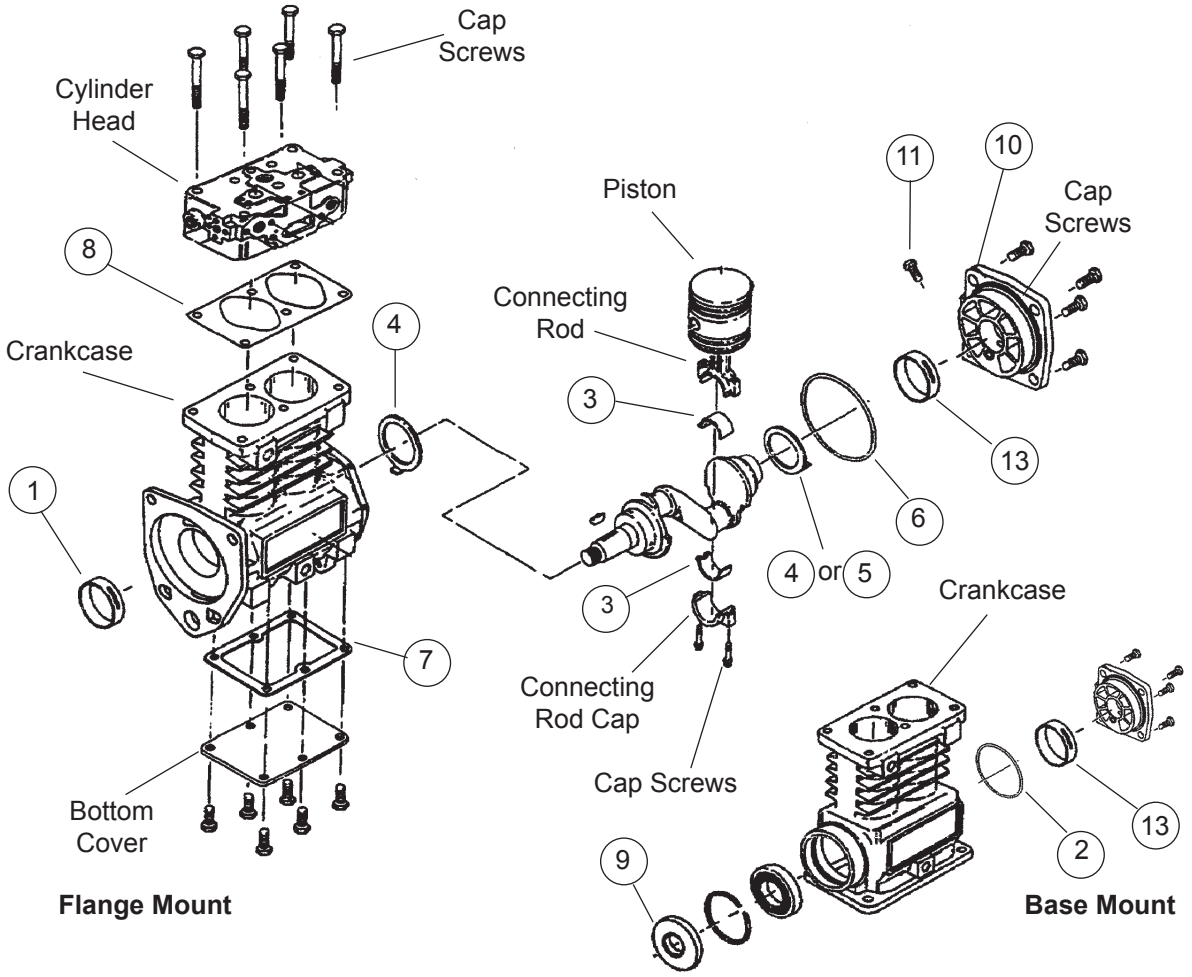
Installation Instructions

BENDIX® CRANKSHAFT BEARING KIT INSTALLATION INFORMATION



Kit Contents				
Item No.	Description	Quantity		
		Kit Pc. No. K092122	Kit Pc. No. 5006944	Kit Pc. Nos. 107969N, 5001340, 5001341 & 5001342
1	Front (or rear) Main Bearing	2	1	2
2	Rear End Cover Seal Ring - Base Mount Compressor (2.62 Dia.)	1	—	1
3	Connecting Rod Insert Sets (4 inserts)	1	1	1
4	Front or Rear Thrust Washer - (2.76 Dia.)	2	2	2
5	Rear Thrust Washer - (1.98 Dia.)	1	—	1
6	Rear End Cover Seal Ring - Flange Mount Compressor (3.83 Dia.)	1	1	1
7	Bottom Cover Gasket	1	1	1
8	Cylinder Head Gasket	1	1	1
9	Crankshaft Oil Seal (Front)	1	—	1
10	Rear End Cover Assembly (Bearing Installed)	1	—	—
11	1/8" Pipe Plug	2	—	—
12	O-Ring	1	1	1
13	Sleeve Bearing	—	1	—

Figure 1 – Bendix® Crankshaft Bearing Kit Exploded View and Kit Contents

GENERAL SAFETY GUIDELINES

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following guidelines should be observed AT ALL TIMES:

- **▲Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.**
- **▲Stop the engine and remove the ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically-charged components.**
- **▲Do not attempt to install, remove, disassemble or assemble a component until you have read, and thoroughly understand, the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.**
- **▲If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with a Bendix® AD-IS® air dryer system, a Bendix® DRM™ dryer reservoir module, or a Bendix® AD-9si® air dryer, be sure to drain the purge reservoir.**
- **▲Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.**
- **▲Never exceed manufacturer's recommended pressures.**
- **▲Never connect or disconnect a hose or line containing pressure; it may whip and/or cause hazardous airborne dust and dirt particles. Wear eye protection. Slowly open connections with care, and verify that no pressure is present. Never remove a component or plug unless you are certain all system pressure has been depleted.**
- **▲Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, wiring, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.**
- **▲Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.**
- **▲Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**
- **▲For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.**
- **▲The power MUST be temporarily disconnected from the radar sensor whenever any tests USING A DYNAMOMETER are conducted on a vehicle equipped with a Bendix® Wingman® system.**
- **▲You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.**

GENERAL

The Crankshaft Bearing Kit contains the crankshaft bearings and seals necessary to perform maintenance on the crankshaft of the Bendix® Tu-Flo® 550 and Tu-Flo® 750 Compressors. Please refer to the service manuals for complete service information (SD-01-333 for the Tu-Flo 550, or SD-01-344 for the Tu-Flo 750 model). Note: This instruction sheet covers several different kits with different kit contents. Parts not used should be discarded.

PREPARATION FOR DISASSEMBLY

1. Remove road dirt and grease from the exterior of the compressor with a cleaning solvent.
2. Before the cylinder head is removed, mark the crankcase in relation to the cylinder head. A convenient method to indicate the relationship is to use a metal scribe to mark the parts with numbers or lines. Do not use marking methods, such as chalk, that can be wiped off or obliterated during rebuilding.

REMOVAL AND DISASSEMBLY

These instructions are intended to be a guide. In some cases additional preparations and precautions may be necessary.

1. Block the wheels of the vehicle and drain the air pressure from all the reservoirs in the system.
2. Drain the engine cooling system and the cylinder head of the compressor. Identify, mark, and disconnect all air, water, and oil lines leading to the compressor.
3. Remove the governor, and any supporting brackets attached to the compressor, and mark their positions on the compressor to aid in reassembly.
4. Remove the discharge and inlet fittings, if applicable, and note their position on the compressor to aid in reassembly.
5. Before removing the cylinder head, drain the coolant from the compressor head in order to avoid coolant leakage into the compressor cylinder bores. This can be done by applying shop air to one of the water ports after the coolant lines are disconnected. Although it is not necessary to remove the compressor to service, the compressor can be removed by disconnecting the oil lines and removing the flange or base mounting bolts.
6. Remove and retain the six cylinder head cap screws and tap the head with a soft mallet to break the gasket bonding.
7. Remove and retain the six bottom cover cap screws and the bottom cover. For base-mount models, retain the mounting screws.
8. Scrape off any gasket material from the compressor base, crankcase, and cylinder head.

9. Mark the connecting rods and their caps to ensure correct reassembly. The connecting rod and cap are a matched set, therefore the caps must not be switched or rotated end-for-end.
10. Remove the connecting rod cap screws and connecting rod caps.
11. Push the pistons and connecting rods out of the cylinder bores. Remove the old connecting rod bearing inserts (3) from the connecting rod and cap.
12. Remove the four rear end cover or flange cap screws, rear end cover or flange, oil seal ring (6), rear thrust washer (5), crankshaft and front thrust washer (4). Press-out the sleeve bearing (1) or oil seal (9) from the crankcase.
13. If the rear end cover (10) is included in the kit, discard the removed end cover. If the cover is not included, remove the sleeve bearing (13).
14. Discard all components replaced by the kit you are installing.

    Note: For compressor models containing a rear ball bearing, the ball bearings must be purchased separately if replacement is necessary.

CLEANING

1. Taking care not to damage the crankcase and cylinder head, carefully remove any residual gasket material with a scraper. Make sure that no foreign matter enters the crankcase, since particles could lodge between the clearance of the bore and the piston.
2. If necessary, clean the top of the pistons in a similar manner to remove any deposited carbon.
3. All parts should be cleaned in a good commercial grade of solvent and dried prior to inspection.

INSPECTION

1. Inspect the crankcase and cylinder head for cracks or damage. If conditions are found that would prevent the cylinder head gasket (8) from properly sealing, replace the compressor.
2. Inspect all other components for signs of wear and damage. Replace as necessary.

ASSEMBLY

General Note: All torques specified in this manual are assembly torques and typically can be expected to fall off after assembly is accomplished. Do not re-torque after initial assembly torques fall unless instructed otherwise.

To convert in-lbs of torque to ft-lbs of torque, divide in-lbs by 12. (in-lbs ÷ 12 = ft-lbs.)

To convert ft-lbs of torque to in-lbs of torque, multiply ft-lbs by 12. (ft-lbs x 12 = in-lbs.)

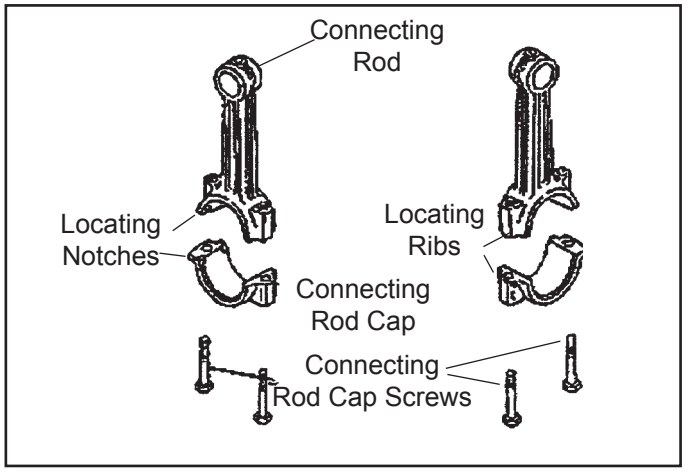


Figure 2 – Connecting Rod Assembly

1. Ensure that the slot in the bearings line up with the oil passages in the end cover (or flange) and crankcase. If you have a model with no oil passage present in the crankcase, press the sleeve bearing into the crankcase with the slot located 90° from vertical. *Note: This bearing kit contains multiple rear sleeve bearings. Use the bearing which pertains to the compressor being serviced and discard the remaining one(s). Note: If this kit contains a rear end cover (10), the sleeve bearing (13) is pre-installed.*
2. Install the front thrust washer (4) with the tang inserted in the slot toward the flange. Insert the crankshaft and the rear thrust washer, (4) or (5), with the tang toward the rear of the compressor.
3. Place the oil seal ring (6) on the rear end cover boss and install the end cover making sure not to pinch the seal ring. *NOTE: This kit contains multiple oil seal rings. Use the one that pertains to the compressor being serviced and discard the others.* Fasten the end cover to the crankcase with the four cover cap screws. Torque the cap screws to 175-225 in-lbs.
4. Rotate the piston rings in their respective piston groove so that each end gap is at least 90° from the previous ring's gap. Lubricate the pistons and rings with engine oil and, using a ring compression tool, return the pistons and connecting rods to their cylinder bores. *Note that the kit contains four inserts.* Install the bearing inserts and lubricate with engine oil. Make sure the locating tangs on the inserts engage with the locating notches in the rod and cap. Fasten each connecting rod and cap to the crankshaft with two cap screws. Locating ribs are incorporated in the cap and the connecting rod to ensure proper alignment. Torque the connecting rod cap screws to 135-155 in-lbs. Do not over-torque.
5. Fasten the bottom cover and gasket (7) with the six cover cap screws. For base-mount models, reinstall using bottom cover gasket (7) and screws retained during disassembly. Snug the cap screws prior to torquing to 175-225 in-lbs in a cross pattern.

6. Lay the new cylinder head gasket (8) in place aligned with the screw holes. *Note that the gasket included in this kit can be installed either way up.*
7. Install the cylinder head and cap screws.
8. Torque the cap screws to an initial 200 in-lbs, and then to 440-500 in-lbs, using a cross pattern across the head until all screws are within the torque specification. Test by applying shop air pressure to one of the coolant ports with all others plugged, and check for leakage by applying a soap solution to the exterior of the body. If leakage is detected, replace the cylinder head.
9. Re-torque the unloader cover cap screws to 175-225 in-lbs.
10. If the compressor was removed, reinstall it on the vehicle. Connect all air water and oil lines to their appropriate ports as marked in the disassembly procedure. If required, see the Bench Testing section that follows; otherwise start the engine and test fittings and gaskets for leakage using a soap solution. A one-inch bubble in five seconds is permitted.

If additional service information is needed, refer to the appropriate compressor service manual (SD-01-333 for the Bendix® Tu-Flo® 550, or SD-01-344 for the Tu-Flo® 750 model).

BENCH TESTING (IF REQUIRED)

Bench tests are not compulsory if the unit has been carefully rebuilt by an experienced technician.

In order to test a compressor under operating conditions, a test rack for correct mounting, cooling, lubricating, and driving the compressor is necessary. A compressor efficiency, or build-up test, can be run as follows:

An engine lubricated compressor must be connected to an oil supply line of at least 15 psi pressure during the test. An oil return line must also be installed to keep the crankcase drained.

Connect a reservoir with a volume of 1,500 cubic inches – including the volume of the connecting line – to the compressor discharge line. With the compressor operating at 2,100 RPM, the time required to raise the reservoir(s) pressure from 85 psi to 100 psi should not exceed 7 seconds for the Bendix Tu-Flo 550, or 5 seconds for the Bendix Tu-Flo 750 model. During this test, the compressor should be checked for gasket leakage and noisy operation, as well as unloader operation and leakage.

If the compressor functions as indicated, reinstall it on the vehicle, connecting all lines as marked during the disassembly procedure.