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Form P7069

Edition 3

July, 2000

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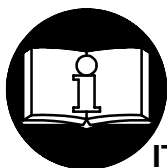
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OPERATION AND MAINTENANCE MANUAL FOR SERIES 5020 AND 5040 TORQUE CONTROL IMPACTTOOLS

NOTICE

Series 5020T and 5040T Adjustable Torque Control Impacttools are designed for use in production applications where fasteners must be applied to precise torques.

Series 5020TDQ and 5040TDQ Non-Adjustable Torque Control Impacttools are designed for use in production applications where a series of different torques must be applied to different fasteners. Ingersoll-Rand is not responsible for customer modification of tools for applications on which Ingersoll-Rand was not consulted.



WARNING

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

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

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

PLACING TOOL IN SERVICE

- Always operate, inspect and maintain this tool in accordance with American National Standards Institute Safety Code for Portable Air Tools (ANSI B186.1).
- For safety, top performance, and maximum durability of parts, operate this tool at 90 psig (6.2 bar/620 kPa) maximum air pressure at the inlet with 1/4" (6 mm) inside diameter air supply hose for Series 5020 Impacttools or 5/16 (8 mm) inside diameter air supply hose for Series 5040.
- Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.
- Do not use damaged, frayed or deteriorated air hoses and fittings.
- Be sure all hoses and fittings are the correct size and are tightly secured. See Dwg. TPD905-1 for a typical piping arrangement.
- Always use clean, dry air at 90 psig maximum air pressure. Dust, corrosive fumes and/or excessive moisture can ruin the motor of an air tool.
- Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel.
- Do not remove any labels. Replace any damaged label.

USING THE TOOL

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

- Always wear hearing protection when operating this tool.
- Keep hands, loose clothing and long hair away from rotating end of tool.
- Note the position of the reversing lever before operating the tool so as to be aware of the direction of rotation when operating the throttle.
- Anticipate and be alert for sudden changes in motion during start up and operation of any power tool.
- Keep body stance balanced and firm. Do not overreach when operating this tool. High reaction torques can occur at or below the recommended air pressure.
- Tool shaft may continue to rotate briefly after throttle is released.
- Air powered tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.
- Use accessories recommended by Ingersoll-Rand.
- Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.
- Impact wrenches are not torque wrenches. Connections requiring specific torque must be checked with a torque meter after fitting with an impact wrench.
- This tool is not designed for working in explosive atmospheres.
- This tool is not insulated against electric shock.

NOTICE

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

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

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

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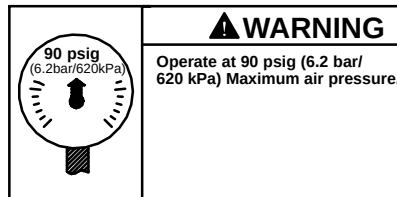
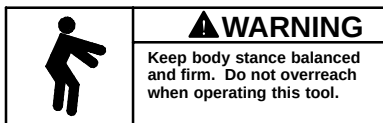
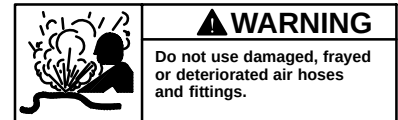
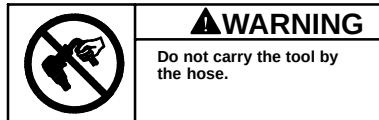
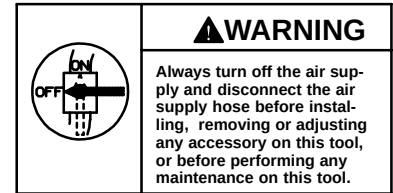
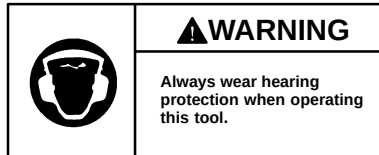
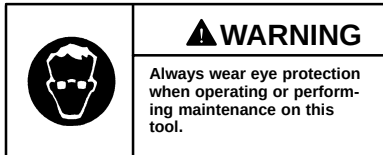
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WARNING LABEL IDENTIFICATION

⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.



PLACING TOOL IN SERVICE

LUBRICATION



Ingersoll-Rand No. 50

Ingersoll-Rand No. 100
Ingersoll-Rand No. 28

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

For USA –

for Series 5020, 5040 No. C18-03-FKG0-28

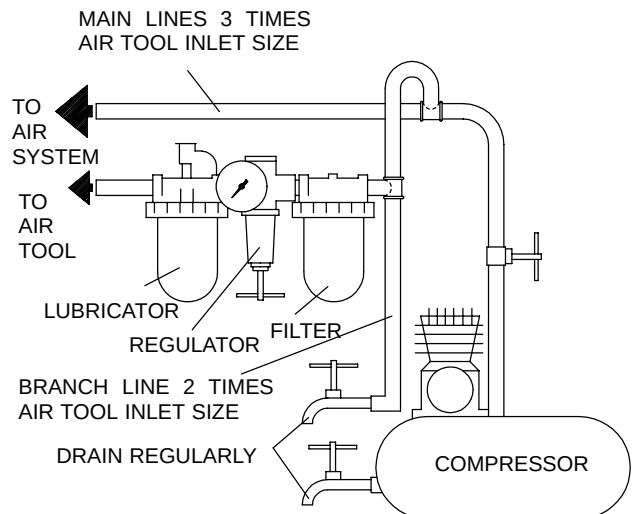
For International –

for Series 5020, 5040 C18-C3-FKG0

After each eight hours of operation, unless an air line lubricator is used, remove the Oil Chamber Plug and fill the oil chamber with Ingersoll-Rand No. 50 Oil.

After each eight hours of operation, inject about 1.5 cc of Ingersoll-Rand No. 100 Grease through the Grease Fitting to lubricate the impact mechanism.

After each forty-eight hours of operation, or as experience indicates, remove the Hammer Case and check the lubrication of the impact unit and gearing. Using Ingersoll-Rand No. 100 Grease, coat only the jaws of the Hammer and the jaws of the Anvil. Apply a thin film of No. 100 Grease to the pilot of the Torsion Bar or the Planet Gear Frame Pilot and place a small amount in the cam grooves at the jaw end of the Hammer and on the Hammer Spring Thrust Bearing Balls. Lubricate the gearing with Ingersoll-Rand No. 28 Grease. Use grease sparingly. Excessive lubrication will retard the action of the tool.



(Dwg. TPD905-1)

OILER ADJUSTMENT

If the built-in lubricator fails to provide proper lubrication to the tool, it can be adjusted by removing the Oil Chamber Plug from the Motor Housing and inserting a small screwdriver through the opening in the Housing to turn the Oiler Adjusting Screw. Rotate the Screw **clockwise** to **decrease** the oil flow and **counterclockwise** to **increase** the flow. If the lubricator cannot be adjusted to provide an acceptable oil flow, replace the Oiler Felt.

PLACING TOOL IN SERVICE

— TORQUE CONTROL INFORMATION —

These tools are furnished with two types of Torsion Bars. Models 5020TDQ and 5040TDQ have a non-adjustable Torsion Bar and a Quick Change Anvil Assembly which permits rapid interchangeability of Bars to achieve the desired torque setting. (Refer to the table in Form P7069.) Models 5020T and 5040T have an integral adjustable Torsion Bar which enables one Bar to be used through a range of torque output. (Refer to the table in Form P7069.) A Torque Setting Jig is required to set the torque on models having an adjustable Torsion Bars.

Non-adjustable Torsion Bars

There are two indicators which reveal the torque capability of non-adjustable torsion bars. Each bar is color coded with one of six colors. Because these colors are used on more than one bar, each bar is additionally coded with a stamped number from one to twelve that is unique to that particular bar. The number can be found stamped on the large hub near the Quick Change Anvil Assembly. (Refer to Drawing TPC588 and table in Form P7069.)

Adjustable Torsion Bars

Check the stamping on the end face of the square driver to determine what torque range the torsion bar is capable of handling. The letter “H” designates a Heavy Torsion Bar, the letter “M” designates a Medium Torsion Bar and the letter “L” designates a Light Torsion Bar. (Refer to the Adjustable Torsion Bar Table in Form P7069 to determine the precise range of Heavy, Medium or Light Bars with different size Impacttools.) All Torsion Bars are adjusted at the factory for controlling the torque when installing fasteners having right-hand threads.

Torque Setting Jigs

There are two types of Torque Setting Jigs available from Ingersoll-Rand.

A Vise Type Torque Setting Jig consisting of two jaws used in a bench vise is available for Model 5020T and Model 5040T and is capable of setting torque for right-hand and left-hand fasteners.

The Screw Type Torque Setting Jig is a self-contained, base-mounted unit using a screw-actuated Torque Jig Arm to make the adjustment. The Screw Type Jig for model 5040T will adjust torque for right-hand fasteners and left-hand fastening torque can be done by removing the Torque Jig Clamps from the Screw Type Jig and using them in vise jaws.

Changing the Permanent Set From Right-Hand to Left-Hand

The Screw Type Torque Setting Jig cannot be used to remove the permanent set placed on the Torsion Bar at the factory. However, by removing the Torque Jig Clamp from the Jig and using the clamp jaws with a bench vise, the permanent set can be changed as follows:

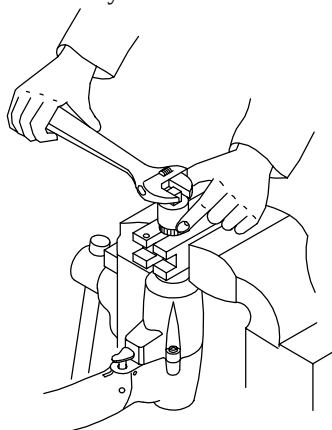
1. Remove the Torque Locking Sleeve Retainer from the Adjustable Torsion Bar.
2. Clamp the Torque Jig Clamp around the Anvil and grip the jaws tightly in a vise.
3. Place a square socket over the end of the Torsion Bar until it just touches the Socket Retaining Plunger. Use a long socket handle to obtain sufficient leverage.
4. While pulling the socket handle clockwise when facing the square driver, disengage the Torque Locking Sleeve from the Torsion Bar by lifting it out of spline engagement with your free hand. Gradually relax the pull on the socket handle, allowing the Torsion Bar to assume an unstressed position. Remove the socket handle and the Torque Locking Sleeve.
5. Apply a torque wrench to the square driver of the Torsion Bar and pull the wrench counterclockwise when facing the square driver until the following torque values are reached.
For 5020T models, 25 ft-lb (34 Nm) for Light Bars; 35 ft-lb (48 Nm) for Heavy Bars.
For 5040T models, 50 ft-lb (68 Nm) for Light Bars; 70 ft-lb (95 Nm) for Medium Bars; 160 ft-lb (217 Nm) for Heavy Bars.
6. Relax the pull on the torque wrench and allow the Bar to assume its natural position. Note that it has taken a slight permanent set. Make adjustments for left-hand operation as described in the following instructions.

Adjusting an Operational Torsion Bar Using a Vise Type Jig

1. Remove the Torque Locking Sleeve Retainer from the Adjustable Torsion Bar.
2. Clamp the Torque Jig Clamp around the Anvil and grip the jaws tightly in a vise with the square driver upward.
3. Note the position of the Torque Locking Sleeve and make a pencil mark on the face of the Jig directly in line with one of the numbers.
4. Place a wrench or square socket over the end of the Torsion Bar until it just touches the Socket Retaining Plunge. Use a long handle tool to obtain sufficient leverage.

PLACING TOOL IN SERVICE

5. While pulling the tool handle clockwise for right-hand tools (counterclockwise for left-hand tools) when facing the square driver, disengage the Torque Locking Sleeve from the Torsion Bar by lifting it out of spline engagement with your free hand.



(Dwg. TPD1011)

6. To increase the delivered torque, rotate the Locking Sleeve counterclockwise for right-hand tools (clockwise for left-hand tools) until the next number aligns with the pencil mark on the Jig and start the Sleeve onto the Anvil. Increase the pull on the wrench until the Locking Sleeve, in its new position, can be fully engaged with the Torsion Bar.
To decrease the delivered torque, rotate the Locking Sleeve **clockwise** for right-hand tools (**counterclockwise** for left-hand tools) until the next number aligns with the pencil mark on the Jig. Engage the Sleeve with the Anvil and Torsion Bar and relax the pull on the wrench.
7. Install the Torque Locking Sleeve Retainer and run at least six nuts or screws before checking the torque.

Adjusting an Unstressed Torsion Bar Using a Vise Type Jig

1. Slide the Torque Locking Sleeve, numbered end first, over the square driver of the Torsion Bar and rotate it **counterclockwise** for right-hand tools (**clockwise** for left-hand tools) when facing the square driver, selecting the **last** position where it will slide into engagement with both the Anvil and Torsion Bar.
2. Clamp the Torque Jig Clamp around the Anvil and grip the jaws tightly in a vise with the square driver upward.
3. Note the position of the Torque Locking Sleeve and make a pencil mark on the face of the Jig directly in line with one of the numbers.
4. Place a wrench or square socket over the end of the Torsion Bar until it just touches the Socket Retaining Plunger. Use a long handle tool to obtain sufficient leverage.

5. While pulling the tool handle clockwise for right-hand tools (counterclockwise for left-hand tools) when facing the square driver, disengage the Torque Locking Sleeve from the Torsion Bar by lifting it out of spline engagement with your free hand.
6. **To increase the delivered torque**, rotate the Locking Sleeve **counterclockwise** for right-hand tools (**clockwise** for left-hand tools) until the next number aligns with the pencil mark on the Jig and start the Sleeve onto the Anvil. Increase the pull on the wrench until the Locking Sleeve, in its new position, can be fully engaged with the Torsion Bar.
To decrease the delivered torque, rotate the Locking Sleeve **clockwise** for right-hand tools (**counterclockwise** for left-hand tools) until the next number aligns with the pencil mark on the Jig. Engage the Sleeve with the Anvil and Torsion Bar and relax the pull on the wrench.
7. Install the Torque Locking Sleeve Retainer and run at least six nuts or screws before checking the torque.

Adjusting an Operational Torsion Bar Using a Screw Type Jig

1. Remove the Torque Locking Sleeve Retainer from the Adjustable Torsion Bar.
2. Turn the Jig Adjusting Screw until the Jig Arm Trunion is located midway on the threaded portion of the Screw.

NOTICE

Use only right-hand Jigs for right-hand adjustment and left-hand Jigs for left-hand adjustment.

3. Position the tool in the Jig so that the marked tooth on the Anvil is visible. Enter the square driver of the Torsion Bar to full depth in the square recess in the Torque Jig Arm and mate the teeth on the Anvil with those in the Torque Jig Clamp. Swing the other Torque Jig Clamp (splined or smooth) over the top of the Anvil.
4. Swing the Jig Clamp Eyebolt into the slot in the Clamp and securely tighten the Eyebolt Thumb Nut.
5. Note the number on the Torque Locking Sleeve that is in alignment with the marked anvil tooth. Slowly turn the Jig Adjusting Screw clockwise until the Torque Locking Sleeve is free to slide forward.

NOTICE

Do not rotate the Screw more than ten complete turns after the slack has been taken up. If the Sleeve is not free by then, it is probably held by a burr. Loosen the Sleeve by lightly striking the back face of the Sleeve with a plastic hammer.

PLACING TOOL IN SERVICE

6. **To decrease the delivered torque**, rotate the Sleeve **clockwise** (when facing the square driver) one or more numbers and slide it back into full engagement with the teeth on the Torsion Bar and Anvil.
To increase the delivered torque, rotate the Sleeve **counterclockwise** (when facing the square driver) one or more numbers and slide it back into full engagement with the teeth on the Torsion Bar and Anvil.
7. Turn the Jig Adjusting Screw counterclockwise until the tension is released and there is play in the Torque Jig Arm.
8. Loosen the Eyebolt Thumb Nut and remove the tool from the Jig.

CAUTION

Do not loosen the Thumb Nut while the Torque Arm Jig is stressed.

9. Install the Torque Locking Sleeve Retainer and run at least six nuts or screws before checking the torque.

Adjusting an Unstressed Torsion Bar Using a Screw Type Jig

Always use a Right-Hand Torque Setting Jig for right-hand thread applications; use a Left-Hand Torque Setting Jig for left-hand thread applications. Make certain the Torsion Bar being adjusted has the proper permanent set in the stress beam for the application on which it is to be used.

1. Slide the Torque Locking Sleeve, numbered end first, over the square driver of the Torsion Bar and rotate it **counterclockwise** for right-hand tools (**clockwise** for left-hand tools) when facing the square driver, selecting the **last** position where it will slide into engagement with both the Anvil and Torsion Bar.
2. Turn the Jig Adjusting Screw until the Jig Arm Trunion is located at the lowest position on the threaded portion of the Screw.

NOTICE

Use only right-hand Jigs for right-hand adjustment and left-hand Jigs for left-hand adjustment.

3. Position the tool in the Jig so that the marked tooth on the Anvil is visible. Enter the square driver of the Torsion Bar to full depth in the square recess in the Torque Jig Arm and mate the teeth on the Anvil with those in the Torque Jig Clamp. Swing the other Torque Jig Clamp (splined or smooth) over the top of the Anvil.
4. Swing the Jig Clamp Eyebolt into the slot in the Clamp and securely tighten the Eyebolt Thumb Nut.
5. Note the number on the Torque Locking Sleeve that is in alignment with the marked anvil tooth.

6. Slide the Locking Sleeve forward, disengaging it from the Anvil. Rotate the Sleeve four numbers (positions) **counterclockwise** for **right-hand** adjustment, **clockwise** for **left-hand** adjustment, and start it onto the Anvil in the new position.
7. Slowly turn the Jig Adjusting Screw clockwise until the Torque Locking Sleeve, in its new position, can be slid over the Torsion Bar to full engagement.
8. Turn the Jig Adjusting Screw counterclockwise until the tension is released and there is play in the Torque Jig Arm.
9. Loosen the Eyebolt Thumb Nut and remove the tool from the Jig.

CAUTION

Do not loosen the Thumb Nut while the Torque Arm Jig is stressed.

10. Install the Torque Locking Sleeve Retainer and run at least six nuts or screws before checking the torque.

Trip Valve Plunger Arm Adjustment

The Trip Valve Plunger Arm is threaded onto the Trip Valve Plunger to provide longitudinal adjustment. The Arm is properly adjusted at the factory and readjustment should not be necessary as long as the original parts continue in use. However, installation of a new Planet Gear Frame, Gear Case, Motor Housing, Hammer or Hammer Case may make readjustment necessary. Adjustment is also required whenever a new Trip Valve Plunger Arm or Trip Valve Plunger, which always includes the Arm, is installed.

If, after replacement of any of the above mentioned parts, the Impactool either fails to stop automatically, or stops prematurely after the first few blows, it is an indication that the Plunger Arm should be reset. To reset the Plunger Arm, proceed as follows:

1. Remove the Plunger Bushing Plug from the Hammer case.
2. Insert a small screwdriver into the slot on the end of the Trip Valve Plunger and rotate the Plunger, 1/2 turn at a time, **clockwise** if the Impactool failed to stop, or **counterclockwise** if the Impactool stopped prematurely.

NOTICE

Total rotation of the Plunger should not exceed two complete revolutions in either direction. If improper operation continues after completing two revolutions, the malfunction is the result of some other cause.

SPECIFICATIONS

PISTOL GRIP with 3/8" SQUARE DRIVE ADJUSTABLE TORSION BAR

Model	Impacts/min.	Recommended Torque Range ft-lb Nm	
5020TAL1	2 100	6-17	8-23
5020TAH1	2 100	10-30	13-40

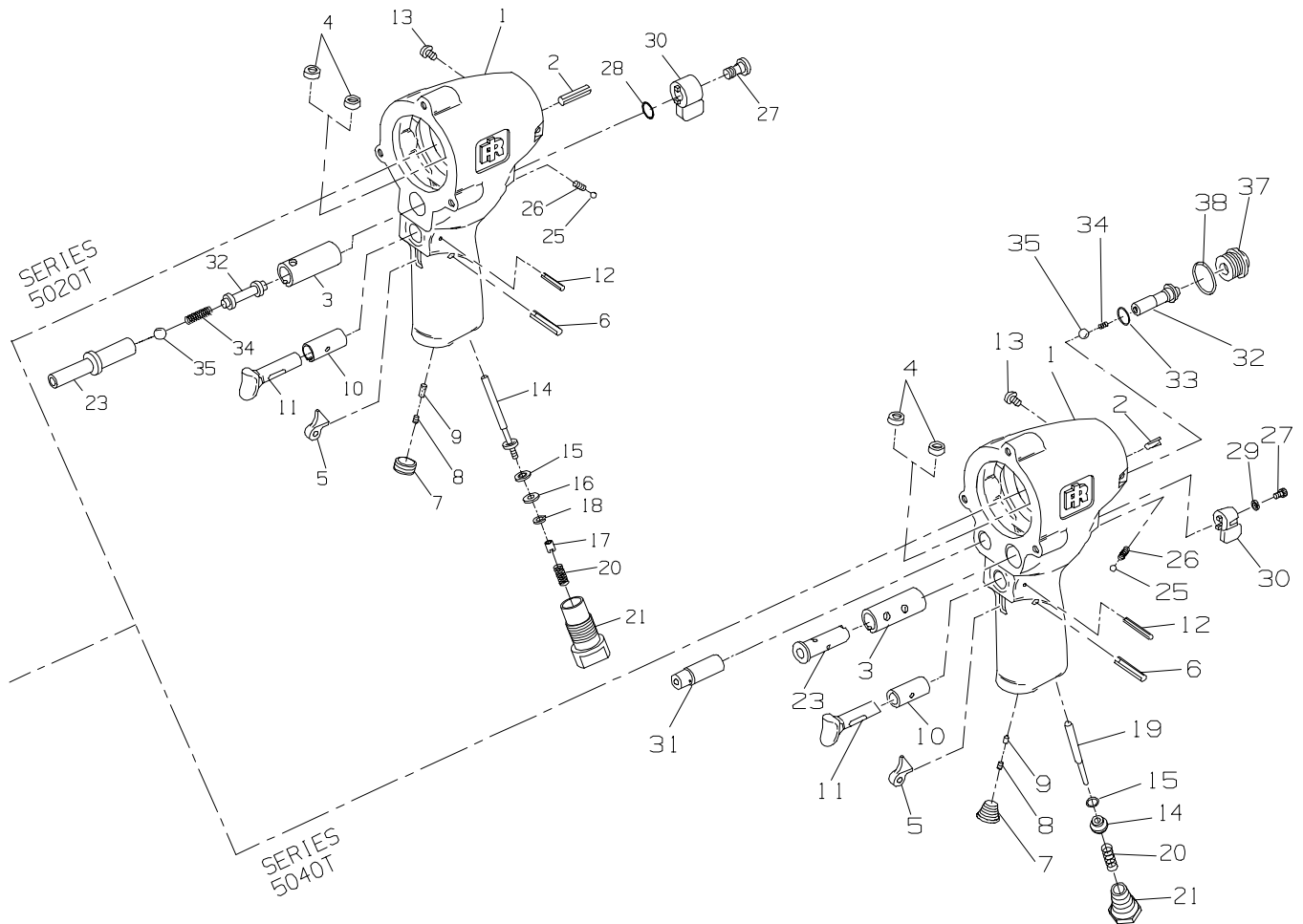
PISTOL GRIP with 1/2" SQUARE DRIVE ADJUSTABLE TORSION BAR

5040TAL1	2 150	20-45	27-61
5040TAM1	2 150	40-65	54-88
5040TAH1	2 150	60-90	81-122

PISTOL GRIP with 5/16" HEX QUICK CHANGE NON-ADJUSTABLE TORSION BAR

5020TDQ	2 100	10-30	13-40
5040TDQ	2 150	20-90	27-122

MAINTENANCE SECTION



Series 5020T and 5040T Housing Units

(Dwg. TPB951)

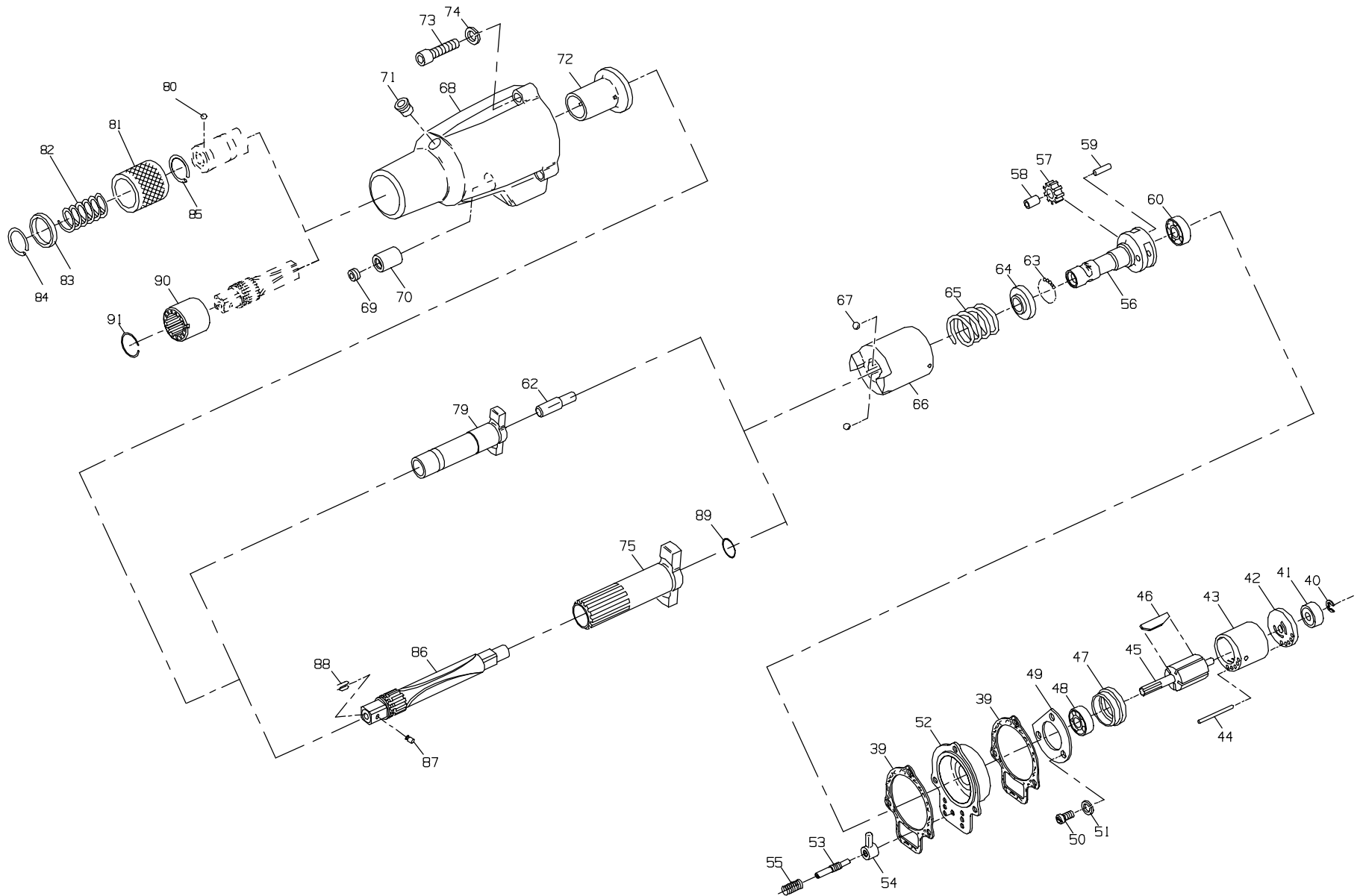
MAINTENANCE SECTION

PART NUMBER FOR ORDERING



		For Series 5020	For Series 5040
1	Motor Housing		
	for models ending in -EU	5020T-EU-40	5040T-EU-40
	for all other models	5020T-40	5040T-40
2	Cylinder Dowel Retainer	ST01-244	5040-6
3	Reverse Valve Bushing	5020-330	5040-330
♦ • 4	Air Port Gasket (2)	5020-210	5020-210
5	Intermediate Lever	504-56C	504-56C
6	Intermediate Lever Pin	R00A2-120	R00A2-120
7	Oil Chamber Plug	R0H-377	R0H-377
8	Oiler Adjusting Screw	R1-71A	R1-71A
♦ 9	Oiler Felt	R1-75	R1-75
10	Trigger Bushing	R00A2-91S	R00A2-91S
11	Trigger	403-93	403-93
12	Trigger Lock Pin	R1AF-524	R1AF-524
13	Vertical Hanger Screw (2)	H54U-667	H54U-667
14	Throttle Valve	502-50A	404-50
♦ • 15	Throttle Valve Face	R0A-159	405-159
16	Valve Face Cap	R0A-157	—
17	Valve Face Cap Nut	R0A-158	—
18	Valve Face Cap Nut Lock Washer	R0A-67	—
19	Throttle Valve Stem	—	404-302
♦ 20	Throttle Valve Spring	R0A-51	R1A-51
21	Air Strainer		
	for 1/8" pipe tap inlet	R00A2-565	—
	for 1/4" pipe tap inlet	R00A2-465	R0-565B
	for 3/8" pipe tap inlet	—	R18-465A
23	Reverse Valve	5020T-329	5040T-329
♦ 25	Reverse Lock Ball	AV1-255	4U-31
♦ 26	Reverse Lock Ball Spring	AV1-256	508-808
27	Reverse Lever Retaining Screw	5020-667	W54-376
♦ • 28	Lever Retaining Screw Seal	R0BR1C-283	—
29	Lever Retaining Screw Lock Washer	—	4U-58
• 30	Reverse Lever	5020-658	5040-658
31	Torque Control Valve Bushing	—	5040T-262
• 32	Torque Control Valve	5020T-161	5040T-161A
♦ • 33	Torque Control Valve Face	—	R1A-159
34	Torque Control Valve Spring	5020T-151	5040T-151
35	Torque Control Trip Valve	5020T-168	G601-65
37	Housing Cap	—	5040-304
♦ • 38	Housing Cap Seal	—	R0AR-210

- ♦ Indicates Tune-up 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.



MAINTENANCE SECTION

5020T and 5040T Power Units

(Dwg. TPA1336)

PART NUMBER FOR ORDERING



		For Series 5020	For Series 5040
◆ • 39	Housing Gasket (2)	5020-34	5040-34
◆ 40	Rear Rotor Bearing Retainer	5020-118	5040-118
◆ • 41	Rear Rotor Bearing	R00H-24	R0H-24
• 42	Rear End Plate	502-12	504-12A
43	Cylinder	502-3	504-3A
44	Cylinder Dowel	502-98	504-98A
45	Rotor	5020-53	5040-53
◆ • 46	Vane Packet (set of 5 Vanes)	R00H-42-5	5040-42-5
• 47	Front End Plate	502-11B	504-11
◆ • 48	Front Rotor Bearing	502-24A	R0-24A
49	Motor Lock Plate	5020-207	5040-207
50	Motor Lock Plate Screw (3)	5UT-359	5040-634
51	Lock Plate Screw Lock Washer (3)	—	4U-58
52	Gear Case	5020-37	5040-37
53	Trip Valve Plunger	5020T-264	5040T-264
54	Trip Valve Plunger Arm	5020T-221	5040T-221
55	Trip Valve Plunger Spring	4E-146	4U-28
	Planet Gear Frame Assembly	5020T-A8	5040T-A8
56	Planet Gear Frame	5020T-8	5040T-8
57	Planet Gear (2)	502-10A	5040T-10
• 58	Planet Gear Bearing	W22-654	—
• 58	Planet Gear Bushing	—	504-500A
• 58	Planet Gear Bearing (2)	—	—
59	Planet Gear Shaft (2)	W22-191	4U-191
• 60	Gear Frame Thrust Bearing	R00H-97	4U-97
62	Planet Gear Frame Pilot (for 5020TDQ and 5040TDQ)	5020-222	5040TD-222
• 63	Hammer Spring Thrust Bearing Ball (15 for 5020; 18 for 5040)	2U-696	2U-696

- ◆ Indicates Tune-up 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



		For Series 5020	For Series 5040
64	Hammer Spring Thrust Bearing Race	2U-695	5U-695A
65	Hammer Spring	2U-728	5040-728
66	Hammer	5020-724	5040-724
67	Cam Ball (2)	2U-722	4U-722
68	Hammer Case (Aluminum)		
	for 5040 models ending in -EU	—	5040-EU-727
	for all other 5040 models	—	5040-727
	for 5020TDQ models ending in -EU	5020-EU-727	—
	for all other 5020TDQ models	5020-727	—
	for 5020T models ending in -EU	5020T-EU-727	—
	for all other 5020T models	5020T-727	—
68	Hammer Case (Steel-Nosed)	—	5040-627
68	Hammer Case (Ductile Iron) (for 5040TDQ or 5081TOAH1)	—	5040-M727
69	Plunger Bushing Plug	5081T-266	5081T-266
70	Plunger Bushing	5081T-265	5081T-265
71	Grease Fitting	130SR-188	130SR-188
*	Warning Label		
	for models ending in -EU	EU-99	EU-99
	for all other models	WARNING-2-99	WARNING-2-99
72	Hammer Case Bushing	—	5040-641
	for No. 5020-727 Hammer Case	5020-641	—
	for No. 5020T-727 Hammer Case	5020T-641	—
72	Hammer Case Bushing (.005" oversize)	—	5040-641-5
	for No. 5020T-727 Hammer Case	5020T-641-5	—
73	Hammer Case Cap Screw (3)	4E-638	AL-636
74	Hammer Case Cap Screw Lock Washer (3)	4U-58	4U-58

* Not illustrated.

PART NUMBER FOR ORDERING

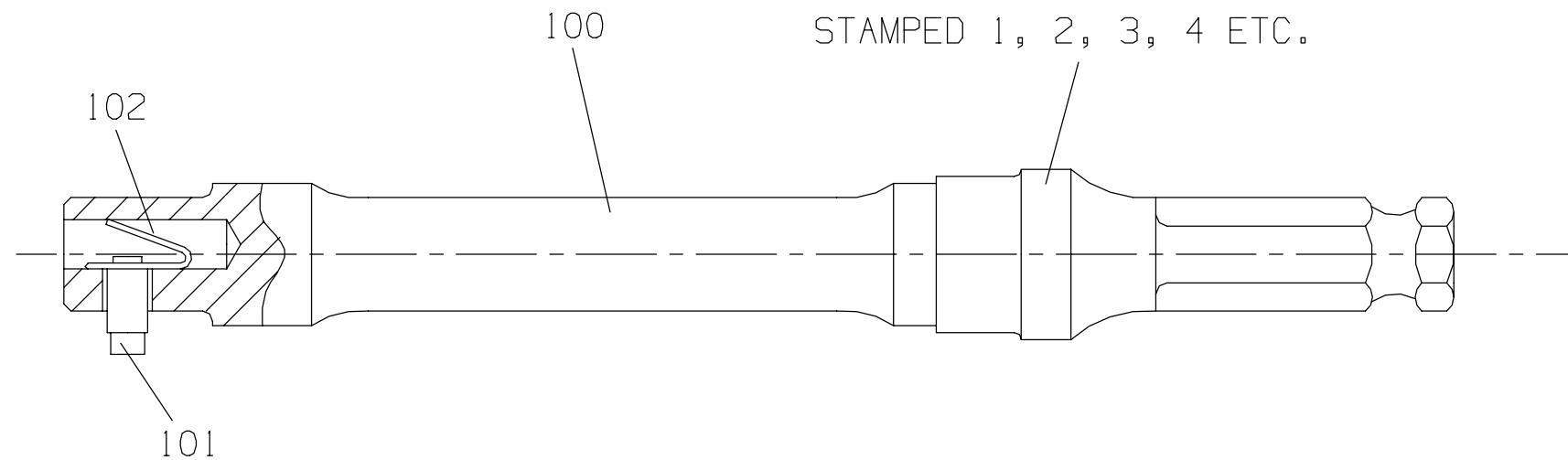


		For Series 5020	For Series 5040
75	Anvil (for Non-Detachable Torsion Bars) for 5020T (5/16" square) for 5040T (7/16" square)	5020T-726 —	— 5040T-726
	Quick Change Anvil Assembly (for 5020TDQ or 5040TDQ)	5020-A926-7	5040-A926-7
79	Quick Change Anvil	5020-926-7	5040-926-7
80	Retaining Ball	2U-722	2U-722
81	Retaining Sleeve	4U-930-7	4U-930-7
82	Retaining Sleeve Spring	4U-931-7	4U-931-7
83	Thrust Ring	4U-932-7	4U-932-7
84	Thrust Ring Lock	4U-933-7	4U-933-7
85	Retaining Sleeve Stop	4U-933-7	—
86	Adjustable Torsion Bar (for 5020T or 5040T)	Refer to Adjustable Tor-	
◆ • 87	Socket Retaining Plunger	sion Bar Table on Page	
	Pin-Type Retainer	5020T-716	804-716
	Ball-Type Retainer	401-715	5UHD-715
◆ • 88	Retaining Plunger Spring	401-718	5UHD-718
89	Torsion Bar Retainer (for 5020T or 5040T)	5020T-281	5040T-281
90	Torque Locking Sleeve (for 5020T or 5040T)	5020T-733	5UT-733A
91	Torque Locking Sleeve Retainer (for 5020T or 5040T)	5020T-741	RV1-340
*	Hose Whip	R00H-130	R0-130
*	Male Hose Nipple	R00A-46	AV1-46
*	Female Hose Nipple	R00A-47	R1-47
*	Male Hose Nipple	—	AL-387
*	Tune-up Kit (includes illustrated items 4 [2], 9, 15, 25, 26, 28, 39 [2], 40, 41, 46, 48, 87, 88, 101 and 102)	5020-TK2	—
	(includes illustrated items 4 [2], 9, 15, 20, 25, 26, 33, 38, 39 [2], 41, 46, 48, 101 and 102)	—	5040-TK2

* Not illustrated.

◆ Indicates Tune-up 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.



Non-Adjustable Torsion Bar for Series 5020TDQ and 5040TDQ Impacttools

(Dwg. TPC588)

NON-ADJUSTABLE TORSION BARS

		COLOR CODE	TORQUE RANGE FT-LB Nm		PART NUMBER FOR ORDERING PIN TYPE BALL TYPE	
100	Non-Adjustable Torsion Bar					
	for 5020TDQ	red	6 to 10	8.1 to 13.6	5040TDQ-P535-1	5040TDQ-B535-1
	for 5040TDQ	red	20 to 25	27.1 to 33.9	5040TDQ-P535-1	5040TDQ-B535-1
	for 5020TDQ	orange	8 to 12	10.8 to 16.3	5040TDQ-P535-2	5040TDQ-B535-2
	for 5040TDQ	orange	22 to 30	29.8 to 40.7	5040TDQ-P535-2	5040TDQ-B535-2
	for 5020TDQ	yellow	10 to 14	13.6 to 19.0	5040TDQ-P535-3	5040TDQ-B535-3
	for 5040TDQ	yellow	25 to 35	3.9 to 47.5	5040TDQ-P535-3	5040TDQ-B535-3
	for 5020TDQ	green	12 to 16	16.3 to 21.7	5040TDQ-P535-4	5040TDQ-B535-4
	for 5040TDQ	green	30 to 40	40.7 to 54.2	5040TDQ-P535-4	5040TDQ-B535-4
	for 5020TDQ	blue	14 to 18	19.0 to 24.4	5040TDQ-P535-5	5040TDQ-B535-5
	for 5040TDQ	blue	35 to 45	47.5 to 61.0	5040TDQ-P535-5	5040TDQ-B535-5
	for 5020TDQ	violet	16 to 20	21.7 to 27.1	5040TDQ-P535-6	5040TDQ-B535-6
	for 5040TDQ	violet	40 to 50	54.2 to 67.8	5040TDQ-P535-6	5040TDQ-B535-6
	for 5020TDQ	red	18 to 22	24.4 to 29.8	5040TDQ-P535-7	5040TDQ-B535-7
	for 5040TDQ	red	45 to 55	61.0 to 74.6	5040TDQ-P535-7	5040TDQ-B535-7

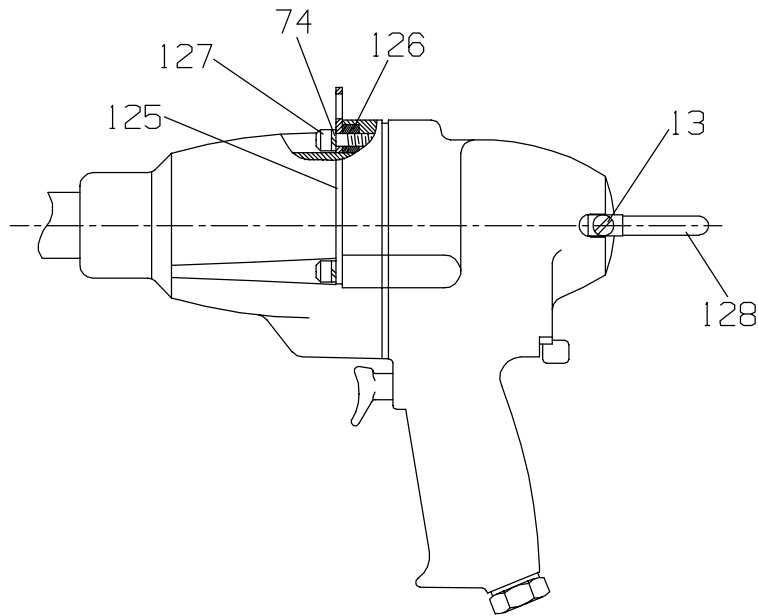
NON-ADJUSTABLE TORSION BARS

		COLOR CODE	TORQUE RANGE FT-LB Nm		PART NUMBER FOR ORDERING PIN TYPE BALL TYPE	
100	Non-Adjustable Torsion Bar <i>(Continued)</i>					
	for 5020TDQ	orange	20 to 24	27.1 to 32.5	5040TDQ-P535-8	5040TDQ-B535-8
	for 5040TDQ	orange	50 to 60	67.8 to 81.4	5040TDQ-P535-8	5040TDQ-B535-8
	for 5020TDQ	yellow	22 to 26	29.8 to 35.3	5040TDQ-P535-9	5040TDQ-B535-9
	for 5040TDQ	yellow	55 to 65	74.6 to 88.1	5040TDQ-P535-9	5040TDQ-B535-9
	for 5020TDQ	green	24 to 28	32.5 to 38.0	5040TDQ-P535-10	5040TDQ-B535-10
	for 5040TDQ	green	60 to 75	81.4 to 102	5040TDQ-P535-10	5040TDQ-B535-10
	for 5020TDQ	blue	26 to 29	35.3 to 39.3	5040TDQ-P535-11	5040TDQ-B535-11
	for 5040TDQ	blue	70 to 85	95.0 to 115	5040TDQ-P535-11	5040TDQ-B535-11
	for 5020TDQ	violet	27 to 30	36.6 to 40.7	5040TDQ-P535-12	5040TDQ-B535-12
for 5040TDQ	violet	75 to 90	102 to 122	5040TDQ-P535-12	5040TDQ-B535-12	
◆ 101	Socket Retaining Plunger (for 5020TDQ or 5040TDQ)				804-716	5UHD-715
◆ 102	Retaining Plunger Spring				5UHD-718	5UHD-718
*	Torsion Bar Case (for 5020TDQ or 5040TDQ)				5040TDQ-637	5040TDQ-637

* Not illustrated.

◆ Indicates Tune-up Kit part.

MAINTENANCE SECTION



Hangers for Torque Control Impacttools

(Dwg. TPD1337)

PART NUMBER FOR ORDERING

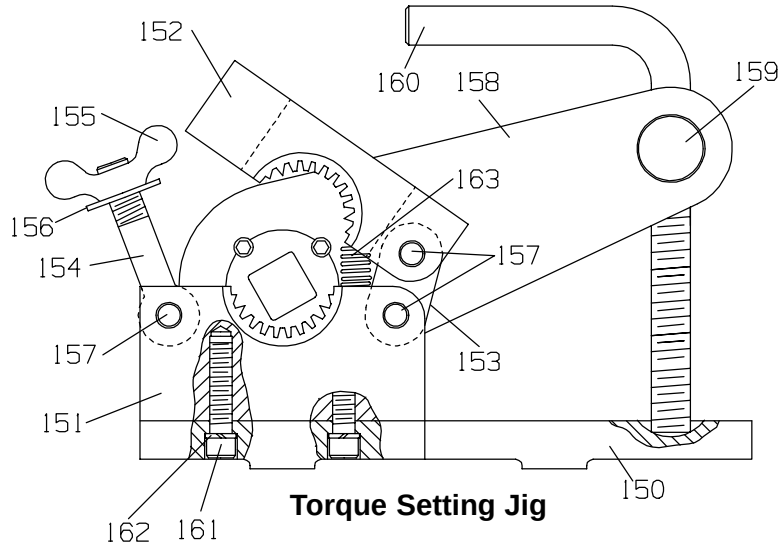


		For Series 5020	For Series 5040
125	Horizontal Hanger	5020-366	5040-366
126	Horizontal Hanger Spacer (2) for Tools with Aluminum or Steel-Nosed Hammer Case	504-140	504-140
	for Tools with Ductile Iron Hammer Case	—	4U-58
127	Horizontal Hanger Cap Screw (2) (for Tools with Aluminum Hammer Case)	504-376A	504-376A
128	Vertical Hanger	5020-365	5040-365

ADJUSTABLE TORSION BARS (Illustration No. 86)

TOOL	TORQUE CLASS	TORQUE RANGE		PART NUMBER FOR ORDERING	
		FT-LB	Nm	PIN TYPE	BALL TYPE
5020T	Light	6 to 17	8.1 to 23.0	5020T-PL735A	5020T-BL735A
5040T	Light	20 to 45	27.1 to 61.0	5040T-PL735B	5040T-BL735B
5040T	Medium	40 to 65	54.2 to 88.1	5040T-PM735B	5040T-BM735B
5020T	Heavy	10 to 30	13.5 to 40.7	5020T-PH735A	5020T-BH735A
5040T	Heavy	60 to 90	81.4 to 122.0	5040T-PH735B	5040T-BH735B

MAINTENANCE SECTION



PART NUMBER FOR ORDERING

		↓	↓
		For 5020T	For 5040T
	Torque Setting Jig		
	for right-hand adjustment	—	5040T-A950A
	for left-hand adjustment	—	—
150	Torque Jig Base		
	for right-hand adjustment	—	5040T-950A
	for left-hand adjustment	—	—
151	Torque Jig Clamp (two matched jaws)	5020T-951	—
153	Jig Clamp Link	—	—
154	Jig Clamp Eyebolt	—	—
155	Eyebolt Thumb Nut	—	—
156	Thumb Nut Washer	—	—
157	Jig Clamp Pin (3)	—	—
	Torque Jig Clamp	—	5040T-A951
151	with spline jaw	—	5040T-951
152	with smooth jaw	—	5040T-971
153	Jig Clamp Link	—	5040T-958
154	Jig Clamp Eyebolt	—	5040T-959
155	Eyebolt Thumb Nut	—	5040T-967
156	Thumb Nut Washer	—	B12-265
157	Jig Clamp Pin (3)	—	5040T-962
158	Torque Jig Arm	—	5040T-952
159	Jig Arm Trunion	—	5040T-960
160	Jig Adjusting Screw	—	5040T-955
161	Base Clamp Screw (4)	—	AL-638
162	Clamp Screw Lock Washer (4)	—	—
163	Jig Arm Spring	—	5040T-969
*	Jig Arm Retaining Plug	—	5040T-954

* Not illustrated.

MAINTENANCE TOOLS

PART NUMBER FOR ORDERING



	For Series 5020	For Series 5040
Hammer Assembly Tool (for disassembling and assembling the impact unit)	4U-30B	4U-30B
Grease Gun	R000A2-228	R000A2-228
Torque Adjusting Wrench (for stressing the torsion bar to produce the required torque)	5020T-982	5UT-982
Torque Control Valve Bushing Reamer (for reaming the torque control valve bushing after pressing it into the motor housing)	—	42253
Socket Retainer Riveting Tool (for installing the plunger-spring-and-washer type socket retainer in the torsion bar)	—	4U-479
Pin Punch (for removing the trigger lock pin)	—	30425

MAINTENANCE SECTION

WARNING

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

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

LUBRICATION

Each time a Series 5020 or 5040 Torque Control Impactool is disassembled for maintenance and repair or replacement of parts, lubricate the tool as follows:

1. Using Ingersoll-Rand No. 100 Grease, coat only the jaws of the Hammer (66) and the jaws of the Anvil (75 or 79). Apply a thin film of No. 100 Grease to the pilot of the Torsion Bar (86) or the Planet Gear Frame Pilot (62) and place a small amount in the cam grooves at the jaw end of the Hammer and on the Hammer Spring Thrust Bearing Balls (63).

NOTICE

Use grease sparingly. Excessive lubrication will retard the action of the tool.

2. Lubricate the gearing with Ingersoll-Rand No. 28 Grease.
3. Use Ingersoll-Rand No. 50 Oil for lubricating the motor. Inject approximately 1 to 2 cc into the air inlet before attaching the air hose. Remove the Oil Chamber Plug (7) and fill the oil chamber.

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.

Disassembly of the Impactool

1. Grasp the handle of the Impactool in a vise with the square drive or Torsion Bar upward.

2. Unscrew and remove the three Hammer Case Cap Screws (73) and Lock Washers (74).
3. Grasp the Quick Change Anvil Assembly or Adjustable Torsion Bar and the Hammer Case (68) and lift it off the Gear Case (52) over the Hammer (66).

NOTICE

Lift the assembly carefully to prevent the Trip Valve Plunger (53) and Spring (55) from popping out of position and becoming lost.

4. **For models 5020TDQ or 5040TDQ** remove the Planet Gear Frame Pilot (62) if it remained in the shaft of the Planet Gear Frame (56).
5. Pull the Hammer (66) and gear train assembly out of the Gear Case (52).

Disassembly of the Impact Mechanism

1. Using finger pressure or a bearing puller, if necessary, pull the Gear Frame Thrust Bearing (60) off the hub of the Planet Gear Frame (56).
2. On the table of an arbor press, position the Hammer (66), jaw end downward, on a sleeve or piece of tubing that has clearance for the shaft of the Planet Gear Frame.
3. Press the Planet Gear Frame into the Hammer against the pressure of the Hammer Spring (65) until the top face of the Hammer Spring Thrust Bearing Race (64) is below the two small diametrically opposite holes in the hammer wall.
4. Insert the ends of the No. 4U-30B Hammer Assembly Tool into the two small holes and gradually release the press pressure on the Gear Frame. The Assembly Tool locks the Race within the Hammer.
5. Remove the assembly from the press and dump the Hammer Spring Thrust Bearing Balls (63) into a container.
6. Replace the assembly on the arbor press as before and press on the Gear Frame until the two Cam Balls (67) drop from the jaw end of the Hammer.
7. Release the grip on the Assembly Tool, allowing the ends to spring out of engagement with the Hammer and, slowly release the press pressure on the Gear Frame.

WARNING

Do not reverse this procedure by removing the assembly from the press and then springing the Assembly Tool from the Hammer; as the Hammer Spring will eject the Gear Frame with considerable force.

MAINTENANCE SECTION

8. To remove the Planet Gears (57), press the Planet Gear Shafts (59) out of the Gear Frame toward the motor end of the Frame. The holes are tapered and pressing in the opposite direction will damage the Gear Frame.

NOTICE

Do not remove the Gears from Models 5020T or 5020TDQ unless you have a new set of Planet Gear Bearings (58). These Bearings are needle bearings which are always damaged during the removal process.

9. To separate the Anvil (75 or 79) from the Hammer Case (68), proceed as follows:
For Model 5020T or 5040T
 - a. Using a thin blade screwdriver, spiral the Torque Locking Sleeve Retainer (91) out of the groove and slide the Torque Locking Sleeve (90) off the end of the Torsion Bar (86).
 - b. Push the Anvil and Torsion Bar out the motor end of the Hammer Case.
 - c. Spiral the Torsion Bar Retainer (89) out of the groove on the Torsion Bar and pull the Bar out the splined end of the Anvil.

For Model 5020TDQ or 5040TDQ

- a. Use a pointed probe or thin blade screwdriver to push against the Thrust Ring (83) while using another thin blade screwdriver to spiral the Thrust Ring Lock (84) out of the groove in the Anvil.
- b. Remove the Thrust Ring, Retaining Sleeve Spring (82), Retaining Sleeve (81) and Retaining Ball (80).
- c. Spiral the Retaining Sleeve Stop (85) out of the groove on the Anvil and push the Anvil out the motor end of the Hammer Case.

Disassembly of the Motor

1. Lift the two Housing Gaskets (39) and the Gear Case (52) off the Motor Housing (1).
2. Unscrew and remove the three Motor Lock Plate Screws (50) and Washers (51) and pull the assembled motor out of the Motor Housing.
3. Slide the Motor Lock Plate (49) off the hub of the Front End Plate (47).
4. Remove the Rear Rotor Bearing Retainer (40) and pull the Rear End Plate (42) and Rear Rotor Bearing (41) off the hub of the Rotor (45).
5. Slide the Cylinder (43) off the Rotor and remove the Cylinder Dowel (44) and Vanes (46).
6. Support the Front End Plate (47) with blocks as close to the large body of the Rotor as possible. Using an arbor press against the splined shaft of the Rotor,

press the Rotor out of the Front End Plate and Front Rotor Bearing (48). Use a bearing puller to pull the Bearing out of the End Plate if the Bearing requires replacement.

Disassembly of the Reverse Valve/Torque Control Valve Mechanism

1. **For Model 5020T or 5020TDQ**, unscrew and remove the Reverse Lever Retaining Screw (27). Remove the Lever Retaining Screw Seal (28) and the Reverse Lever (30). Be careful not to lose the Reverse Lock Ball (25) and Reverse Lock Ball Spring (26).
For Model 5040T or 5040TDQ, unscrew and remove the Housing Cap (37) and Housing Cap Seal (38). Remove the Torque Control Valve (32), Torque Control Valve Face (33), Torque Control Valve Spring (34) and Torque Control Trip Valve (35) from the Torque Control Valve Bushing (31).
2. **For Model 5020T or 5020TDQ**, grasp the Reverse Valve (23) at the motor end of the Housing (1) and pull the Valve, Torque Control Trip Valve (35), Torque Control Valve Spring (34) and the Torque Control Valve (32) out of the Reverse Valve Bushing (3).
3. **For Model 5040T or 5040TDQ**, unscrew and remove the Reverse Lever Retaining Screw (27). Remove the Lever Retaining Screw Seal (28) and the Reverse Lever (30). Be careful not to lose the Reverse Lock Ball (25) and Reverse Lock Ball Spring (26).
4. **For Model 5040T or 5040TDQ**, pull the Reverse Valve (23) out of the Reverse Valve Bushing (3) from the motor end of the Housing (1).

Disassembly of the Throttle Mechanism

1. Unscrew and remove the Air Strainer (21).
2. **For Model 5020T or 5020TDQ**, remove the Throttle Valve Spring (20), Throttle Valve (14) with the Throttle Valve Face (15), Valve Face Cap (16), Valve Face Cap Nut (17) and Valve Face Cap Nut Lock Washer (18).
For Model 5040T or 5040TDQ, remove the Throttle Valve Spring (20), Throttle Valve (14), Throttle Valve Face (16) and Throttle Valve Stem (19).
3. To remove the Trigger(11), press the Trigger Lock Pin (12) out of the Housing (1) and pull the Trigger out of the Trigger Bushing (10).
4. Press the Intermediate Lever Pin (6) out of the Housing to remove the Intermediate Lever (5).
5. Unscrew the Oil Chamber Plug (7) and the Oiler Adjusting Screw (8) to remove the Oiler Felt (9) if the Felt must be replaced.

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 installing 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 oil before installation.
5. Apply a film of O-ring lubricant to all O-rings before final assembly.

Assembly of the Throttle Mechanism

1. Position the Intermediate Lever (5) in the slot of the Motor Housing (1) and when the openings in the Lever and Housing are aligned, press the Intermediate Lever Pin (6) into the Housing and through the Lever to secure it in position.
2. Slide the Trigger (11) into the Trigger Bushing (10). Make certain the Intermediate Lever is positioned to make contact with end of the Trigger. Align the slot in the Trigger with the hole in the Motor Housing and press the Trigger Lock Pin (12) into the Housing and through the Trigger to secure it in position.
3. **For Model 5020T or 5020TDQ**, assemble in sequence, the Throttle Valve Face (15), Valve Face Cap (16), Valve Face Cap Nut Lock Washer (18) and Valve Face Cap Nut (17) on the threaded end of the Throttle Valve (14). Encircle the Cap Nut with the Throttle Valve Spring (20) and insert the assembly, Spring and assembled end trailing, into the bottom of the motor housing handle. Make certain the end of the Throttle Valve contacts the Intermediate Lever correctly.
For Model 5040T or 5040TDQ install the Throttle Valve Face (15) on the Throttle Valve (14) and insert the Valve on the small end of the Throttle Valve Stem (19). Encircle the Valve with the Throttle Valve Spring (20) and insert the assembly, Spring and assembled end trailing, into the bottom of the motor housing handle. Make certain the end of the Throttle Valve contacts the Intermediate Lever correctly.
4. Thread the Air Strainer (21) into the Handle to capture the throttle parts and tighten it securely.
5. Install the Oiler Felt (9) and Oiler Adjusting Screw (8) in the oil chamber. Fill the chamber with the recommended oil, install the Oil Chamber Plug (7) and tighten it securely.

Assembly of the Reverse Valve/Torque Control Valve Mechanism

For Model 5020T or 5020TDQ

1. Insert the Torque Control Trip Valve (35) followed by the Torque Control Valve Spring (34) into the bore of the Reverse Valve (23).
2. Insert the Torque Control Valve (32), small end first, into the bore of the Reverse Valve.
3. Slide the assembled Reverse Valve, large end first, into the front of the Reverse Valve Bushing (3).
4. Insert the Reverse Lever Retaining Screw (27) through the Reverse Lever (30) and install the Lever Retaining Screw Seal (28) over the threads of the Screw against the Lever.
5. Insert the Reverse Lock Ball Spring (26) followed by the Reverse Lock Ball (25) into the small angular hole in the Motor Housing (1).
6. Enter the lugs on the Reverse Lever into the slot across the rear face of the Reverse Valve so the lever arm is swung forty-five degrees to the right when facing the rear of the Housing. Retain the Lever in position with the Reverse Lever Retaining Screw.

For Model 5040T or 5040TDQ

1. Install the Torque Control Valve Face (33) on the Torque Control Valve (32).
2. Insert the Torque Control Trip Valve (32) followed by the Torque Control Valve Spring (34) into the bore of the Torque Control Valve Bushing (31) from the back end of the Motor Housing (1).
3. Insert the assembled Torque Control Valve, small end first, into the bore of the Bushing.
4. Install the Housing Cap Seal (38) on the Housing Cap (37) and thread the Housing Cap into the Motor Housing. Tighten the Cap securely.
5. Slide the Reverse Valve (23), large end last, into the front of the Reverse Valve Bushing (3).
6. Install the Lever Retaining Screw Lock Washer (29) over the threads of the Reverse Lever Retaining Screw (27) and insert the Screw through the Reverse Lever (30).
7. Insert the Reverse Lock Ball Spring (26) followed by the Reverse Lock Ball (25) into the small angular hole in the Motor Housing.
8. Enter the lugs on the Reverse Lever into the slot across the rear face of the Reverse Valve so the lever arm is swung forty-five degrees to the right when facing the rear of the Housing. Retain the Lever in position with the Reverse Lever Retaining Screw.

MAINTENANCE SECTION

Assembly of the Motor

1. Press the Cylinder Dowel Retainer (2) out the rear of the Motor Housing (1).
2. Press a new Front Rotor Bearing (48) into the Front End Plate (47).
3. Stand the Rotor (45) on the table of an arbor press with the spline shaft upward. Place a 0.001" shim on the face of the large rotor body and press the assembled Bearing and End Plate, Bearing trailing, onto the rotor shaft. Press on the inner race of the Bearing and continue pressing until the shim drags between the End plate and rotor body.
4. Grasp the assembled Rotor in copper-covered or leather-covered vise jaws with the Front End Plate downward. Wipe each Vane (46) with a film of oil and insert a Vane into each of the rotor vane slots with the straight edge of the Vane away from the body.
5. Install the Cylinder (43) over the rotor body against the Front End Plate. Make certain the end of the Cylinder with the two large holes in the cylindrical surface is nearest the Front End Plate.
6. Install the Rear End Plate (42) followed by the Rear Rotor bearing (41) on the rear hub of the Rotor. Position the end plate face with the kidney shaped slots against the Cylinder.
7. Install the Rear Rotor Bearing Retainer (40) in the groove on the rear rotor hub to retain the Bearing and End Plate.
8. Align the dowel holes in both End Plates with the dowel hole in the Cylinder of the assembled motor and insert a 5/32" diameter rod about 10" (254 mm) long through the holes, allowing the excess to protrude out the Rear End Plate.
9. Before installing the motor, make certain that both rubber Air Port Gaskets (4) are in good condition and are installed, large bore first, in the two recesses in the motor housing wall.
10. From the motor end of the housing, insert the protruding end of the rod through the hole from which the Cylinder Dowel Retainer was removed. Slide the assembled motor into the Motor Housing, being certain to keep the opposite end of the rod seated in the Front End Plate. Do not remove the assembly rod at this time.
11. Slide the Motor Lock Plate (49) over the end plate hub and start the three Motor Lock Plate Screws (50) and Lock Washers (51) into the Motor Housing. Alternately turn each Screw a little at a time until all are tight.
12. Withdraw the assembly rod and install the Cylinder Dowel (44) in its place. Press the Cylinder Dowel Retainer in flush with the contour of the Housing.

Assembly of the Impact Mechanism

1. **For Model 5020T or 5020TDQ**, use a needle bearing inserting tool and press a new Planet Gear Bearing (58) into each of the Planet Gears (57).
For Model 5040T or 5040TDQ, press a Planet Gear Bushing (58) into each of the Planet Gears (57).
2. Slide the assembled Planet Gears into the Planet Gear Frame (56) and secure them by pressing the Planet Gear Shafts (59) in place from the gear end of the Frame. Do not press the Pins from the shaft end of the Gear Frame. The holes are tapered and the Gear Frame will be damaged.
3. Stand the Planet Gear Frame, bearing end down, on the table of an arbor press and slide the Hammer Spring Thrust Bearing Race (64), cupped side first, over the gear frame shank.
4. Slip the Hammer Spring (65) over the gear frame shank and set it on the Bearing Race.
5. Align the points of the cam grooves inside the Hammer (66) with the points of the cam grooves in the gear frame shank and slide the Hammer onto the shank and over the Spring.

MAINTENANCE SECTION

6. Place a suitable sleeve on the hammer jaws and press down on the Hammer, against the compression of the Spring, until the cam grooves in the gear frame shank are exposed.
7. Place a Cam Ball (67) in each cam grove and enter the ends of the 4U-30B Hammer Assembly Tool in the small, diametrically opposite holes in the hammer wall. Squeeze the Assembly Tool while releasing the press pressure and the Tool will hold the assembly together.
8. Invert the assembly and stand it on a workbench so the Planet Gear Frame is forced upward as far as the Cam Balls will permit. Insert the correct number of Hammer Spring Thrust Bearing Balls (63) into the cup in the Bearing Race.
9. Support the assembly, jaw end down, on the sleeve on the arbor press and press on the Planet Gear Frame until the Assembly Tool springs free. Slowly release the press pressure on the assembly.
10. Push the Gear Frame Thrust Bearing (60) onto the hub on the gear end of the Gear Frame.

Assembly of the Impactool

1. Grasp the handle of the Motor Housing (1) in leather-covered or copper-covered vise jaws with the spline shaft of the Rotor (45) upward.
2. Place a Housing Gasket (39) on the Housing followed by the Gear Case (52), hub end first, and the other Housing Gasket. Make sure the bolt hole pattern matches the pattern of the Housing.
3. Install the assembled Hammer (66) and Planet Gear Frame (56) in the Gear Case, hammer end trailing. Engage the spline of the Rotor with the teeth of the Planet Gears.
4. Slide the Trip Valve Plunger Spring (55) onto the end of the Trip Valve Plunger (53) that has the end slotted for a screwdriver. Insert the other end into the Reverse Valve (23) or Torque Control Valve Bushing (31) with the Trip Valve Plunger Arm pointed toward the tool center line.
5. If the Anvils (75 or 79) were separated from the Hammer Case (68), proceed as follows:

For Model 5020T or 5040T

- a. Insert the Torsion Bar (86), spline end trailing, into the spline end of the Anvil (75) and install the Torsion Bar Retainer (89) in the groove of the Torsion Bar.
- b. Insert the assembly, spline end first, into the Hammer Case and through the Hammer Case Bushing (72).

- c. Slide the Torque Locking Sleeve (90), notched end trailing, onto the Torsion Bar. Engage the spline on the Bar with the spline inside the Sleeve.
- d. Install the Torque locking Sleeve Retainer (91).

For Model 5020TDQ or 5040TDQ

- a. Insert the Anvil (79), anvil end trailing, into the Hammer Case and through the Hammer case Bushing (72).
 - b. Install the Retaining Sleeve Stop (85) in the anvil groove nearest the Hammer Case.
 - c. Place the Retaining Ball (80) in the hole in the Anvil and slide the Retaining Sleeve (81), small open end first, onto the Anvil to capture the Ball in position.
 - d. Slide the Retaining Sleeve Spring (82) onto the Anvil and into the Sleeve.
 - e. Slide the Thrust Ring (83), cup end trailing, onto the Anvil against the Spring.
 - f. Pushing against the Ring with a thin blade screwdriver to compress the Spring, install the Thrust Ring Lock (84) in the anvil groove.
6. **For Model 5020TDQ or 5040TDQ**, install the Planet Gear Pilot (62) small end first, into the end of the gear frame shaft.
 7. Place the assembled Hammer Case against the Motor Housing. Make certain the Anvil engages the Hammer properly and the shaft of the Trip Valve Plunger enters the hole in the Hammer Case.
 8. Install the three Hammer Case Cap Screws (73) and Lock Washers (74) and tighten them securely.

NOTICE

If the Torsion Bar was removed from the Hammer Case for Model 5020T or 5040T, readjust the torque as instructed in the section PLACING THE TOOL IN SERVICE.

MAINTENANCE SECTION

TROUBLESHOOTING GUIDE		
Trouble	Probable Cause	Solution
Low power	Dirty Inlet Bushing or Air Strainer Screen and/or Exhaust Silencer	Using a clean, suitable, cleaning solution, in a well ventilated area, clean Air Strainer Screen, Inlet Bushing and Exhaust Silencer.
	Worn or broken Vanes	Replace complete set of Vanes.
	Worn or broken Cylinder and/or scored End Plates	Examine Cylinder and replace it if it is worn or broken or if bore is scored or wavy. Replace End Plates if they are scored.
	Dirty motor parts	Disassemble tool and clean all parts with a suitable cleaning solution, in a well-ventilated area. Reassemble tool as instructed in this manual.
	Improper positioning of Reverse Valve	Make certain that Reverse Valve is fully engaged to the left or right.
Motor will not run	Incorrect assembly of motor	Disassemble motor and replace worn or broken parts and reassemble as instructed.
	Insufficient lubricant in the impact mechanism	Remove Hammer Case Assembly and lubricate impact mechanism.
Tool will not impact	Broken or worn impact mechanism parts	Remove Hammer Case and examine impact mechanism parts. Replace any worn or broken parts.
	Impact mechanism not assembled correctly	Refer to Assembly of the Impact Mechanism .
Incorrect torque output	Incorrect Torsion Bar adjustment or wrong non-adjustable Bar	Readjust adjustable Torsion Bar as instructed. Install correct non-adjustable Bar.
	Improper Trip Valve adjustment	Adjust Trip Valve as instructed.

NOTICE

SAVE THESE INSTRUCTIONS. DO NOT DESTROY.

NOTES