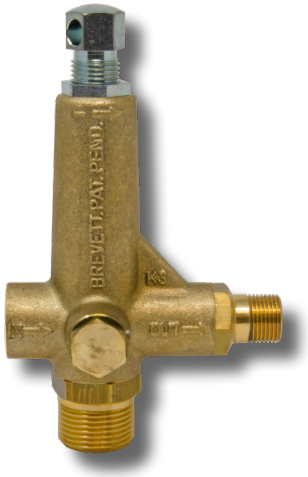
REGULATING & RELIEF VALVES

GENERAL PUMP *A member of the Interpump Group*

ZK3

Flow Sensitive Unloader



General Pump recommends using a safety relief device in conjunction with this unloader valve when installed on a positive displacement pump. General Pump is not liable and assumes no responsibility for this valve when used in a customer's high pressure system.

FEATURES

- All stainless and brass internal parts.
- No external moving parts or springs.
- Unique balance nozzle principle: Eliminates high pressure in all lines while unit is in bypass mode. Eliminates pressure peaks normally generated by conventionally designed unloaders.
- Unique unbalanced piston design permits precise pressure adjustment.
- Mounts in discharge line; flow-through design.
- Convenient bypass location
- Minimum 5% bypass required for operation.
- Dual gauge ports.

SPECIFICATIONS

Part Number	ZK30	ZK31	ZK32	ZK33
Maximum Volume	2.1 - 3.0 GPM	3.0 - 4.2 GPM	4.2 - 5.5 GPM	5.0 - 6.0 GPM
Maximum Discharge Pressure	0 - 1500 PSI			
Maximum Temperature	165° F			
Port Sizes: Inlet	3/8"-1- BSP-F			
Bypass	3/4"-14 BSP-M			
Outlet	3/8"-19 BSP-M			
Dimensions	5.75" x 3.5" x 2.75"			
Weight	1.7 lb.			

INSTALLATION

APPLICATION

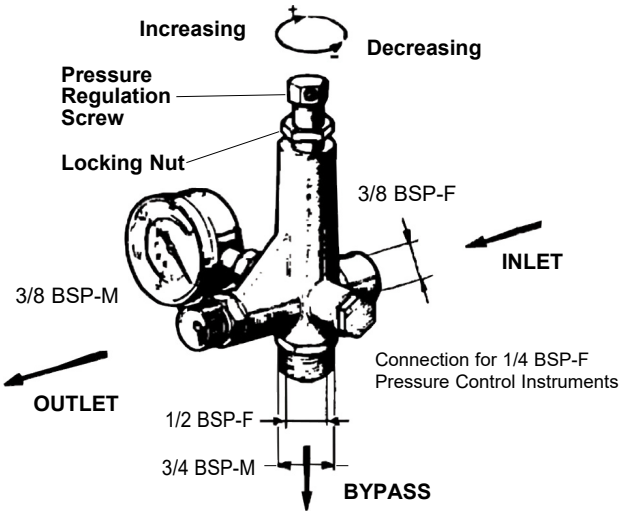
This product is to be used with clean, fresh water. For different or corrosive liquids, contact **GP Companies Inc.** technical support department. Appropriate filtration should be installed when used with liquids containing any solids. Select the proper unloader valve based on the nominal operating rating: system rated pressure, max flow and max temperature. **Under no circumstances should the pressure of the system exceed the maximum rated pressure of any component.**

INSTALLATION

When installed on hot water cleaners, this valve is to be installed **before** the boiler. Installing safety devices which limit the accidental increase of the fluid temperature is required. **Always** install a safety valve (pop-off) to protect the operator and system.

UNLOADER ADJUSTMENT:
READ AND UNDERSTAND THESE INSTRUCTIONS PRIOR TO USE
DO NOT ATTEMPT TO ADJUST THE ZK3 WITHOUT A PRESSURE GAUGE INSTALLED ON THE SYSTEM!

Choose the correct nozzle size, able to discharge regularly, on bypass, at least 5% of the total flow of the system in order to achieve a constant pressure, and avoid trouble-some pressure spikes. Prior to start-up set the **ZK3** unloader to its lowest pressure setting by turning the adjusting screw (item 12) **clockwise** until stop and make sure the system has an adequate water supply. Follow pressure washer manufacturer's safety guidelines for start-up and start the washer. Once running, cycle trigger gun open and closed four or five times to purge any remaining air and to make sure the **ZK1** unloader is functioning properly. With the trigger gun open (spray mode) gradually increase the pressure by turning the adjusting screw (item 12) **counter-clockwise**, increasing pressure by increments **no greater then 200 psi** cycling the gun at each interval. If at any point the unloader does not unload properly, return the pressure to minimum and repeat adjusting sequence. Once the system is brought up to rated pressure cycle the trigger gun four or five times to make sure it is functioning properly and set the jam nut (item 13). Shut down the system and restart and confirm the pressure setting.



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PARTS LIST

Item	Part Number	Description	Qty
1	94737400	Spring	1
2	36300866	Valve	1
3	36300466	Control Rod	1
4	36303466	Steel Insert	1
5	36300670	Piston	1
6	94740200	Spring	1
7	36300570	Spring Plate	1
8	701501	O-ring	1
10	98204100	Caps	2
11	36300041	Unloader Body	1
12	36300164	Pressure Adjusting Screw	1
13	92256000	Nut	1
14	90382300	O-ring	1
15		**Nozzle**	1
	10007666	K3.0, Ø2.0 mm	
	10007766	K3.1, Ø2.5 mm	
	10016266	K3.2, Ø 2.75 mm	
	10016366	K3.3, Ø3.0 mm	
16	90383300	O-ring	1
17		**Nipple**	1
	10007871	K3.0, 3/8 BSP, Ø 3.0 mm	
	10007870	K3.1, 3/8 BSP, Ø 3.0 mm	
	10016070	K3.2, 3/8 BSP, Ø 3.25 mm	
	10016170	K3.3, 3/8 BSP, Ø 3.5 mm	
18	90383500	O-ring	1
19	36300370	Rod Guide	1
20	92770700	Compression Rings	4
21	90050900	Retaining Ring	1
22	701019	O-ring	1
23	92192500	Nut	1
24	36304970	Valve Seat	1
25	36303570	Ring Nut	1

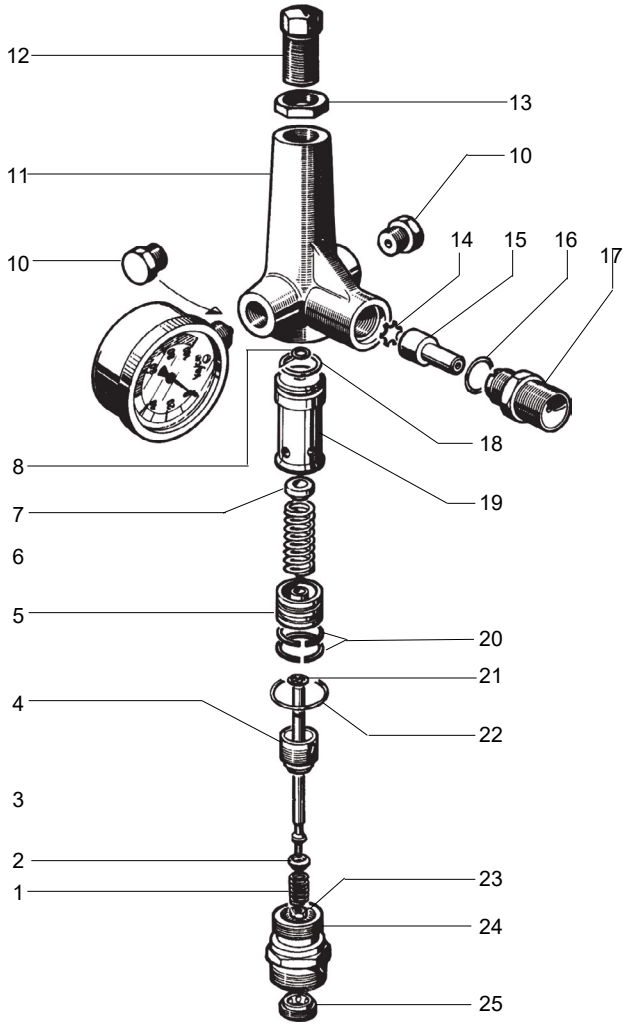
Repair Kits

Repair KIT 59

Includes Items: 1, 2, 4, 5, 6, 8, 16, 18, 20, 21, 22, 23, 25

Repair KIT 61

Includes Items: 1, 2, 3, 4, 5, 6, 7, 20, 21, 22, 23, 24, 25



PROBLEMS	PROBABLE CAUSES	SOLUTIONS
Unloader cycles in spraying mode	• Restricted discharge • Undersized spray tip • Clogged chemical injector (if applicable)	• Correct source of restriction • Replace with properly sized nozzle • Clean / replace chemical injector
System does not come up to pressure	• Oversized spray tip • Foreign material in nozzle • Restricted discharge	• Replace with properly sized nozzle • Clean / replace nozzle • Correct source of restriction in discharge
Pressure spikes	• Unloader improperly adjusted • Less than 5% flowage in bypass	• See instructions for adjusting unloader
Unloader does not unload properly	• Foreign material in unloader • Pump starving for water • Leaks in system	• Check filters and/or strainers. Clear unloader of debris • Correct inlet conditions • Correct leaks

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