



Form 04584249

Edition 1

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# Air Impactool

2903P

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## Maintenance Information



**Save These Instructions**

***IR*** Ingersoll-Rand®



## WARNING

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

### Lubrication

Each time a Series 2903P Air Impact Wrench is disassembled for maintenance, and repair or replacement of parts, lubricate the tools as follows:

1. Work approximately 6 to 8 cc of **Ingersoll-Rand** No. 100 Grease into the impact mechanism. Coat the Anvil (46) or (49) lightly with grease

around the Hammer Case Bushing (41). Inject approximately 1 to 2 cc of grease into the Grease Fitting (23).

2. Use **Ingersoll-Rand** No.50 Oil for lubricating the motor. Inject approximately 1 to 2 cc of oil into the air inlet before attaching the air hose. Remove the Oil Chamber Plug (4) and fill the oil chamber.

### 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.

3. Remove Rear Rotor Bearing Retainer (25).
4. Lift the Rear End Plate (27) and Rear Rotor Bearing (26) from Rotor.

#### Disassembly of the Reverse Valve

### NOTICE

The Reverse Valve Screw (22) is installed with a thread locking compound.

1. Unscrew the Reverse Valve Knob Screw and remove the Reverse Valve Knob (21).

### NOTICE

Be careful you do not lose the Reverse Valve Detent Ball (19) and Spring (20) from the hole in the side of the Reverse Valve.

2. While slowly rotating the Reverse Valve (18), withdraw it from the Reverse Valve Bushing(16).

#### Disassembly of the Throttle

1. Unscrew and remove the Air Inlet (15).
2. Lift off the Exhaust Deflector (14) and withdraw the Exhaust Silencer (13).
3. Remove the Oiler Retaining Ring (12) from inside the handle.
4. Withdraw the Oiler Body Assembly (9), Throttle Valve Spring (8) and Throttle Valve (7).
5. Withdraw Trigger Assembly (2).

### NOTICE

Do not remove the Throttle Valve Seat (6) unless you have a new Throttle Valve Seat on hand for installation.

6. If the Throttle Valve Seat (6) must be replaced, thread a long 3/8" cap screw into it and withdraw it from the handle.

#### Disassembly of the Air Impact Wrench

1. Clamp the handle of the Air Impact Wrench in a vise with the square drive upward.
2. Unscrew and remove the four Hammer Case Cap Screws(45).
3. While lightly tapping on the end of the Anvil (46 or 49) with a plastic hammer, lift off the Hammer Case (40).
4. Grasp the Hammer Frame (36) and carefully lift off the entire impact mechanism, making certain not to drop the two Hammer Pins (37).
5. Lift the Rear Hammer Frame Washer (38) and the two Motor Clamp Washers(35) from the front of the motor.
6. Grasp the splined end of the Rotor (28) and pull the assembled motor from the Motor Housing (1).

#### Disassembly of Impact Mechanism

1. With the Impact Mechanism on a workbench, driver end up, grasp the Anvil (46) or (49) and lift it from the mechanism.
2. Remove the two Hammer Pins (37).
3. Slide the Hammer (39) from the Hammer Frame (36).

#### Disassembly of the Motor

1. Lift the Front End Plate (33) and Front Rotor Bearing (34) from splined end of Rotor.
2. Remove Cylinder (30) and Vanes (29).

### 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-ring before final assembly.

5. Make certain the two Oiler Body Seals (11) are positioned in the annular grooves on the Oiler (9) and install the Oiler counterbored end first into the handle. The large end of the Throttle Valve Spring should seat in the counterbore in the Oiler.
6. Install the Oiler Retaining Ring (12) in the groove in the handle.
7. Grasp the Exhaust Silencer (13) by the long edge and rolling it into a tight cylindrical shape, insert the Silencer into the handle flush with the recess.
8. Position the Exhaust Deflector (14) on the bottom of the handle and retain it with the Air Inlet (15). Tighten the Air Inlet to 30 to 50 ft-lb (40.5 to 47.5 Nm) torque.

#### Assembly of the Throttle Mechanism

1. If the Throttle Valve Seat (6) was removed from the handle, install a new Throttle Valve Seat by pushing it into place with a 1/2" (13 mm) diameter dowel.
2. Wipe the trigger pin with some light grease and insert the Trigger Assembly (2) into the trigger bushing.
3. Insert the Throttle Valve (7), long stem end first, into the bottom of the handle so the end of the valve stem engages the hole in the Trigger pin.
4. Install the Throttle Valve Spring (8), small end first, into the handle of the Motor Housing Assembly (1).

#### Assembly of the Reverse Valve

1. Make certain the Reverse Valve Bushing Seals (17) are properly located in undercut in the Reverse Valve Bushing (16).
2. Dampen the Reverse Valve (18) with light oil. Install the Reverse Valve Detent Spring (20) followed by the Reverse Valve Detent Ball (19) in the Hole in the Reverse Valve. With the Air Impact Wrench in an upright position, and while facing the handle end of the Air Impact Wrench, slowly rotate the Reverse Valve and insert it from left to right in the splined end of the Reverse Valve Bushing.

- Attach the Reverse Valve Knob (21) to the Reverse Valve with the Reverse Valve Knob Screw (22) and tighten the Screw to 40 to 50 in-lbs (4.5 to 5.6 Nm) torque.

### Assembly of the Motor

- Using a sleeve that will contact only the outer ring of the bearing, press the Front Rotor Bearing (34) into the Front End Plate (33) and the Rear Rotor Bearing (26) into the Rear End Plate (27).
- Slip the Front End Plate and Bearing over the splined hub of the Rotor.
- Grasp the splined hub of the Rotor in leather-covered or copper-covered vise jaws so the Rotor is in a vertical position.
- Dampen each Vane (29) with light oil and insert a Vane into each vane slot.
- Set the Cylinder (30) over the Rotor and onto the Front End Plate.
- Slide the Rear End Plate and Bearing onto the rotor hub and against the Cylinder.
- Install the Rear Rotor Bearing Retainer (25) in the groove on the rotor hub.
- Wipe a thin film of light grease on the End Plate Gasket (24) and press the Gasket firmly against the Rear End Plate.
- Align the dowel hole in both End Plates with the one through the Cylinder and insert a guide rod 5/32" (4.0 mm) diameter x 6" (152 mm) long. Allow the rod to protrude from the Rear End Plate and End Plate Gasket.
- Grasp the handle of the Motor Housing (1) in leather-covered or copper-covered vise jaws so the bore of the Motor Housing is horizontal.
- Insert the protruding end of the guide rod into the dowel hole in the bore of the Motor Housing and slide the motor along the rod until it is completely seated.
- Remove the guide rod and replace it with the Cylinder Dowel (31).
- Reposition the Motor Housing in the vise so the open face of the Motor Housing is upward.

- Place the two Motor Clamp Washers (35), convex side first, against the Front End Plate so the inner rim of the leading Washer contacts the End Plate and the outer rim of the trailing Washer contacts the Hammer Case Pilot (43).
- Place the Rear Hammer Frame Washer (38) over the hub of the Rotor and against the Front Rotor Bearing.

### Assembly of the Impact Mechanism

- Coat the spline and pin holes of the Hammer Frame (36) with a light film of **Ingersoll-Rand No.100 Grease**. Position the Hammer Frame on a workbench, splined end down.
- Coat the Hammer (39) with a light film of **Ingersoll-Rand No.100 Grease** and slide the Hammer into the Hammer Frame.
- Coat the two Hammer Pins (37) with a light film of **Ingersoll-Rand No.100 Grease** and insert the Pins into the two pin holes of the Hammer Frame so they engage the notches on the Hammer.
- Coat the Anvil (46) or (49) with a light film of **Ingersoll-Rand No.100 Grease**. Slide the Anvil into the Hammer Frame and through the Hammer until it seats.
- Set the assembled impact mechanism down over the splined hub of the Rotor.

### Assembly of the Air Impact Wrench

- Position the Hammer Case Gasket (42) against the face of the Motor Housing.
- Smear a thin film of **Ingersoll-Rand No.100 Grease** on the inside surface of the Hammer Case Bushing (41) and place the Hammer Case (40) down over the Anvil (46) or (49) and against the Motor Housing.
- Install the Hammer Case Cap Screws (45). Tighten the Hammer Case Cap Screws to 60 to 70 in-lb (7.0 to 8.0 Nm) torque.

## Troubleshooting Guide

Troubleshooting Guide		
Trouble	Probable Cause	Solution
Low power	Dirty Inlet Bushing or Air Strainer Screen and/or Exhaust Silencer.	Using a clean, suitable, cleaning solution in a well ventilated area, clean Air Strainer Screen, Inlet Bushing Exhaust Silencer.
	Worn or broken Vanes.	Replace <b>complete</b> set of Vanes.
	Worn or broken Cylinder and/or scored End Plates.	Examine 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 tool and clean all parts with a suitable cleaning solution, in a well ventilated area. Reassemble tool as instructed in this manual.
	Improper positioning of the Reverse Valve.	Make certain that the Reverse Valve is <b>fully</b> engaged to the left or right.
Motor will not run	Incorrect assembly of motor.	Disassemble motor and replace worn or broken parts and reassemble as instructed.
	Insufficient lubricant in the impact mechanism.	Remove Hammer Case Assembly and lubricate impact mechanism.
Tool will not impact	Broken or worn impact mechanism parts.	Remove Hammer Case and examine impact mechanism parts. Replace any worn or broken parts.
	Impact Mechanism not assembled correctly.	Refer to <b>Assembly of the Impact Mechanism</b> .

## Related Documentation

For additional information refer to:  
 Air Impact Wrench Product Safety Information Manual Form 04580916,  
 Air Impact Wrench Product Information Manual Form 04584777,  
 Air Impact Wrench Parts List Manual Form 04584397.

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



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