

## Instructions for Adjusting AR Minimatic 4/B

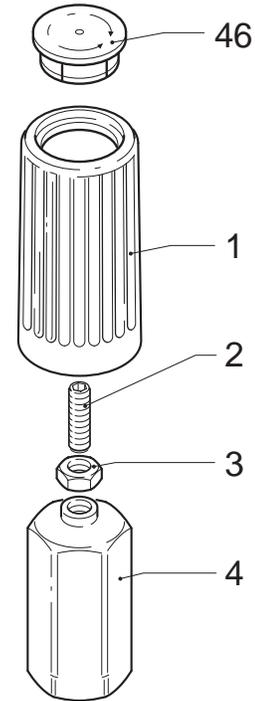


Please follow these easy steps to adjust the pressure:

- Step 1: Remove black cap (pos. #46)
- Step 2: Loosen nut (pos. #3) with 10mm wrench.
- Step 3: Turn brass (pos. #4) clockwise until it stops.
- Step 4: Start pump, watch pressure gauge and turn (pos. #2) using 3mm hex clockwise until recommended/rated pressure is obtained. Line pressure will be approximately 200 psi less than actual head pressure. **DO NOT** set line pressure to rated.
- Step 5: Release trigger and make sure there is minimal spike (200-300 psi) (Repeat this step two or three times).
- Step 6: Tighten nut (pos. #3) down against (pos. #4).
- Step 7: Replace black cap (pos. #46)

NOTE: Now pressure can be decreased by turning black knob counterclockwise, but the pressure cannot be increased to a rating higher than was set.

We recommend this procedure be done by a qualified high pressure pump service technician. Failure to properly adjust can cause serious damage to equipment and body.



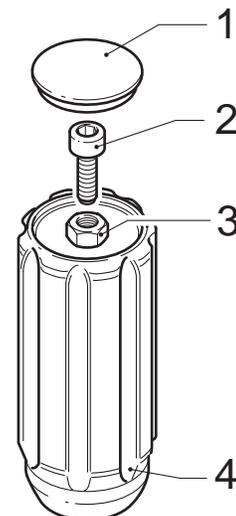
AR1540740 Nut holder for adjusting Minimatic Unloader

## Instructions for Adjusting AR Gymatic Unloader Valves

Please follow these easy steps to adjust the pressure:

- Step 1: Remove black cap (pos. #1) from knob.
- Step 2: Loosen bolt (pos. #2) with 6mm hex wrench.
- Step 3: Loosen nut (pos. #3) to top of pos. #2 (bolt).
- Step 4: Turn the black knob (pos. #4) clockwise until it stops.
- Step 5: Start pump, watch pressure gauge and turn pos. #2 (bolt) until recommended/rated pressure is obtained.
- Step 6: Release trigger and make sure there is minimal spike (300-400 psi) (Repeat this step two or three times)
- Step 7: Spin pos. #3 (nut) down. While holder pos. #2 (bolt) in place with hex wrench, use special tool (AR1560590) Or extended 13mm socket wrench to hand tighten Pos. #3 (nut) against pos. #4 (black knob).
- Step 8: Replace pos. #1 (black cap).

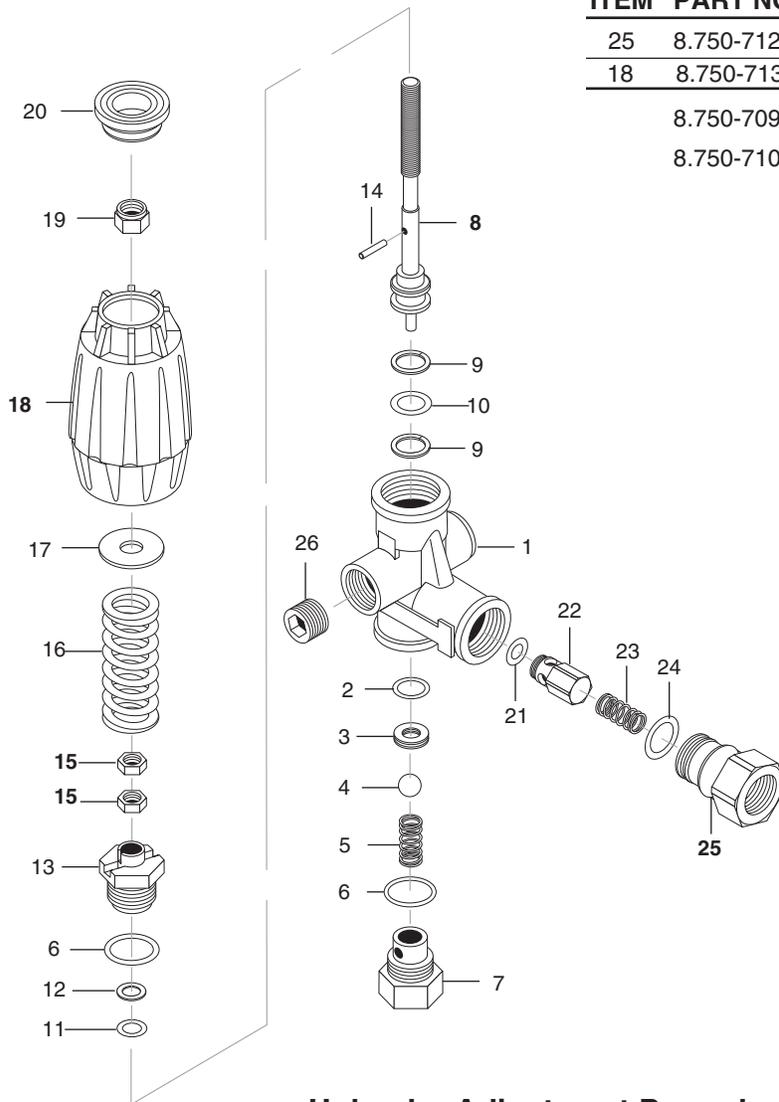
NOTE: Now pressure can be decreased by turning black knob counterclockwise, but the pressure cannot be increased to a rating higher than what max is set at by technician.



AR1560590 Nut holder for adjusting Gymatic Unloader

# VRT3 UNLOADER EXPLODED VIEW AND PARTS LIST

8.750-297.0, 8 GPM, 2320 PSI  
 8.750-298.0, 8 GPM, 3630 PSI  
 8.750-299.0, 8 GPM, 4500 PSI



ITEM	PART NO.	DESCRIPTION	QTY
25	8.750-712.0	Outlet Fitting	1
18	8.750-713.0	Knob, Unloader	1
	8.750-709.0	Repair Kit, VRT3, 2320/3630 PSI	
	8.750-710.0	Repair Kit, VRT3, 4500 PSI	
		(Kit Items: 1, 4, 8-12, 16, 21-22)	

## Unloader Adjustment Procedures

1. Remove lock nut (Item 19).
2. Remove adjustment knob (Item 18).
3. Loosen the two (2) nuts (Item 15), move them upward on stem (Item 8) until you see 4 or more threads below the nut.
4. Re-attach adjusting knob (Item 18).
5. Start machine. Open the trigger of the spray gun. Increase pressure by turning adjustment knob (Item 18) clockwise until pressure is at the desired operating pressure.
6. Remove the adjustment knob (Item 18), tighten the lower nut (Item 15) tightly against the upper nut (Item 15). Re-attach adjustment knob (Item 18) and screw down until contact is made with the nuts (Items 15). Screw down lock nut (Item 19) onto the stem (Item 8) until the threads cut into the nylon insert of the lock nut (Item 19).

\*If adjustment knob (Item 18) **DOES NOT** make contact with upper nut (Items 15), remove adjusting knob (Item 18), re-adjust (raise) nuts (Items 15) on stem (Item 8) and re-attach adjustment knob (Item 18), then repeat step #6.

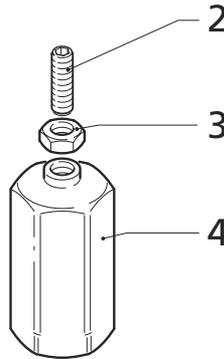
\*\*If adjustment knob (Item 18) **DOES** make contact with upper nut; release the trigger of the spray gun and watch the pressure gauge for the pressure increase ("spike"). This "spike" **SHOULD NOT** exceed 500 psi above the operating pressure. If "spike" pressure exceeds the 500 psi limit, remove the adjusting knob (Item 18) and re-adjust (lower) the nuts (Items 15) on the stem (Item 8). Re-attach the adjusting knob (Item 18), then repeat step #6.

# AR Plunger Pumps

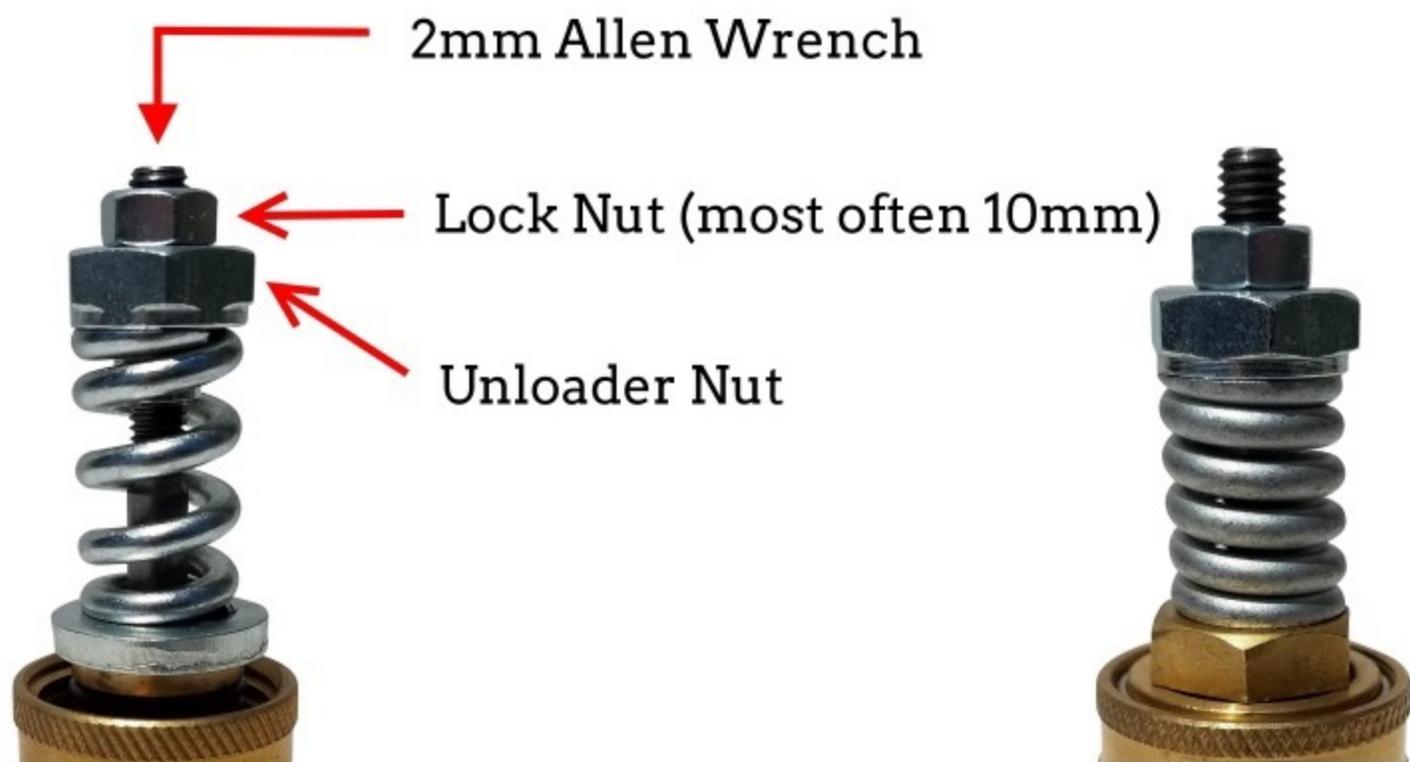
## Unloader Adjusting Instructions

Follow these easy steps to adjust the pressure:

1. Loosen nut (pos. #3) with 10mm wrench.
2. Turn brass (pos. #4) clockwise until it stops.
3. Start pump, watch pressure gauge and turn (pos. #2) using 3mm hex clockwise until recommended/rated pressure is obtained. Line pressure will be approximately 200 psi less than actual head pressure. **DO NOT** set line pressure to rated.
4. Release trigger and make sure there is minimal spike (200-300 psi) (Repeat this step two or three times).
5. Tighten nut (pos. #3) down against (pos. #4).



# AAA, FNA & OEM Unloader Adjustment



Loosen the Lock Nut and hold the center threaded shaft with an Allen wrench.

To increase the pressure, turn the Unloader Nut clockwise till the desired pressure is reached making sure the spike pressure does not exceed the max rated pressure of the pump.

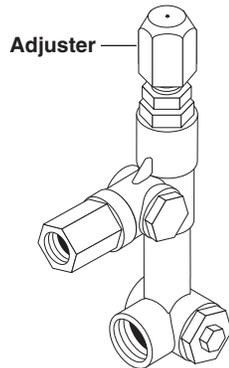
To reduce the pressure, turn the Unloader Nut counter clockwise.

Tighten the lock nut when done.

## Adjusting Unloaders (Liberty Units)

The unloader (on “Liberty” units) is a safety device which allows water to bypass back to the pump inlet or float reservoir when the trigger of a shut-off gun is released. Think of it like a traffic-cop for water, directing it to the spray-gun or through the bypass ports. Unloaders are designed to respond to either an increase in pressure or a change in flow direction. They are not pre-set for pressure. When a pressure washer shows signs of unexpected low pressure, bypassing the unloader is a good first step to troubleshoot where the problem may be. (See Feb. ‘08 Tech Tip: “Bypassing the Unloader”) Leaky fittings, weep or worn guns will all cause undue stress on the system.

**Pressure Trapping (Activated) Unloaders are adjusted with the system operating and the shut-off trigger squeezed** so that water is flowing through the properly sized (for pressure and volume) spray nozzle (all adjustments should be made with water flowing and pressure in the system). Start the system with the unloader adjuster backed off to the lowest setting. Release the trigger to see the bypass pressure (it should NEVER exceed 300-500 psi above normal operating pressure); squeeze the trigger, turn the adjuster to the desired operating pressure; release the trigger observing the bypass pressure. Once the desired pressure is reached, stop adjusting and set the top locking nut to hold the system pressure.

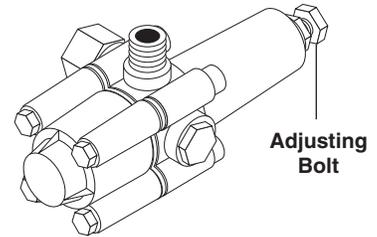


Pressure Trapping

**Flow Actuated Unloaders are adjusted with the system operating and the shut-off trigger released** (usually with the adjusting bolt screwed into the body of the unloader) and turning the bolt ¼ turn out. Squeeze the trigger, read the operating pressure. If more pressure is desired, release the trigger and slowly turn

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the bolt another full turn out. Repeat this process until full pressure is achieved and the lock nut then is tightened. This unloader style needs to bypass a minimum amount (5%) at all times for correct operation (to soften the impact of contact between the valve and seat).



Flow Actuated

If an unloader has been over-adjusted, it can have a difficult time going into the bypass mode and can develop VERY high pressure when the trigger on the gun is released, potentially damaging the pump, hose, gun and fittings. This condition is known as “spike or cracking”. Spike pressure should NEVER exceed 300-500 psi above normal operating pressure; ideally spike pressure would only be 50-75 psi above operating pressure.

Many unloader manufacturers recommend the use of pop-off valves or rupture disks as a safety backup for possible unloader malfunction.

Do not adjust the unloader pressure setting to compensate for a worn nozzle.

Never allow a machine to remain in bypass mode for more than 2-3 minutes, consider using a thermal pump protector to help for heat build-up.