

Models

Pneumatic Regulators

22980PR, 22981PR & 22982PR



Construction Characteristics

- Compact Size
- Body made with Special Brass
- Interchangeable Valve Seats
- Constant Pressure with multi-spray gun operating
- Connections for Pressure Gauge

Performance Chart

| Model | Operating Pressure | | Min. Flow Rate | | Max. Flow Rate | | Water Temperature | |
|---------|--------------------|-------|----------------|-------|----------------|-------|-------------------|----|
| | PSI | Bar | GPM | L/min | GPM | L/min | °F | °C |
| 22981PR | 0-2200 | 0-150 | 2.1 | 8.0 | 79.3 | 300 | 150 | 70 |
| 22982PR | 0-3000 | 0-180 | 2.1 | 8.0 | 79.3 | 300 | 150 | 70 |
| 22980PR | 0-7250 | 0-500 | 2.1 | 8.0 | 26.4 | 100 | 150 | 70 |

IMPORTANT!

- **Observe the direction of the flow. NEVER close or fit the bypass with a shut-off device.**
- **Continual bypass operation without releasing the water can cause the liquid to heat up, damaging the unit and endangering people.** To prevent this from happening, limit the bypass duration (note the max. temperature), and calculate the duration in conjunction with the operating conditions. Use fittings (e.g. thermal valve on water inlet) to avoid heat increase.

OPERATION

- The entire flow must pass through the valve. Compressed air is admitted into the regulator cylinder via a pneumatic governor.
- The water pressure reacts proportionally to the adjusted air pressure. Therefore, the regulator is optimally suited for keeping pressure at a constant level when one pump is connected to several discharge points (spray guns).
- When terminals (spray guns) are shut off, the valve switches to pressure free bypass operation.

PERFORMANCE

The bypass line must be laid in a flow-favorable way.

The cross-section of the bypass line must at least correspond to the outlet cross-section of the valve.

| | | | | |
|------------------|-----|-----|-----|----|
| Outlet (BSP+NPT) | 1/4 | 1/2 | 3/4 | 1 |
| Min. ø (mm) | 8 | 8 | 15 | 17 |

SAFETY INSTRUCTIONS

IMPORTANT! Observe the direction of flow. The bypass must under no circumstances be closed off or fitted with a shut-off device. The diameter of the bypass discharge port should not be reduced any further but increased instead (1" BSP or bigger). As the full amount of 79.3 GPM (300 L) causes very high flow speed, a large dimensioned and sturdy high pressure hose must be tightly fitted to the bypass (to avoid whip effect) – preferably in a straight down position. Elbow fittings after the bypass outlet are to be avoided. The line after the bypass should be constructed to allow for good flow without much resistance. The stagnation pressure between the pump and Regulator depends directly on the flow resistance present in the bypass line.

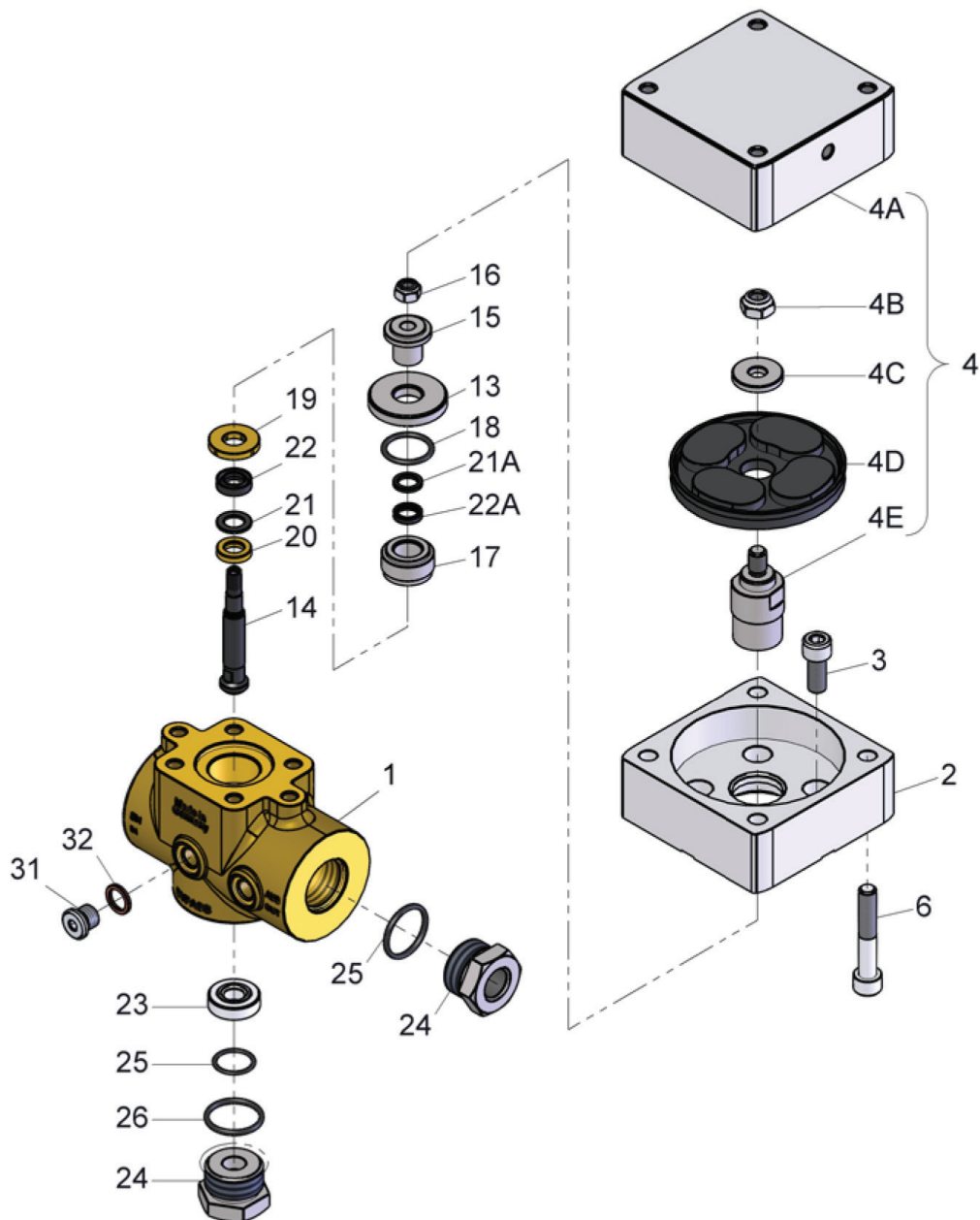
Continuous bypass operation without releasing the water can cause the liquid to heat up which in turn could damage the unit and endanger persons.

Possible preventive measures:

- 1.) Limit the bypass duration (maximum temperature 150 °F [70°C]); the duration is to be calculated by the operator in conjunction with the operating conditions.
- 2.) Use fittings to avoid heat increase (e.g. thermo valve on water inlet side).

22980PR

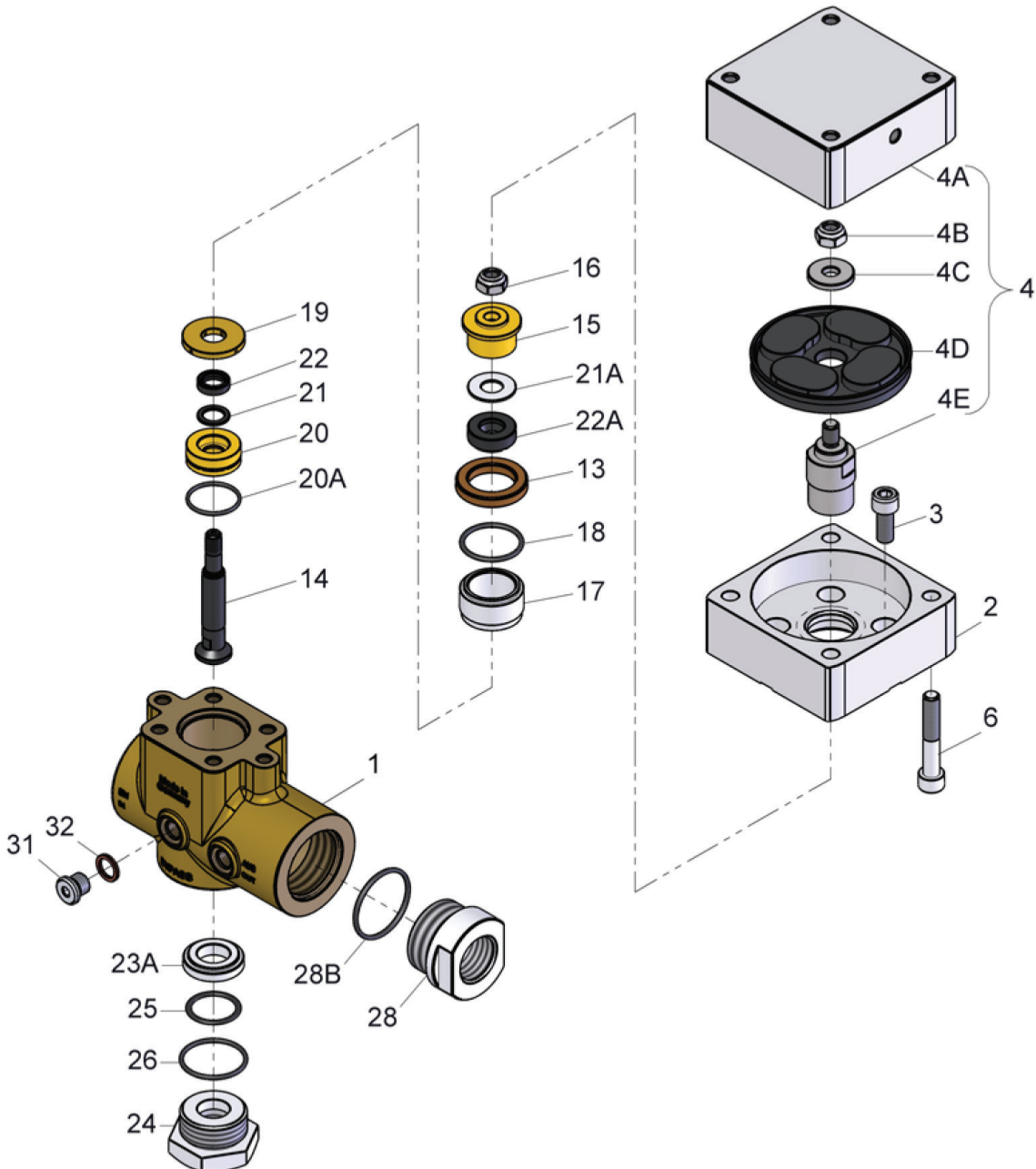
| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> | <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> |
|-------------|---------------|---------------------|-------------|-------------|---------------|--------------------|-------------|
| 1 | 08500 | Casing | 1 | 18* | 12004 | O-Ring | 1 |
| 2 | 03053 | Cylinder Adapter | 1 | 19 | 08519 | Spacer Ring | 1 |
| 3 | 07008 | Inner Hexagon Screw | 4 | 20 | 08520 | Guide Ring | 1 |
| 4 | 03578 | Cylinder Assembly | 1 | 21* | 07392 | Support Ring | 1 |
| 4A | 03579 | Cylinder | 1 | 21A* | 06718 | Support Ring | 1 |
| 4B | 04036 | Hexagon Nut | 1 | 22* | 07391 | Grooved Seal Ring | 1 |
| 4C | 03580 | Washer | 1 | 22A* | 06717 | Grooved Seal Ring | 1 |
| 4D | 04635 | Sleeve | 1 | 23* | 08523 | Valve Seat | 1 |
| 4E | 03581 | Pressure Pin | 1 | 24 | 08524 | Valve Plug | 2 |
| 6 | 04035 | Inner Hexagon Screw | 4 | 25* | 07489 | O-Ring | 2 |
| 13 | 06714 | Centering Disc | 1 | 26* | 12057 | O-Ring | 1 |
| 14* | 06687 | Piston | 1 | 31 | 07423-0100 | Plug | 4 |
| 15* | 06715 | Seal Support | 1 | 32 | 06934 | Copper Gasket | 4 |
| 16* | 06713 | Hexagon Nut | 1 | | | | |
| 17 | 06716 | Cylinder | 1 | | | | |
| | | | | *09543R | | Repair Kit | |



22981PR

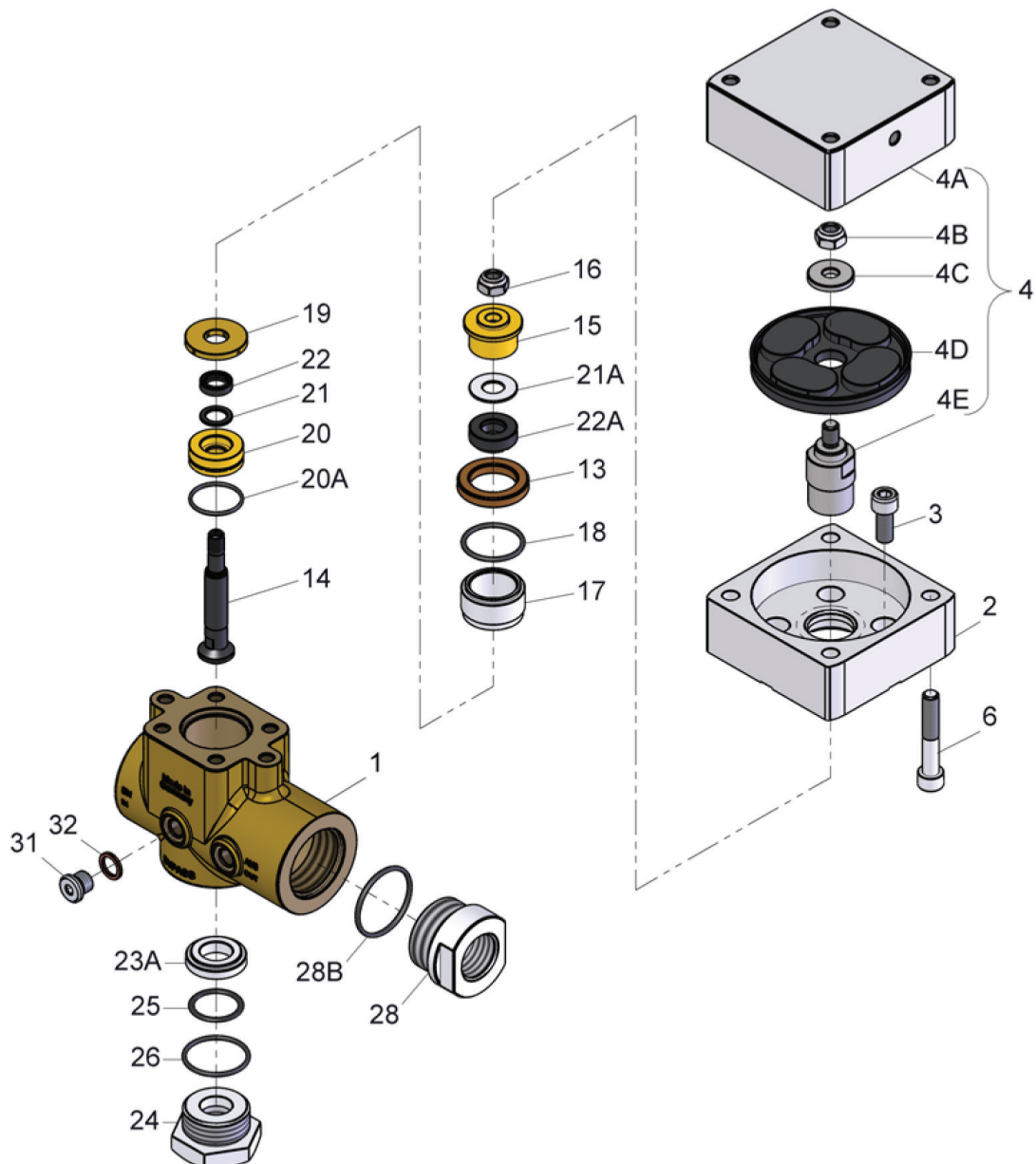
| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> | <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> |
|-------------|---------------|---------------------|-------------|-------------|---------------|----------------------|-------------|
| 1 | 05512 | Casing | 1 | 19 | 05709 | Spacer Ring | 1 |
| 2 | 03053 | Cylinder Adapter | 1 | 20 | 05643 | Guide Ring | 1 |
| 3 | 07008 | Inner Hexagon Screw | 4 | 20A+ | 07281 | O-Ring | 1 |
| 4 | 03578 | Cylinder Assembly | 1 | 21+ | 07840 | Support Ring | 1 |
| 4A | 03579 | Cylinder | 1 | 21A+ | 13253 | Support Ring | 1 |
| 4B | 04036 | Hexagon Nut | 1 | 22+ | 13254 | Seal Packing | 1 |
| 4C | 03580 | Washer | 1 | 22A+ | 13255 | Seal Packing | 1 |
| 4D | 04635 | Sleeve | 1 | 23A+ | 13256 | Valve Seat | 1 |
| 4E | 03581 | Pressure Pin | 1 | 24 | 05724 | Bypass Valve Plug | 1 |
| 6 | 04035 | Inner Hexagon Screw | 4 | 25+ | 12057 | O-Ring | 1 |
| 13 | 05625 | Centering Disc | 1 | 26+ | 12055 | O-Ring | 1 |
| 14+ | 13247 | Piston | 1 | 28 | 05725 | Kick-Back Valve Plug | 1 |
| 15+ | 13248 | Seal Support | 1 | 28B+ | 07653 | O-Ring | 1 |
| 16 | 04036 | Hexagon Nut | 1 | 31 | 07423-0100 | Plug | 4 |
| 17 | 05628 | Cylinder | 1 | 32 | 06934 | Copper Gasket | 4 |
| 18+ | 13012 | O-Ring | 1 | | | | |

+09704R Repair Kit



22982PR

| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> | <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> |
|-------------|---------------|-----------------------|-------------|-------------|---------------|----------------------|-------------|
| 1 | 05512 | Casing | 1 | 20 | 05643 | Guide Ring | 1 |
| 2 | 03053 | Cylinder Adapter | 1 | 20A* | 07281 | O-Ring | 1 |
| 3 | 07008 | Inner Hexagon Screw | 4 | 21* | 07840 | Support Ring | 1 |
| 4 | 03578 | Short Stroke Cylinder | 1 | 21A* | 07904 | Support Ring | 1 |
| 4A | 03579 | Cylinder | 1 | 22* | 13254 | Seal Packing | 1 |
| 4B | 04036 | Hexagon Nut | 1 | 22A* | 08087 | Seal Packing | 1 |
| 4C | 03580 | Washer | 1 | 23A* | 03054 | Valve Seat | 1 |
| 4D | 04635 | Sleeve | 1 | 24 | 05724 | Bypass Valve Plug | 1 |
| 4E | 03581 | Pressure Pin | 1 | 25* | 12057 | O-Ring | 1 |
| 6 | 07773 | Inner Hexagon Screw | 4 | 26* | 12055 | O-Ring | 1 |
| 13 | 05703 | Centering Disc | 1 | 28 | 05725 | Kick-Back Valve Plug | 1 |
| 14* | 13247 | Piston | 1 | 28B* | 07653 | O-Ring | 1 |
| 15* | 05704 | Seal Support | 1 | 31 | 07423-0100 | Plug | 4 |
| 16 | 04036 | Hexagon Nut | 1 | 32 | 06934 | Copper Gasket | 4 |
| 17 | 05705 | Cylinder | 1 | | | | |
| 18* | 13012 | O-Ring | 1 | | | | |
| 19 | 05709 | Spacer Ring | 1 | | | | |
| | | | | *09705 | | Repair Kit | |



INSTALLATION AND ADJUSTMENT OF PRESSURE

The valve is installed in the discharge line and should be close to the discharge outlet of the high pressure pump. If there is considerable flow rate or plunger displacement, we recommend fitting a pressure accumulator between the high pressure pump and the regulator valve to dampen pump pulsation.

Version 1: The compressed air is adjusted to the desired pump pressure via a pneumatic governor without a kick-back valve.

An air pressure of 87 PSI (6 Bar) corresponds to approximately 7612 PSI (525 Bar) of water pressure on the 22980PR, and 1450 PSI (100 Bar) of water pressure on the 22981PR and 22982PR. Slight difference in these values can arise due to pulsation (see chart below).

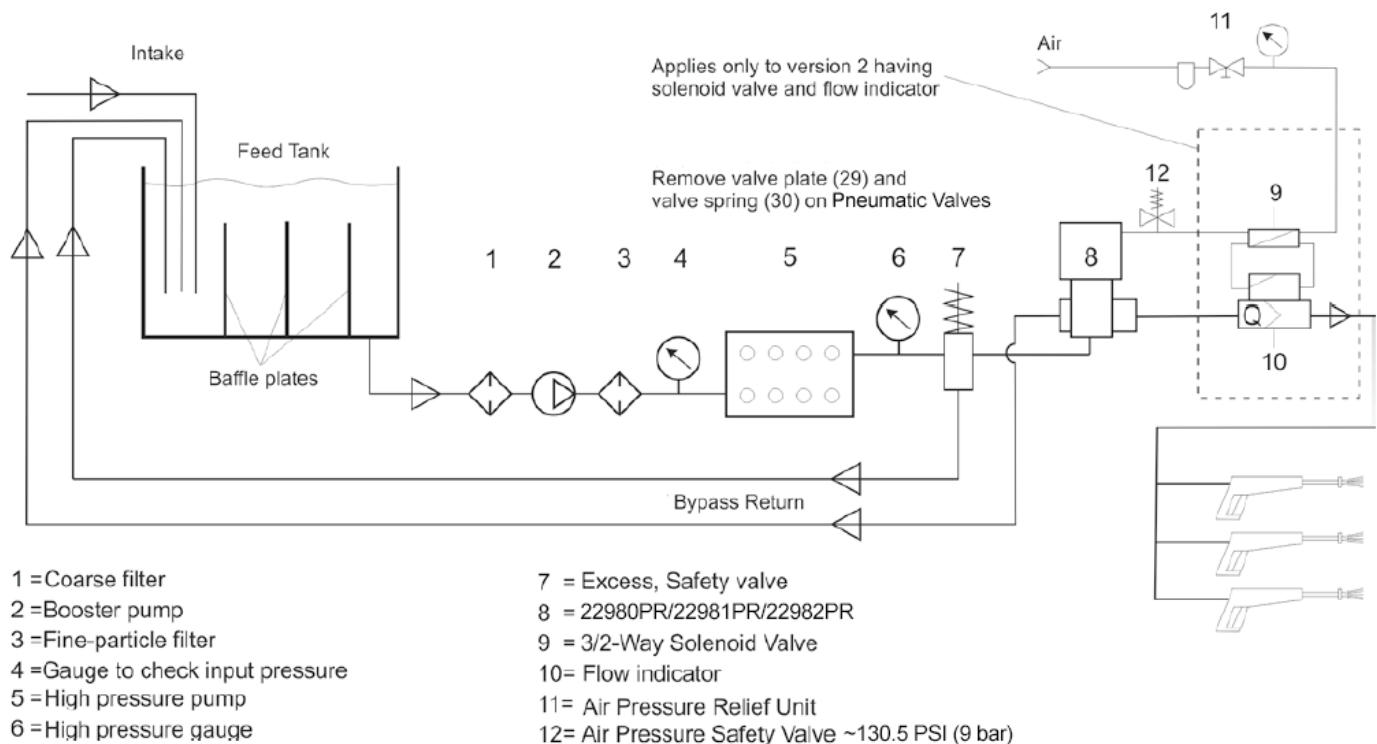
| 22980PR, 22981PR & 22982PR Air Pressure Chart | | | | | | | |
|-----------------------------------------------|-----|-----------------|-----|-----------------|-----|-----------------|-----|
| | | 22980PR | | 22981PR | | 22982PR | |
| Air Pressure | | Liquid Pressure | | Liquid Pressure | | Liquid Pressure | |
| PSI | Bar | PSI | Bar | PSI | Bar | PSI | Bar |
| 14.5 | 1 | 1100 | 75 | | | 362.5 | 25 |
| 29 | 2 | 2175 | 150 | 290 | 20 | 725 | 50 |
| 43.5 | 3 | 3262 | 225 | 580 | 40 | 1087 | 75 |
| 58 | 4 | 4350 | 300 | 864 | 60 | 1450 | 100 |
| 72.5 | 5 | 5438 | 375 | 1160 | 80 | 1812 | 125 |
| 87 | 6 | 6525 | 450 | 1450 | 100 | 2175 | 150 |
| 101.5 | 7 | 7612 | 525 | 1740 | 120 | 2538 | 175 |
| 116 | 8 | | | 2030 | 140 | | |
| 130.5 | 9 | | | 2320 | 160 | | |

IMPORTANT! To prevent pump overload, install and adjust the safety valve to the maximum operating pressure. Additionally, install an adjusted safety valve in the compressed air line to ensure that the admissible operating pressure of the regulator valve cannot be exceeded in the case of incorrect adjustment of the air pressure relief unit.

When several spray guns are being used, the preset air pressure ensures that the discharge pressure on the spray guns always remains consistent and even. The regulator switches to pressure-free bypass operating when the last gun is closed. The discharge pressure between the regulator and guns remains (see configuration sketch on next page)

Version 2 An addition to version 1 is installing a flow indicator in the discharge line after the regulator. Install a 3/2 way solenoid valve (e.g., Festo 7803 MFH-3-1/8, min. air pressure of 43.5 PSI or (3 bar) in the compressed air line.

At zero flow (all guns closed), the flow indicator will switch the solenoid valve so the piston unit in the regulator becomes pressure-free. When the regulator switches to pressure-free bypass, the pressure lines between the regulator and guns are also become pressure-free. This puts less strain on the pump and unit parts, reducing wear. Pressure on the guns will build gradually (see configuration sketch).



SERVICE AND ADJUSTMENT

These procedures are only to be carried out by qualified personnel.

To RENEW PISTON SEALS

Unscrew the inner hexagon screw (6) and remove short-stroke cylinder (4). After unscrewing inner hexagon screw (3), remove cylinder retainer (2) from casing (1).

Push out complete piston assembly (13-22A) upwards. Hold piston (14) with size 12 spanner wrench and remove hexagon nut (16). Remove cylinder (17), seal support (15), spacer ring (19) and seal retainer (20)-22981PR/22982PR or guide ring (20)-22980PR 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 177 in.-lbs. (20NM)

Center bypass valve seat (23 or 23A) within casing and tighten to 110 ft.-lbs. (150 NM) with valve plug (24). Next, insert complete piston unit from the top. Fit cylinder adapter (2) on to the casing (1) with inner hexagon screws (3) to 33 ft.-lbs. (45 NM).

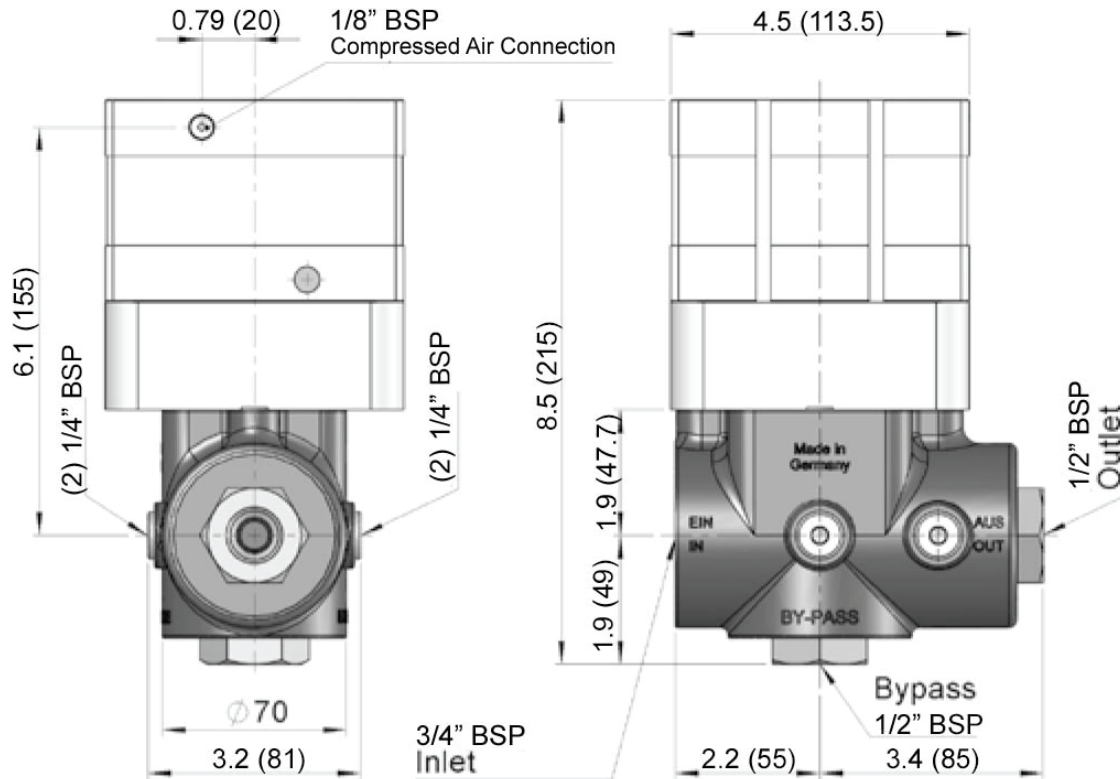
Mount short-stroke cylinder (4) with screwed-in compression cap (5) onto cylinder adaptor (2). Tighten inner hexagon screws (6) to 33 ft.-lbs. (45 NM).

To CHECK AND REPLACE VALVES

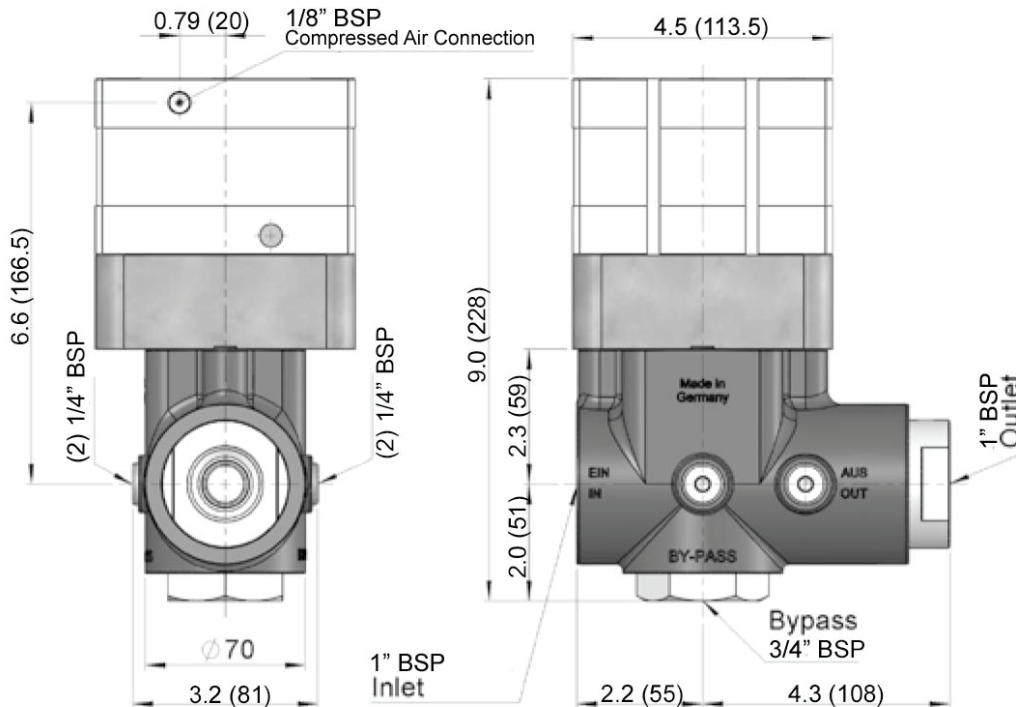
Remove the valve seats (23 or 23A) and check the surfaces and O-rings (25/26) for wear and/or damage. Replace as necessary.

| Troubleshooting Guide | | |
|-------------------------------------------------------|---------------------------|-------------------------------------------------------------------------|
| Defect | Cause | Remedy |
| Valve switches repeatedly when gun is closed | Leaky Gun | Renew gun |
| | Leaky Pressure Pipe | Seal pressure pipe |
| | Leaky seal (22) | Renew seal |
| | Worn out non-return valve | Check and renew as necessary valve plate, O-ring and seat |
| | Leaky seal (18) | Renew Seal |
| Gauge shows high pressure peaks when shutting off gun | Air pressure is too high | Reduce air pressure |
| | Dirty Valve | Clean valve (removing deposits, etc.). Grease parts before reinstalling |

22980PR Dimensions - Inches (mm)



22981PR & 22982PR Dimensions - Inches (mm)



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

GIANT
Performance Under Pressure

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