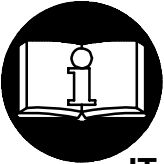


OPERATION AND MAINTENANCE MANUAL FOR MODEL 2705A1 STANDARD DUTY IMPACTOOL

NOTICE

Model 2705A1 Impactool is designed for use in light assembly work and machinery maintenance.

Ingersoll-Rand is not responsible for customer modification of tools for applications on which Ingersoll-Rand was not consulted.



⚠ WARNING

**IMPORTANT SAFETY INFORMATION ENCLOSED.
READ THIS MANUAL BEFORE OPERATING TOOL.**

**IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PLACE THE INFORMATION
IN THIS MANUAL INTO THE HANDS OF THE OPERATOR.**

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

PLACING TOOL IN SERVICE

- Always operate, inspect and maintain this tool in accordance with American National Standards Institute Safety Code for Portable Air Tools (ANSI B186.1).
- For safety, top performance, and maximum durability of parts, operate this tool as 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet with 3/8" (10 mm) inside diameter air supply 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 use damaged, frayed or deteriorated air hoses and fittings.
- Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905-1 for a typical piping arrangement.
- Always use clean, dry air at 90 psig maximum air pressure. Dust, corrosive fumes and/or excessive moisture can ruin the motor of an air tool.
- Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel.
- 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.

- Keep hands, loose clothing and long hair away from rotating end of tool.
- Note the position of the reversing lever before operating the tool so as to be aware of the direction of rotation when operating the throttle.
- Anticipate and be alert for sudden changes in motion during start up and operation of any power tool.
- Keep body stance balanced and firm. Do not overreach when operating this tool. High reaction torques can occur at or below the recommended air pressure.
- Tool shaft may continue to rotate briefly after throttle is released.
- Air powered 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.
- Use accessories recommended by Ingersoll-Rand.
- 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.
- This tool is not designed for working in explosive atmospheres.
- This tool is not insulated against electric shock.

NOTICE

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

Repairs should be made only by authorized trained personnel. Consult your nearest Ingersoll-Rand Authorized Servicenter.

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

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INGERSOLL-RAND®
PROFESSIONAL TOOLS

WARNING LABEL IDENTIFICATION



FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

| | |
|--|---|
| | ⚠ WARNING |
| | Always wear eye protection when operating or performing maintenance on this tool. |

| | |
|--|--|
| | ⚠ WARNING |
| | Always wear hearing protection when operating this tool. |

| | |
|--|---|
| | ⚠ WARNING |
| | 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. |

| | |
|--|--|
| | ⚠ WARNING |
| | Air powered 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. |

| | |
|--|------------------------------------|
| | ⚠ WARNING |
| | Do not carry the tool by the hose. |

| | |
|--|--|
| | ⚠ WARNING |
| | Do not use damaged, frayed or deteriorated air hoses and fittings. |

| | |
|--|--|
| | ⚠ WARNING |
| | Keep body stance balanced and firm. Do not overreach when operating this tool. |

| | |
|--|--|
| | ⚠ WARNING |
| | Operate at 90 psig (6.2 bar/620 kPa) Maximum air pressure. |

ADJUSTMENTS

SETTING THE POWER REGULATOR



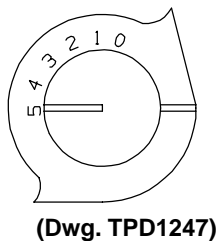
Impact wrenches are not torque control devices. Fasteners with specific torque requirements must be checked with suitable torque measuring devices after installation with an impact wrench.

Model 2705A1 Impactool incorporate 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:

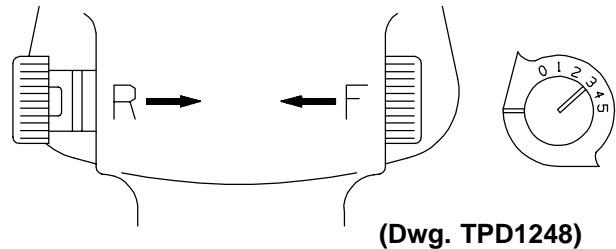
For full power in both directions, rotate the reverse valve until the notch on each end of the reverse valve aligns with the number 5 on each side of the housing.



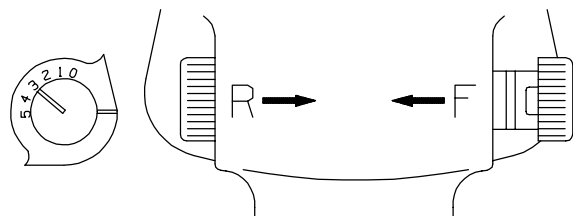
The numbers 0 thru 5 on the housing are only for reference and **DO NOT** denote a specific power output. Zero (0) designates the lowest power output while five (5) denotes the highest.



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. See 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 the opposite direction. See Dwg. TPD1249.



PLACING TOOL IN SERVICE

LUBRICATION



Ingersoll-Rand No. 50

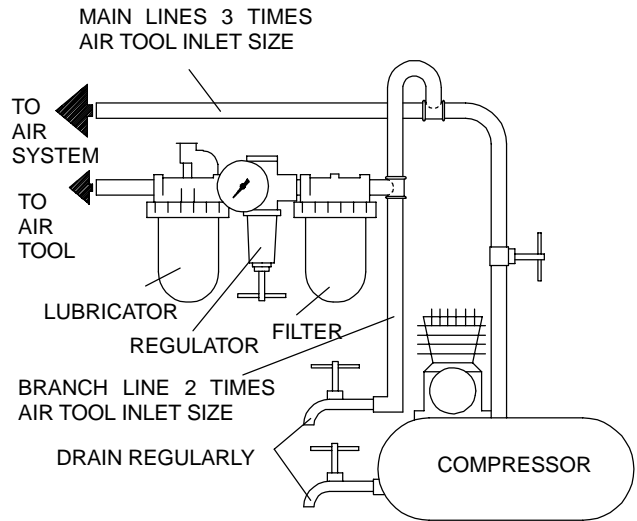


Ingersoll-Rand No. 100

Always use of an air line lubricator. We recommend the following Filter-Lubricator-Regulator Unit:

For USA – No. C28-04-FKG0-28

After each forty-eight hours of operation, or as experience indicates, inject about 4 cc of Ingersoll-Rand No. 100 Grease into the Grease Fitting.

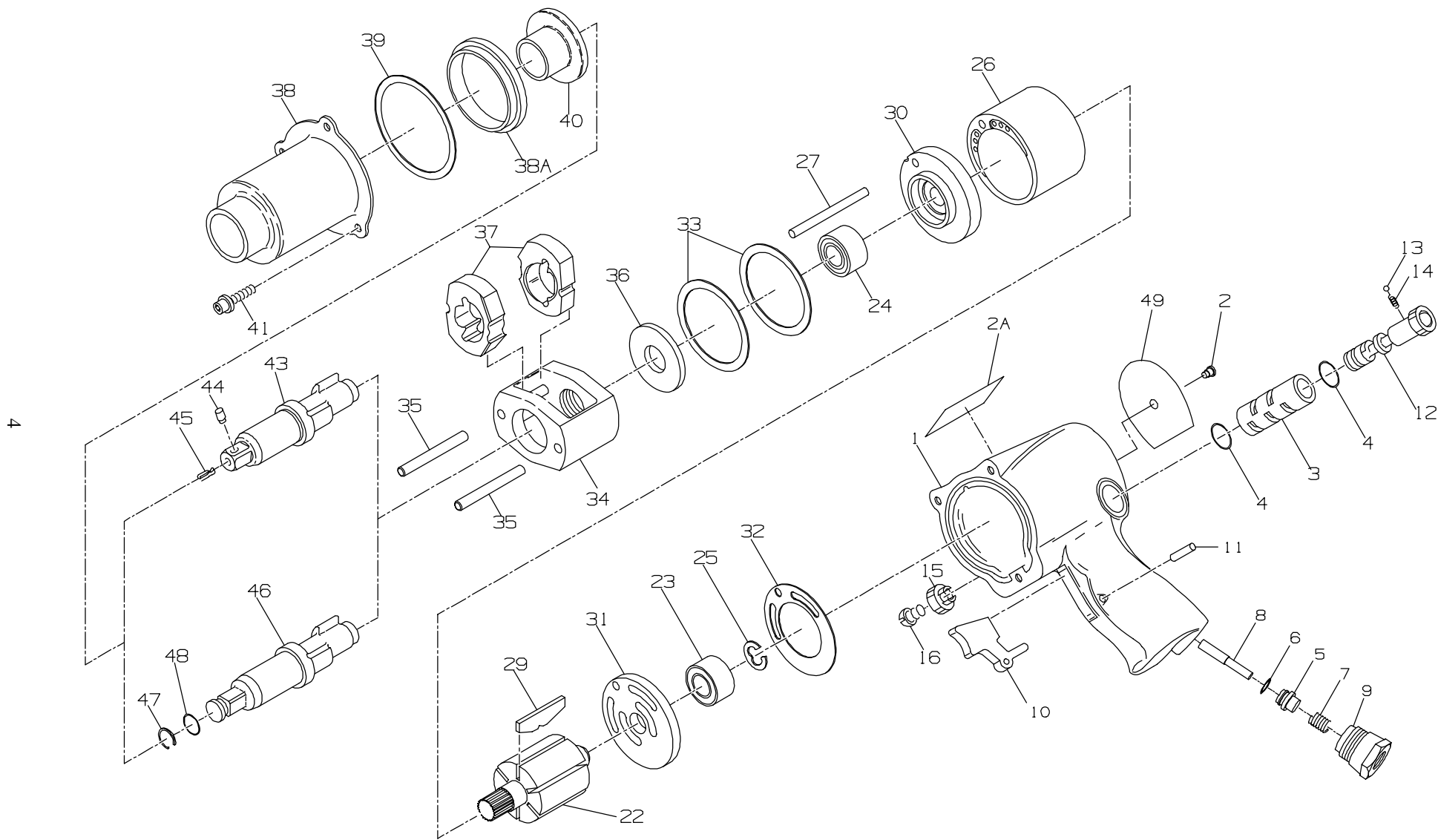


(Dwg. TPD905-1)

HOW TO ORDER AN IMPACT TOOL

1/2" SQUARE DRIVE

| Model | Impacts/min. | Recommended Torque Range | |
|--------|--------------|--------------------------|--------|
| | | ft-lb | Nm |
| 2705A1 | 1,200 | 40-200 | 54-271 |



(Dwg. TPA800-6)



PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

| | | | | | |
|------|-------------------------------------|--------------|------|---|------------|
| | Motor Housing Assembly | 231-A40A | 33 | Motor Clamp Washer (2) | 227-207 |
| 1 | Motor Housing | 231-B40 | 34 | Hammer Frame Assembly | 231-A703 |
| 2 | Grease Fitting | 130SR-188 | 35 | Hammer Pin (2) | 231-704 |
| 2A | Housing Label | WARNING-2-99 | 36 | Hammer Frame Rear Washer | 231-706 |
| 3 | Reverse Valve Bushing | 231-A330 | 37 | Hammer (2) | 231-724 |
| ◆ 4 | Reverse Valve Bushing Seal (2) | PS3-67 | 38 | Hammer Case Assembly | 705-A927 |
| 5 | Throttle Valve Assembly | 404-50A | 38A | Hammer Case Pilot | 405-800 |
| ◆ 6 | Throttle Valve Face | 405-159 | ◆ 39 | Hammer Case Gasket | 230-36 |
| ◆ 7 | Throttle Valve Spring | R1A-51 | 40 | Hammer Case Bushing | 705-941 |
| 8 | Throttle Valve Stem | 402-302 | 41 | Hammer Case Cap Screw (3) | 231-638 |
| 9 | Air Strainer Assembly | 402-565 | 43 | Anvil Assembly (with pin-type retainer) | 2904-P726 |
| 10 | Trigger | 705-93 | ◆ 44 | Socket Retaining Plunger | 804-716 |
| 11 | Trigger Pin | 533-656 | ◆ 45 | Plunger Spring | 5UHD-718 |
| 12 | Reverse Valve | 231-329A | 46 | Anvil Assembly (with ring-type retainer) | 231-A626A |
| ◆ 13 | Reverse Valve Detent Ball | AV1-255 | ⊗ 47 | Socket Retainer | 231-425A |
| ◆ 14 | Reverse Valve Detent Spring | 231-664 | 48 | Retainer O-ring | R1A-159 |
| 15 | Reverse Valve Knob | 231-666 | 49 | Nameplate | 2705A1-301 |
| 16 | Reverse Valve Knob Screw | 231-665 | * | Tube of Grease | 405-MG1 |
| 22 | Rotor | 231-53 | * | Lube Injector | 230-228 |
| ◆ 23 | Rear Rotor Bearing | 402-22 | * | Bottle of Oil | 405-M01 |
| ◆ 24 | Front Rotor Bearing | 4U-97 | * | Tune-up Kit (includes illustrated parts 4 (2), 6, 7, 13, 14, 23, 24, 25, 29, 32, 39, 44, 45) and (non-illustrated part R1-75) | 2705-TK3 |
| ◆ 25 | Rear Rotor Bearing Retainer | 402-118 | | | |
| 26 | Cylinder | 407-3 | | | |
| 27 | Cylinder Dowel | 230-98 | | | |
| ◆ 29 | Vane Packet (set of 6 Vanes) | 221-42-6 | | | |
| 30 | Front End Plate | 231-11 | | | |
| 31 | Rear End Plate | 231-12 | | | |
| ◆ 32 | End Plate Gasket | 231-283 | | | |

* Not illustrated.

◆ Indicates Tune-up Kit part.

⊗ If you have an old-style, one-piece Socket Retainer, order Part No. 231-425 as a replacement.

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 Series 2705A1 Impactool is disassembled for maintenance and repair or replacement of parts, lubricate the tool as follows:

1. Work approximately 4 to 6 cc of Ingersoll–Rand No. 100 Grease into the impact mechanism. Coat the Anvil (43) or (46) lightly with grease around the Hammer Case Bushing (40). Inject approximately 1 to 2 cc of grease into the Grease Fitting (2).
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. 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 Impactool

1. Clamp the handle of the Impactool in a vise with the square driver upward.
2. Unscrew and remove the three Hammer Case Cap Screws (41).
3. While lightly tapping on the end of the Anvil (43) or (46) with a plastic hammer, lift off the Hammer Case (38).
4. Grasp the Hammer Frame (34) and carefully lift off the entire impact mechanism, making certain not to drop the two Hammer Pins (35). If it is necessary to disassemble the impact mechanism, refer to **Disassembly of the Impact Mechanism**. If it is unnecessary to disassemble the impact mechanism, set it aside intact.

Disassembly of the Impact Mechanism

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

NOTICE

Note the twin Hammers (37) 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 the mechanism sitting upright on the workbench, slowly rotate the 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. Don't do this; merely rotate the Anvil until it comes up solid.

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

NOTICE

The twin hammers will be free to slide from the Hammer Frame when the Hammer Pins are removed. Do not drop the Hammers.

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

Disassembly of the Reverse Valve

1. Unscrew the Reverse Valve Knob Screw (16) and remove the Reverse Valve Knob (15).

NOTICE

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

2. While slowly rotating the Reverse Valve (12), withdraw it from the Reverse Valve Bushing (3).

NOTICE

Be careful you do not lose the Reverse Valve Detent Ball (13) and Spring (14) from the hole in the side of the Reverse Valve.

MAINTENANCE SECTION

Disassembly of the Motor

1. Lift the Rear Hammer Frame Washer (36) and the two Motor Clamp Washers (33) from the front of the motor.
2. Grasp the splined end of the Rotor (22) and pull the assembled motor from the Motor Housing (1).
3. Lift the Front End Plate (30) and Front Rotor Bearing (24) from the splined end of the Rotor.
4. Remove the Cylinder (26) and Vanes (29).
5. Remove the Rear Rotor Bearing Retainer (25).
6. Lift the Rear End Plate (31) and Rear Rotor Bearing (23) from the Rotor.

Disassembly of the Throttle Mechanism

1. Unscrew the Air Strainer (9) and remove it.
2. Withdraw the Throttle Valve Spring (7), Throttle Valve (5), and Throttle Valve Stem (8). Remove the Throttle Valve Face (6) from the Throttle Valve.
3. Remove the Trigger Pin (11) and Trigger (10).

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 or 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

1. Place the Trigger (10) in the Housing (1) and secure it with the Trigger Pin (11).
2. Install the Throttle Valve Face (6) on the Throttle Valve (5).
3. Install the Throttle Valve stem (8), Throttle Valve and Throttle Valve Spring (7).
4. Install the Air Strainer Assembly (9) and tighten it to 30 to 35 ft-lb (40.5 to 47.5 Nm) torque.

Assembly of the Motor

1. Using a sleeve that will contact only the outer ring of the bearing, press the Front Rotor Bearing (24) into the Front End Plate (30) and the Rear Rotor Bearing (23) into the Rear End Plate (31).
2. Slip the Front End Plate and Bearing over the splined hub of the Rotor (22).
3. Grasp the splined hub of the Rotor in leather-covered or copper-covered vise jaws so that the Rotor is in a vertical position.

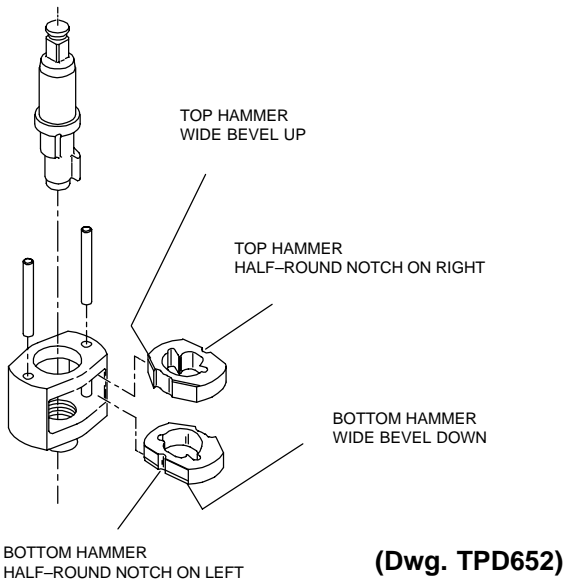
4. Dampen each Vane (29) with light oil and insert a Vane into each vane slot.
5. Set the Cylinder (26) over the Rotor and onto the Front End Plate.
6. Slide the Rear End Plate and Bearing onto the rotor hub and against the Cylinder.
7. Install the Rear Rotor Bearing Retainer (25) in the groove on the rotor hub.
8. Align the dowel hole in both End Plates with the one through the Cylinder, and insert a guide rod 5/32" diameter x 6" long (3.9 mm diameter x 152 mm long). Allow the rod to protrude from the Rear End Plate.
9. Grasp the handle of the Motor Housing in leather-covered or copper-covered vise jaws so that the bore of the Motor Housing is horizontal.
10. Wipe a thin film of light grease on the End Plate Gasket (32) and press the Gasket firmly against the Rear End Plate.
11. 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.
12. Remove the guide rod and replace it with the Cylinder Dowel (27).
13. Reposition the Motor Housing in the vise so that the open face of the Motor Housing is upward.
14. Place the two Motor Clamp Washers (33), **convex side first**, against the Front End Plate so that the inner rim of the leading Washer contacts the End Plate and the outer rim of the trailing Washer contacts the Hammer Case Pilot (38A).
15. Place the Rear Hammer Frame Washer (36) over the hub of the Rotor and against the Front Rotor Bearing.

Assembly of the Reverse Valve

1. Make certain the Reverse Valve Bushing Seals (4) are properly located in the undercuts in the Reverse Valve Bushing (3).
2. Dampen the Reverse Valve (12) with light oil. Install the Reverse Valve Detent Spring (14) followed by the Reverse Valve Detent Ball (13) in the hole in the Reverse Valve. With the Impactool in an upright horizontal position, and while facing the handle end of the Impactool, slowly rotate the Reverse Valve and insert it from left to right in the splined end of the Reverse Valve Bushing.
3. Apply a thread locking compound to the Reverse Valve Knob Screw (16). Attach the Reverse Valve Knob (15) to the Reverse Valve with the Reverse Valve Knob Screw, and tighten the Screw to 40 to 50 in-lb (4.5 to 5.6 Nm) torque.

MAINTENANCE SECTION

Assembly of the Impact Mechanism



1. Coat the Hammers (37) with a light film of Ingersoll-Rand Impactool Grease No. 100.
2. Replace the Hammers in the Hammer Frame (34) 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.

3. Replace the Hammer Pins (35).
4. Examine the base of the Anvil (43) or (46) and note its contour. While looking down through the Hammer Frame, swing the top Hammer to its full extreme one way or another until you can match the contour of the Anvil. Enter the Anvil into the Hammer Frame and through the first Hammer. Swing the bottom Hammer in the opposite direction from the top Hammer and maneuver the Anvil slightly until it drops into the bottom Hammer.

Assembly of the Impactool

1. Set the assembled impact mechanism down over the splined hub of the Rotor.
2. Smear a thin film of Ingersoll-Rand Impactool Grease No. 100 on the inside surface of the Hammer Case Bushing (40), and place the Hammer Case down over the Anvil and against the Motor Housing.
3. Install the Hammer Case Cap Screws (41). Tighten the Hammer Case Cap Screws to 60 to 70 in-lb (6.8 to 7.9 Nm) torque.

MAINTENANCE SECTION

TROUBLESHOOTING GUIDE

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

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.