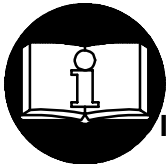


MAINTENANCE SECTION COVERING GEAR CASE MODULES for SERIES DAA40, DAF40 AND DAM40 TORQUE CONTROL WRENCHES WITHOUT TRANSDUCERS

⚠ 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.

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 over-reach 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.
- This tool is not designed for working in explosive atmospheres.
- This tool is not insulated against electric shock.

(Continued on page 3-2)

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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 **WARNING**

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.


USING THE TOOL (*Continued*)


- When installing or removing the output device on any tool, **ALWAYS** grasp a metal component of the tool while tightening or loosening the Coupling Nut or Spindle Cap. Acceptable clamping locations include, but are not limited to, the hex on the Gear Case, the Tool Hanger, the Torque Reaction Arm or any metal Mounting Plate. **NEVER** grasp the composite tool body or handle in vise jaws to restrain the torque of the Coupling Nut or Spindle Cap. Such practice will result in damage to the tool.
- Do not use power units and gear trains that exceed the capability of the output device.
- The Tube Nut Attachment has an opening on the front side for construction and application purposes. **DO NOT**, under any circumstance place your fingers in this opening.
- The Torque Reaction Bar must be positioned against a positive stop. Do not use the Bar as a dead handle and take all precautions to make certain the operator's hand cannot be pinched between the Bar and a solid object.
- When operated continuously for long periods of time, Series D Nutrunners may become hot at the spindle end of the tool. Take all precautions necessary to avoid skin contact with the hot surfaces. Prolonged contact may result in burns.
- All Series D Torque Control Wrenches and Nutrunners with reverse capability have rotational arrows molded into the housing in the area of the reversing mechanism. When the direction switching device is positioned nearest the molded circular arrow with an "F" in the center, spindle rotation will be forward or clockwise direction. When the direction switching device is positioned nearest the molded circular arrow with an "R" in the center, spindle rotation will be reverse or counterclockwise direction.


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 electrical supply and disconnect the power cord before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.

	⚠ WARNING
	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 cord.

	⚠ WARNING
	Do not use damaged, frayed or deteriorated power cords.

	⚠ WARNING
	The Torque Reaction Bar must be positioned against a positive stop. Do not use the Bar as a dead handle and take all precautions to make certain the operator's hand cannot be pinched between the Bar and a solid object.

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

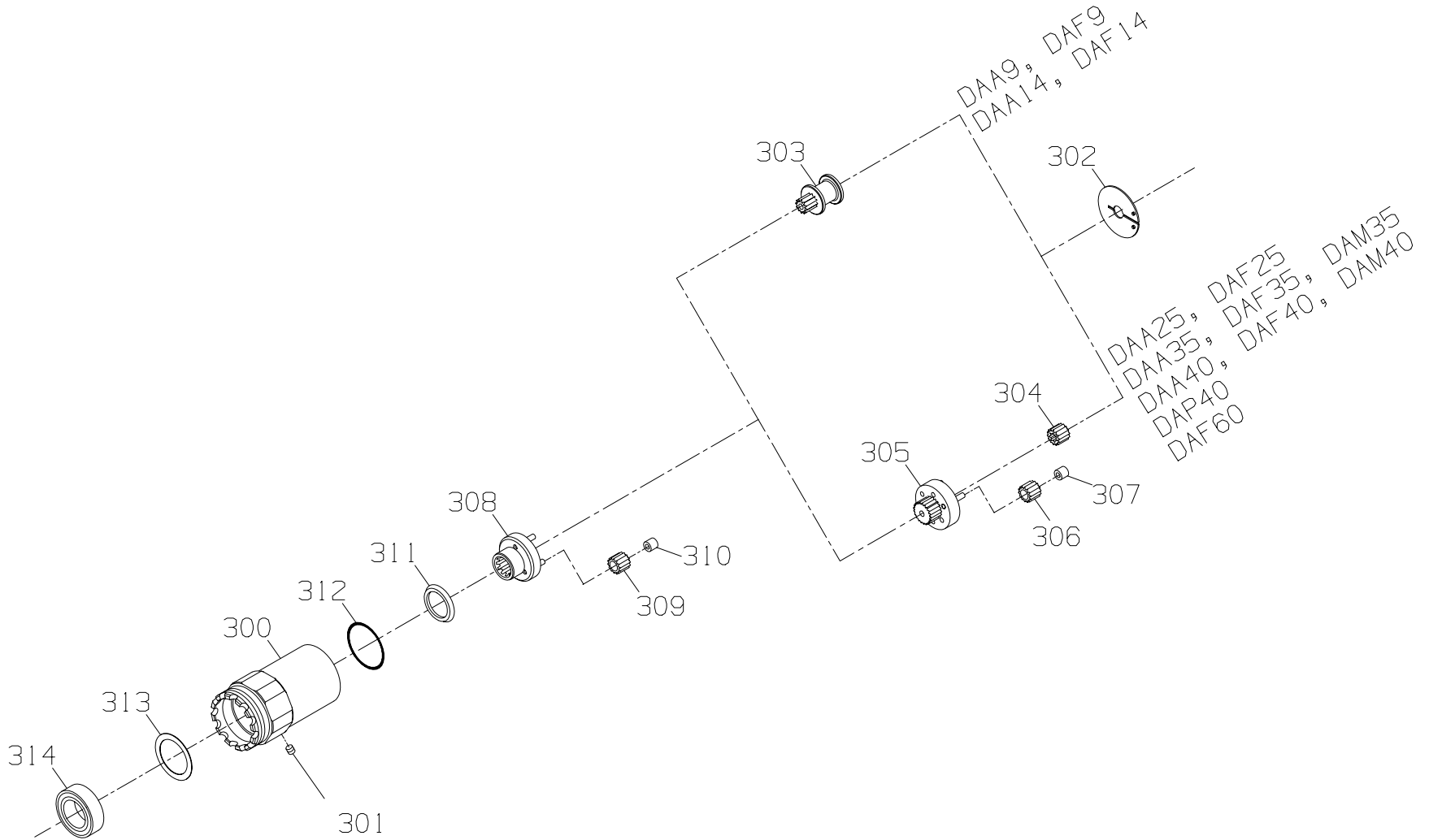
LUBRICATION



Ingersoll-Rand No. 67

After each 250,000 cycles, or four months of operation or as experience indicates, inject 3 to 4 cc of Ingersoll-Rand No. 67 Grease into the Grease Fitting (301) in the Gear Case Assembly (300).

**SERIES D ANGLE WRENCH GEAR UNITS
FOR MODELS WITHOUT TRANSDUCERS**



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(Dwg. TPC627-1)



PART NUMBER FOR ORDERING



	+	Gear Case Module						
		for hand-held tools	DAA9-M37	DAA14-M37	DAA25-M37	DAA35-M37	DAA40-M37	DAP40-M37
		for fixtured tools	DAF9-M37	DAF14-M37	DAF25-M37	DAF35-M37	DAF40-M37	DAF60-M37
		for mounted tools	_____	_____	_____	DAM35-M37	_____	DAM40-M37
300		Gear Case Assembly						
		for hand-held tools	DAA40-B37	DAA40-B37	DAA40-B37	DAA40-B37	DAA40-B37	DAA40-B37
		for fixtured tools	DAF40-B37	DAF40-B37	DAF40-B37	DAF40-B37	DAF40-B37	DAF40-B37
		for mounted tools	_____	_____	_____	DAM35-B37	_____	DAM35-B37
301		Grease Fitting	D0F9-879	D0F9-879	D0F9-879	D0F9-879	D0F9-879	D0F9-879
302		Gear Retainer	DAA40-81	DAA40-81	DAA40-81	DAA40-81	DAA40-81	DAA40-81
303		Drive Coupling	DAA9-17	DAA14-17	_____	_____	_____	_____
304		Rotor Pinion	_____	_____	DAA25-17	DAA35-17	4RLM-17	_____
305		Planet Gear Head	_____	_____	DAA25-216	DAA35-216	DAA40-216	DAP40-216
306		Gear Head Planet Gear Assembly (3)	_____	_____	_____	6WTN-A10	_____	_____
307		Planet Gear Bearing	_____	_____	_____	7AH-500	_____	_____
306		Planet Gear (3)	_____	_____	4RLN-10	6WTN-10	4RLM-10	4RLL-10
307		Planet Gear Bearing (3)	_____	_____	6WTM-500	7AH-500	6WTM-500	6WTM-500
308		Planet Gear Spindle	DAA9-8	DAA14-8	DAA25-8	DAA9-8	DAA40-8	DAA9-8
309		Spindle Planet Gear Assembly (4) . . .	6WTP-A10	_____	_____	6WTP-A10	_____	6WTP-A10
310		Spindle Planet Gear Bearing	WFS182-654	_____	_____	WFS182-654	_____	WFS182-654
309		Spindle Planet Gear (4 for DAA25- M37; 3 for all others)	_____	4RLL-10	6WTM-10	_____	DAA40-10	_____
310		Spindle Planet Gear Bearing (4 for DAA25-M37; 3 for all others)	_____	6WTM-500	6WTM-500	_____	DAA40-500	_____
311		Grease Shield Support	DAA40-5	DAA40-5	DAA40-5	DAA40-5	DAA40-5	DAA40-5
312		Shield Support O-ring	DAA40-606	DAA40-606	DAA40-606	DAA40-606	DAA40-606	DAA40-606
313		Grease Shield	DAA40-701	DAA40-701	DAA40-701	DAA40-701	DAA40-701	DAA40-701
314		Gear Case Bearing	R1602-510	R1602-510	R1602-510	R1602-510	R1602-510	R1602-510

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+ To assure proper gear placement, refer to **Gear Identification Chart** on page 3-6.

GEAR IDENTIFICATION CHART

PART NUMBER	PART NAME	ILLUS. NO.	NUMBER OF TEETH	
			EXTERNAL	INTERNAL
DAA9-17	Drive Coupling	303	12	7
DAA14-17	Drive Coupling	303	7	7
4RLM-17	Rotor Pinion	304	19	7
DAA35-17	Rotor Pinion	304	17	7
DAA25-17	Rotor Pinion	304	14	7
DAA25-216	Planet Gear Head	305	21	—
DAA35-216	Planet Gear Head	305	12 •	—
DAP40-216	Planet Gear Head	305	12 •	—
DAA40-216	Planet Gear Head	305	9	—
4RLL-10	Planet Gear	306 & 309	20 +	—
DAA40-10	Planet Gear	309	20 +	—
4RLM-10	Planet Gear	306	14 #	—
6WTP-10	Planet Gear	309	18	—
4RLN-10	Planet Gear	306	17	—
6WTN-10	Planet Gear	306	16	—
6WTM-10	Planet Gear	309	14 #	—

- Gear Head DAP40-216 can be distinguished from Gear Head DAA35-216 by the additional three holes in the face of the Gear Head.
- + Gear DAA40-10 can be distinguished from Gear 4RLL-10 by the annular groove across the center of the gear teeth.
- # Gear 4RLM-10 is marked with red stain and Gear 6WTM-10 is marked with white stain. If the stains are not visible when the gears are removed, tag the gears for future identification.

MAINTENANCE SECTION

Disassembly of the Gear Case

1. Grasp the Gear Case Assembly (300) in copper-covered vise jaws with the assembled motor upward, and using a wrench on the flats of the Housing Coupling Nut, loosen the joint and remove the tool from the vise. Unscrew the Gear Case from the Housing.
2. Using snap ring pliers, remove the Gear Retainer (302) from the clutch end of the Gear Case.
3. **For DAA9 and DAA14 modules**, remove the Drive Coupling (303).
For DAA25, DAA35 and DAA40 modules, remove the Rotor Pinion (304), Planet Gear Head (305), Planet Gears (306) and Planet Gear Bearings (307).
For DAP40 modules, remove the Planet Gear Head (305), Planet Gears (306) and Planet Gear Bearings (307).
4. Slide the Spindle Planet Gears (309) and Spindle Planet Gear Bearings (310) off the shafts of the Planet Gear Spindle (308).
5. With the clutch end of the Gear Case standing on the table of an arbor press, carefully press the Planet Gear Spindle out of the Gear Case Bearing (314). Remove the Bearing and Grease Shield (313) from the Gear Case and the Grease Shield Support (311) and Shield Support O-ring (312) from the hub of the Planet Gear Spindle.

Assembly of the Gear Case

1. Install the Grease Shield Support (311), small edge trailing, onto the hub of the Gear Head Spindle (308). Install the Shield Support O-ring (312) on the Support.
2. Support the pin end of the Spindle on a steel rod long enough to keep the Gear Case (300) from contacting the table of an arbor press. Position the Gear Case, external thread upward, on the Spindle. Install the Grease Shield (313) in the Gear Case and press the Gear Case Bearing (314) onto the shaft of the Planet Gear Spindle. Press the Bearing until it enters the Gear Case and stops against the Shield Support.

3. Install a Spindle Planet Gear (309) and Spindle Planet Gear Bearing (310) on each shaft of the Spindle. Make certain the teeth of the Planet Gears mesh with the teeth of the Ring Gear.
4. Work 3 to 4 cc of Ingersoll-Rand No. 67 Grease into the gear train.
5. **For DAA9 and DAA14 modules**, install the Drive Coupling (303), gear teeth first, into the Gear Case. Make certain the gear teeth mesh with the teeth of the Planet Gears.
For DAA25, DAA35, DAA40 and DAP40 modules, install the Planet Gear Head (305) into the Gear Case.
6. **For DAA25, DAA35, DAA40 and DAP40 modules**, install a Planet Gear (309) and Planet Gear Bearing (310) on each of the pins on the Planet Gear Head. Make certain the teeth on the shaft of the Gear Head mesh with the teeth of the Spindle Planet Gears.
7. **For DAA25, DAA35 and DAA40 modules**, install the Rotor Pinion (304) between the Planet Gears.
8. Using snap ring pliers, install the Gear Retainer (302) in the internal groove of the Gear Case.

CAUTION

In the following step, make certain the spline of the Clutch Spindle properly engages the Drive Coupling, Rotor Pinion or Planet Gears. Improper engagement will damage the splines and may force the Clutch rearward causing the Shutoff Valve Assembly to move out of correct adjustment.

9. Thread the Gear Case onto the clutch housing and engage the teeth of the Clutch Spindle with the teeth of the Drive Coupling or Rotor Pinion. It may be necessary to rotate the Spindle to mesh the teeth properly while threading the Gear Case Nut onto the Clutch Housing. Tighten the joint between 20 and 25 ft-lb (27 and 34 Nm) torque.

MAINTENANCE SECTION

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Gear Case gets hot	Excessive grease	Clean and inspect the Gear Case and gearing parts and lubricate as instructed on front page.
	Worn or damaged parts	Clean and inspect the Gear Case and gearing. Replace worn or broken components.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.