

**INSTRUCTION AND SERVICE MANUAL**  
**HR-20P PNEUMATICALLY CONTROLLED**  
**PRESSURE REGULATOR**

## I. GENERAL INSTRUCTIONS

The Hydroplex model HR-20P pneumatically controlled 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.

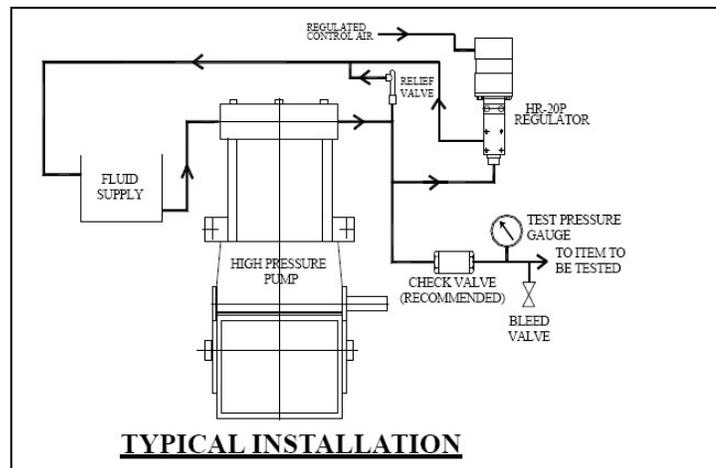
The purpose of the HR-20P pneumatically controlled regulator is to remotely regulate the discharge pressure from a high pressure source. The valve is normally open to automatically divert liquid at a very low pressure from the source back to a low pressure location when the pneumatic control pressure is not applied. This makes the HP-20P suitable for pressure control during hydrostatic testing, and also for use as a bypass valve to allow starting of the pump without back pressure. When the pneumatic control pressure is applied by an operator, system pressure will be increased in proportion to the applied pressure. Releasing of the pneumatic pressure will immediately drop the pump pressure back to a minimal level, while holding pressure past the downstream check valve.

### A. Installation

#### CAUTION

**THE HR-20P PNEUMATICALLY CONTROLLED 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 HR-20P PNEUMATICALLY CONTROLLED REGULATOR VALVE.**

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).

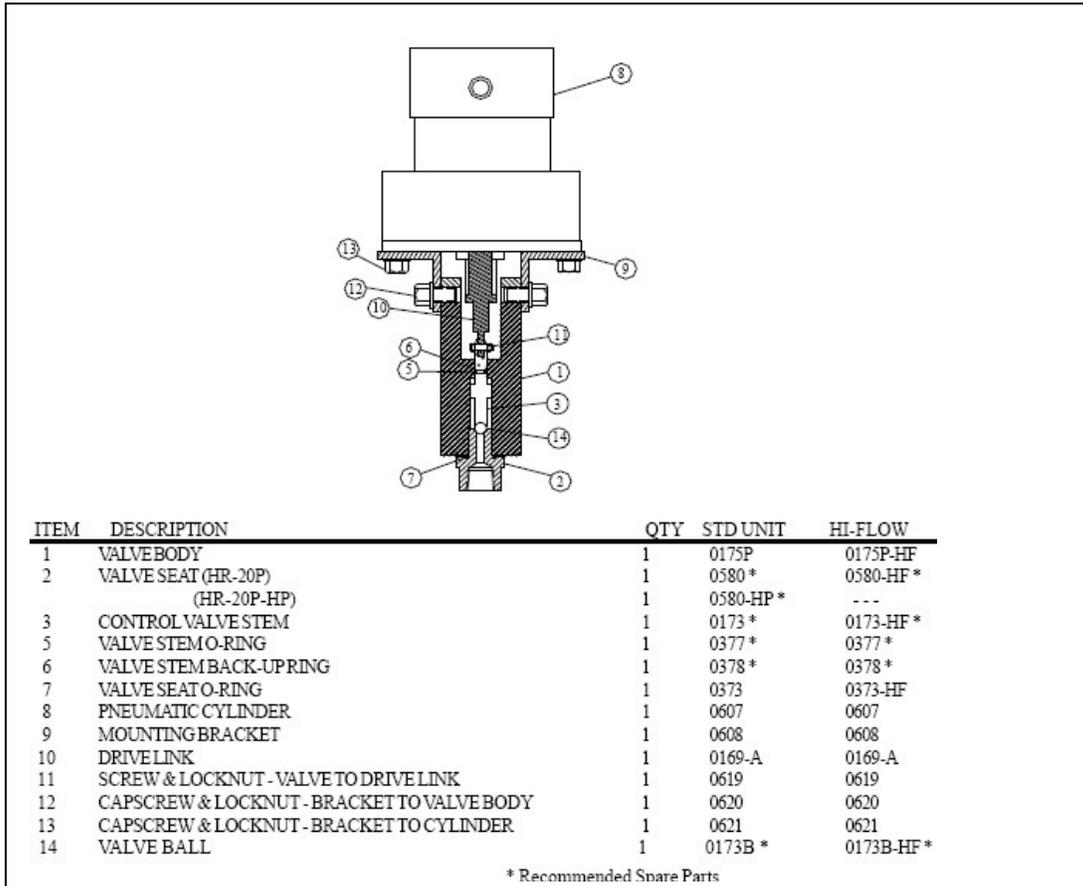


2. Securely mount the HR-20P pneumatically controlled regulator in a location that will be convenient. Four (4) holes sized for ¼” bolts are provided in the side of the HR-20P for this purpose.
3. Pipe the branch connection of the tee into the inlet connection of the HR-20P. The piping should be sized 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 HR-20P 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. Connect an air pressure source that has a varying pressure controller to the upper 1/2” npt connection near the top of the control head.
7. 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. Ensure that there is no air pressure to the HR-20P valve before starting the pump
6. Start the pump and check for proper operation
7. While monitoring system pressure gauge, begin applying pneumatic pressure to the HR-20P pneumatically controlled regulator. System pressure will rise as the pressure is applied. For hydrostatic testing, once the desired pressure is reached the pneumatic pressure 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



Should it become impossible to achieve the desired system pressure, it may be necessary to replace the valve ball (item 14) 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 pneumatic pressure to achieve the same pump pressure can be an indication that the valve seat will soon need replacing. After being certain that all pressure is released, disconnect the piping from the HR-20P inlet and unscrew the valve seat (item 2). The valve ball (item 3) and valve seat (item 2) can then be replaced. A new o-ring (item 7) should also be used.

## III. PERFORMANCE

Maximum pressure rating: 20,000 PSI for HR-20P and HR-20-HF, 30,000 PSI for HR-20P-HP

Nominal flow rating: 10 gpm for HR-20P and HR-20-HP, 20 gpm for HR-20P-HF

Cv: 0.43 for HR-20P and HR-20P-HP, 1.0 for HR-20P-HF

Pressure ratio=220:1 for HR-20P and HR-20P-HP, 80:1 for HR-20P-HF

#### 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 WHATSOEVER, 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 or 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 bore with WD40 in humid or salty conditions.



# HR-20P DIMENSIONS

