

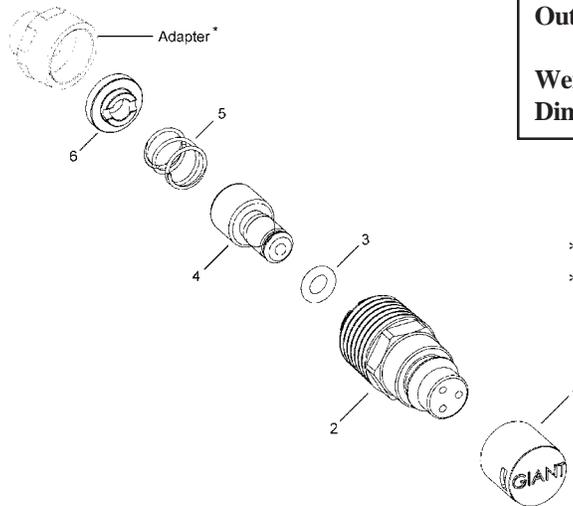
# Model 23400 Series

## Automatic Thermal Relief Valves

Item	Part #	Description	Qty.
1	06416	Deflector	1
2	06351*	Thermal Body, 1/2"	1
3	06355	O-Ring	1
4	23402	Power Pill	1
5	06356	Spring	1
6	06352	Spring Retainer	1

### OPERATING CONDITIONS

Max Inlet Pressure:	90 PSI
Max System Flow:	8 GPM
Preset Temperature:	140° F
Inlet Port Size:	23420A 1/4" NPT 23421A 3/8" NPT 23422A 1/2" NPT
Outlet:	7/8" Hose Barb (without deflector)
Weight:	3 Ounces
Dimensions:	7/8" X 1.8"



- \* For 1/4" Thermals, an adapter (p/n 06399 is included)
- \* For 3/8" Thermals, an adapter (p/n 06400 is included)

### Installation:

The Series 23400 Automatic Thermal Relief Valve is a must for any system utilizing a closed loop bypass line or internal bypass. The valve is designed to protect your pump and accessories against extreme heat when the pump is in bypass. When the temperature of the water in the bypass line reaches the preset temperature of the valve a small amount of hot water is released which is replaced by cooler supply water. This in turn lowers the temperature of the water in the bypass line thus signaling the valve to close. NOTE: The thermal relief valve works most effectively on pumping systems having positive inlet pressures.

### Closed Loop Bypass Systems:

For pumping systems whose bypass line is routed back to the pump inlet (closed loop), installation of the Giant thermal relief valve should be in this loop. By installing a "tee" in the bypass line the thermal relief valve can effectively be installed to detect heat build up during pump bypass. A 1/2" (I.D.) hose should be attached to the end of the valve to direct the hot discharge water to a safe location.

### Internal Bypass Pumps:

On pumps equipped with an internal bypass system, (such as the Giant Series R51000) the thermal relief valve can be utilized by installing a "tee" at the inlet of the pump. The Giant thermal relief valve can be placed in a branch of the "tee" where it will sense the increased water temperature. A 1/2" (I.D.) hose should be attached to the end of the valve to direct the hot discharge water to a safe location.

### Repair:

Because of its unique construction the Giant Thermal Relief valve is not rebuildable. The design utilized will provide years of trouble free service.



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# INSTALLATION & OPERATING INSTRUCTIONS

## Safety Relief Valve

- 1) The safety relief valve is to be positioned on the discharge side of the pumping unit.
  - 2) Either the port directly on the bottom of the valve, or the side port that is closest to the bottom of the valve, can be used as inlet to receive the pumps discharge. Plug the other inlet port.
  - 3) The side port closest to the top of the unloader is the bypass port. This port will redirect the pumped media when the gun is closed or when the system pressure exceeds that of which the valve has been set.
  - 4) Giant Industries, Inc. recommends by-pass to atmosphere when the 22545 is used as a safety relief valve.
- Maximum operating conditions when used as a safety relief valve only; in conjunction with an unloader, should not exceed 21 GPM @ 3200 PSI.

## Pressure Regulator

- 1) The Pressure Regulator is to be positioned on the discharge side pumping unit.
- 2) Either the port directly on the bottom of the valve or the side port that is closest to the bottom of the valve can be used as the inlet to receive pump discharge. Whichever port is selected as the inlet, the remaining port must then be used as an outlet.
- 3) The side port closest to the top of the unloader is the by-pass port. This will redirect the pumped media when the gun is closed or when the system pressure exceeds that of which the regulator has been set.
- 4) The proper sized by-pass line, (depending on GPM) can be directed to a holding tank, to atmosphere, or back to the pump inlet.

**NOTE:** By-pass lines returning to the pump inlet should be equipped with a protective device to prevent excessive heat build-up in the by-pass line that can damage the pumping system during periods of prolonged by-pass.

- 5) **Caution:** A properly sized pressure gauge must be used when attempting to adjust your regulator to its setting. When the valve is used as a regulator with no other unloading device in the system, maximum operating conditions should not exceed 8 GPM @ 3200 PSI.

**NOTE:** Cracking pressure at which full by-pass is activated can rise 10-15% over rated operating pressure depending on your system.

- 6) **Caution:** When using the 22545 series valve as a regulator with no other unloading device in the system, Giant Industries, Inc. strongly recommends the use of a pop-off valve positioned down stream of the regulator as a safety back-up to regulator malfunction.
- 7) Always adjust regulator spring to system pressure with the system open. Be sure before adjusting that the spray nozzle orifice is properly sized for the volume and pressure you desire, and then fine tune the regulator.

**CAUTION:** Never use the regulator to compensate for a worn nozzle as you risk bottoming out the regulator, causing regulator malfunction that can lead to severe system damage and possible bodily injury.

## DISASSEMBLY OF THE 22545 SERIES

To rebuild the guide plug, stem and piston assembly:

- 1) Remove items 19, 18 and 17.
- 2) Clamp the valve body avoiding excessive clamping pressure. Turn the valve cap (item #15) counterclockwise and remove the valve cap assembly from the valve body.
- 3) Clamp the piston (item #12) in a soft-jawed vise. Turn the valve cap counterclockwise and remove the stem from the piston.
- 4) The o-ring (item #11) and back-up rings (item #10) can now be removed from the piston.
- 5) Check the o-ring (item #2) on the valve cap for signs of wear or damage and replace if necessary.
- 6) Check the o-ring and back-up ring (items #13 & 14) and replace if necessary.
- 7) A thread locking substance (locktite R #271 or equivalent) must be used when remounting the piston onto the stem. Be sure threads are clean and dry before applying thread locking substance and allow sufficient time for the substance to "set".
- 8) Lubricate all parts before assembly. Proceed to reassemble the regulator using the above steps in reverse order.

To rebuild the ball valve assembly:

- 1) Remove inlet fitting (item #1) from the valve body. Remove the ball and spring (items #3 & 4) from the valve body.
- 2) Check the spring retainer o-ring (item #2) for signs of wear or damage and replace as necessary. Check the ball (item #4) for signs of wear and damage and replace as necessary.
- 3) If the ball (item #4) is to be replaced, it may be necessary to replace the valve seat and o-ring (item #5 & 6).
- 4) Lubricate all parts before reassembly. Replace the ball valve assembly by performing step 1 in reverse order.



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