0838
8	NYLON LOCKNUT	1	0839
9	ROLLER CAM	1	0828
10	TORSION SPRING	1	0830*
11	STOP SCREW	1	0831*
12	HANDLE	1	0829
13	OUTER COIL SPRING	1	0825
14	SPRING	1	0374

* RECOMMENDED SPARE PARTS

Should it become impossible to achieve the desired system pressure, it may be necessary to replace the valve ball (item 3) and valve seat (item 2). The inlet seat is the main wear item on the valve and should be available as a spare part with the pump unit. Increased down force to achieve the same pressure can be an indication that the valve seat will soon need replacing. Use of a cheater pipe on the handle will usually result in damage to the valve. After being certain that all pressure is released, disconnect the piping from the HR2-20 inlet and unscrew the valve seat (item 2). The valve ball (item 3) and valve seat (item 2) can then be replaced. While disassembled, the spring (item 14) should also be inspected and replaced if worn or damaged. A new o-ring (item 4) should also be used.

If the handle is not returning to the original position after releasing handle force, it may be necessary to replace the outer coil spring (item 13) and/or torsion spring (item 10). To do this, remove the nylon lock nut (item 8) and pull out the cam bolt (item 7). The handle (item 12), roller cam (item 9) and torsion spring (item 10). The valve stem (item 5) can then be removed, along with the outer coil spring (item 13). Inspect the two springs and replace as required. Reverse the procedure to reassemble the unit. A new polypak seal (item 6) should be used. The unit should be vertical during reassembly so that the valve ball (item 3) is properly sitting on the valve seat (item 2).

III. PERFORMANCE

Maximum pressure rating: 20,000 PSI for HR2-20 and 30,000 PSI for HR2-20HP

Nominal flow rating: 10 gpm

Cv: 0.43

IV. WARRANTY

A. Warranty

Equipment manufactured by Hydroplex is warranted against defective material and workmanship as determined by Hydroplex for a period of twelve (12) months from date of shipment, except where normal service is less. Workmanship, materials, or equipment purchased or supplied by any supplier other than Hydroplex bears no warranty by Hydroplex, and is limited to that given by the supplier involved. Warranty does not include freight, installation or removal from field installation. Warranty work is to be done at Hydroplex's plant and does not include field service. All repairs and determination of problems are to be made at Hydroplex's plant. This warranty does not extend to wearable items such as packing, gaskets, o-rings, seals, plungers, seats, etc.

SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES, INCLUDING ANY WARRANTY MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

B. Limitation of Liability

Hydroplex's liability for defective material and workmanship covered by the warranty shall be limited to the repair or replacement of such defective material or workmanship. Hydroplex and its suppliers shall in no event be liable to the Customer for any indirect of consequential damages arising out of this Contract or any breach thereof, and the maximum liability of Hydroplex, in any case, shall be limited to the return of the goods and repayment of the price or to repair and replacement of the non-conforming goods or parts thereof.

V. TIPS:

1. Mount the valve waist high with the pressure gauge at eye level for optimum leverage

2. Keep a spare seat and ball on hand when in the field. With continued usage there will be wear to the seat as shown here. This causes an increase in the required handle force to achieve the desired pressure. Solids in the fluid stream will accelerate wear at high pressure!

3. Occasionally spray the valve stem and springs with WD40 in humid or salty conditions.