

# OPERATION AND MAINTENANCE MANUAL FOR MODELS IR-C232A AND IR-C232A-2 SUPER-DUTY AUTOMOTIVE 1/2" IMPACT WRENCHES

## NOTICE

Models IR-C232A and IR-C232A-2 Impact Wrenches are designed for use in general automotive repair, body shops, front end service and light truck and farm equipment applications.

## ⚠ WARNING

**IMPORTANT SAFETY INFORMATION ENCLOSED - SAVE THESE INSTRUCTIONS  
READ AND UNDERSTAND THIS MANUAL BEFORE OPERATING THIS PRODUCT**



**IT IS YOUR RESPONSIBILITY TO MAKE THIS SAFETY INFORMATION  
AVAILABLE TO OTHERS THAT WILL OPERATE THIS PRODUCT**

**FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD  
RESULT IN INJURY**

### PLACING TOOL IN SERVICE

- Always install, operate, inspect and maintain this product in accordance with all applicable standards and regulations (local, state, country, federal, etc.).
- Always use clean, dry air at 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet. Higher pressure may result in hazardous situations including excessive speed, rupture, or incorrect output torque or force.
- Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905-2 for a typical piping arrangement.
- Ensure an accessible emergency shut off valve has been installed in the air supply line, and make others aware of its location.
- Do not use damaged, frayed or deteriorated air hoses and fittings.
- Keep clear of whipping air hoses. Shut off the compressed air before approaching a whipping hose.
- 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.
- Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel. Use only recommended lubricants.
- Keep work area clean, uncluttered, ventilated and illuminated.
- Do not remove any labels. Replace any damaged label.

### USING THE TOOL

- Always wear eye protection when operating or performing maintenance on this tool.
- Always wear hearing protection when operating this tool.
- Always use Personal Protective Equipment appropriate to the tool used and material worked. This may include dust mask or other breathing apparatus, safety glasses, ear plugs, gloves, apron, safety shoes, hard hat and other equipment.
- This tool is not designed for working in explosive environments, including those caused by fumes and dust, or near flammable materials.
- This tool is not insulated against electric shock.
- Be aware of buried, hidden or other hazards in your work environment. Do not contact or damage cords, conduits, pipes or hoses that may contain electrical wires, explosive gases or harmful liquids.
- Prevent exposure and breathing of harmful dust and particles created by power tool use.  
Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
  - lead from lead based paints,
  - crystalline silica from bricks and cement and other masonry products, and
  - arsenic and chromium from chemically treated lumber.
 Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

Refer All Communications to the Nearest  
Ingersoll-Rand Office or Distributor.

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**Using the Tool (Continued)**

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- Keep others a safe distance from your work area, or ensure they use appropriate Personal Protective Equipment.
- Keep hands, loose clothing, long hair and jewelry away from working end of tool.
- Power tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.
- Keep body stance balanced and firm. Do not overreach when operating this tool. Anticipate and be alert for sudden changes in motion, reaction torques, or forces during start up and operation.
- Tool and/or accessories may briefly continue their motion after throttle is released.
- To avoid accidental starting - ensure tool is in "off" position before applying air pressure, avoid throttle when carrying, and release throttle with loss of air.
- Ensure work pieces are secure. Use clamps or vises to hold work piece whenever possible.
- Do not carry or drag the tool by the hose.
- Do not use power tools when tired, or under the influence of medication, drugs, or alcohol.
- Never use a damaged or malfunctioning tool or accessory.
- Do not modify the tool, safety devices, or accessories.
- Do not use this tool for purposes other than those recommended.
- Use accessories recommended by Ingersoll-Rand.
- Note the position of the reversing mechanism before operating the tool so as to be aware of the direction of rotation when operating the throttle.
- Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.
- Impact Wrenches are not torque wrenches. Connections requiring specific torque must be checked with a torque meter after fitting with an impact wrench.
- Periodically check the drive end of the tool to make certain that the socket retainer functions correctly, and that sockets and drive ends are not excessively worn which may allow the socket to come off when rotating.

**NOTICE**

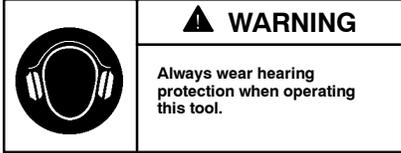
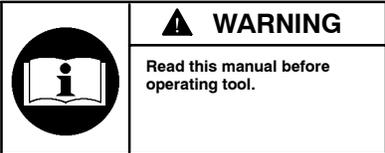
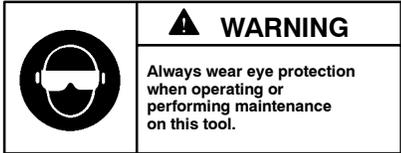
The use of other than genuine Ingersoll-Rand replacement parts may result in decreased tool performance and increased maintenance, and may invalidate all warranties.

Repairs should be attempted only by authorized, trained repairmen. Consult your nearest Ingersoll-Rand Authorized Servicer.

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**WARNING SYMBOL IDENTIFICATION**

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## SERVICING THE TOOL

### Lubrication



**Ingersoll-Rand No. 50**



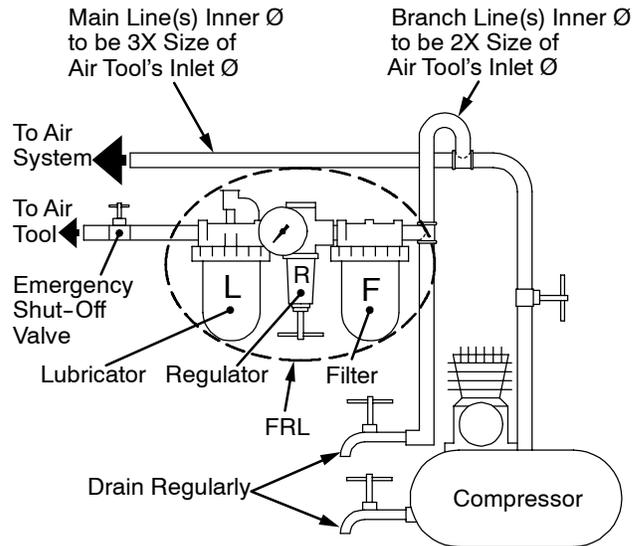
**Ingersoll-Rand No. 100**

Always use an air line lubricator with these tools.  
We recommend the following Filter-Regulator-Lubricator (FRL) Unit:

**For USA use Unit Number C28-04-FKG0-28**  
**For International use Unit Number C28-C4-FKG0**

**After each eight hours of operation**, if an airline lubricator is not used, remove the oil chamber plug (17) and fill the oil chamber with Ingersoll-Rand No. 50 Oil.

**After each forty-eight hours of operation**, or as experience indicates, inject about 4 cc of the recommended grease into the Grease Fitting (16).



**(Dwg. TPD905-2)**

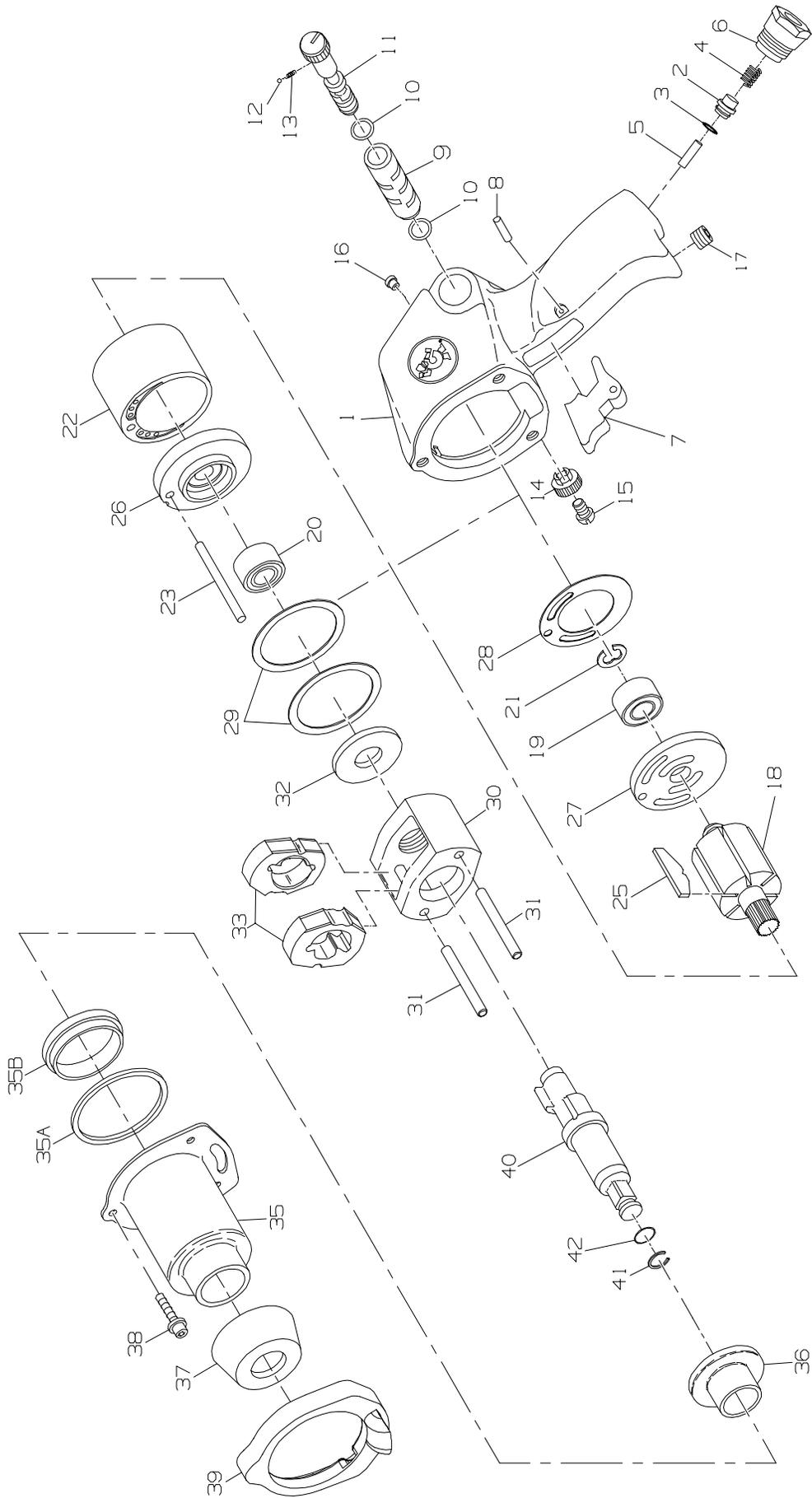
## HOW TO ORDER AN IMPACT WRENCH

### PISTOL GRIP with 1/2" SQUARE DRIVE

Model	Impacts/min.	Recommended Torque Range	
		ft-lb	Nm
IR-C232A	1,200	40-400	64-542

### PISTOL GRIP with 7/16" HEX DRIVE and QUICK-CHANGE ANVIL

IR-C232A-2	1,200	40-400	64-542
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(Dwg. TPA1505)

**PART NUMBER FOR ORDERING**

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1	Motor Housing Assembly	232C-A40	27	Rear End Plate	231-12
2	Throttle Valve Assembly	404-50	28	End Plate Gasket	231-283
◆	Throttle Valve Face	405-159	29	Motor Clamp Washer (2)	227-207
◆	Throttle Valve Spring	R1A-51	30	Hammer Frame Assembly	231XP-A703
5	Throttle Valve Stem	402-302	31	Hammer Pin (2)	231-704
6	Air Strainer Assembly	402-565	32	Hammer Frame Rear Washer	231-706
7	Trigger	705-93	◆	Hammer (2)	231XP-724
8	Trigger Pin	533-656	35	Hammer Case Assembly	232-A727A
9	Reverse Valve Bushing	231-A330	◆	Hammer Case Gasket	230-36
◆	Reverse Valve Bushing Seal (2)	PS3-67	35A	Hammer Case Pilot	405-800
11	Reverse Valve	231-329A	35B	Hammer Case Bushing	705-941
◆	Reverse Valve Detent Ball	AV1-255	36	Hammer Case Shield	AW234-109
◆	Reverse Valve Detent Spring	231-664	◆	Hammer Case Cap Screw (3)	231-638
14	Reverse Valve Knob	231-666	39	Grommet	232-110
15	Reverse Valve Knob Screw	231-665	◆	Anvil Assembly (1/2" square drive)	
16	Grease Fitting	130SR-188		Standard length	231B-A626
*	Housing Label	WARNING-2-99		2" Extended length	231B-A414
17	Oil Chamber Plug	R0H-377	41	Socket Retainer	231-425A
*	Oiler Felt	231-63	42	Retainer O-ring	R1A-159
18	Rotor	231-53	*	Hammer Kit (includes illustrated parts 33[2], 35A, 38[3] and 40)	
19	Rear Rotor Bearing	402-22		for standard length	231XP-THK1
20	Front Rotor Bearing	4U-97		for 2" extended length	231XP-THK2
21	Rear Rotor Bearing Retainer	402-118	*	Tube of Grease	405-MG1
22	Cylinder	231XP-3	*	Bottle of Oil	405-M01
23	Cylinder Dowel	230-98	*	Lube Injector	230-228
25	Vane Packet (set of 6 Vanes)	2131-42A-6			
26	Front End Plate	231-11			

\* Not illustrated.

◆ Indicates Tune-up Kit part.

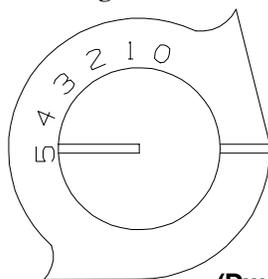
## SETTING THE POWER REGULATOR

The Models IR-C232A and IR-C232A-2 Impactool incorporates a power regulator into the reverse mechanism that allows the operator to have either full power output in one direction and reduced power output in the other direction or full power output in both directions. To adjust the power, proceed as follows:

**For full power in both directions**, rotate the reverse valve until the notch on each end of the reverse valve aligns with the number 5 on each side of the housing.

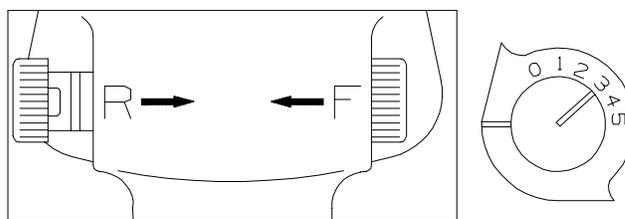
### NOTICE

The numbers 0 thru 5 on the housing are only for reference and **DO NOT** denote a specific power output. Zero (0) designates the lowest power output while five (5) denotes the highest.



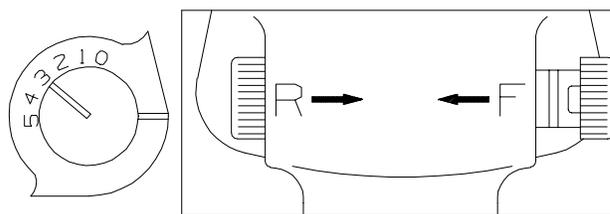
(Dwg. TPD1247)

**For reduced power in the forward direction and full power in the reverse direction**, push the reverse valve inward on the right side of the tool and rotate the reverse valve until the notch on the right side aligns with the desired number on the right side. This provides reduced power in forward but full power in reverse when the reverse valve is pushed in the opposite direction.



(Dwg. TPD1248)

**For reduced power in the reverse direction and full power in the forward direction**, push the reverse valve inward on the left side of the tool and rotate the reverse valve until the notch on the left side aligns with the desired number on the left side. This provides full power in forward but reduced power in reverse when the reverse valve is pushed in the opposite direction.



(Dwg. TPD1249)

## MAINTENANCE SECTION

### ⚠ 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.

### LUBRICATION

Each time a Model IR-C232A Impact Wrench is disassembled for maintenance and repair or replacement of parts, lubricate the tool as follows:

1. Work approximately 6 to 8 cc of Ingersoll-Rand No. 100 Grease into the impact mechanism. Coat the Anvil (40) lightly with grease around the Hammer Case Bushing (36). Inject approximately 1 to 2 cc of grease into the Grease Fitting (17).
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.

### 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 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.

## MAINTENANCE SECTION

### Disassembly of the Impact Wrench

1. Clamp handle of Impact Wrench in a vise with square driver upward.
2. Unscrew and remove the three Hammer Case Cap Screws (38).
3. While lightly tapping on end of Anvil (40) with a plastic hammer, lift off Hammer Case (35), Hammer Case Pilot (35B) and Hammer Case Gasket (35A).
4. Grasp Hammer Frame (30) and carefully lift off the entire impact mechanism, making certain not to drop the two Hammer Pins (31). If it is necessary to disassemble the impact mechanism, refer to **Disassembly of the Impact Mechanism**. If it is unnecessary to disassemble impact mechanism, set it aside intact.

### Disassembly of the Impact Mechanism

1. Set mechanism, driver end up, on a workbench.

#### NOTICE

**Note the twin hammers within the Hammer Frame. These are identical, but must be placed in the Hammer Frame in a certain relationship. Using a felt-tipped pen, mark the top hammer “T↑” and the bottom hammer “B↑” with the arrows pointing upward. Mark both Hammers on the same end.**

2. With mechanism sitting upright on workbench, slowly rotate Anvil in a clockwise direction until it comes up solid.

#### NOTICE

**If you continue to rotate the Anvil, it will cam the Hammers out of engagement. Do not allow this to happen; merely rotate the Anvil until it comes up solid.**

3. Hold Hammer Frame firmly and without disturbing the hammers, gently lift Anvil simultaneously rotating it clockwise about 1/8 of a turn from the Hammer Frame.

#### NOTICE

**The twin hammers are now free to slide from the Hammer Frame when the Hammer Pins are removed. Do not drop the Hammers (33).**

4. With Anvil removed, lift out the two Hammer Pins.
5. Remove the Hammers.

### Disassembly of the Motor

1. Lift Rear Hammer Frame Washer (32) and two Motor Clamp Washers (29) from front of motor.
2. Grasp splined end of Rotor (18) and pull assembled motor from Motor Housing (1).
3. Lift Front End Plate (26) and Front Rotor Bearing (20) from splined end of the Rotor.
4. Remove Cylinder (22) and Vanes (25).
5. Remove Rear Rotor Bearing Retainer (21).

6. Lift Rear End Plate (27) and Rear Rotor Bearing (19) from Rotor.
7. Unscrew Air Strainer (6) and remove it.
8. Withdraw Throttle Valve Spring (4), Throttle Valve (2), and Throttle Valve Stem (5). Remove Throttle Valve Face (3) from Throttle Valve.
9. Remove Trigger Pin (8) and Trigger (7).
10. Unscrew Reverse Valve Knob Screw (15) and remove Reverse Valve Knob (14).

#### NOTICE

**This Screw is installed with a quality thread locking compound. You may have to heat it slightly to loosen the Screw.**

11. While slowly rotating Reverse Valve (11), withdraw it from Reverse Valve Bushing (9).

#### NOTICE

**Be careful not to lose the Reverse Valve Detent Ball (12) and Spring (13) from the hole in the side of the Reverse Valve.**

## 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 installing 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. 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.
6. Check every bearing for roughness. If an open bearing must be cleaned, wash it thoroughly in solvent and dry it with a clean cloth. **Sealed or shielded bearings should never be cleaned.**

### Assembly of the Motor

1. Make certain Reverse Valve Bushing Seals (10) are properly located in undercuts in Reverse Valve Bushing (9).
2. Dampen Reverse Valve (11) with light oil. Install Reverse Valve Detent Spring (13) followed by Reverse Valve Detent Ball (12) in hole in Reverse Valve. With the Impact Wrench in an upright horizontal position and while facing handle end of Impact Wrench, slowly rotate the Reverse Valve and insert it from left to right in the splined end of Reverse Valve Bushing.
3. Apply a quality thread locking compound to the Reverse Valve Knob Screw (15). Attach Reverse Valve Knob (14) to Reverse Valve with Reverse Valve Knob Screw and tighten Screw to 40 to 50 in-lb (4.5 to 5.6 Nm) torque.

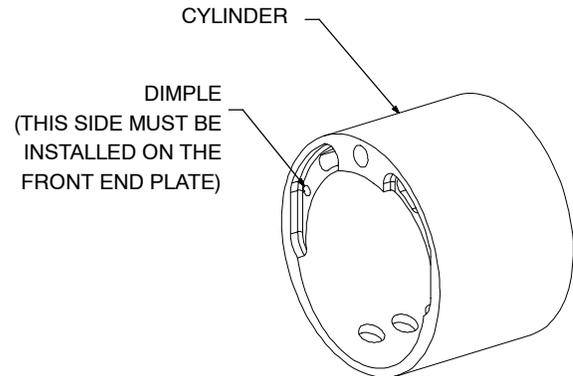
## MAINTENANCE SECTION

4. Place Trigger (7) in Housing (1) and secure it with Trigger Pin (8).
5. Install Throttle Valve Face (3) on Throttle Valve Assembly (2).
6. Install Throttle Valve Stem (5), Throttle Valve and Throttle Valve Spring (4).
7. Install Air Strainer Assembly (6) and tighten it to 30 to 35 ft-lb (40.5 to 47.5 Nm) torque.
8. Using a sleeve that will contact only outer ring of bearing, press Front Rotor Bearing (20) into Front End Plate (26) and Rear Rotor Bearing (19) into Rear End Plate (27).
9. Slip Front End Plate and Bearing over splined hub of Rotor (18).
10. Grasp splined hub of Rotor in leather-covered or copper-covered vise jaws so that Rotor is in a vertical position.
11. Dampen each Vane (25) with light oil and insert a Vane into each vane slot.
12. Set the Cylinder (22) over the Rotor and onto the Front End Plate.
13. Slide Rear End Plate and Bearing onto rotor hub and against Cylinder.
14. Install Rear Rotor Bearing Retainer (21) in groove on rotor hub.
15. Align dowel hole in both End Plates with the one through Cylinder and insert a guide rod 5/32" diameter x 6" long (3.9 mm diameter x 152 mm long). Allow rod to protrude from Rear End Plate.
16. Grasp handle of the Motor Housing in leather-covered or copper-covered vise jaws so that bore of the Motor Housing is horizontal.
17. Wipe a thin film of light grease on End Plate Gasket (28) and press Gasket firmly against Rear End Plate.
18. Insert protruding end of guide rod into dowel hole in bore of Motor Housing and slide motor along rod until it is completely seated.
19. Remove guide rod and replace it with Cylinder Dowel (23).
20. Reposition Motor Housing in vise so that open face of Motor Housing is upward.
21. Place two Motor Clamp Washers (29), convex side first, against Front End Plate so that inner rim of leading Washer contacts End Plate and outer rim of trailing Washer contacts Hammer Case Pilot (35B).
22. Place Rear Hammer Frame Washer (32) over hub of Rotor and against Front Rotor Bearing.

### NOTICE

**For proper performance, the Cylinder (22) must be installed according to the following instructions:**

23. One end of the Cylinder has a small dimple on the air inlet. The end with the dimple on it must be installed on the Front End Plate. See Dwg. TPA1778.



(Dwg. TPA1778)

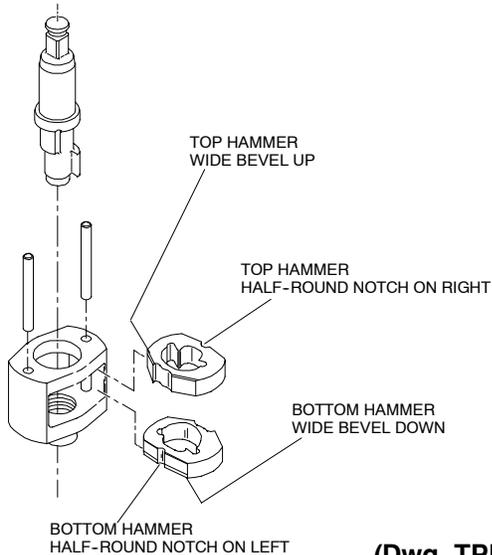
Set the Cylinder over the Rotor and onto the Front End Plate.

24. Slide Rear End Plate and Bearing onto rotor hub and against Cylinder.
25. Install Rear Rotor Bearing Retainer (21) in groove on rotor hub.
26. Align dowel hole in both End Plates with the one through Cylinder, and insert a guide rod 5/32" diameter x 6" long (3.9 mm diameter x 152 mm long). Allow rod to protrude from Rear End Plate.
27. Grasp handle of the Motor Housing in leather-covered or copper-covered vise jaws so that bore of the Motor Housing is horizontal.
28. Wipe a thin film of light grease on End Plate Gasket (28) and press Gasket firmly against Rear End Plate.
29. Insert protruding end of guide rod into dowel hole in bore of Motor Housing and slide motor along rod until it is completely seated.
30. Remove guide rod and replace it with Cylinder Dowel (23).
31. Reposition Motor Housing in vise so that open face of Motor Housing is upward.

## MAINTENANCE SECTION

- Place two Motor Clamp Washers (29), convex side first, against Front End Plate so that inner rim of leading Washer contacts End Plate, and outer rim of trailing Washer contacts Hammer Case Pilot (35B).
- Place Rear Hammer Frame Washer (32) over hub of Rotor and against Front Rotor Bearing.

### Assembly of the Impact Mechanism



- Coat Hammers (33) with a light film of Ingersoll-Rand No. 100 Grease.
- Replace Hammers in Hammer Frame (30) exactly as they were when you marked them prior to disassembly.

### NOTICE

If you are installing new Hammers or want to change the location of the existing Hammers to utilize both impacting surfaces, slide the Hammers in the Hammer Frame so that the half-round notch on one Hammer is located on one side of the Frame and the half-round notch on the other Hammer is located on the other side of the Frame.

- Replace Hammer Pins (31).
- Examine base of Anvil (40) and note its contour. While looking down through the Hammer Frame, swing top Hammer to its full extreme one way or another until you can match contour of Anvil. Enter Anvil into Hammer Frame and through first Hammer. Swing bottom Hammer in opposite direction from top Hammer and maneuver Anvil slightly until it drops into bottom Hammer.

### Assembly of the Impact Wrench

- Set assembled impact mechanism down over splined hub of Rotor.
- Smear a thin film of Ingersoll-Rand No. 100 Grease on inside surface of Hammer Case Bushing (36), and place the Hammer Case down over Anvil and against Motor Housing.
- Install Hammer Case Cap Screws (38). Tighten Hammer Case Cap Screws to 60 to 70 in-lb (6.8 to 7.9 Nm) torque.





