



MAINTENANCE SPECIFICATION

NYR-303

INSTRUCTIONS FOR MAINTENANCE OF  
EL -60 EMPTY/LOAD VALVE PORTION  
P/N 771822, 60% ASSEMBLY  
P/N 771877, 50% ASSEMBLY  
P/N 774090, 40% ASSEMBLY

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ISSUE NO. 4  
DATE: SEPTEMBER 5, 2002

MAINT. SPEC. NYR-303  
8 PAGES

A. TOOLS REQUIRED

1. Wrench, Open End, 1"
2. Wrench, Open End, 7/8"
3. Wrench, Open End, 9/16"
4. Wrench, Hex Key, 5/32"
5. Pliers, Retaining Ring, Internal, #01
6. Pliers, Retaining Ring, Internal, #05
7. Pliers, Ring Clamp
8. Pliers, Needle Nose
9. Wrench, Torque, Min. Range 10 Ft.-Lbs.
10. No. 2 Silicone Grease (e.g. Dow Corning 55/55M)

B. DISASSEMBLING

1. Place a 3/4" block between the cover (32) and lever (37) to assist in disassembly then remove four hex head cap screws (33) from body (1). Remove cover (32) from body (1).
2. Remove retaining ring (21) from body (1).
  - a. Remove guide sleeve (20) and ratio piston (18) from body (1).
  - b. Remove and discard two O-rings (17) and O-ring (19) from ratio piston (18).
  - c. Remove retaining ring (12), spring seat and stop (13), spring (14), guide pin (15), and check valve (16) from ratio piston (18). Discard check valve (16).
3. Remove tube port plug (2) and check body (5) from body (1).
  - a. Remove and discard O-ring (3) from tube port plug (2), umbrella valve (6) and O-ring (4) from check body (5).

4. Remove indicator (7) from body (1).
  - a. Remove piston (10), and spring (9) from indicator (7).
  - b. Remove and discard O-ring (8) from indicator (7) and O-ring (11) from piston (10).

**WARNING**

**COMPONENT SPRINGS WITHIN THIS UNIT ARE UNDER COMPRESSIVE LOADS. EXERCISE CARE WHEN DISASSEMBLING THIS UNIT TO PREVENT PARTS FROM INADVERTENTLY FLYING OUT AND CAUSING INJURIES.**

5. Remove and discard O-ring (24) from piston follower (25).
  - a. Push out pin (26), remove push rod (22) and spring (23) from piston follower (25). If spring (23) is red, discard; if spring (23) is blue and conforms to spring details as listed in Section C-3, it can be reused.
  - b. Place hand onto piston follower (25) and hold piston follower (25) from flying out, then remove elastic stop nut (38), shoulder screw (36) that connects piston rod (30) to lever (37). Discard elastic stop nut (38).
  - c. Remove piston follower with assembled pieces (25 thru 30) from valve cover (32).
  - d. Remove spring (31) from piston rod (30).
  - e. Place piston follower (25) in a vise and remove piston rod (30). Remove washer (29), piston (28), and diaphragm (27) from piston follower (25). Discard diaphragm (27). Remove piston follower (25) from vise.
6. Remove shoulder screw (36) and elastic stop nut (38) from cover (32). Remove lever (37) from cover (32). Discard elastic stop nut (38).

**NOTE**

Step 7 is required only if there are visible signs of wear, damage or corrosion to quick disconnect nipple (41).

7. Remove dust cap (42) and quick disconnect nipple (41) from body (1). Discard quick disconnect nipple (41).

C. CLEANING, INSPECTING, AND REPAIRING

**WARNING**

**SOLVENTS AND SOLVENT FUMES CAN BE HARMFUL TO HEALTH. WHEN USING SOLVENTS, BE SURE TO:**

- **WEAR EYE, SKIN, AND RESPIRATORY PROTECTION.**
- **WORK IN A WELL VENTILATED AREA.**
- **AVOID REPEATED OR PROLONGED CONTACT.**
- **KEEP SOLVENT CONTAINER CLOSED.**
- **KEEP SOLVENT AWAY FROM SPARKS, FLAMES, AND HEAT.**

**FAILURE TO OBSERVE THESE SAFETY PRECAUTIONS CAN LEAD TO INJURY OR INTOXICATION.**

**WARNING**

**CLEANING USING COMPRESSED AIR CAN CAUSE PARTICLES TO BECOME AIRBORNE, BE SURE TO:**

- WEAR EYE PROTECTION.
- DO NOT EXCEED 30 PSI.

**FAILURE TO OBSERVE THESE SAFETY PRECAUTIONS CAN LEAD TO INJURY.**

1. Wash all parts in a suitable solvent that will dissolve oil and grease and permit all parts to be thoroughly cleaned without abrasion (i.e. mineral spirits). Then blow dry with a jet of dry, compressed air.
2. Replace all rubber parts and springs previously discarded.
3. Examine all springs to verify conformity to spring details as follows and replace where necessary:

<u>Ref. No.</u>	<u>Mat'l.</u>	<u>Approx. Outside Dia.</u>	<u>Approx. Wire Dia.</u>	<u>Approx. Free Height</u>	<u>Approx. No. of Active Coils</u>
9	St. Stl.	1/4"	1/64"	1-1/4"	9-1/2
14	St. Stl.	17/32"	1/32"	1-1/2"	6
23	St. Stl. (Blue)	35/64"	1/32"	1-7/16"	6-1/4
30	Mu. Wire	1-5/32"	7/64"	3"	6-5/16

LOAD INSPECTION

<u>Ref. No.</u>	<u>Deflect To</u>	<u>Load Is</u>
9	9/16"	1.4 lbs. +/- .05 lbs.
14	13/32"	.74 lbs. +/- .06 lbs.
23	3/4"	1.6 lbs. +/- .05 lbs.
30	1.292"	40.75 lbs. +/- 2 lbs.

CAUTION: WHEN INSPECTING SPRINGS, DO NOT COMPRESS SPRINGS BEYOND THE TEST DEFLECTION HEIGHT, OTHERWISE DAMAGE TO SPRINGS MAY OCCUR.

4. Replace any other parts that are cracked, broken, cut, worn, damaged, or in such a condition as would result in unsatisfactory operation.

To assist in determining if wear or damage has occurred to the wearing parts of this assembly, the allowable tolerances for these parts are listed in the text that follows. If a part fails to meet a requirement, the part should be replaced, unless otherwise stated.

- (a) Piston Rod (30)
    - Piston rod holes to be free of scratches, nicks, or dents and shall exhibit no elongation.
  - (b) Shoulder Screw (36)
    - Shoulder screw to be free of flat spots, dirt, and corrosion.
  - (c) Adjusting Screw (39)
    - End of adjusting screw to be free of surface wear, dents, and burrs.
5. Replace any retaining ring that is not elastic enough to clamp securely.

**D. LUBRICATING AND REASSEMBLING**

1. Rubber O-rings must be lubricated individually with No. 2 Silicone Grease (e.g. Dow Corning 55/55M). Prior to assembly, the O-ring shall be coated with grease. After installing the new O-ring in its groove, remove only the excess grease before inserting the assembly into the coated bushing.
2. Place lever (37) in cover (32) then insert shoulder screw (36) and new elastic stop nut (38) into lever (37) and cover (32).

**NOTE**

Install diaphragm (27) with numbers facing up so that numbers go into the groove in the cover (32).

3. Place piston follower (25) in a vise. Install new diaphragm (27) onto the piston (28), then install piston (28), washer (29), and piston rod (30) onto diaphragm follower (25). Securely tighten piston rod (30) to diaphragm follower (25).
  - a. Install spring (31) onto piston rod (30).
  - b. Insert piston follower with assembled pieces (25 thru 31) into cover (32)
  - c. Place hand on piston follower (25) and press on piston follower (25) to compress spring (31). Insert shoulder screw (36) through lever (37) and piston rod (30). Attach elastic stop nut (38) to shoulder screw (36).

**NOTE**

Use #2 silicone grease (e.g. Dow Corning 55/55M) to grease the push rod (22).

- d. Insert blue spring (23) and lightly greased push rod (22) into diaphragm follower (25), then insert pin (26) into hole in piston follower (25) and push rod (22).
  - e. Install new O-ring (24) onto piston follower (25).
4. Install new O-ring (8) onto indicator (7) and O-ring (11) onto piston (10).
- a. Insert spring (9) and piston (10) into indicator body (7).

- b. Insert indicator (7) into body (1) and securely tighten.
5. Insert new umbrella valve (6) into check body (5).
- a. Install new O-ring (3) onto tube port plug (2).
  - b. Install new O-ring (4) onto body check (5).
  - c. Insert check body (5) and tube port plug (2) into body (1).

**NOTE**

Use #2 silicone grease (e.g. Dow Corning 55/55M) to grease the guide pin (15).

6. Insert new check valve (16), lightly greased guide pin (15) stem, spring (14), spring seat and stop (13), and retaining ring (12) into the ratio piston (18).
- a. Install two new O-rings (17) and new O-ring (19) onto ratio piston (18).
  - b. Insert ratio piston (18) and guide sleeve (20) into body (1).

**NOTE**

Guide sleeve (20) recess should be aligned with the hole in the body (1) to help in the ease of installing and removing of retaining ring (21).

- c. Insert retaining ring (21) into body (1).

**NOTE**

Installation of retaining ring (21) should be with the plier holes located within the cutout in the guide sleeve (20).

7. Place a 3/4" block between the cover (32) and the lever (37) to assist in assembly then carefully align push rod (22) into guide sleeve (20) and install cover (32) onto body (1) and secure in place with four hex head cap screws (33). Tighten screws (33) to 15±1.5 ft.-lbs.

**NOTE**

Step 8 is only required if quick disconnect nipple (41) was discarded during disassembly.

**NOTE**

Use Key-Tite Pipe Sealant when installing quick disconnect nipple (41) unless nipple has preapplied thread sealant.

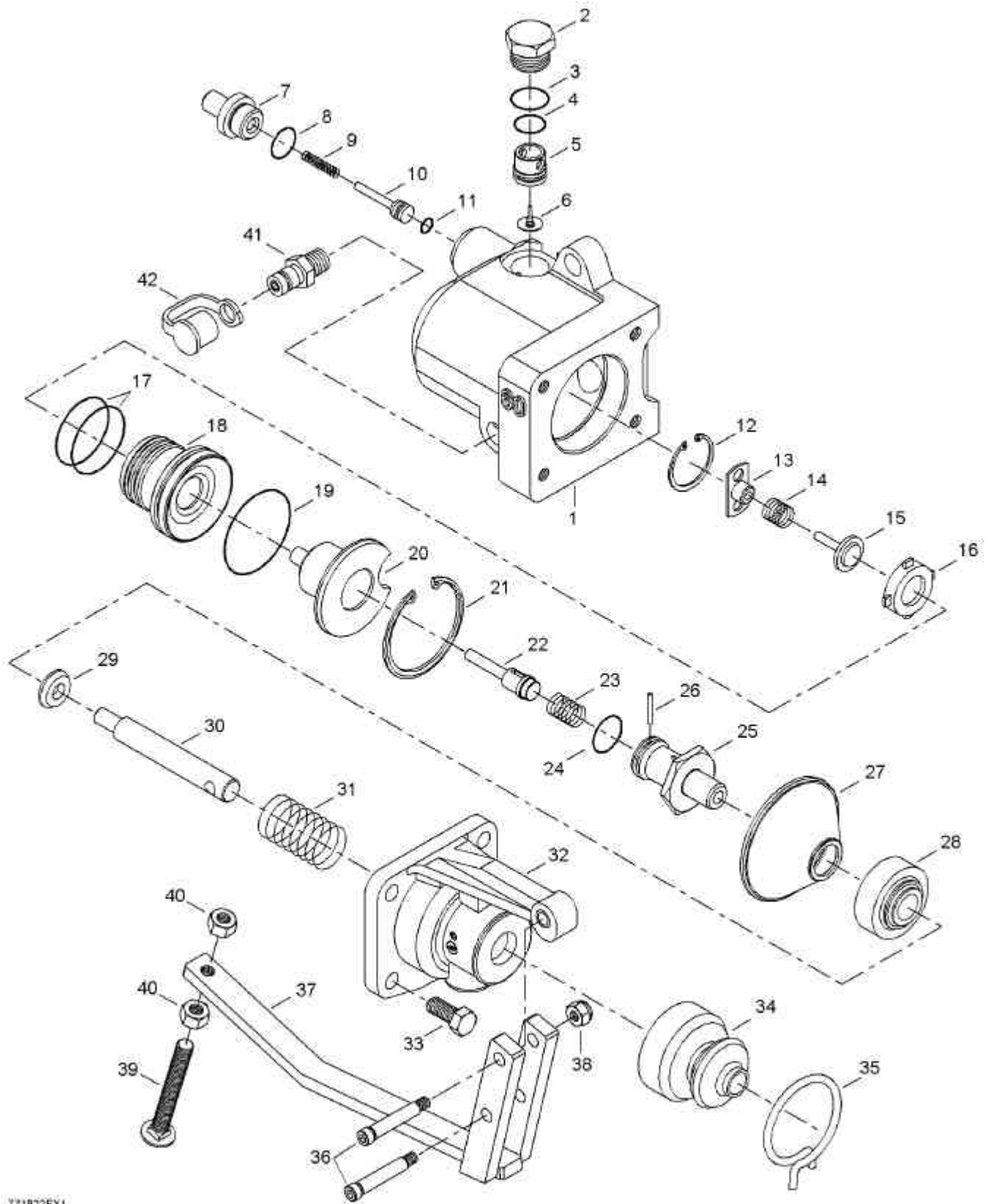
8. Install quick disconnect nipple (41) into body (1).

**E. TESTING**

After the completion of the above, the EL-60 Empty/Load Valve must be tested in accordance with the instructions given in Test Document NYT-1243-C.

KEY FOR FIGURE NYR-303

1. Body
2. Tube Port Plug
3. O-ring
4. O-ring
5. Check Body
6. Umbrella Valve
7. Indicator
8. O-ring
9. Spring
10. Piston
11. O-ring
12. Retaining Ring
13. Spring Seat and Stop
14. Spring
15. Guide Pin
16. Check Valve
17. O-ring
18. Ratio Piston
19. O-ring
20. Guide Sleeve
21. Retainer Ring
22. Push Rod
23. Spring
24. O-ring
25. Piston Follower
26. Pin
27. Diaphragm
28. Piston
29. Washer
30. Piston Rod
31. Spring
32. Valve Cover
33. Hex Head Cap Screw
34. Dust Boot
35. Clamp
36. Shoulder Screw
37. Lever
38. Elastic Stop Nut
39. Adjusting Screw
40. Lock Nut
41. Quick Disconnect Nipple
42. Dust Cap



771B22EX1

NYR-303 EL-60 EMPTY/LOAD VALVE

REVISION PAGE:

NYR-303

ISSUE NO. 1  
DECEMBER 17, 1992

Original Issue

ISSUE NO. 2  
JANUARY 6, 1993

Removed Flat Screwdriver from tools required  
Paragraph B. 4 - changed indicator body (8) to indicator (7)  
Paragraph B. 4. a - removed retaining ring (13) and wasp  
excluder (12). Changed indicator body (8) to indicator (7).  
Paragraph B. 4. b added O-ring (8) from indicator body (7).  
Paragraph D. 4 O-ring (8) onto indicator body (7).  
Paragraph D. 4. a removed wasp excluder (12) and retaining  
ring (13) and changed indicator body (8) to indicator (7).  
Paragraph D. 4. b changed indicator body (8) to indicator (7).  
Paragraph D. 6. Note within the cutout was with recess.  
Paragraph D. 7 added carefully align piston (24) into guide sleeve  
(22).

KEY FOR FIGURE NYR-303

Changed Cap Visor (7) to Indicator (7).  
Changed Body (8) to O-ring (8).  
Removed Wasp Excluder (12), Retaining Ring (13), and Pipe  
Plug (46).

NYR-303 EL-60 EMPTY/LOAD

Drawing change to 7 and 8, made 7 and 8 item 7 and 8 is  
now an O-ring.  
Removed pipe plug from drawing and remove its hole.  
Changed retaining ring 14 to another retaining ring.  
Changed drawing of lever 40 from cast to a fabricated  
lever.

ISSUE NO. 3  
JULY 12, 2001

Added #2 silicone grease (e.g. Dow Corning 55/55M) to tools required  
list and updated references throughout document.  
Added solvent and compressed air warnings.  
Changed spring information on page 3.  
Added information for replacement of quick disconnect nipple.  
Updated Figure NYR-303.

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Added 40% assembly P/N 774090