

32097 O-Ring Kit Installation

(7500S, 7500XS, 7501)

QTY	P/N & Description	Item	Material	Size
1	20184 Back-up ring, piston stem	414	White Teflon	7/16"
1	14190 O-ring, piston stem	415	Black nitrile rubber	7/16"
3	13969 O-ring, piston retainer	428	Black nitrile rubber	3/4"
	13969 O-ring, bypass fitting	442	Black nitrile rubber	3/4"
	13969 O-ring, discharge fitting	446	Black nitrile rubber	3/4"
1	14759 O-ring, Body	429	Black nitrile rubber	3/8"
1	107675 Backup ring, body	430	White Teflon	3/8"
1	13963 O-ring, seat	437	Black nitrile rubber	1/2"

Note: The o-ring for the check valve (item 443, P/N 541060) is not included with the 32097 Kit. The pre-assembled check valve with the o-ring factory installed is sold separately.

Tools & equipment required:

7/8" wrench, 3/4" wrench, Seal pick, 5/16" punch, 7/16" socket or nut driver, large common screw driver.

White Lithium grease, Medium (blue) Loctite 242

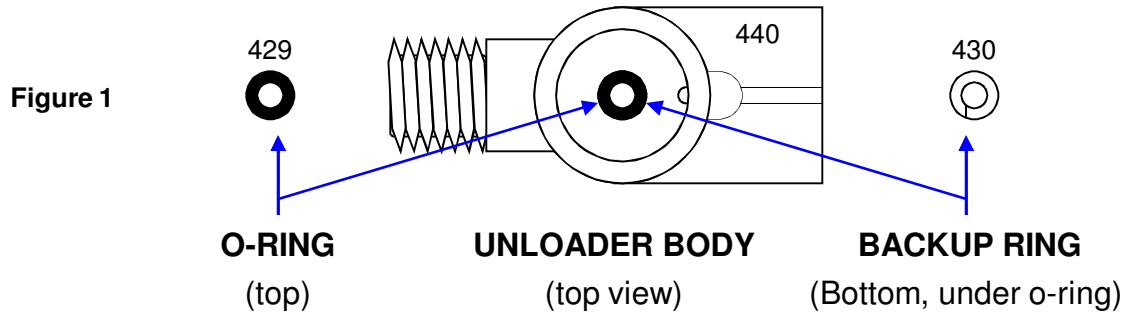


MODEL 7500 UNLOADER SERVICING AND REBUILD

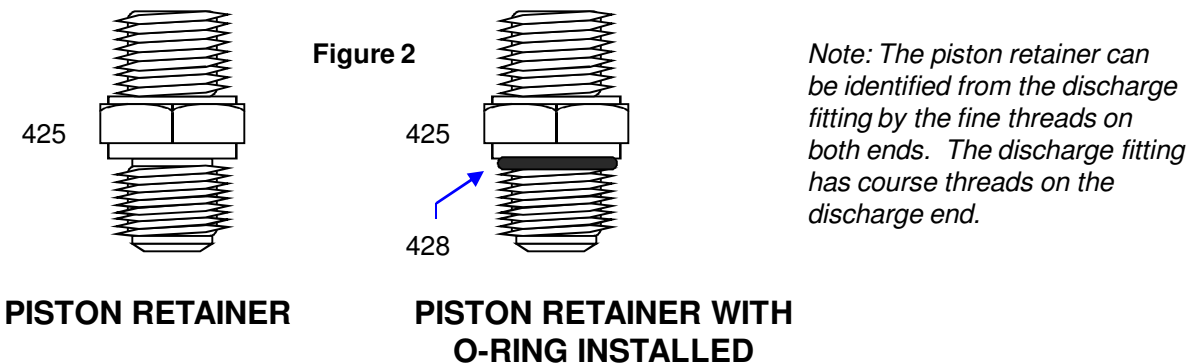
Disassembly & reassembly: Accomplish in a sequential, step by step manner.

1. Disconnect by-pass, discharge and inlet plumbing from unloader.
 2. Remove unloader from pump.
 3. Secure unloader in a vise with hex adjusting cap facing up, being careful not to harm the inlet threads.
 4. Model 7500S: Remove discharge fitting and o-ring, spring, check valve and o-ring – $\frac{3}{4}$ " wrench.
 5. Model 7600S: Remove discharge fitting and o-ring, spring, check valve and o-ring, collar, check valve seat and o-ring – $\frac{3}{4}$ " wrench.
 6. Note: The seat for the check valve is machined into the unloader not removable. Exercise caution when removing components to avoid damage to the unloader walls and seat.
 7. Examine check valve, check valve seat, collar and discharge fitting for wear or fatigue and o-ring for cuts or wear and replace as needed.
 8. Note: While the discharge fitting is removed, inspect sealing area where the check valve makes contact within the internal body of the unloader for grooves, pitting and wear. If damage is found, stop the repair and replace with a complete new unloader. If not, proceed with disassembly.
 9. If supplied with a lock nut, the lock nut does not need to be removed. Turn lock nut down towards unloader body.
 10. Remove adjusting hex cap, (turning counterclockwise), spring & spring retainer (disk).
 11. Examine spring and retainer for scale build-up, fatigue or wear and replace as needed.
 12. Remove by-pass fitting with o-ring from bottom port – $\frac{7}{8}$ " wrench
 13. Remove the seat and o-ring from the male threaded side of the by-pass fitting. Use a $\frac{5}{16}$ " punch to remove the seat from the bypass fitting by tapping gently on the stainless steel seat.
 14. Examine seat for scale build-up, scoring and wear and replace as needed. Examine o-ring for cuts and wear and replace as needed.
- CAUTION:** *Step 15 must be accomplished before removing the piston retainer to prevent from damaging to the piston stem/ball & valve assembly.*
15. Looking down from the top of the piston retainer (the place where you just unscrewed the hex adjusting cap), notice the slot for a large flat-tip screwdriver on the top of the piston stem. Looking up from the bottom (the place where you removed the by-pass fitting), notice the $\frac{7}{16}$ " hex on the ball & valve assembly. Holding the hex ball & valve assembly with a $\frac{7}{16}$ " nut driver or deep socket, unscrew the piston stem in a counterclockwise direction with the flat-tip screwdriver.
 16. Push the piston stem from the piston retainer. Slight resistance against the o-ring seals may be felt.
 17. Remove the piston retainer fitting with o-ring – $\frac{3}{4}$ " wrench.
 18. Remove the piston stem o-ring and piston stem back back-up ring.
 19. Inspect piston retainer for wear. Examine o-rings and back-up rings for cuts or wear and replace as needed.

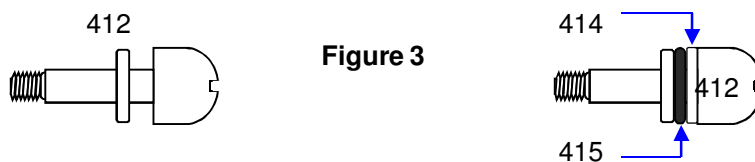
- Using a seal pick or similar tool, remove the back-up ring and o-ring from the unloader body (440).
- Lubricate and install the white back-up ring (430) first, then lubricate and install the black o-ring (429) on top of the back-up ring and ensure both are securely seated in the unloader body.



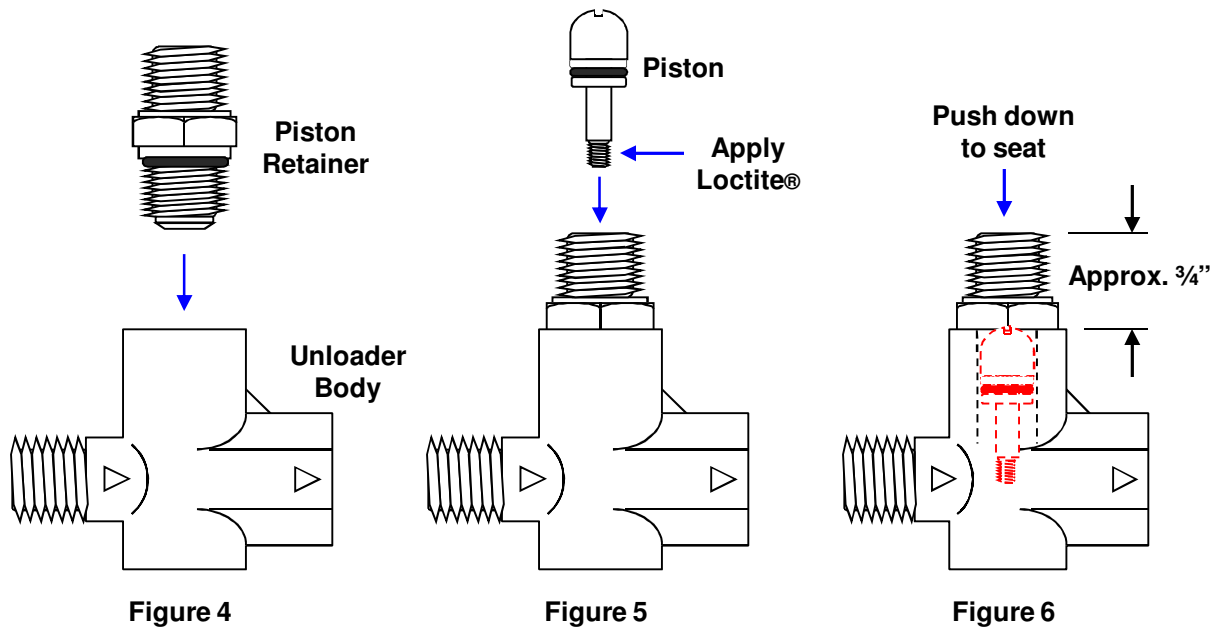
- Lubricate and install o-ring (428) on the piston retainer (425). Carefully hand thread the piston retainer with the small diameter hole facing down into the unloader body and tighten with a wrench (see page 4 Figure 4).



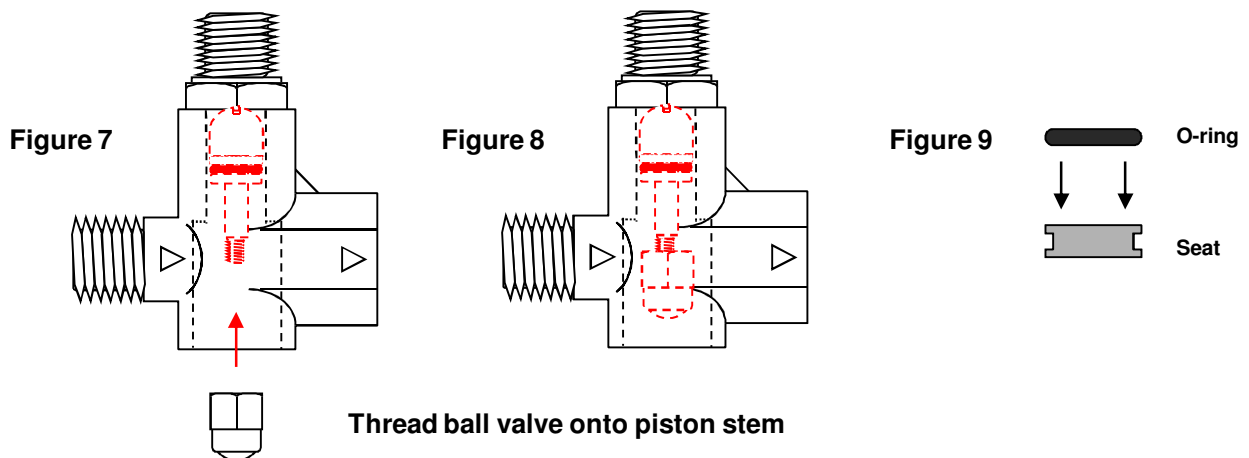
- Lubricate and install o-ring (415) over piston stem head (412) and then install the white back-up (414) ring into the groove above the o-ring on the piston head.



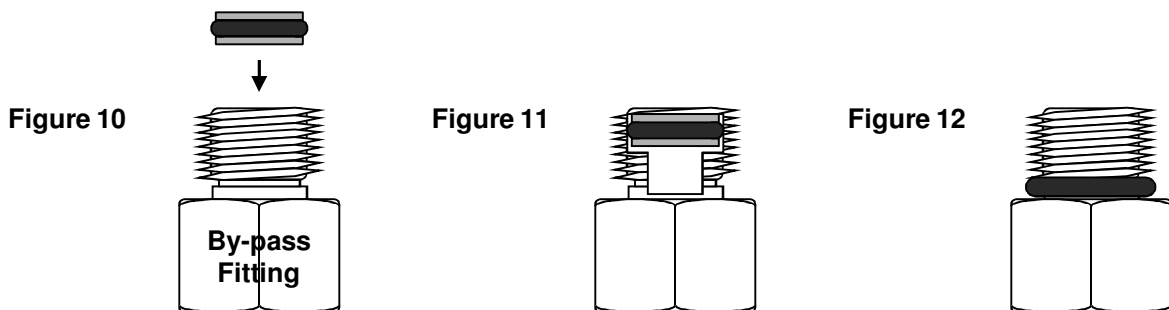
- Apply Loctite® 242 to the last few threads of the piston stem.
- Insert piston stem from the top through the piston retainer until seated (see page 4 Figure 5 & 6).



8. Using the same tools as used during the piston/valve ball disassembly in step 15, place valve/ball assembly into nut-driver or socket with ball surface facing down into the socket. Place the screwdriver tip into the slotted piston stem head. Thread the piston stem into the ball valve assembly and tighten.



9. Place by-pass fitting on a flat surface with the male threads facing up.
10. Lubricate and install o-ring onto seat (figure 9). Press seat into by-pass fitting (figure 10 & 11).
11. Lubricate and install o-ring onto by-pass fitting (figure 12), hand thread fitting into unloader body and tighten with a wrench.



12. Insert spring into discharge fitting (figure 13).
13. Insert check valve with small step end into spring (figure 14 & 15).

Figure 13

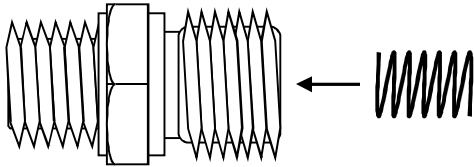
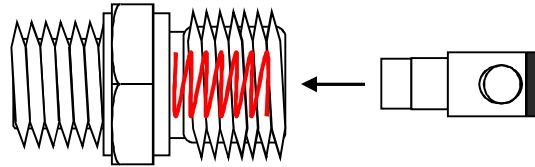


Figure 14



14. Lubricate and install o-ring on discharge fitting (figure 16).
15. Hand thread fitting into unloader body and tighten with a wrench.

Figure 15

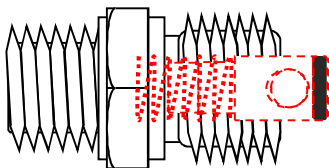
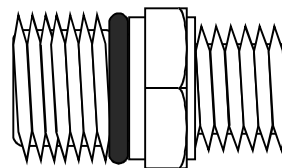
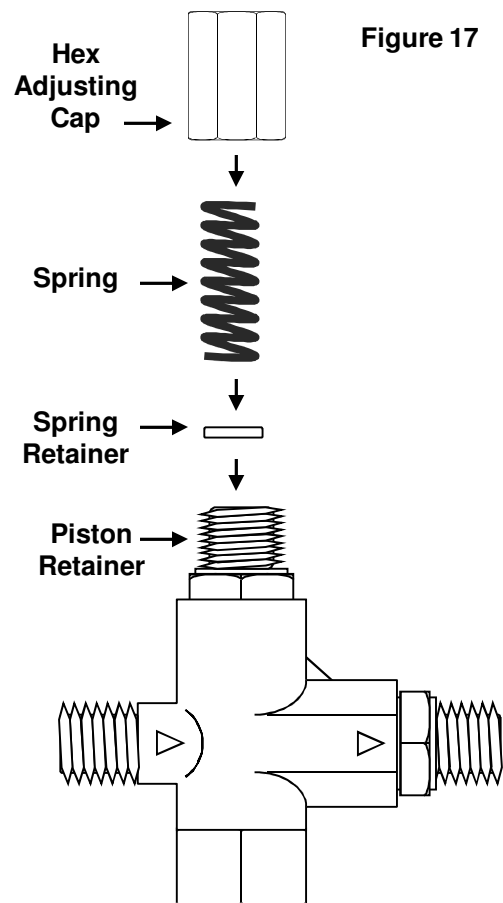


Figure 16

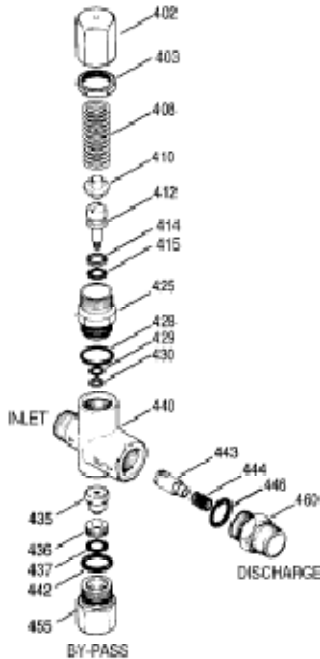


16. Place spring retainer on top of piston stem (figure 17).
17. Place spring on to spring retainer (figure 17).
18. Thread hex adjusting cap on to piston retainer (figure 17).
19. Re-install unloader onto pump.
20. Reconnect by-pass, discharge and inlet plumbing to unloader and check for leaks.
21. Adjust pressure as required (see "Pressure Adjustment" CAT data sheet)

Figure 17



EXPLODED VIEW 7500S Unloader

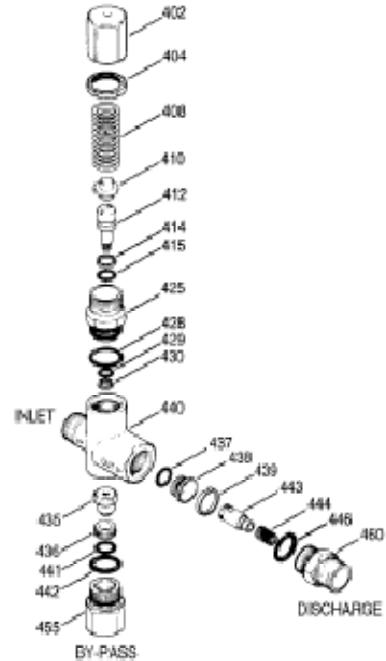


PARTS LIST

ITEM	P/N	MATL	DESCRIPTION	QTY.
402	540081	BB	Cap, Hex Adjusting	1
403	51047	BB	Nut, Lock (M18 x 1)	1
408	32094	STZP R	Spring, Pressure	1
410	107672	BB	Retainer, Spring	1
412	45894	S	Stem, Piston (M5)	1
414	20184	PTFE	Back-up-Ring, Piston Stem	1
415	14180	NBR	O-Ring, Piston Stem - 700	1
	14161	FPM	O-Ring, Piston Stem - 700	1
425	107673	BB	Retainer, Piston	1
428	13969	NBR	O-Ring, Piston Retainer - 700	1
	14320	FPM	O-Ring, Piston Retainer - 700	1
429	14759	NBR	O-Ring, Body	1
	14160	FPM	O-Ring, Body - 900	1
430	107675	PTFE	Back-up-Ring, Body	1
435	45898	BB	Valve and Ball Assembly (M5)	1
436	107680	S	Seat	1
437	13963	NBR	O-Ring, Seat - 700	1
	14303	FPM	O-Ring, Seat - 700	1
440	-	BB	Body	1
442	13969	NBR	O-Ring, By-Pass Fitting - 700	1
	14320	FPM	O-Ring, By-Pass Fitting - 700	1
443	541060	BB	Valve, Check w/O-Ring	1
444	45824	S	Spring	1
446	13969	NBR	O-Ring, Discharge Fitting - 700	1
	14320	FPM	O-Ring, Discharge Fitting - 700	1
455	45895	BB	Fitting, By-Pass (3/8" NPTF)	1
460	107681	BB	Fitting, Discharge (3/8" NPTM)	1
468	32097	NBR	Kit, O-Ring (Incls: 414,415, 428 - 430, 437, 442, 446)	1
	31627	FPM	Kit, O-Ring (Incls: 414,415, 428 - 430, 437, 442, 446)	1

Italics are optional items. R Components comply with RoHS Directive.
MATERIAL CODES (Not Part of Part Number): BB=Brass FPM=Fluorocarbon
 NBR=Medium Nitrile (Buna-N) PTFE=Pure Polytetrafluoroethylene S=304SS
 STZP=Steel/Zinc Plated

EXPLODED VIEW 7600S Unloader



PARTS LIST

ITEM	P/N	MATL	DESCRIPTION	QTY.
402	45197	BB	Cap, Hex Adjusting	1
404	45201	BB	Nut, Lock (M25x1)	1
408	45198	ZP	Spring, Pressure	1
410	45199	BB	Retainer, Spring	1
412	45894	S	Stem, Piston (M5)	1
414	20184	PTFE	Back-up-Ring, Piston Stem	1
415	14190	NBR	O-Ring, Piston Stem - 700	1
425	45200	BB	Retainer, Piston	1
428	28133	NBR	O-Ring, Piston Guide - 900	1
429	14759	NBR	O-Ring, Body	1
430	107675	PTFE	Back-up-Ring, Body	1
435	45716	S	Valve and Ball Assembly (M5)	1
436	107680	S	Seat	1
437	26127	NBR	O-Ring, Seat	1
438	45208	S	Seat, O-Valve	1
439	45205	BB	Collar	1
440	-	BB	Body	1
441	13983	NBR	O-Ring, Seat - 700	1
442	28133	NBR	O-Ring, Adapter - 900	1
443	35203	BB	Valve, Check w/O-Ring	1
444	45824	S	Spring	1
448	28133	NBR	O-Ring, Discharge Fitting - 900	1
455	45895	BB	Fitting, By-Pass (3/8" NPTF)	1
460	107691	BB	Fitting, Discharge (3/8" NPTM)	1
468	32098	NBR	Kit, O-Ring (Incls: 414,415,428,429,430,437,441,442,446)	1

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 S=304SS ZP=Zinc Plated