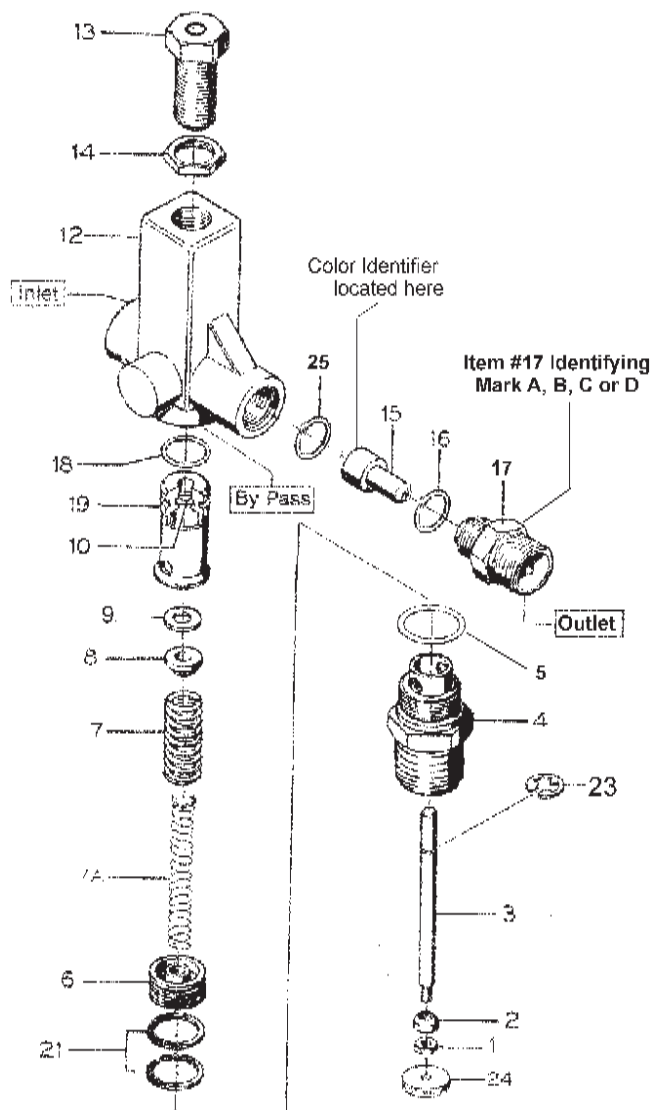


# Series Adjustable Unloader 22600



Item	Part#	Description	Quantity
1+	22601	Nut	1
2+	22602	Valve Cone	1
3 +	22661	Piston Rod (Sold Only with item #23)	1
4+	22660	Seat 1/2" FNPT x 3/4" MNPT (Except 22654A)	1
4+	22660A	Seat 1/2" FNPT x 3/4" MNPT (22654A Only)	1
5*+	22640	O-Ring, Seat	1
6+	22605	Piston (Except 22648A/22650A/22654A)	1
6+	22696B	Piston (22648A/22650A/22654A Only)	1
7+	22691	Spring	1
7A+	22689	Helper Spring	1
8+	22694	Cone Washer	1
9	22641	Shim (22654A only)	1
10*+	22608	O-Ring	1
12	22611A	Valve Body	1
13	22612A	Adjusting Screw	1
14	22627A	Lock Nut	1
15	22615	Orifice (22655 only), red	1
15	22616	Orifice (22656 only), black	1
15	22663	Orifice (22648(A), 22650, 22654A), blue	1
15	22617C	Orifice (22647 only), green	1
16*	22618	O-Ring, Nipple	1
17	22619	Nipple (22648(A) & 22655), A	1
17	22620	Nipple (22656), B	1
17	22621	Nipple (22647), C	1
17	22664	Nipple (22654A, 22650), D	1
18*	22622	O-Ring, Sleeve	1
19	22623	Sleeve	1
21*+	22609	Piston Ring (Except 22648A/22650/22654A)	2
21*+	22603	O-Ring (22648A/22650A/22654A Only)	2
23*+	22792	Snap Ring	1
24 +	22642	Bypass Plate	1
25 *	22659	O-Ring	1

## \*Short Kits

Includes Items: 5, 9, 10, 16, 18, 21, 23, 25, and p/n #22662 (Old Style Snap Ring)

**Kit 22666** All, except for 22648A, 22650, 22654A

**Kit 22666A** Only 22648A, 22650, 22654A

## \*Long Kits

Includes Items: 1-8, 10, 18, 21, 23 and 24

**Kit 22688** All, except for 22648A, 22650A and 22654A

**Kit 22688A** Only 22648A & 22650

**Kit 22695A** Only 22654A

## DISASSEMBLY AND REPAIR OF 22600 UNLOADER

1. Place the unloader in a vise. CAUTION: Excessive clamping force will deform the valve body. Always clamp on flat surface nearest the inlet, outlet ports.
2. With a 7/8" wrench, remove the outlet nipple (17).
3. With a pair of needle nose pliers. CAUTION: Excessive clamping force will deform the orifice. Remove the orifice (15) and o-ring (25) with a pair of needle nose pliers.
4. Inspect the outlet o-ring (16). Inspect the holes in the orifice (15) and outlet nipple (17) for signs of erosion. Install o-ring (25) and orifice into the valve body (12). Install the outlet nipple and tighten until snug.
5. Remove the adjusting screw (13) and lock nut (14) from the valve body (12).
6. With an 1-1/8" wrench, remove the internal assembly (long kit) by unscrewing the bypass seat (4).
7. Remove the sleeve (19) by placing a soft, blunt instrument (such as a wood dowel rod) through the adjusting screw hole in the valve body and carefully push the sleeve out of the bottom of the valve body (12).
8. **Caution:** Once the snap ring (23) has been removed, the cone washer (8) will "fly off" the end of the piston rod (3). Grasp the cone washer with one hand and with the other hand carefully pry the snap ring out of the groove on the piston rod.
9. Slide the piston (6), the spring (7), the helper spring (7A), and the cone washer (8) off the end of the piston rod (3).
10. The piston rod/bypass cone assembly (1-3) will now slide out of the bottom of the bypass seat (4).

THIS COMPLETES DISASSEMBLY - TO REASSEMBLE, USE THE FOLLOWING SEQUENCE

11. Inspect the piston rod (3) and valve cone (2) for signs of wear and replace if necessary. The valve cone is removed by grasping the piston rod with a rubber-gripper and unscrewing the nut with a 7mm wrench. The valve cone can now be pulled off the end of the piston rod.
12. To reassemble, push the valve cone onto the piston rod. The flat side of the valve cone faces towards the threaded end of the piston rod. Grasp the piston rod with a rubber gripper, install the nut and tighten to 20 inch pounds.
13. Inspect the seat (4) and the o-ring (5) for signs of wear and replace if necessary. Slide the piston rod (3) up through the bypass seat.
14. Inspect the piston rings (21) for wear and replace if necessary. Slide the piston (6), spring (7), helper spring (7A), and cone washer (8) over the end of the piston rod (3).
15. Push the piston rod (3) up against the bypass seat (4). Push down on the cone washer (8) against the helper spring (7A) until the snap ring groove on the piston rod is visible above the cone washer. Install the snap ring (23) with the flat side of the snap ring facing away from the springs. An audible "snap" should be heard as the snap ring is installed.
16. Check the spring clearance gap on the piston rod assembly. The assembly should provide a spring clearance of 1/64" to 1/32". If the clearance gap is excessive, install a shim (9) between the snap ring and the cone washer. If the clearance gap is less than 1/64", the unloader will still function properly although there may be slight pressure maintained in the system when the unloader is in bypass. (Note: the spring may be filed or ground to provide the desired gap clearance if necessary.)
17. Inspect the sleeve o-rings (10 and 18). The internal sleeve o-ring (10) can be removed using a straight pin. When installing this o-ring, make sure it is fully seated

into the groove. Inspect the sleeve (19) for wear especially at the piston rod bore.

18. Inspect the valve body (12) for signs of wear or deformation. Replace if necessary.
19. Install the sleeve (19) into the valve body (12) with a soft, blunt instrument (such as a wood dowel rod). Push the sleeve all the way up to the end of the sleeve bore inside the valve body.
20. With extreme care, grease the piston rod assembly and install into the valve body (12). Avoid forcing the assembly against the seat threads inside the valve body as this will damage the piston rings (21). Tighten the bypass seat (4) until snug.
21. Install the adjusting screw lock nut assembly (13 and 14).

**NOTE:** Always remember to generously lubricate all moving parts with a light weight oil for easy reassembly and to give the moving parts protection when "running in" the unloader.

## SELECTION AND INSTALLATION OF THE GIANT 22600 SERIES UNLOADER

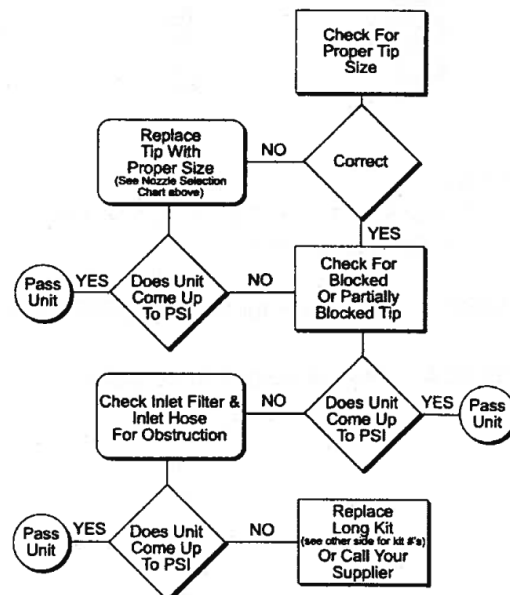
The Giant Industries 22600 Series Unloader must be sized to match the output of the pump in gallons per minute (GPM). Giant Industries Series Unloaders are available in the following ranges:

### Nozzle Selection Chart

Model #	Flow Range (GPM)	Operating PSI	Minimum Spray Tip Nozzle Size
22648/22648A	1.5-4.0	0-3000	4.0
22650/22650A	3.0-4.5	0-3000	4.0
22654A	3.5-4.8	3000-4000	4.0
22655	3.0-5.5	0-3000	5.0
22656	4.5-6.5	0-3000	6.0
22647	5.5-6.5	0-3000	7.5

**Note:** As a rule, if there is any question on which unloader to select in border line cases, select the lower GPM rating of the two.

## 22600 Unloader Trouble Shooting For No Or Low Pressure



Giant Industries, Inc.

900 N. Westwood Ave., Toledo, Ohio 43607  
PHONE: 419-531-4600, FAX: 419-531-6836  
www.giantpumps.com