

SPX Hydraulic Technologies  
5885 11th Street  
Rockford, IL 61109-3699 USA  
**powerteam.com**

Tech Services: (800) 477-8326  
Fax: (800) 765-8326  
Order Entry: (800) 541-1418  
Fax: (800) 288-7031

Operating Instructions and Parts List for:

PE-NUT  
PE-NUTC

## MODEL PE-NUT HYDRAULIC POWER PUMP



**TOTAL WEIGHT:**  
28 lbs. with oil (12.7 kg with oil)

**HYDRAULIC LINES:**  
Hydraulic lines rated for a minimum of 10,000 psi working pressure must be used.

### INTRODUCTION

The PE-NUT Hydraulic Power Pump is designed for spring-returned remote tools.

### SPECIFICATIONS

**MOTOR:**

5/8 HP (.47 kw), 115 volts or 230 volts AC with 11 amps current draw

**PUMPING CAPACITY:**

160 cu. in. per minute at 100 PSI (2.62liters per minute at 700 kPA/7 BAR)

30 cu. in. per minute at 10,000 PSI (.491 liters per minute at 70,000 kPA/700 BAR)

**RESERVOIR VOLUME:**

1.6 quarts total (1.51 liters total)

**OIL TYPE**

Petroleum based fluids, 180 SSU minimum at 100 degree F, 50 SSU at

210 degree F, minimum for best performance.

**VALVE SETTINGS:**

Low pressure relief valve, 150 PSI (1,050 kPA/10 BAR).

High pressure relief valve, 10,000 PSI (70,000 kPA/ 700 BAR)

**MOTOR CONTROL:**

Pendant switch

**CONTROL VALVE:**


Internal pressure-operated release valve

**OVERALL DIMENSIONS:**


6-1/2 x 8-1/4 x 14-3/8 inches high.

(16.51 x 20.95 x 36.51 cm high)


**IMPORTANT SAFETY INFORMATION**

 This is the safety alert symbol.


It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death

 **DANGER**

Denotes an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**

Denotes a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION**


Denotes a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.




**CAUTION**


Caution used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.


**IMPORTANT**

Denotes an operating or service procedure or condition considered essential for expedient and efficient operation and service.

 **WARNING** To help prevent personal injury,

-  • Always wear eye protection whenever operating hydraulic equipment.
-  • Always wear hearing protection as required.
- Operation, repair, or maintenance of hydraulic equipment should be performed by a qualified person who understands the proper function of hydraulic equipment per local directives and standards.
- Hydraulic equipment must be assembled correctly and then checked for proper function before use. Use hydraulic components of the same hydraulic pressure ratings.
- Never place your hands or other body parts near a hydraulic fluid leak.  
 Never use your hands or other body parts to check for a possible leak.  
 High pressure fluid can be injected under your skin causing serious injury and/or infection.
- If improperly used, pressurized equipment can be potentially hazardous. Therefore: Hydraulic connections must be securely fastened before building pressure in the system. Release all system pressure before loosening any hydraulic connection in the system.
- Do not exceed the hydraulic pressure rating noted on the pump data plate. Creating pressure beyond the rated pressure can result in personal injury.
- Gauges and accessories may not be included with the pump. However, a hydraulic gauge is strongly recommended whenever the pump is used.

 **WARNING**

 It is the operators responsibility to read and understand the following safety statements,

- Only qualified operators should install, operate, adjust, maintain, clean, repair, or transport this machinery.
- Inspect pump before use. Replace any worn or damaged parts. Failure to observe these warning can result in severe injury or death.

**IMPORTANT**

- Properly dispose of all fluids, components, and assemblies at the end of their useful life.
- Hydraulic fluid should be compatible with all hydraulic components.

## OPERATING INSTRUCTIONS

**WARNING**

BE SURE THAT EQUIPMENT CONNECTED TO THIS PUMP IS RATED FOR 10,000 PSI OPERATION.

- Quick coupler connection:
  - Remove dust covers from couplers
  - Push male and female halves together at each connection and spin the threaded sleeve of the female half securely onto the threaded portion of the male half.
- Connect motor to correct power source, 115 volt A.C.
- Pump is shipped with the reservoir full of oil and is ready for use.
- Open reservoir by turning wing of vent plug counter clockwise.
- Connect pendant switch cord to twist-lock receptacle on motor.
- Place work piece in position in tool. Depress pendant switch to start motor. When work is completed, release pendant switch. Motor will stop and ram will retract.
- When line pressure reaches valve setting, a definite popping will be heard. This indicates that the relief valve pressure setting has been reached and no higher pressure can be obtained. Prolonged operation of valve in excess of 10,000 PSI will shorten life of valve considerably and should be avoided. Operator should release pendant switch.
- Close vent plug when completed.

Note: With connections properly made, ball check valves in both halves of coupler are open to permit free flow of oil in either direction.

**IMPORTANT**

The greatest single cause of failure in hydraulic pumps is dirt. Extreme caution should be exercised to prevent the introduction of foreign matter into the unit.

## SERVICING INSTRUCTIONS

**ADDING OIL:**

- If the pump is connected to cylinder or tool, retract ram fully and then disconnect from pump.
- Remove vent plug assembly, including adapter.
- Fill with clean, fresh hydraulic oil until oil is visible in sight gauge window in reservoir wall. Recommended oil: Amoco Rykon MV or equivalent.

**DRAINING AND FLUSHING OF RESERVOIR AND PUMP:**

- If the pump is connected to cylinder or tool, retract ram fully and then disconnect from pump.
- Remove the four screws holding motor and pump assembly to reservoir. Carefully lift assembly out of reservoir, taking care not to damage gasket.
- Dump out oil from reservoir and clean out all sludge and sediment. Fill with approximately 1-1/2 quarts of clean, recommended oil (see above).
- Replace assembly, being sure that gasket is not damaged and is in place and secure with four screws.

## POWER SUPPLY

**ELECTRICAL SHOCK OR ELECTROCUTION**

- Any electrical work must be done and tested by a qualified electrician per local directives and standards.
- Disconnect the pump from the power supply and relieve pressure before removing the motor case cover or performing maintenance or repair.
- Never use an ungrounded power supply with this unit.

**POWER SUPPLY (continued)**

- If the power cord is damaged or wiring is exposed, replace or repair immediately.
- Changing the voltage on this unit is an involved, and if improperly performed, hazardous procedure. Consult the manufacturer for specific information before attempting any rewiring.
- Check the total amperage draw for the electrical circuit you will be using. (For example: Do not plug a pump or pumps that may draw 25 amps into a 20 amp fused electrical circuit.)
- Do not attempt to increase the powerline capacity by replacing a fuse with another fuse of higher value. Overheating of the powerline and the possibility of a fire will result.
- Electric pumps should never be exposed to rain or water which could cause personal electrical hazard.
- Avoid conditions which can cause damage to the power cord such as abrasion, crushing, sharp cutting edges, or corrosive environment. Damage to the power cord can cause an electrical hazard.

**REPLACING MOTOR BRUSH ASSEMBLIES**



Disconnect motor from electric power source.

Remove drip cover.

Remove two top screws and loosen two remaining screws that fasten handle to motor housing. Tip handle out of the way.

Remove two screws that fasten drip cover to motor housing and remove cover.

With screwdriver, carefully loosen brush cap to expose end of brush assembly. Carefully pry under metal terminal of brush assembly until it pops free. Remove and discard entire brush assembly.

Insert new brush assembly, aligning flaps of terminal with flats in hole of brush holder. Press in place until terminal seats against end of brush holder, using finger pressure only. Re-install brush cap while holding terminal in place. Tighten cap lightly to avoid cracking. Repeat this procedure with other brush assembly. Always replace both assemblies at once.

Install drip cover and secure with two screws.

Install handle with two screws and tighten two remaining screws.

Illustration

- |                    |                                     |
|--------------------|-------------------------------------|
| 1. Carrying Handle | 6. Pump Assembly (inside reservoir) |
| 2. Drip Cover      | 7. Sight Gauge                      |
| 3. Motor Housing   | 8. Vent Plug Assembly               |
| 4. Coupler, Female |                                     |
| 5. Reservoir       |                                     |

PREVENTIVE MAINTENANCE



**WARNING** To help prevent personal injury,

- Disconnect the pump from the power supply before performing maintenance or repair procedures.
- Repairs and maintenance are to be performed in a dust-free area by a qualified technician.

**IMPORTANT**

Maintenance Cleaning

Never use a high pressure washer to clean hydraulic components!

1. Keep the pumps outer surface as free from dirt as possible.
2. Seal all unused couplers with thread protectors.
3. Keep all hose connections free of dirt and grime.
4. The breather-hole in the filler cap must be clean and unobstructed at all times.
5. Equipment connected to the pump must be kept clean.
6. Use a high grade hydraulic fluid in this pump. Change as recommended (every 300 hours). Some conditions may require the use of different viscosity hydraulic fluids.

TROUBLE-SHOOTING GUIDE



**WARNING**

- To help prevent personal injury, any repair work or trouble-shooting must be done by qualified personnel familiar with this equipment.
- Use the proper gauges and equipment when trouble-shooting.

PROBLEM	CAUSE	SOLUTION
Electric motor does not run  <b>WARNING</b>  To help prevent personal injury, disconnect power supply before removing cover. Any electrical work should be performed by a qualified electrician.	<ol style="list-style-type: none"> <li>1. Pump not turned ON.</li> <li>2. Unit is not plugged in.</li> <li>3. No voltage supply.</li> <li>4. Overheated motor has caused overcurrent protection to disengage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set switch to "ON" position.</li> <li>2. Plug in unit.</li> <li>3. Check line voltage. Check reset button or fuse on power panel.</li> <li>4. Wait for motor to cool before restarting.</li> </ol>
Electric motor will not shut off.	<ol style="list-style-type: none"> <li>1. Defective motor controls.</li> </ol>	<ol style="list-style-type: none"> <li>1. Disconnect from power supply and contact an Authorized Hyd. Service Center.</li> </ol>
Electric motor stalls, surges, overheats or will not start under a load. <ol style="list-style-type: none"> <li>1. Low voltage or electrical cord size</li> </ol>	too small. <ol style="list-style-type: none"> <li>1. Refer to the "Electric Pump"</li> </ol>	information following Trouble-shooting Guide
Pump will not build full pressure.	<ol style="list-style-type: none"> <li>1. Faulty pressure gauge.</li> <li>2. Check for external leakage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Calibrate gauge.</li> <li>2. Seal faulty fittings with sealant. Replace leaking pipes or hoses.</li> </ol>

TROUBLE-SHOOTING GUIDE (continued)

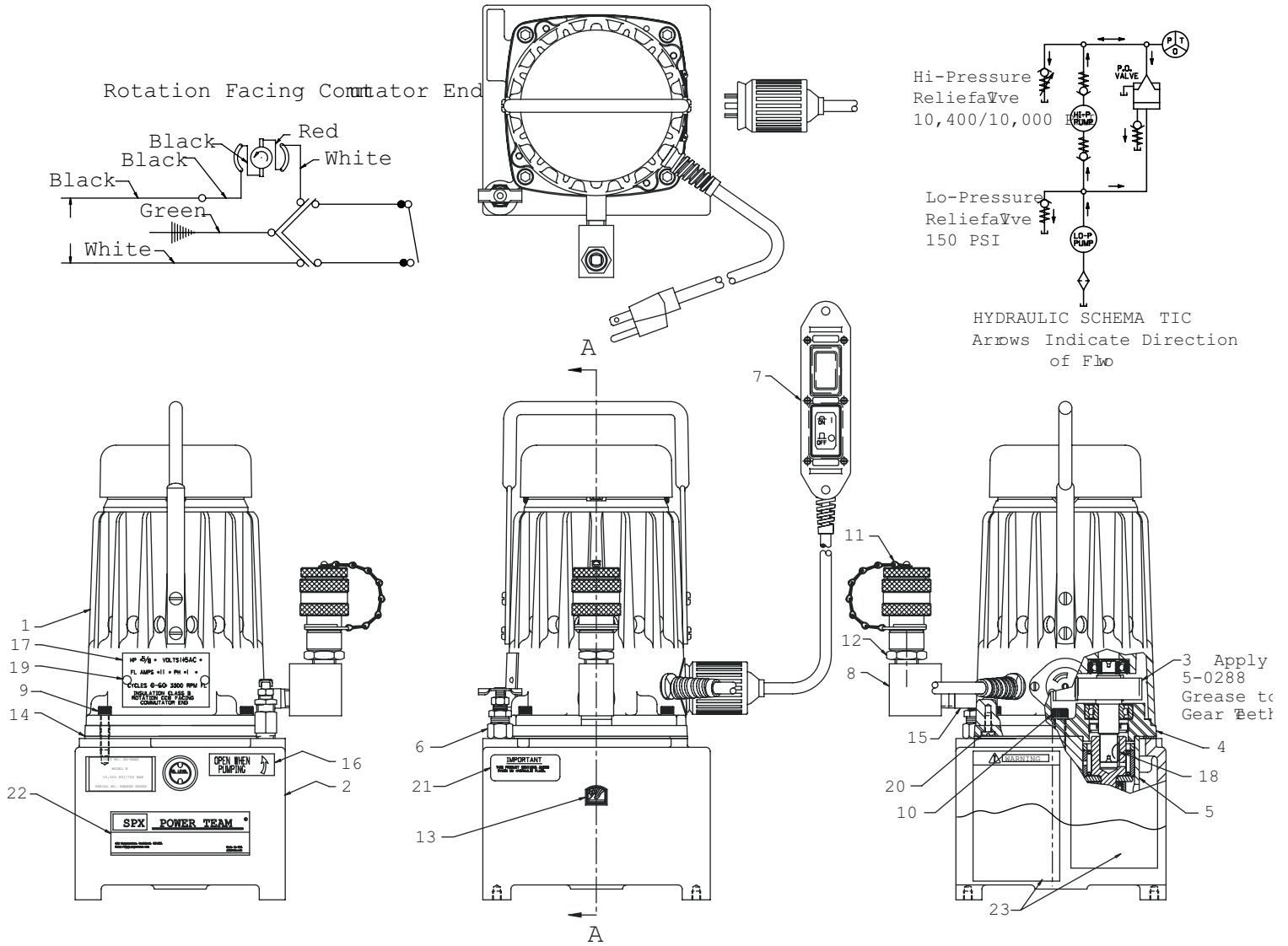
Pump is not delivering fluid or delivers only enough fluid to advance cylinder(s) partially or erratically.

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Fluid level too low.</li> <li>2. Cold fluid or fluid too viscous.</li> <li>3. Three phase motor rotating in wrong direction.</li> <li>4. Vacuum in reservoir.</li> </ol> | <ol style="list-style-type: none"> <li>1. Fill reservoir according to directions "Adding Oil" under "Servicing Instruction" section</li> <li>2. Hydraulic fluid is of a higher viscosity than necessary. Change to a lighter fluid.</li> <li>3. Refer to electrical schematic on motor.</li> <li>4. Check for plugged vent in filler plug.</li> </ol> |
|--|---|

IMPORTANT:

- Correct voltage is required for the pump to operate properly.
  - Low voltage may cause: overheated motor; motor fails to start under load; motor surging when trying to start; or motor stalls before maximum pressure is reached.
  - Check the voltage rating on the pump motor name plate to be certain the outlet or power source you are using is of the proper voltage.
  - Always check the voltage at the motor with the pump running at full pressure.
- Never run the motor on long, light gauge extension cords. Refer to the minimum recommended gauge chart below.

AMPS At Maximum Hyd. Pressure	Electrical Cord Size AWG (mm <sup>2</sup> ) 3.2 Volt Drop			
	Length of Electrical Cord			
	0-25 ft. (0-8 m)	25-50 ft. (8-15 m)	50-100 ft. (15-30 m)	100-150 ft. (30-46 m)
6	18 (.82)	16 (1.33)	14 (2.09)	12 (3.32)
10	18 (.82)	14 (2.09)	12 (3.32)	10 (5.37)
14	16 (1.33)	12 (3.32)	10 (5.37)	8 (8.37)
18	14 (2.09)	12 (3.32)	8 (8.37)	8 (8.37)
22	14 (2.09)	10 (5.37)	8 (8.37)	6 (13.30)
26	12 (3.32)	10 (5.37)	8 (8.37)	6 (13.30)
30	12 (3.32)	10 (5.37)	6 (13.30)	4 (21.29)



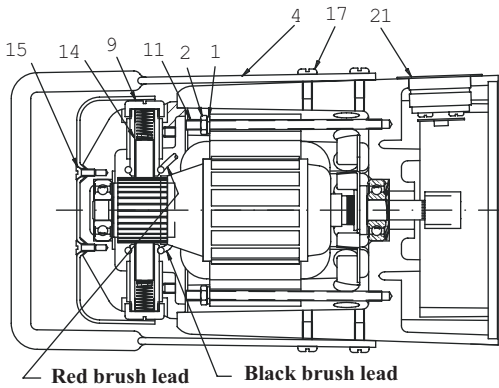
Pump PE-NUT

Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	3-0102	1	Motor Assembly, 115V	15	3-3004	1	Nipple, Hi-Pressure Pipe
2	3-0108-OR9	1	Reservoir Assembly	16	3-5191	1	Decal, Air Vent
3	3-0659	1	Gear/Pinion Ass'y, Output	17	3-7287	1	Plate, Motor Name
4	3-0961	1	Cover Assembly, Gear Case	18	5-0129	1	Key, (3/32 x 1/2)
5	3-2581	1	Pump Block Assembly	19	5-0312	2	Screw, Parker Kalon
6	3-5910	1	Plug Assembly, Vent	20	5-0815	4	Screw, (10-32 x 1/2 P.H.M.)
7	360085	1	Control, Hand	21	4-0967	1	Label, Rykon MV Oil
8	3-2719	1	Elbow, Hi-Pressure	22	202173	1	Decal, Tradename Power Team
9	10016	4	Screw, (1/4-20 x 1 S.H.C.)	23	200188	1	Decal, Warning Important
10	11013	2	Screw (5/16-18 x 1 S.H.C.)	NOT SHOWN			
11	9797	1	Plug, Dust				
12	9796	1	Coupler, Female (3/8" NPTF)	3-0315-OR9	1	Case, Carrying	
13	250209	1	Decal, Made in USA	202173	1	Decal, Tradename Power Team	
14	3-1049	1	Gasket, Motor				

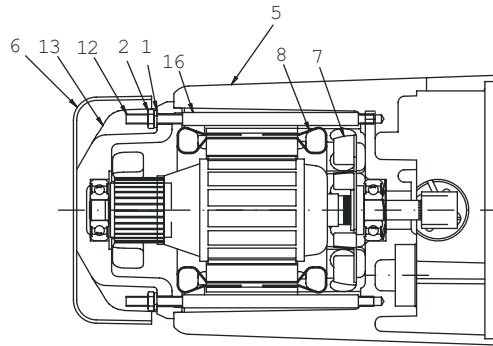


MOTOR ASSEMBLY  
NO. 3-0102

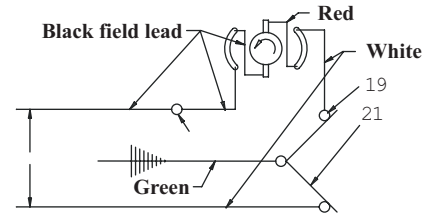
Note: Item 16 (2 pieces 3-3/8 inches long)



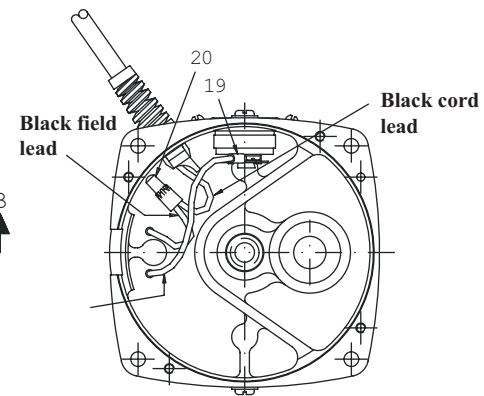
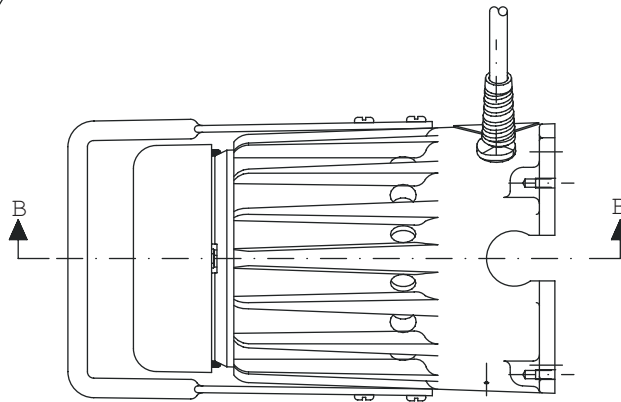
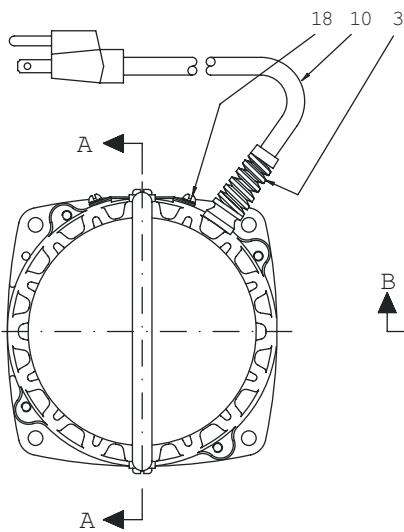
SECTION A-A



SECTION B-B



ELECTRICAL SCHEMATIC

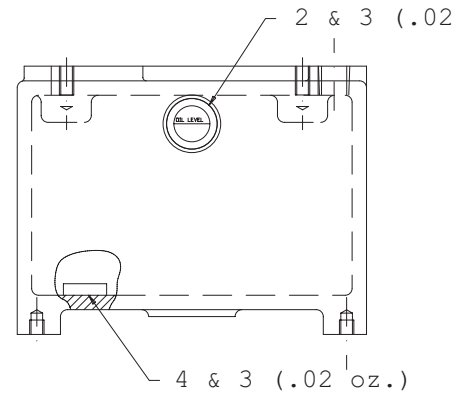
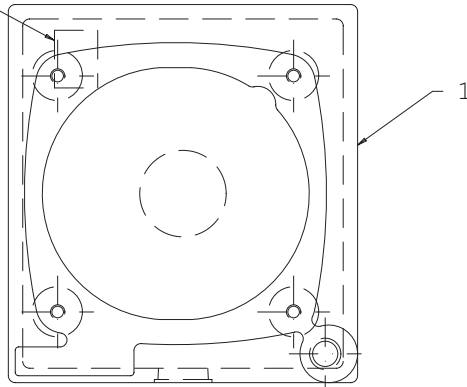


Item No.	Part No.	No. Req'd	Description
1	10241	4	Washer, Lock .33 x .20
2	11010	4	Nut, Hex 10-32
3	251048	1	Bushing, Strain Relief
4	3-0103	1	Handle, Carrying
5	3-0263	1	Housing, Motor
6	3-0509	1	Cover, Drip Proof
7	3-0661	1	Armature Assembly, 115 VAC
8	3-0690	1	Field, 1/2 HP - 10,000 RPM
9	3-0825	1	Cap, Brush Holder
10	3-0973	1	Cord Set, 115 VAC
11	3-1392	2	Stud, (10-32 x 3-3/4)

Item No.	Part No.	No. Req'd	Description
12	3-1395	2	Stud, (10-32 x 4-3/4)
13	3-1630	1	End Bell Assembly
14	3-3003	2	Brush Assembly
15	5-0101	2	Screw, (6-32 x 3/8)
16	5-0496	6.75"	Tubing, Black
17	5-0815	4	Screw, (10-32 x 1/2 P.H.M.)
18	5-1013	2	Screw, (6-32 x 1/4 R.H.)
19	8-1056	1	Terminal
20	8-1361	1	Joint, Insulated Wire
21	8-1565	1	Base



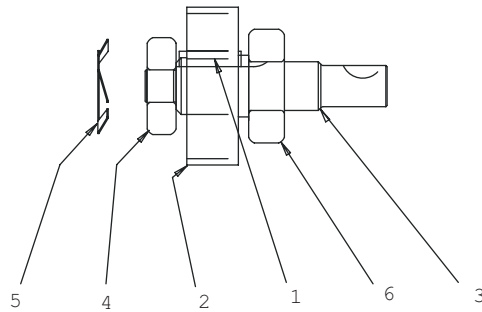
Adhere Magnet in this corner



RESERVOIR ASSEMBLY  
No. 3-0108-0R9

Item No.	Part No.	No. Req'd	Description
1	3-03190R9	1	Reservoir, 1 Quart
2	5-0309	1	Sight Gage

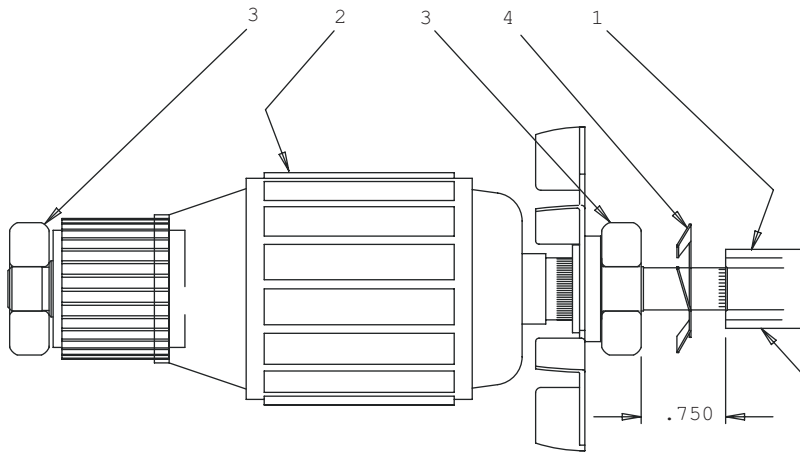
Item No.	Part No.	No. Req'd	Description
3	5-0313	.04oz.	Cup, Loctite Mixer
4	5-0549	1	Magnet



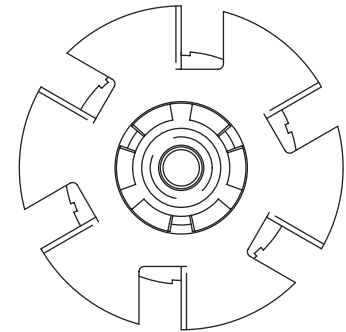
GEAR AND SHAFT ASSEMBLY  
OUTPUT  
No. 3-0659

Item No.	Part No.	No. Req'd	Description
1	3-0187	1	Key
2	3-0503	1	Gear
3	3-0660	1	Shaft, Output

Item No.	Part No.	No. Req'd	Description
4	5-0290	1	Bearing, Ball
5	5-0294	1	Spring, Pre-load
6	5-0441	1	Bearing, Ball

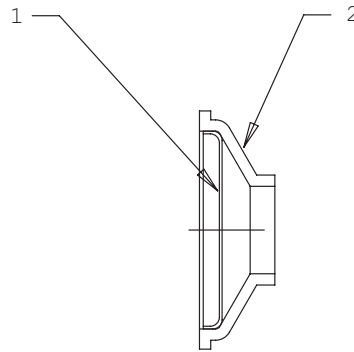
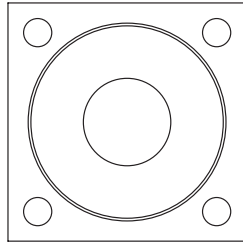


Press pinion on, flush with end of shaft



ARMATURE ASSEMBLY 115 VAC  
No. 3-0661

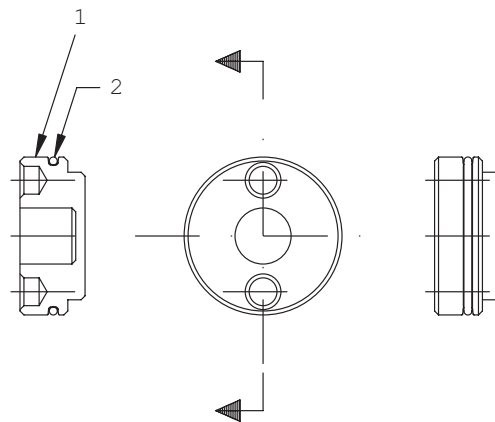
Item No.	Part No.	No. Req'd	Description
1	3-0505	1	Pinion
2	3-0692	1	Armature/Fan Sub-assembly
3	5-0290	2	Bearing, Ball
4	5-0294	1	Spring, Pre-load



HOUSING ASSEMBLY, INTAKE  
No. 3-2569

Item No.	Part No.	No. Req'd	Description
1	3-2567	1	Screen, Intake

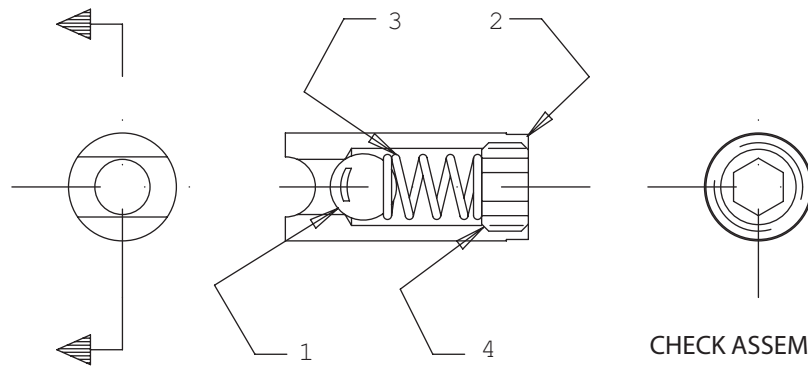
Item No.	Part No.	No. Req'd	Description
2	3-6687	2	Housing, Intake



PISTON ASSEMBLY P.O.  
No. 3-2576

Item No.	Part No.	No. Req'd	Description
1	3-6036	1	Piston, Valve

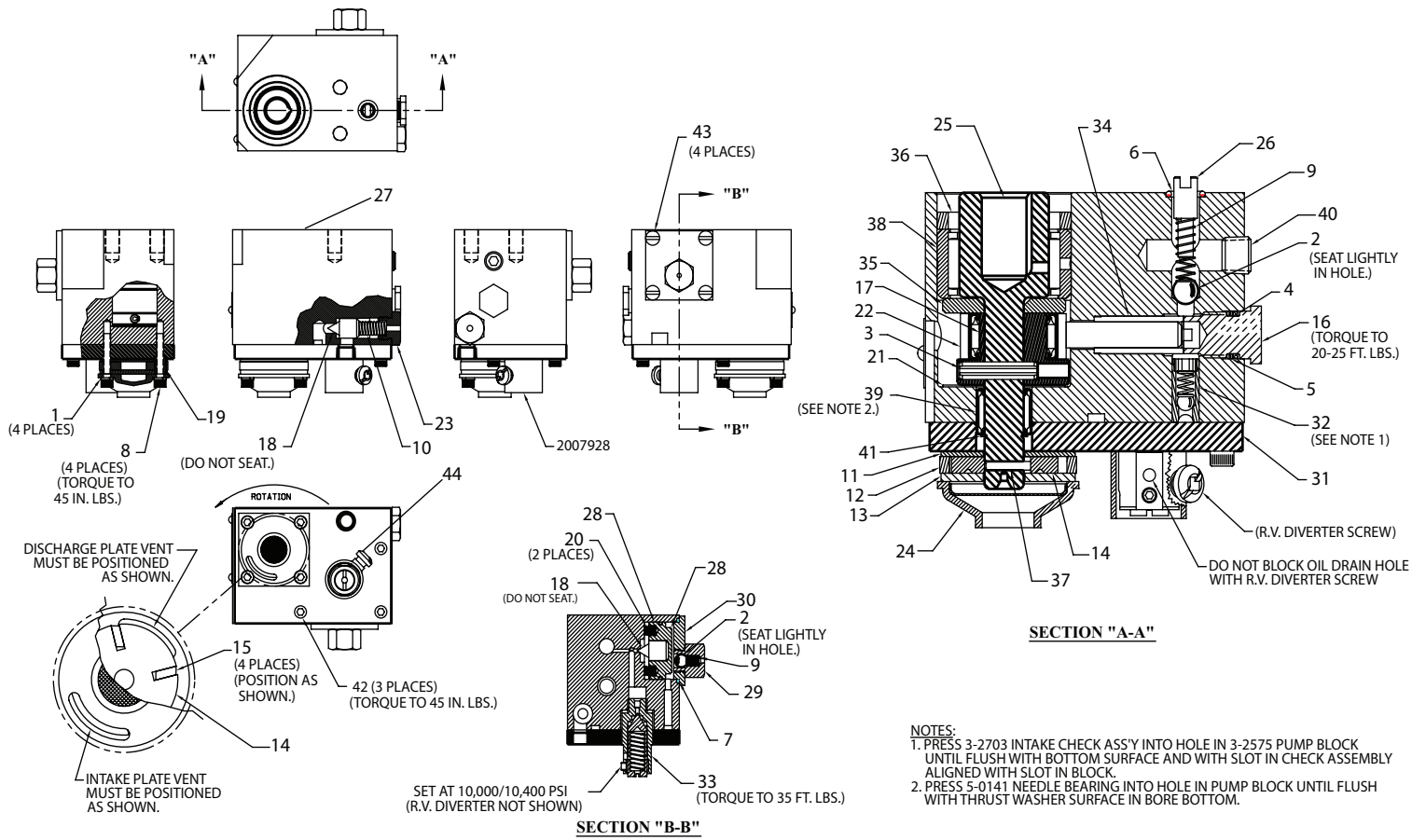
Item No.	Part No.	No. Req'd	Description
2	5-2836	1	O-ring



CHECK ASSEMBLY  
INTAKE  
No. 3-2703

Item No.	Part No.	No. Req'd	Description
1	12223	1	Ball, 3/16 Dia. Steel
2	3-5152	1	Insert, Intake

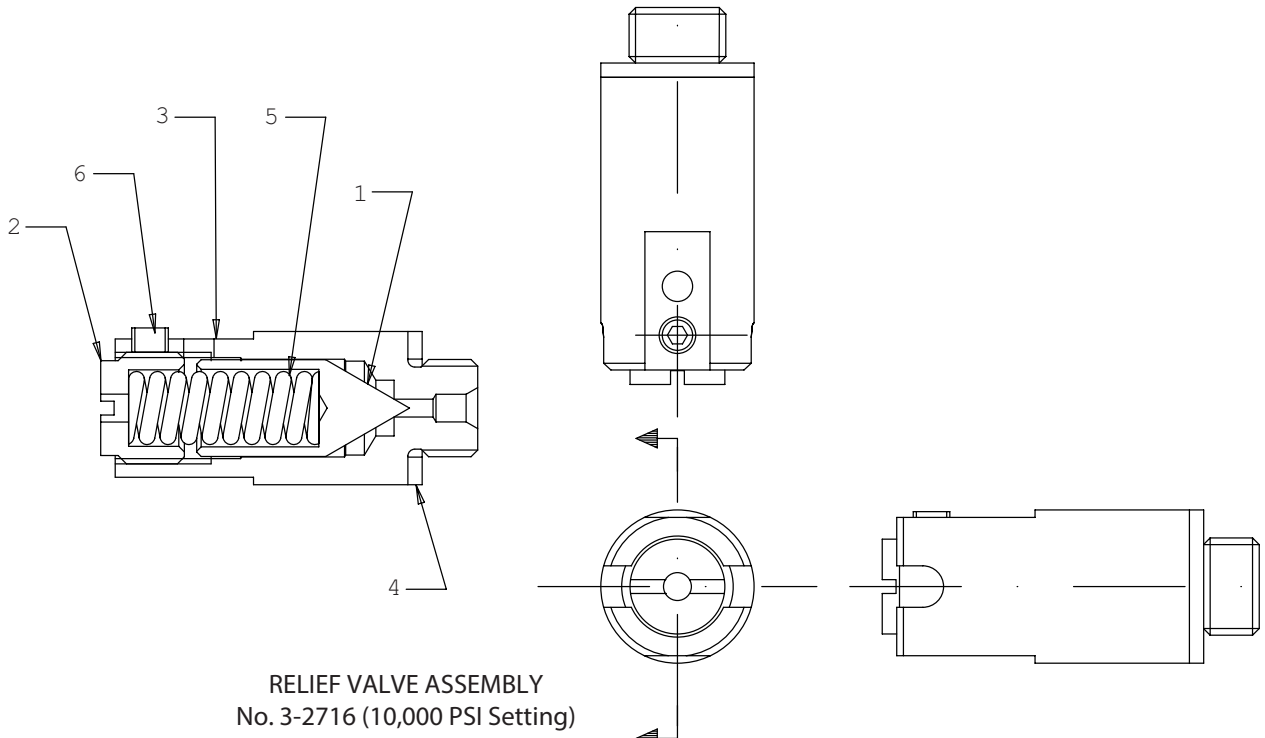
Item No.	Part No.	No. Req'd	Description
3	5-1976	1	Spring, Compression
4	5-2062	1	Screw, (1/4-28 x 1/8 Hollow)



PUMP BLOCK ASSEMBLY  
No. 3-2581

Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	10240	4	Washer, Lock .29 X .17	23	3-2446	1	Screw, Adjusting
2	10423	2	Ball, 9/32 Dia. Steel	24	3-2569	1	Housing Assembly, Intake
3	10549	1	Pin, Roll .19 x .88	25	3-2573	1	Shaft, Drive
4	11863	1	Washer, Backup .50 x .38	26	3-2574	1	Pin, Ball Stop
5	13943	1	O-ring, .50 x .37 Urethane	27	3-2575	1	Assembly, Pump Block
6	14763	1	O-ring, .43 x 31 Urethane	28	3-2576	1	Plunger Assembly P.O.
7	15124	1	O-ring, 1.37 x 1.25 Nitrile	29	3-2577	1	Body, Valve
8	253682	4	Screw, 8-32 x 1.00 S.H.C.	30	3-2578	1	Cap, Valve
9	3-0028	2	Spring, Compression	31	3-2579	1	Plate, Cover
10	3-0086	1	Spring, Compression	32	3-2703	1	Check Assembly, Intake
11	3-0110	1	Plate, Discharge	33	3-2716	1	Valve Assembly, Hi-Pressure
12	3-0111	1	Plate, 3/16 Pump	34	3-2913	1	Set, 9/32 Plunger/Bushing
13	3-0112	1	Plate, Intake	35	3-8342	1	Washer, Thrust
14	3-0115	1	Rotor	36	3-8343	1	Spacer, Bearing
15	3-0116	4	Vane	37	5-0114	1	Pin, 3/32 x 1/2 Dowel
16	3-0135	1	Plug, Plunger	38	5-0139	1	Bearing, Needle
17	3-0144	1	Collar, Eccentric	39	5-0141	1	Bearing, Needle
18	3-0747	2	Plunger, Valve	40	5-0829	1	Plug, 1/8-27
19	3-1060	1	Dowel, Hollow	41	5-1532	1	Ring, Retaining
20	3-1226	2	Spring	42	5-1769	3	Screw, (8-32 x 5/8 S.H.C.)
21	3-2175	1	Washer, Thrust	43	5-1771	4	Screw, (8-32 x 3/8 F.H.M.)
22	3-2445	1	Ring Assembly, Bearing	44	2007928	1	Diverter, Relief Valve Flow

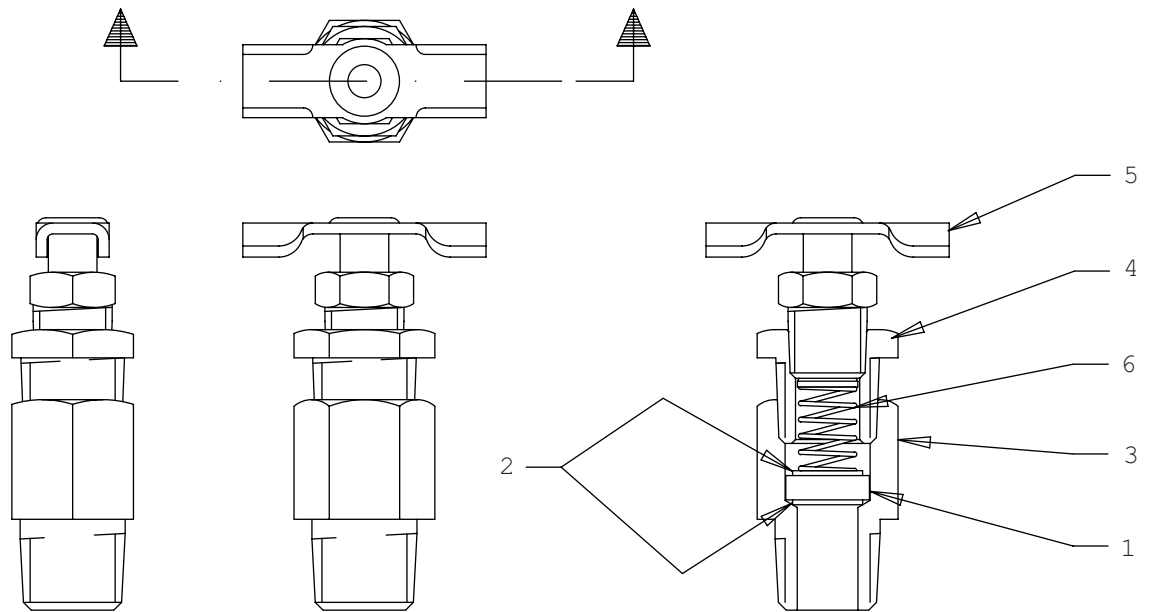
Note: Gray area marks latest revision.



RELIEF VALVE ASSEMBLY  
No. 3-2716 (10,000 PSI Setting)

Item No.	Part No.	No. Req'd	Description
1	3-0654	1	Plunger, Valve
2	3-1091	1	Screw, Valve Adjusting
3	3-1232	1	Body, Valve

Item No.	Part No.	No. Req'd	Description
4	3-1233	1	Washer
5	3-1234	1	Spring, Compression
6	5-1264	1	Screw, 8-32 x 7/64 Set

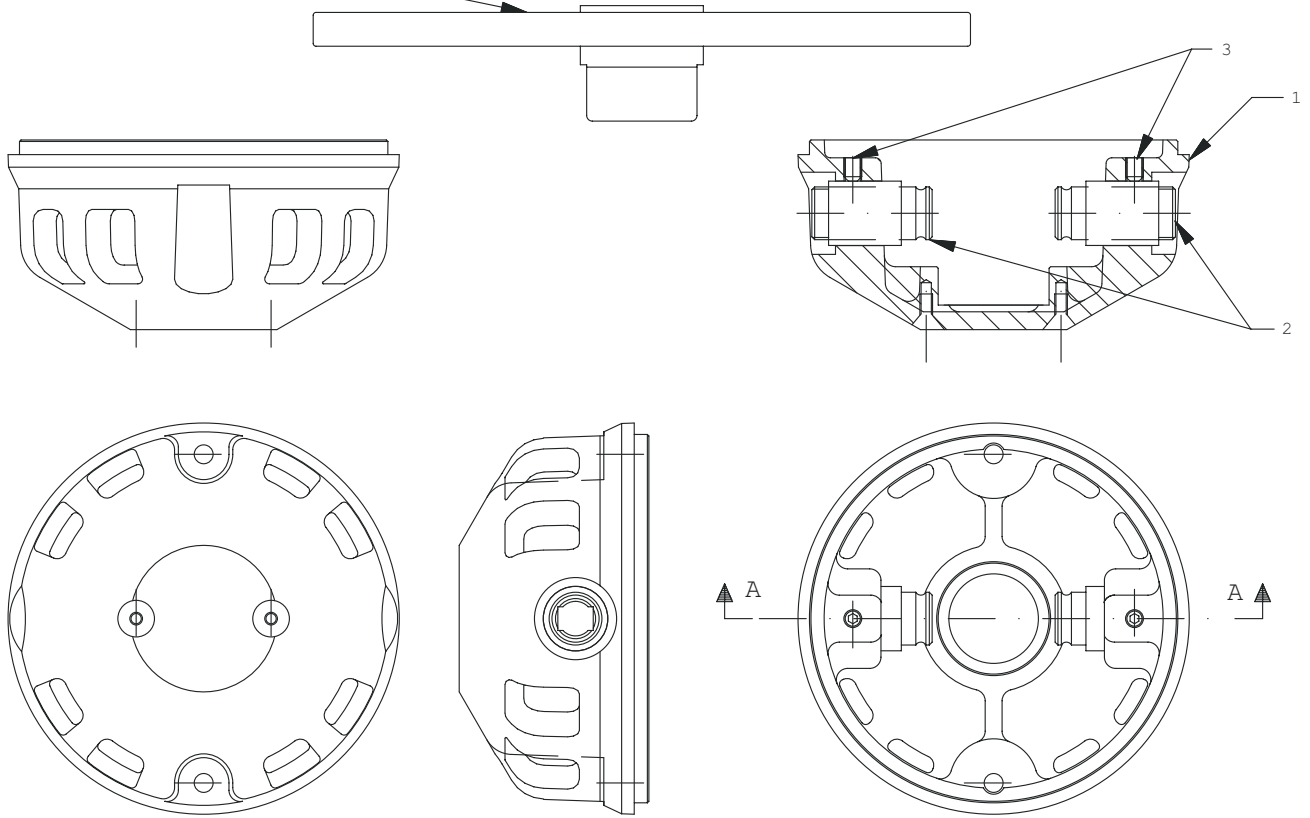


PLUG ASSEMBLY VENT  
No. 3-5910

Item No.	Part No.	No. Req'd	Description
1	3-5911	1	Plug, Felt
2	5-0325	1	Washer, Plain
3	5-0465	1	Adapter, 1/4 M x 1/4 F

Item No.	Part No.	No. Req'd	Description
4	5-1460	1	Bushing, 1/4
5	5-1773	1	Valve, Shut-off
6	5-1876	1	Spring, Compression

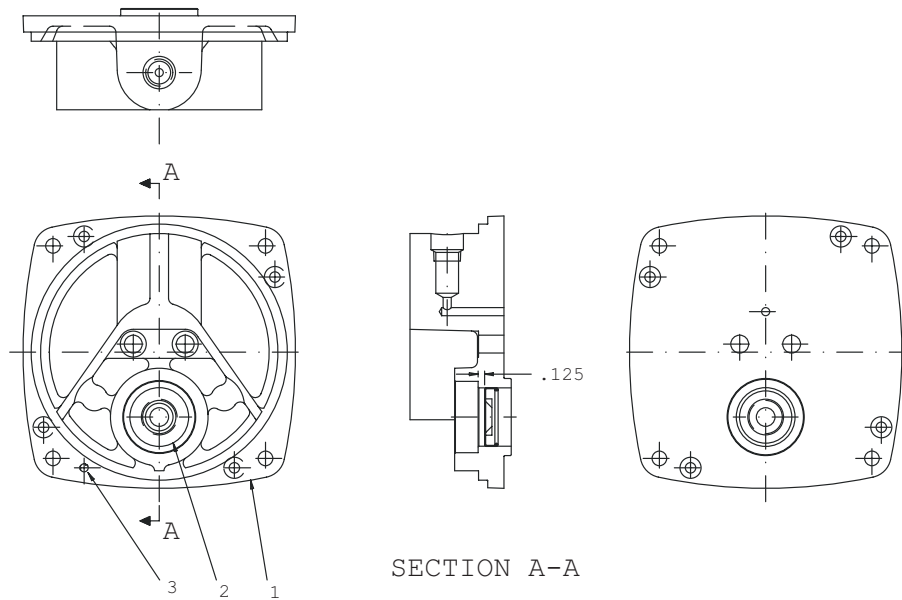
Use SPX tool #T-228 to space and align brush holder



END BELL ASSEMBLY  
No. 3-1630

Item No.	Part No.	No. Req'd	Description
1	3-0282	1	End Bell
2	3-0283	1	Holder, Brush

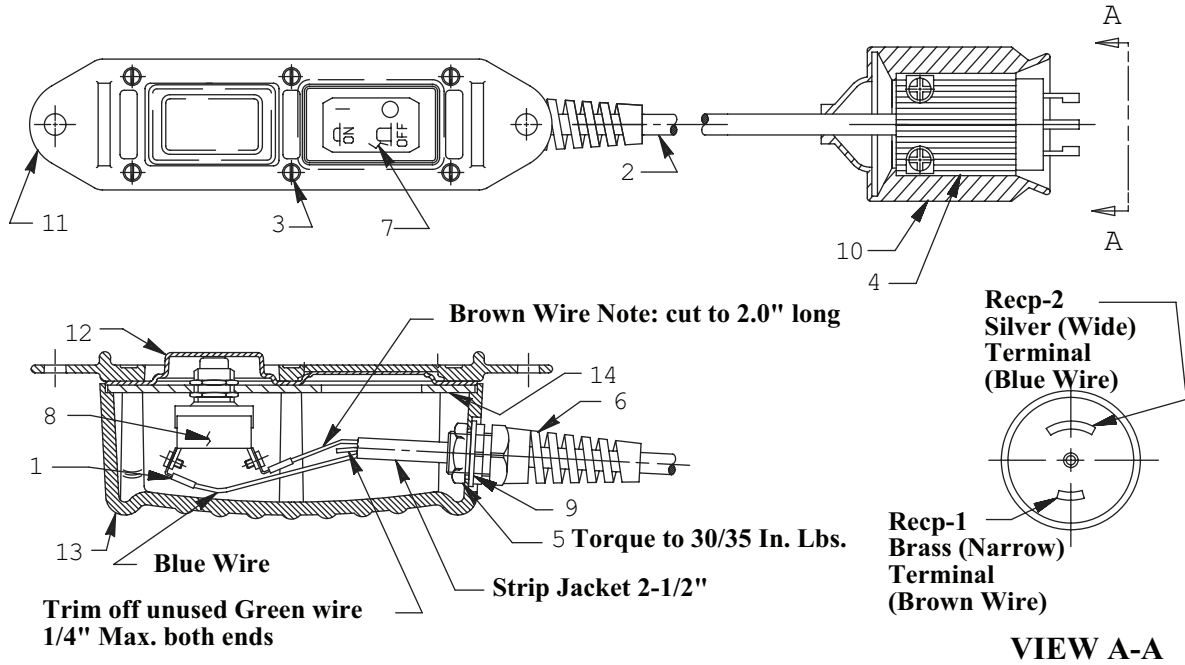
Item No.	Part No.	No. Req'd	Description
3	5-0425	2	Screw, 1-32 x 1/4 Cup Pt.



SECTION A-A

Item No.	Part No.	No. Req'd	Description
1	3-0104	1	Cover, Gear Case
2	5-0585	1	Seal, Oil
3	5-0828	1	Locator, 5/32 x 3/8

COVER ASSEMBLY GEAR CASE  
No. 3-0961



CONTROL, HAND ASSEMBLY  
No. 360085

Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	10525	2	Terminal, Ring Tongue	8	253197	4	Switch, Push Button
2	12908	11"	Cable, 18/3 SJTO	9	253607	2	Gasket, Rubber
3	250248	6	Screw, P.H. #4-24 x 3/4	10	260076	1	Cover, Electrical Connector
4	250894	1	Plug, Electrical	11	420050-1	1	Cover, Plastic
5	251802	1	Nut, Hex Lock PG11 Thread	12	420050-2	1	Gasket, Remote Hand Switch
6	251818	1	Bushing, Strain Relief	13	420050-4	1	Housing, Switch
7	253172	1	Decal, On/Off	14	420050-5	1	Switch, Mounting