



Form 04584231  
Edition 1  
April 2005

# Air Impact Wrench

## 2902 Series

---

# Maintenance Information



**Save These Instructions**

***IR*** Ingersoll-Rand®

## NOTICE

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. Failure to do so could result in injury.

### Lubrication

Each time a Series 2902 Air Impact Wrench is disassembled for maintenance and repair or replacement of parts, lubricate tool as follows:

1. Work approximately 8 cc of **Ingersoll-Rand** Air Impact Wrench Grease No. 105 into the impact mechanism. Coat the Anvil (66, 69, 72 or 79) lightly with grease. Also, coat the inside of the Hammer

Case Bushing (62) with grease. Inject approximately 2 to 4 cc of grease into the Grease Fitting (37, 32).

2. Use **Ingersoll-Rand** No. 10 Oil for lubricating the motor. Inject approximately 1 to 2 cc of oil into air inlet (6, 21) before attaching the air hose. Remove the Oil Chamber Plug (2) 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. When grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part or tool 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 Air Impact Wrench

##### For the 3/8" Square Drive Anvil Assembly (69)

1. Clamp the handle of the Air Impact Wrench in a leather or copper-covered vise, square drive upward.
2. Remove the four Hammer Case Capscrews (65).
3. While tapping lightly on the end of the Anvil with a plastic hammer, lift off the Hammer Case (62).

## NOTICE

The Hammer Pins (61) are loose within the Hammer Frame (60) and will be able to fall from the mechanism when the Hammer Case is removed.

4. Grasp Hammer Frame and carefully lift off the entire impact mechanism, making certain not to drop the two Hammer Pins.
5. If disassembly of the Impact Mechanism is not required, set the mechanism aside intact.
6. Remove the Hammer Frame Washer (58) from the end of the Rotor (52) shaft. Remove the Air Impact Wrench from the vise.

##### For the 1/4" Quick-Change Anvil Assembly

1. Clamp the handle of the Air Impact Wrench in a leather or copper-covered vise, square drive upward.
2. Remove the four Hammer Case Cap Screws (65).
3. Remove the Retaining Sleeve Stop (78).

## NOTICE

The Retaining Ball (76) will fall free when the Retaining Sleeve (77) is removed.

4. Remove the Retaining Sleeve, Retaining Ball, Retaining Sleeve Spring (75), Thrust Ring (74), and Thrust Ring Lock (73).
5. Remove the Hammer Case Assembly (62).
6. Grasp the Hammer Frame (60) and carefully lift off the entire impact mechanism, making certain not to drop the two Hammer Pins (61).
7. If disassembly of the Impact Mechanism is not required, set the mechanism aside.
8. Remove the Hammer Frame Washer (58) from the end of the Rotor (52) shaft. Remove the Air Impact Wrench from the vise.

##### For the 7/16" Quick-Change Anvil Assembly

1. Clamp the handle of the Air Impact Wrench in a leather or copper-covered vise, square drive upward.
2. Unscrew and remove the four Hammer Case Cap Screws (65).
3. Remove the Thrust Ring Lock (82), Thrust Ring (83), and Retaining Sleeve Spring (84).

\* Registered trademark of Loctite Corporation.

## NOTICE

The Retaining Ball (85) will fall free when the Retaining Sleeve (86) is removed.

4. Remove the Retaining Sleeve, Retaining Ball, and remove the Hammer Case Assembly (62).

## NOTICE

The Body Lock Pin (81) will fall free when the Quick-Change Anvil Body (80) is removed.

5. Remove the Quick-Change Anvil Body, the Body Lock Pin.
6. Grasp the Hammer Frame (60) and carefully lift off the entire impact mechanism, making certain not to drop the two Hammer Pins (61).
7. If disassembly of the Impact Mechanism is not required, set the mechanism aside.
8. Remove the Hammer Frame Washer (58) from the end of the Rotor (52) shaft. Remove the Air Impact Wrench from the vise.

#### Disassembly of the Impact Mechanism

1. Set the mechanism on a workbench, driver end up.
2. Grasp the Anvil (66, 67, 72, or 79) and lift it from the impact mechanism.
3. Remove the two Hammer Pins (61) and the Hammer (59).

#### Disassembly of the Motor

1. Grasp the splined end of the Rotor (52) and pull the entire motor from the Housing (1).
2. Lift off the Hammer Frame Washer (58).
3. Lift off the Front End Plate (56). If the Front Rotor Bearing (57) needs to be replaced, press it from the Front End Plate.
4. Remove the Cylinder (54) and the Vanes (53).
5. Remove the Rear Rotor Bearing Retainer (49) and slide the Bearing (50) and the Rear End Plate (51) off the short hub of the Rotor.
6. Remove the End Plate Gasket (48) from the Motor Housing.
7. **For Model 2902SB only**, remove the Silencers (18) from the Motor Housing.

#### Disassembly of the Reverse Valve

##### For Model 2902P

## NOTICE

The Knob Screw (36) is installed with Loctite ®\*.

1. Unscrew and remove the Knob Screw. Remove the Reverse Valve Knob (35).
2. Slowly rotate the Reverse Valve (11) back and forth while withdrawing it from the reverse valve bushing.

## NOTICE

Be careful not to lose the Detent Ball (33) and Detent Ball Spring (34) from the hole in the side of the Reverse Valve.

3. Remove the two Reverse Valve O-ring (12) from the undercut at each end of the reverse valve bushing.

## For the 2902SB

### NOTICE

The Reverse Valve Stop (30) is secured with loctite®.

1. Unscrew the Reverse Valve Stop (30) from the Reverse Valve (28).
2. Slowly rotate the Reverse Valve back and forth while withdrawing it from the reverse bushing. Remove the Reverse Valve Seal (29) from the Reverse Valve; and the Bushing Seal (31) from the undercut inside the reverse valve bushing.

## Disassembly of the Throttle

### For Model 2902P

1. Using a pin punch, tap out the Bushing Retaining Pin (45) from left to right while facing the back of the tool. Remove the entire Throttle Valve Assembly.
2. If it is necessary to replace the Trigger (40), pull it off the Throttle Valve (38).
3. Remove the Large Bushing O-ring (43) and one Small Bushing O-ring (44) from the Throttle Valve Bushing (42). Remove the other Small Bushing O-ring (44) seated in the recess of the handle.
4. Using a pin Punch, tap out the Throttle Valve Retaining Pin (41) to release the Throttle Valve from the Throttle Valve Bushing.

## 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 Throttle Mechanism

### For the 2902P

1. Install a new Throttle Valve Face (39) in the annular groove at the end of the Throttle Valve (38).
2. Install a new large Bushing O-ring (43) and a new small Bushing O-ring (44) into their respective grooves of the Throttle Valve Bushing (42). Seat the other new Small Bushing O-ring (44) into the recess of the Motor Housing.
3. Insert the Throttle Valve into the Throttle Valve Bushing, taking care to line up the retaining pin holes in the Throttle Valve Bushing and the Throttle Valve. Drive the Throttle Valve Retaining Pin (41) into the Throttle Valve Retaining Pin hole.
4. If the Trigger (40) was removed, press it onto the end of the Throttle Valve.
5. Install the throttle Valve Assembly into the Housing (1), taking care to line up the cross hole in the throttle Valve Bushing with the Retaining Pin (45) from right to left when facing the rear of the tool. Work the Trigger a few times to assure a good sliding fit.
6. Install the Exhaust Silencers (10) in the Housing. Make sure the Silencer is rolled tightly for easy installation.
7. Install the Deflector Gasket (9) and Exhaust Deflector (8).
8. Install the Inlet Bushing (6) and Bushing O-ring (7). Tighten the Bushing to 20 to 25 ft-lb (27 to 34 Nm) torque.

### For Model 2902SB

1. Install a new Power Regulator Seal (24) in the groove closest to the Knurled Knob on the Power Regulator Assembly (23).
2. Place the Detent Spring (26) and the Detent Ball (27) in the shallow hole in the hexagonal flange of the Swivel Inlet Body (20). Capture the Spring/Ball combination with the Power Regulator Assembly reinstalled in the Swivel Inlet Body.
3. Align the groove on the end of the Power Regulator shaft with the thru hole in the Swivel Inlet Body and insert the Regulator Retainer (25). The Regulator will turn firmly but freely within the Body when properly assembled.
4. Place a new Swivel Inlet Seal (22) in each counterbore in the Swivel Inlet (21), place the Inlet Assembly Spacer (19) on the top of the Swivel Inlet so that it aligns with the hole in the Swivel Inlet and slide the inlet over the threaded end of the Swivel Inlet Body.

5. Remove the Throttle Valve Face (39) from the annular groove at the end of the Throttle Valve.
6. Unscrew and remove the Inlet Bushing (6).
7. Lift off the Exhaust Deflector (8) and Deflector Gasket (9). Using an awl, remove the Exhaust Silencer (10) from the handle.

## For Model 2902SB

1. Using a punch, carefully drive the Throttle Lever Pin (17) from the Motor Housing and remove the Throttle Lever (16).
2. Hold the Motor Housing firmly in a vise, taking care not to distort the motor bore. Using a wrench on the machined flats and turning counterclockwise, remove the Swivel Inlet Body (20).
3. Remove the Swivel Inlet Assembly (21), Seals (22), and Inlet Assembly Spacer (19) from the Swivel Inlet Body.

### NOTICE

The Detent Ball (27) and Detent Spring (26) will come lose when the Power Regulator Assembly (23) is removed from the Swivel Inlet Body.

4. Push the Regulator Retainer (25) through the Swivel Inlet Body and remove the Power Regulator Assembly, Detent Ball, and Detent Spring.
5. Withdraw the Throttle Valve Spring (15) and Throttle Valve (13). Remove the Throttle Valve Face (14) from the Throttle Valve.

5. Install a new Throttle Valve (14) in the groove on the Throttle Valve (13) and insert the assembled Throttle Valve, stem first into the tapped hole in the Motor Housing (1).
6. Next, insert the Throttle Valve Spring (15) into the tapped hole in the Housing and retain the Throttle parts with the Swivel Inlet. Thread the Inlet into the tapped hole clockwise and tighten to 23 to 27 ft-lb (31 to 37 Nm) torque.
7. Align the holes in the Throttle Lever (16) with the holes in the boss on top of the Motor Housing and press the Throttle Lever Pin (17) into the through hole. Press the Throttle Lever several times checking that the mechanism does not bind.
8. If the Nameplate (46) has become disfigured, replaced it after transferring the proper serial number.

## Assembly of the Reverse Valve

### For Model 2902P

1. Install two Reverse Valve O-rings (12) in the undercut at each end of the reverse valve bushing.

### NOTICE

Install the Reverse Valve (11) from left to right while facing the rear of the tool.

2. Install the Detent Ball Spring (34) and Detent Ball (33) in the Reverse Valve, while sliding the Reverse Valve into the reverse valve bushing, compress the Spring and Ball until they are seated in the bushing.
3. Insert the Knob Screw (36) through the Reverse Valve Knob (35). Apply Loctite No.242 to the first two or three threads of the Screw and thread the Screw into the tapped end of the Reverse Valve. While holding the serrated end of the Reverse Valve with pliers, tighten the Screw to 4 to 7 in lb (0.45 to 0.80 Nm) torque.

### For Model 2902SB

1. Insert a new Bushing Seal (31) into the undercut inside the reverse valve bushing, making certain it is firmly seated.
2. Install a new Reverse Valve Seal (29) in the groove closest to the hexagonal end on the Reverse Valve (28). Coat the Reverse Valve with a small amount of the recommended oil and insert the tapered end of the Valve into the housing bushing from left to right when facing the rear of the tool until the tapered end of the Valve protrudes from the right side of the Housing.

### CAUTION

Rotate the Valve back and forth slowly, being careful not to damage the Seals when inserting the Valve in the bushing.

- Apply Loctite No. 242 to the first two or three threads of the Reverse Valve Stop (30) and thread the Stop into the tapped end of the Reverse Valve. Tighten the Stop to 4 to 7 in-lb (.45 to .80 Nm) torque.

### Assembly of the Motor

- Install a new End Plate Gasket (48) into the motor bore of the Motor Housing (1), making sure the holes in the Gasket align with those in the bottom of the Housing.
- Slide the Rear End Plate (51) onto the short hub of the Rotor (52), with the bearing recess trailing.
- Slide the Rear Rotor Bearing (50) onto the short hub of the Rotor against the Rear End Plate.
- Install the Rear Rotor Bearing Retainer (49).
- With the splined end of the Rotor upright, place the Cylinder (54), pocket end first, over the Rotor with the dowel hole and ports aligned with the holes in the Rear End Plate.
- Apply a light film of oil to the Vanes (53) and insert them into the vane slots in the Rotor.
- If the Front Rotor Bearing (57) was removed, press a new Bearing into the recess of the Front End Plate (56).
- Slide the assembled Front End Plate over the splined hub of the Rotor, Bearing trailing, with the dowel hole and ports of the Front End Plate aligning with like holes in the Cylinder and Rear End plate.
- Insert a 6" x 1/8" (150 mm x 302 mm) rod through the aligned dowel holes in the two End Plates and Cylinder. Use the rod as a guide to insert the motor into the Motor Housing with the dowel hole and ports of the motor and End Plate Gasket aligned.
- Grasp the Motor housing in a vise, motor upward. Withdraw the rod and replace it with the Cylinder Dowel (55).
- For the 2902SB only, install new Silencers (18) in the Motor Housing(1).

### Assembly of the Impact Mechanism

- Place the Hammer Frame Washer (58) over the splined hub of the Rotor and against the Front Rotor Bearing (57).
- Coat the spine and pin holes of the Hammer Frame (60) with a light film of **Ingersoll-Rand Grease No.105**.
- Install the Hammer Frame on the splined hub of the Rotor.
- Coat the hammer (59) with a light film of **Ingersoll-Rand Grease No.105** and slide the Hammer inside the Hammer Frame.

- Coat the two Hammer Pins (61) with a light film of **Ingersoll-Rand Grease No.105** and insert the Pins in the two holes of the Hammer Frame so they engage the notches on the Hammer.
- Coat the Anvil (66, 69, 72, and 79) with a light film of **Ingersoll-Rand Grease No.105**. Place the Anvil into the front of the Hammer Frame and through the Hammer until it seats in the rear of the Hammer Frame.

### Assembly of the Air Impact Wrench

#### For the 1/4" Quick-Change Anvil Assembly

- Reinstall the Hammer Case (62) and secure with the Cap Screws (65).
- Follow the Hammer Case with the Thrust Lock Ring (73), Thrust Ring (74), Retaining Sleeve Spring(75), Retaining Ball (76), Retaining Sleeve (77), and the Retaining Sleeve Stop (78).

#### For the 7/16" Quick-Change Anvil Assembly

- Reinstall the Hammer Case (62) and secure with the Cap Screws (65).
- Use a spot of grease to place the Body Lock Pin (81) and the Retaining Ball (85) in the Quick-Change Body Anvil (80).
- Slide the Retaining Sleeve (86) over the Body Anvil followed by the Retaining Sleeve Spring (84) and Thrust Ring (83).
- Secure with the Thrust Ring Lock (82).

#### For the 3/8" Square Drive Anvil

- If the Hammer Case Bushing (63) was removed, smear a thin film of **Ingersoll-Rand Grease No.105** on the surface of the Bushing and press the Bushing into the Hammer Case (62) from the large open end until the bushing flange contacts the Hammer Case.
- Place the Hammer Case Gasket (64) over the front end of the Motor Housing with the Holes in the Gasket and Housing aligned.
- Slide the Hammer Case Assembly over the Impact Mechanism and install the Hammer Case Cap Screws (65). Tighten the Cap Screws to 45 in-lb (5 Nm) torque.

### 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. Blow dry with compressed air.
	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 the 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 the motor.	Disassemble the motor, 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 the 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 04584769,  
 Air Impact Wrench Parts List Manual Form 04584595.

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

---

**Notes**

---

**Notes**

---

**Notes**



[www.irtools.com](http://www.irtools.com)

© 2005 Ingersoll-Rand Company