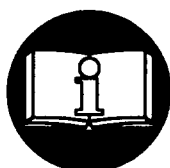
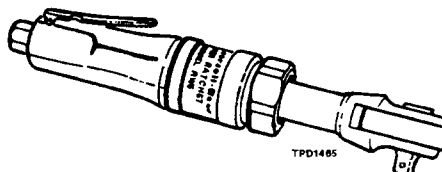


OPERATION AND MAINTENANCE MANUAL for

RW6 MODEL B AIR RATCHET WRENCH

(with first three letters of the Serial Number AMF, AMG, AMH or higher)



WARNING

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

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

- 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 at 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet with 1/4" (6 mm) inside diameter air supply hose.
- 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.
- 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.
- Keep hands, loose clothing and long hair away from rotating end of tool.
- Anticipate and be alert for sudden changes in motion during start up and operation of any power tool.
- Tool accessory may continue to ratchet briefly after throttle is released.
- 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.
- Use accessories recommended by Ingersoll-Rand.
- Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.

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.

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

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

It is the responsibility of the employer to place the information in this manual into the hands of the operator.

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

© Ingersoll-Rand Company 1994

Printed in U.S.A.

INGERSOLL-RAND®
PROFESSIONAL TOOLS

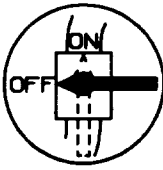
WARNING LABEL IDENTIFICATION

WARNING

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.
--	---

PLACING TOOL IN SERVICE

LUBRICATION



Ingersoll-Rand No. 10 Ingersoll-Rand No. 28

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

For USA – No. C22-04-G00

For International – No. C26-C4-A29

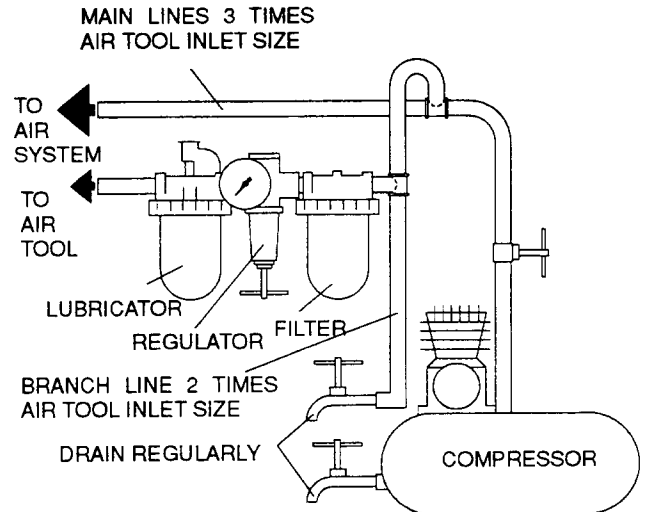
Before starting the tool and after each shift, unless the air line lubricator is used, detach the air hose and inject about 1.5 cc of Ingersoll-Rand No. 10 Oil into the air inlet.
After each forty hours of operation, or as experience indicates, inject about 0.5 cc of Ingersoll-Rand No. 28 Grease into the Grease Fitting (32).

INSTALLATION

Air Supply and Connections

Always use clean dry air. Dust, corrosive fumes and/or excessive moisture can ruin the motor of an air tool. An air line filter can greatly increase the life of an air tool. The filter removes dust and moisture.

Low pressure (under 90 psig; 6.2 bar/620 kPa) reduces the speed of all air tools. Low air pressure not only wastes time, but also costs money. High air pressure (over 90 psig; 6.2 bar/620 kPa) raises performance beyond the rated capacity of the tool and could cause injury. Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905-1 below for a typical piping arrangement.

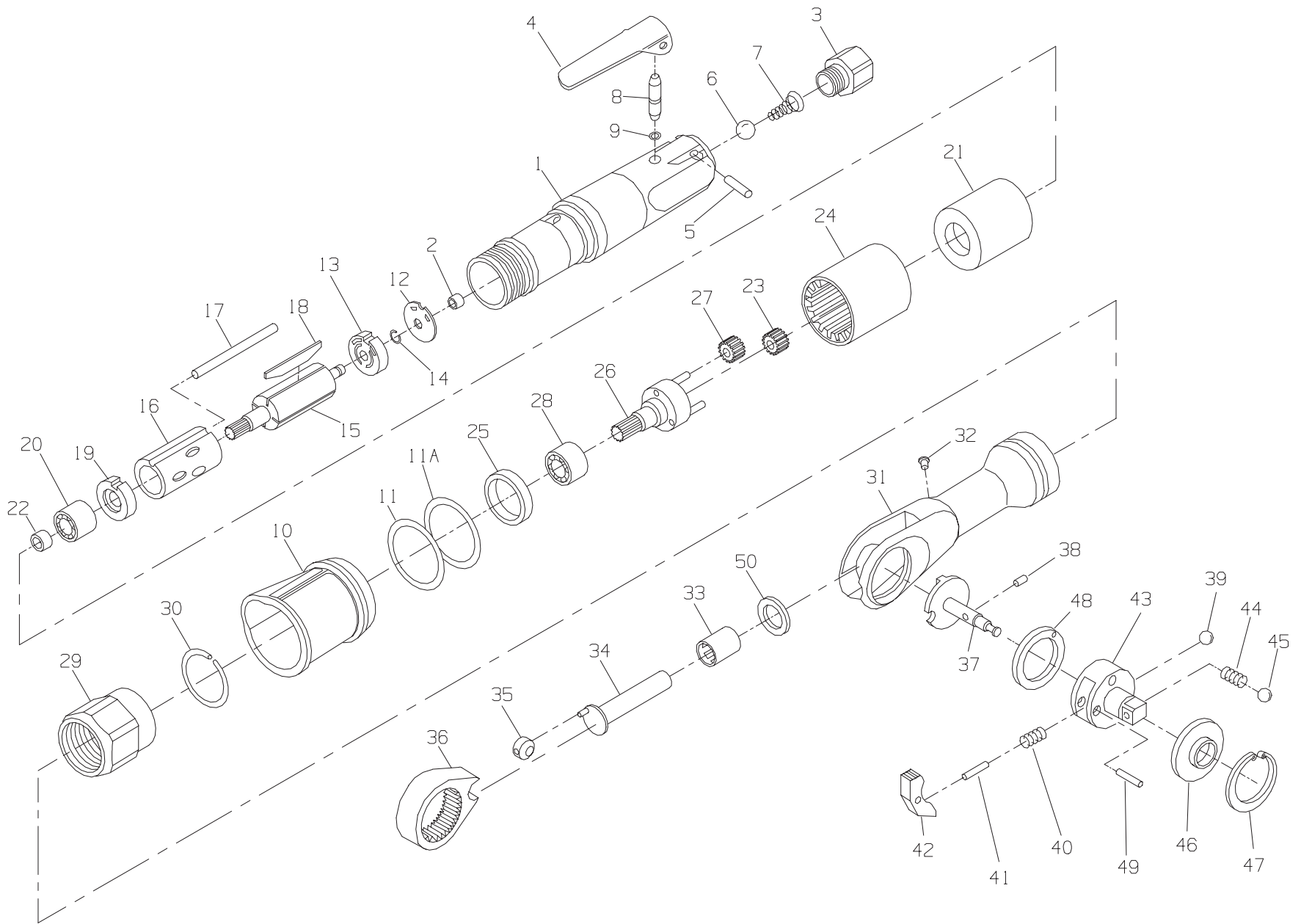


(Dwg. TPD905-1)

RW6 Model B Ratchet Wrench is designed for running small threaded fasteners in industrial applications where a close-quarter tool is needed.

HOW TO ORDER A RATCHET WRENCH

Model	Driver Description	Free Speed, rpm	Stall Torque	
			ft-lb	Nm
RW6 Model B	3/8" Square	185	27	37



PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

1	Motor Housing Assembly	106-A40	27	Planet Gear (3)	5RAN-9
*	Warning Label	WARNING-9-99	28	Spindle Bearing	R0A2-22
2	Rear Rotor Bearing	5R-24	29	Coupling Nut	106-27
3	Inlet Bushing	R001-182	30	Ratchet Head Retaining Ring	182A53-29
4	Throttle Lever	201-273		Ratchet Head Assembly	106-A322A
5	Throttle Lever Pin	7L-120	31	Ratchet Housing	106-322A
6	Throttle Valve (3/8" diameter steel ball)	D04-280	32	Grease Fitting	D0F9-879
7	Throttle Valve Spring	504-51	33	Crankshaft Bearing	106-32A
8	Throttle Valve Plunger Assembly	106-A302	34	Crankshaft	106-35A
9	Throttle Valve Plunger Seal	8SL-259	35	Drive Bushing	106-36A
10	Exhaust Deflector Assembly	106-A23	36	Yoke	106-37A
11	Exhaust Deflector Seal	M0V010AA-379	37	Reverse Button	106-38A
11A	Deflector Seal Retaining Ring	106-323	38	Reverse Button Pin	106-39A
12	Rear End Plate Gasket	5RLK-739	39	Reverse Button Retaining Ball (3/16"	
13	Rear End Plate	5RLK-12		diameter steel ball)	106-49A
14	Rear End Plate Retainer	5RLK-118	40	Ratchet Spring	106-41A
15	Rotor	106-53	41	Ratchet Lock Pin	106-42A
16	Cylinder	5LK-3	42	Ratchet Pawl	106-43A
17	Cylinder Dowel	106-98	43	Ratchet Anvil	106-A44A
18	Vane Packet (set of 4 Vanes)	R1401-42-4	44	Detent Spring (2)	106-45A
19	Front End Plate	106-11	45	Detent Ball (5/32" diameter steel ball) (2) ...	2U-696
20	Front Rotor Bearing	WWA100-97	46	Thrust Washer	106-47A
21	Front Rotor Bearing Housing	106-13	47	Anvil Retaining Ring	106-48A
22	Rotor Pinion Spacer	5RAN-18	48	Wear Washer	106-52B
23	Rotor Pinion	5RAN-17	49	Pawl Retaining Pin	106-34A
24	Ring Gear	106-406	50	Ratchet Head Seal	106-603
25	Ring Gear Spacer	106-118	*	Nameplate	RW6-301A
26	Spindle	106-8	*	Protective Boot	106-32

* Not illustrated.

MAINTENANCE SECTION

WARNING

Always wear eye protection when operating or performing maintenance on this tool.

Always turn off air supply and disconnect air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.

LUBRICATION

Each time the RW6 Model B Ratchet Wrench is disassembled for maintenance, repair or replacement of parts, lubricate the tool as follows:

1. Inject approximately 0.5 cc of Ingersoll–Rand No. 28 Grease into Grease Fitting (32). Whenever the Ratchet Housing (31) is removed from the power unit, work some of the recommended grease into the Front Rotor Bearing (20) and Spindle Bearing (28). Coat the Planet Gears (27) with a light film of recommended grease.
2. Inject approximately 1.5 cc of Ingersoll–Rand No. 10 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 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.
5. Do not press any needle bearing from a part unless you have a new needle bearing on hand for installation. Needle bearings are always damaged during the removal process.

Disassembly of the Wrench

1. Clamp the flats on the Motor Housing Assembly (1) in leather-covered or copper-covered vise jaws, with the square drive upward.
2. Loosen the Coupling Nut (29).

3. Carefully separate the Ratchet Housing (31) from the Motor Housing Assembly.
4. Carefully lift the assembled Spindle (26) and the assembled motor from the Motor Housing.

Disassembly of the Gearing

1. If required, remove the Planet Gears (27) from the Spindle (26).
2. If required, remove the Spindle Bearing (28) from the Spindle.
3. Remove the Ring Gear Spacer (25), Ring Gear (24), Front Rotor Bearing Housing (21), and the Rotor Pinion Spacer (22) from the Motor Housing Assembly (1).

Disassembly of the Motor

1. Remove the Front Rotor Bearing (20) and the Front End Plate (19) from the front of the motor.
2. Remove the Cylinder (16), Cylinder Dowel (17), and the Vanes (18).
3. Slide the Rear Rotor Bearing (2) from the Rotor (15) along with the Rear End Plate Gasket (12), Rear End Plate Retainer (14), and the Rear End Plate (13).

Disassembly of the Ratchet Head Assembly

NOTICE

The Detent Ball (45) and the Detent Spring (44) are free to fall from the Anvil when the Thrust Washer (46) is removed.

1. Remove the Anvil Retaining Ring (47) and the Thrust Washer.
2. Carefully remove the Ratchet Anvil (43).
3. If required, hold the Ratchet Pawl (42) and remove the Pawl Retaining Pin (49). Remove the Ratchet Pawl, Ratchet Lock Pin (41) and the Ratchet Spring (40).
4. Remove the Wear Washer (48) and the Reverse Button (37).
5. Slide the Yoke (36), Drive Bushing (35), Crankshaft (34), Crankshaft Bearing (33), and the Ratchet Head Seal (50) out of the Ratchet Housing (31).

Disassembly of the Throttle

1. Remove the Throttle Valve Spring (7) and the Throttle Valve Ball (6) by unscrewing the Inlet Bushing (3).
2. Release the Throttle Lever (4) by removing the Throttle Lever Pin (5).
3. Remove the Throttle Valve Plunger Assembly (8) from the Motor Housing Assembly (1).

MAINTENANCE SECTION

ASSEMBLY

General Instructions

1. Always press on the **inner** ring of a ball-type bearing when installing the bearing on a shaft.
2. Always press on the **outer** ring of a ball-type bearing when pressing the bearing into a bearing recess.
3. Whenever grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws. Take extra care with threaded parts and housings.
4. Always clean every part and wipe every part with a thin film of the recommended oil before installation.
5. Check every bearing for roughness. If an open bearing must be cleaned, wash it thoroughly in a clean, suitable cleaning solution and dry with a clean cloth. **Sealed or shielded bearings should never be cleaned.** Work grease thoroughly into every open bearing before installation.
6. Apply a film of o-ring lubricant to all O-rings before final installation.

Assembly of the Throttle

1. If required, replace the Throttle Valve Plunger Seal (9) on the Throttle Valve Plunger Assembly (8).
2. Place the Throttle Valve Plunger Assembly into the Motor Housing Assembly (1).
3. Secure the Throttle Lever (4) to the Motor Housing with the Throttle Lever Pin (5).
4. Place the Throttle Valve (6) and the Throttle Valve Spring (7) into the Motor Housing and secure them with the Inlet Bushing (3).

Assembly of the Ratchet Head Assembly

1. Replace the Ratchet Head Seal (50) and the Crankshaft Bearing (33) into the Ratchet Housing (31).
2. Insert the Crankshaft (34) into the Ratchet Housing.
3. Place the Drive Bushing (35) into the recess in the Yoke (36). Make sure that the hole in the Bushing that accepts the pin on the Crankshaft is facing down.
4. Carefully slide the Yoke into the Housing making sure that the crankshaft pin and the hole in the Bushing engage.
5. Check the Reverse Button Pin (38) in the Reverse Button (37). Make sure that it is in good condition. Insert the Reverse Button into the Ratchet Housing.
6. If required, reassemble the Ratchet Anvil (43) as follows:
 - a. Place the Ratchet Spring (40) and the Ratchet Lock in (41) into the Anvil.
 - b. Place the Ratchet Pawl (42) into the Anvil, making sure that the Lock Pin seats in the Pawl. Secure the Pawl with the Pawl Retaining Pin (49).
7. Place the Wear Washer (48) and the assembled Ratchet Anvil into the Ratchet Housing, making sure that the

Reverse Button Pin goes into and is caught by the Anvil.

8. With a little grease on the Detent Spring (44) and the Detent Ball (45) to help hold them in place, insert them into the Anvil.
9. Place the Thrust Washer (46), shoulder out, over the Anvil and secure the assembly with the Anvil Retaining Ring (47).
10. If required, replace the Grease Fitting (32) in the Ratchet Housing.

Assembly of the Motor

1. Place the Rear End Plate (13) on the smooth end of the Rotor (15) and secure it with the Rear End Plate Retainer (14). Follow the Retainer with the Rear End Plate Gasket (12) and the Rear Rotor Bearing (2).
2. Place the Cylinder (16) over the Rotor. Place the Cylinder Dowel (17) through the Cylinder and into the Rear End Plate.
3. After applying a light coat of the recommended oil to the Vanes (18), insert the Vanes into the slots in the Rotor.
4. Place the Front End Plate (19), Front Rotor Bearing (20), and the Rotor Pinion Spacer (22) on the splined end of the Rotor.
5. Slide the Front Rotor Bearing Housing (21) over the Front Rotor Bearing.

Assembly of the Gearing

1. Place the three Planet Gears (27) onto the Spindle (26).
2. Place the Spindle Bearing (28) on the splined shaft of the Spindle.

Assembly of the Wrench

1. Clamp the flats of the Motor Housing Assembly (1) in leather-covered or copper-covered vise jaws, with the motor end up.
2. Carefully insert the assembled motor, splined end out, into the Motor Housing Assembly.
3. Place the Ring Gear (24) on the end of the motor.
4. Place the Rotor Pinion (23) on the splined end of the motor.
5. Making sure that Planet Gears (27) engage with the Ring Gear and the Rotor Pinion, carefully place the assembled Spindle (26) into the Ring Gear.
6. Place the Ring Gear Spacer (25) on the Ring Gear.
7. If required, place the Coupling Nut (29), wrench flats first, onto the Ratchet Housing (31) and secure it with the Ratchet Head Retaining Ring (30) inserted into the groove in the Ratchet Head.
8. Bring the Ratchet Housing and the Motor Housing together while engaging the splines in the Crankshaft (34) with the splines in the Spindle.
9. Tighten the Coupling Nut to secure the assembly.

MAINTENANCE SECTION

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Low power or low free speed	Low air pressure	Check the air pressure at the Inlet. The pressure must not exceed 90 psig (6.2 bar/620 kPa).
	Plugged Inlet Bushing Screen	Clean the Screen in a well-ventilated area with a clean, suitable, cleaning solution. If it cannot be cleaned, replace it.
	Worn or broken Vanes	Replace the complete set of Vanes.
	Loose Coupling Nut and/or Worn or broken Cylinder	Tighten the Nut. Replace the Cylinder if it is worn or broken or if the bore is scored or wavy.
	Scoring of End Plates	Replace End Plates if they are scored.
	Improper lubrication or dirt build-up in the motor	Lubricate the Wrench as instructed in LUBRICATION . If lubrication does not result in satisfactory operation, disassemble the motor, inspect and clean all parts.
Scoring of End Plates	Improper assembly	Make certain that all motor or Cylinder parts are properly aligned prior to clamping the motor assembly.
Ratchet Housing gets hot	Insufficient grease	Clean and inspect the Gear Case gearing parts and lubricate as instructed in LUBRICATION .
	Worn or damaged parts	Clean and inspect the Gear Case and gearing. Replace worn or broken components.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.