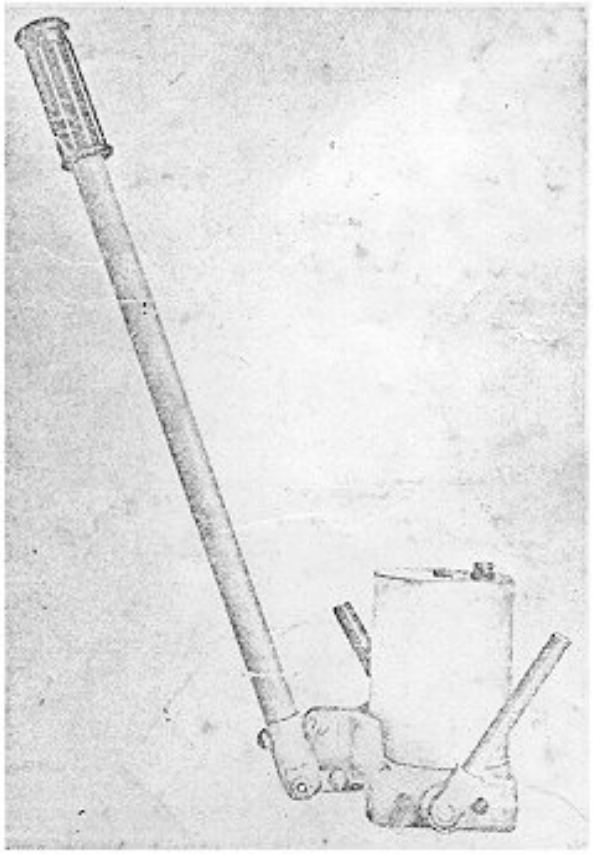
MAINTENANCE MANUAL

FOR

THE ELECTROL 430 POWERPAK



ELECTROL INCORPORATED, KINGSTON, N. Y.

GENERAL DESCRIPTION

The purpose of this manual is to provide information that will enable users and mechanics to familiarize themselves with the operation and repair of Electrol powerpaks and the function of their parts.

In the center of this manual there is an assembly drawing which can be referred to while reading through this text. This drawing shows all parts in the order of their assembly and disassembly.

The reservoir is located on the top of the powerpak body. The reservoir has two purposes: to supply all necessary fluid to the unit and to act as a surge chamber.

The hand pump incorporates a double-acting piston which discharges pressurized fluid when actuated in either direction. During the piston outstroke, the fluid is forced from one side of the piston head to the system. At the same time, fluid flows from the reservoir by means of the suction intake valve, located within the reservoir, to the other side of the piston head due to the displacement in the hand pump chamber. The one-way check valve in the piston head permits fluid to flow from only one side of the piston to the other. During the piston instroke the fluid flows through this check valve and to the system.

At the same time, the suction intake valve closes, preventing the flow of fluid back to the reservoir.

The selector handle may be moved alternately, and directs the pressurized fluid through the port opposite toward which the handle is moved. As a result of this same movement, fluid may flow through the other port to act as a return. The desired fluid flow path is established by the arrangement of balls, seats and lifting plungers. A plunger, actuated by the camshaft, unseats the ball, allowing the fluid to flow to the selected pressure port. At the same time, the camshaft actuates a return plunger and ball, allowing the fluid to flow to the reservoir.

A relief valve, which can be adjusted to the proper setting, is located within the reservoir. This relief valve automatically opens when the system pressure exceeds the maximum operating pressure of the powerpak.

AUXILIARY HYDRAULIC PUMP

An auxiliary hydraulic pump for intermittent duty can be used with the Electrol powerpak. The pump is connected to the powerpak at the 1/4" pipe port, marked "S" (suction), and at the 1/8" pipe port, marked "P" (pressure). A one-way check valve should be used between the pump and powerpak on the pressure side. This will prevent back pressure from acting on the pump.

When using an auxiliary pump, the pressurized fluid must flow through the relief valve after moving the cylinder to its extended or retracted position. Because of the small flow passage through the relief valve, the fluid will heat excessively if a pump supplies continuous flow to the powerpak; therefore, a pump supplying intermittent flow is recommended.

TROUBLE SHOOTING

1. Lack of pressure on the outstroke of the hand pump piston.
   Probable cause:
   (a) Check valve seat in the hand pump piston is damaged or foreign matter on the seat.
   (b) "O" ring seal on the hand pump piston damaged.
   (c) "O" ring seal on the check valve seat in the hand pump piston damaged.
   (d) Relief valve held open because of damage to seat or foreign matter on the seat.

2. Lack of pressure on the instroke of hand pump piston.
   Probable cause:

   (a) Suction intake valve seat damaged or foreign matter on the seat.
   (b) "O" ring seal on the intake suction seat damaged.
   (c) "O" ring seal on the hand pump piston damaged.
   (d) Air in the system or a loose fitting.

3. Lack of pressure on both outstroke and instroke of hand pump piston.
   Probable cause:

   (a) Leakage through relief valve due to damaged seat, or damaged "O" ring seal, or foreign matter on the seat.
   (b) Scored piston chamber.

4. Cylinder rod creepage.
   Probable cause:
   (a) Suction intake valve seat damaged or foreign matter on the seat.

I. 430 C –1 to –4 POWERPAK DATA

1. Operating pressure:
   - 430C-1 100 to 400 psi (+50 / -0)
   - 430C-2 200 to 800 psi (+50 / -0)
   - 430C-3 300 to 1200 psi (+50 / -0)
   - 430C-4 400 to 1500 psi (+50 / -0)

   (a) Relief valve cracking at 200 psi ± 50 above operating pressure.

2. Hand Pump:

   (a) Bore: 1”

   (b) Stroke: 1 1/8”

   (c) Volume per cycle (2 strokes): .88 cu. in.

   (d) Hand pump load: 50# at 1500 psi

3. Reservoir capacity: 14 cu. In. to 103 cu. In. (as per customer’s requirements)

4. Port screens: 60 mesh

5. Weight dry: approximately 5 pounds (Less reservoir.)

II. 430 M POWERPAK DATA

1. Operating pressure: 450 psi (+50 -0)

   (a) Relief valve cracking at 200 psi (+50 -0) above operating pressure.

2. Hand pump:

   (a) Bore: 1”

   (b) Stroke: 1 1/8”

   (c) Volume per cycle (2 strokes): .88 cu. in.

3. Reservoir capacity: 14 cu. In. (B4061-1 reservoir.)

4. Port screens: 60 mesh

5. Weight dry: approximately 5 pounds (Less reservoir.)

III. 430 P POWERPAK DATA

1. Operating pressure: 800 psi (+50 -0)

   (a) Relief valve cracking at 200 psi ±50 above operating pressure.

2. Hand pump:

   (a) Bore: 1”

   (b) Stroke: 1 1/8”

   (c) Volume per cycle (2 strokes): .88 cu. in.

   (d) Hand pump load: 20# at 500 psi.

3. Reservoir capacity: 31 cu. In. (B4060-2.)

4. Port screens: 60 mesh.

5. Weight dry: approximately 5 pounds (less reservoir.)

IV. 430 RDH5 POWERPAK DATA

1. Operating pressure: 800 psi (+50 -0)

   (a) Relief valve cracking at 200 psi ±50 above operating pressure.

2. Hand pump:

   (a) Bore: 1”

   (b) Stroke: 1 1/8”

   (c) Volume per cycle (2 strokes): .88 cu. in.

   (d) Hand pump load: 20# at 500 psi.

3. Reservoir capacity: 14 cu. in. (B4061-1 reservoir)

4. Port screens: 60 mesh.

5. Weight dry: approximately 5 pounds (Less reservoir.)

EXTERNAL LEAKAGE

1. Leakage around hand pump piston stop.
   Probable cause:

   (a) "O" ring seals damaged on piston stop.

   (b) Hand pump piston rod scored.

2. Leakage around retainer plugs.
   Probable cause:

   (a) "O" ring on retainer plug damaged.

3. Leakage around selector cam shaft.
   Probable cause:

   (a) "O" ring seal on camshaft.

DISASSEMBLY AND REASSEMBLY CAUTIONS AND HINTS

1. Keep unit free of all foreign material.

2. Use internal snap ring pliers #1 and #3 (Waldes Kohinoor, Inc.)

3. Use needle nose pliers for the removal of all retainer plugs and lifter plungers.

   CAUTION: Care should be taken not to damage seats and bores.

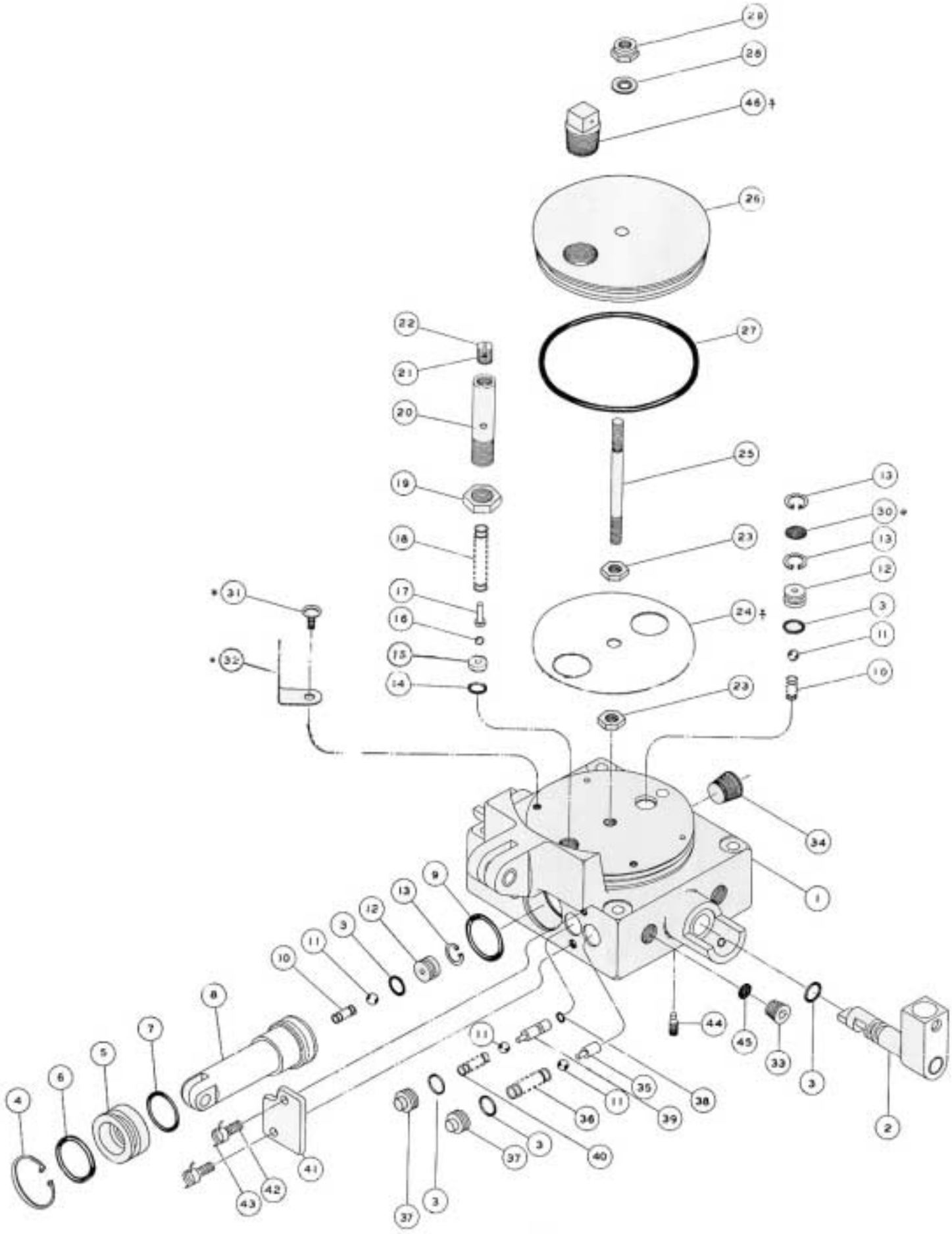
4. Prior to removal of camshaft all lifter plungers must be relieved of tension.

5. Use a suitable hooked tool to remove suction intake check valve seat and hand pump check valve seat.

   CAUTION: Care should be taken not to damage seat or ball when Removing.

6. Care should be taken to clean all parts before assembling. Any suitable cleaning fluid may be used for this purpose.

7. Prior to assembly apply a generous coating of Vaseline on all "O" rings and on their component parts.



NOTE :
* REQUIRED ON MODELS 430C 1-4, 430P, AND 430RDH5 ONLY
† REQUIRED ON MODELS 430C 1-4, 430P, AND 430M ONLY
• REQUIRED ON MODEL 430RDH5 ONLY

P A R T S L I S T

430C-1 to –4, 430M, 430P, 430RDH5 POWERPAK MODELS

ITEM	TOTAL QTY.	PART NO.	DESCRIPTION
1.	1	A9636	Body and Bushing Assembly
2.	2	A7887	Shaft and Adapter Assembly
3.	13	AN6227-6	Packing – “O” Ring
4.	1	NAS50-106	Ring – Snap
5.	1	A4059	Stop – Piston
6.	1	AN6227-16	Packing – “O” Ring
7.	1	AN6227-13	Packing – “O” Ring
8.	1	A4058	Piston – Hand Pump
9.	1	AN6227-15	Packing – “O” Ring
10.	2	A1993	Spring
11.	12	ELA16-8	Ball (Only 10 req’d on Models 430P & 430RDH5) (Only 11 req’d on Model 430M)
12.	2	A3714	Seat
13.	3	NAS50-43	Ring – Snap (Only two req’d on Model 430M)
14.	1	AN6227-5	Packing – “O” Ring
15.	1	A4873	Seat
16.	1	ELA16-6	Ball
17.	1	A1975	Retainer
18.	1	A7688	Spring
19.	1	AN316-7R	Nut
20.	1	A9638	Body
21.	1	A9537	Insert
22.	1	A9641	Screw
23.	2	AN316-4	Nut (Only one req’d on Model 430RDH5)
24.	+ 1	A9672	Battle
25.		A9761-1 thru –6	Stud (Optional according to size reservoir)
26.	1	A5418	Cover
27.	1	AN6230-13	Gasket – “O” Ring
28.	1	PRP110	Dyna-seal
29.	1	AN365	Nut
30.	ϕ 1	A4749	Strainer
31.	ϕ ϕ 2	A9285	Restrictor
32.	ϕ ϕ 2	A9284	Baffle
33.	3	AN932-2	Plug {Only one req’d on Models 430C-1 to –4 {& 430RDH5. Only two req’d on M# 430P
34.	1	AN932-3	Plug (None req’d on Model 430P)
35.	4	A9100	Plunger Lifter
36.	4	A4057	Spring
37.	9	A9640	Retainer
38.	4	PRP902-¾	“O” Ring

P A R T S L I S T (Continued)

ITEM	TOTAL QTY.	PART NO.	DESCRIPTION
39.	4	A4055	Plunger
40.	4	A4056	Spring
41.	4	A9639	Plate
42.	8	AN501A10-7	Screw – Fillister Head
43.		AN995C41-12	Lockwire
44.	2	AN565C8-8	Screw – Set
45.	4	A4750	Strainer
46.	ϕ 1	A5419	Plug – Filler
	1	AN394-17	Pin – Clevis
	1		Nameplate
	1	A4067	Link
	ϕ 1	AN394-25	Pin – Clevis
	ϕ 2	AN394-29	Pin – Clevis
	ϕ 4	AN380-2-1	Pin – Cotter (Only one req'd on M# 430RDH5)
	ϕ 1	A8279	Link
	ϕ 2	A7886	Lever (Only one req'd on Model 430P)
	/ 2	A1976	Spring (Only one req'd on Model 430M)
	/ 2	**#52-048-250-0625**	Rol Pin (Only one req'd on Model 430M)
	1	A9691	Tube – Handle (Req'd on Model 430M only)
	4	AN960-416	Washer (Only one req'd on Model 430RDH5)
		B4060-1 thru -6	Reservoir (Optional according to Customer's Application)
	ϕ ϕ ϕ 1	A4368	Grip
	1	A7686	Spring (Req'd on Model 430C-1 only)
	1	A7687	Spring (Req'd on Model 430C-2 only)
	1	B9673	Handle – Hand Pump (Req'd on Model 430C-1 to -4 only)
	1	A9679	Fork (Req'd on Model 430P only)
	1	A7747	Handle (Req'd on Model 430P only)

+	Req'd on Models 430C-1 to -4, 430P & 430RDH5 only
ϕ	Req'd on Models 430C-1 to -4, 430P & 430M only
ϕϕϕ	Req'd on Models 430C-1 to -4, & 430P only
/	Req'd on Models 430C-1 to -4, & 430M only
ϕϕ	Req'd on Model 430RDH5 only

NOTE: ***See schematic for items 1 through 46***

POWERPAK MODELS 430 C -1 to -4, 430 M, 430 P and 430 RDH5

(Spare Parts Kit)

Seals and Snap Rings

TOTAL QTY.	PART NO.	DESCRIPTION
1	PRP110-¼	Dyna Seal
4 (8)	PRP902-3/4	Packing – "O" Ring
1	AN6227-5	Packing – "O" Ring
13	AN6227-6	Packing – "O" Ring
1	AN6227-13	Packing – "O" Ring
1	AN6227-15	Packing – "O" Ring
1	AN6227-16	Packing – "O" Ring
2 (1)	AN6230-13	Packing – "O" Ring
3	NAS50-43	Ring – Snap
1	NAS50-106	Ring – Snap