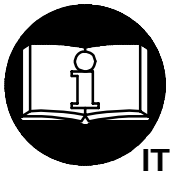
Form P7416
Edition 2
April, 2000

GB

INSTRUCTIONS FOR MODELS 2904P1, 2904P2 and 2904P4 IMPACTOOLS

NOTICE

Models 2904P1, 2904P2 and 2904P4 Impactools are designed for use in general maintenance and production applications.
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 all regulations (local, state, federal and country), that may apply to hand held/hand operated pneumatic tools.
- For safety, top performance, and maximum durability of parts, operate this tool at 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.
- The use of a hose whip is recommended. A coupler connected directly to the air inlet increases tool bulk and decreases tool maneuverability.
- For maximum performance, the coupler on the wall should be the next size larger than the coupler used on the tool. The coupler closest to the tool should not be less than the proper air supply hose size.

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.

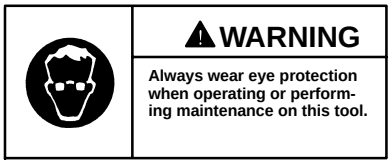
Printed in U.S.A.

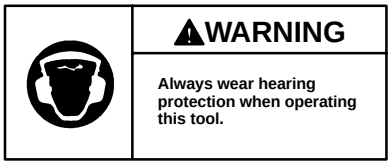
INGERSOLL-RAND®
PROFESSIONAL TOOLS

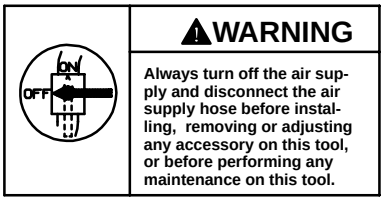
WARNING LABEL IDENTIFICATION

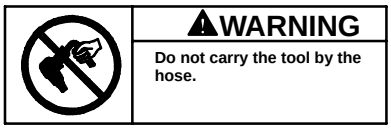
⚠ WARNING

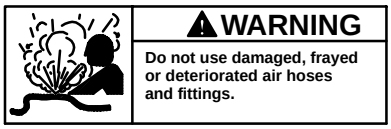
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

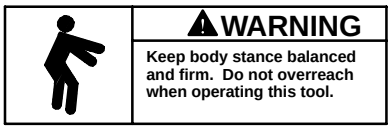


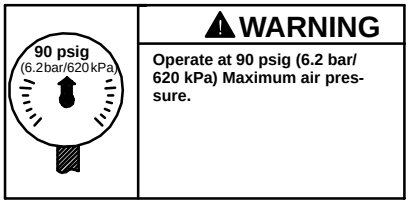










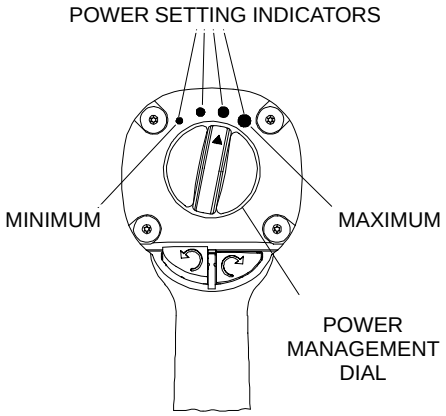


USING THE POWER MANAGEMENT SYSTEM

⚠ WARNING

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

MODEL 2904P
POWER MANAGEMENT SYSTEM



(Dwg. TPD1339)

Models 2904P1, 2904P2 and 2904P4 Impactools incorporate a Power Management System that allows the operator to select four power output settings. These settings range from minimum power output through maximum power output in the forward direction only. **The Air Wrench will always operate at maximum power output in the reverse direction, no matter what power output level is selected.**

⚠ WARNING

The four power setting indicators of increasing size on the rear of the housing indicate increasing power output levels, are for reference only and DO NOT denote a specific power output. The smallest power setting indicator designates minimum power output, the two middle power setting indicators denote medium power outputs and the largest power setting indicator denotes maximum power output.
The power output can be further reduced in forward or reverse by using the variable throttle. Air supply systems which do not deliver adequate air pressure can affect power output at all settings.

PLACING TOOL IN SERVICE

LUBRICATION

Ingersoll–Rand No. 50

Ingersoll–Rand No. 115–1LB for routine external lubrication of the impact mechanism through the Hammer Case Grease Fitting.

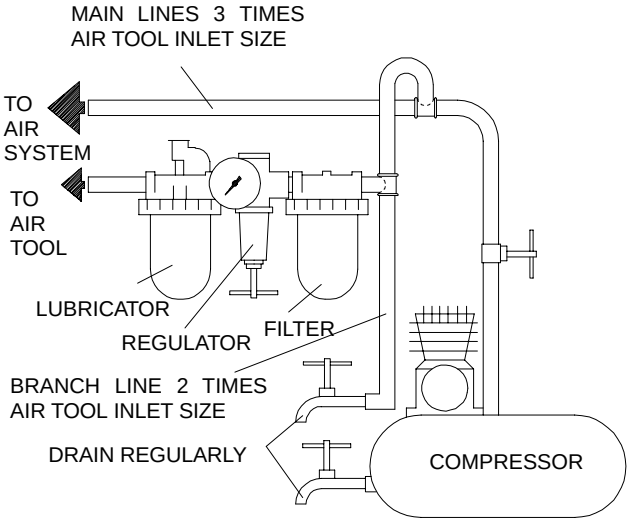
Use Ingersoll–Rand No. 105–1LB or Ingersoll–Rand 105–8LB when disassembling and assembling the impact mechanism.

Always use of an air line lubricator with these tools.
We recommend the following Filter–Lubricator–Regulator Unit:

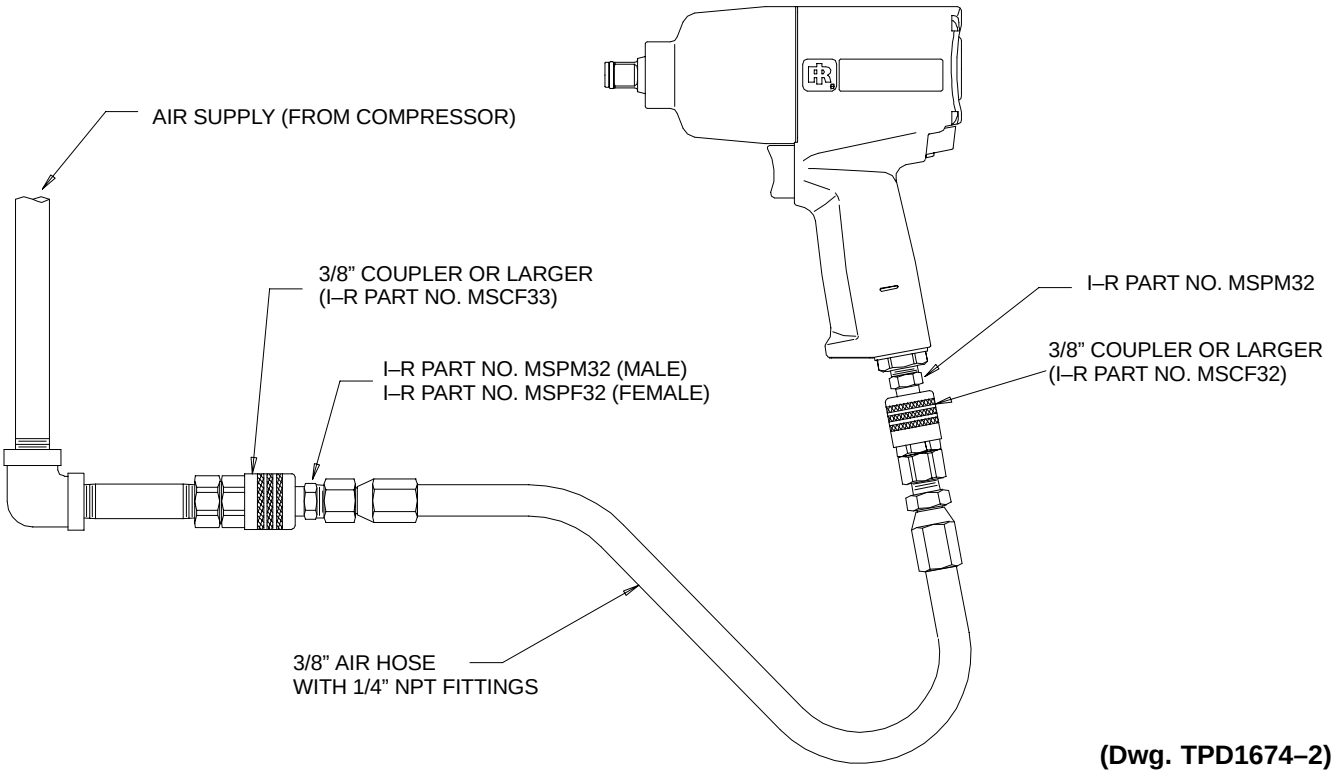
For USA – No. C18–03–FKG0–28
For International – C18–C3–FKG0

CAUTION

Do not mark any nonmetallic surface on this tool with customer identification codes. Such actions could affect tool performance.



(Dwg. TPD905–1)



(Dwg. TPD1674–2)

PLACING TOOL IN SERVICE

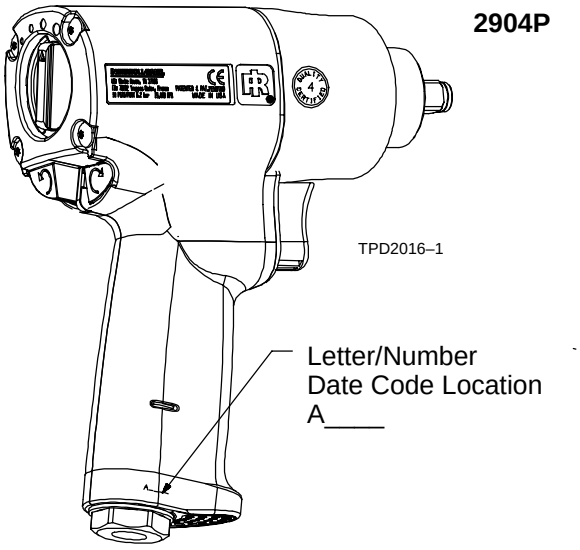
SPECIFICATIONS

Model	Type of Handle	Drive	Impacts per min.	Recommended Torque Range	
				Forward ft–lb (Nm)	Reverse ft–lb (Nm)
2904P1	pistol grip	3/8”	1,500	25–200 [230 Max.] (34–272 [312 Max.])	230 [260 Max.] (312 [352 Max.])
2904P2	pistol grip	1/2”	1,500	25–190 [220 Max.] (34–258 [298 Max.])	220 [250 Max.] (298 [339 Max.])
2904P4	pistol grip	1/4” hex Q.C.	1,500	25–200 [230 Max.] (34–272 [312 Max.])	230 [260 Max.] (312 [352 Max.])

Model	■Sound Level dB (A)		♦Vibrations Level
	Pressure	Power	m/s^2
2904P1	94.9	107.9	3.1
2904P2	93.7	106.7	3.1
2904P4	94.9	107.9	3.1

■ Tested in accordance with PNEUROP PN8NTC1.2

♦ Tested to ISO8662–7 loaded with frictionbrake to 9 RPM



DECLARATION OF CONFORMITY

We ***Ingersoll–Rand, Co.***

(supplier's name)

78192 Trappes Cedex France

(address)

declare under our sole responsibility that the product,

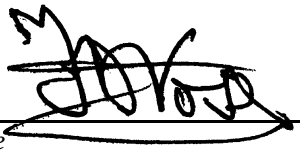
Models 2904P1, 2904P2 and 2904P4 Impactools

to which this declaration relates, is in compliance with the provisions of

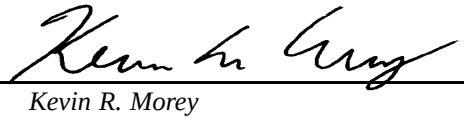
98/37/EC *Directives.*

By using the following Principle Standards: ***ISO8662, PNEUROP PN8NTC1***

Serial No. Range ***(1999 →) A99G XXXXX →***



D. Vose
Name and signature of authorised persons



Kevin R. Morey
Name and signature of authorised persons

April, 2000
Date

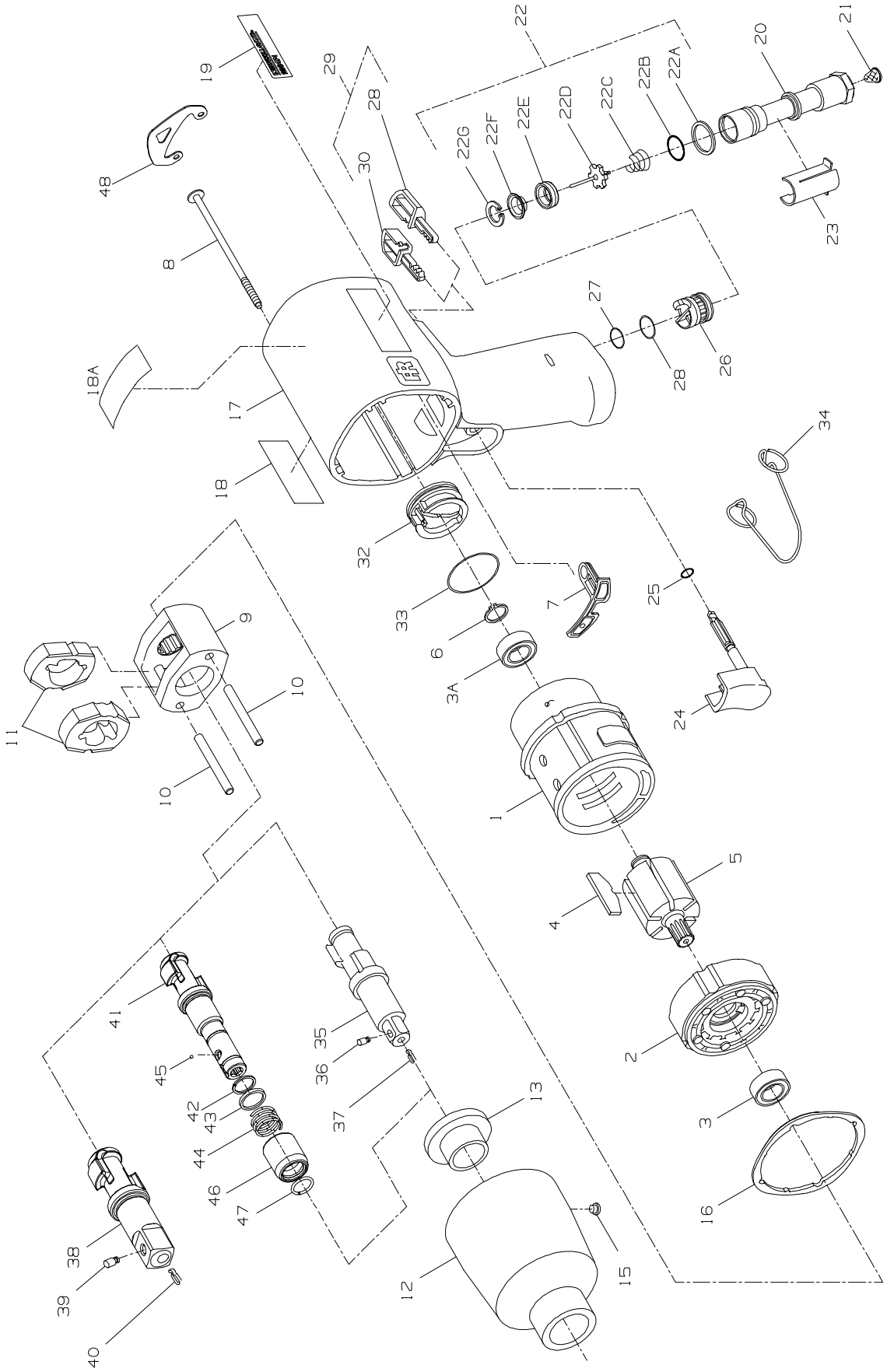
April, 2000
Date

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.

When the life of the tool has expired, it is recommended that the tool be disassembled, degreased and parts be separated by material so that they can be recycled.

(TPA1714)


1
2
3
3A
4
5
6
7
8
9
10
10
11
12
13
15
16
17
18
18A
19
20
21
22
22A
22B
22C
22D
22E
22F
22G
23
24
25
26
27
28
28
29
30
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

		PART NUMBER FOR ORDERING	
	1	Cylinder	2112–3
	2	Front End Plate	2112–11
♦	3	Front Rotor Bearing	2131–97
♦	3A	Rear Rotor Bearing	R00H–97
♦•	4	Vane Packet (set of 6 Vanes)	2112–42–6
	5	Rotor	2112–53
♦	6	Rear Rotor Bearing Retainer	4E–6
#♦•	7	Motor Gasket	2112–283
+	8	Hammer Case Screw (4)	2112–638
		Hammer Frame Assembly	2112–A703
	9	Hammer Frame	2112–703
	10	Hammer Pin (2)	2112–704
+	11	Hammer (2)	
		for 2904P1 and 2904P4	2112–724
		for 2904P2	2904P–724
	12	Hammer Case Assembly	2112–727
	13	Hammer Case Bushing	2112–641
	15	Grease Fitting	D0F9–879
#♦•+	16	Hammer Case Gasket	2112–36
	17	Housing Assembly	2112–A40
	18	Housing Label	2112–99
	18A	Warning Label	WARNING–2–99
	19	Nameplate	
		for 2904P1	2904P1–301
		for 2904P2	2904P2–301
		for 2904P4	2904P4–301

		PART NUMBER FOR ORDERING	
		Inlet Bushing Assembly	2131–A565
	20	Inlet Bushing	2131–565
♦	21	Inlet Bushing Screen	5RA–61
♦	22	Inlet Parts Kit	2131–K303
	22A	Washer	————
♦	22B	Inlet Bushing Seal	————
	22C	Tilt Valve Spring	————
	22D	Tilt Valve	————
	22E	Tilt Valve Seat	————
	22F	Tilt Valve Seat	————
		Support	————
	22G	Tilt Valve Seat Retainter	————
	23	Inlet Retainer Clip	2131–57
•	24	Trigger Assembly	2131–A93
#♦	25	Trigger O–ring	————
	26	Reverse Valve Assembly	2131–A329
#♦	27	Reverse Valve O–ring (top)	————
#♦	28	Reverse Valve O–ring (bottom) (blue)	————
	29	Button Kit	2112–K75
	30	Forward Button	————
	31	Reverse Button	————
	32	Power Management Dial	2112–A249
#♦	33	Power Management Dial Seal	2112–248

♦ Indicates Tune–up Kit part.
+ Indicates Hammer Kit part.
# Indicates Seal Kit part.
• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
34	Inlet Clip Removal Tool	2131–322	*	Grease (for lubrication when	
	Anvil Assembly (for 2904P1)	2112P–A626		disassembling and assembling the	
35	Anvil	2112P–626		impact mechanism)	
♦36	Socket Retainer	5020–716		1 lb	105–1LB
♦37	Socket Retainer Spring	401–718		8 lb	105–8LB
	Anvil Assembly (for 2904P2)	2112P–A726	*	Protective Cover	2112–P32
38	Anvil	2112P–726	*	Grease Gun	R000A2–228
39	Socket Retainer	804–716	*	Seal Kit (includes illustrated	
40	Socket Retainer Spring	5UHD–718		items 7, 16, 22B, 25, 27, 28 and 33)	2112–K36
	Anvil Assembly (for 2904P4)		*	Tune–up Kit (includes	
	(Quick Change)	2112–A926–4		illustrated items 3, 3A, 4, 6, 7, 16,	
41	Quick Change Anvil	2112–926–4		21, 22, 25, 27, 28, 33, 36 and 37)	2904P–TK2
42	Thrust Ring Lock	5C1–853	*	Hammer Kit (for 2904P1)	
43	Thrust Ring	I0A902A2–932–4		(includes illustrated items 8 [4],	
44	Retaining Sleeve Spring	2U–931–4		11 [2], 16, and Anvil Assembly part	
45	Retaining Ball	2U–696		number 2112P–A626)	2904P1–THK1
46	Retaining Sleeve	2U–930–4	*	Hammer Kit (for 2904P2) (includes	
47	Retaining Sleeve Stop	2U–933–4		illustrated items 8 [4], 11 [2], 16	
48	Hanger	2112–366		and Anvil assembly part number	
*	Grease (1 lb) (for external lubrication			2112P–A726)	2904P2–THK1
	of the impact lubrication of the impact				
	mechanism)	115–1LB			

* Not illustrated.

♦ Indicates Tune–up Kit part.

MAINTENANCE SECTION

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 vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.

NOTICE

Always use leather–covered vise jaws when clamping the handle in a vise. Leather will conform to the shape of the handle and allow the tool to be held securely. To prevent damage to the exhaust diffuser, never clamp only the bottom of the handle.

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 Impact Wrench

1. Clamp the handle of the impact wrench in a vise with leather–covered jaws with the square drive positioned horizontally.

NOTICE

Avoid excessive clamping pressure which can damage the Housing and can cause difficulty when removing the parts.

2. Unscrew and remove the four Hammer Case Screws (8).
3. While lightly tapping on the end of the Anvil (35, 38 or 41) with a plastic hammer, lift off the Hammer Case (12) and Hammer Case Gasket (16).

NOTICE

The Front End Plate (2) might come off during the removal of the Hammer Case. Make sure that it does not drop on the floor or strike a hard or metallic surface since it might be damaged.

4. Grasp the Hammer Frame (9) and carefully lift off the entire impact mechanism, making certain not to drop the two Hammer Pins (10).

Disassembly of the Square Drive Anvil

Model 2904P1 and 2904P2

1. Use a hooked wire to pull the Socket Retainer Spring (37 or 40) out of the end of the Anvil (35 or 38).
2. Remove the Socket Retainer (36 or 39).

Disassembly of the Quick–Change Anvil

Model 2904P4

1. Remove the Retaining Sleeve Stop (47).

NOTICE

The Retaining Ball (45) will fall free when the Retaining Sleeve (46) is removed.

2. Remove the Retaining Sleeve, Retaining Ball, Retaining Sleeve Spring (44), Thrust Ring (43) and Thrust Ring Lock (42).

Disassembly of the Impact Mechanism

1. Set the mechanism, driver end up, on the 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 "T↑ " hammer 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 while simultaneously rotating it clockwise about 1/8 of a turn, from the Hammer Frame.
4. With the Anvil removed, lift out the two Hammer Pins.

NOTICE

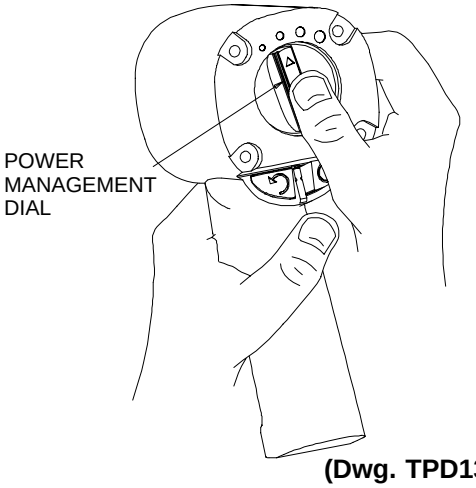
The twin hammers are now free to slide from the Hammer Frame. Be careful do not to drop them.

Disassembly of the Motor

NOTICE

When pulling, disassembling or assembling the motor, we recommend replacement of the Motor Gasket (7).

1. Remove the Motor Assembly from the Housing (17) by pushing on the Power Management Dial (32) from the back of the Housing. Refer to Dwg. TPDD1322.



(Dwg. TPD1322)

NOTICE

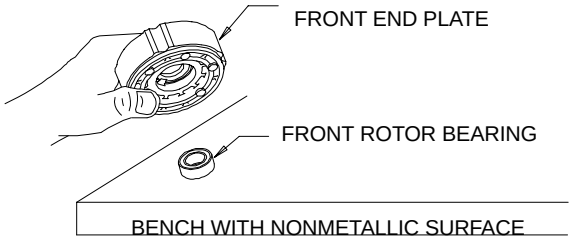
If the Motor Assembly cannot be removed from the Housing by pushing, tap the Power Management Dial lightly until the Motor Assembly is free.

2. Remove the Power Management Dial from the rear of the Cylinder (1). Remove the Power Management Dial Seal (33) if it needs to be replaced.
3. Remove the Front End Plate (2) from the Cylinder by tapping the splined end of the Rotor (5) with a plastic hammer.

NOTICE

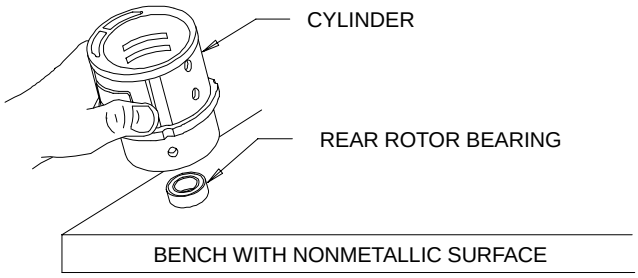
To prevent damage to the Cylinder, do not tap or strike Cylinder on a hard or metallic surface when removing the Rotor Bearings (3) and (3A).

To remove the Front Rotor Bearing, hold the Front End Plate with Front Rotor Bearing down and tap the Front End Plate on a flat, nonmetallic surface such as a work bench. This will loosen the Front Rotor Bearing so that it will drop out of the Front End Plate. Refer to Dwg. TPD1323.



(Dwg. TPD1323)

4. Remove the Rear Rotor Bearing Retainer (6) from the rear of the Rotor (5). The Rotor can now be removed from the Cylinder. Remove the Vanes (4) from the Rotor if they need to be replaced.



(Dwg. TPD1324)

5. To remove the Rear Rotor Bearing, hold the Cylinder with the Rear Rotor Bearing down and tap the Cylinder on a flat, nonmetallic surface such as a work bench. This will loosen the Rear Rotor Bearing so that it will drop out of the Cylinder. Refer to Dwg. TPD1324.
6. Working from the rear of the Housing, push out the Motor Gasket (7).

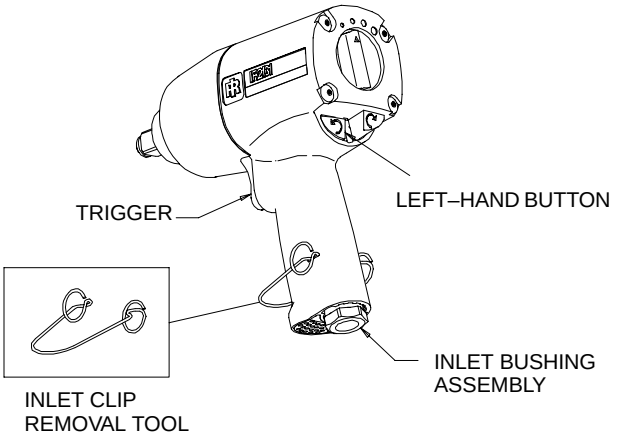
NOTICE

When removing the Motor Gasket, do not use a screwdriver or any other sharp object which could damage the Gasket and/or Housing.

Disassembly of the Throttle Mechanism

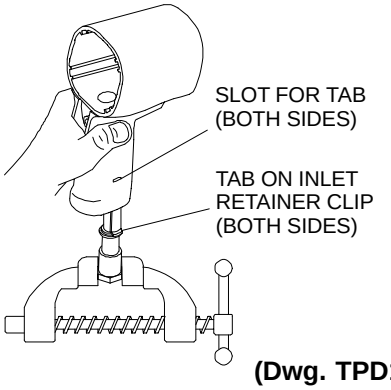
NOTICE

For ease of disassembly, we recommend using the Inlet Clip Removal Tool (34). Refer to Dwg. TPD1681.



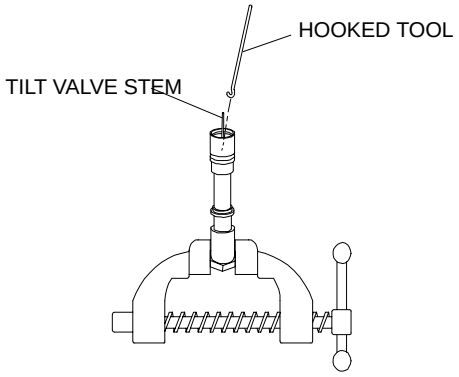
(Dwg. TPD1681)

1. Secure the Inlet Bushing in a vise. Press in both tabs of the Inlet Retainer Clip (23) and pull upward on the Housing (17). This will allow the Inlet Bushing to come free from the Handle of the Housing. Refer to Dwg. TPD1326.
2. Pull the Trigger (24) from the front of the Housing and remove the Trigger O–ring (25).



(Dwg. TPD1326)

3. With the Inlet Bushing still in the vise, remove the Tilt Valve Seat Retainer (25G) and Tilt Valve Seat Support (25F). Use a hooked tool with no sharp edges to remove the Tilt Valve Seat (25E) from the Inlet Bushing. Refer to Dwg. TPD1327.



(Dwg. TPD1327)

4. Remove the Tilt Valve (25D) and Tilt Valve Spring (25C) if damaged.
5. Remove the Inlet Bushing Seal (25B) and Inlet Retainer Clip (23) if damaged. Remove Washer (25A).

NOTICE

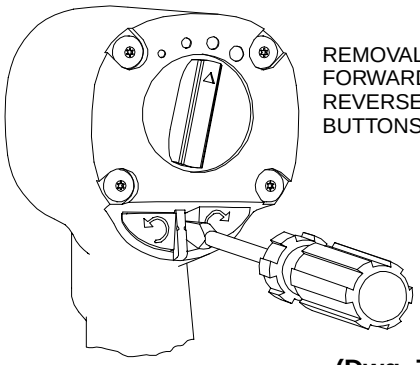
Do not remove the Inlet Bushing Screen (21) from the Inlet Bushing unless it is damaged. Clean the Inlet Bushing Screen by using a suitable cleaning solution in a well ventilated area.

Disassembly of the Reverse Valve Mechanism

NOTICE

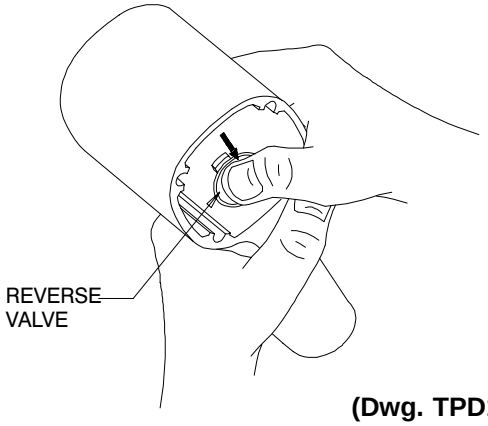
The Reverse Valve Assembly cannot be removed without first removing the Forward and Reverse Buttons (30) and (31). Therefore, it is important that the procedure below be followed exactly.

1. Notice the notches on either side of the partition. These notches indicate the correct location for insertion of a thin–bladed screwdriver used for removing the Forward and Reverse Buttons. Insert the screwdriver between the partition and the Button which is fully extended. **Gently** pry against the Button to disengage the detent so that the Button can be removed. After the Button is removed, reach inside the Housing and rotate the Reverse Valve to extend the remaining Button. Repeat the above procedure for the remaining Button. Refer to Dwg. TPD1328.



(Dwg. TPD1328)

2. Insert thumb into the front of the Housing and push **down** on the Reverse Valve so that it can be removed through the bottom of the handle. Refer to Dwg. TPD1329.



(Dwg. TPD1329)

NOTICE

Do not try to remove the Reverse Valve by pushing upward. It can only be removed by pushing it downward and out of the bottom of the handle. If the Reverse Valve does not come free, tap the bottom of the handle lightly with a rubber hammer until it drops out.

3. Remove the Top Reverse Valve O–ring (27) and the Bottom Reverse Valve O–ring (28) from the Reverse Valve.

ASSEMBLY

General Instructions

1. Whenever grasping a tool or part in a vise, always use leather–covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.

NOTICE

Always use leather–covered vise jaws when clamping the handle in a vise. Leather will conform to the shape of the handle and allow the tool to be held securely. To prevent damage to the exhaust diffuser, never clamp only the bottom of the handle.

2. Always clean every part and wipe every part with a thin film of oil before installation.

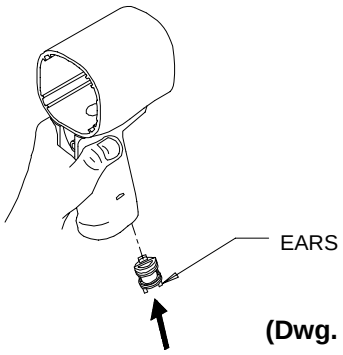
NOTICE

Do not remove grease from the impact mechanism or Hammer Case (12). If the impact mechanism has not been disassembled, inject Ingersoll–Rand No. 115–1LB Grease through the Hammer Case Grease Fitting (15).
When disassembling and assembling the impact mechanism, remove all grease from the impact mechanism and Hammer Case and lubricate the impact mechanism and Hammer Case Bushing (13) with Ingersoll–Rand No. 105–1LB Grease or Ingersoll–Rand No. 105–8LB Grease.

3. Apply a film of o–ring lubricant to all O–rings before final assembly.

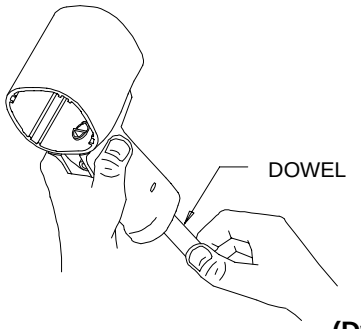
Assembly of the Reverse Valve Mechanism

1. Install the Bottom Reverse Valve O–ring (28) (color–coded blue) and the Top Reverse Valve bring (27) on the Reverse Valve (26).
2. Insert the Reverse Valve in the bottom of the handle making sure that two ears on the Reverse Valve are facing downward. Refer to Dwg. TPD1330.



(Dwg. TPD1330)

Use a wooden dowel to push the Reverse Valve up through the handle **until the top of the Reverse Valve is flush with or slightly above the bottom of the motor bore in the Housing (17).**
Refer to Dwg. TPD1331.

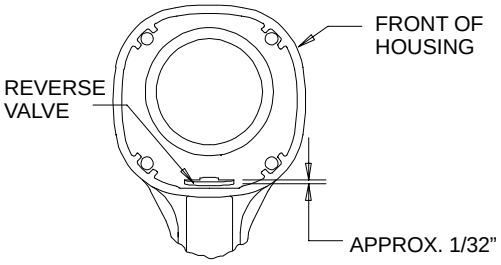


(Dwg. TPD1331)

NOTICE

If the Reverse Valve is pushed up too far and becomes wedged, it will have to be pushed back down through the the handle and re–inserted from the bottom of the handle. The Reverse Valve cannot be removed by pushing it up through the handle and into the motor bore. If the Reverse Valve must be removed and re–installed, make sure that the Top and Bottom Reverse Valve O–rings have not been rolled off and are in their proper positions on the Reverse Valve.

3. When the Reverse Valve has been installed, rotate the Reverse Valve so that the tab on the Reverse Valve is at the rear of the Housing. Refer to Dwg. TPD1332.

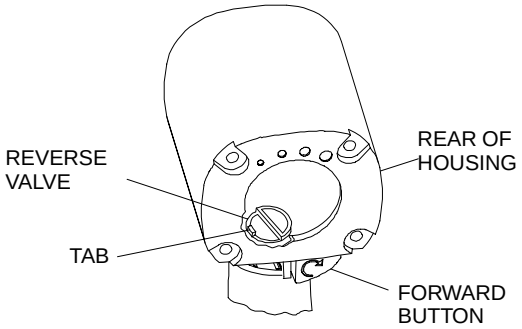


(Dwg. TPD1332)

NOTICE

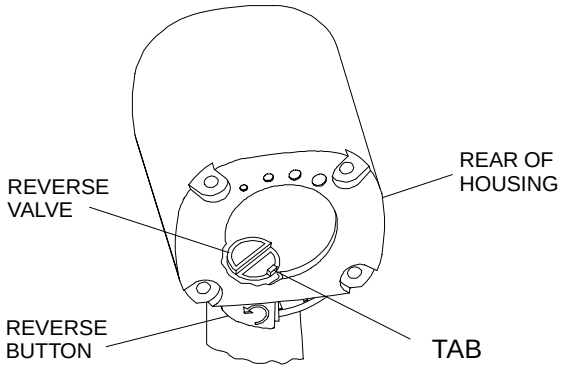
If the orientation of the Reverse Valve is not correct (tab facing the the rear of the Housing), the Trigger (28) and the Forward and Reverse Buttons (4A) and (4B) cannot be installed.

4. Install the Trigger O–ring (25) on the Trigger. Insert the Trigger Assembly in the front of the Housing.
5. Rotate the Reverse Valve in either direction until an ear comes up against the Trigger.
6. Look through the Housing from the **rear.** If the tab on the Reverse Valve has been rotated to the **left,** install the **right** Button in the Housing. When one Button has been installed, push the Button in. This will rotate the’ Reverse Valve so that the other Button can be installed. Refer to Dwg. TPD1333.



(Dwg. TPD1333)

If the tab on the reverse Valve has been rotated to the right, install the left Button. Refer to Dwg. TPD1334**.**



(Dwg. TPD1334)

NOTICE

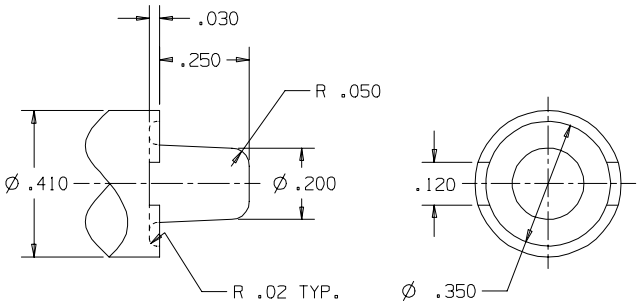
If the Forward/Reverse Buttons will not install easily, move the Reverse Valve slightly higher in the handle to provide better alignment with the Buttons.

7. After the Forward/Reverse Buttons have been installed, remove the Trigger before proceeding with installation of the throttle mechanism.

Assembly of Throttle Mechanism

1. Using an Inlet Bushing Screen Installation Tool, install the Inlet Bushing Screen (21), screened end first, in the bottom (hex end) of the Inlet Bushing (20). Insert the rounded end of the tool in the cone formed by the screen and tap the end of the tool to secure the rim of the screen in the Bushing. Refer to Dwg. TPD1473.

Inlet Bushing Screen Installation Tool



(Dwg. TPD1473)

2. Install the Washer (25A), Inlet Retainer Clip (23), Inlet Bushing Seal (25B), Tilt Valve Spring (25C), Tilt Valve (25D) Tilt Valve Seat (25E) and Tilt Valve Seat Support (25F).

⚠ WARNING

The Tilt Valve Seat Retainer (25G) must be properly installed in the groove in the Inlet Bushing (20). To check for correct installation of the Retainer, insert a pin into one of the holes in the Retainer and rotate the Retainer. A correctly installed Retainer will rotate freely but with some resistance in the groove of the Inlet Bushing. An incorrectly installed Retainer will pop out of the Inlet Bushing when the Retainer is rotated.

⚠ WARNING

Do not use compressed air to check installation of the Tilt Valve Seat Retainer or Inlet Bushing Screen unless the entire Inlet Bushing Assembly is installed in the tool with the Hammer Case installed and properly secured to the Motor Housing. Failure to do so could result in injury.
Install the Tilt Valve Seat Retainer.

NOTICE

When re–installing the Inlet Bushing Assembly (20), pull the Trigger (24) outward and make sure that the Reverse Button (31) is depressed before snapping the Inlet Bushing Assembly back into the Housing.

3. Install the Inlet Bushing Assembly by pushing it into the hole in the Housing until you see and hear the tabs on Inlet Retainer Clip snap into place through the slots in Housing handle.

NOTICE

The Reverse Button (left) (31) must be pushed in before the Trigger can be installed. Otherwise, the Trigger will be damaged during installation.

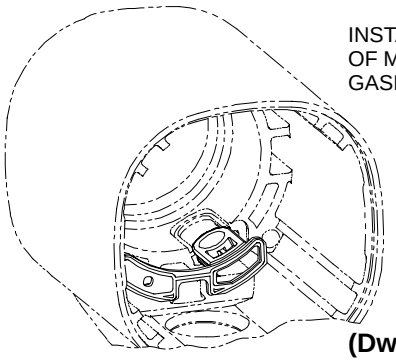
4. Install the Trigger by pushing it into the handle until a click is heard indicating that it is properly engaged.

Assembly of the Motor

NOTICE

When disassembling, assembling or pulling the Motor, we recommend replacement of the Motor Gasket (7).

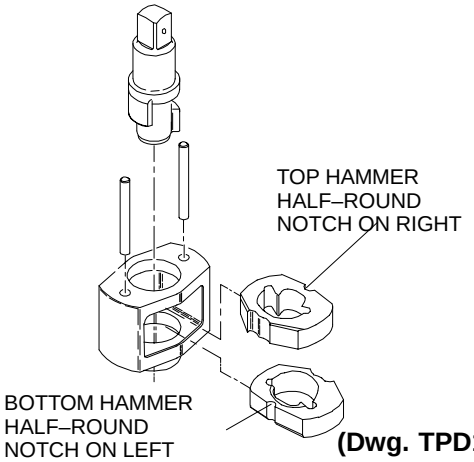
1. Install the Motor Gasket in the Housing making sure that the grooves in the tab of the Motor Gasket fit around ridge in the Housing. Refer to Dwg. TPD1336.



(Dwg. TPD1336)

2. Install the Rear Rotor Bearing (3A) into the rear of the Cylinder (1).
3. Install the Rotor in the Cylinder and secure with the Rear Rotor Bearing Retainer (6).
4. Install Vanes (4) in the slots in the Rotor (5).
5. Install the Front Rotor Bearing (3) into the Front End Plate (2). Install the Front End Plate on the Cylinder by pressing on the inner race of the front Rotor Bearing until the Bearing is seated on the Rotor Shaft.
6. Install Power Management Dial (34) through the front of Housing into smaller diameter at rear. Position the Dial so that the arrow lines up with one of the power setting indicators. Install the Dial Seal (35) at the beginning of the same diameter.
7. Insert the motor assembly into the front of Housing so that the smaller diameter at the rear of the motor will seat the Dial Seal when the motor is pushed into it's final location.

Assembly of the Impact Mechanism



(Dwg. TPD1535)

1. Coat the Hammers (11) with a light film of No. Ingersoll–Rand 105–1LB Grease or Ingersoll–Rand No. 105–8LB Grease.
2. Heavily coat the jaws of the Anvil (35, 38 or 41) with Ingersoll–Rand No. 105–1LB Grease or Ingersoll–Rand No. 105–8LB Grease.
3. Replace the Hammers in the Hammer Frame (9) 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.

4. Replace the Hammer Pins (10).
5. Examine the base of the Anvil (35, 38 or 41) 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. Refer to Dwg. TPD1535.

Assembly of the Air Wrench

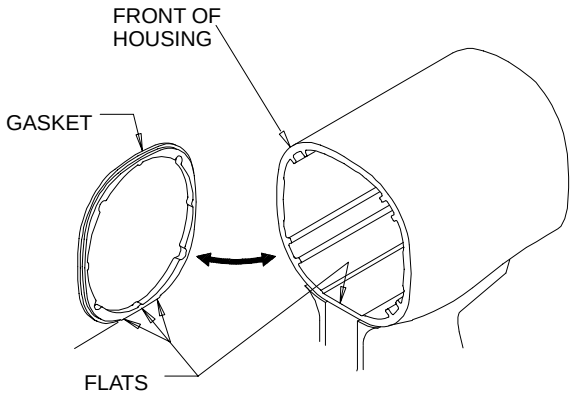
1. Position the Motor Housing (17) in leather–covered vise jaws with the splined shaft of the Rotor in a horizontal position.
2. Place the assembled impact mechanism down onto the splined hub of the Rotor.
3. Position the Hammer Case Gasket (16) against the face of the Motor Housing.

NOTICE

Be sure that the flat on the bottom of the Hammer Case Gasket is installed in the corresponding flat in the Housing. If the Hammer Case Gasket is not installed correctly, the Air Wrench will not function properly.

Refer to Dwg. TPD1335–1.

4. Apply a thin film of Ingersoll–Rand No. 105–1LB Grease or Ingersoll–Rand 105–8LB Grease on inside surface of the Hammer Case Bushing (13), and place the Hammer Case (12) down over the Anvil and against the Motor Housing.



(Dwg. TPD1335–1)

5. Install the Hammer Case Screws (8) and tighten them to 20 in–lb (2.26 Nm) torque.

Assembly of the Square Drive Anvil

Model 2904P1 and 2904P2

1. Insert the Socket Retainer (36 or 39) in the Anvil.
2. Push the Socket Retainer Spring (37 or 40) in the end of the Anvil so that it secures the Socket Retainer.

Assembly of the Quick–Change Anvil

Model 2904P4

1. Install the Thrust Ring Lock (42) on the Anvil (41).
2. Install the Thrust Ring (43), Retaining Sleeve Spring (44), Retaining Ball (40), Retaining Sleeve (46) and Retaining Sleeve Stop (47).

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Low power	Dry Motor	**Daily,** inject 3 cc of Ingersoll–Rand No. 50 Oil into the inlet and run the tool to lubricate the motor.
	Inadequate air supply	Install proper air supply and connection. Refer to Dwg. TPD905–1 and Dwg. TPD1674–1 on pages 3 and 4.
	Dirty Inlet bushing Screen	Using a clean, suitable, cleaning solution in a well ventilated area, clean the Inlet Bushing Screen.
	Worn or broken Vanes	Replace a **complete** set of Vanes
	Worn or broken Cylinder and/or scored End Plates	Examine Cylinder. Check outside and ends for wear or damage and inside for scored or wavy bore. Replace Cylinder if any of these conditions exist. Replace End Plates if they are scored.
	Dirty motor parts.	Disassemble the Tool and clean in a clean, suitable, cleaning solution in a well ventilated area. Assemble the Tool and inject 3 cc of the recommended oil into Inlet and run Tool to lubricate internal parts.
	Damaged Reverse Valve	Replace Reverse Valve. Refer to **Installation of Reverse Valve.**
Motor will not run	Incorrect assembly of motor	Disassemble motor and replace worn or broken parts and reassemble. Refer to **Assembly of the Motor.**
	Insufficient lubricant in impact mechanism.	Lubricate impact mechanism through Hammer Case Grease Fitting using the recommended grease.
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 not assembled correctly.	Refer to **Assembly of Impact Mechanism.**

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.

Service Centers

Ingersoll–Rand Company
510 Hester Drive
White House, TN 37188
USA
Tel: (615) 672 0321
Fax: (615) 672 0801

Ingersoll–Rand Sales Company Limited
Chorley New Road
Horwich, Bolton
Lancashire BL6 6JN
England – UK
Tel: (44) 204 880890
Fax: (44) 204 880388

Ingersoll–Rand Equipements de Production
111 Avenue Roger Salongro
BP 59
F–59450 Sin Le Noble
France
Tel: (33) 27 93 0808
Fax: (33) 27 93 0800

Ingersoll–Rand GmbH
Gewerbealle 17
45478 Mülhelm/Ruhr
Deutschland
Tel: (49) 208 99940
Fax: (49) 208 9994445

Ingersoll–Rand Italiana SpA
Casella Postale 1232
20100 Milano
Italia
Tel: (39) 2 950561
Fax: (39) 2 95380169

Ingersoll–Rand
Camino de Rejas 1, 2–18 B1S
28820 Cosiada (Madrid)
España
Tel: (34) 1 669 5850
Fax: (34) 1 669 6054

Ingersoll–Rand Nederland
Produktieweg 10
2382 PB Zoeterwoude
Nederland
Tel: (31) 71 45220
Fax: (31) 71 218671

Ingersoll–Rand Company SA
PO Box 3720
Airode 1451
South Africa
Tel: (27) 11 864 3930
Fax: (27) 11 864 3954

Ingersoll–Rand
Scandinavian Operations
Kastruplundgade 221
DK–2770 Kastrup
Danmark
Tel: (45) 32 526092
Fax: (45) 32 529092

Ingersoll–Rand SA
The Alpha Building
Route des Arsenaux 9
CH–1700 Fribourg
Schweiz/Suisse
Tel: (41) 37 205111
Fax: (41) 37 222932

Ingersoll–Rand Company
Kuznetsky Most 21/5
Entrance 3
103698 Moscow
Russia
CIS
Tel: (7) 501 882 0440
Fax: (7) 501 882 0441

Ingersoll–Rand Company
16 Pietro
Ul Stawki 2
PL–00193 Warsaw
Poland
Tel: (48) 2 635 7245
Fax: (48) 2 635 7332