



502-X1-002-03

SERVICE MANUAL AND REPAIR PARTS FOR *Posidyne® X Class* CLUTCH/BRAKE DRIVES



WARNING - Read this manual before any installation, maintenance or operation.

MANUFACTURERS OF MECHANICAL AND ELECTRICAL POWER TRANSMISSION EQUIPMENT



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Posidyne X Class CLUTCH/BRAKE

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Section 1

DESCRIPTION and OPERATION

1-1 THE OIL SHEAR PRINCIPLE

Conventional clutches and brakes depend on the friction between solid surfaces operating in air to transmit torque. Friction does the job, but produces a great amount of heat and wear. The *Posidyne* Clutch/Brake units are **Oil Shear Drives**, with the friction surfaces operating in a bath of oil, the oil molecules tend to cling to each other and to the friction surfaces. As moving and stationary elements are brought together, a thin, but positive film of oil is maintained between them, controlled by the clamping pressure and carefully designed grooves in the elements. Torque is transmitted from one element to the other through the viscous shear of the oil film. So long as there is relative motion between the elements, they are protected by the oil, thus greatly reducing wear. The oil bath also effectively transmits heat away from the friction elements.

1-2 DESCRIPTION & OPERATION

(See Figure 1.1)

In the *Posidyne X Class Clutch/Brakes*, the friction surfaces in both the Clutch Stack and Brake Stack consist of alternate carbon steel plates and advanced friction material on steel discs. The oil control grooves are molded into the friction material disc surfaces. The discs have internal teeth which mate with a spline on the output shaft for both clutch and brake applications. The steel plates are pinned to the input shaft in the clutch and the housing for the brake. The splined sections of the output shaft contains a centrifugal pumping system to maintain a positive flow of fluid between the discs and plates.

The *Posidyne X Class Units* are equipped with a clutch and a brake. The Clutch Stack is operated by compressed air. The *Posidyne* Brake Stack may be pressure operated, or it may be spring loaded to operate automatically when the clutch is released.

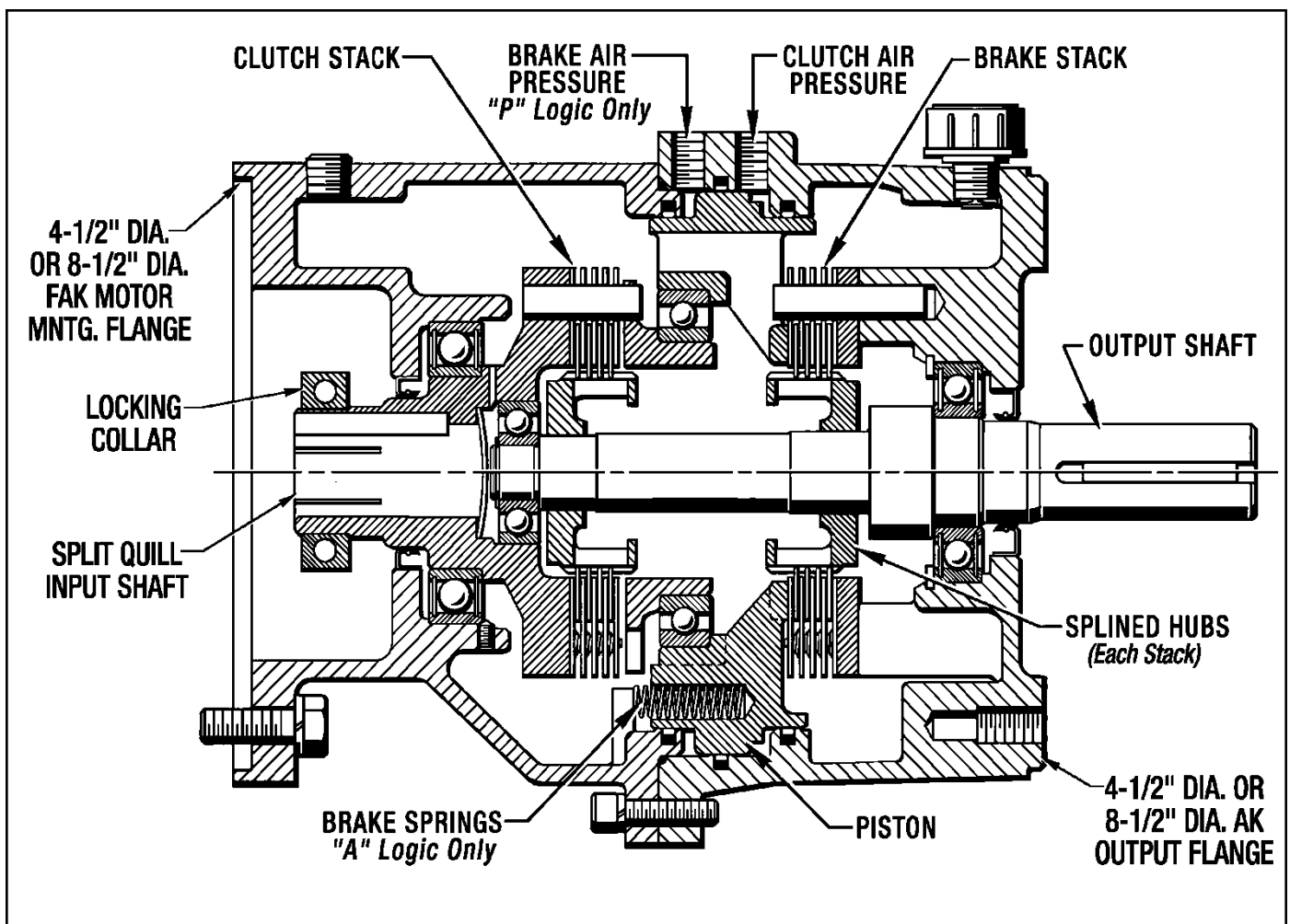


Figure 1.1 - X Class Posidyne Clutch/Brake Description

Section 2 - SPECIFICATIONS

2-1 OPERATING SPECIFICATIONS

Specifications for the *Posidyne* Clutch/Brake Drives are listed in the following Specification Table.

2-2 LOGIC DESCRIPTION

"A" Logic - Air Set Clutch, Spring Set Brake.
"P" Logic - Air Set Clutch, Air Set Brake.
"C" Logic - Clutch Only

SIZE & MODEL	LOGIC	CLUTCH TORQUE			BRAKE TORQUE			MAX RPM	AVG. THP			CYCLIC INERTIA (Lb. Ft. ²)	OIL CAPACITY (Oz.)			OVERHUNG LOAD CAP. (Lbs. Pull)
		STATIC (Lb. In.)	DYN. (Lb. In.)	AIR PR. (PSI)	STATIC (Lb. In.)	DYN. (Lb. In.)	AIR PR. (PSI)		HORIZ.	VIU	VID		HORIZ.	VIU	VID	
X1-2P2	P	110	95	60	110	95	60	1800	.40	.40	.40	.005	37	54	50	167
X1-2A2	A	90	77	80	49	42	----					.50				
X1-2C2	C	99	85	70	----	----	----		.41	.34	.011		.0048	53	59	
X2-3P3	P	220	189	60	220	189	60					.66	.63			
X2-3A3	A	179	154	80	98	84	----		.049	.0426	.0426			.0426		
X2-3C3	C	198	170	70	----	----	----					.049	.0426		.0426	
X3-4P4	P	512	440	70	512	440	70		.049	.0426	.0426			.0426		
X3-4A4	A	359	309	80	189	163	----					.049	.0426		.0426	
X3-4C4	C	468	402	80	----	----	----		.049	.0426	.0426			.0426		
X4-5P5	P	1039	894	60	1039	894	60					.049	.0426		.0426	
X4-5A5	A	777	668	80	444	382	----	.049	.0426	.0426	.0426					
X4-5C5	C	1000	860	70	----	----	----					.049	.0426	.0426	.0426	

NOTES: VIU = Vertical Input Up; VID = Vertical Input Down. * - Contact Force Control Factory.
 THP Ratings were developed under these parameters - 100° F Ambient Temperature & 220° F Maximum Oil Temperature.
 Overhung Load Capacity is based on Load at Midpoint of Shaft Extension.

2-3 DIMENSIONS

Sizes X1 and X2

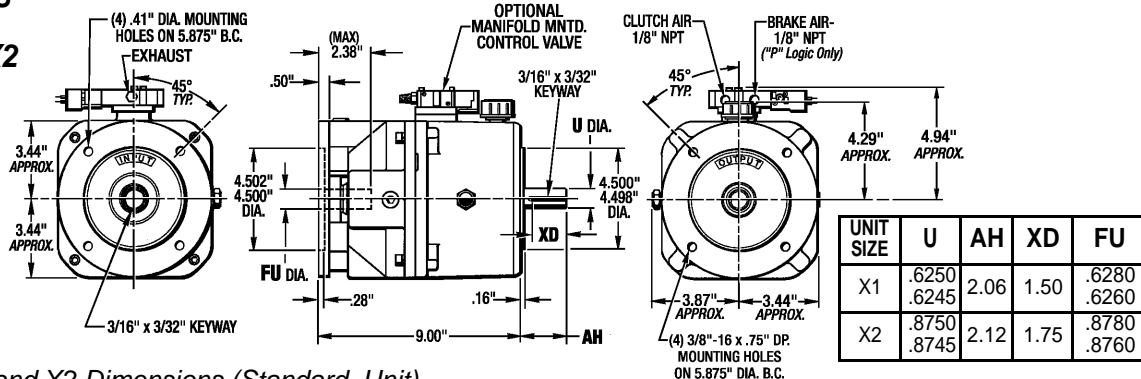


Figure 2.1 - X1 and X2 Dimensions (Standard Unit)

Sizes X3 and X4

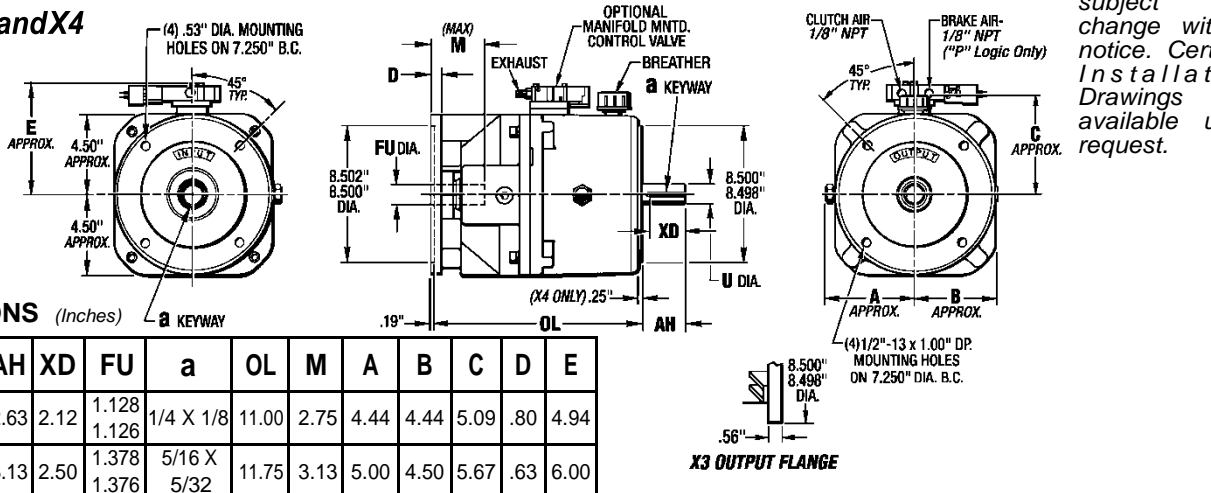


Figure 2.2 - X3 and X4 Dimensions (Standard Unit)

Dimensions are subject to change without notice. Certified Installation Drawings are available upon request.

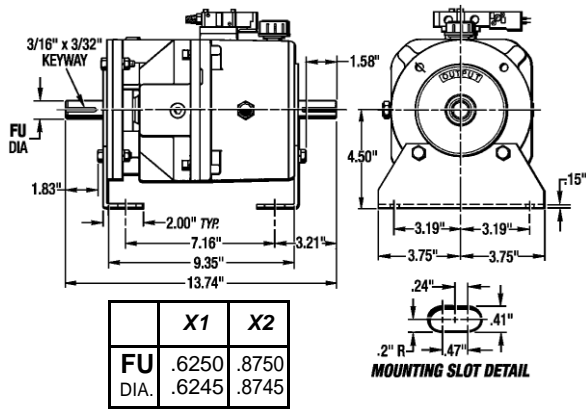


Figure 2.3 - X1 and X2 Dimensions
(With Mounting Feet & Male Input Shaft)

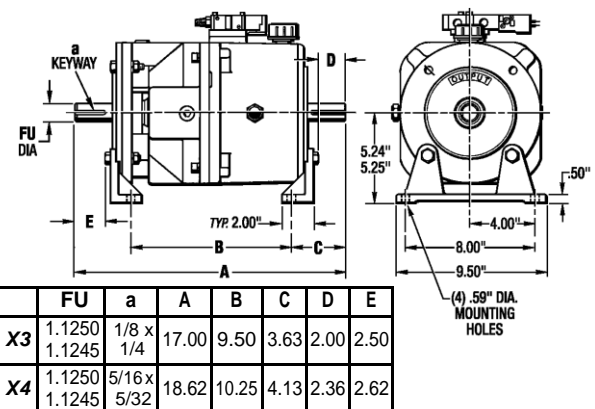


Figure 2.4 - X3 and X4 Dimensions
(With Mounting Feet & Male Input Shaft)

Overhung Load Capacity @ Midpoint of Male Input Shaft

X1.....	152 Lbs.	X3.....	435 Lbs.
X2.....	152 Lbs.	X4.....	459 Lbs.

NOTE: All other dimensions are the same as shown in Figures 2.1 & 2.2.

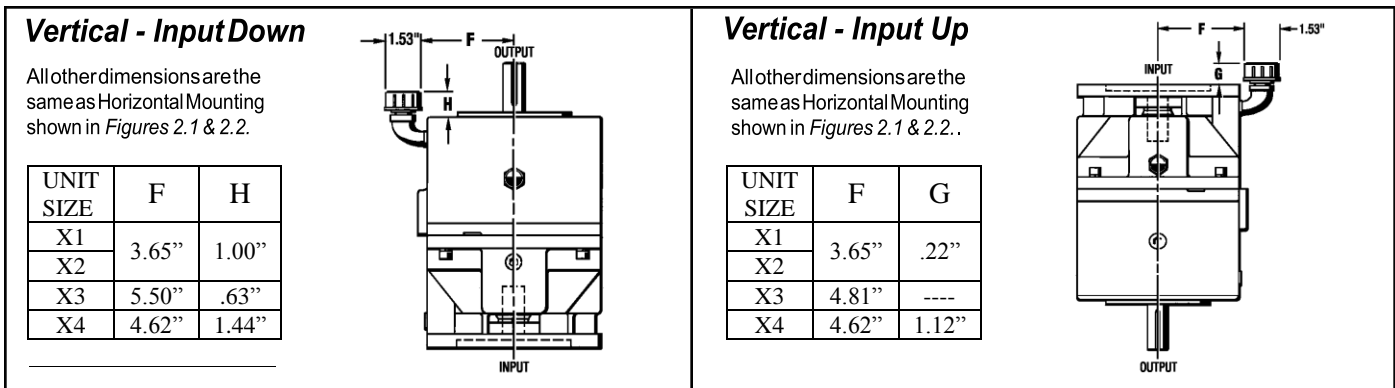


Figure 2.5 - Vertical Mounting Dimensions

Section 3 - INSTALLATION

3-1 RECEIVING THE *Posidyne* CLUTCH/BRAKE

Check the *Posidyne* Clutch/Brake for shortages or damages immediately after arrival. Prompt reporting to the Carrier's Agent, with notations made on the Freight Bill, will expedite any adjustment made by the Carrier.

When unloading or handling the *Posidyne* Clutch/Brake, keep it upright. All *Posidyne* drives are filled with oil for horizontal mounting, ready to run, when shipped. **Vertical mounted units will require additional fluid.** Refer to **Section 4.** Before placing the *Posidyne* Clutch/Brake in service or storage, check the fluid level to make sure none has spilled out in transit. Add fluid if necessary. Refer to **Section 4.**

Remove the red plastic pipe plug from the top of the Output Housing and install the Air Breather (#45).

Note - There are some pipe fittings supplied for Vertical Mounting. This is used for the Air Breather as shown in Figure 4.1.

If the *Posidyne* Clutch/Brake is not to be installed or operated soon after arrival, store it in a clean dry place having a slow and moderate change in ambient temperature.

3-2 MOUNTING THE *Posidyne* CLUTCH/BRAKE TO THE MOTOR (See Figure 3.1)

1. First make sure that the pilot diameter and mating surfaces of the C-Face Flange is clean and free of all nicks, burrs or anything that would not allow the *Posidyne* Clutch/Brake to seat properly.
2. Loosely install the Locking Collar (#281) in position on the Input shaft (#2) with the split in the collar aligned with the split in the quill shaft as shown in Figure 3.1. on the next page. **Do not tighten the screws yet.**
3. Remove the drive motor key if there is one on the motor shaft and install Key (#180), which is supplied with the *Posidyne* Clutch/Brake.

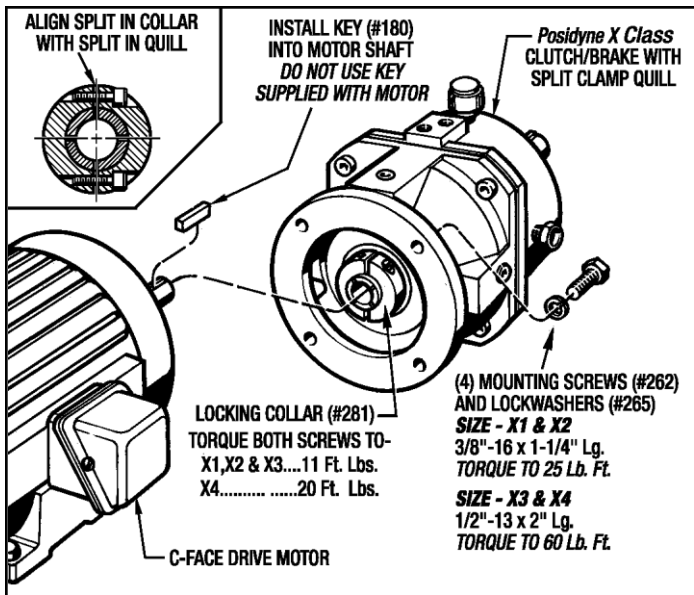


Figure 3.1 - X Class Posidyne Installation

IMPORTANT - Make sure that the motor shaft is thoroughly cleaned but do not lubricate the shaft with any oil. Torque transfer depends on friction between the motor shaft and the split quill input shaft.

- Slip the Posidyne Clutch/Brake onto the motor shaft with the Key (#180) aligned with the keyway in the Input Shaft (#2). Push the Drive Unit until it seats on the motor pilot diameter.
- Attach the Posidyne Clutch/Brake with the (4) Hex Hd. Screws (#262) and (4) Lockwashers (#265). On Sizes X1 and X2 the torque is **25 Lb. Ft. (300 Lb. In.)** Sizes X3 and X4 requires **60 Lb. Ft. (720 Lb. In.)** of torque.

Visually check to see if the C Face mounting surfaces are snug and tight all the way around.

- Torque the (2) Screws in the Locking Collar (#281) to the following Torque:

Size X1, X2 and X3.....**11 Lb. Ft. (132 Lb. In.)**
Size X4.....**22 Lb. Ft. (264 Lb. In.)**

3-3 MOUNTING THE CLUTCH/BRAKE WITH MALE INPUT SHAFT & MOUNTING FEET (See Figure 10.3)

- Insert the Male Input Shaft into the split quill. Attach the adapter plate and mounting feet to the unit as shown in Figure 10.3. Torque the (4) mounting bolts and nuts to **25 Lb. Ft.** for Sizes X1 & X2 and **60 Lb. Ft.** for Sizes X3 & X4. Torque the (2) Screws in the Locking Collar as described in step 6 above.
- The Drive should be mounted on a firm, level base or foundation, common with both the driving and driven components. Use SAE Grade 5 Hex Hd. Cap Screws to bolt the drive securely into place. Before tightening down the bolts, check alignment with both the driving and driven machinery, then recheck after tightening.
- If the input or output shaft is to be directly coupled, use only

a flexible coupling (with horsepower service factor 3 to 1) to take care of maximum torque requirements. Make sure that the shafts to be coupled are concentric within 0.005 in. TIR. Check for horizontal, vertical and angular misalignment. Use shims as necessary to correct.

CAUTION:

Do not force couplings or bushings on shaft.

- If the Drive is to be connected through a belt, chain or gear drive, locate as close as possible to the housing to minimize overhung loads. Make sure that the sheaves, sprockets or gears are in line and that the shafts are parallel.
- After the machinery has been in operation for a few hours, make sure that all mounting bolts are tight and recheck the alignment of all components.
- After machinery has been in operation for 40 hours check the mounting bolts and tighten if necessary.

3-4 PNEUMATIC HOOKUP

Figure 3-2 illustrate typical compressed air systems for the X Class Posidyne Clutch/Brake Unit.

Note the following when planning and installing the air system:

- Use direct acting solenoid air valves or pilot operated valves to give the response speed required. Locate the valves as close as possible to the air inlets on the Posidyne Clutch/Brake.
- The optional accumulator should be used for quick response, particularly if the air line loss and the nature of the air supply is such that recovery is slow. Size the accumulator to be at least 10 times the air required per engagement.
- A small amount of oil in the air supply may prolong the life of the pneumatic control valve, but too much oil will fill the Posidyne Clutch/Brake piston chamber with oil and make the actuation sluggish.

No oil in the air supply is better than too much oil in the air supply.

- The air pressure regulator should be sized and set to provide the required torque. (See **Torque Specifications Chart for Max. Air Pressure.**)
- Pressure is directly proportional to torque. **The Max. Air Pressure is as follows:**

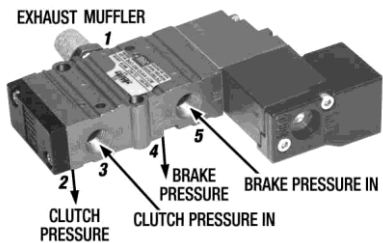
(X1, X2 & X4) "A" Logic - 80 PSI, "C" Logic - 70 PSI, "P" Logic - 60 PS.I

(X3) "A" Logic - 80 PSI, "C" Logic - 80 PSI, "P" Logic - 70 PS.I.

Use only the air pressure necessary. This will give additional life to the Clutch/Brake.

NOTE: Use 3/16" I.D. tubing or hoses for Remote Installation for Sizes X1, X2 and X3 Posidyne. Use 1/4" I.D. tubing or hoses for Remote Installation for Size X4 Posidyne.

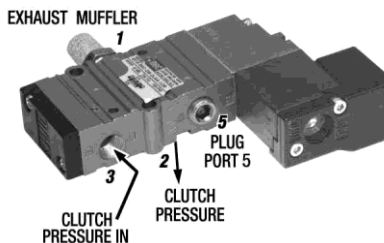
MANIFOLD MOUNTED CONTROL VALVE



"P" Logic

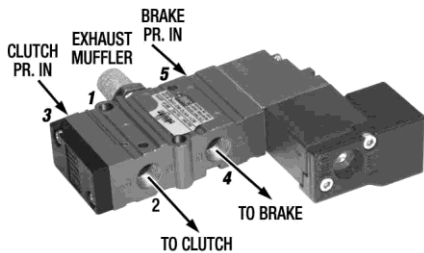
400 Series Control Valve

**"A" Logic
"C" Logic**



400 Series Control Valve

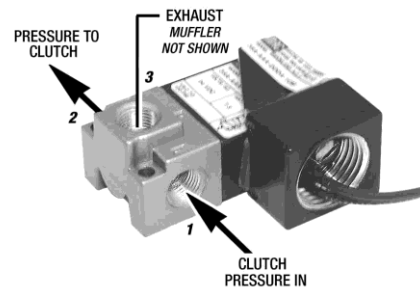
REMOTE MOUNTED CONTROL VALVE



"P" Logic

400 Series Control Valve

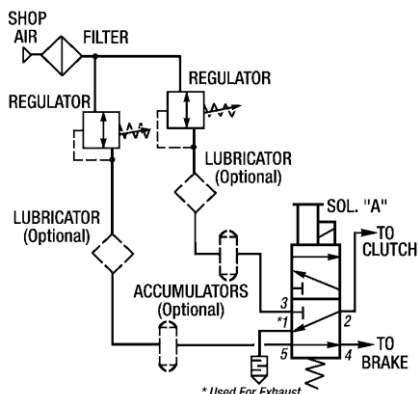
**"A" Logic
"C" Logic**



35 Series Control Valve

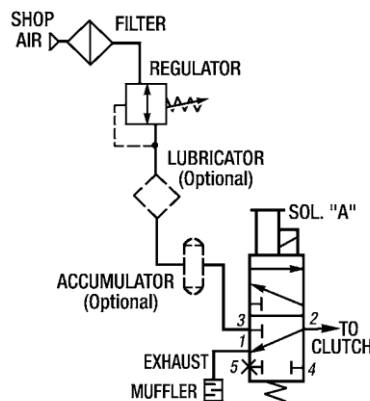
PNEUMATIC DIAGRAMS

"P" Logic



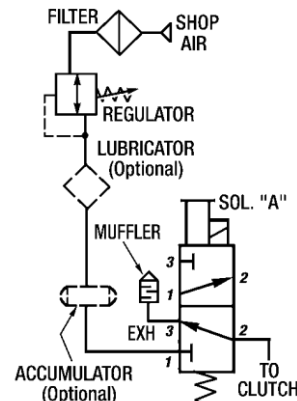
400 Series Control Valve

"A" & "C" Logic - Manifold Mounted



400 Series Control Valve

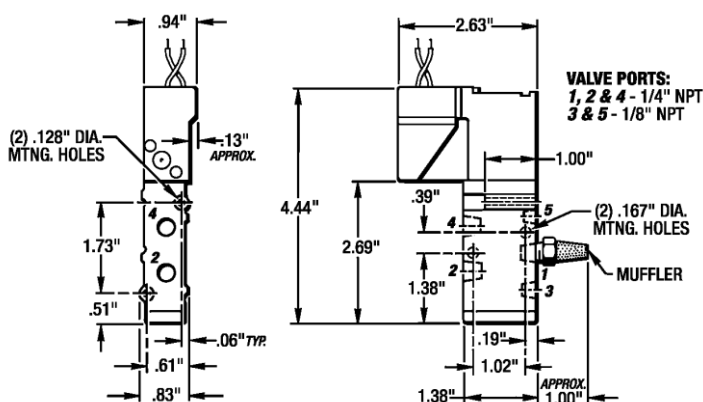
"A" & "C" Logic - Remote Mounted



35 Series Control Valve

Figure 3.2 - Pneumatic Control Valves & Diagrams

400 Series Control Valve



35 Series Control Valve

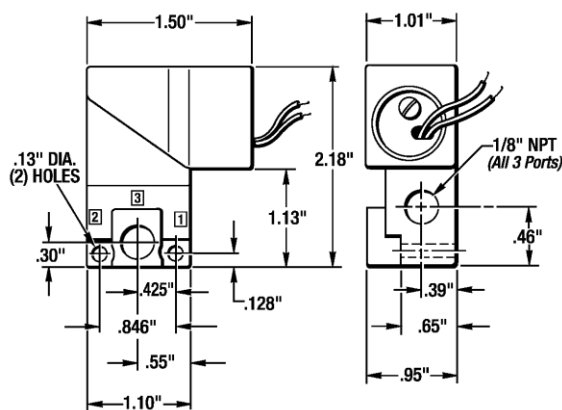


Figure 3.3 - Pneumatic Valve Dimensions For Remote Mounting

Section 4 LUBRICATION

4-1 CHECKING THE FLUID LEVEL

When the *Posidyne* Clutch/Brake is installed and weekly thereafter, or until experience dictates otherwise, check the fluid level. Always check the fluid level with the drive at room temperature and while it is not running.

The *Posidyne* Clutch/Brake has a fluid sight gauge located on the side of the *Posidyne* Clutch/Brake. The fluid level is to show at the center of the gauge with the motor turned off.

4-2 CHANGING THE FLUID

(See Figure 4.1)

IMPORTANT : Open the disconnects to the drive motors before attempting to change the fluid.

After the first 30 days of operation completely drain the fluid from the drive using the drain plugs provided. If the fluid sight glass is dirty it should be removed and cleaned.

Reinstall the drain plugs and refill the drive to the center of the sight glass with fresh fluid.

On vertical mounted *Posidyne* Clutch/Brake, also remove the top Pipe Plug (#92) to act as a vent when filling with fluid. Replace when filled.

After the first fluid change check the fluid level and color of the fluid at least once per month. Maintain the fluid level to the center of the sight glass by adding additional fluid as needed. The fluid should be changed after every 12 months of operation or sooner if the fluid color darkens. High energy applications, high cycle rates and extremely dirty environments will darken the color of the fluid.

CAUTION: Do not overfill the Drive Unit.
Excess fluid will cause the unit to overheat.

4-3 TYPE OF FLUID

Use only Mobil Automatic Transmission Fluid ATF-210 (Type "F") or Mobil Multi-purpose Automatic Transmission Fluid for all drives. **Always use the type of fluid specified on the Name Plate.**

For Washdown and/or Food Processing Applications use **Mobil Synthetic ATF Fluid.**

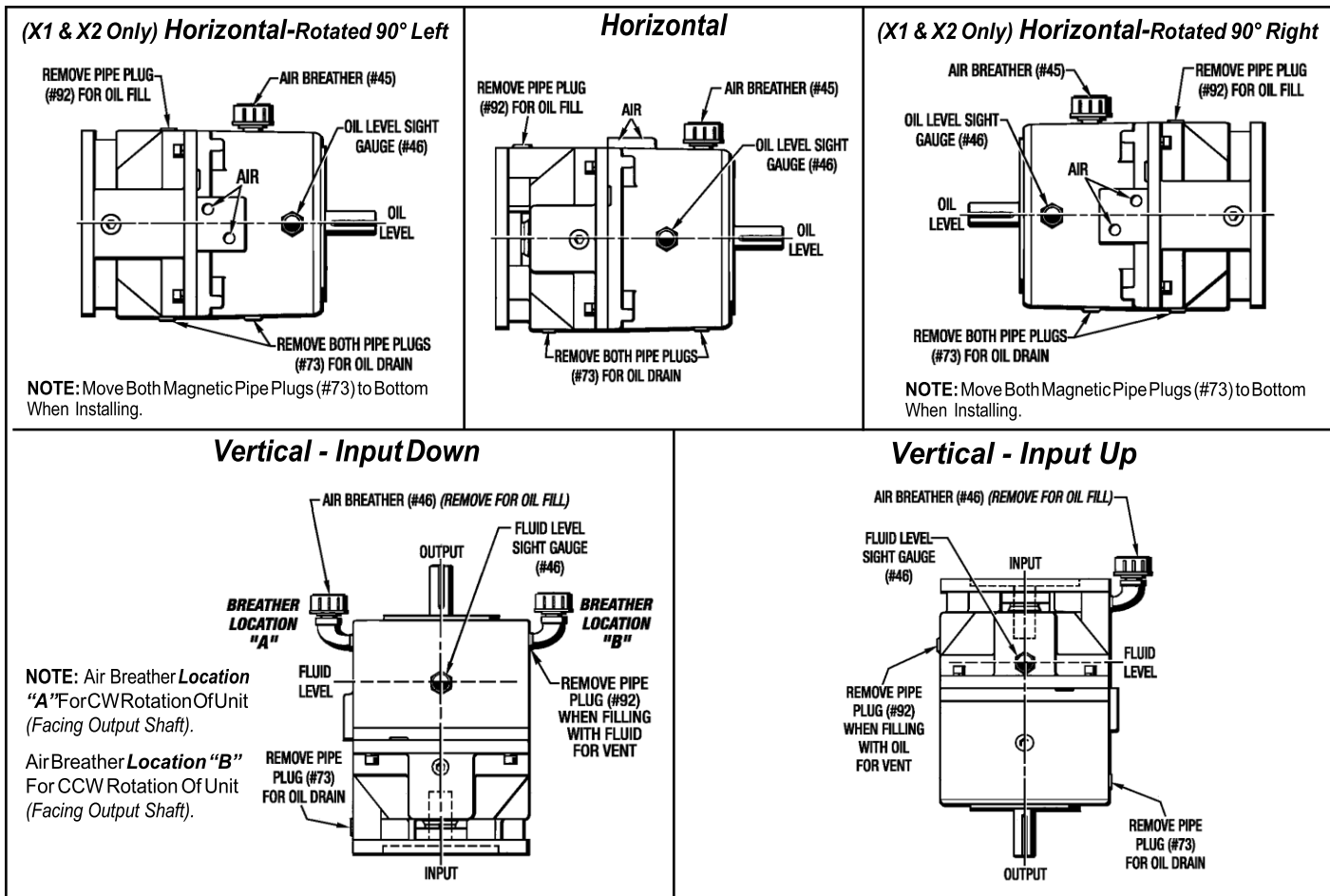


Figure 4.1 - Lubrication

Section 5 OPERATIONAL CHECKS

These Operational Checks are to be made when the Drive Unit is removed from service for repair. Provisions for manually controlled 60 or 70 PSI for "P" Logic and 80 PSI air pressure max. for "A" Logic must be made for these Operational Checks. (See Figure 5.1 below.)

5-1 GENERAL SET-UP INSTRUCTIONS

Assemble a Pneumatic Testing Set-Up similar to the one shown in Figure 5.1

5-2 CHECKING CLUTCH AND BRAKE PISTON SEALS

1. Hook the Pneumatic Testing Setup to the Clutch Port and apply shop air to it.
2. Crack the Shut-off Valve until the air pressure reads the correct air pressure. See Figure 5.1 below for correct air pressure.
3. Quickly shut the air off and observe the Pressure Gauge to see if the air pressure stays the same, or drops. If the pressure stays the same or drops slowly, the Piston Seals are okay. If the pressure drops rapidly (**more than 5 PSI per 10 Seconds**) the Piston Seals are leaking and will need to be replaced.
4. Disconnect the shop air and exhaust the air pressure from the drive unit.

("P" Logic Only) Air Operated Brake

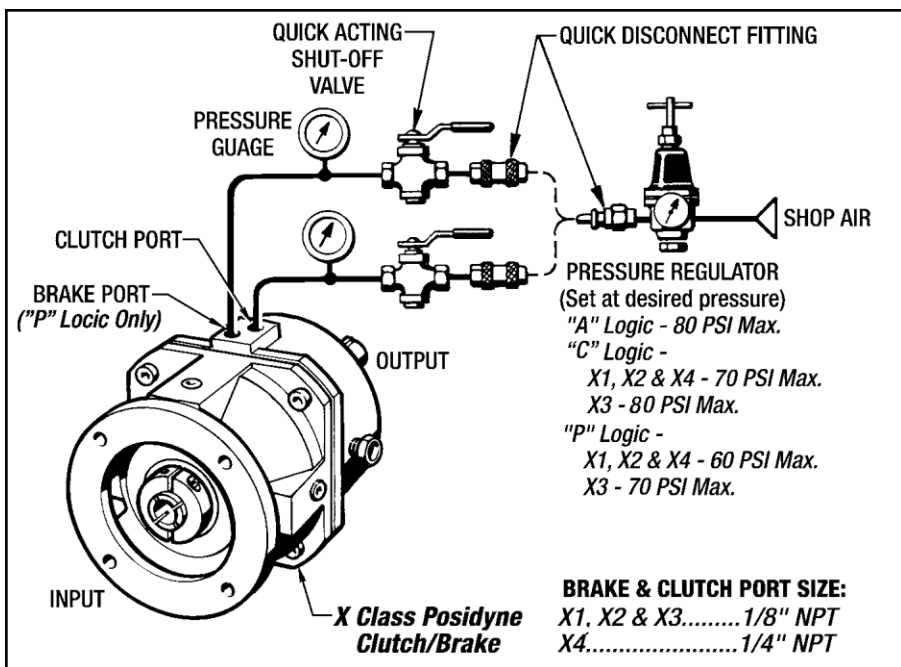


Figure 5.1 - Pneumatic Testing Set-Up

5. Hook the Pneumatic Testing Setup to the Brake Port and apply 60 PSI max. shop air to it.
6. Repeat Steps 2, 3 and 4.

5-3 CHECKING CLUTCH AND BRAKE ENGAGEMENT OR INPUT SHAFT Vs. OUTPUT SHAFT ROTATION.

(WITH C-FACE MOUNTED DRIVE MOTORS)

If the C-Face mounted Drive Motors are still attached, then the Input Shaft is not accessible to be manually rotated to check Clutch/Brake Engagement and Input Shaft vs. Output Shaft rotation.

1. Temporarily hook-up Drive Motor and "Bump" it to check the Clutch or Brake Operating Modes and Output Shaft rotation.

5-4 DRIVE MOTORS

Check wiring connections against the wiring diagram on the Name Plate. "Bump" the motor and check direction of rotation. Check all connections for tightness.

5-5 PNEUMATIC CONTROL

The Pneumatic Control Operational Checks are to be made with Pneumatic Control valves hooked up.

(See Figures 3.2 and 3.3 for appropriate Pneumatic Control Diagrams.)

1. Shut off air supply, lock it out, and bleed off any trapped air in the system.
2. Insert Diagnostic Pressure Gauges in the air supply between the control valves and the drive. Turn air supply back on.
3. Activate Solenoid Control Valves for desired function.
 - A. "Run" Air Pressure to Clutch.
 - B. "Stop" Air Pressure to Brake ("P" Logic Only.)
4. Check air pressure with installed diagnostic pressure gauges for each function.
5. Check all electrical connections and the solenoid operation per manufacturer's specifications.

Section 6 TROUBLESHOOTING

6-1 TROUBLESHOOTING CHART

TROUBLE	POSSIBLE CAUSE	REMEDY
Both clutch and brake fail to engage properly.	Electrical control circuit.	Check control circuit.
	Low air pressure.	Increase air pressure.**
	Air pressure regulator or piping.	Check for improper operation or leaks.
	Worn friction surfaces.	Check parts for wear and replace if necessary. (See Section 6-2)
Clutch fails to engage properly.	Electrical control circuit.	Check control circuit.
	Valve not functioning properly.	Check valve operation. Replace if necessary.
	Internal air leakage.	Check and replace O-Rings and Liners if necessary.
	Low air pressure	Increase air pressure.**
	Worn friction surfaces.	Check parts for wear and replace if necessary. (See Section 6-2)
	Input shaft not turning.	Check to see if motor is running. Be sure the motor shaft is not damaged.
Picks up load too quickly.	Air pressure too high.	Reduce air pressure.
	Low oil level.	Check oil level and add if necessary.
Clutch fails to disengage properly.	Electrical control circuit.	Check control circuit.
	Valve not functioning properly.	Check and replace valve if necessary.
	Piston sticking-broken return springs.	Disassemble to extent necessary and inspect for damaged parts.
Noise and vibration	Mounted on poor foundation.	Improve installation. Tighten foot bolts.
	Misaligned couplings.	Recheck alignment.
	Damaged bearings.	Disassemble to extent necessary and inspect for damaged bearings.
<p>Noise without load (With C-Face Motor) Slight noise or rattling sound in the input end of a C-Face unit when the drive motor is running in an unloaded condition. If the motor is AC variable speed it may be louder at certain speeds.</p>	<p>This is a normal condition. The input shaft is loosely supported in order to compensate for motor shaft run-out and out of round conditions of the pilot.. Some noise can be generated by the movement of the input shaft & drive plates.</p>	<p>This is not a harmful condition to the clutch/brake, and will not cause premature wear.</p>
<p>Noise with load (With C-Face DC Motor) Slight noise or chatter coming from the input end of a C-Face unit when the drive motor is DC and is running in a loaded condition. Noise exists only when the motor is loaded under certain conditions.</p>	<p>This is a normal condition of the motor and is not in the clutch/brake unit. The harmonics of the DC motor is transmitted to the clutch/brake housing and sounds as if it was coming from the clutch/brake.</p>	<p>This is not a harmful condition to the clutch/brake, and will not cause premature wear.</p>

6-1 TROUBLESHOOTING CHART (Continued)

TROUBLE	POSSIBLE CAUSE	REMEDY
Brake fails to engage properly.	Electrical control circuit.	Check control circuit.
	Valve not functioning properly.	Check valve operation. Replace if necessary.
	Internal air leakage.	Check and replace O-Rings and Liners if necessary.
	Low air pressure.	Increase air pressure.**
	Worn friction surfaces.	Check parts for wear and replace if necessary. (See Section 6-2)
	Piston sticking.	Disassemble to extent necessary and inspect for damaged parts
	Weak or broken brake springs.	Replace springs.
Drive overheats. (Oil temp. above 225° F.)	Inertia or resistance changed.	Check with Force Control engineering.
	Improper oil level.	Check oil level. Add or drain as needed.
Oil leakage	Oil seal lips damaged.	Check to see if oil is leaking around shaft and replace if necessary.
	O-Ring Seal.	Tighten all external bolts. If that doesn't work replace O-Ring.
	Poor ventilation.	Remove breather and clean.
Oil leakage out breather.	Damaged seal around piston.	Disassemble and repair.
	Oil level too high.	Drain excess oil.
	Breather Location.	Check location. See Page 6
Excessive shaft end play.	Bearings bad.	Disassemble and replace.
Clutch or brake does not repeat.	Air pressure changed.	Check air pressure and adjust.
	*Oil temperature changed.	Check temperature.
	Resistance in machine changed.	Lubricate bearings.
	AC control circuit.	Change to DC control circuit.
	Stop switch not hard wired.	Hard wire stop switch to air valve.

* - For installations requiring precise starting and stopping, operating temperatures are important. Operating temperatures between 116° F. and 165° F. are recommended. If the transmission fluid is allowed to drop to ambient temperatures overnight, the clutch input shaft should be run approx. 1/2 hour before operating the machinery

** - Maximum Air Pressure. (See Section 2 Specifications Chart for maximum operating air pressure.)

6-2 CHECKING BRAKE and CLUTCH STACKS for WEAR

To assure correct piston travel and stack engagement, the following steps must be taken when replacing the Clutch and Brake Stacks. **Worn Stack Condition** can also be determined with this procedure.

Measure the stacks as shown in *Figure 6.1*. **Always measure each stack separately.**

Place the correct number of Drive Plates (#13) and Friction Discs (#12) in an arbor press and clamp firmly.

Measure the **Stack Height** and compare it with the tabulated value given in the **Stack Height Table**.

The **Worn Stack Condition** given in the **Stack Height Table** can be used to determine whether or not your old stacks are worn enough to be replaced.

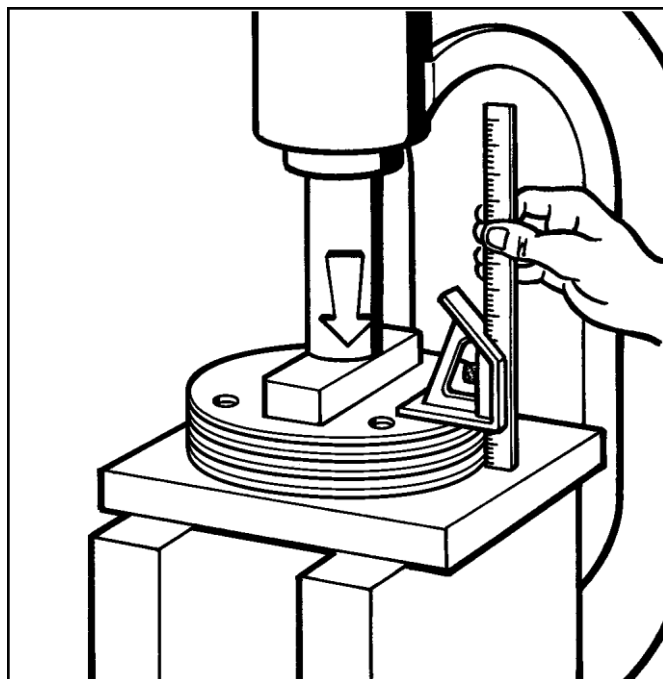


Figure 6.1 - Measuring Stack Height

STACK HEIGHT TABLE (Inches)

UNIT SIZE	WHICH STACK	NEW STACK HEIGHT				WORN STACK CONDITION	
		MINIMUM		MAXIMUM		DECIMAL	NEAREST FRACTION
		DECIMAL	NEAREST FRACTION	DECIMAL	NEAREST FRACTION		
X1	CLUTCH	.212	7/32	.228	15/64	.190	3/16
	BRAKE	.212	7/32	.228	15/64	.190	3/16
X2	CLUTCH	.379	3/8	.407	13/32	.190	3/16
	BRAKE	.379	3/8	.407	13/32	.190	3/16
X3*	CLUTCH	.733	47/64	.765	49/64	.639	41/64
	BRAKE	.733	47/64	.765	49/64	.639	41/64
X4	CLUTCH	.682	11/16	.732	47/64	.611	39/64
	BRAKE	.682	11/16	.732	47/64	.611	39/64

* - Size X3 has a controlled stack height. Stack dimensions are shown controlled with Shim (#378) included.

If stack measures .745" or less, then the Shim (#378) will be required.

Section 7 DISASSEMBLY

7-1 GENERAL DISASSEMBLY PROCEDURE

1. Disconnect the *Posidyne X Class* Clutch/Brake from the gear box or driven machinery and move it to a suitable work area. See Section 7-2 below to disconnect the Clutch/Brake from the drive motor.
2. Disconnect all pneumatic lines and valves connected to the Clutch/Brake.
3. Remove the (2) Drain Plugs (#73) from the bottom of the housings and drain all fluid from the unit. Save or discard, as condition warrants.

NOTE - It is recommended that you set the Clutch/Brake on the output end with the output shaft in a vertical down position for ease of disassembly. Supply suitable bracing and clamping to stabilize the Clutch/Brake during the disassembly procedure.

The *Posidyne X Class* Clutch/Brake is comprised of (2) main assemblies and they are:

1. Input Housing Assembly -

- (a) Input Housing, Piston Seal (*"P"* Logic Only) and Input Oil Seal.
- (b) Input Shaft and Bearing.

2. Output Housing Assembly -

- (a) Output Housing, Piston Seals and Output Oil Seal.
- (b) Output Shaft and Bearings.
- (c) Clutch Stack.
- (d) Piston Sub-Assembly.
- (e) Brake Stack.

7-2 REMOVING CLUTCH/BRAKE FROM MOTOR

(See Figures 7.1 and 10.1)

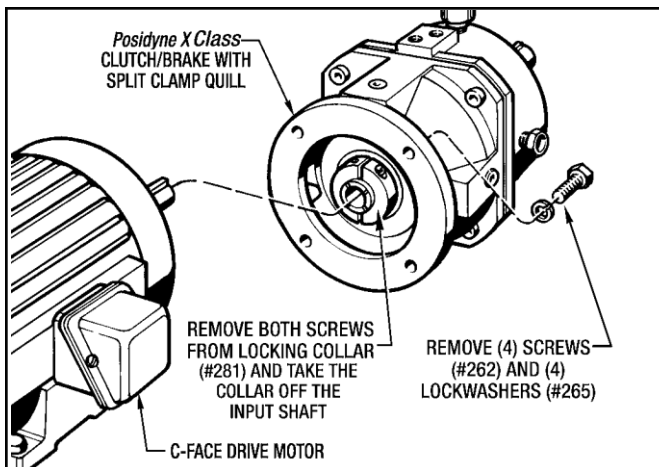


Figure 7.1 - Removing Clutch/Brake From Motor

1. Loosen and remove the (2) Screws in the Locking Collar (#281). Remove the Locking Collar (#281) off the Input Shaft (#2).
2. Remove the (4) Hex Hd. Mounting Screws (#262) and the (4) Lockwashers (#265). Remove the Clutch/Brake off the motor flange

7-3 CLUTCH/BRAKE DISASSEMBLY

(See Figures 10.1 and 10.2)

1. Remove the (4) Screws (#63) and (4) Lockwashers (#127). Pry and lift off the Input Housing (#8) away from the Output Housing (#9). (Slots are provided between the housings.)
2. Take the O-Ring (#104) off the Input Housing pilot diameter and discard it.
3. Remove the Clutch Stack from the Output Shaft (#1) spline.

IMPORTANT - If the Clutch Stack is not to be replaced, keep the Drive Plates (#13), Friction Discs (#12) and Pressure Plate (#6) in the exact same order as they were removed.

4. Apply light air pressure to the clutch port. Pull the Piston Sub-Assembly out of the Output Housing (#9)

NOTE - On *"A"* Logic Drives there are (6) Springs (#36) for Sizes X1, X2 and X3 Clutch/Brakes. On Size X4 there are (9) Springs (#36). Take them all out of the spring pockets. *"C"* Logic has only (3) Springs (#36)

5. If the Piston Liners and O-Rings are to be replaced, they can be removed from the Piston Seal Grooves in the Input Housing (#8) and the Output Housing (#9). (See Figure 7.2)

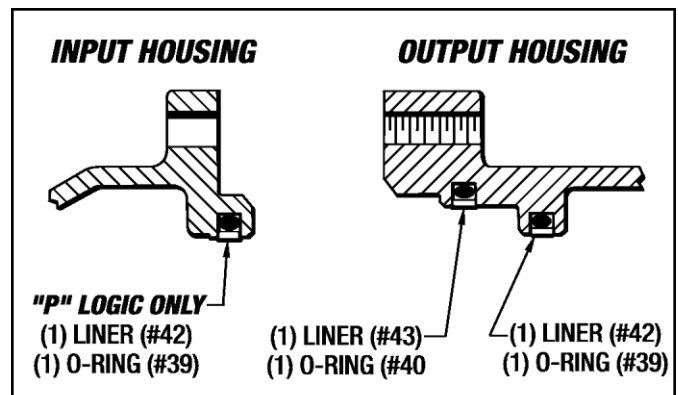


Figure 7.2 - Piston Liners and O-Rings

For *"P"* Logic there will be (1) Liner (#42) and (1) O-Ring (#39) in the Input Housing. There will not be a Liner or O-Ring in the Input Housing for *"A"* & *"C"* Logic.

In the Output Housing, there will be (1) Liner (#43), (1) O-Ring (#40), (1) Liner (#42) and (1) O-Ring (#39) for all three "A", "C" and "P" Logics.

- Remove the Brake Stack from the Output Shaft (#1) spline. This step does not apply to "C" Logic.

IMPORTANT - If the Brake Stack is not to be replaced, keep the Drive Plates (#13), Friction Discs (#12) and Pressure Plate (#6) in the exact same order as they were removed.

7-4 INPUT SHAFT REMOVAL & DISASSEMBLY

(See Figure 10.1)

A. Input Shaft Removal

If the Drain Plug (#73) is still installed in the bottom of the Input Housing, remove it at this time.

- Insert an 1/8" allen wrench through the drain hole and into the 1/4"-20 Set Screw (#57). Loosen it enough to allow the Bearing (#35) to slide out of the bearing bore. (See Figure 7.3)

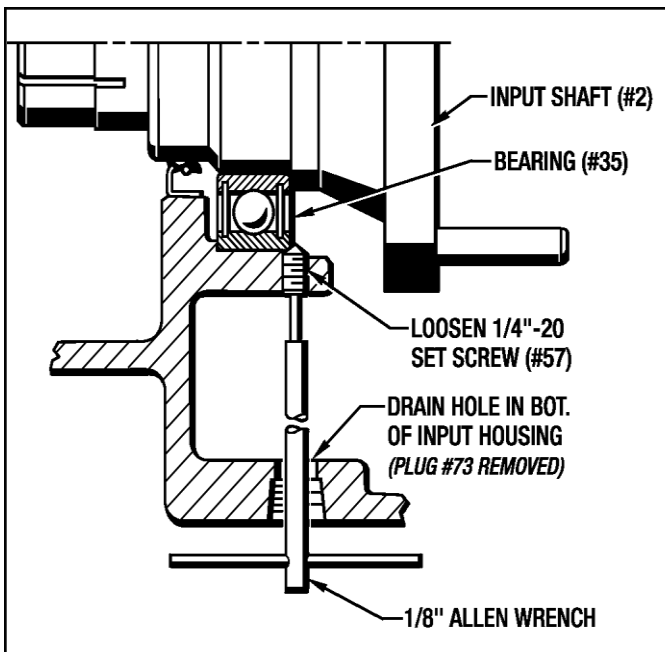


Figure 7.3 - Loosening Bearing Retainer Set Screw (#57)

- Push the Input Shaft (#2) straight out of the Input Housing (#8).

CAUTION - Be very careful not to damage the lip of the Oil Seal (#32) when removing the Input Shaft (#2).

B. Input Shaft Disassembly

(See Figure 7.4)

- Remove the Bearing (#35) from the Input Shaft (#2) with a Bearing Splitter and an arbor press as shown in Figure 7.4.

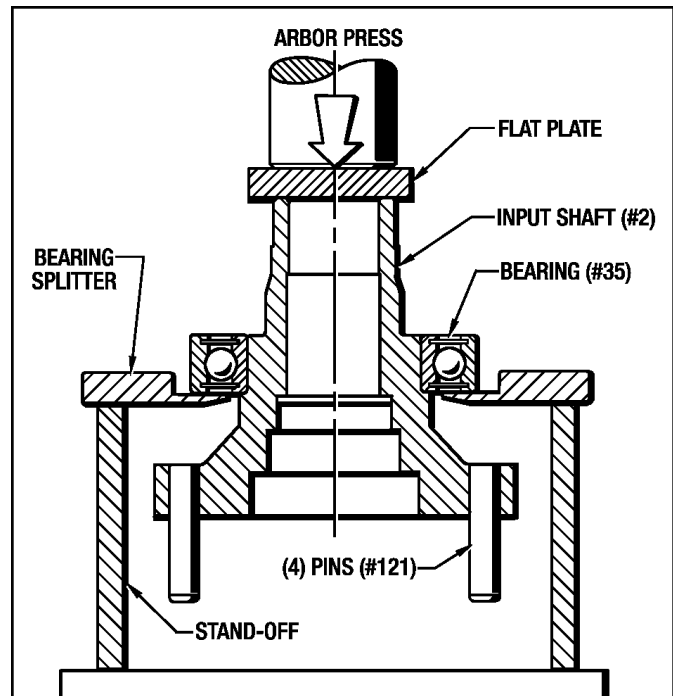


Figure 7.4 - Removing Bearing (#35)

7-5 OUTPUT SHAFT REMOVAL & DISASSEMBLY

(See Figure 10.1)

Only remove this Output Shaft if either the Oil Seal (#31), Pilot Bearing (#28) or Bearing (#26) needs to be replaced.

A. Output Shaft Removal

- Remove the Key (#180) from the Output Shaft (#1).
- Remove the Retaining Ring (#44) from the bearing bore in the Output Housing (#9).
- Cover the shaft keyway with electrical tape and coat the tape with a little white grease to prevent the keyway from cutting the oil seal lip.
- Carefully pull the Output Shaft (#1) out of the rear of the Output Housing (#9).

CAUTION - Be very careful not to damage the lip of the Oil Seal (#31) when removing the Output Shaft (#1).

B. Output Shaft Disassembly

- Use a Bearing Puller as shown in Figure 7.5 to remove Bearing (#26) from the Output Shaft (#1).
- Remove the Retaining Ring (#47) from the tail end of the Output Shaft (#1) and use a small Bearing Splitter to remove the Pilot Bearing (#28) from the Output Shaft (#1).

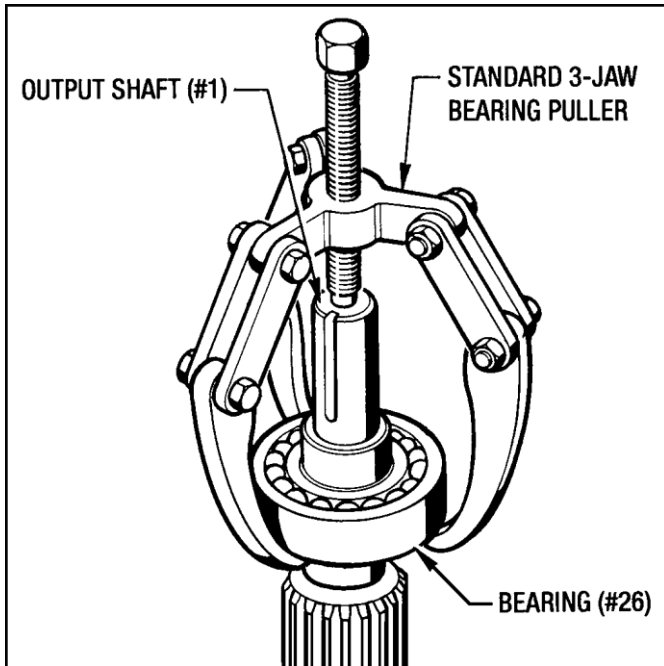


Figure 7.5 - Removing Bearing (#26)

7-6 REMOVING OIL SEALS

(See Figure 10.1)

Oil Seal (#32) is in the Input Housing (#8) and Oil Seal (#31) is in the Output Housing (#9).

Use an arbor press to remove them if they need replaced.

7-7 PISTON DISASSEMBLY

(See Figures 7.6, 7.7 and 10.1)

1. Insert a Rectangular Flat Plate into the Piston (#3) and lay it on the top surface of the Bearing (#27). (See Figure 7.6)

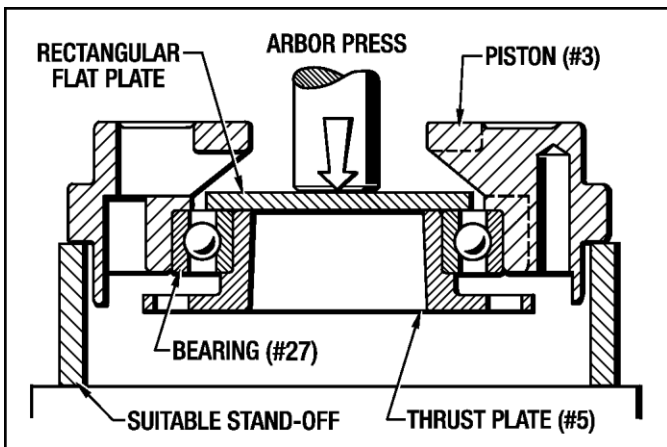


Figure 7.6 - Piston Disassembly

NOTE - For Sizes X1, X2 and X3 this Rectangular Flat Plate should be approx. 3-1/2" x 1-1/2" x 1/4".

For Size X4 it should be approx. 4-3/4" x 2-1/2" x 1/4".

2. Press the Bearing (#27) and Thrust Plate (#5) out of the Piston (#3) with an arbor press. (See Figure 7.6)
3. The Thrust Plate (#5) can be removed from the Bearing (#27) with a Bearing Splitter and Arbor Press as shown in Figure 7.7.

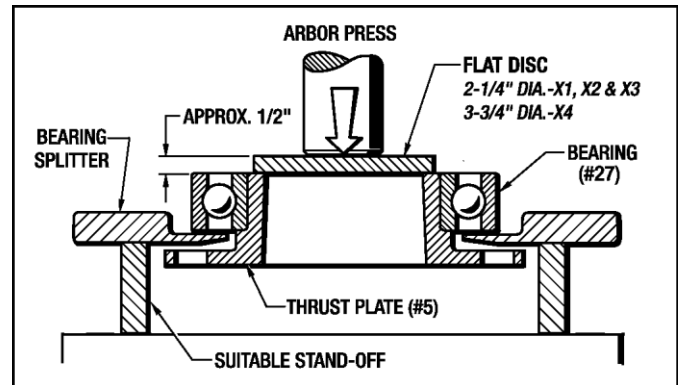


Figure 7.7 - Removing Thrust Plate (#5) From Bearing (#27)

This completes the Disassembly Procedure. See Section 8 for Cleaning and Inspection of parts and Section 9 for Reassembly Procedure.

Section 8 CLEANING AND INSPECTION

8-1 CLEANING AND INSPECTION

Clean metal parts in a suitable solvent and dry in a stream of low pressure compressed air. The Clutch and Brake Drive Plates (#13) can be cleaned in a solvent, but **DO NOT** clean the Clutch and Brake Friction Discs (#12) in solvent. Use only a clean, dry and lint-free rag to clean these Friction Discs. (Solvent will damage the resilient paper-based friction material used on the Friction Discs). Keep the Drive Plates and Friction Discs in the same order as they were removed. After cleaning, inspect parts for cracks, distortion, scoring, nicks, burrs or other damage would affect serviceability.

Pay particular attention to the following:

1. Check the disc wear surfaces for scoring, galling or evidence of uneven wear.
2. Check the clutch and brake plates for scoring or galling. Make sure they are flat. If a perceptible ridge is worn in any of the drive plates, replace all of the drive plates and friction discs as a complete set.
3. Carefully check the piston and bore surfaces for nicks, scratches, scoring or other damage which would affect operation or cause leakage.

4. Pay particular attention to the shafts in the area of rotary seals. Check for nicks, scratches which would cause leakage. Replace any damaged parts.
5. It is not necessary to remove the ball bearings to check their operation. Slowly rotate the free race of each bearing by hand checking to see if it turns freely without rough or flat spots.

8-2 REPAIR AND REPLACEMENT

A fine stone or crocus cloth may be used to remove minor surface defects from parts so long as the operating or sealing action of the part is not affected. The use of coarser abrasives or other machining methods should not be attempted. Otherwise, damaged parts should be replaced.

Replacement is recommended also for the following, as applicable:

1. Replace all O-Rings, Liners and Oil Seals removed during the course of disassembly.
2. Replace Clutch or Brake Discs and Drive Plates in complete sets only.

Section 9 REASSEMBLY

9-1 GENERAL REASSEMBLY INSTRUCTIONS

1. Refer to **Section 10 - Ordering Repair Parts** for a visual reference to all parts described in this Reassembly Section. (See *Figures 10.1 & 10.2*)
2. Basically the Reassembly Procedure is just the reverse order of the Disassembly Procedure.
3. Lubricate O-rings, Liners and the lips of Oil Seals with a little "White Grease" (Mobil Lithium #SHC-PM) immediately prior to installation and reassembly of any mating parts.
4. One method of installing Ball Bearings on to their prospective shafts is to heat up the bearings to a **maximum of 212° F.** and drop them onto the shaft. Always make sure that the bearings are seated properly when using this method.

CAUTION- Always wear suitable protective gloves when handling heated parts.

5. The other method of installing press fitted parts is to use an Arbor Press. Special Assembly Tools are required with this method. **Section 11 - Special Assembly Tools** shows machining drawings for each

Assembly Tool, if you prefer to make your own tools.

Each Assembly Tool has its own Part Number and can be ordered from the Force Control factory. The Special Assembly Tool Part Numbers are as follows:

1. **OIL SEALS (#32) & (#31)**
Sizes X1 & X2#601-X1-002
Size X3#601-X3-003
Size X4#601-X3-001
2. **INPUT BEARING (#35)**
Sizes X1 & X2#601-X1-007A
Size X3#601-X3-006
Size X4Consult Factory
3. **PISTON THRUST BEARING (#27)**
Sizes X1, X2 & X3#601-X1-007B
Size X4Consult Factory
4. **OUTPUT BEARING (#26)**
Size X1#601-X1-006B
Size X2#601-X1-006A
Size X3Consult Factory
Size X4Consult Factory

9-2 PISTON REASSEMBLY

(See Figure 10.1)

1. Apply **Primer-T** and wipe off both the OD of the Bearing (#27) and the ID of the bearing bore in the Piston (#3) to remove any grease.
2. Apply **Green Loctite #680** to the bearing bore in the Piston (#3).
3. Install the Bearing (#27) into the Piston (#3) with an Arbor Press and the appropriate Bearing Assembly Tool as shown in Figure 9.1.

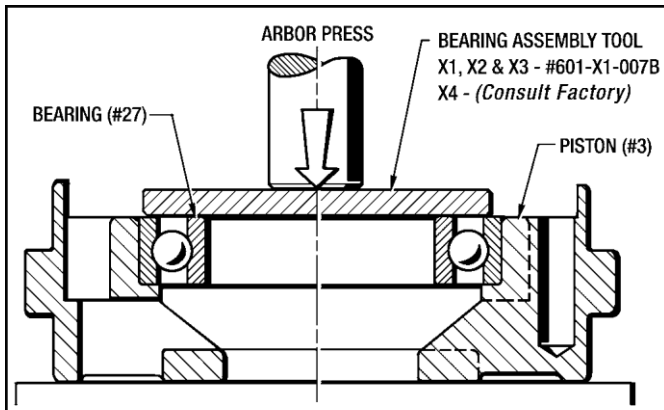


Figure 9.1 - Installing Bearing (#27)

4. Clean the Thrust Plate (#5) with **Primer-T** and apply **Green Loctite #680** to the OD.
5. With the same Bearing Assembly Tool and an Arbor Press, install the Thrust Plate (#5) into the Bearing (#27) as shown in Figure 9.2.

CAUTION- Excessive pressure will brinell the Bearing (#27).

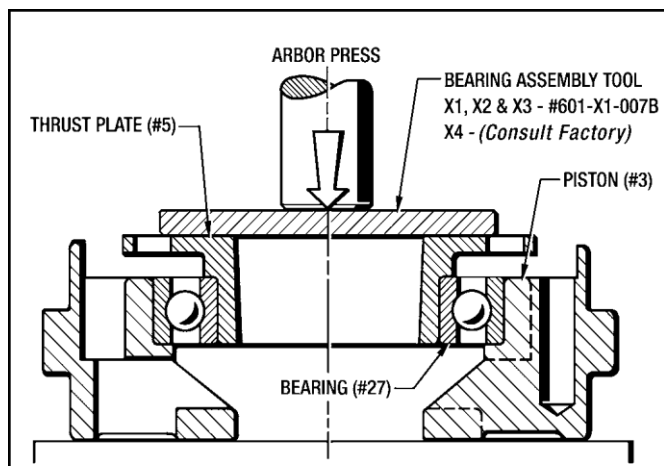


Figure 9.2 - Installing Thrust Plate (#5)

9-3 INSTALLING OIL SEALS

(See Figures 9.3 and 10.1)

A. Oil Seal (#31) Into Output Housing

1. Apply **Permatex "Form-A-Gasket" #3D** to the OD of the Oil Seal (#31).
2. Install the Oil Seal (#31) into the Output Housing (#9) with an Arbor Press and the appropriate Assembly Tool as shown in Figure 9.3. **IMPORTANT-This Oil Seal must be installed squarely to prevent oil leaks.**
3. Clean off any excess Permatex.

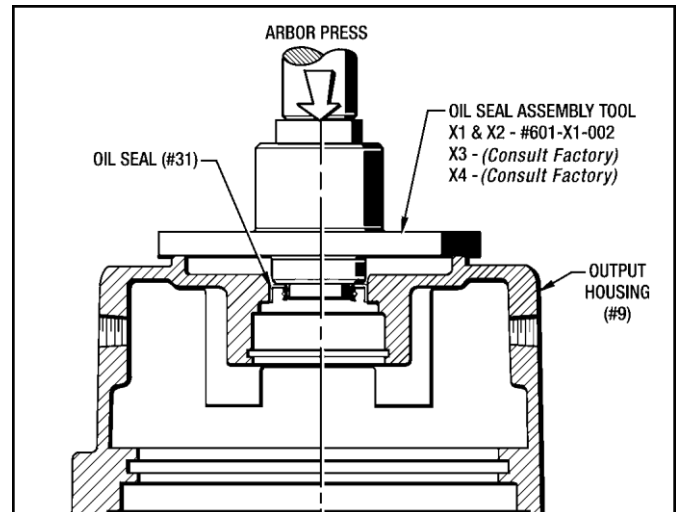


Figure 9.3 - Installing Oil Seal (#31)

B. Oil Seal (#32) Into Input Housing (#8)

1. Apply **Permatex "Form-A-Gasket" #3D** to the OD of the Oil Seal (#32).
2. Install the Oil Seal (#32) into the Input Housing (#8) with an Arbor Press and the appropriate Assembly Tool as shown in Figure 9.4. **IMPORTANT-This Oil Seal must be installed squarely to prevent oil leaks.**
3. Wipe off any excess Permatex.

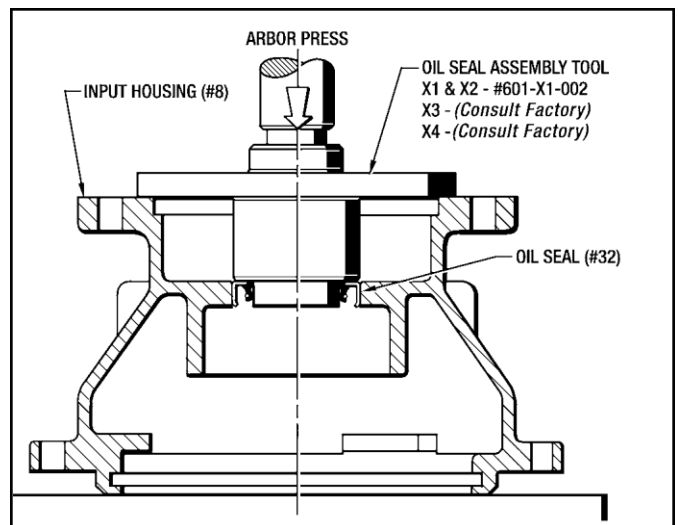


Figure 9.4 - Installing Oil Seal (#32)

9-4 OUTPUT SHAFT REASSEMBLY

(See Figure 10.1)

A. Pilot Bearing (#28)

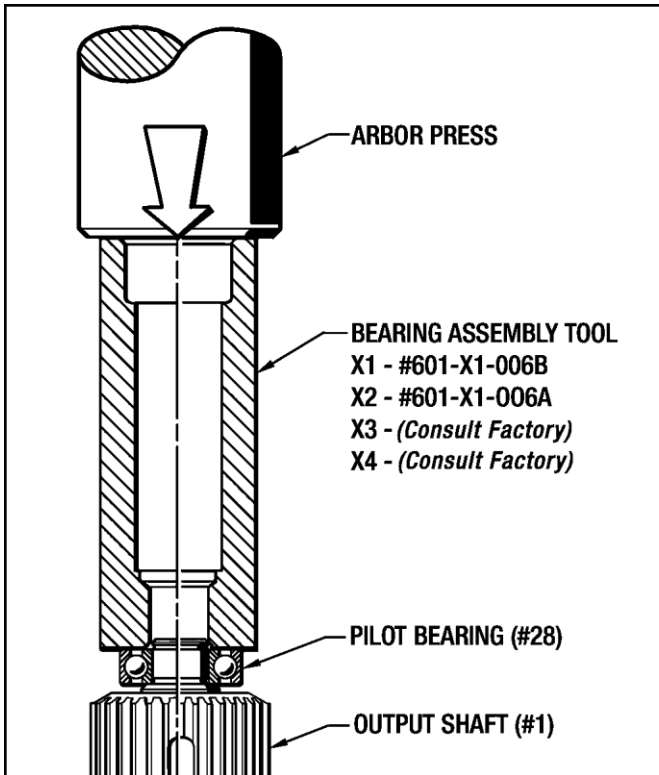


Figure 9.5 - Installing Pilot Bearing (#28)

1. Install the Pilot Bearing (#28) on to the Output Shaft (#1) with an Arbor Press and the appropriate Bearing Assembly Tool as shown in Figure 9.5.

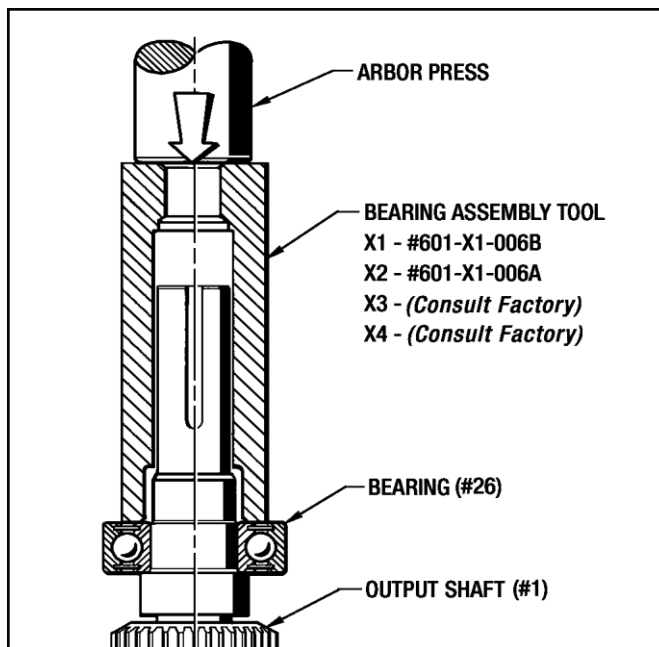


Figure 9.6 - Installing Bearing (#26)

Make sure the Bearing (#28) is completely seated on the Output Shaft (#1).

2. Install the Retaining Ring (#47) on the Output Shaft (#1).

B. Output Bearing (#26)

1. Install the Bearing (#26) on to the Output Shaft (#1) with an Arbor Press and the appropriate Bearing Assembly Tool as shown in Figure 9.6.

9-5 INPUT SHAFT REASSEMBLY

(See Figure 10.1)

1. Install the Bearing (#35) on to the Input Shaft (#2) with an Arbor Press and the appropriate Bearing Assembly Tool as shown in Figure 9.7.

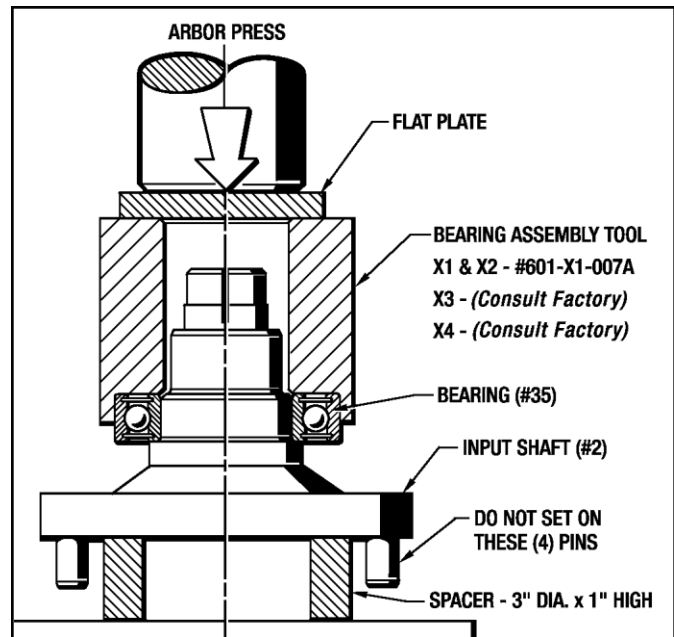


Figure 9.7 - Installing Bearing (#35)

9-6 INSTALLING OUTPUT SHAFT (#1) INTO OUTPUT HOUSING (#9)

(See Figure 10.1)

1. Lubricate the lip of the Oil Seal (#31) with a little White Grease and set the Output Housing (#9) face down on the table. Cover up the keyway in the Output Shaft (#1) with electrical tape.

NOTE - You will need approximately 3" to 4" clearance under the Output Housing (#9) to insert the Output Shaft (#1).

2. Carefully insert the Output Shaft (#1) into the Output Housing (#9) until the Bearing (#26) is completely seated in the bearing bore.

CAUTION - Be very careful not to damage the Oil Seal (#31) lip when inserting this Output Shaft (#1).

3. Install the Retaining Ring (#44) into the Output Housing (#9).

9-7 INSTALLING THE BRAKE STACK

(See Figure 10.2)

("A" and "P" Logic Only)

The Brake Stack can be placed on the Output Shaft (#1) spline. It will consist of Pressure Plates (#6), Drive Plates (#13), Friction Discs (#12) and Separator Springs (#229) over the dowel pins between the drive plates.

See Figure 10.2 for the correct **Stack Configuration** for each specific unit size.

9-8 PISTON INSTALLATION

(See Figure 10.1)

1. Apply a little White Grease to both O-Rings (#40) & (#39) and both Liners (#43) & (#42). Install them into the Output Housing (#9) piston seal grooves as shown in Figure 9.8.

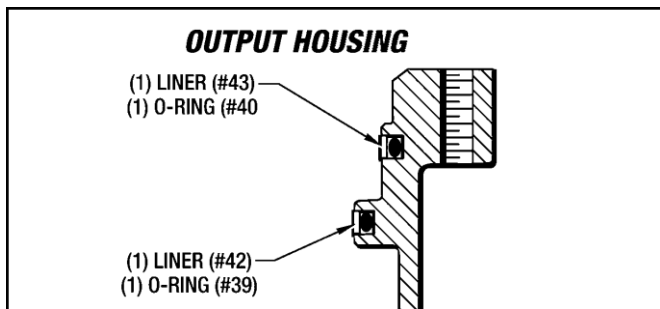


Figure 9.8 - Installing Piston Seals in Output Housing (#9)

2. Carefully place the Piston Sub-Assembly into the Output Housing (#9). Make sure the hole in the bottom surface of the Piston (#3) is aligned with the top Pin (#121) as shown in Figure 9.9.

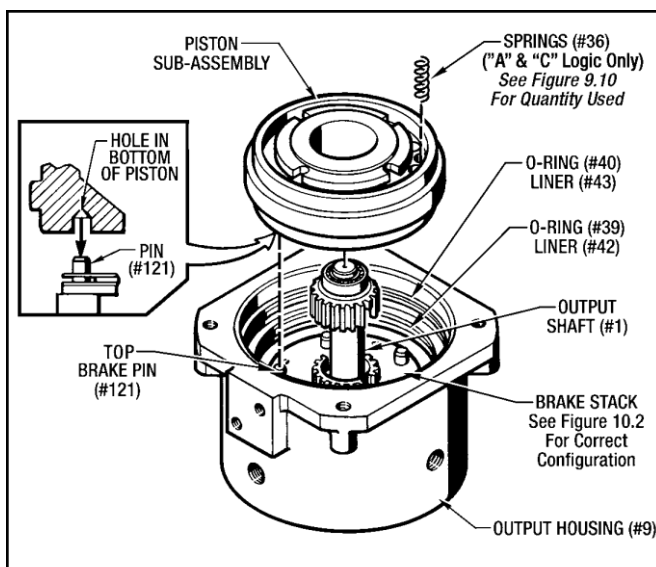


Figure 9.9 - Installing Piston Sub-Assembly

("A" and "C" Logic Only)

3. Place the correct number of Springs (#36) into the spring pockets of the Piston (#3). (See Figure 9.10)

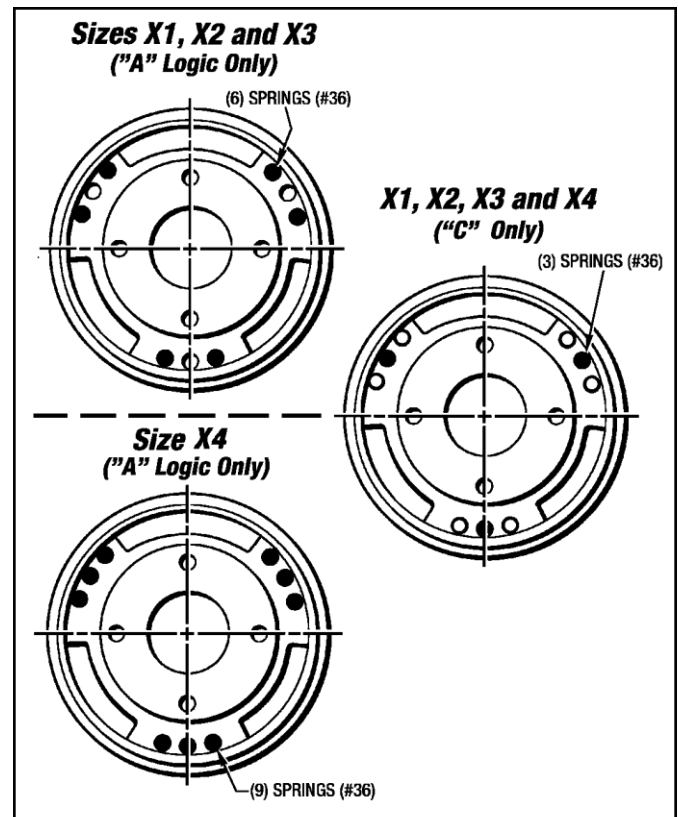


Figure 9.10 - Brake Spring Placement ("A" & "C" Logic Only)

9-9 INSTALLING CLUTCH STACK

(See Figure 10.2)

The **Clutch Stack** will have to be assembled on the Input Shaft first. It will consist of Drive Plates (#13), Friction Discs (#12) and Separator Springs (#229) on the dowel pins between the drive plates.

NOTE - The Size X1 also has (1) Pressure Plate (#6) in the Clutch Stack.

1. Place the Input Shaft (#2) on the work bench with the (4) Dowel Pins (#121) pointing up.
2. Assemble the **Clutch Stack** on to the Input Shaft (#2) as shown in Figure 10.2 for the correct **Stack Configuration** for each specific unit size.

IMPORTANT - Make sure that you install (4) Separator Springs (#229) on the (4) Dowel Pins (#121) between each Drive Plate (#13). Also align and center the Friction Discs (#12) spline with each other the best you can.

3. Pick the Input Shaft (#2) and Clutch Stack up with your hands, holding the stack in place with your thumbs, turn it over and place it on the Output Shaft (#1) spline. If the splines bind-up, loosen the pres-

sure on the stack and work it back and forth until the stack slides down on to the spline. Make sure the (4) Dowel Pins (#121) are aligned with the (4) holes in the Clutch Thrust Plate (#5).

9-10 INSTALLING INPUT HOUSING

(See Figure 10.1)

1. Lubricate the lip of the Oil Seal (#32) with a little White Grease.
2. Lubricate the O-Ring (#104) with a little White Grease and install it on the mounting register as shown in Figure 9.11.

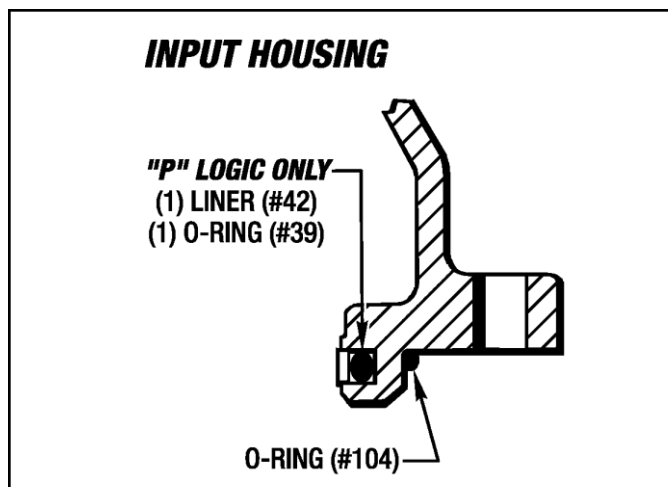


Figure 9.11 - Installing Input Housing

3. Loosely install the Set Screw (#57) into the Input Housing (#8) with Blue Loctite #271 as shown in Figure 9.12. **Make sure the screw does not protrude into the bearing bore.**

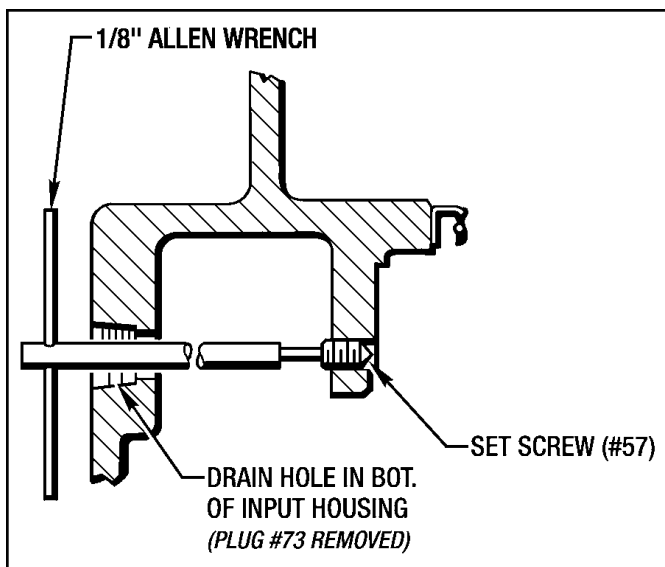


Figure 9.12 - Installing Set Screw (#57)

(This next Step #4 is only for "P" Logic)

4. Lubricate the O-Ring (#39) and the Liner (#42) with a little White Grease and install them into the piston seal groove in the Input Housing (#8) as shown in Figure 9.11 above.
5. Lubricate the lip of the Oil Seal (#32) with a little white grease.
6. Slide the Input Housing (#8) down over the input Shaft (#2).
7. Attach the Input Housing (#8) to the Output Housing (#9) with (4) Screws (#63) and (4) Lockwashers (#127).

CAUTION - Be very careful not to damage the lip of the Oil Seal (#32).

NOTE - The (4) Screws (#63) will have to be tightened down in an even manner for "A" Logic Units because the Input Housing (#8) will be under spring pressure.

8. Torque these (4) Screws (#63) to the following torques:
 Size X1, X2 and X3..... **14 Lb. Ft.**
 Size X4..... **25 Lb. Ft.**
9. Apply 60 PSI shop air to the Clutch Port to fully seat the Bearing (#35) into the bearing bore.
10. Tighten down the Set Screw (#57) until tight, then back it off **1/8 turn** to prevent side loading of the Input Shaft Bearing (#35).
11. Before continuing any further, do a complete Operational check as described in **Section 5-2 - Checking Clutch and Brake Seals.**
12. Hand tighten the Locking Collar (#281) back on the Input shaft (#2).

9-11 FINAL REASSEMBLY

(See Figure 10.1)

1. Replace any Pipe Plugs, Fittings, Air Breather and Sight Gauge removed for Disassembly.
2. Fill with Mobil ATF 210 Type F Automatic Transmission Fluid as specified in **Section 4 - Lubrication.**

9-12 REMOUNTING THE CLUTCH/BRAKE TO THE DRIVE MOTOR (See Figure 10.1)

1. Remount the Clutch/Brake back on the Drive Motor with the same procedure as described in **Section 3 - Mounting The Posidyne Clutch/Brake.**
2. Reconnect the Pneumatic System as specified in **Section 3-3 - Pneumatic Hook-Up.**

Section 10

ORDERING REPAIR PARTS

10-1 GENERAL INFORMATION

This section illustrates, lists and describes all available repair parts for the Force Control *Posidyne X Class* Clutch/Brake Drive Units. Parts are identified on the exploded views with Part Reference Numbers. These Numbers correspond to the Part Reference Number given in the Parts List. The Part Name and Quantity is also given in the Parts List. This Part Reference Number, Part Name and Quantity should be used when ordering parts.

The Exploded View Drawings are as follows:

Figure 10.1 - Posidyne X Class Clutch/Brake.

Figure 10.2 - Stack Configurations

Figure 10.3 - Options - Manifold Mounted Valve Kit, Male Input Adapter Kit and Foot Mounting Kit

10-2 DRIVE MOTORS

The motors used with these Drive Units are standard and may be repaired or replaced by any qualified motor rebuild facility or supplier.

10-3 FACTORY REBUILDSERVICE

Factory Rebuild Service is offered by Force Control Industries at the factory. Before returning a unit for this service, however, be sure to first contact the Force Control Industries Service Sales Department for authorization and shipping instructions. Force Control Industries cannot be responsible for units returned to the factory without prior notice and authorization.

Care must be given to the packing of return drives. Always protect mounting surfaces by attaching to a skid. Shipment-damaged drives always delay repairs. It is usually impossible to recover damage costs from the carrier. When possible describe the problem experienced on your shipping papers.

RETURN TO :

Force Control Industries, Inc.
3660 Dixie Highway
Fairfield, Ohio 45014

Telephone: 513-868-0900
Fax No.: 513-868-2105
E-Mail: info@forcecontrol.com

10-4 ORDERING REPLACEMENT PARTS


When ordering replacement parts, please specify all of the following information:

1. **Drive Model Number** (on the name plate)
2. **Drive Serial Number** (on the name plate)
3. **Part Reference Number** (from the parts list or exploded view drawing.)
4. **Part Name** (from the parts list)
5. **Quantity** (from the parts list)
6. **Complete Shipping Information**

Failure to include information for items 1 thru 6 will only delay your parts order. Unless another method is specified for item 6, parts less than 150 pounds will be shipped United Parcel Service, parts over 150 pounds will be shipped Motor Freight. Air freight and other transportation services are available but only if specified on your order.

10-5 NAME PLATE

The Name Plate shown below is located on the Input Housing.

Force Control Industries, Inc.	
	Fairfield, Ohio For Service Call 513-868-0900
www.forcecontrol.com Posidyne X Class	
Model No.	
Serial No.	
Use Mobil® ATF 210 Type F	

Posidyne X Class CLUTCH/BRAKE

(Figure 10.1)

REF. No.	PART NAME	QTY.	REF. No.	PART NAME	QTY.
1	Output Shaft	1	47	Retaining Ring, Pilot Bearing	1
2	Input Shaft	1	*57	Set Screw, 1/4"-20 x 3/8" Lg.....	1
3	Piston.....	1	63	Soc. Hd. Cap Screw	
5	Clutch Thrust Plate	1		(X1 and X2) 5/16"-18 x 1-1/2" Lg.	4
8	Input Housing	1		(X3 and X4) 3/8"-16 x 1-1/2" Lg.	4
9	Output Housing.....	1	73	Pipe Plug, Magnetic 3/8" NPT	2
*26	Bearing, Output Shaft	1	74	Pipe Plug ("A" and "C" Logic Only)	
*27	Bearing, Thrust Plate	1		(X1, X2 & X3) 1/8" NPT.....	1
*28	Pilot Bearing	1		(X4) 1/4" NPT	1
*31	Oil Seal, Output Shaft	1	92	Pipe Plug, 3/8" NPT	4
*32	Oil Seal, Input Shaft	1	*104	O-Ring	1
*35	Bearing, Input Shaft	1	117	90° Street Elbow (Use for Vertical Only)	1
*36	Brake Spring		121	Dowel Pin, 3/8" x 1-1/4".....	4
	Size X1, X2 and X3 ("A" Logic)	6	122	Dowel Pin, 1/2" x 1-3/4".....	4
	Size X4 ("A" Logic)	9	127	Lockwasher	
	All Sizes ("C" Logic).....	3		(X1 and X2) 5/16".....	4
*39	O-Ring			(X3 and X4) 3/8".....	4
	"A" and "C" Logic	1	180	Key.....	2
	"P" Logic	2	208	Plug, Expansion.....	1
*40	O-Ring	1	262	Hex Hd. Mounting Screw	
*42	Piston Liner, Small Diameter			(X1 and X2) 3/8"-16 x 1-1/4" Lg.	4
	"A" Logic	1		(X3 and X4) 1/2"-13 x 2" Lg.	4
	"P" Logic	2	265	Lockwasher	
*43	Piston Liner, Large Diameter	1		(X1 and X2) 3/8".....	4
44	Retaining Ring, Output Bearing	1		(X3 and X4) 1/2".....	4
*45	Air Breather	1	281	Clamping Collar	1
*46	Sight Gauge.....	1			

* - Indicates parts in Overhaul Kit.

Posidyne X Class CLUTCH/BRAKE

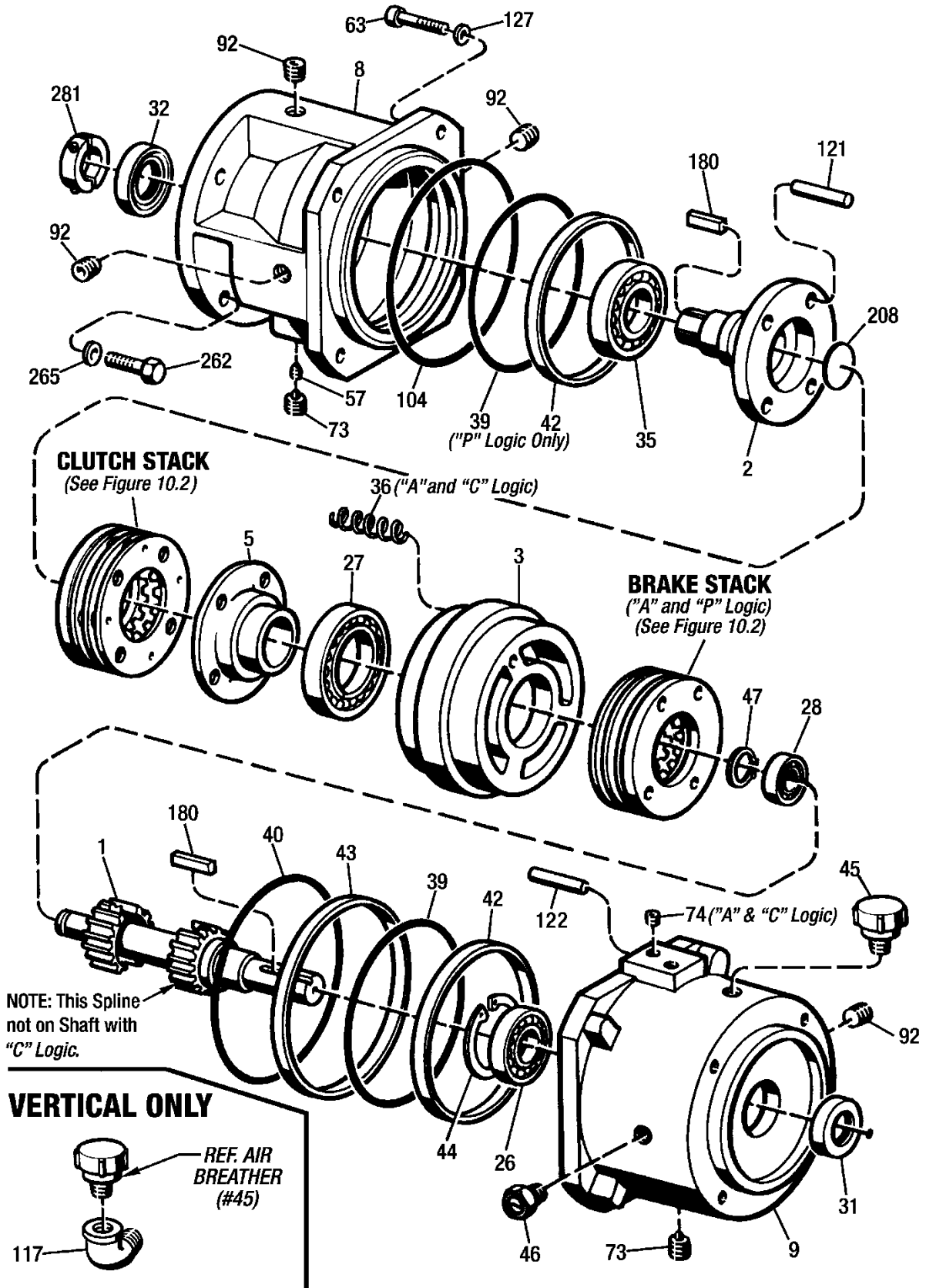


Figure 10.1 - Posidyne X Class Clutch/Brake Unit

CLUTCH & BRAKE STACK CONFIGURATIONS

(Figure 10.2)

Size X1 Posidyne

REF. No.	PART NAME	QTY.	REF. No.	PART NAME	QTY.
6	Stack Pressure Plate		*13	Drive Plate	
	“C” Logic	1		“C” Logic	2
	“A” and “P” Logic	3		“A” and “P” Logic	4
*12	Friction Disc		*229	Separator Spring	
	“C” Logic	1		“C” Logic	4
	“A” and “P” Logic	2		“A” and “P” Logic	8

* - Indicates parts in Overhaul Kit.

Size X2 Posidyne

REF. No.	PART NAME	QTY.	REF. No.	PART NAME	QTY.
6	Stack Pressure Plate (“A” and “P” Logic)	1	*229	Separator Spring	
*12	Friction Disc			“C” Logic	8
	“C” Logic	2		“A” and “P” Logic	16
	“A” and “P” Logic	4			
*13	Drive Plate				
	“C” Logic	3			
	“A” and “P” Logic	6			

* - Indicates parts in Overhaul Kit.

Size X3 Posidyne

REF. No.	PART NAME	QTY.	REF. No.	PART NAME	QTY.
6	Stack Pressure Plate (“A” and “P” Logic)	1	*229	Separator Spring	
*12	Friction Disc			“C” Logic	16
	“C” Logic	4		“A” and “P” Logic	32
	“A” and “P” Logic	8	*378	Shim.....	AR
*13	Drive Plate				
	“C” Logic	5			
	“A” and “P” Logic	10			

* - Indicates parts in Overhaul Kit.

AR - As Required.

Size X4 Posidyne

REF. No.	PART NAME	QTY.	REF. No.	PART NAME	QTY.
6	Stack Pressure Plate (“A” and “P” Logic)	1	*229	Separator Spring	
*12	Friction Disc			“C” Logic	16
	“C” Logic	4		“A” and “P” Logic	32
	“A” and “P” Logic	8			
*13	Drive Plate				
	“C” Logic	5			
	“A” and “P” Logic	10			

* - Indicates parts in Overhaul Kit.

CLUTCH & BRAKE STACK CONFIGURATIONS

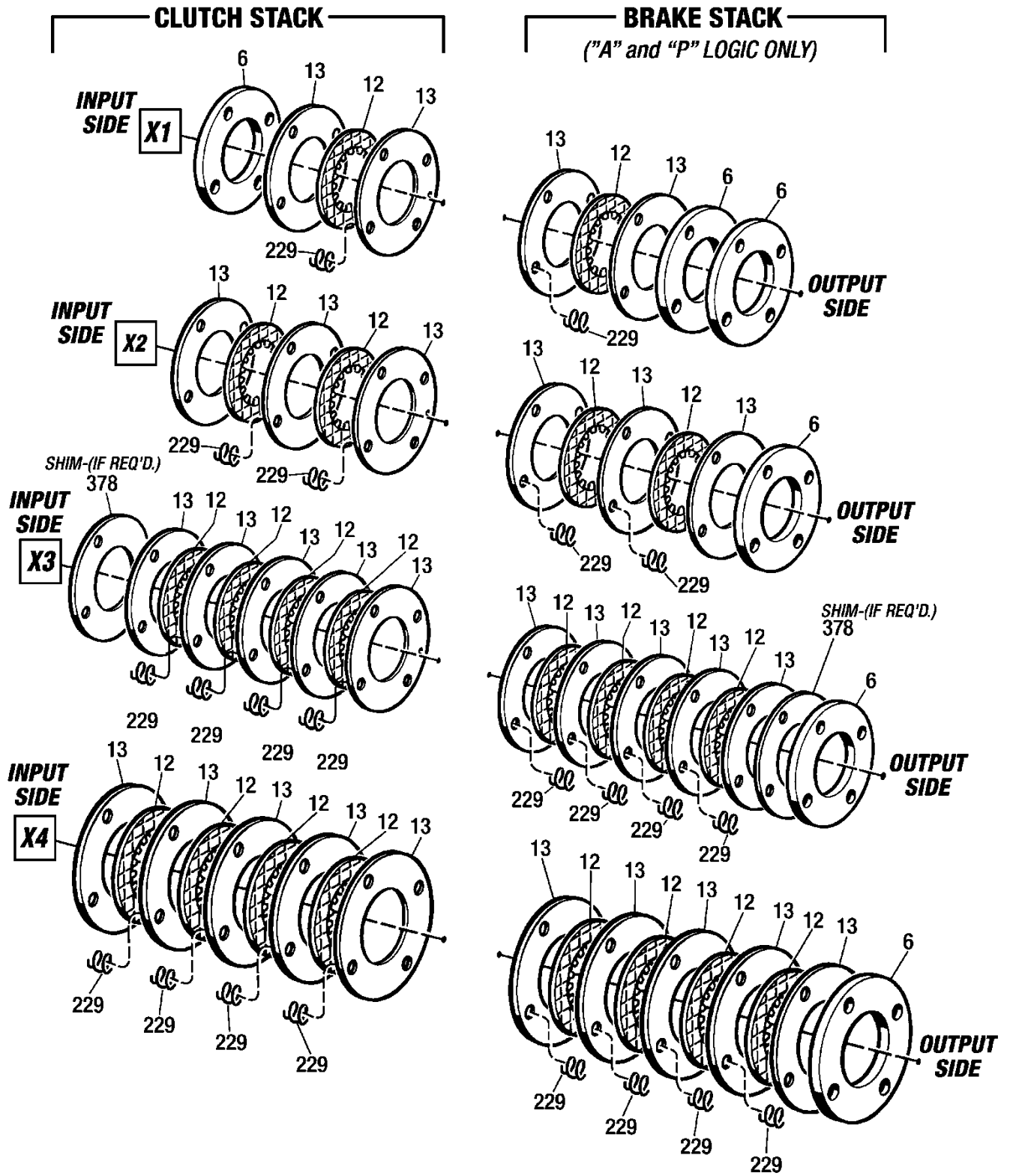


Figure 10.2 - Clutch & Brake Stack Configurations

Parts List - Figure 10.3
Manifold Mounted Valve Kit

REF. No.	PART NAME	QTY.
701	Manifold	1
727	Soc. Hd. Screw, #10-32 x 1-3/8" Lg.	2
737	Lockwasher, #10	2
807	Gasket	1

To order a complete Manifold Mounted Valve Kit use the following Part Number:

Size and Logic	Part Number
(X1-X3 "P" Logic)	#09-56-931-00
(X4 "P" Logic)	#09-56-932-00
(X1-X3 "A" Logic)	#09-56-933-00
(X4 "A" Logic)	#09-56-934-00

Parts List - Figure 10.3
Male Input Adapter Kit

REF. No.	PART NAME	QTY.
1	Input Adapter	1
2	Male Input Shaft	1
3	Hex Hd. Screw (X1 & X2) 3/8"-16 x 1-1/2" Lg..... (X3 & X4) 1/2"-13 x 2-1/4" Lg.....	4 4
4	Hex Nut (X1 & X2) 3/8"-16	4
	(X3 & X4) 1/2"-13	4
5	Lockwasher (X1 & X4) 3/8"	4
	(X3 & X4) 1/2"	4
6	Bearing	1
7	Key (X1 & X2) 3/16" Sq. x 3/4" Lg. (X3) 1/4" Sq. x 1-1/2" Lg. (X4) 5/16" Sq. x 1-1/2" Lg.	1 1 1

To order a complete Male Input Adapter Kit use the following Part Numbers:

X1 Posidyne	#02-X1-1A-KIT
X2 Posidyne	#02-X2-1A-KIT
X3 Posidyne	#02-X3-1A-KIT
X4 Posidyne	#02-X4-1A-KIT

Add a "W" after *KIT* for Washdown Duty.
 Example: #02-X1-1A-KITW

Add a "E" after *KIT* for White Epoxy Paint Finish.
 Example: #02-X1-1A-KITE

Parts List - Figure 10.3
Foot Mounting Kit
X1 and X2 Posidyne

REF. No.	PART NAME	QTY.
1	Foot Bracket	2
2	Hex Hd. Screw, 3/8"-16 x 3/4" Lg.....	2
3	Lockwasher, 3/8"	4
4	Hex Hd. Screw, 3/8"-16 x 1-1/2" Lg.....	2
5	Hex Nut, 3/8"-16	2

To order a complete Foot Mounting Kit use the following Part Number - *02-X1-FT-KIT*

Add a "W" after *KIT* for Washdown Duty.
 Example: #02-X1-FT-KITW

Add a "E" after *KIT* for White Epoxy Paint Finish.
 Example: #02-X1-FT-KITE

NOTE - This Foot Mounting Kit cannot be used on these *Posidyne* units without the Male Input Adapter Kit.

Parts List - Figure 10.3
Foot Mounting Kit
X3 and X4 Posidyne

REF. No.	PART NAME	QTY.
1	Foot Bracket	2
2	Hex Hd. Screw, 1/2"-13 x 1-1/4" Lg.	2
3	Lockwasher, 1/2"	4
4	Hex Hd. Screw, 1/2"-13 x 2-1/4" Lg.	2
5	Hex Nut, 1/2"-13	2

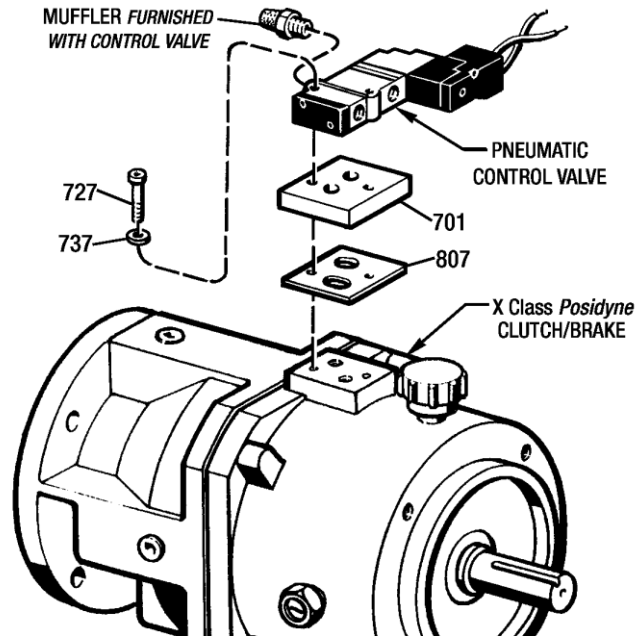
To order a complete Foot Mounting Kit use the following Part Number - *02-X4-FT-KIT*

Add a "W" after *KIT* for Washdown Duty.
 Example: #02-X3-FT-KITW

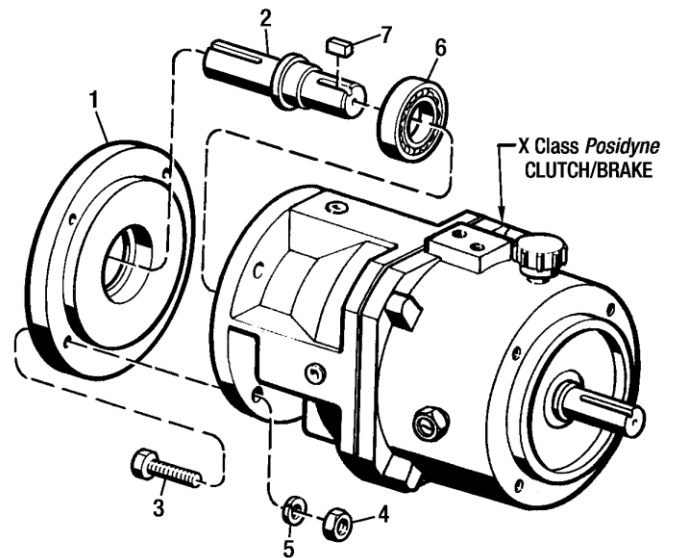
Add a "E" after *KIT* for White Epoxy Paint Finish.
 Example: #02-X1-FT-KITE

NOTE - This Foot Mounting Kit cannot be used on these *Posidyne* units without the Male Input Adapter Kit.

MANIFOLD MOUNTED VALVE KIT

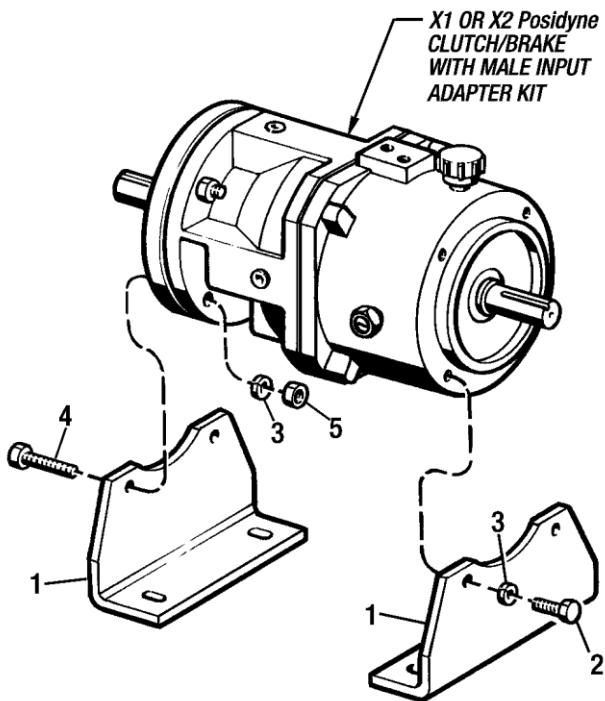


MALE INPUT ADAPTER KIT



FOOT MOUNTING KIT

Sizes X1 and X2 Posidyne



Sizes X3 and X4 Posidyne

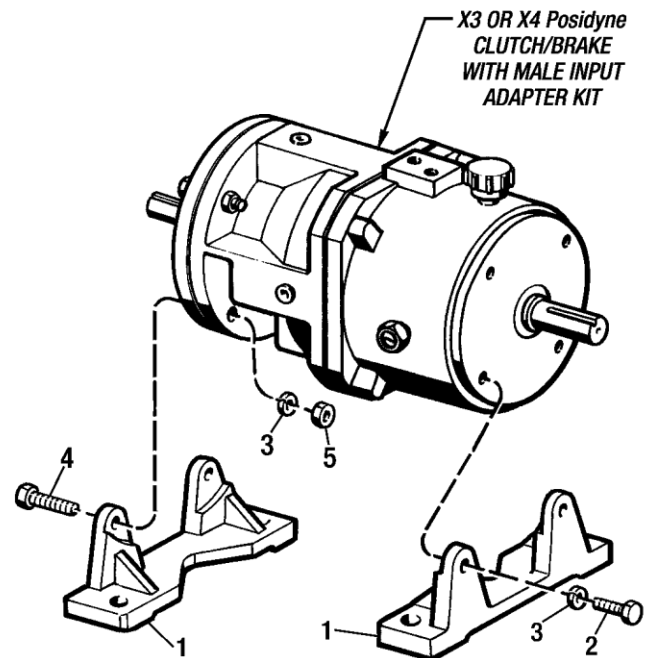
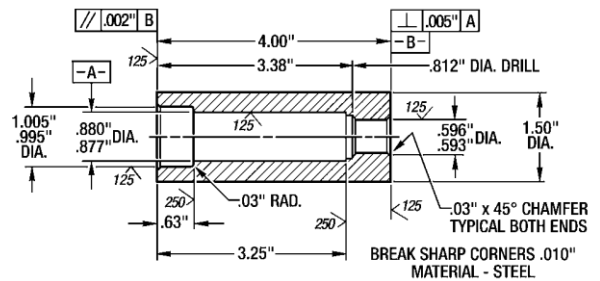
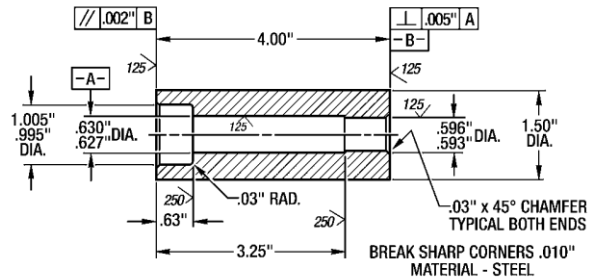
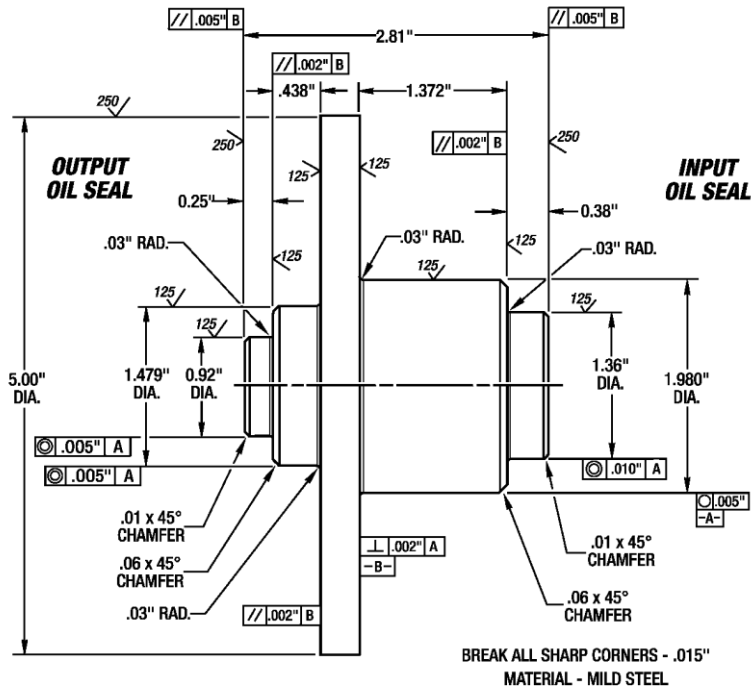


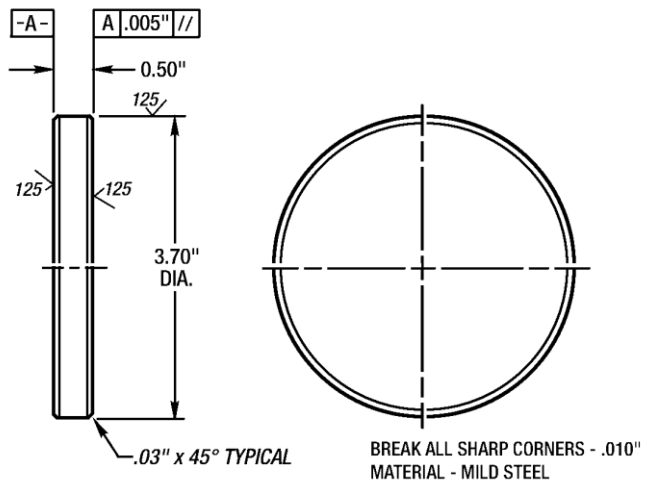
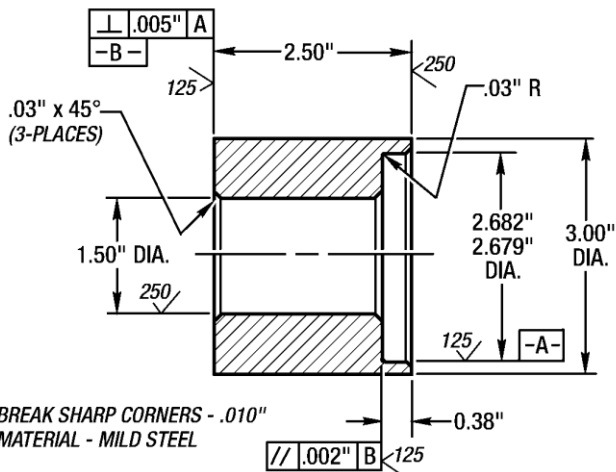
Figure 10.3 - Options - Manifold Mounted Valve Kit, Male Input Adapter Kit & Foot Mounting Kit

NOTE: Clutch/Brake Units must have a Male Input Shaft Adapter to be Foot Mounted.

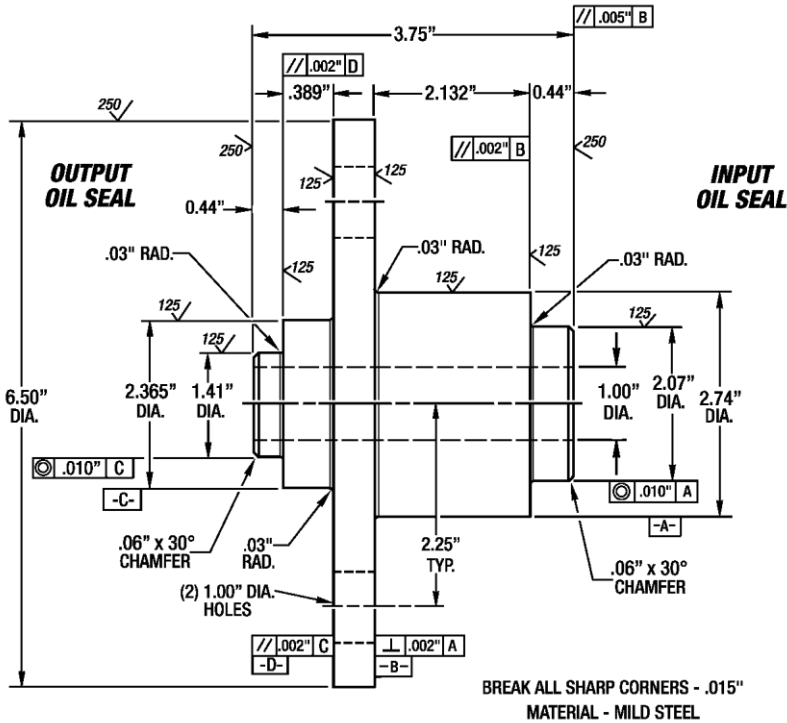
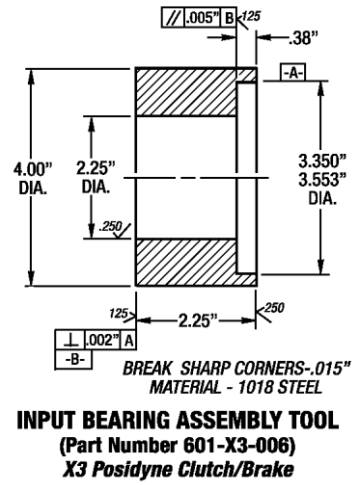
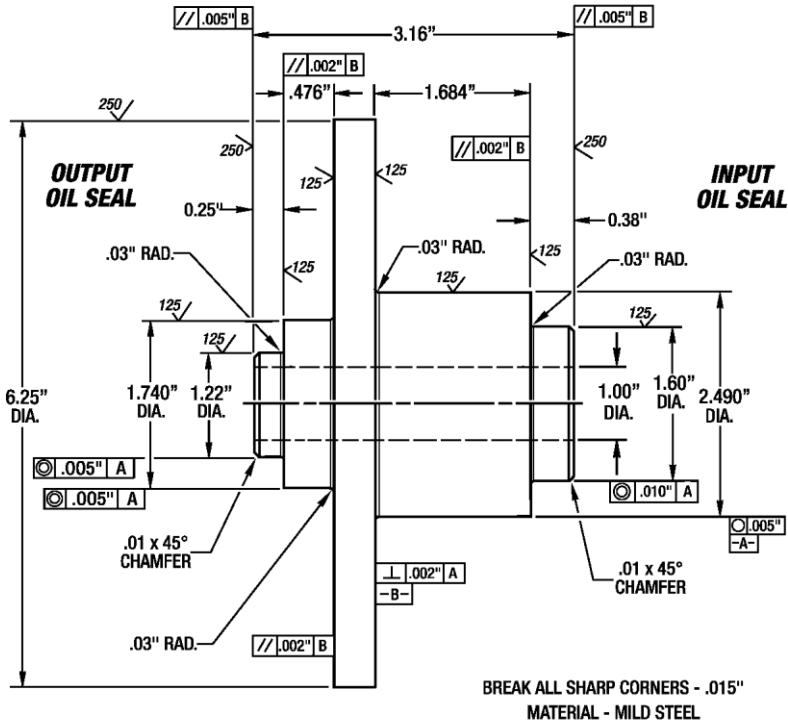
Section 11 SPECIAL ASSEMBLY TOOLS



OUTPUT BEARING ASSEMBLY TOOL



Contact Force Control for Assembly Tools for *Posidyne* sizes not shown.



Contact Force Control for Assembly Tools for *Posidyne* sizes not shown.

Manual Revision & Printing History

Posidyne X Class Clutch/Brake

REVISION NUMBER	REVISION DATE <i>(Mo./Yr.)</i>	PRINTING DATE <i>(Mo./Yr.)</i>	REVISION/ACTION DESCRIPTION	REVISION INITIATED BY: <i>(Name)</i>	REVISION MADE BY: <i>(Name)</i>
502-X1-002-01	4/04	-----	Added "C" Logic. Added Revision History.	Brooks	Brooks
502-X1-002-03	10/18	-----	Converted manual to Word document. Updated overhaul parts list. Added Revision History.	Fuhrman	Stoner

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*Providing today's industries with
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