



16575425
Edition 1
December 2010

Air Pulse Tools

100P4 and 140P6 Models

Maintenance Information



Save These Instructions

 **Ingersoll Rand**

WARNING

Always wear eye protection when operating or performing maintenance on this tool.
Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool or before performing any maintenance on this tool.

Note: When reading the instructions, refer to exploded diagrams in parts Information Manuals when applicable (see under Related Documentation for form numbers).

Disassembly

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. When grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
3. Do not remove any part which is a press fit in or on an assembly unless the removal of that part is necessary for repairs or replacement.
4. Do not disassemble the tool unless you have a complete set of new gaskets and O-rings for replacements.
5. Use impulse Tool Rebuild Tools listed in Table 2 .

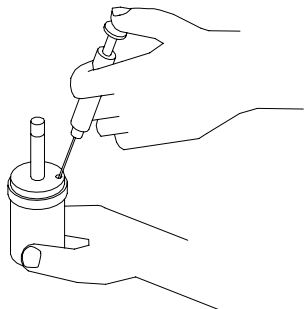
Changing The Mechanism Fluid

To change the Mechanism Fluid in the Impulse Mechanism, proceed as follows:

1. Using a hex wrench, remove the four mechanism Cover Bolts (71) and Spring Washers (70). Lift the Mechanism Cover (68) off of the Motor Housing (1). Remove the mechanism Cover Gasket (43).
2. Lift the assembled mechanism off the Rotor (39).
3. Using a 2 mm hex wrench, rotate the Torque Adjustment Screw clockwise until the Screw stops. Rotate the Screw counterclockwise until it stops or makes six complete revolutions.
4. Remove the Oil Plug (61) and Oil Plug Seal (60).
5. With the oil plug opening downward over a container, rotate the Drive Shaft to purge the fluid from the mechanism. As an alternate method, using the Syringe from the Fluid Replacement Kit (Part No. EQ106S-K400), purge the fluid from the first cavity. Then rotate the Drive Shaft to expose the second cavity and purge the fluid using the syringe.
6. Using the syringe and fluid from the Fluid Replacement Kit (Part No. EQ106S-K400), fill the mechanism with the fluid furnished in the Kit. (Refer to Dwg. TPD1265)

NOTICE

DO NOT SUBSTITUTE ANY OTHER FLUID. Failure to use the fluid provided could damage the tool, increase maintenance and decrease performance. Use only clean fluid in these tools.



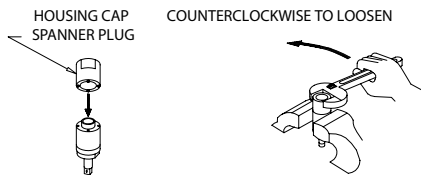
(Dwg. TPD1265)

7. Submerge the fill opening in the remainder of the fluid, and using a wrench, rotate the Drive Shaft to purge any remaining air from the system.
8. Thread the Oil Plug (61) with the Oil Plug Seal (60) into the mechanism until it is snug.
9. Using a 2 mm hex wrench, turn the Torque Adjustment Screw clockwise until it stops. This is the maximum torque position.

10. Wipe the outside of the mechanism dry and clean and remove the Oil Chamber Plug. Using the syringe, withdraw 1.2 cc of fluid for models 100P4 and 130P4 and 1.3 cc for model 140P6.
11. Install the Oil Plug and tighten it between 20 and 25 in-lb (2.3 and 2.8 Nm) torque.
12. Position a new Mechanism Cover Gasket (43) on the Motor Housing and install the assembled mechanism on the rotor shaft (39).
13. Place the mechanism Cover (68) Bushing (67) and Washer (66) over the Drive Shaft against the Housing and Gasket. Install the four Mechanism Cover Cap Screws and Lock Washers. Tighten each Screw between 45 and 50 in-lb (5.1 and 5.6 Nm) torque.

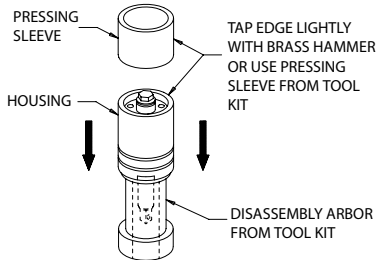
Disassembly of the Impulse Mechanism

1. Remove the Mechanism Cover Bolts (71) and Spring Washers (70) and lift the Mechanism Cover (68) off the Motor Housing (1).
2. Pull the mechanism assembly out of the Cover.
3. With the oil plug opening downward over a container, rotate the drive shaft to purge the oil from the mechanism. As an alternate method, using the syringe from the Fluid Replacement Kit (Part No. EQ106S-K400), purge the fluid from the first cavity. Then rotate the Drive Shaft to expose the second cavity and purge the fluid using the syringe.
4. Grasp the flats of the Liner Case (64) in vise jaws with the output end of the Drive Shaft downward.
5. Insert the pins of the Housing Cap Spanner Plug from the Tool Kit into the holes in the Housing Cap (44). Using a wrench on the plug, unscrew and remove the Liner Cap from the Housing Assembly. (Refer to Dwg. TPD1267)



(Dwg. TPD1267)

- Stand the Disassembly Arbor from the Tool Kit, large end downward, on a workbench or the table of an arbor press. Insert the output end of the Drive Shaft into the central opening and either tap the Housing downward off the components or use the Pressing Sleeve in the Tool Kit to press the Housing downward off the components. (Refer to Dwg. TPD1268)



(Dwg. TPD1268)

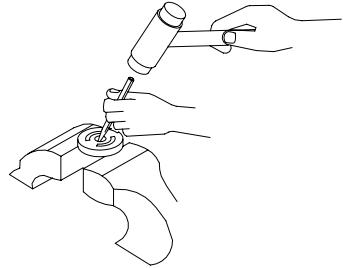
- Disassemble the components of the mechanism in the sequence shown in manual 16574782.

Disassembly of the Motor

- Grasp the Motor Housing (1) in vise jaws with the Motor Housing Cover (31) up.
- Remove the Motor Housing Cover Bolts (28). Remove the Motor Housing Cover and Motor Housing Cover Gasket (32) from the Motor Housing.
- Secure the Motor Housing in vise jaws with the motor bore in a horizontal position and handle pointing down. Using a plastic hammer, lightly tap the Housing surrounding the motor bore to loosen the motor. Tap Front End Plate and take the assembled motor out of the Motor Housing.
- Remove the Front End Plate (41), Front End Plate Bearing (42), Cylinder Assembly (37) and Vanes (40) from the Rotor.
- On the table of an arbor press, support the Rear End Plate (36) with blocks as close to the Rotor as possible and press the Rotor out of the Rear End Plate and Rear Rotor Bearing (35).
- To remove the Rear Rotor Bearing from the Rear End Plate, use a small drift or pin punch through the central opening of the Rear End Plate to tap the Bearing out of the End Plate. (Refer to Dwg. TPD1271)

NOTICE

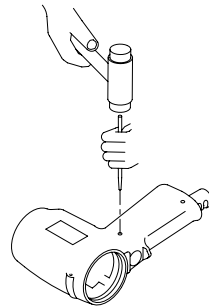
Do not enlarge or damage the shaft hole in the End Plate.



(Dwg. TPD1271)

Disassembly of Throttle and Exhaust Element

- Remove Rubber Grip (11).
- Using a pin punch, tap the Throttle Retaining Pin (12) out of the Handle. The Throttle Retaining Pin is protected by an embossed circular pad of metal. Insert the pin punch into the middle of the pad to locate the Pin. (Refer to Dwg. TPD1272)



(Dwg. TPD1272-1)

- Grasp the Trigger (24) and pull the assembled throttle out of the Motor Housing.
- Using a pin punch and without damaging the Trigger, remove the Trigger Pin (23). Slide the Trigger off of the shaft of the Throttle Rod (14).
- Grasp the Reverse Lever (25) and pull the Reverse Valve (27) from the front of the Throttle Bushing Assembly.
- Remove the Throttle Rod Assembly from the rear of the Throttle Bushing.
- Remove Throttle Rod O-ring (13) from the Throttle Rod.
- If it is necessary to replace the Reverse Lever or Reverse Valve, use a pin punch to tap out the Reverse Lever Pin (26) out of the Reverse Lever. Separate the Reverse Lever from the Reverse Valve.
- Unscrew and remove the Hose Joint (5).
- This will allow the Exhaust Cover (8) and Exhaust Elements (9, 9A, 9B) to be removed from the Hose Joint.
- Remove the O-ring (10) from the Motor Housing.

Assembly

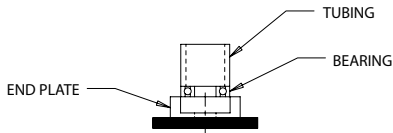
General Instructions

- When grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
- Always press on the inner ring of a ball-type bearing when installing the bearing on a shaft.

- Always press on the outer ring of a ball-type bearing when pressing the bearing into a bearing recess.
- Except for bearings and mechanism parts, always clean every part and wipe every part with a thin film of oil before installation.
- Wipe a thin film of mechanism fluid on all internal mechanism components before installing them in the mechanism.
- Apply a film of O-ring lubricant to every O-ring before installation.

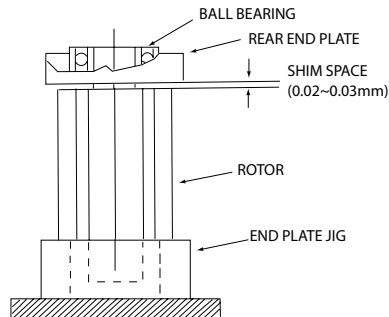
Assembly of the Motor, Throttle and Exhaust Element

1. Install the Exhaust Element (9, 9A) over the Exhaust Element (9B) and insert both inside the Exhaust Cover (8). Install the Exhaust Cover containing both Elements on the Hose Joint until it seats.
2. Install the O-ring (10) in the Motor Housing (1).
3. Thread the Hose Joint with the Exhaust components into the Motor Housing and tighten to 18-26 ft-lb (25-35 Nm) torque.
4. Install the Throttle Rod Seal (13) in the groove on the large hub of the Throttle Rod (14).
5. Put the Reverse Lever (25) on the Reverse Valve (27) and secure it with the Reverse Lever Pin (26).
6. Start the Reverse Valve into the Throttle Bushing (19). Install the Reverse Lever Detent Spring (21) in the hole in the Bushing. Set the Reverse Lever Detent Ball (22) on the Spring and while holding it in place, align the Ball with the detent hole in the Bushing. Push the Valve into the Bushing until the Reverse Lever Detent Ball seats in the detent hole.
7. Insert the Throttle Rod, shaft end first, through the rear of the Throttle bushing and through the Reverse Valve so that the hub of the Throttle Rod seats against the end of the Throttle Bushing.
8. Install the Trigger (24) on the Throttle Rod and secure it with the Trigger Pin (23).
9. Install the Throttle Retaining Pin (12) in the Housing, making sure that it captures the Throttle Bushing Assembly.
10. Using an arbor press and the End Plate Jig that contacts the outer ring of the bearings, press the Front End Plate Bearing (42) into the Front End Plate (41) and the Rear End Plate Bearing (35) into the Rear End Plate (36). (Refer to Dwg. TPD1274)



(Dwg. TPD1274)

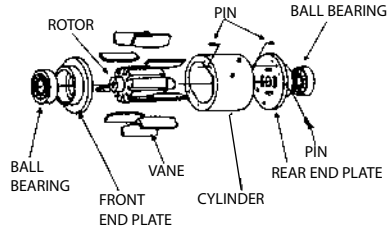
11. Stand the Rotor (39) on the table of an arbor press. It should be upright on a flat metal plate having a clearance hole for the shaft. The shaft with the hex must be upward.
12. Place a 0.001" (0.025 mm) shim on the upward surface of the large portion of the rotor body. Using a piece of tubing that contacts the inner ring of the bearing, press the Rear Rotor Bearing and Rear End Plate onto the shaft of the Rotor until the End Plate contacts the shim. Remove the shim. (Refer to Dwg. TP2202)



(Dwg. TP2202)

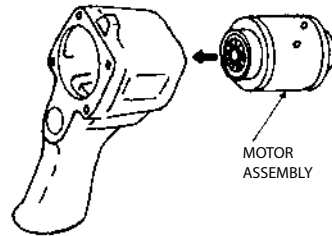
13. Coat each Vane (40) with a thin film of oil and insert a Vane into each of the rotor vane slots with the straight edge of the Vane outward.

14. Install the Cylinder (37) over the Vanes and Rotor with the end of the Cylinder having the Rear End Plate Alignment Pin (38). Make certain the Pin enters the hole in the face of the Front End Plate. (Refer to Dwg. TP2203).



(Dwg. TP2203)

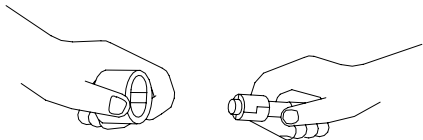
15. Place the Front End Plate and Bearing against the face of the Cylinder, Bearing end trailing.
16. Install the Motor Housing Cover O-rings (33) in the grooves in the rear of the Motor Housing.
17. Insert the assembly into the rear of the Motor Housing. It may be necessary to tap the assembly into position with a brass or plastic hammer.
18. Install the Motor Housing Cover Gasket (32) and Motor Housing Cover (31) on the rear of the Motor Housing. Secure it with the motor Housing Cover Bolts (28). Tighten to 40-50 in-lb (5.1-5.6 Nm) torque.



(Dwg. TP2204)

Assembly of the Impulse Mechanism

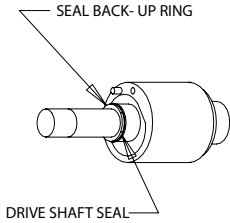
1. Insert the Relief Valve (49, 50, 51, 52, 53) into the Liner (48) as shown in manual 16574782.
2. Place a Blade (54) into one of the slots of the Drive Shaft (56) with the assembly holes inward.
3. From the opposite side of the Shaft, set a Blade Spring (55, 55A, or 55B) in the hole of a blade.
4. Compress the Springs with the Blades until both Blades are flush with the Drive Shaft and install the assembly in the Liner with the output end of the Drive Shaft protruding out the end of the Liner containing Adjust Bolt. Make certain the ends of the Blades are flush with the ends of the Liner. (Refer to Dwg. TPD1284).



(Dwg. TPD1284)

5A. For 100P or 130P:

Install the Drive Shaft Seal (57) first and then Seal Back-up Ring (58) on the Drive Shaft against the hub. (Refer to Dwg. TPD1285)

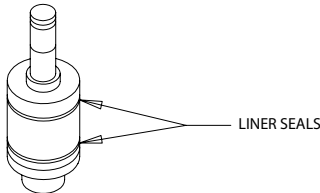


(Dwg. TPD1285)

5B. For 140P:

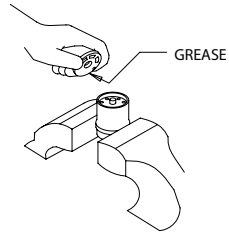
Install Drive Shaft Seal (57), Back-Up Ring (58) and Washer (63C) in order, to Front Liner Cover. Afterward, set the Retaining Ring (63B) in the groove.

- Align the pin holes in the face of the Rear Liner Cover (45) with the two Liner Pins (47) at the rear of the Liner and place the Cover against the Liner. A groove will be formed on Liner Cover. Do not attempt to put the Seal in the groove at this time.
- Install O-ring (52) and Back-Up Ring (53) to the Adjust Bolt (51).
- Align the pin holes in the Front Liner Cover (59) with the Pins in the front face of the Liner and place the Cover against the face of the Liner. Stand the assembly on the workbench with the output end of the Drive Shaft upward. (Refer to Dwg. TPD1288)



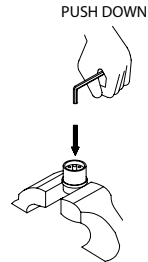
(Dwg. TPD1288)

- Apply a thin film of grease to the Liner O-rings (63).
- Lubricate the Liner Cover O-ring (46) and install it in the groove on the Liner Upper Plate (45).
- Lubricate the Front Liner Seal (63) and put it on the Front Liner Cover after orienting the Housing to the proper position, install the Housing over the Liner.
- Grasp the flats of the Housing (64) in vise jaws with the output spindle downward. (Refer to Dwg. TPD1289)



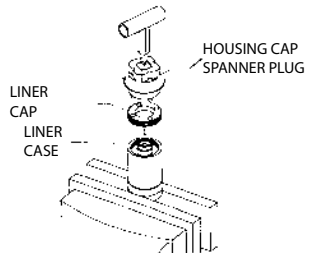
(Dwg. TPD1289)

- Install Liner Upper Plate (45) and use a hex socket to push it below the threads at the rear of the Housing. (Refer to Dwg. TPD1290)



(Dwg. TPD1290)

- Install the Liner Cap (44) and using the Housing Cap Spanner Plug furnished in the Tool Kit, tighten the Cap **100P** - 200 Nm (148 ft-lb), **130P** - 220 Nm (163 ft-lb) and **140P** - 240 Nm (177 ft-lb). (Refer to Dwg. TP2205)



(Dwg. TP2205)

- Make certain the Drive Shaft rotates freely and then fill the mechanism with fluid and reassemble the tool as instructed in the section, **CHANGING THE MECHANISM FLUID**.

Table 2 - Impulse Tool Rebuild Tools

Tool Name	Part Number	Tool Kit Number	Model Used On
Housing Cap Spanner Plug	100P4-A-HCT	100P4-99 and 130P4-99	100P4 and 130P4
Housing Cap Spanner Plug	140P6-A-HCT	140P6-99	140P6
Disassembly Arbor	100P4-B-HA	100P4-99 and 130P4-99	100P4 and 130P4
Disassembly Arbor	140P6-B-HA	140P6-99	140P6
Pressing Sleeve	100P4-C-HA	100P4-99	100P4
Pressing Sleeve	130P4-C-HA	130P4-99	130P4
Pressing Sleeve	140P6-C-HA	140P6-99	140P6
End Plate Jig	100P4-H-HA	100P4-99	100P4
End Plate Jig	130P4-H-HA	130P4-99	130P4
End Plate Jig	140P6-H-HA	140P6-99	140P6

Related Documentation

For additional information refer to:

Product Safety Information Manual 04584983.

Product Information Manual 80167547.

Maintenance Information Manual 16574782.

Manuals can be downloaded from www.ingersollrandproducts.com.

Notes:

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