



16575292
Edition 2
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Air Screwdrivers and Angle Wrenches

Series 41

Maintenance Information



Save These Instructions

IR *Ingersoll Rand*[®]

Product Safety Information

WARNING

- Failure to observe the following warnings, and to avoid these potentially hazardous situations, could result in death or serious injury.
- Read and understand this and all other supplied manuals before installing, operating, repairing, maintaining, changing accessories on, or working near this product.
- Always wear eye protection when operating or performing maintenance on this tool. The grade of protection required should be assessed for each use and may include impact-resistant glasses with side shields, goggles, or a full face shield over those glasses.
- Always turn off the air supply, bleed the air pressure and disconnect the air supply hose when not in use, before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool or any accessory.

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

Lubrication

Each time a Series 41 Screwdriver is disassembled for maintenance and repair or replacement of parts, lubricate the tool as follows:

1. Lubricate the clutch with **Ingersoll Rand** No. 105 or **Ingersoll Rand** No. 115 Grease.
 2. Lubricate the gearing with **Ingersoll Rand** No. 105 Grease.
 3. Use **Ingersoll Rand** No. 10 Oil for lubricating the motor. Inject approximately 1 to 2 cc of oil into the air inlet before attaching the air hose.
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Disassembly

General Instructions

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. Whenever 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 a subassembly 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 replacement.
5. Do not press any needle bearing from a part unless you have a new needle bearing on hand for installation. Needle bearings are always damaged during the removal process.

Disassembly of the Right-Angle

NOTICE

The Clutch Housing (91) has left-hand threads.

1. Using wrenches on flats of Clutch Housing or Ring Gear (36) or (49) and Lock Nut (102), loosen Nut completely and pull the Right Angle from tool.
2. Remove Lock Nut (124) or (142), releasing drive assembly.

NOTICE

The Right Angle Housing (97) has left-hand threads.

3. Remove Lock Nut (99) from Housing.

NOTICE

Do not disassemble further unless damage is evident.

4. To disassemble, pull Pinion (96) or (107) from Housing.
5. Remove Retaining Ring (93) or (104) and Spacer (94) or (105) to allow removal of Needle Bearing (95) or (106).

Disassembly of the Clutch

1. Remove Right Angle from tool.
2. Clamp tool in leather-covered or copper-covered vise jaws, clamping on Inlet Adapter (2).

NOTICE

The Clutch Housing (91) has left-hand threads.

3. Remove Clutch Housing using a strap type wrench.
4. Remove clutch assembly from tool.
5. Clamp drive end of Driven Jaw (88) in leather-covered or copper-covered vise jaws, being careful not to damage Driven jaw.
6. Remove snap ring (71).
7. Using a 7/8" wrench, remove Adjustment Nut (72), Adjustment Washer (75) and Clutch Spring (76).

NOTICE

Removal of Ball Sleeve (80) releases six Balls (85) and Plunger (83).

8. Remove Retaining Rings (77) and slide off Guide (78), Spring (79), Ball Sleeve, six Balls, Plunger, Thrust Race (81) and Thrust Bearing (73).

NOTICE

Removal of Thrust Race (82) releases six Balls (87).

9. Remove Thrust Race, releasing Six Balls.
10. Remove Retaining Ring (89) and then rotate Driven jaw to remove twelve Balls (86). Separate driven jaw and spindle (84), releasing eleven Balls (86).

Disassembly of the Gearing

1. Remove Angle Head Assembly and Clutch Assembly from tool.
2. Remove Ring Gear (36) or (49) using a wrench on flats.
3. Remove Snap Ring (40) and Washer (39) where applicable.
4. Remove Spindle(s) and Gears from Ring Gear.

NOTICE

Keep Gears grouped with mating spindle when disassembling double reduction gearing.

NOTICE

Do not remove Bearing (38) or Spacer (37) unless damage is evident.

5. To remove Bearing and Spacer from Ring Gear, press on Spacer from inside splined end of Ring Gear.

NOTICE

Do not remove Gear (32) or (43) from Carrier Assembly (51) unless damage is evident. Gears are press fit onto Carrier Assemblies.

NOTICE

Disassembly of the Motor:

1. Remove Right-Angle, Clutch Assembly and gearing from tool.
2. Remove Spacer (31) and throttle Rod (21).
3. Tap front edge of Housing to remove motor assembly. Locating Pin (29) should also come out.
4. Tap splined end of Rotor (25) with a soft faced hammer; motor will come apart.

NOTICE

Bearing (28) is light press fit on Rotor.

5. Remove End Plate (23) and Bearing (22) from Rotor.

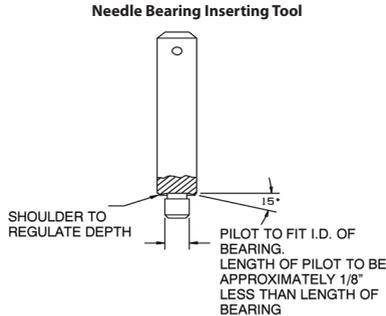
Disassembly of the Housing

1. Clamp Air Inlet Adapter (2) in leather-covered or coppercovered vise jaws.
2. Unthread Head (7) using a wrench on flats.
3. Remove Spacer (3), Diffuser Washer (4), Exhaust Cap (5) and Fillers (6).
4. Remove Screen (1) from Inlet Adapter.
5. Remove Screw (12) and O-Ring (13), releasing Spring (14) and Valve Stem (16).
6. Clamp Head in leather-covered or copper-covered vise jaws.
7. Using a strap type wrench, unthread and remove Housing (11) from Head.
8. Remove Reverse Ring (9) and O-Ring (149). This will permit removal of O-Ring (10) and O-Rings (150).
9. Remove Valve Assembly (19) and Spring (20), where applicable.

Assembly

General Instructions

1. Always press on the inner ring of a ball-type bearing when installing the bearing on a shaft.
2. Always press on the outer ring of a ball-type bearing when pressing the bearing into a bearing recess.
3. Whenever grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws. Take extra care with threaded parts and housings.
4. Always clean every part and wipe every part with a thin film of oil before installation.
5. Apply a film of O-Ring lubricant to all O-Rings before final assembly.
6. Check every bearing for roughness. If an open bearing must be cleaned, wash it thoroughly in a suitable cleaning solution and dry with a clean cloth. **Sealed or shielded bearings should never be cleaned.** Work grease thoroughly into every open bearing before installation.
7. Unless otherwise noted, always press on the stamped end of a needle bearing when installing a needle bearing into a recess. Use a bearing inserting tool similar to the one shown in Dwg. TPD786.



(Dwg. TPD786)

Assembly of the Housing

1. Lubricate O-Ring of a Valve Assembly (19) and install Spring (20) and Valve Assembly to Housing (11), where applicable.
2. Lubricate and install O-Rings (10) and (150) on Housing.
3. Lubricate and install O-Ring (149) on Reverse Ring (9) and install Reverse Ring on Housing.
4. Lubricate and install O-Ring (8) on Head.
5. Install Housing (11) on Head (7), tightening with a wrench on flats of Head and a strap wrench on Housing.
6. Lubricate and install O-Ring (15) on Valve Stem (16).
7. Lubricate Valve Stem with **Ingersoll Rand** No. 10 Oil and install in Head.
8. Install Spring (14) in Head, securing with O-Ring (13) and Screw (12).
9. Install two Fillers (6) in Exhaust Cap (5).
10. Install Exhaust Cap (5) in Head, aligning Lever with Valve Stem.
11. Install Diffuser Washer (4) and Spacer (3) in Head, securing with Inlet Adapter (2).
12. Using a suitable cleaning solution in a well-ventilated area, clean and install Screen (1) in Inlet Adapter.

Assembly of the Motor

1. Lubricate Bearing (22) with the recommended lubricant.
2. Assemble Bearing to End Plate (23), pressing on outer race of Bearing.
3. Install End Plate (23) on Rotor, pressing on inner race of Bearing.
4. Coat Vanes (24) with **Ingersoll Rand** No. 10 Oil and install in rotor slots, straight side out.
5. Coat inside of Cylinder (26) with **Ingersoll Rand** No. 10 Oil and install over Rotor.

NOTICE

Air inlet slots in end of Cylinder must be aligned with two air inlet holes in End Plate (23).

6. Assemble Bearing (28) on End Plate (27), pressing on outer race of Bearing.
7. Assemble End Plate (27) on Rotor, pressing on inner race of Bearing.

NOTICE

Be sure Rotor turns without binding.

8. Insert Pin (29) into 0.096" diameter blind hole at bottom of motor cavity in Housing.
9. Align notches of End Plates and Cylinder and install motor into Housing, aligning notches with Pin.
10. Lubricate O-ring (30) and install on End Plate.
11. Install Spacer (31) on motor.

NOTICE

Assemble Spacer with groove facing gearing.

12. Coat Throttle Rod (21) with **Ingersoll Rand** No. 10 Oil and insert into Rotor.
13. Assemble gearing, Clutch Assembly and Right-Angle Assembly on tool.

Assembly of the Gearing

1. Assemble Spacer (37) and Bearing (38) into Ring Gear (36) or (49), pressing on outer race of Bearing.
2. Coat shafts of Spindle with **Ingersoll Rand** No. 105 Grease.
3. Assemble Gears and Bearings (34) on shafts of mating Spindle.
4. **For Models 41AA6 and 41AA9**, install Carrier Assembly (51) on Spindle Assembly (35) or (50).
5. Lubricate sets of Gears with **Ingersoll Rand** No. 105 Grease.
6. Assemble Spindle and Gearing into Ring Gear. Rotate Spindle and Gears to align gear teeth with splines of Ring Gear.
7. Assemble Washer (39) and Snap Ring (40) on Spindle, where applicable.
8. Thread Ring Gear on tool and tighten by using wrench on flats.
9. Install Clutch Assembly and Right-Angle Assembly on tool.

Assembly of the Clutch

1. Lubricate ball grooves of Spindle (84) with the recommended lubricant and install eleven Balls (86) into groove.
2. Assemble Spindle into Driven Jaw (88), securing Balls.
3. Assemble twelve Balls (86) into Driven jaw and secure with Retaining Ring (89).
4. Lubricate ball pockets of Driven Jaw with the recommended lubricant and install six Balls (87) into pockets, securing with Thrust Race (82).
5. Lubricate Thrust Bearing (73) and Thrust Race (81) with the recommended lubricant and install on Spindle.
6. Coat Plunger (83) with the recommended lubricant and install on Spindle, securing with Balls (85).

NOTICE

Assemble two Balls per hole.

7. Secure Balls with Ball Sleeve (80).
8. Assemble Spring (79) and Guide (78) on Spindle, securing with Retaining Rings (77).
9. Install Clutch Spring (76).
10. Lubricate face of Adjustment Washer (75) with **Ingersoll Rand** No. 67 Grease and install on Spindle.
11. Thread Adjustment Nut onto Spindle, securing with Snap Ring (71).
12. Lubricate Bearing (74) with the recommended lubricant and install on Driven jaw, pressing on inner race of bearing.
13. Install clutch assembly in tool.

NOTICE

Clutch Housing (91) has left-hand threads.

14. Assemble Clutch Housing on tool.

NOTICE

Right Angle Assembly has left-hand threads.

15. Install Right-Angle Assembly on tool.
16. Adjust clutch. See Clutch Adjustment in Product Information Manual(s) - 80167380 or 80167398.

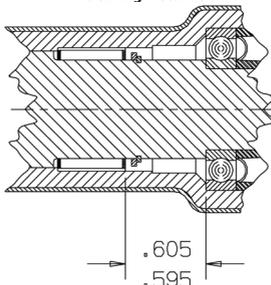
Assembly of the Right Angle

1. Lubricate Bearings with the recommended lubricant before assembly.
2. Install Needle Bearing (95) or (106) and Spacer (94) or (105) on Pinion, securing with Retaining Ring (93) or (104).

NOTICE

Bearing (106) is to be located .006" from shoulder on pinion. See Dwg. TPD1528.

Bearing Installation



(Dwg. TPD1528)

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3. Install Bearing (100) on Pinion, pressing on inner race of Bearing.
4. Assemble Pinion and Components in Housing, pressing on outer race of Bearing.

NOTICE

Lock Nut (99) has left-hand threads.

5. Install Lock Nut on Housing, securing Pinion.
6. Apply approximately 3/32 oz. of the recommended lubricant to Right Angle gearing upon assembly.

NOTICE

The Right Angle Housing (97) has left-hand threads.

7. Assemble Drive assembly to Lock Nut (124) or (142) or Finder Housing (118) or (138) and assemble to Right- Angle Housing.
8. Assemble Lock Nut (102) to Housing, securing with Snap ring (101).

NOTICE

The Right Angle Housing has left-hand threads.

9. Install Right-Angle Housing and components on tool, securing with Lock Nut (102).

Related Documentation

For additional information refer to:

Product Safety Information Manual Form 04585006.

Product Information Manual Form 80167380 and 80167398.

Parts List Manual Form 16574600.

Manuals can be downloaded from ingersollrandproducts.com.

Notes:

ingersollrandproducts.com

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