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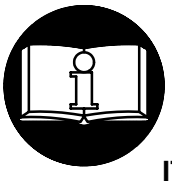
MAINTENANCE SECTION COVERING POWER MODULES for SERIES DEPTS30 PUSH–TO–START DC ELECTRIC TORQUE CONTROL WRENCHES



⚠ 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.

(Continued on page 2–2)

NOTICE

The use of other than genuine Ingersoll–Rand replacement parts may result in personal injury, decreased tool performance and increased maintenance, and may invalidate all warranties.
Have your tool repaired by a qualified person. This electric tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.
Repairs should be made only by authorized, trained personnel. Consult your nearest Ingersoll–Rand Authorized Servicenter.

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

Printed in U.S.A.

INGERSOLL-RAND®
PROFESSIONAL TOOLS

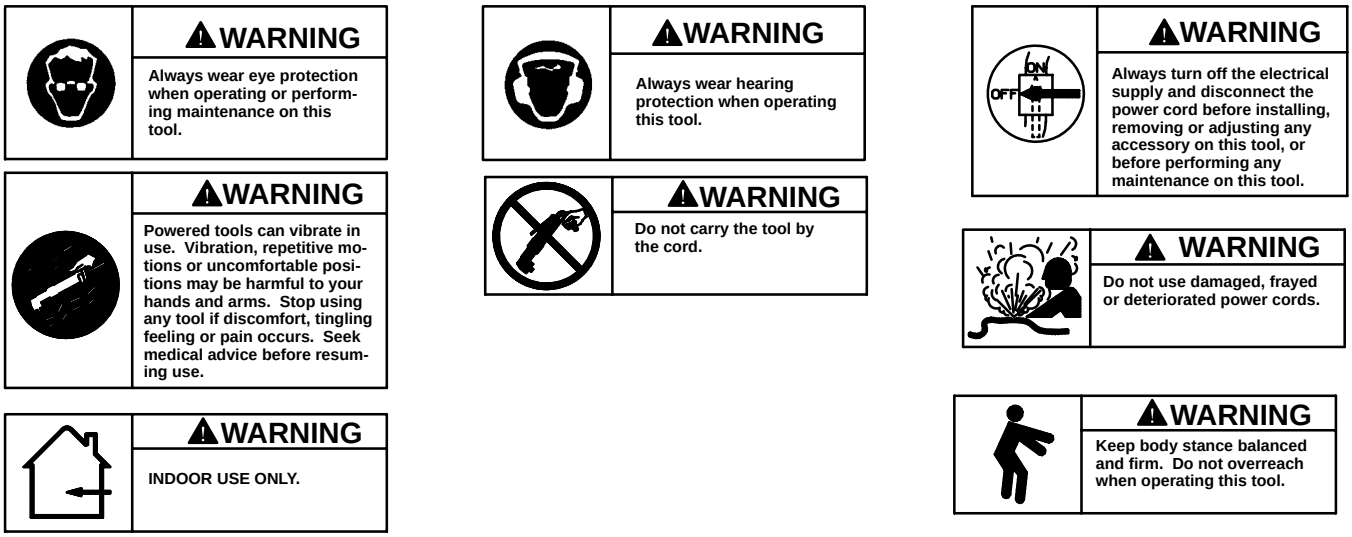
⚠ WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

USING THE TOOL *(Continued)*

- **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.
- **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.**
- **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.**
- **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.**
- **Series DEPTS Tools are designed to generate torque that has a reaction greater than the ability of the operator to absorb. DO NOT, under any circumstances, operate Series DEPTS Tools without a torque reaction, restraining device attached to the rear of the Tool. For information and recommendations describing suitable devices, contact Ingersoll–Rand.**
- **Do not allow the clevis fastener on Series DEPTS Tools to loosen. Movement of the tool in the clevis will create a pinch hazard to the operator and may increase wear damage to the cord and electrical connections.**
- **Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.**

WARNING LABEL IDENTIFICATION



TOOL INSTALLATION

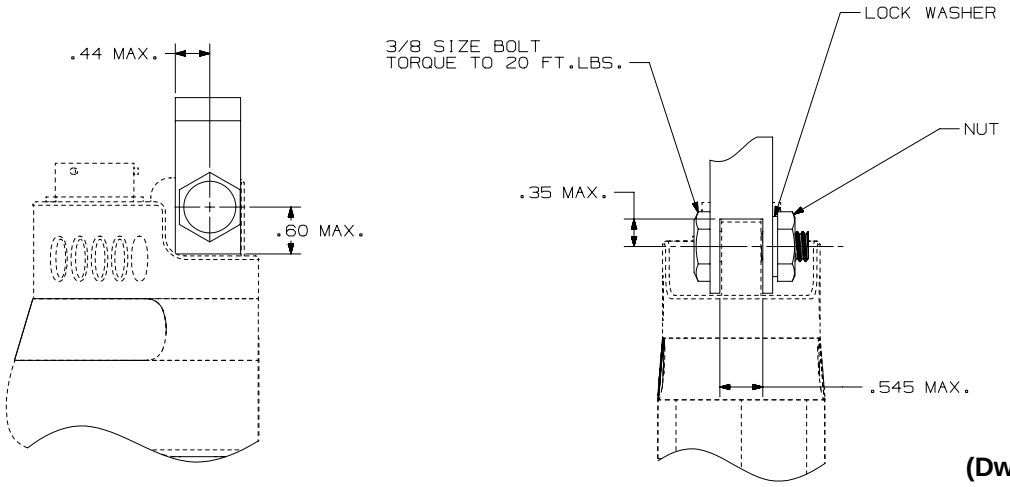
Because the Series DEPTS Push–to Start Torque Control Wrenches generate more torque reaction than an operator is capable of absorbing, the tool must be mounted to a torque reaction arm. The tool Hanger Assembly (1) has a cross–hole through it and is designed to fit into the slot of a clevis. Since no one clevis is suitable for all torque reaction arms or all applications, use Drawing TPD2013 to fabricate or purchase a clevis made from a material that is suitable for the amount of torque generated by the tool. The dimensions shown on the drawing are the maximum allowable sizes for the Hanger Assembly.

With a suitable clevis attached to the torque reaction arm, proceed as follows:

1. Insert the DEPTS tool Hanger Assembly (1) into the slot of the clevis with the Light Ring (4) positioned to face the operator.
2. Insert a steel 3/8” fastener through the two holes in the clevis and the cross–hole in the Hanger Assembly.
3. Install a lock washer and nut on the fastener.
4. Tighten the nut to a minimum of 20 ft–lb. (27.2 Nm) torque.

WARNING

Do not allow the clevis fastener on Series DEPTS Tools to loosen. Movement of the tool in the clevis will create a pinch hazard to the operator and may increase wear damage to the cord and electrical connections.



(Dwg. TPD2013)

PUSH ROD ADJUSTMENT

The Push Rod controlling the push–to–start feature of the Series DEPTS Tools has been preset at the factory. However, wear, replacement or unique applications may necessitate adjusting the Push Rod to improve the timing of the start–up or shut–off of the Tool. To adjust the Push Rod, proceed as follows:

1 **For models with Quick Change Spindles,** use a pointed probe to compress the Retaining Sleeve Spring (37) while using another pointed probe to spiral the Spring Sleeve Retainer (38) out of the Bit Retaining Sleeve (36). Remove the Spring, Sleeve and Bit Retaining Ball (35) from the Quick Change Spindle.

2 Using a spanner wrench or Grip Retainer Wrench (Part No. DEPTS30–26), unscrew and remove the Grip Retainer (52) from the front of the tool.

3 Pull the Grip (51) off the spindle end of the tool.

4 Using a 1–3/16" open–end wrench, unscrew and remove the Spindle Cap Assembly (49).

5 Pull the assembled Spindle (34, 40 or 44) and Spindle Return Spring (33) off the front of the Transducer.

6 **To adjust the functioning of an operational tool**, proceed as follows:

   a) Insert a hex wrench into the Push Rod Adjustment Screw (39, 43 or 48) located inside the motor end of the Spindle.

   b) If the tool starts prematurely when the Spindle is depressed, rotate the Adjustment Screw clockwise to delay the starting. One full revolution of the Screw will cause a 0.032" (0.8 mm) change in the Screw location.

   c) If the tool starts later than desired when the Spindle is depressed, rotate the Adjustment Screw counterclockwise to reduce the start time. One full revolution of the Screw will cause a 0.032" (0.8 mm) change in the Screw location.

   To adjust the functioning of a newly installed Push Rod, proceed as follows:

   a) Remove the Thrust Washer (28A) from the spline of the Drive Spindle Assembly (29).

   b) Insert the new Push Rod into the Drive Spindle and the power unit as far as it will go.

   c) Measure the distance from the protruding end of the Push Rod to the near face of the shoulder that serves as a stop for the Drive Spindle Bearing (30). Subtract 0.080" from that measurement and record the length.

   d) Measure the distance from the motor end face of the Spindle to the face of the Push Rod Adjusting Screw. Do not measure into the hex opening of the Screw, measure only to the face.

   e) If the measurement does not match the recorded length for the extended Push Rod, turn the Adjusting Screw inward or outward until both distances are the same.

7 Insert the Spindle Return Spring into the central opening in the Drive Spindle Assembly.

8 If the Thrust Washer was removed to measure the length of a new Push Rod, install the Washer on the spline of the Drive Spindle.

9 Insert the Spindle into the Spindle Cap Assembly and thread the Assembly, output end trailing, onto the motor. Make certain the Push Rod enters the opening in the Push Rod Adjustment Screw located inside the Spindle.

10 Tighten the Spindle Cap Assembly between 20 and 25 ft–lb. (27 and 34 Nm) torque.

11 Install the Grip, large opening leading, over the Spindle Cap Assembly against the motor.

12 Thread the Grip Retainer onto the front of the tool, and using a spanner wrench or the Grip Retainer Wrench, tighten the Retainer between 10 and 15 ft–lb. (13.6 and 20.3 Nm) torque.

13 **For models with Quick Change Spindles,** insert the Bit Retaining Ball into the hole in the Spindle and slide the Bit Retaining Sleeve onto the Spindle to retain the Ball. Install the Retaining Sleeve Spring and capture the assembly by installing the Spring Sleeve Retainer.

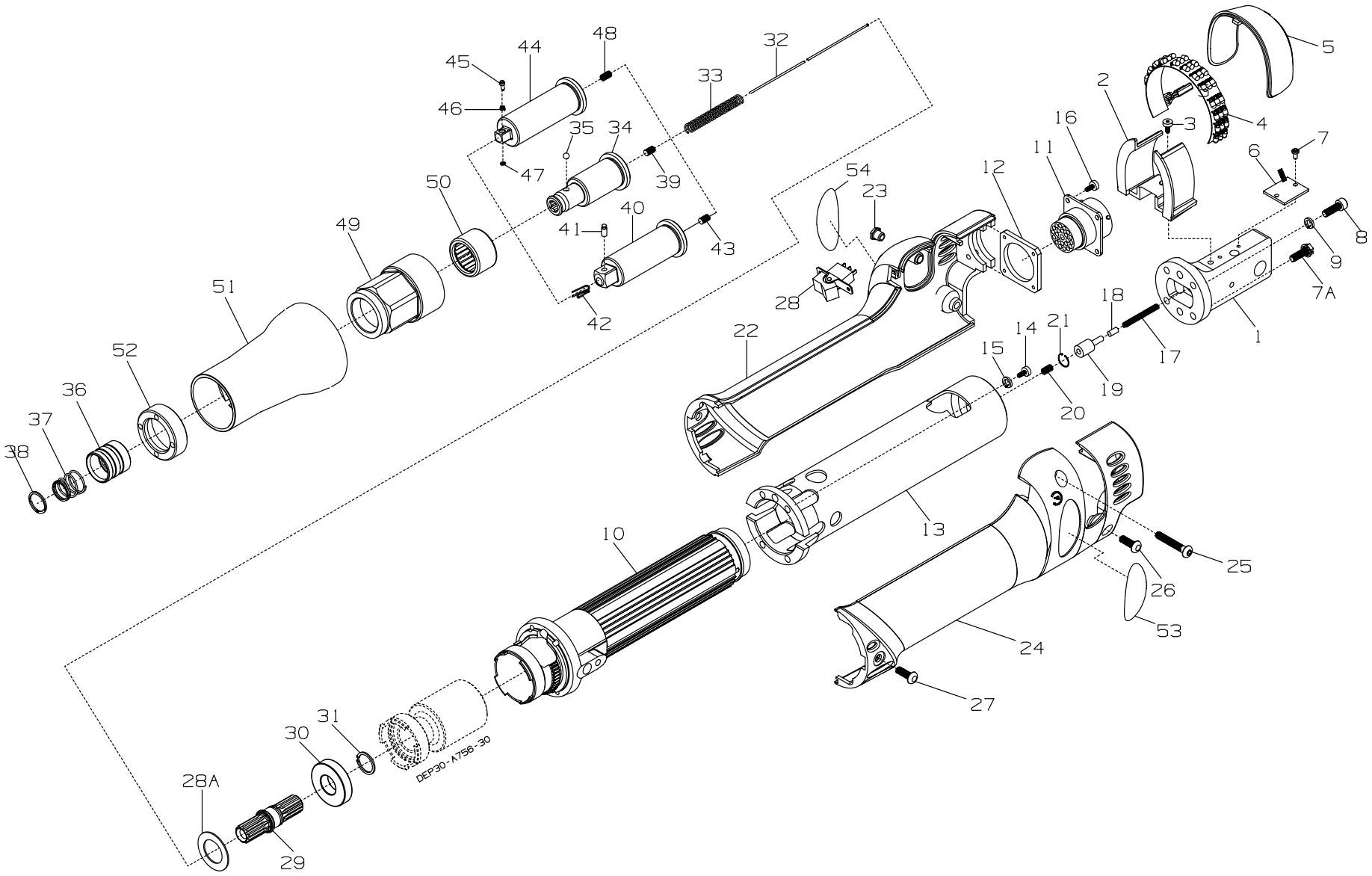
⚠ WARNING

In the following procedure, make certain the tool is held by a fixture before attempting to start it. Failure to do so may result in injury.

14 Test the tool for acceptable starting after reassembling it. It may be necessary to adjust the Push Rod travel to achieve proper starting. Make travel adjustments by turning the Push Rod Adjustment Screw inward or outward until the desired results are achieved.

WIRING CHART

CONNECTOR PIN	CABLE WIRE COLOR	LOCATION	LOGIC
A	Red	Transducer Cable (4 Wire Shielded)	(+) Excitation
B	Black		(–) Excitation
C	Green		(+) Signal
D	White		(–) Signal
E	Shield		Shield
F	White	Throttle Circuit	Start/Stop
G	Green		Start/Stop
H	Red; Yellow; Red	Throttle; Logic; Fwd/Rev.	(+) 5 Volt
J	Black	Fwd/Rev. Switch	Reverse
L	Red/Black	Light Ring	Red LEDs
M	Orange/Black		Yellow LEDs
N	Green/Black		Green LEDs
P	Green	Logic Cable (7 Wire)	Ground Sense
R	Brown		PTC Return
T	Blue		Encoder “H1”
S	Black; Black; Violet	Throttle; Light Ring; Logic	Common
U	Red	Motor Power Leads	Phase U
V	Black		Phase V
W	White		Phase W
X	Red	Logic Cable (7 Wire)	Encoder “H2”
Y	Orange		Encoder “H3”
Z	Green/Yellow	Ground Lead	Ground



(Dwg. TPA1676–1)

		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
1	Hanger Assembly	DEPTS30–A25		Quick Change Spindle Assembly (for	
2	Light Ring Support	DEPTS30–801		model DEPTS9 only)	DEPTS30–A586–Q4
3	Support Mounting Screw	DEA40–704EL	34	Quick Change Spindle	DEPTS30–586–Q4
4	Light Ring	DEP30–98	35	Bit Retaining Ball	RX1–629
5	Light Ring Lens	DEP30–600	36	Bit Retaining Sleeve	5C1–930–4
6	Trigger Circuit	DEPTS30–PCA	37	Retaining Sleeve Spring	5C1–931–4
7	Circuit Mounting Screw (2)	400–25–74–11	38	Sleeve Spring Retainer	5C1–853
7A	Ground Screw (1)	DEPTS30–810	39	Push Rod Adjustment Screw	DEPTS30–561
8	Hanger Mounting Screw (3)	DEPTS30–638		Spindle Assembly (for 3/8” square drive)	
9	Mounting Screw Washer (3)	DEPTS30–58		(for all models)	DEPTS30–A586–S6
10	Motor Assembly	DEPTS30–A22	40	Spindle	DEPTS30–586–S6
11	Receptacle	DEM40–967	41	Socket Retaining Pin	5020–716
12	Receptacle Mounting Plate	DEPTS30–860	42	Retaining Pin Spring	401–718
13	Motor Frame	DEPTS30–40	43	Push Rod Adjustment Screw	DEPTS30–561
14	Mounting Screw (4)	DEPTS30–638		Spindle Assembly (for 1/4” square drive)	
15	Mounting Screw Washer (4)	DEPTS30–58		(for models DEPTS9 and DEPTS15 only)	DEPTS30–A586–S4
16	Receptacle Mounting Screw (4)	DEA40–934	44	Spindle	DEPTS30–586–S4
17	Shutoff Spool Spring	DEPTS30–842	45	Socket Retaining Pin	500B–816AX
18	Shutoff Spool Magnet	DEP30–6	46	Retaining Pin Spring	500B–818
19	Shutoff Spool Assembly	DEPTS30–A900	47	Retaining Pin Washer	2U–817
20	Set Screw	DEPTS30–268	48	Push Rod Adjustment Screw	DEPTS30–561
21	Shutoff Spool Retainer	DEPTS30–118	49	Spindle Cap Assembly	DEPTS30–A531
22	Right Motor Housing	DEPTS30–40R	50	Spindle Cap Bearing	DEPTS30–606
23	Housing Nut	DEA40–23	51	Grip	DEPTS30–30
24	Left Motor Housing	DEPTS30–40L	52	Grip Retainer	DEPTS30–482
25	Long Housing Screw	DEA40–704	53	Nameplate Label	
26	Short Housing Screw	DEA40–703		for model DEPTS9	DEP9–301
27	Front Housing Screw	99V60–200		for model DEPTS15	DEP15–301
28	Directional Switch Assembly	DEP30–A19		for model DEPTS20	DEP20–301
28A	Thrust Washer	DEP30–80		for model DEPTS25	DEP25–301
29	Drive Spindle Assembly	DEPTS30–A586		for model DEPTS30	DEP30–301
30	Drive Spindle Bearing	4U–97	54	Warning Label	DEP30–99
31	Bearing Retainer	5C1–729	*	Grip Retainer Wrench	DEPTS30–26
32	Push Rod	DEPTS30–435	*	Cable Assembly	DEM40–249
33	Spindle Return Spring	DEPTS30–626			

* Not illustrated.

MAINTENANCE SECTION

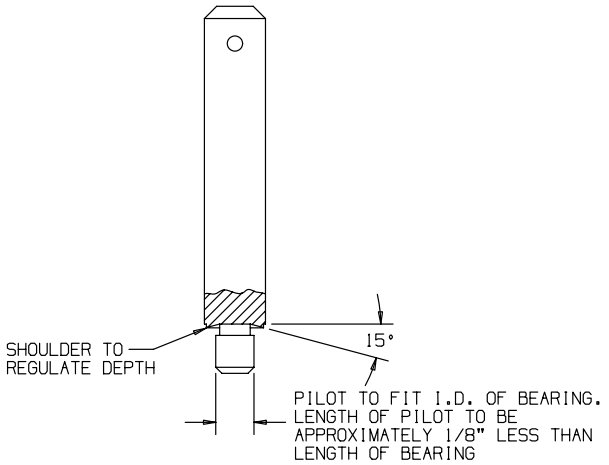
Disassembly of the Spindle

1. **For models with Quick Change Spindles,** use a pointed probe to compress the Retaining Sleeve Spring (37) while using another pointed probe to spiral the Spring Sleeve Retainer (38) out of the Bit Retaining Sleeve (36). Remove the Spring, Sleeve and Bit Retaining Ball (35) from the Quick Change Spindle.
2. Using a spanner wrench or Grip Retainer Wrench (part No. DEPTS30–26), unscrew and remove the Grip Retainer (52) from the front of the tool.
3. Pull the Grip (51) off the spindle end of the tool.
4. Using a 1–3/16" open–end wrench, unscrew and remove the Spindle Cap Assembly (49).
5. If the Spindle Cap Bearing (50) must be replaced, use a bearing puller to pull it out of the large end of the Spindle Cap.
6. Pull the assembled Spindle (34, 40 or 44), Spindle Return Spring (33), Push Rod (32) and Drive Spindle Assembly (29) off the front of the Transducer.
7. If the tool has been starting satisfactorily and for any reason it becomes necessary to remove the Push Rod Adjustment Screw (39,43 or 48), make a note of the distance from the motor end of the Spindle to the Adjustment Screw. The time required to adjust the Push Rod can be reduced when the Screw is reinstalled by turning the Screw inward to the original depth.
8. If the Drive Spindle Bearing (30) must be replaced, use snap ring pliers to remove the Bearing Retainer (31) and pull the Bearing off the shaft of the Drive Spindle.

Assembly of the Spindle

1. If the Drive Spindle Bearing (30) was removed, slide a new Bearing onto the shaft of the Drive Spindle (29).
2. Using snap ring pliers, install the Bearing Retainer (31) to keep the Bearing in position.

Needle Bearing Inserting Tool



(Dwg. TPD786)

3. **If the Spindle Cap Bearing (50) was removed,** use a Needle Bearing Inserting Tool as shown in Dwg. TPD786 to install a new one. Place the Spindle Cap (49), large opening upward, on the table of an arbor press and using the Inserting Tool, press the Bearing into the Spindle Cap.
4. Install the Drive Spindle Assembly, bearing end leading, into the front of the Transducer.
5. Insert the Spindle Return Spring (33) and Push Rod (32) into the central opening in the Drive Spindle Assembly. Make certain the Push Rod is inserted as far as it can enter the motor assembly.
6. Insert the Spindle (34, 40 or 44) into the Spindle Cap Assembly and thread the Assembly, output end trailing, onto the motor. Make certain the Push Rod enters the opening in the Push Rod Adjustment Screw (39, 43 or48) located inside the Spindle.
7. Tighten the Spindle Cap Assembly between 20 and 25 ft–lb. (27 and 34 Nm) torque.
8. Install the Grip (51), large opening leading, over the Spindle Cap Assembly against the motor.
9. Thread the Grip Retainer (52) onto the front of the tool, and using a spanner wrench or the Grip Retainer Wrench, tighten the Retainer between 10 and 15 ft–lb. (13.6 and 20.3 Nm) torque.
10. **For models with Quick Change Spindles**, insert the Bit Retaining Ball (35) into the hole in the Spindle and slide the Bit Retaining Sleeve (36) onto the Spindle to retain the Ball. Install the Retaining Sleeve Spring (37) and capture the assembly by installing the Spring Sleeve Retainer (38).

⚠ WARNING

In the following procedure, make certain the tool is held by a fixture before attempting to start it. Failure to do so may result in injury.

11. Test the tool for acceptable starting after reassembling it. It may be necessary to adjust the Push Rod travel to achieve proper starting. Make travel adjustments by turning the Push Rod Adjustment Screw, which is located inside the motor end of the Spindle, clockwise or counterclockwise.

NOTICE

SAVE THESE INSTRUCTIONS.
DO NOT DESTROY.

NOTES

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SAVE THESE INSTRUCTIONS. DO NOT DESTROY.