



45761848
Edition 2
October 2009

Air Die Grinder

AC4A, SC4A and XC4A Series

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

Whenever one of these Grinder is disassembled for overhaul or replacement of parts, lubricate the tool as follows:

1. Always wipe the Vanes with a light film of oil before inserting them into the vanes slots.
2. Inject 0.5 to 1.0 cc of **Ingersoll Rand** No. 10 oil into the air inlet Assembly after assembly.

3. Whenever a new Wick is installed, soak the Wick in approximately 1-1/2 cm³ of **Ingersoll Rand** No. 63 or No. 10 oil. Do not substitute any other oil.
 4. Always apply 1.5~2 cc **Ingersoll Rand** No. 67 grease into Bevel Gear and wick cavity in the Angle Head. Do not substitute any other grease.
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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 bearing are always damaged during the removal process.

Tool special instructions

Steps common to all Straight Models

1. Remove the Housing Nut using wrench.
2. Remove the Clamp Nut using wrench.
3. Pull the Motor subassembly out of the Motor Housing.
4. Disassemble the Motor.

Steps common to all Extended Models

1. Remove the Housing Nut using wrench.
2. Remove the extension Housing using wrench.
3. Remove the Arbor Coupling.
4. Pull the Motor subassembly out of the Motor Housing.
5. Disassemble the Motor.
6. Disassemble the extension Housing subassembly.

Steps common to all Angle Models.

1. Remove the Angle Head Cover.
 2. Remove the Housing Nut using wrench.
 3. Unscrew Clamp Nut from Housing using wrench, remove the Angle Housing subassembly.
 4. Pull the Motor subassembly out of the Motor Housing.
 5. Disassemble the Motor.
 6. Disassemble the Angle Housing subassembly.
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Assembly

General Instructions

1. Always press on the **inner** ring of a ball-type bearing when installing the bearing on a shaft.
2. Whenever grasping a tool or part in a vise, always use soft sided vise jaws. Take extra care not to damage threads or distort housings.

Disassembly of Angle Housing Subassembly

1. Pull out the Wick from Angle Housing Groove using pliers.
2. Unscrew Bearing Retainer Nut from Angle Housing (left hand thread).
3. Pull out the Arbor subassembly from Angle Housing.
4. Support the Rear Bearing Inner Race, press the Arbor out of the Bearing.
5. Support the Gear, press the Arbor out of the Gear.
6. Remove the Key from Arbor.
7. Support the front Bearing Outer Race, press the Arbor out of the Bearing.
8. Remove the Spacer and Bearing Retainer Nut from Arbor.

Disassembly of Extension Housing Subassembly

1. Lock the Collet body at front flats, unscrew and remove the Coupling Nut.
2. Remove the Ball Bearing from back, and remove the Collet body from front.

Disassembly of the Motor

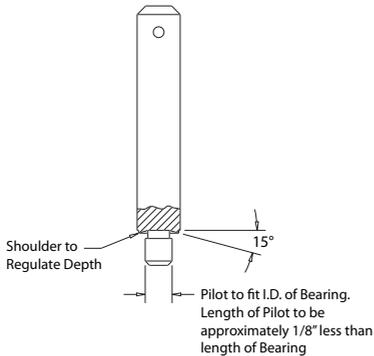
1. Grasp the Cylinder in a soft sided vise and use a punch to tap the Rotor out of the Rear Bearing.
2. Remove the Rear Endplate, Rear Bearing and Spring Washer.
3. Remove the Vanes out of Rotor.
4. Grasp the Rotor in a soft sided vise and remove the Collet body or Coupling Nut or Pinion.
5. Press Rotor out of the front Bearing by support front Endplate. Remove Spacer.

Disassembly of the Inlet Bushing and Throttle

1. Using a 3/4" wrench, unscrew and remove the Inlet Bushing subassembly.
 2. Remove the Diffuser and Muffler.
 3. Remove the exterior Sleeve.
 4. Remove Lever subassembly after pushing the Pin out of the Housing.
 5. Unscrew and remove the Valve Plug.
 6. Remove the Spring and the Throttle Valve.
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3. Always clean every part and wipe internal part with a thin film of oil before installation.
4. Check every bearing for roughness. Don't use rough bearings.
5. 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 drawing TPD786.

Needle Bearing inserting Tool



(Dwg. TPD786)

Assembly of the Motor Housing

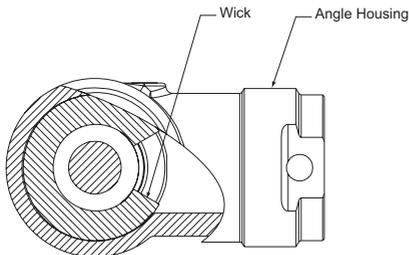
1. Add O-ring onto Throttle Pin, Insert Throttle Pin with Spring into Valve hole of Housing assembly.
2. Add the O-ring onto Valve Plug, screw the Valve Plug into Housing Thread, tighten it to 5 N.m torque.

Assembly of the Extension Housing on Extended Models

1. Press Needle Bearing into Extension Housing using Fixture.
2. Put Collet Arbor into Extension Housing from front. Support the front side of the Arbor on the table and press Bearing down to Extension Housing bearing shoulder, apply Loctite 277 approximately 1/4 to 1/3 of the way around the Thread, Thread the Coupling Nut, tighten it to 10 N.m torque

Assembly of the Angle Head

1. Put the Bearing Retainer Nut onto Arbor from rear end.
2. Insert Spacer on Arbor, press Arbor lower bearing onto Arbor, then press the Key into Arbor slot, add Gear and use Fixture press it down to the Bearing.
3. Press Arbor Upper Bearing onto the Arbor, make sure Bearing sit the Arbor Shoulder.
4. Apply Loctite 243 to the Bearing Retainer Nut Thread, approximately 1/4 to 1/3 of the way around. Put Arbor subassembly into Angle Housing and tighten the Bearing Retainer Nut into Angle House to 25 N.m torque
5. Install oil soaked Wick with pliers. Make sure the Wick is located at the center of the Elbow. See Drawing 46806436.

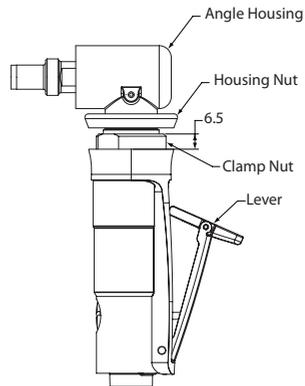


(Dwg. 46806436)

6. Inject 1.5~2 ml **Ingersoll Rand** No. 67[®] grease into Bevel Gear and Wick Cavity in the Angle Head. Do not substitute any other grease.

Final Assembly

1. Install motor into the Motor Housing. Make sure the Cylinder Dowel Pin is aligned with the round hole in the Motor Housing.
2. **For Straight Model**, apply Loctite 243 approximately 2 to 3 pitches on the Clamp Nut Thread, thread it into Housing Assembly, tighten it to 25 N.m torque, tighten the Housing Nut too.
3. **For Extension Model**, place the Arbor Coupling and Clamp Sleeve on to the Motor assembly apply Loctite 243 approximately 2 to 3 pitches on the Extension Housing Thread, then install the Extension Housing assembly.
4. **For Angle model**, apply Loctite 243 approximately 2 to 3 pitches on the Clamp Nut outside Thread, fasten it into housing assembly by approximately 5~6 revolutions, let the Clamp Nut stick out of the Housing by about 6.5 mm. Put the Aluminium Housing Nut onto Angle Housing Assembly, apply Loctite 243 approximately 2 to 3 pitches on the Angle Housing Thread, then fasten the Angle Housing Assembly to Clamp Nut Inner Thread, make sure the Angle Head is at the opposite side of the Lever, tighten the Clamp Nut on Fixture. See Drawing 46806428.



(Dwg. 46806428)

5. Place the O-ring in the position of the exterior Sleeve, install it into Housing. Place the Muffler and Diffuser at the back, apply Loctite 243 approximately 1/4 to 1/3 of the way around the inlet Bushing Thread, tighten the Inlet Bushing assembly to 15 N.m torque.
6. Install the Collet and Collet Nut.

Troubleshooting Guide

Trouble	Probable Cause	Solution
Low power or low free speed	Insufficient air pressure	Check air line pressure at the inlet of the tool. It must be 90 psig (6.2 bar/620KPa).
	Clogged Muffler elements	Disassemble the tool's inlet, if the Muffler can't be cleaned, replace it.
	Plugged Inlet Screen	Clean the Inlet Screen with a clean, suitable cleaning solution or replace the Screen.
	Worn or broken vanes	Install a complete set of new Vanes.
	Worn or broken Motor Housing	Replace the Motor Housing.
	Internal air leakage in the Motor Housing indicated by high air consumption/low speed or air leaking out the front and rear exhaust simultaneously.	Replace the Motor Housing.
	Bent stem on Throttle Valve	Remove the Throttle Valve.
	Angle Gear Wick misaligned or damaged.	Reposition or replace the Wick.
Excessive run out	Bent Arbor	Replace the Arbor.
	Loose Collet Nut	Tighten the Collet Nut.
	Worn or damaged Collet, Collet Nut or Nosepiece	Replace the damaged component and retest.
	Worn or damaged upper Arbor Bearing or lower Arbor Bearing	Replace the worn or damaged Bearing.
Scoring of end plate	Worn front end plate Spacer or front end plate	Install a new front end plate Spacer and front end plate.
	Worn front Rotor Bearing	Install a new front Rotor Bearing.
Leaky Throttle Valve	Dirt accumulation on Throttle Valve or Throttle Valve Seat.	Disassemble, inspect and clean parts.
	Worn Throttle Valve or Throttle Valve Seat	Replace the Throttle Valve and/or Throttle Valve Seat.
	Excessive dirt build-up beneath the Throttle Lever.	Clean out the slot area.
	Bent Throttle Valve Plunger	Replace the plunger.
Front Rotor Bearing runs hot	Front end plate Spacer rubbing the bore of the front end plate	Replace the front end plate and front end plate Spacer combination.
Slow tool idle	Bent or leaky Throttle Valve	Replace the Throttle Valve.
Rough operation/vibration	Improper lubrication or dirt buildup	Disassemble the tool and clean in a suitable cleaning solution. Assemble the tool and inject 3 cc of the recommend oil in the inlet and run the Grinder long enough to coat the internal parts with the oil.
	Worn or broken rear Bearing or front Rotor Bearing	Replace the worn or broken Bearing. Examine the front end plate. Front end plate Spacer, and rear Rotor Bearing, and replace any damaged parts. If the rear end plate is damaged, replace the Rotor.
	Worn or broken upper Arbor Bearing or lower Arbor Bearing	Examine the worn or broken Bearing.
	Worn or broken Bevel Gear or Bevel Pinion	Examine the Bevel Gear and Bevel Pinion. If either is worn or damaged, replace both the Gear and the Pinion because they are a matched set and must not be used separately.

Related Documentation

For additional information refer to:

Product Safety Information Manual 04580288.

Product Information Manual 45760899.

Parts Information Manual 45760923, 45760915 and 45760907.

Manuals can be downloaded from www.ingersollrandproducts.com.

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