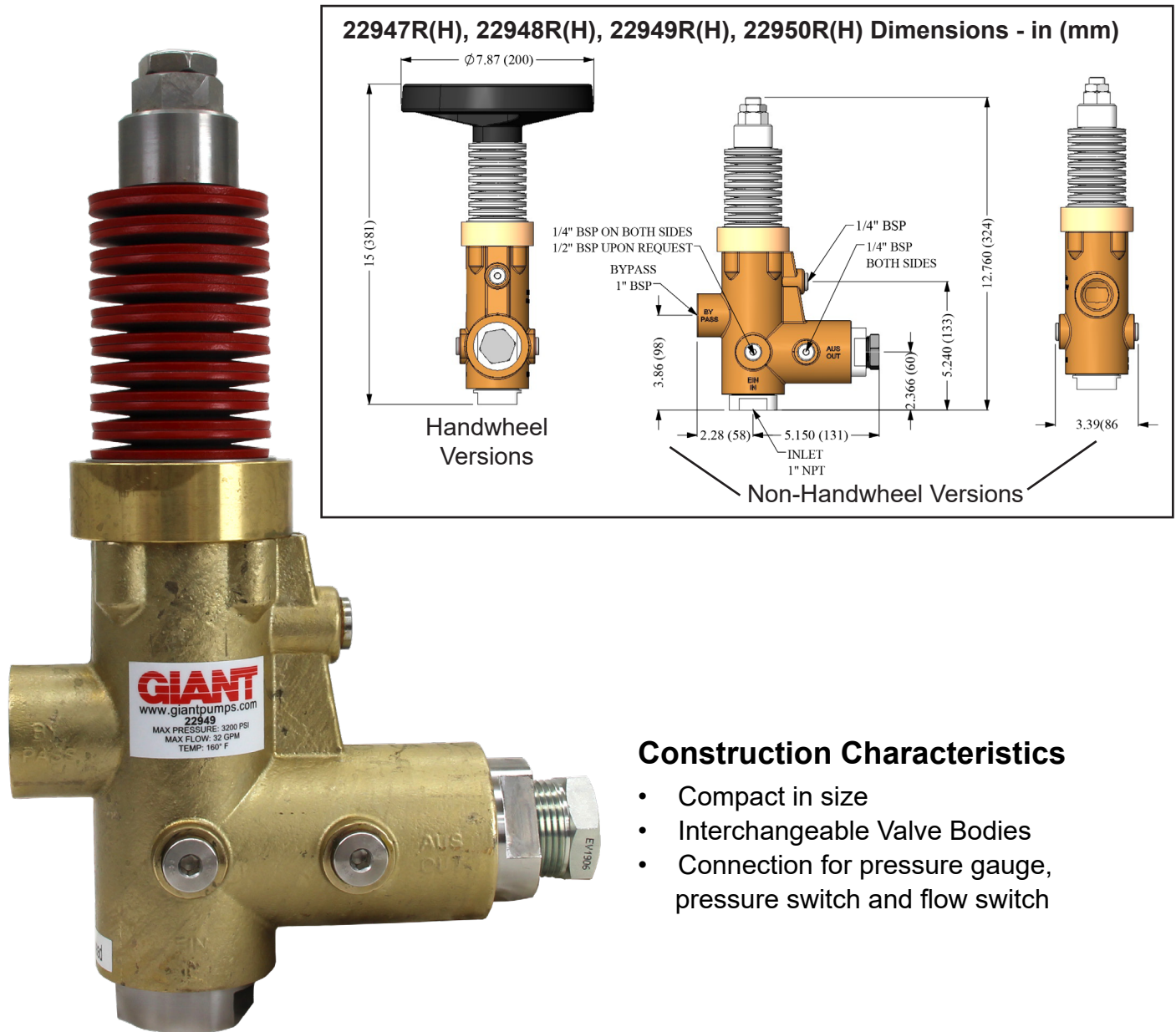


Adjustable Regulator

Models

22947R(H), 22948R(H), 22949R(H) & 22950R(H)



non-handwheel version shown

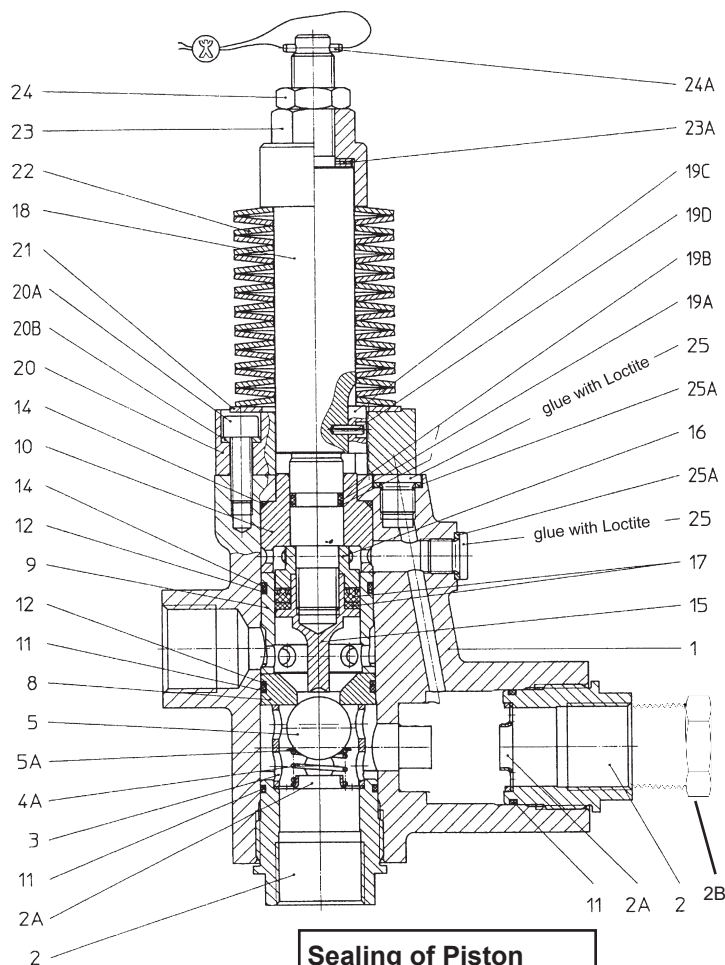
Construction Characteristics

- Compact in size
- Interchangeable Valve Bodies
- Connection for pressure gauge, pressure switch and flow switch

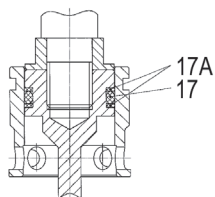
| Specifications | | | | |
|----------------|-----------------------------|--------------------------------|--------------------------------|-----------------------------------|
| Unloader | Pressure Range PSI (bar) | Maximum Flow GPM (L/min) | Minimum Flow GPM (L/min) | Maximum Temperature °F (°C) |
| 22947(H) | 300-1160 (20-80) | 60 (225) | 2.1 (8) | 160 (70) |
| 22948(H) | 600-1600 (40-110) | 60 (225) | 2.1 (8) | 160 (70) |
| 22949(H) | 1600-3200 (110-220) | 32 (120) | 2.1 (8) | 160 (70) |
| 22950(H) | 3200-5800 (220-400) | 16 (60) | 2.1 (8) | 160(70) |

22947R, 22948R, 22949R, and 22950R

Non-Handwheel Versions Cut-through View and Parts



Sealing of Piston Body for 22947



| Item | Part # | Description | Qty |
|------|---------------|---------------------------------|-----|
| 1 | 06730 | Casing | 1 |
| 2 | 12042 | Tension Plug | 1 |
| 2A | 12043 | Spring Tension Disc | 1 |
| 2B | PF-5406-16PSS | Plug | 1 |
| 4A | 12118 | Spring, Inlet valve | 1 |
| 5 | 12046-0100 | Ball Valve, Inlet (22947/22948) | 1 |
| 5 | 12047-0100 | Ball Valve, Inlet (22949/22950) | 1 |
| 8 | 06734 | Valve Seat, Inlet (22947/22948) | 1 |
| 8 | 06745 | Valve Seat, Inlet (22949) | 1 |
| 8 | 06746 | Valve Seat, Inlet (22950) | 1 |
| 9 | 12053 | Cylinder | 1 |
| 10 | 12054 | Guide | 1 |
| 11 | 06577 | O-Ring | 2 |
| 12 | 12056 | Support Ring | 2 |
| 14 | 06736 | O-Ring | 2 |
| 15 | 12059 | Piston | 1 |
| 15 | 04846 | Piston Body (22947) | 1 |
| 16 | 12060 | Spacer(22947) | 1 |
| 16 | 12284 | Spacer (22948/22949/22950) | 1 |
| 17 | 04847 | O-Ring for 15 (22947) | 1 |
| 17 | 12283 | Packing (22948/22949/22950) | 1 |
| 17A | 04848 | Support Ring (22947) | 2 |
| 18 | 06737 | Piston Rod | 1 |
| 19A | 22618 | O-Ring, Valve Stem | 1 |
| 19B | 12064 | Spacer, Valve Stem | 2 |
| 19C | 12065 | Key | 1 |
| 19D | 12066 | Tension Sleeve | 1 |
| 20 | 12067 | Support Ring | 1 |
| 20A | 06738 | Allen Screw | 4 |
| 20B | 01011-0400 | Washer, Spring | 4 |
| 21 | 12070 | Disc | 1 |
| 22 | 04850 | Spring, Silver (22947) | 23 |
| 22 | 12071 | Spring, Yellow (22948) | 19 |
| 22 | 12072 | Spring, Red (22949) | 19 |
| 22 | 12073 | Spring, Orange (22950) | 19 |
| 23 | 12074 | Nut, Adjusting | 1 |
| 23A* | 06739 | Spacer Disc, 0.2mm | 1 |
| 23B* | 06740 | Spacer Disc, 0.5mm | 2 |
| 23C* | 06741 | Spacer Disc, 1.0mm | 2 |
| 23D* | 06742 | Spacer Disc, 5mm | 1 |
| 24 | 06743 | Nut, Locking | 1 |
| 24A | 06744 | Tension Pin | 1 |
| 25 | 07423-0100 | Plug, 1/4" | 6 |
| 25A | 07161 | Washer | 6 |

* May not be present. Quantity may vary.

Repair Kits

Unloader

Small Kit

22948/22949/22950 09619R 11,12,14,17,19A,19D

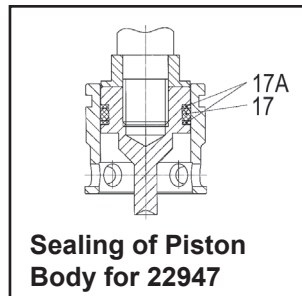
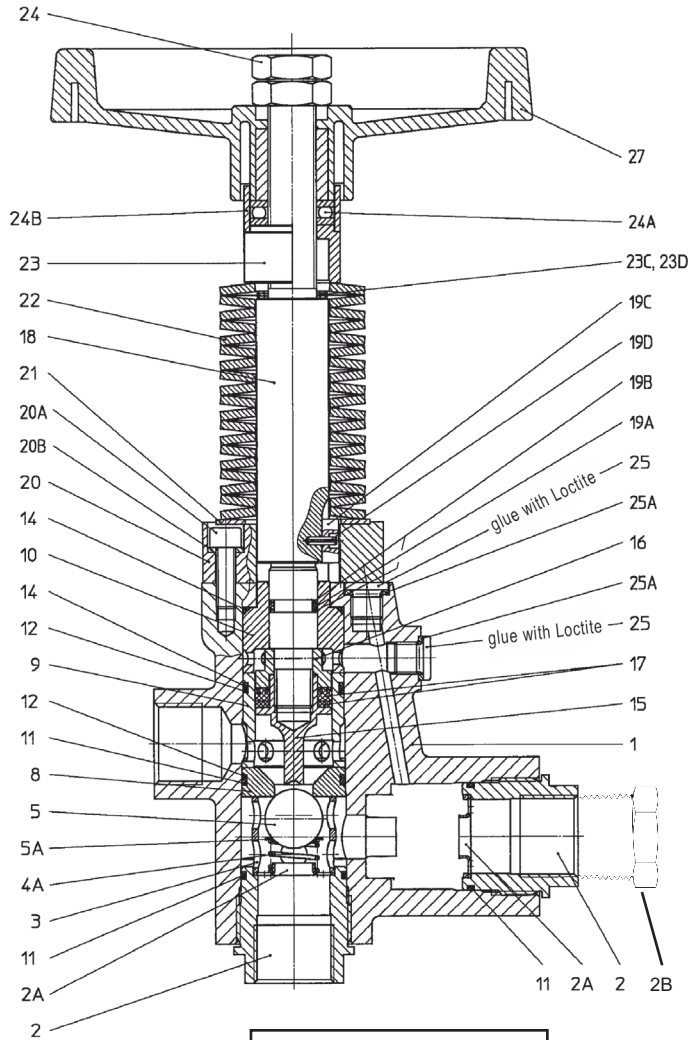
Large Kit

22947 09813R 4A,5,11,12,14,17,17A,19A,19B,19D

22948 12081R 4A,5,11,12,14,17,19A,19B,19D

22949 & 22950 12082R 4A,5,11,12,14,17,19A,19B,19D

22947RH, 22948RH, 22949RH and 22950RH Handwheel Versions Cut-through View and Parts



| Item | Part # | Description | Quantity |
|------|---------------|---------------------------------|----------|
| 1 | 06730 | Casing | 1 |
| 2 | 12042 | Tension Plug | 1 |
| 2A | 12043 | Spring Retainer Disc | 1 |
| 2B | PF-5406-16PSS | Plug | 1 |
| 4A | 12118 | Spring, Inlet valve | 1 |
| 5 | 12046-0100 | Ball Valve, Inlet (22947/22948) | 1 |
| 5 | 12047-0100 | Ball Valve, Inlet (22949/22950) | 1 |
| 5A | 05357 | Spacer Disc | 1 |
| 8 | 06734 | Valve Seat, Inlet (22947/22948) | 1 |
| 8 | 06745 | Valve Seat, Inlet (22949) | 1 |
| 8 | 06746 | Valve Seat, Inlet (22950) | 1 |
| 9 | 12053 | Cylinder | 1 |
| 10 | 12054 | Guide | 1 |
| 11 | 06577 | O-Ring | 2 |
| 12 | 12056 | Support Ring | 2 |
| 14 | 06736 | O-Ring | 2 |
| 15 | 12059 | Piston | 1 |
| 15 | 04846 | Piston Body (22947) | 1 |
| 16 | 12060 | Spacer (22947) | 1 |
| 16 | 12284 | Spacer (22948/22949/22950) | 1 |
| 17 | 04847 | O-Ring for 15 (22947) | 1 |
| 17 | 12283 | Packing (22948/22949/22950) | 1 |
| 17A | 04848 | Support Ring (22947) | 2 |
| 18 | 04849 | Piston Rod | 1 |
| 19A | 22618 | O-Ring, Valve Stem | 1 |
| 19B | 12064 | Spacer, Valve Stem | 2 |
| 19C | 12065 | Key | 1 |
| 19D | 12066 | Tension Sleeve | 1 |
| 20 | 12067 | Support Ring | 1 |
| 20A | 06738 | Allen Screw | 4 |
| 20B | 01011-0400 | Washer, Spring | 4 |
| 21 | 12070 | Disc | 1 |
| 22 | 04850 | Spring, Silver (22947) | 23 |
| 22 | 12071 | Spring, Yellow (22948) | 19 |
| 22 | 12072 | Spring, Red (22949) | 19 |
| 22 | 12073 | Spring, Orange (22950) | 19 |
| 23 | 04851 | Spacer Sleeve | 1 |
| 23C* | 04852 | Spacer Disc, 1.0mm | 2 |
| 23D* | 04853 | Spacer Disc, 5mm | 1 |
| 24 | 04854 | Nut, Locking | 2 |
| 24A | 04855 | Tension Pin | 1 |
| 24B | 04856 | Protective Sleeve | 1 |
| 25 | 07423-0100 | Plug, 1/4" | 6 |
| 25A | 07161 | Washer | 6 |
| 27 | 04857 | Handwheel | 1 |

* May not be present. Quantity may vary.

Repair Kits

Unloader

Small Kit

22948/22949/22950 09619R 11,12,14,17,19A,19D

Large Kit

22947 09813R 4A,5,11,12,14,17, 17A, 19A,19B,19D

22948 12081R 4A,5,11,12,14,17, 19A,19B,19D

22949 & 22950 12082R 4A,5,11,12,14,17, 19A,19B,19D

22947R(H), 22948R(H), 22949R(H), 22950R(H) Operation and Maintenance

Operation

The whole discharge must be connected via a "T" fitting to the inlet port. Should the actual operating pressure exceed the adjusted operating pressure, the valve then acts as a pressure regulator.

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

IMPORTANT! Valves are NOT SET when delivered. They become a SAFETY COMPONENT only after adjustment on the machine by trained personnel.



Service and Adjustment

Re-servicing and adjusting work is only to be carried out by skilled tradesmen.

Safety Instructions

Important! Observe direction of flow. The bypass must under no circumstances be closed or fitted with any shut-off device.

Important! Continuous bypass operation without releasing the water can cause the liquid to heat up which in turn could damage the unit and endanger persons.

Possible preventive measures:

- 1.) Limit the bypass duration (max. temperature 140 °F/60 °C); the duration is to be calculated by the operator and in conjunction with the operating conditions.
- 2.) Use fittings (e.g. thermal valve on water inlet) to avoid heat increase.

To Adjust Pressure

- 1.) Open valve so that it is completely tension-free, i. e. loosen nut (24) and adjusting nut (23) so that the piston rod can be moved by hand.
- 2.) Spring pack is tensioned by adjusting nut (23) while the pump is running and with open gun (if more than one gun is used, all have to be open) until required operating pressure is attained and no more water runs out on the bypass side. Then lock nut (24) to adjusting nut (23). If the nozzle hole corresponds exactly to the flow-rate and pressure of the pump, no more water will run out over the bypass after the required pressure has been attained.

If the nozzle hole is too small and the whole output won't go through the nozzle after the maximum pump pressure has been reached, on no account is the valve to be adjusted higher than the maximum operating pressure of the pump. In this case, the bypass should be partially left open. It is however, advisable to install suitable nozzles.

To Renew Piston Rod Seals and Sleeves

Unscrew nuts (24+23). Remove spring pack (22). With a 6mm allen wrench, unscrew the 4 inner hexagon screws (20A) and remove spring support (20). Remove woodruff key (19C) and remove inlet tensioning plug (2). Remove spring (4A), ball (5) and spacer disc (5A). Push out piston rod (18) downwards together with inner parts (8, and 9). Remove piston body (15) with a size 19 wrench and pull piston rod out of guide case (10). Cut out worn seals and replace. Then carefully clip O-ring (19A) and support rings (19B) onto the piston rod. Note order of installation. For 22948, 22949 and 22950, put packing (17) on piston rod (18). For 22947, put o-ring (17) and support ring (17A) on piston rod (18). Re-install guide sleeve (10) and spacer (16). Check casing (1) surfaces and inner parts for dirt or damage as this will cause the seals to wear out quickly. Check O-rings (11&14) and support rings (12) and replace as necessary. Remount piston body to piston rod with Loctite 648. Re-assemble in reverse order. Grease all parts lightly with Silicone before reinstalling.

To Check and Replace Valves

Remove the plugs (2) and check whether the balls (5) or valve plate (6) are worn out. Remove valve seats (8, 7) with clipping pliers and check surfaces for damage. Check O-rings (11) and replace as necessary.



WARNING: This product might contain a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm.
For more information go to:
www.P65Warnings.ca.gov

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Performance Under Pressure

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| Troubleshooting Guide | | |
|--|---|---|
| Problem | Cause | Remedy |
| Valve switched repeatedly when gun is closed | Leaky Gun | Repair gun |
| | Leaky pressure pipe | Seal pressure pipe |
| | Leaky sleeve | Replace o-rings |
| | Worn out kick-back valve body | Replace kick-back valve body or o-ring or examine valve seat |
| | Leaky seal (12,14) | Renew seal |
| Leaky piston rod | Defective o-ring/support ring | Replace piston rod seals and examine surfaces in guide plug |
| Leaky bypass at nominal pressure | nozzle too small, too much water | Install larger nozzle |
| | Worn out bypass valve | Examine and renew as necessary, ball (5) and bypass valve body (8) |
| Pressure Gauge shows high pressure peaks when shutting off gun | Valve set too high above operating pressure | Turn back adjusting nut (23) and hexagon nut (24) or handwheel |
| | Dirty valve | Clean valve (removing lime deposits, etc.) Grease parts before reinstalling |