



45595642

Edition 1

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## Geared Offset Heads

Models D1610-A147 and D1411-A147

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# Maintenance Information



Save These Instructions

 **Ingersoll Rand**

**WARNING**

Always wear eye protection when operating or performing maintenance on this tool.

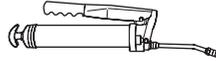
Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool or before performing any maintenance on this tool.

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

**Lubrication**

**WARNING**

Do not grease excessively. Too much lubricant will result in overheating. Grease leakage from the Spindle end is an indication of excessive lubrication.



**Ingersoll Rand No. 28**

Whenever an offset Head is disassembled for overhaul or replacement of parts, lubricate all parts lightly with Ingersoll Rand No. 28 grease.

After Each 40 hours of operation, inject 0.5 cm<sup>3</sup> of Ingersoll Rand No. 28 grease into grease fitting.

**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.

**Disassembly of Model D1610 Geared Offset Head**

1. Carefully grasp the Gear Offset Head in copper or leather-covered Vise jaws with Drive Gear (807) facing upward.

**NOTICE**

In the following step, the Spindle Bearing Cap has a left-hand thread.

2. Loosen and remove Spindle Bearing Cap (804) from Housing Cover (810).
3. Use a 5/32 Hex. Wrench to loosen and remove Screw (809).
4. Slide Coupling Nut (803) back and remove Retainer (802) from the Housing Cover. Slide the Coupling Nut off the Housing Cover.
5. Use Snap Ring Pliers to remove Retainer (805) from the Housing Cover.
6. Tip the Housing Cover and pull Drive Gear (807) free of the Housing Cover.
7. Bearing (806) and Washer (808) may now be removed from the Drive Gear.
8. Use a 3/16 Hex Wrench to loosen and remove Cap Screws (829) and Lock washers (828). When the Cap Screws are removed the Housing will separate into four pieces: Gear Housing (801), Housing Cover (810), Gasket (811), and Extension Adapter (827).
9. Pull Idler Gear (814), Washer (813) and Washer (815) out of the Gear Housing. Remove the Washers from the Idler Gear Shaft.
10. Pull Spindle Drive (819), Washer (817), Bearing (818) and Washer (820) out of the Gear Housing. Remove Washers and Bearing from the Spindle Drive.
11. Place the flat side of Housing Cover (810) on a wooden block on an Arbor Press table with the Splined Hub end away from you. Use a round metal rod and the Press to remove Bearing (812) from the center hole in the Housing Cover.
12. Turn the Housing Cover 180 degrees to position it on the wooden block flat side up. Use a round metal rod and the Press to remove Bearing (816) from the bottom hole in the Housing Cover.

13. Place Gear Housing (801) flat side up on the wooden block. Use a round metal rod and the Press to remove Bearing (821), Bearing (822), Bearing (823), and Seal (824) from the Gear Housing.
14. Remove Grease Fitting (826) and Washer (825) from the Gear Housing.

**Disassembly of Model D1411 Geared Offset Head**

1. Carefully grasp the Geared Offset Head in copper or leather-covered Vise with the Drive Gear (861) facing upward.

**NOTICE**

In the following step, the Spindle Bearing Cap has a left-hand thread.

2. Loosen and remove Spindle Bearing Cap (854) from Gear Housing (851).
3. Slide Coupling Nut (853) back and remove Retainer (852) from the Housing. Slip the Coupling Nut off the Housing.
4. Use Snap Ring Pliers to remove Retainer (855) from the Housing.
5. Use a 3/16 Hex Wrench to loosen and remove Cap Screws (880) and Lockwashers (879). When the Cap Screws are removed the Spacer (876) will be detached from the Gear Housing.
6. Pull Drive Gear (861), and Bearing (856) out of the Gear Housing.
7. The Bearing may now be removed from the Drive Gear.
8. Pull spindle Drive (875), Bearing (877), Seal (878), and Washer (876) out of the Gear Housing.
9. The Bearing, Seal, and Washer may now be removed from the Spindle Drive.
10. Use a 3/16 Hex Wrench to loosen and remove Cap Screws (873) and Lockwashers (872). When the Cap Screws are removed the Housing Cover (871) can be separated from the Gear Housing by pulling the Housing Cover away from the Housing and off Pin (859). Remove Gasket (860).
11. Place the Housing Cover on a wooden block on an Arbor Press table with the end having the four mounting screw recesses facing up. Use a round metal rod or a bearing insertion tool, press Bearing (868) and Bearing (870) out of the Housing Cover.
12. Pull Idler Gear (869) and Washer (864) out of the Gear Housing. Remove the Washer from the Idler Gear Shaft.
13. Place Gear Housing (851) on the wooden block with the Splined Hub end down. Use a round metal rod and the Press to remove Cap (865) from the Gear Housing.
14. Rotate the Gear Housing 180 degrees to position it on the wooden block flat side down. Use a 3/16 Hex Wrench to loosen and remove Plug (862) then, use a round metal rod and the Press to remove Bearing (863), Bearing (866), and Bearing (867) from the Gear Housing.
15. Remove Grease Fitting (858) and Washer (857) from the Gear Housing.

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## Assembly

### General Instructions

1. 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.
2. Always clean every part and wipe every part with a thin film of oil before installation.
3. Apply a film of O-ring lubricant to all O-rings before final assembly.

### Assembly of Model D1610 Geared Offset Head

1. Lubricate all parts lightly with **Ingersoll Rand** No. 28 grease.
2. Place the flat side of Gear Housing (801) on a wooden block on an Arbor Press table and press Bearing (821), Bearing (822), Bearing (823), and Seal (824) into the Gear Housing.
3. Place Washer (825) over the threaded shaft of Grease Fitting (826) and install the Grease Fitting in the Gear Housing. Set the assembled Gear Housing aside until needed.
4. Place the flat side of Housing Cover (810) on the wooden block with the Splined Hub end away from you and press Bearing (816) into the bottom hole in the Housing Cover.
5. Turn the Housing Cover 180 degrees to position it on the wooden block flat side up. Use a round metal rod and the Press to install Bearing (812) against the shoulder in the center hole in the Housing Cover.
6. Grasp the Housing Cover from the flat side and slip Coupling Nut (803) over the splined end of the Housing Cover. Use snap ring pliers to install Retainer (802) in the groove of the spline.
7. Use a 5/32 Hex Wrench to tighten Screw (809) into the Housing Cover. Tighten between 12 and 18 in-lb (1.4 and 2.0 Nm) torque.
8. Slide the Bearing (818) and Washer (817) onto Spindle Drive (819) and insert the Spindle Drive into the Bearing in the lower hole in the Housing Cover. Place the Washer (820) on the Spindle Drive.
9. Slide Washer (813) onto the shaft of Idler Gear (814). Insert the idler gear shaft into the Bearing in the center hole in the Housing Cover. Slide Washer (815) onto the gear shaft.
10. Set Gasket (811) in position against the Housing Cover. Align and assemble the Gear Housing with the Housing Cover.
11. Position the Extension Adapter (827) against the Housing Cover and fasten the Housing Cover, Gear Housing and Adapter together using the Cap Screws (829) and Lock Washers (828). Tighten the Cap Screws between 12 and 18 in-lb (1.4 and 2.0 Nm) torque.
12. Press Bearing (806) on Drive Gear (807) with the ground surface of the Bearing facing the Drive Gear. Press against the painted surface of the Bearing.
13. Slide Washer (808) onto the Drive Gear and insert the Drive Gear into the Housing Cover.
14. Carefully grasp the Geared Offset Head in copper or leather-covered Vise jaws with drive end facing upward.
15. Install retainer (805) in the Housing Cover using Snap Ring Pliers.

#### NOTICE

**In the following step, the Spindle Bearing Cap has a left-hand thread.**

16. Apply Perma-Loc LH050 Pipe Sealant\* to the first two threads of Cap (804) and screw the Cap into the Housing Cover. Tighten the Cap between 60 and 65 in-lb (6.75 and 7.35 Nm) torque.

### Assembly of Model D1411 Geared Offset Head

1. Lubricate all parts lightly with **Ingersoll Rand** No. 28 grease.
2. Place Housing Cover (871) on a wooden block on an Arbor Press table with the end having the four mounting screw recesses facing down. Using a round metal rod or a bearing insertion tool and the Press, install Bearing (868), Bearing (870), and Bearing (877) into the Housing Cover. Set the Housing Cover aside until needed.
3. Press the Bearing (856), stained side trailing, onto the hub at the spline end of the Drive Gear (861).
4. Secure the Bearing to the Drive Gear using snap ring pliers to install the retainer (855) in the groove on the shaft of the gear.
5. Position the Gear Housing (851) on a wooden block with the spline hub downward. Using bearing inserting tools, press Bearing (863), Bearing (866) and Bearing (867) into the Gear Housing.

#### NOTICE

**In the following step, the Spindle Bearing Cap has a left-hand thread.**

6. Press Pin (859) into the Gear Housing.
7. Insert the Drive Gear, bearing end trailing, into the central opening of the Gear Housing. Insert it from the end having the large splined hub.
8. Apply Perma-Loc LH050 Pipe Sealant to the first two threads of Cap (854) and screw the Cap into the Gear Housing. Tighten the Cap between 60 and 65 in-lb (6.75 and 7.35 Nm) torque.
9. Insert Washer (864), Idler Gear (869), and Spindle Drive (877) into the Gear Housing making certain that the gear teeth are properly meshed.
10. Place the Housing Cover (871) over the Spindle Drive and slide it into position just short of the point where the gears on the Spindle Drive mesh with the Idler gears.
11. Place Gasket (860) on the Gear Housing flange.
12. Carefully join the Gear Housing and the Housing Cover making certain that the shafts protruding from the Gear Housing are properly aligned with the Bearings in the Housing Cover. The Pin in the Gear Housing must align with the locating hole in the Housing Cover.
13. Fasten the Gear Housing to the Housing Cover using four Cap Screws (873) and four Lockwashers (872). Tighten the Cap screws between 12 and 18 in-lb (1.4 and 2.0 Nm) torque.
14. Fasten Spacer (874) to the Housing Cover using three Cap Screws (880) and three Lockwashers (879). Tighten the Cap Screws between 12 and 18 in-lb (1.4 and 2.0 Nm) torque.
15. Place Washer (857) over the thread shaft of Grease Fitting (858) and install the Grease Fitting in the Gear Housing. Set the assembled Gear Housing aside until needed.
16. Carefully grasp the Geared Offset Head in copper or leather-covered Vise jaws with the large spline end facing upward. Slip Coupling Nut (853) over the splined end of the Gear Housing. Install Retainer (852) in the groove on the splined end of the Gear Housing.
17. Install Plug (862) and Cap (865) in the Gear Housing.
18. Press Seal (878) onto the Spindle Drive and down into the Housing Cover.

\* Product of National Starch and Chemical Corporation

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### Related Documentation

For additional information refer to:  
Product Safety Information Manual 16573685.  
Product Information Manual 16576951.  
Parts Information Manual 04581021.

Manuals can be downloaded from [www.irttools.com](http://www.irttools.com).

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