



16600983
Edition 1
October 2007

Air Impact Wrench

588A1

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

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 the Impact Wrench

WARNING

Never attempt to disassemble a Model 588A1 or 588A1-EU Impact Wrench without a hoist, block and tackle, or other lifting device. The complete Impact Wrench and its major assemblies are too heavy to be manually handled. Follow the recommended procedure for disassembly below.

1. Suspend the Impact Wrench by the Vertical Hanger (36) in the Back Head (22) and place a large socket on solid, level footing beneath it.
2. Lower the tool, engaging the square driver in the socket drive hole. As a safety measure, leave the hoist hook attached to the Eyebolt so that the Tool cannot tip over.
3. Remove the Hammer Case Long Bolts (11) and Hammer Case Short Bolts.
4. Slowly lift the Motor Housing (1) with assembled parts from the Gear Case (50). If the Motor Housing and Gear Case fail to separate after raising the Motor Housing about 1/2" (12 mm), lightly strike the Gear Case with a soft hammer to jar it loose.

5. Attach the hoist sling to the planet gear frame assembly and lift the Gear Case with assembled parts from the Hammer Case (82). If the Gear Case and Hammer Case fail to separate after raising the Gear Case about 1/2" (12 mm), lightly strike the hammer case bosses a few downward blows with a soft hammer.
6. Remove the Backhead Long Cap Screws (25), Backhead Short Cap Screws (26) and Backhead (22). This will give access to the motor.

Disassembly of the Impact Mechanism

1. Before removing the Ball Cam (75) from the Hammer (77), clean the grease from the Hammer, Cam Balls (74) and Ball Cam.
2. Stand the Hammer, jaw end down, on an arbor press table and press on the face of the Ball Cam, telescoping it into the hammer bore against the compression of the Hammer Spring (76) until a Cam Ball drops from each of the two holes in the hammer wall.
3. Slowly ease the pressure on the Ball Cam and withdraw the Ball Cam from the Hammer.

Disassembly of the Motor

1. Grasp the splined rotor hub in copper-covered vise jaws and unscrew the Governor Assembly from the Rotor (15).

NOTICE

This is left-hand thread; turn clockwise to remove.

2. Grasp the Cylinder (19) in one hand; never clamp it in a vise. Insert a 5/16" (7 mm) diameter rod about 6" (150 mm) long into the rotor bore and drive on the rod until the rear rotor hub is driven out of the Rear Rotor Bearing (21), freeing the Rear End Plate (20), Cylinder and Vanes (18).
3. Support the Front End Plate (14) as close to the Rotor as possible and press on the pinion face to remove the Front Rotor Bearing (13) from the rotor hub.

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.

Assembly of the Motor

1. Slip the Front End Plate (14), crescent grooved side first, onto the rotor front hub.
2. Place the Front Rotor Bearing (13), shielded side first, over the hub.
3. Slide a sleeve that will contact only the bearing inner ring over the hub and press the Bearing onto the rotor hub until only running clearance remains between the faces of the End Plate and Rotor (15).

4. Grasp the splined hub in copper-covered vise jaws, positioning the Rotor upright. Place a Vane (18) in each vane slot in the Rotor; then place the Cylinder (19) over the Rotor and onto the End Plate.

NOTICE

Before proceeding, make sure the Cylinder is properly installed.

Check Cylinder installation as follows:

- Note that there are two 3/4" (19 mm) holes, one in each of the two flats running lengthwise on the Cylinder. One of the holes is located about midway between the cylinder ends, while the other is located relatively close to one end. The hole nearer the end must be at the top or farthest from the splined rotor hub.
5. With the Cylinder properly installed, continue the assembly by sliding the Rotor Bearing Spacer (17), **internally-chamfered end first**, onto the rear rotor hub. Press the Rear Rotor Bearing (21), **shielded side first**, into the recess in the Rear End Plate (20) with an arbor that will contact only the bearing outer ring.
 6. Press the End Plate and Bearing assembly onto the rotor hub with an arbor that will contact only the bearing inner ring. See **Governor Adjustment**. Then thread the Governor Assembly tightly into the Rotor.

- Be sure both Air Port Gaskets are in good condition and are installed, large open end first, in the two air ports in the large bore in the Motor Housing (1) before installing the motor in the Motor Housing.
- Align the dowel hole in each End Plate (14) and (20) with the dowel hole in the Cylinder (19) and insert a 1/4" (6 mm) diameter rod about 12" (305 mm) long, allowing it to protrude about 6" (150 mm) from the Front End Plate.
- Enter the protruding end of the rod into the dowel hole at the bottom of the motor housing bore and slide the motor into the Motor Housing.
- Run the Backhead Cap Screws (25) and (26) finger-tight. Then turn each a little at a time until all are tight.

Assembly of the Impact Mechanism

- When assembling the Ball Cam (75) in the Hammer (77), stand the Hammer, jaw end down, on the table of an arbor press and enter the Hammer Spring (76) into the hammer bore. Note that one ring of the Hammer Spring Thrust Bearing (73) is held firmly in the shell, while the other is free to rotate.
- Place the Bearing on the Spring so that the free ring rests on the end of the Spring.
- Align the points of the cam grooves in the Ball Cam with the holes in the hammer wall and slide the Ball Cam over the Bearing and Spring.
- Press on the cam rear face, telescoping the Ball Cam into the Hammer against the compression of the Spring, until a Cam Ball (74) can be entered into each cam groove through the holes in opposite sides of the Hammer.
- Use a Reverse Valve Bushing Reamer to size a new Reverse Valve Bushing (3) after pressing it into the Motor Housing.
- Use a Governor Valve Bushing Reamer to size a new Governor Valve Bushing (4) after pressing it into the Motor Housing.
- Periodically, examine the Hammer Case Bushing (83). Install a new Bushing if the present one is worn to the extent that the shank on the Anvil (86) is a loose fit in the bushing bore.

Assembly of the Impact Wrench



Never attempt to assemble a Model 588A1 or 588A1-EU Impact Wrench without a hoist, block and tackle or other lifting device. The complete Impact Wrench and its major assemblies are too heavy to be manually handled. Follow the recommended procedure for assembly below.

- Make sure that the square driver is engaged in a large Socket (89) and that the Socket is resting on level footing so that the Hammer Case containing the assembled impact mechanism components are standing upright to prevent the tool from tipping over during assembly.
- Attach the hoist sling to the planet gear frame assembly and lower the Gear Case (49) with assembled parts onto the Hammer Case (82).
- Attach the hoist sling to the Motor Housing (1) and lower the Motor Housing with assembled parts onto the Gear Case (50).
- Install the Hammer Case Long Bolts (11) and Hammer Case Short Bolts to secure the Gear Case and Motor Housing in position.

Oversize Hammer Case Bushings

The continued use of a worn Hammer Case Bushing may permit the Bushing to deform or enlarge the hole in the front of the Hammer Case so that the Case no longer retains the Bushing properly. Should the Bushing become loose in the Case, an oversize Bushing should be installed. Bushings .005", .010", .015" and .03 1" are available. The amount of oversize is etched on the oversize Bushing; the standard size Bushing is unmarked.

After removing a loose Bushing, examine it for oversize etching. If unmarked, replace it with a .005" oversize Bushing; if it is marked, replace it with the next larger oversize Bushing. When pressed in, the oversize Bushing will automatically true up the deformed opening in the Hammer Case.

Troubleshooting Guide

Trouble	Probable Cause	Solution
Low power	Worn or broken Vanes	Replace the complete set of Vanes.
	Worn or broken Cylinder and/or scored End Plates	Examine the Cylinder and replace it if it is worn or broken or if bore is scored or wavy. Replace End Plates if they are scored.
	Dirty motor parts	Disassemble the tool and clean all parts with a clean, suitable, cleaning solution in a well ventilated area. Assemble the tool and inject 3 cc of recommended oil into Inlet and run tool to lubricate internal parts.
	Improper positioning of the Reverse Valve	Make certain that the Reverse Valve is fully engaged.
Motor will not run	Incorrect assembly of motor	Disassemble motor, replace worn or broken parts and reassemble as instructed.
	Insufficient lubricant in impact mechanism	Remove the Hammer Case Assembly and lubricate the impact mechanism.
Tool will not impact	Broken or worn impact mechanism parts	Remove the Hammer Case Assembly and examine impact mechanism parts. Replace any worn or broken parts.
	Impact mechanism not assembled correctly	Refer to Assembly of Impact Mechanism .

Related Documentation

For additional information refer to:
 Product Safety Information Manual 04580916.
 Product Information Manual 03523017.
 Parts Information Manual 16600975.

Manuals can be downloaded from www.irttools.com.

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