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Air Impact Wrench

599A1

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 Sectional diagram in parts Information Manuals when applicable (see under Related Documentation for form numbers).*

Oiler Adjustment

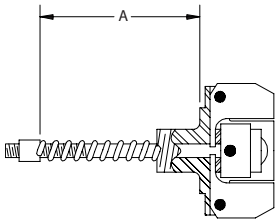
A Metered amount of oil, carried from the oil chamber to the motor by live air, lubricates the Vanes (33). The amount of oil admitted to the air stream is regulated by two Oiler Adjustment Screws (5).

Adjustment is made at the factory and should not be changed unless lubricating difficulties are experienced. If adjustment becomes necessary, turn the Oiler Adjustment Screws with a small screwdriver.

Turning the Screws in reduces the oil flow; backing the Screws out increases the oil flow.

Two Oiler Felts (6) are located under each Screw. After long usage, these Felts may become clogged, preventing the passage of oil. If this happens, remove the Plug and Screws and replace the Felts.

Governor Adjustment



(Dwg. TPD497)

Drawing TPD497 illustrates the sensitive weight-type Governor which controls the speed of the Multi-Vane motor. It is adjusted at the factory to produce a socket speed of approximately 295 rpm. It is seldom necessary to change this adjustment. However, if the free speed of the square driver is checked with a tachometer and is not within 5 rpm of the recommended speed of 295 rpm, steps should be taken to correct it. Screwing the adjusting nut further onto the governor stem increases the speed; backing the nut off decreases the speed. One-half turn of the nut will vary the socket speed about 5 rpm.

When installing a new Governor, set the Nut so that dimension "A" is 2-1/8" (54 mm). This usually produces an allowable speed.

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 Impact Wrench 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 599A1 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 Eyebolt (65) in the Back Head (21) 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 precaution, leave the hoist hook attached to the Eyebolt so that the Impact Wrench cannot tip over.
3. Remove the Hammer Case Bolts (51) and (52). Slowly lift the Motor Housing (1), with assembled parts, from the Gear Case. 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.
4. Attach the hoist sling to the planet gear frame assembly and lift the Gear Case (49) with assembled parts from the Hammer Case (62). 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.
5. Remove the Backhead Cap Screws (24) and Backhead (21). This will give access to the motor.

Disassembly of Impact Mechanism

1. Support the Hammer (55) jaw end down, on a press table and press on the rear face of the Ball Cam (58), telescoping the two parts against the compression of the Hammer Spring (56) until the two Cam Balls (59) drop from the holes in the hammer wall.
2. Release the pressure slowly after removal of the Balls and withdraw the Ball Cam from the Hammer.

Disassembly of the Motor

NOTICE

Never clamp the Cylinder (26) in a vise.

1. Lay the motor horizontally on a work bench and unscrew the governor assembly.

NOTICE

The Rotor (29) and Governor (37) have left-hand threads; turn the governor assembly clockwise to remove it from the motor assembly.

2. Insert a 7/16" (11 mm) diameter rod about 8" (203 mm) long into the rotor bore.
3. Grasp the Cylinder with one hand and sharply strike the rod until the rotor rear hub is driven from the rear Rotor Bearing (31).
4. Support the front Cylinder End Plate (32) as close to the rotor body as possible and press the pinion end of the Rotor out of the front Rotor Bearing.
5. Remove any other motor components which need to be replaced.

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. Using an arbor that contacts only the **outer** ring of the Bearings, press the Rotor Bearings (31), **shielded side first**, into the recesses in the Cylinder End Plates (32).

NOTICE

Press only on the bearing inner ring when installing the end plate and bearing assemblies on the rotor hubs.

   Be sure to press each assembly onto the rotor hub until the bearing **inner** ring contacts the Rotor Bearing Spacer (30).
2. Be sure the rubber Air Port Gaskets (27) and Gasket Retaining Springs (28) are in good condition and that one of each is in position in each of the six air ports in the wall of the Cylinder (26) before sliding the motor assembly into the Motor Housing (1).
3. Install the Backhead (21) and secure the Backhead Cap Screws (24).

Assembly of the Impact Mechanism

1. Stand the Ball Cam (58), large open end up, on the press table.
2. Seat one hammer spring thrust bearing ring, grooved side up, in the recess in the Ball Cam.
3. Place the ball and retainer assembly on top of this ring. Place the second bearing ring, grooved side first, on top of the bearing balls.
4. Stand the Hammer Spring (56), either end first, on top ring of the Hammer Spring Thrust Bearing (57). Pass the Arbor (60), large end first, through the spring and bearing bores and centralize it in the Ball Cam.
5. Align the holes in the hammer wall with the cam groove points in the Ball Cam and slide the Hammer over the Cam, allowing the arbor pilot to pass through the hole in the front of the Hammer.
6. Place a sleeve over the arbor pilot and seat it against the end faces of the hammer jaws. Press on the sleeve, forcing the Hammer down over the Ball Cam, against the compression of the Hammer Spring, until a Cam Ball (59) can be inserted into each cam groove through the holes in the hammer wall.
7. Insert one Ball into each hole and slowly release the pressure.

Replacement of Planet Gear Bearings

1. When replacing Planet Gear Bearings (43), use a bearing Inserting Tool. Using a flat-faced arbor can damage the bearing shell.
2. Press only on the bearings **stamped face**.
3. Press one Bearing in from each end of the gear bore. Do not use one Bearing to force the other into position.

Assembly of the Impact Wrench

⚠ WARNING

Never attempt to assemble a Model 599A1 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.

1. Make sure that the square driver is engaged in a large Socket, 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.
2. Screw a hook or eyebolt having a 3/4"-10 thread shank into the tapped hole in the Arbor (60). Using the hoist, lower the Hammer (55) with assembled parts, into the Hammer Case.
3. Attach the hoist sling to the planet gear frame assembly and lower the Gear Case with assembled parts onto the Hammer Case (62).
4. Attach the hoist sling to the Motor Housing and lower the Motor Housing with assembled parts onto the Gear Case.
5. Install the Hammer Case Bolts (51) and (52) to secure the Gear Case and Motor Housing in position.

NOTICE

Periodically examine the Hammer Case Bushing (63). Install a new Bushing if the present one is worn to the extent that the shank on the Anvil (61) is a loose fit in the bushing bore. See the following instructions.

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 .031" 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.

Reverse Valve Bushing

When installing a new Reverse Valve Bushing (4), align the scribe marks on the Bushing and Motor Housing (1).

Troubleshooting Guide

Trouble	Probable Cause	Solution
Low power	Worn or broken Vanes	Replace **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 the 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 Reverse Valve is **fully** engaged.
Motor will not run	Incorrect assembly of the motor	Disassemble motor, replace worn or broken parts and reassemble as instructed.
	Insufficient lubricant in the impact mechanism	Remove the Hammer Case Assembly and lubricate impact mechanism.
Tool will not impact	Broken or worn impact mechanism parts	Remove the Hammer Case and examine the impact mechanism parts. Replace any worn or broken parts.
	Impact mechanism not assembled correctly	Refer to **Assembly of the Impact Mechanism**.

Related Documentation

For additional information refer to:
Product Safety Information Manual 04580916.
Product Information Manual 03523865.
Parts Information Manual 16605990.

Manuals can be downloaded from www.irtools.com.

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www.irtools.com

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