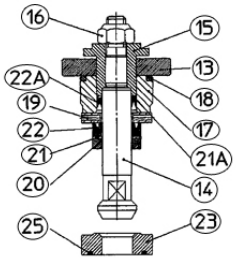
# Models

## 22980 Unloader
## 22980R Regulator

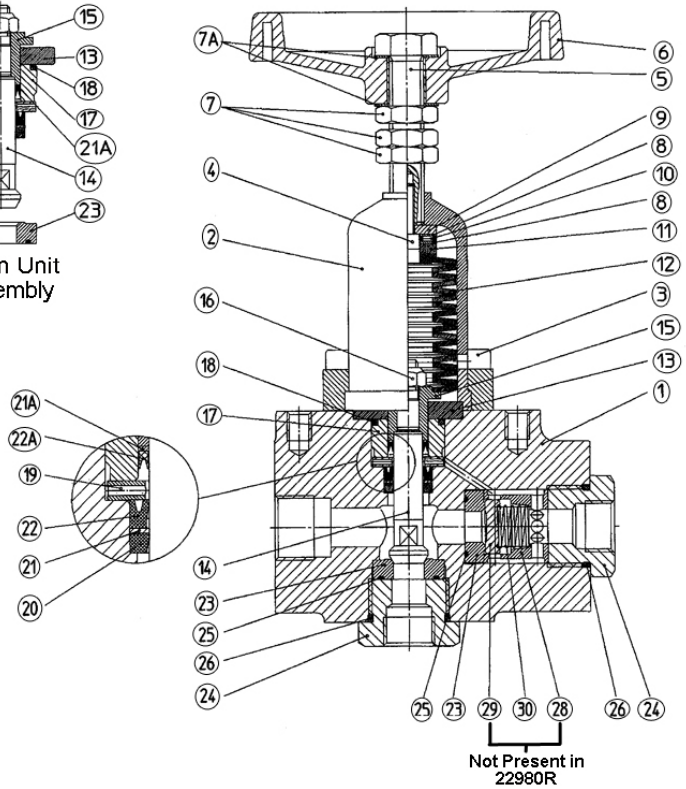
# Industrial Unloader/Regulator (High Pressure)

| Item | Part# | Description | Quantity |
|---|---|---|---|
| 1 | 08500 | Casing | 1 |
| 2 | 06880 | Spring Guide | 1 |
| 3 | 07381 | Inner Hexagon Screw | 4 |
| 4 | 08503 | Inner Hexagon Screw | 1 |
| 5 | 08504 | Stud Bolt | 1 |
| 6 | 08505 | Hand Wheel | 1 |
| 7 | 08506 | Hexagon Nut | 3 |
| 7A | 08882 | Washer | 2 |
| 8 | 08507 | Disc | 2 |
| 9 | 08508 | Bearing Part I | 1 |
| 10 | 12323 | Axial Bearing | 1 |
| 11 | 08510 | Bearing Part II | 1 |
| 12 | 12218 | Spring Plate | 18 |
| 13 | 06714 | Centering Disc | 1 |
| 14 | 06687 | Piston | 1 |
| 15 | 06715 | Seal Support | 1 |
| 16 | 06713 | Hexagon Nut | 1 |

| Item | Part# | Description | Quantity |
|---|---|---|---|
| 17 | 06716 | Cylinder | 1 |
| 18 | 12004 | O-Ring | 1 |
| 19 | 08519 | Spacer Ring | 1 |
| 20 | 08520 | Guide Ring | 1 |
| 21 | 07392 | Support Ring | 1 |
| 21A | 06718 | Support Ring | 1 |
| 22 | 07391 | Seal Pack | 1 |
| 22A | 06717 | Seal Ring | 1 |
| 23 | 08523 | Valve Seat | 2 |
| 24 | 08524 | Valve Plug | 2 |
| 25 | 07489 | O-Ring | 2 |
| 26 | 12057 | O-Ring | 2 |
| 28 | 08530 | Spacer Pipe (22980) | 1 |
| 29 | 08531 | Valve Plate (22980) | 1 |
| 30 | 12216 | Valve Spring (22980) | 1 |
| 30 | 07423-0100 | Plug, 22980R (not shown) | 4 |
| 32 | 06934 | Seal, 22980R (not shown) | 4 |



Piston Unit Assembly




## Operating Specifications

| | U.S. | Metric |
|---|---|---|
| Max. Pressure: | 7250 PSI | (500 bar) |
| Maximum Flow: | 26.4 GPM | (100 l/min.) |
| Minimum: | 2.1 GPM | (8.0 l/min.) |
| Maximum Temperature: | 160° F | 70°C |
| Inlet Port: | | 3/4" BSP |
| Outlet Port: | | 1/2" BSP |
| Bypass: | | 1/2" BSP |
| Weight: | | 15.4 lbs. |

## Repair Kits

**Unloader Repair Kit - p/n 09543**

**Parts Included:** 14, 15, 16, 18, 21, 21A, 22, 22A, 23, 25, 26, 29, 30

**Regulator Repair Kit - p/n 09547**

**Parts Included:** 14, 15, 16, 18, 21, 21A, 22, 22A, 23(1), 25(1), 26(1)

## SERVICE AND ADJUSTMENT

Servicing and adjusting work is only to be carried out by qualified personnel.

IMPORTANT **Observe the direction of the flow. The by-pass must NEVER be closed or fitted with a shut-off device.**

## OPERATION

The whole discharge must be guided through the valve. Should the actual operating pressure exceed the adjusted operating pressure, the valve then acts as a pressure regulator. The valve switches to pressure free bypass operation when the spray gun shuts off and the spray pressure between gun and valve remains idle.

The valve can be operated with several spray guns. It is also possible to connect several pumps to one (1) common discharge line. .

Valves are pre-adjusted to the desired operating pressure; therefore, the actual operating pressure must be indicated when ordering.

**TO RENEW THE PISTON ROD SEALS AND SLEEVES**

Relieve the spring pack by means of the hand wheel (6). Screw out the four inner hexagon screws (3). Remove the spring guide (2) along with the spring plates (12) and hand wheel. **CAUTION: The hexagon nuts (7) are not to be shifted from the set position. These are the locking nuts which ensure that the maximum adjusted pressure cannot be exceeded.** Note the sequence of the plate springs (12) for reassembling.

Push out complete piston assembly (#13-22A) upwards. Hold piston (14) with size 12 wrench and remove hexagon nut (16). Remove cylinder (17), seal support (15), centering disc (13), spacer ring (19) and guide ring (20) together with seals from the piston (14). Take note of the sequence for reassembling.

Check inner cylinder surface (17) and piston surface (14). Check seals and replace as necessary. Dirt or damage will cause seals to wear out quickly. Grease all parts lightly with silicone before reinstalling. Tighten hexagon nut (16) to 33 ft.-lbs. (45NM)

Center bypass valve seat (23) within casing and tighten to 110 ft-lbs. (150 NM) with valve plug (24). Next insert complete piston unit from the top. Fit spring guide (2) along with spring plates (12), tighten inner hexagon screws (3) to 36 ft.-lbs. (49 NM).

**TO CHECK AND REPLACE VALVES**

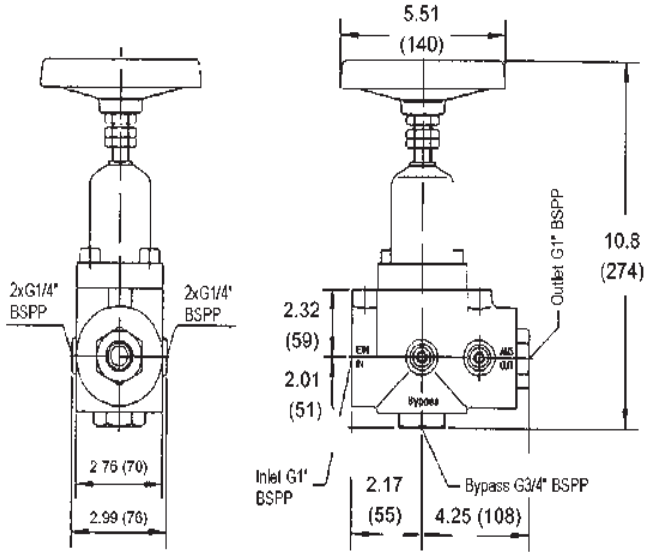
Screw out plugs (24x2), pull out spacer pipe (28) underneath plug (24). Check whether the valve plate (29) underneath or the piston (14) is worn out. Remove the valve seats (23) and check the surfaces and O-rings for wear and/or damage. Replace as necessary.

**TO ADJUST PRESSURE**

The pressure is to be adjusted by means of the hand wheel (6) while the pump is running and the gun is open (in the case of multiple guns, all guns must be open) until required operating (or the maximum permitted) pressure is reached. If adjustment of the selected nozzle sizes is correct, no water will flow through the bypass. The hexagon nut (7) is then to be locked to the spring guide (2).

NOTE If the nozzle orifice is too small, under no circumstance is the valve to be adjusted to an operating pressure higher than that of the maximum operating pressure of the pump. In this case, properly sized nozzles should be selected.

## 22980 & 22980R
## DIMENSIONS (INCHES)




| DEFECT | CAUSE | REMEDY |
|---|---|---|
| Valve switches on & off repeatedly when gun is closed | Gun Leaking | Repair / Replace Gun |
| | Leak in Discharge Line | Identify & Fix Leak |
| | Seal Ring (22) leaks Kick-Back valve is defective | Replace Seal Ring Check valve seat (23), valve plate (29), spring (30) & O-ring (25) |
| Leakage at spring guide | Piston Seal (22A) Leaking | Replace Seal Ring (22A) |
| | Cylinder O-ring (18) leaks | Replace O-ring (18) |
| Switches to Bypass while gun is open | Nozzle too small / Too much water | Install larger nozzle |
| | Bypass valve worn | Replace piston (14), bypass valve seat (23) & O-ring (25) |
| Pressure gauge reading jumps when spray gun is shut off | Valve activation pressure is set higher than operating pressure | Turn hand wheel to operating pressure level and secure with locknut (7) |
| | Dirt in valve | Clean valve of any deposits. Grease parts before reassembly |

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