



**16606048**  
Edition 3  
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# Air Impact Wrench

Series 5980 and 5982

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## Maintenance Information



Save These Instructions

**IR** Ingersoll Rand®

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## Product Safety Information

### WARNING

- Failure to observe the following warnings, and to avoid these potentially hazardous situations, could result in death or serious injury.
- Read and understand this and all other supplied manuals before installing, operating, repairing, maintaining, changing accessories on, or working near this product.
- Always wear eye protection when operating or performing maintenance on this tool. The grade of protection required should be assessed for each use and may include impact-resistant glasses with side shields, goggles, or a full face shield over those glasses.
- Always turn off the air supply, bleed the air pressure and disconnect the air supply hose when not in use, before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool or any accessory.

**Note:** When reading the instructions, refer to exploded diagrams in Parts Information Manuals when applicable (see under Related Documentation for form numbers).

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## Lubrication

Each time a Series 5980 or 5982 Impact Wrench is disassembled for maintenance and repair or replacement of parts, lubricate the tool as follows:

1. Work approximately 45 cc of **Ingersoll Rand** No. 170 Grease into the impact mechanism. Coat the Anvil (50) lightly with grease around the Hammer Case Bushing (53). Inject approximately 4 cc of grease into the Grease Fitting (13).

2. Use **Ingersoll Rand** No. 50 Oil for lubricating the motor. Inject approximately 3 to 4 cc of oil into the air inlet before attaching the air hose. Remove the Oil Chamber Plug (7) and fill the oil chamber.
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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.

4. Carefully rotate Impact Wrench about Dead Handle until motor is downward. Making certain not to drop motor, lightly tap Motor Housing (1) with a plastic hammer to jar the motor loose.
5. While grasping Cylinder (18) in one hand (never clamp Cylinder in a vise), insert a 5/16" (7 mm) rod about 6" (150 mm) long into bore of Rotor (19) and drive in the rod to remove Rear Rotor Bearing (22) from hub of Rotor.
6. Remove Rear End Plate (23), Cylinder and Vanes (24).
7. Support Front End Plate (26) as close to Rotor as possible and press rotor hub from bore of Front Rotor Bearing (25) and End Plate.

### Disassembly of the Impact Wrench

1. Grasp Dead Handle (29) horizontally in a vise so that square driver is upward.
2. Unscrew and remove Hammer Case Cap Screws (41).
3. Lift Anvil (50) and the two Anvil Drive Pins (51) from Arbor (47).
4. Grasp Hammer (42) and lift impact mechanism from Gear Frame (31).

### Disassembly of the Gearing

1. Remove impact mechanism as described in steps 1 through 4 of "**Disassembly of the Impact Mechanism**".
2. While tapping around edge of Housing Cover (39), pull on pilot end of Gear Frame (31) and withdraw assembled Gear Frame and Housing Cover from Motor Housing (1).
3. Do not remove Internal Gear (28) unless a new Internal Gear is to be installed. Use a gear puller to remove old Internal Gear.
4. Support Housing Cover as close to web of Gear Frame as possible and press Gear Frame from bore of Front Gear Frame Bearing (35).
5. Remove Front Gear Frame Spacer (37).
6. Support remainder of assembly on the exposed area of the Rear Gear Frame Spacer (38) and press Gear Frame from bore of Rear Gear Frame Bearing (36).
7. Press Planet Gear Shafts (34) from Gear Frame and remove Planet Gears (32).
8. Slide Planet Gear Bearings (33) from Planet Gears.

### Disassembly of the Impact Mechanism

1. Wash impact mechanism in a suitable solvent to clean as much grease as possible from it.
2. Place impact mechanism on an arbor press so it is supported on the hammer jaws and so Arbor is free to move downward.
3. Press on end of Ball Cam (46) until Cam Balls (45) drop out of holes in side of Hammer.
4. Ease up on the handle of the arbor press.
5. Lift Ball Cam from Hammer. Friction Drive Washer (49) may come off with the Ball Cam or it may stay on rear face of Arbor.
6. Grasp Hammer Spring Thrust Bearing Race (43), and being careful not to drop the seventeen Hammer Spring Thrust Bearing Balls (44), lift Arbor and Bearing Race from the bore of Hammer.
7. Lift Hammer Spring (48) from bore of Hammer.

### Disassembly of the Throttle

1. Unscrew Throttle Assembly from Motor Housing (1).
2. Grasp Throttle Body (64) in a vise and unscrew Air Strainer Body (68) from Air Strainer Cap (65). Remove Air Strainer Screen (66) and clean it thoroughly.
3. Unscrew Air Strainer Cap from Throttle Body. Withdraw Throttle Valve Spring (61) and Throttle Valve (56).
4. Slide Throttle Lever (63) from slot in Throttle Body and remove Throttle Lever Spacer (62).

### Disassembly of the Motor

1. Grasp Dead Handle (29) horizontally in a vise so Grip Handle (15) is upward.
2. Unscrew Backhead Cap Screws (14) and lift off Backhead (12) and Grip Handle.
3. Withdraw Reverse Valve Lever (10) and Reverse Valve (8).

## 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 in a bearing recess.
3. 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.
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

1. Grasp Throttle Body (64) in a vise so internal threaded end is upward.
2. Slide Throttle Lever Spacer (62), slotted end trailing, down over Throttle Body.
3. Insert notched foot of Throttle Lever through slotted side of Throttle Lever Spacer so end of foot hooks over top edge of Spacer.
4. Install a new Throttle Valve Face (57) on Throttle Valve (56).
5. Insert Throttle Valve, stem end first, into bore of Throttle Body so stem of Throttle Valve engages notch in foot of Throttle Lever.
6. Place Throttle Valve Spring (61), small end first, against the top of Throttle Valve.
7. Install Air Strainer Cap (65), making certain large end of Throttle Valve Spring enters counterbore in Air Strainer Cap.
8. Stand Air Strainer Screen (66) upright inside Air Strainer Cap and place Air Strainer Screen Support (67) on the upper end of Screen.
9. Place Air Strainer Body (68) down over Air Strainer Screen Support and Screen and thread it into Air Strainer Cap.

### Assembly of the Gearing

1. If Internal Gear (28) was removed from Motor Housing (1), install a new Internal Gear as follows:
  - a. Note that there are two notches on diametrically opposite sides of the Internal Gear.
  - b. Engage the protruding lugs on the Housing Cover (39) with the notches on the Internal Gear and while aligning the bolt holes on the Housing Cover with the tapped holes in the Motor Housing, start the Internal Gear squarely into the Motor Housing.
  - c. Remove the Housing Cover and press in the Internal Gear until it seats on the shoulder in the Motor Housing.
2. Install Grease Guide (30), flat side first, in large bore of Gear Frame (31).
3. Slide a Planet Gear Bearing (33) into each Planet Gear (32). Work a little grease into the bore and between the rollers of each Bearing.
4. Support Gear Frame on short hub end. Slide a Planet Gear between flanges on the Gear Frame, aligning bore of Planet Gear Bearing with shaft hole in flanges.
5. Press a Planet Gear Shaft (34), beveled end first, into shaft hole until the full diameter of Shaft is flush with front face of flange and so half-section of Shaft protrudes from flange. When pressing Shaft in, it must be positioned so the lug or half-section faces the tip end of flange.
6. Install second Planet Gear and Shaft.
7. Place Rear Gear Frame Spacer (38), flat side first, on short hub of Gear Frame.
8. Press Rear Gear Frame Bearing (36) onto short hub of Gear Frame until it contacts the Rear Gear Frame Spacer.
9. Place Front Gear Frame Spacer (37), large diameter first, over pilot end of the Gear Frame so it seats against flange of Gear Frame and between lugs on Planet Gear Shafts.

10. Press Front Gear Frame Bearing (35), shield side trailing, into bearing recess in the Housing Cover.
11. Press Housing Cover with assembled Bearing, lug side first, onto pilot end of the Gear Frame until Bearing seats against Front Gear Frame Spacer.

### Assembly of the Motor

1. Place Front End Plate (26), crescent grooved side first, on splined end of the Rotor.
2. Press Front Rotor Bearing (25), shield side first, onto hub of Rotor until it contacts Front End Plate.



**Do not press the Bearing on far enough to bind the End Plate against the face of the Rotor.**

3. Grasp Rotor Pinion in a vise so Rotor is in a vertical position.
4. Wipe each Vane (24) with a light film of oil and place a Vane in each slot in the Rotor.
5. Place Cylinder (18) down over Rotor and against Front End Plate.

### NOTICE

**Make certain the Cylinder is properly installed.**

There are two 3/4" (19 mm) holes, one on each of two flats running lengthwise of the Cylinder. One of these holes is located midway on the Cylinder; the other hole is located relatively close to one end of the Cylinder. When you place the Cylinder down over the Rotor, the 3/4" (19 mm) hole nearest the end of the Cylinder must be at the trailing end.

6. Slide Rotor Bearing Spacer (21), chamfered end first, on hub of Rotor.
7. Place Rear End Plate (23), bearing recess trailing, on hub of Rotor.
8. Press Rear Rotor Bearing (22), shield side first, on hub of Rotor until inner race seats against Rotor Bearing Spacer.

### Assembly of the Impact Mechanism

1. Coat Friction Drive Washer (49) with a film of **Ingersoll Rand** No. 170 Grease and install it in bottom of Ball Cam (46).
2. Work some **Ingersoll Rand** No. 170 Grease into large bore of Arbor (47), onto ball race of Arbor and on face of flange on Arbor.
3. Coat ball race on Hammer Spring Thrust Bearing Race (43) with **Ingersoll Rand** No. 170 Grease and slip Hammer Spring Thrust Bearing Race, ball race first, over shaft of the Arbor up to arbor flange.
4. Slip seventeen Hammer Spring Thrust Bearing Balls (44) into ball race between the face of arbor flange and Hammer Spring Thrust Bearing Race. Grease will help hold the balls in position.
5. Coat cam grooves on Ball Cam (46) with **Ingersoll Rand** No. 170 Grease and set Ball Cam, open end upward, on workbench.
6. Place Arbor with its assembled Hammer Spring Thrust Bearing Race and Bearing Balls inside Ball Cam against the Friction Drive Washer.
7. Place Hammer Spring (48) down over Arbor and against Hammer Spring Thrust Bearing Race.
8. Coat cam grooves inside Hammer (42) with **Ingersoll Rand** No. 170 Grease.
9. Align holes in side of Hammer with points of cam grooves on Ball Cam and seat the Hammer, open end first, down over Arbor, Hammer Spring and Ball Cam.
10. While holding these parts intact, place assembly on table of an arbor press so it is supported on hammer jaws and so the Arbor is free to move downward.
11. Press against rear face of Ball Cam until points in cam groove are aligned with the holes in side of Hammer. Place a Cam Ball (45) into each hole in side of Hammer until it enters cam groove on Ball Cam.
12. Slowly ease up on handle of arbor press. Impact mechanism will stay intact.

## Assembly of the Impact Wrench

1. Thread Dead Handle (29) into dead handle boss on side of Motor Housing (1).
2. Grasp Dead Handle in a vise so bore of Motor Housing is horizontal or nearly horizontal.
3. Install a new Reverse Valve Seal (9) on Reverse Valve (8).
4. Slip Reverse Lever (10) on hub of Reverse Valve so knob on Lever faces hole in side of Reverse Valve.
5. Insert Reverse Valve into bore of Reverse Valve Bushing (2) so knob on Reverse Lever faces outside of Motor Housing.
6. Be certain both Air Port Gaskets (3) are in good condition and are installed, large open end first, in the two air ports in bore of Motor Housing.
7. Install the assembled motor as follows:
  - a. Align dowel hole in each End Plate (23 and 26) with dowel hole in Cylinder (18) and insert a 1/4" (6 mm) diameter rod about 12" (305 mm) long, allowing it to protrude about 6" (150 mm) from Front End Plate.
  - b. Insert protruding end of the rod into dowel hole at bottom of motor housing bore and slide motor into Motor Housing.
  - c. Place End Plate Gasket (11) on face of Rear End Plate.
  - d. Install Backhead (12) on rear face of Motor Housing. Tighten Backhead Cap Screws (14) to 75 to 90 ft-lb (102 to 122 Nm) torque.
  - e. Install Grip Handle (15) on rear face of Backhead. Tighten Grip Handle Cap Screws (16) to 75 to 90 ft-lb (102 to 122 Nm) torque.
8. Install assembled gearing as follows:
  - a. Grasp Dead Handle (29) in a vise so gear end of Motor Housing is upward.
  - b. Place a Housing Cover Gasket (40) on face of Motor Housing.
  - c. Place assembled Planet Gear Frame (31) and Motor Housing Cover (39) on the face of the Motor Housing, making certain the Planet Gears (32) mesh with the Rotor Pinion (19) and Internal Gear (28). Manually, rotate Planet Gear Frame two or three revolutions to make certain there is no binding.
9. Install assembled impact mechanism as follows:
  - a. With Impact Wrench positioned as it was in Step 8 (a), place a Housing Cover Gasket on face of Motor Housing Cover (39).
  - b. Place assembled impact mechanism on pilot of Gear Frame (31), making certain hexagon section on Gear Frame enters the hexagon bore of Ball Cam (46).
  - c. Work some **Ingersoll Rand** Impact Wrench No. 170 Grease on protruding end of the Arbor (47) and place an Anvil Drive Pin (51) on each side of Arbor. The grease will hold the Pins in position.
  - d. Grease jaws and shank of Anvil with Impact Wrench Grease No. 170 and set Anvil down over end of Arbor so Anvil Drive Pins enter bore of Anvil.
  - e. Place Hammer Case (52) over Anvil and against Motor Housing Cover. Install Hammer Case Cap Screws (41). Tighten Hammer Case Cap Screws to 150 to 175 ft-lb (203 to 237 Nm) torque.
10. Thread Throttle Assembly into side of Motor Housing.

## 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 and 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 clean, suitable, cleaning solution, in a well-ventilated area. Reassemble tool as instructed in this manual.
Motor will not run	Improper positioning of Reverse Valve	Make certain that Reverse Valve is <b>fully</b> engaged to the left or right.
	Incorrect assembly of motor	Disassemble motor and replace worn or broken parts and reassemble as instructed.
Tool will not impact	Insufficient lubricant in the impact mechanism	Remove Hammer Case Assembly and lubricate impact mechanism.
	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:  
 Product Safety Information Manual 04580916.  
 Product Information Manual 03532124.  
 Parts Information Manual 16606030.

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

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