

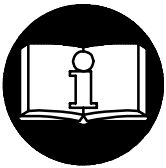
MAINTENANCE SECTION COVERING

STRAIGHT SPRING LOADED SPINDLES

for

SERIES D TORQUE CONTROL WRENCHES

WHEN THIS MODULE IS USED WITH AN AIR POWERED TOOL



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

(Continued on page 5-2)

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.

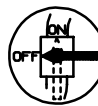
USING THE TOOL (Continued)


- Do not remove the Inlet Plug without first disconnecting the live air supply.
- Whenever the Angle Head is installed or repositioned, the Throttle Lever must be positioned so that reaction torque will not tend to retain the throttle in the “ON” position.
- 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 Always wear eye protection when operating or performing maintenance on this tool.
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	⚠ WARNING Always wear hearing protection when operating this tool.
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	⚠ 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.
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	⚠ 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.
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	⚠ WARNING Do not carry the tool by the hose.
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	⚠ WARNING Do not use damaged, frayed or deteriorated air hoses and fittings.
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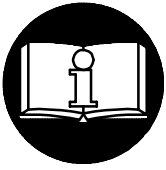
	⚠ WARNING Keep body stance balanced and firm. Do not overreach when operating this tool.
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	⚠ WARNING Operate at 90 psig (6.2 bar/ 620 kPa) Maximum air pressure.
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	⚠ WARNING The Torque Reaction Bar 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.
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WHEN THIS MODULE IS USED WITH AN ELECTRIC POWERED TOOL

⚠ WARNING



**IMPORTANT SAFETY INFORMATION ENCLOSED.
READ ALL THESE INSTRUCTIONS BEFORE PLACING TOOL IN SERVICE OR
OPERATING THIS TOOL AND SAVE THESE INSTRUCTIONS.
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.**

Disconnect the Power Cord from the receptacle before performing any maintenance on this tool.



**This symbol is to alert the user and service personnel to the presence of
uninsulated dangerous voltage that will cause a risk of electric shock.**



**This symbol is to alert the user and service personnel to the presence of important
operating instructions that must be read and understood to prevent personal injury,
electrical shock or damage to the equipment.**

**WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD
ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK
AND PERSONAL INJURY, INCLUDING THE FOLLOWING.**

PLACING TOOL IN SERVICE

- Use only with Ingersoll–Rand Series Controllers.
- 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 electric tools.
- Inspect tool cords periodically and if damaged, have them repaired by an authorized service facility.
- 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.
- 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.
- Guard Against Electric Shock. Prevent body contact with earthed or grounded surfaces. For example; pipes, radiators, ranges, refrigerator enclosures.
- Don't abuse Cord. Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil, and sharp edges.
- Keep work area clean. Cluttered areas and benches invite injuries.
- Consider work area environment. Don't expose power tools and chargers to water. Keep work area well lighted. Do not use tool in explosive or flammable atmospheres.
- Keep bystanders and children away. Do not permit unauthorized personnel to operate this tool, or touch tool or cord.

- Store idle tools. When not in use, tools should be stored in a dry, high or locked up place, out of reach of children.
- Don't force tool. It will do the job better and more safely at the rate for which it was intended.
- Use the right tool. Do not force a small tool or attachment to do the job of a heavy-duty tool.
- Do not use a tool for a purpose for which it is not intended. Example: Do not use a screwdriver as a drill.
- Dress properly. Do not wear loose clothing or jewelry. They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
- Secure work. Use clamps or a vise to hold work. Operators often need both hands to perform job functions.
- Don't overreach. Keep proper footing, balance, and a firm grip on the tool at all times.
- Maintain tools with care. Keep tools clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and if damaged, have them repaired by an authorized service facility. Inspect extension cords periodically and replace if damaged. Keep handles dry, clean, and free from oil and grease.
- Remove adjusting keys and wrenches. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
- Avoid unintentional starting. Don't carry tool with finger on switch.

(Continued on page 5-4)




⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

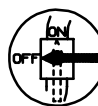


USING THE TOOL (Continued)

- Do not drop or abuse the tool.
 - Whenever a tool is not being used, position the Power Switch to the “OFF” position and unplug the power cord.
 - Stay alert. Watch what you are doing. Use common sense. Do not operate tool when you are tired.
 - Check damaged parts. Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated elsewhere in this operation manual.
 - Have defective switches replaced by an authorized service center.
 - Do not use the tool if the switch does not turn it on and off.
 - Whenever the Angle Head is installed or repositioned, the Throttle Lever must be positioned so that reaction torque will not tend to retain the throttle in the “ON” position.
 - 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.
 - Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.

WARNING LABEL IDENTIFICATION

	⚠ WARNING Always wear eye protection when operating or performing 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 INDOOR USE ONLY.

	⚠ WARNING Always wear hearing protection when operating this tool.
	⚠ WARNING Do not carry the tool by the cord.
	⚠ 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 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 Do not use damaged, frayed or deteriorated power cords.
	⚠ WARNING Keep body stance balanced and firm. Do not overreach when operating this tool.

PLACING IN SERVICE

LUBRICATION



Ingersoll-Rand No. 67

For Series D40 Straight Spring Loaded Spindles Before installation and whenever a Spring Loaded Spindle is disassembled, lubricate the Drive Spindle Bearings (502), Drive Shaft (503) and Disengaging Spring (506) with Ingersoll-Rand No. 67 Grease.

For Series D120 Straight Spring Loaded Spindles Before installation and whenever a Spring Loaded Spindle is disassembled, lubricate the Square Drive Spindle Bearings (502), Drive Spindle (503), Rear Spindle Bearing (505) and Disengaging Spring (508) with Ingersoll-Rand No. 67 Grease.

INSTALLATION

WARNING

When installing or removing a Spring Loaded Spindle on a tool, **ALWAYS** hold the tool by the hex on the Gear Case while tightening the Coupling Nut (516). **NEVER** grasp the composite tool body or handle in vise jaws to restrain the tightening torque of the Coupling Nut. Such a practice will result in damage to the tool and with electric models will cause wire leads to malfunction creating an electric shock hazard.

NOTICE

In this first step, the Coupling Nut (516) has a left-hand thread.

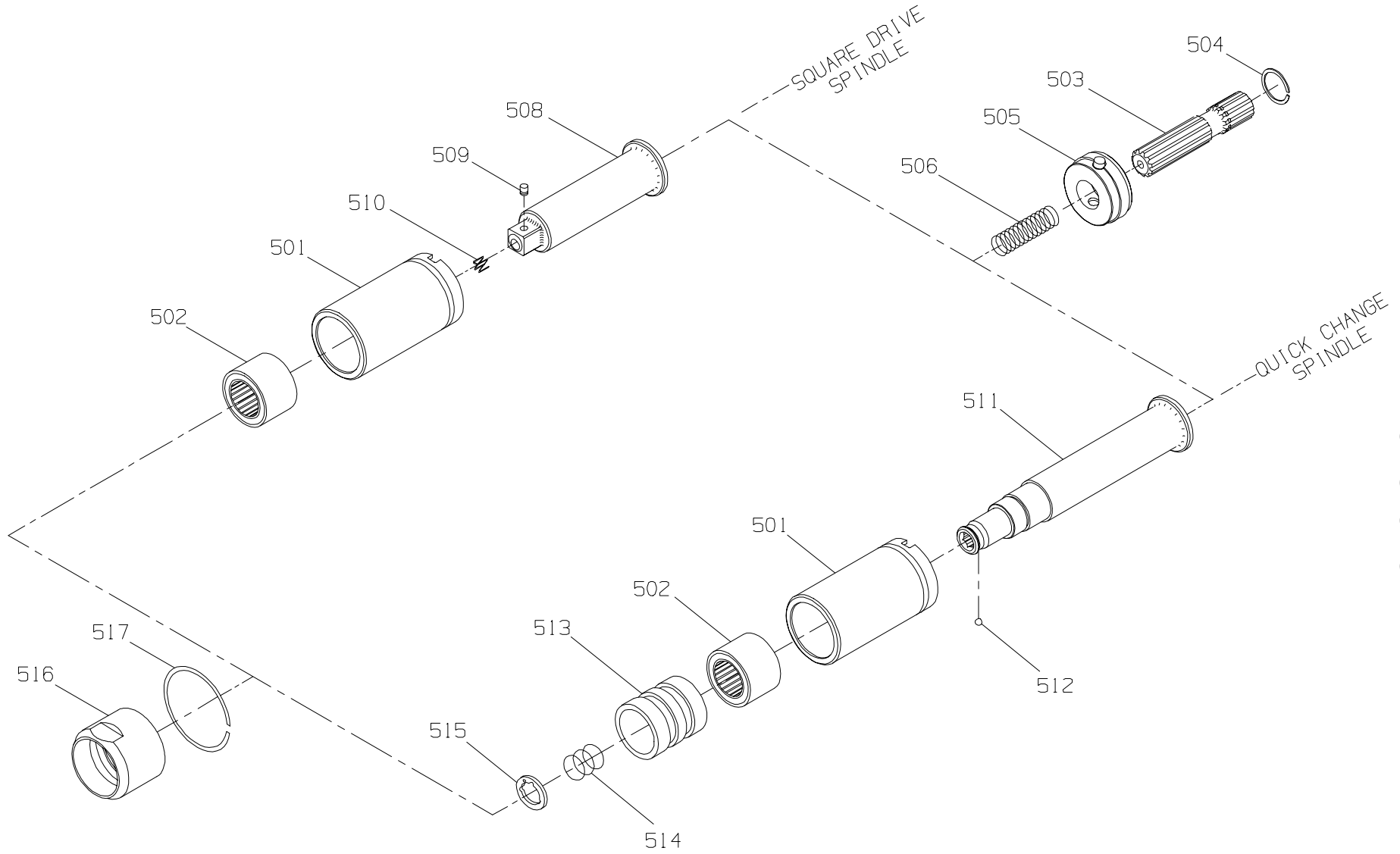
1. Grasp the flats of the metal Gear Case in leather-covered or copper-covered vise jaws with the output end of the tool upward, and using a wrench on the hex of the Coupling Nut, unscrew the Coupling Nut and pull the Angle Housing Assembly or Spindle Assembly away from the Gear Case.
2. **For Series D40 Straight Spring Loaded Spindles** Engage the spline on the Drive Shaft (503) with the teeth of the gear train in the Gear Case and slide the Spring Loaded Spindle Assembly against the Gear Case.

For Series D120 Straight Spring Loaded Spindles Engage the spline on the Drive Spindle (503) with the teeth of the Gear train in the Gear Case and slide the Spring Loaded Spindle Assembly against the Gear Case.

NOTICE

The thread in the following step is a left-hand thread.

3. **For Series D40 Straight Spring Loaded Spindles** Thread the Coupling Nut onto the Gear Case and using a wrench on the flats of the Coupling Nut, tighten the Nut between 25 and 30 ft-lb (27 and 40 Nm) torque.
For Series D120 Straight Spring Loaded Spindles Thread the Coupling Nut onto the Gear Case and using a wrench on the flats of the Coupling Nut, tighten the Nut between 50 and 60 ft-lb (68 and 81 Nm) torque.



MAINTENANCE SECTION

STRAIGHT SPRING LOADED SPINDLES FOR ALL 40 Nm AIR TOOLS AND 40 Nm ELECTRIC TOOLS HAVING DEA5, DEA8 or DEA15 GEARING AND SERIAL NUMBERS LOWER THAN A97G01000 or DEA20, DEA23, DEA31, DEA40 AND DEP40 GEARING AND SERIAL NUMBERS LOWER THAN A97B01000. (Dwg. TPB1000-1)



PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

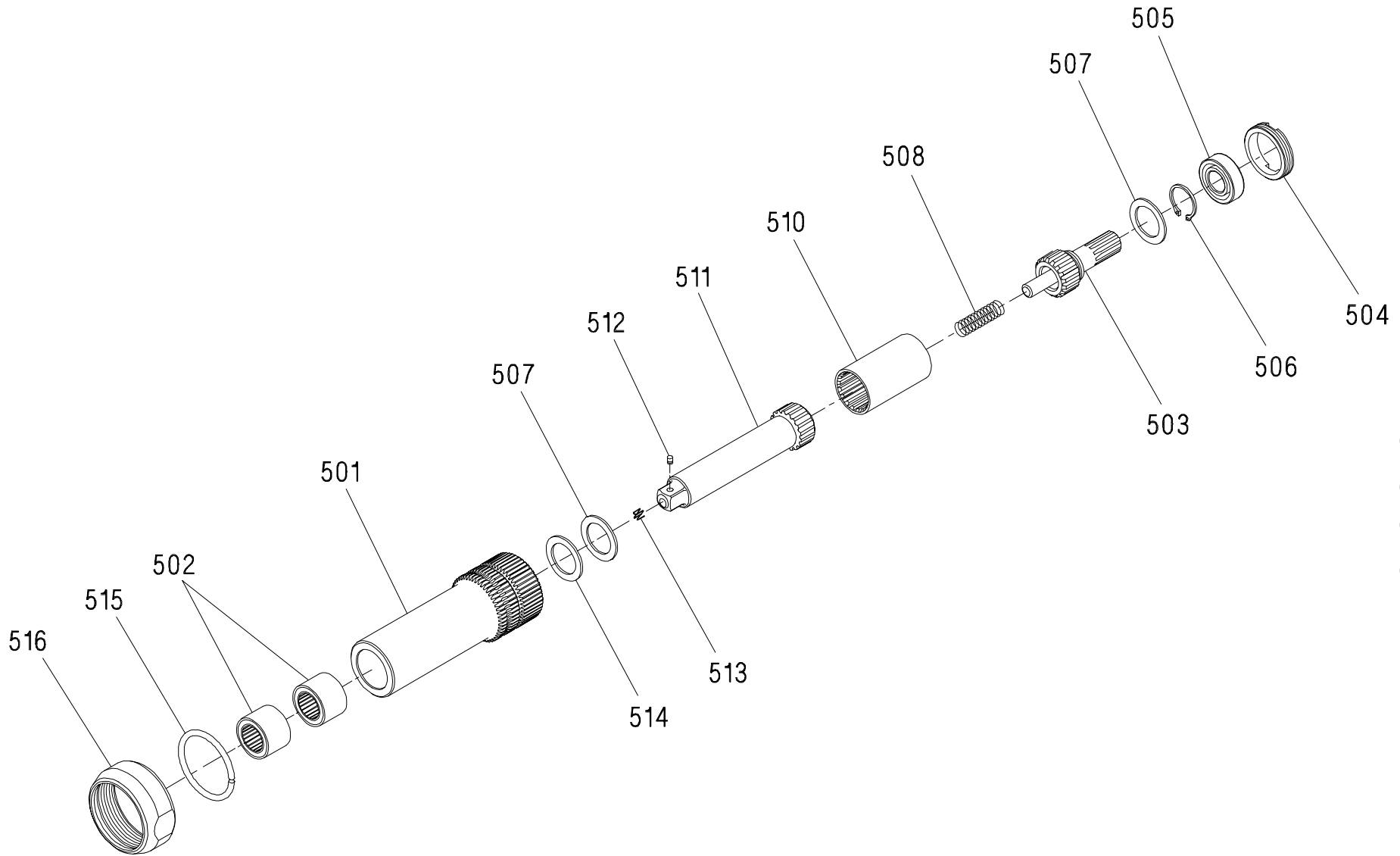
5-7

+	Square Drive Spring Loaded Spindle Assembly Attachment		504	Drive Shaft Retainer	182A53-689
	with 1/4" square drive 4" long	E4S4	505	Housing Orientation Ring	DAA2-A682
	with 3/8" square drive 4" long	E4S6	506	Disengaging Spring	
	with 3/8" square drive 6" long	E6S6		for E9S6	E9S6-626
	with 3/8" square drive 8" long	E8S6		for all others	E4-626A
	with 3/8" square drive 9" long	E9S6	508	Square Drive Spindle	
	with 3/8" square drive 10" long	E10S6		for E4S4	E4S4-P586
	with 1/2" square drive 4" long	E4S8		for E4S6 or E8S6	E4S6-P586
	with 1/2" square drive 6" long	E6S8		for E6S6 or E10S6	E6S6-P586
	with 1/2" square drive 8" long	E8S8		for E4S8 or E8S8	E4S8-P586
with 1/2" square drive 10" long	E10S8	for E6S8 or E10S8		E6S8-P586	
501	Quick Change Spring Loaded Spindle Assembly Attachment		509	Socket Retaining Pin	
	with 1/4" quick change 4" long	E4Q4		for E4S6, E6S6, E8S6, E9S6 or E10S6	5020-716
	Housing Assembly		*	for E4S8, E6S8, E8S8 or E10S8	804-716
502	for E4Q4, E4S4, E4S6, E6S6, E4S8 or E6S8	E4-A580		for E4S4	500B-816AX
	for E8S6, E9S6, E10S6, E8S8 or E10S8	E8-A580	510	Socket Retainer Spring	
	Housing			for E4S6, E6S6, E8S6, E9S6 or E10S6	401-718
	for E4Q4, E4S4, E4S6, E6S6, E4S8 or E6S8	E4-580	*	for E4S8, E6S8, E8S8 or E10S8	5UHD-718
503	for E8S6, E9S6, E10S6, E8S8 or E10S8	E8-580	*	for E4S4	500B-818
	Front Spindle Bearing	ML50K-318		Pin Retaining Washer (for E4S4)	2U-817
503	Drive Shaft		511	Quick Change Spindle (for E4Q4)	DEMP40-586A
	for E4Q4, E4S4, E4S6, E6S6, E4S8 or E6S8	E4-584	512	Bit Retaining Ball (for E4Q4)	RX1-629
	for E8S6, E10S6, E8S8 or E10S8	E8-584	513	Bit Retaining Sleeve (for E4Q4)	5C1-930-4
	for E9S6	E9S6-584	514	Retaining Sleeve Spring (for E4Q4)	5C1-931-4
			515	Sleeve Spring Retainer (for E4Q4)	5C1-853
			516	Coupling Nut	DAA2-27
			517	Coupling Nut Retainer	DAA2-29

MAINTENANCE SECTION

* Not illustrated.

+ These Spindle Assemblies are to be used with all 40 Nm Air Tools and 40 Nm Electric Tools having DEA5, DEA8 or DEA15 Gearing and Serial Numbers lower than A97G01000 or 40 Nm Electric Tools having DEA20, DEA23, DEA31, DEA40 or DEP40 Gearing and Serial Numbers lower than A97B01000.



MAINTENANCE SECTION

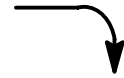
STRAIGHT SPRING LOADED SPINDLES FOR 120 Nm TOOLS and 40 Nm ELECTRIC TOOLS HAVING DEA5, DEA8 or DEA15 GEARING AND SERIAL NUMBER HIGHER THAN A97G01000 or DEA20, DEA23, DEA31, DEA40 AND DEP40 GEARING AND SERIAL NUMBERS HIGHER THAN A97B01000.

(Dwg. TPB1018)

PART NUMBER FOR ORDERING



PART NUMBER FOR ORDERING



++	Square Drive Spring Loaded Spindle Assembly Attachment		510	Coupler	
	with 1/4 in. square drive 4 in. long	120E4S4		for E4S4, E4S6, E4S8	120E4-581
	with 1/4 in. square drive 6 in. long	120E6S4		for E6S4, E6S6, E6S8, E8S4, E8S6, E8S8	120E6-581
	with 1/4 in. square drive 8 in. long	120E8S4	511	Square Drive Spindle	
	with 3/8 in. square drive 4 in. long	120E4S6		for E4S4	120E4S4-586
	with 3/8 in. square drive 6 in. long	120E6S6		for E4S6	120E4S6-586
	with 3/8 in. square drive 8 in. long	120E8S6		for E4S8	120E4S8-586
	with 1/2 in. square drive 4 in. long	120E4S8		for E6S4	120E6S4-586
	with 1/2 in. square drive 6 in. long	120E6S8		for E6S6	120E6S6-586
	with 1/2 IN. square drive 8 in. long	120E8S8		for E6S8	120E6S8-586
	Housing Assembly			for E8S4	120E8S4-586
	for E4S4, E4S6, E4S8	120E4-A580		for E8S6	120E8S6-586
	for E6S4, E6S6, E6S8	120E6-A580	512	for E8S8	120E8S8-586
	for E8S4, E8S6, E8S8	120E8-A580		Socket Retaining Pin	
501	Housing			for E4S4, E6S4, E8S4	500B-816AX
	for E4S4, E4S6, E4S8	120E4-580		for E4S6, E6S6, E8S6	5020-716
	for E6S4, E6S6, E6S8	120E6-580	513	for E4S8, E6S8, E8S8	804-716
	for E8S4, E8S6, E8S8	120E8-580		Socket Retainer Spring	
502	Front Spindle Bearing	182A53-606		for E4S4, E6S4, E8S4	500B-818
503	Drive Spindle Assembly	120E4-A584		for E4S6, E6S6, E8S6	401-718
504	Bearing Cap	8SA32-531	514	for E4S8, E6S8, E8S8	5UHD-718
505	Rear Spindle Bearing	8SA32-593		Washer	120E4-105
506	Snap Ring	FEA100-20	515	Coupling Nut	DAA4-27
507	Washer	120E4-106	516	Coupling Nut Retainer	DAA4-29
508	Disengaging Spring		*	Mounting Bracket Kit	DEM120-K48
	for E4S4, E4S6, E4S8	120E4-626	*	Pin Retainer Washer (for E4S4, E6S4, E8S4)	2U-817
	for E6S4, E6S6, E6S8, E8S4, E8S6, E8S8	120E6-626			

* Not illustrated.

++ These Spindle Assemblies are used on all 120 Nm Tools and 40 Nm Electric Tools having DEA5, DEA8 or DEA15 Gearing and Serial Numbers higher than A97G01000 or 40 Nm Electric Tools having DEA20, DEA23, DEA31, DEA40 or DEP40 Gearing and Serial Numbers higher than A97B01000.

MAINTENANCE SECTION

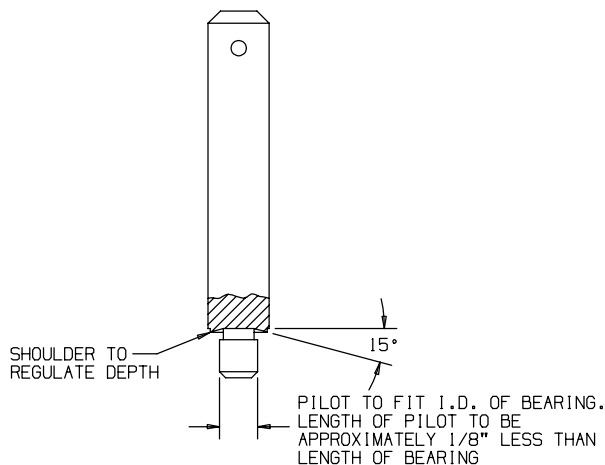
SERIES D40 DRIVE SPINDLE BEARING REPLACEMENT

NOTICE

In this first step, the Coupling Nut (516) has a left-hand thread.

1. Grasp the flats of the metal Gear Case in leather-covered or copper-covered vise jaws with the output end of the tool upward, and using a wrench on the hex of the Coupling Nut, unscrew the Coupling Nut and pull the Housing (501) away from the Gear Case and off the assembly.
2. Press the Front Spindle Bearing (502) out of the Housing.
3. Using a bearing inserting tool as shown in Drawing TPD786, press a new Front Spindle Bearing into the end of the spindle Housing without the notch and continue pressing until the trailing end of the Bearing is flush with the end of the Housing.

Needle Bearing Inserting Tool



(Dwg. TPD786)

4. Lubricate the Bearing with Ingersoll-Rand No. 67 Grease and install the assembled Housing over the Spindle (508 or 511) against the Gear Case.

NOTICE

The thread in the following step is a left-hand thread.

5. Thread the Coupling Nut onto the Gear Case and using a wrench on the hex of the Coupling Nut, tighten the Nut between 25 and 30 ft-lb (27 and 40 Nm) torque.

SERIES D120 DRIVE SPINDLE BEARING REPLACEMENT

NOTICE

In the following step, the Coupling Nut (516) has a left-hand thread.

1. Grasp the flats of the metal Gear Case in a vise with leather-covered or copper-covered jaws with the output end of the tool upward, and using a wrench on the hex of the Coupling Nut, unscrew the Coupling Nut and pull the Housing (501) away from the Gear Case and off the tool.
2. Slide the Coupling Nut off the Spindle Housing (501) and remove the Coupling Nut Retainer (515).

NOTICE

In the following step, the Bearing Cap (504) has a left-hand thread.

3. Grasp the splined end of the Spindle Housing in a vise with leather-covered or copper-covered jaws with the splined end facing upward, and using a Bearing Cap wrench, unscrew the Bearing Cap (504). Use snap ring pliers to remove the Retaining Ring (506).
4. Lift and remove the Drive Spindle (503) to pull the Rear Spindle Bearing (505), Retaining Ring (506), and Washer (507) out of the Housing.
5. Remove the Spindle Housing from the vise and tip the housing to let the Spring (508), Coupler (510), Square Drive Spindle (511), and Washers (507) and (514) slide out.
6. Press both of the Square Drive Spindle Bearings (502) out of the Housing.
7. Using a bearing insertion tool of the type shown in Drawing TPD786, press a new Square Drive Spindle Bearing into the unthreaded end of the spindle Housing and continue pressing until the Bearing is seated properly near the center of the Spindle Housing. Press another Square Drive Spindle Bearing into the unthreaded end of the housing until the trailing edge of the bearing is located flush with the end of the Housing.
8. Lubricate the Bearings with Ingersoll-Rand No. 67 Grease.
9. Slide Washer (507) and Washer (514) on the Square Drive Spindle (511) and insert the Spindle into the Spindle Housing (501).
10. Align the Coupler (510) to slip over the splines on the Square Drive Spindle, and slide it into position in the Spindle Housing.

MAINTENANCE SECTION

11. Insert one end of the Disengaging Spring (508) over the shaft and into the recess in the Square Drive Spindle.
12. Slide Washer (507) on the Drive Spindle (503). Use snap ring pliers to install the Retaining Ring (506) on top of the Washer.
13. Align the Square Drive Spindle (503) to engage the splines on the Coupler and contain the Disengaging Spring within its recess and slide it into position in the Spindle Housing.

NOTICE

In the following step, the Bearing Cap (504) has a left-hand thread.

14. Grasp the splined end of the Spindle Housing in a vise with leather-covered or copper-covered jaws with the splined end facing upward. Apply a drop of Perma-Lok MM-115* to the threads of a Bearing Cap (504) and using a Bearing Cap wrench, tighten the Bearing Cap between 20 and 25 ft-lbs (27 and 34 Nm) torque.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.

* Product of National Starch and Chemical Corporation.