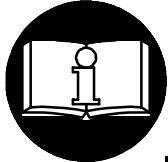


OPERATION AND MAINTENANCE MANUAL FOR MODELS ES20B AND ES30B ELECTRIC SCREWDRIVERS

NOTICE

Models ES20B and ES30B Electric Screwdrivers are designed for installing threaded fasteners in light industrial and appliance manufacturing applications. 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 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.
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

- 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. Inspect extension cords periodically and replace if damaged.
- Do not remove any labels. Replace any damaged label.

USING THE TOOL

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

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.

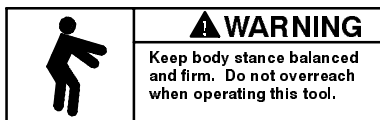
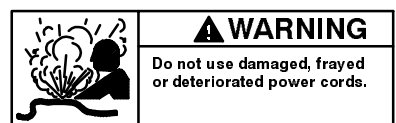
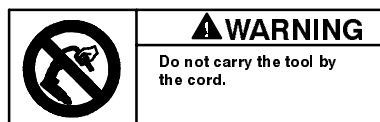
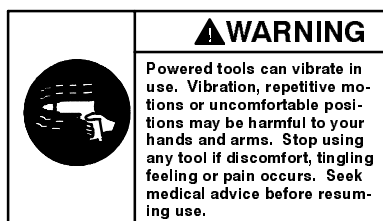
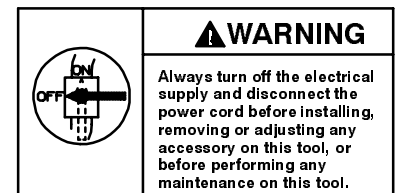
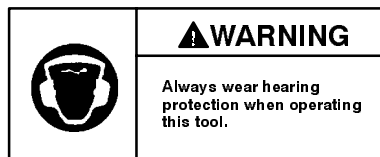
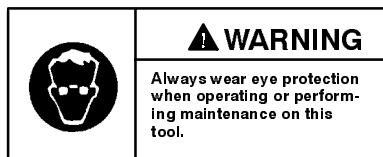
⚠ WARNING

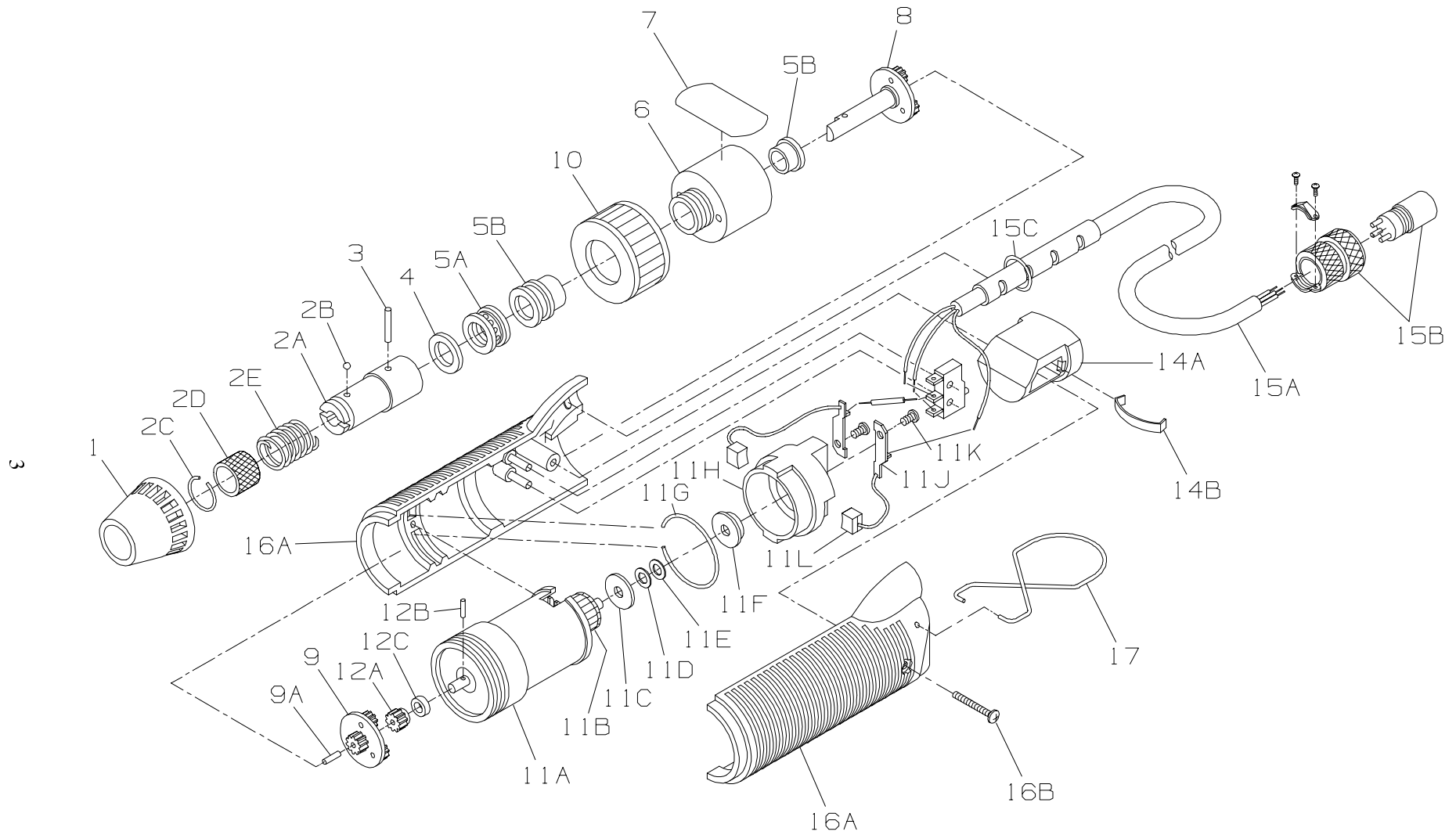
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

USING THE TOOL (Continued)

- **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, 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.**
- **Do not drop or abuse the screwdriver.**
- **Whenever changing a bit, make certain the Forward/Reverse Switch is in the "OFF" position and the tool is unplugged.**
- **Do not allow chemicals such as acetone, benzene, thinner, ketone, trichloroethylene or other similar chemicals to come in contact with the screwdriver housing as damage will result.**
- **Do not operate the Forward/Reverse Switch when the motor is running.**
- **Whenever a tool is not being used, move the Forward/Reverse Switch to the "OFF" position and unplug the screwdriver.**
- **The use of any accessory or attachment other than recommended in this manual can present a risk of personal injury.**

WARNING LABEL IDENTIFICATION





MAINTENANCE SECTION

(Dwg. TPC501)

MAINTENANCE SECTION

PART NUMBER FOR ORDERING



		Model ES20B	Model ES30B
1	Nose Cap	ES20B-624	ES20B-624
	Gear Case Assembly	ES20B-A37	ES30B-A37
	Bit Holder Assembly	ES20B-A586	ES20B-A586
2A	Bit Holder	-----	-----
2B	Bit Holder Ball (.078" dia.)	-----	-----
2C	Stop Ring	-----	-----
2D	Holder Clamp	-----	-----
2E	Holder Spring	-----	-----
3	Joint Pin	-----	-----
4	Washer (.008" thickness)	-----	-----
	Bearing Assembly	ES20B-A24	ES20B-A24
5A	Thrust Bearing (includes two thrust washers)	-----	-----
5B	Bushing (2)	-----	-----
	Gear Case	ES20B-37	ES30B-37
7	Nameplate	ES20B-301	ES30B-301
8	Spindle Assembly	20B-A8	ES30B-A8
9	Gear Head Assembly	ES40T-216	ES40T-216
9A	Guide Spindle	-----	-----
10	Gear Case Cover	ES20B-630	ES20B-630
	Motor Assembly	ES20B-A53	ES20B-A53
11A	Yoke Assembly	-----	-----
11B	Armature Assembly	-----	-----
11C	Slinger Plate	-----	-----
11D	Shim	-----	-----
11E	Shim	-----	-----
11F	Rear Armature Bearing	-----	-----
11G	Motor Retaining Ring	-----	-----
11H	Rear Motor Cover	-----	-----
11J	Brush Holder (2)	-----	-----
11K	Brush Holder Screw (2)	-----	-----
11L	Brush (2)	-----	-----

MAINTENANCE SECTION

PART NUMBER FOR ORDERING



		Model ES20B	Model ES30B
	Armature Gear Assembly	ES20B-A610	ES30B-A610
12A	Armature Gear	-----	-----
12B	Gear Pin	-----	-----
12C	Gear Spacer	-----	-----
13	Push Button Switch	ES20B-629	ES20B-629
	Push Button Assembly	ES20B-A627	ES20B-A627
14A	Push Button	-----	-----
14B	Push Button Spring	-----	-----
	Cord Assembly	ES20B-A23	ES20B-A239
15A	Cord	-----	-----
15B	Plug	-----	-----
15C	Cord Stop Ring	-----	-----
	Housing Assembly	ES20B-A40	ES20B-A40
16A	Housing (includes right and left side)	-----	-----
16B	Housing Screw	-----	-----
17	Suspension Ball	ES20B-365	ES20B-365
*	Brush Package (includes [10] Brushes illustration number 11L)	ES20B-P635-10	ES20B-P635-10
*	Housing Screw Package (includes [10] Housing Screws	-----	-----
	illustration number 16B)	ES20B-704	ES20B-704+
	Rear Motor Cover Assembly (includes the Rear Motor Cover		
	11H, Brush Holder 11J [2], Brush Holder Screw 11K [2],		
	Brush 11L [2] and Rear Armature Bearing 11F)	ES20B-A628	ES20B-A628
*	Shaker Plate	DLW4000	DLW4000
*	Bit Adapter	DLW-4100	DLW-4100

* Not illustrated.

+ Can be purchased in quantities of ten. Refer to the nonillustrated listing of parts for an ordering part number.
Rear Motor Cover can be purchased as part of the Rear Motor Cover Assembly. Refer to nonillustrated listing of parts for an ordering number.

MAINTENANCE SECTION

DISASSEMBLY

Always wear eye protection when operating or performing maintenance on this tool. Always turn off the electrical supply and disconnect the electrical cord before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.

1. Using wooden blocks notched out as illustrated (Figure 1) on page 3, hold the tool housing firmly in a vise.

NOTICE

Locate blocks toward the front of the Housing. Turning counterclockwise, by hand, unscrew and remove the Nose Cap (1) and Gear Case Cover (10).

2. Using a spanner wrench as illustrated (Figure 2) on page 3 and turning counterclockwise, by hand, unscrew and remove the Gear Case Assembly.
3. If the Gear Case Assembly needs to be disassembled, proceed as follows:
 - a. Using a 1/16" pin punch and a hammer, remove the Joint Pin (3) from the Bit Holder Assembly.
 - b. Remove the Bit Holder Assembly. (This is a slip fit).
 - c. Remove the Thrust Bearing (5A).

NOTICE

Be careful not to lose the washer (4). (.008" thickness).

- d. Carefully pull out the Gear Head Assembly (9).

NOTICE

Be careful not to lose the guide spindle (9A).

4. Remove the Stop Ring (15C).
5. Using a No. 1 Phillips screwdriver, unscrew and remove the Housing Screw (16B) that locks together the two sides of the Housing (16A).
6. Remove the Cord Assembly, Push Button Switch (13) and Motor Assembly as a unit from the Housing. If the Push Button Switch is defective, unsolder wire leads and replace.

7. If the Brushes (11L) need to be inspected, proceed as follows:
 - a. Using a thin bladed screwdriver, pry the end of the Brush Holder Spring outward, latching against the Housing and remove the Brush.

NOTICE

Mark the brush so it can be installed in the same exact position during reassembly.

Repeat step (a) to remove the second Brush. If the Brushes need to be replaced, unsolder Brush leads from the Brush Holders and remove the brushes.

- b. Using a good commercial electric contact cleaner, wipe the commutator to remove dirt and carbon build-up.

NOTICE

Rotate the armature by hand while cleaning.

CAUTION

Do not remove the rotor assembly from the yoke assembly (11A) as the yoke could be slightly demagnetized which in turn will affect motor performance.

8. Loosen and remove the two screws from the clamp end of the Cord Assembly. Turning counterclockwise, by hand, unscrew and remove the large knurled end of the plug from the Controller. With the plug still in the controller, carefully grasp the small knurled end of the Plug (15B) with pliers. Turning counterclockwise "break free" the small knurled end of the plug. Remove the plug from the controller and unscrew the small knurled end by hand. Push the power cord through the knurled section of the plug to expose the solder connections of the Plug. If the Plug needs to be replaced, unsolder wire leads and replace the Plug.

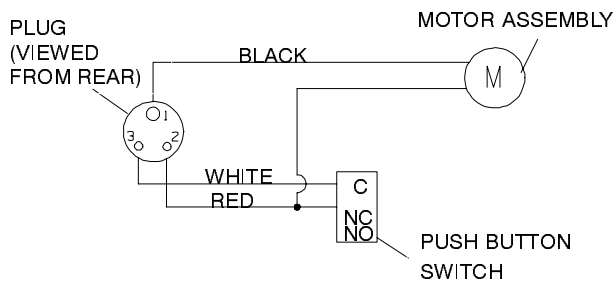
MAINTENANCE SECTION

ASSEMBLY

1. If the Plug (15B) on the Cord Assembly was removed, install a new Plug, soldering the connections as shown in the Wiring Diagram. Pull the power cord through the knurled body of the plug and screw the plug into the small knurled section of the plug. Insert the plug into the controller and using pliers, carefully tighten the plug into the small knurled section. Screw the large knurled end of the plug onto the controller. Replace the cord clamp and retain the cord into the clamp with the two clamp screws. Tighten securely.
2. If the Brushes (11L) were removed, install two new brushes, soldering the connections as shown in the illustration. Insert a brush into the corresponding hole of the Rear Motor Cover (11H). Using a thin bladed screwdriver, pry the end of the holder spring outward and laterally and install the spring into the groove of the Brush. Repeat the same procedure for the second Brush.
3. Make sure the Commutator is clean and free of any dirt or oil.

NOTICE

Avoid touching the commutator.



Wiring Diagram for ES20B and ES30B
Electric Screwdrivers

4. If the Push Button Switch (13) was removed, install a new Switch, soldering the connections as shown in the Wiring Diagram.
5. Install the Cord Assembly, Push Button Switch and Motor Assembly as a unit into the Housing (16A).

NOTICE

Make sure the push button spring (14B) is in place.

NOTICE

Make sure the motor hole aligns with the raised post in the motor housing and the motor retaining ring (11G) is carefully aligned as illustrated on page 4.

6. Carefully install the Housing Screw (16B), recessed side of the Housing onto the assembled side of the Housing.

NOTICE

Make sure the motor leads are not pinched and properly connected through the housing and the two sides of the housing align and are properly seated. Using a No. 1 phillips screwdriver, install the housing screw into the housing. Tighten snugly.

CAUTION

Do not overtighten the screw as the housing will be damaged.

7. Install the Stop Ring (15C) in the groove of the Housing where the Cord (15A) enters the Housing.
8. If the Gear Case Assembly was disassembled, proceed as follows:
 - a. Carefully install the Spindle Assembly (8) into the Gear Case (6). See illustration.
 - b. Carefully install the Gear Head Assembly (9) and Guide Spindle (9A) into the Gear Case.
 - c. If the Armature Gear (12A) was removed, install a new Gear and Gear Spacer (12C). Retain the Gear on the motor shaft with the Gear Pin (12B). Lightly coat the Gear with Ingersoll-Rand No. 67 (Exxon Unirex* N2) Grease.
9. Carefully install the Gear Case Assembly, turning it clockwise onto the Motor Assembly.

NOTICE

Make sure the spindle assembly properly engages the gear head assembly and armature gear. The proper engagement is achieved by slowly turning the Spindle Assembly (8) by hand as the gear case is seated.

NOTICE

Failure to do so could cause damage to the gearing, motor and housing.

10. Install the Trust Bearing (5A) (includes two washers, one on each side of the Bearing) and Washer (4) (.008" thickness) onto the Spindle Assembly. Lightly oil the Bearing with Ingersoll-Rand Pneu-Lube® Light Oil No. 10.
11. Install the Bit Holder Assembly onto the Spindle Assembly, aligning the pin hole in the Bit Holder with the hole in the Spindle Assembly.

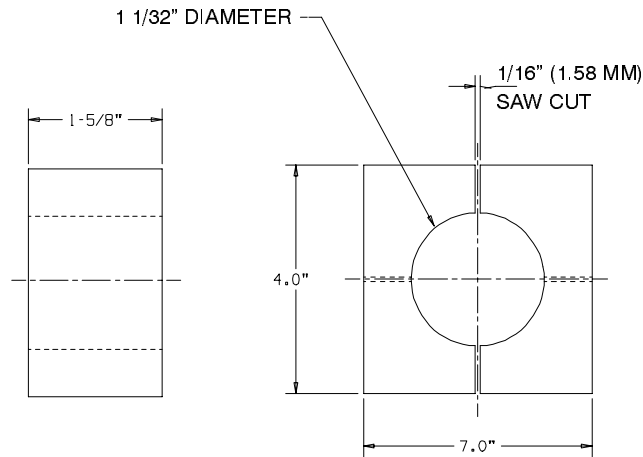
MAINTENANCE SECTION

12. using a 1/16" pin punch and hammer, install the Joint Pin (3) into the hole of the Bit Holder and Spindle Assembly.

13. Install the Gear Case Cover (10) onto the Gear Case.
14. Turning clockwise, install the Nose Cap (1) onto the Gear Case. Tighten hand tight.

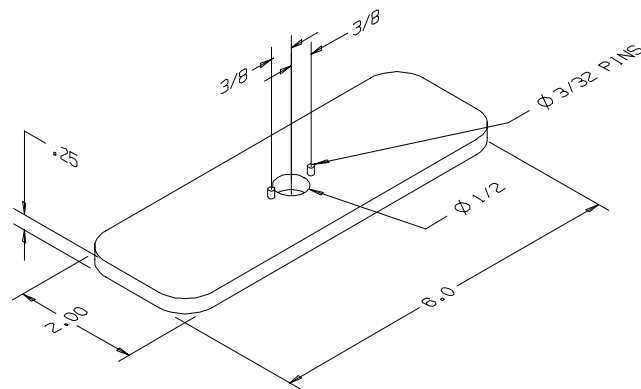
NOTICE

Make sure the pin is flush with the top of the bit holder hole.



(Figure 1)

(Dwg. TPD1021)



(Figure 2)

(Dwg. TPD1022)

NOTES

NOTES