

# OPERATION AND MAINTENANCE MANUAL FOR MODEL ESCB50 ELECTRIC SCREWDRIVER CONTROLLER

## NOTICE

This Controller is designed for indoor use only, with Models ES45T, ES50T and ES50TC Electric Screwdrivers, Models ES45T, ES50T and ES50TC Electric Screwdrivers are recommended for assembly applications where precise torque control is required.

## ⚠ 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

- Disconnect Tools when not in use, before servicing and when changing accessories and bits.
- When Tool is used outdoors, use only extension cords intended for use outdoors and so marked.
- 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.
- **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 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  
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**INGERSOLL-RAND®**  
**PROFESSIONAL TOOLS**  
**delvo®**

**⚠ 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, 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.**
- **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.**

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**OPERATION**

**CAUTION**

- **Do not drop or abuse the Controller.**
- **Whenever a Controller is not being used, position the Power Switch to the "OFF" position and unplug the power cord.**

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**MAINTENANCE**

**DO NOT ATTEMPT TO REPAIR THIS TOOL.**

All repairs and maintenance of the Controller and its cord must be performed by an authorized servicer.

## WARNING LABEL IDENTIFICATION



**FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.**

	<p><b>WARNING</b></p> <p>Always wear eye protection when operating or performing maintenance on this tool.</p>
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	<p><b>WARNING</b></p> <p>Always wear hearing protection when operating this tool.</p>
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	<p><b>WARNING</b></p> <p>Always turn off the electrical supply and disconnect the power cord before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.</p>
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	<p><b>WARNING</b></p> <p>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.</p>
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	<p><b>WARNING</b></p> <p>Do not carry the tool by the cord.</p>
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	<p><b>WARNING</b></p> <p>Do not use damaged, frayed or deteriorated power cords.</p>
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	<p><b>WARNING</b></p> <p>Keep body stance balanced and firm. Do not overreach when operating this tool.</p>
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	<p><b>WARNING</b></p> <p>INDOOR USE ONLY.</p>
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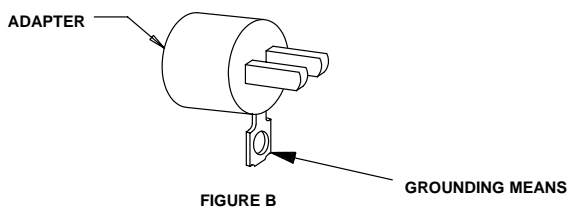
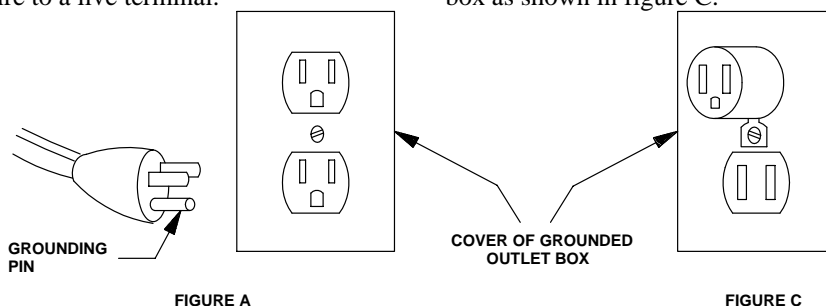
## PLACING TOOL IN SERVICE

### GROUNDING INSTRUCTIONS

The tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with a three-conductor cord and three-prong grounding-type plug to fit the proper grounding-type receptacle. The green (or green and yellow) conductor in the cord is the grounding wire. Never connect the green (or green and yellow) wire to a live terminal.

If your unit is for use on less than 150V, it has a plug that looks like that shown in Figure A.

An adapter (see Figure B) is available for connecting Figure A-type plugs to 2-prong receptacles. The green colored rigid grounding strap must be connected to a permanent ground such as to a properly grounded outlet box as shown in figure C.



(Dwg. TPD446-2)



**For safe use of adapters, the outlet box must be grounded. If there is any doubt, have a qualified electrician check connections.**

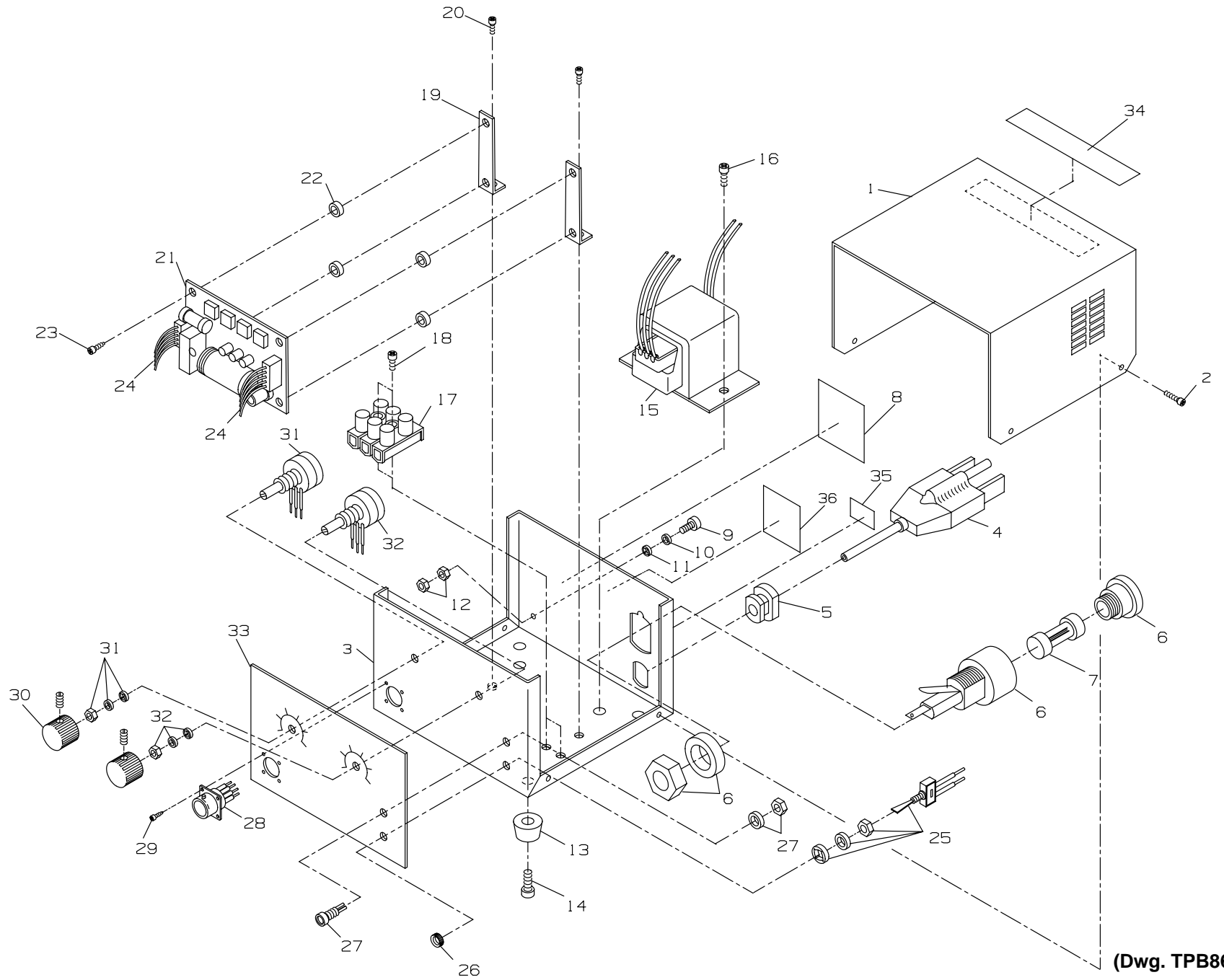
**Use only 3-wire extension cords that have 3-prong grounding type plugs and 3 pole receptacles that accept the controllers plug. Replace or repair damaged cords.**

## Extension Cords

Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating.

The Table below shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

		Volts	Total length of cord in feet			
		120V	0 – 25	26 – 50	51 – 100	101 – 150
Ampere rating		AWG				
More than	Not more than					
0	6	18	16	16	14	
6	10	15	16	14	12	
10	12	16	16	14	12	
12	16	14	12	not recommended		



**MAINTENANCE SECTION**

(Dwg. TPB865-2)



PART NUMBER FOR ORDERING →

PART NUMBER FOR ORDERING →

1	Cover .....	ESCB50-628	19	Circuit Board Mounting Bracket (2) .....	ESCB50-629
2	Cover Mounting Screw (4) .....	ESCB50-808	20	Mounting Bracket Screw (2) .....	ESCB50-806
3	Chassis .....	ESCB50-627	21	Circuit Board .....	EC24N-B525
4	Power Cord Assembly .....	ESCB50-449UL	22	Circuit Board Mounting Insulator (4) .....	ESCB50-616
5	Cord Stop .....	ESCB50-445	23	Circuit Board Mounting Screw (4) .....	ESCB50-787
6	Fuse Holder Assembly .....	ESCB50-A705UL	24	Socket Assembly (2) .....	ESCB50-670
7	Fuse .....	ESCB50-638UL	25	Power Switch .....	ESCB50-634
8	Nameplate .....	ESCB50-301UL	26	Switch Mounting Nut .....	ESCB50-636
9	Ground Screw .....	ESCB50-810	27	Pilot Lamp .....	ESCB50-637
10	Ground Washer .....	ESCB50-812	28	Receptacle .....	ESCB40-463
11	Ground Screw Lock Washer .....	ESCB50-811	29	Receptacle Mounting Screw (4) .....	ESCB50-815
12	Ground Screw Nut (2) .....	ESCB50-740	30	Control Knob (includes setscrew) (2) .....	ESCB50-801
13	Rubber Foot (4) .....	ESCB40-730	31	Speed Potentiometer .....	ESCB40-485
14	Foot Mounting Screw (4) .....	ESCB50-672	32	Soft Start Potentiometer .....	ESCB40-486
15	Transformer .....	ESCB50-325	33	Faceplate .....	ESCB50-667
16	Transformer Mounting Screw (2) .....	ESCB50-672	34	Logoplate .....	ESCB10-99
17	Terminal Block .....	ESCB50-813UL	35	Warning Label .....	ESCB50-99UL
18	Terminal Block Mounting Screw (2) .....	ESCB50-814UL	36	Fuse Warning Label .....	EC24N-98

## MAINTENANCE SECTION

### WARNING

Maintenance procedures have the potential for severe shock hazard and should be performed by qualified personnel.

### DISASSEMBLY

### WARNING

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

#### Cover (1)

1. Using a phillips screwdriver, remove the four Cover Mounting Screws (2).
2. Lift the Cover off the Chassis (3).

#### Power Cord Assembly (4)

1. Using a thin bladed screwdriver, loosen the right rear screw in the Terminal Block (17) and remove the white wire.
2. Remove the heat shrink from the Power Switch (25) and unsolder the black wire from the Switch.
3. Loosen the two Ground Screw Nuts (12) and remove the green ground wire.
4. Using a thin bladed screwdriver, pry the Cord Stop (5) out of the Chassis (3) and remove the Cord Assembly.

#### Transformer (15)

1. Remove the heat shrink and unsolder the two yellow wires from the red and brown leads.
2. Using a thin bladed screwdriver, loosen the three screws at the front of the Terminal Block (17) and remove the brown, grey and white wires.
3. Using a phillips screwdriver, remove the two Transformer Mounting Screws (16).

#### Circuit Board (21)

1. Unplug the two Socket Assemblies (24). Important: Note the location of the Socket Assemblies for reassembly purposes.
2. Using a phillips screwdriver, remove the two Mounting Bracket Screws (20).

#### Fuse Holder (6)

1. Insert a thin bladed screwdriver into the slots in the fuse holder cap and rotate the cap counterclockwise. Remove the cap and the Fuse (7).
2. Remove the heat shrink and unsolder the two wires from the Holder.
3. Using a wrench, unscrew and remove the fuse holder nut. Pull the Fuse Holder out of the Chassis (3).

#### Soft Start Potentiometer (32)

1. Using a miniature thin bladed screwdriver, unscrew and loosen the setscrew in the Control Knob (30) of the Soft Start Potentiometer. Remove the Knob.
2. Unscrew and remove the potentiometer nut and pull the Potentiometer away from the Chassis (3).
3. Remove the heat shrink and unsolder the yellow and orange wires. **Important:** Note the location of these wires for reassembly purposes.

#### Speed Potentiometer (31)

1. Using a miniature thin bladed screwdriver, unscrew and loosen the setscrew in the Control Knob (30) of the Speed Potentiometer. Remove the Knob.
2. Unscrew and remove the potentiometer nut and pull the Potentiometer away from the Chassis (3). **Important:** Note the location of these wires for reassembly purposes.

#### Power Switch (25)

1. Using pliers, unscrew and remove the Switch Mounting Nut (26).
2. Remove the shrink wrap and unsolder the two wires from the Power Switch. **Important:** Note the colors and location of these wires for reassembly purposes.

#### Pilot Lamp (27)

1. Loosen and remove the nut and washer of the Pilot Lamp located on the back of chassis front panel.
2. Remove the heat shrink and unsolder the two wires on the Pilot Lamps. Important: Note the colors and location of these wires for reassembly purposes.

#### Receptacle (28)

1. Using a phillips head screwdriver, unscrew and remove the four Receptacle Mounting Screws (29).
2. Remove the heat shrink and unsolder the five wires at the Receptacle. **Important:** Note the color and location of these wires for reassembly purposes. To assist with reassembly, the plug face is numbered at each jack position.

## MAINTENANCE SECTION

### ASSEMBLY

#### Receptacle (28)

1. Slip a small piece of heat shrink tubing (obtain from nearest Radio Shack) onto each of the five receptacle wires.
2. Pull the wires through the receptacle opening in the front face of the Chassis (3) and solder each colored wire to the same terminal it was removed from at disassembly.
3. Slide the five pieces of heat shrink tubing over the soldered connections and heat shrink the tubing.
4. Position the Receptacle against the face of the Chassis with the number one jack at one o'clock and the number five jack at eleven o'clock. Secure the Receptacle by installing the four Receptacle Mounting Screws (29).

#### Pilot Lamp (27)

1. Install the Pilot Lamp in the Chassis (3) and secure it with the nut and washer.
2. Slip a small piece of heat shrink tubing onto each of the two pilot lamp wires.
3. Solder each wire to the terminal it was removed from at disassembly.
4. Slide the two pieces of heat shrink tubing over the soldered connections and heat shrink the tubing.

#### Power Switch (25)

1. Slip a small piece of heat shrink tubing onto each of the two power switch wires.
2. Solder each wire to the terminal it was removed from at disassembly.
3. Slide the two pieces of heat shrink tubing over the soldered connections and heat shrink the tubing.
4. Position the Switch against the Chassis (3) and secure it with the Switch Mounting Nut (26).

#### Speed Potentiometer (31)

1. Slip a small piece of heat shrink tubing onto each of the three potentiometer wires.
2. Solder each wire to the terminal it was removed from at disassembly.
3. Slide the three pieces of heat shrink tubing over the soldered connections and heat shrink the tubing.
4. Position the Potentiometer against the Chassis (3) and secure it with the washers and nut.
5. Slide the Control Knob (30) onto the shaft of the Potentiometer and, using a miniature thin bladed

screwdriver, tighten the knob setscrew against the shaft.

#### Soft Start Potentiometer (32)

1. Slip a small piece of heat shrink tubing onto each of the two potentiometer wires. Do not install the tubing on the jumper wire.
2. Solder each wire to the terminal it was removed from at disassembly.
3. Slide the two pieces of heat shrink tubing over the soldered connections and heat shrink the tubing.
4. Position the Potentiometer against the Chassis (3) and secure it with the washers and nut.
5. Slide the Control Knob (30) onto the shaft of the Potentiometer and, using a miniature thin bladed screwdriver, tighten the knob setscrew against the shaft.

#### Fuse Holder (6)

1. Slip a small piece of heat shrink tubing onto each of the two fuse wires.
2. Position the Fuse Holder against the Chassis (3) and secure it with the washer and fuse holder nut.
3. Solder each wire to the terminal it was removed from at disassembly.
4. Slide the two pieces of heat shrink tubing over the soldered connections and heat shrink the tubing.

#### Circuit Board (21)

1. Plug the two Socket Assemblies (24) into the Circuit Board in the same location as when disassembled
2. Position the Board in the Chassis (3) and, using a phillips screwdriver, install the two Mounting Bracket Screws (20).

#### Transformer (15)

1. Position the Transformer on the Chassis (3) with the side having three leads toward the Potentiometer side of the Chassis. Using a phillips screwdriver, install the two Transformer Mounting Screws (16).
2. Slip a small piece of heat shrink tubing onto each of the two wires opposite the three lead side.
3. Solder the left yellow wire, when facing the front of the Controller, to the exact same red wire it was disassembled from in the Socket Assembly (24). Slide the heat shrink tubing over the solder connection and heat shrink the tubing.
4. Solder the right yellow wire, when facing the front of the Controller, to the exact same brown wire it was disassembled from in the Socket Assembly. Slide the heat shrink tubing over the solder connection and heat shrink the tubing.
5. When facing the front of the Controller and using a thin bladed screwdriver, install the brown wire from the Transformer into the right front connection on the Terminal Block (17). Install the grey wire from the Transformer into the center front connection.



## MAINTENANCE SECTION

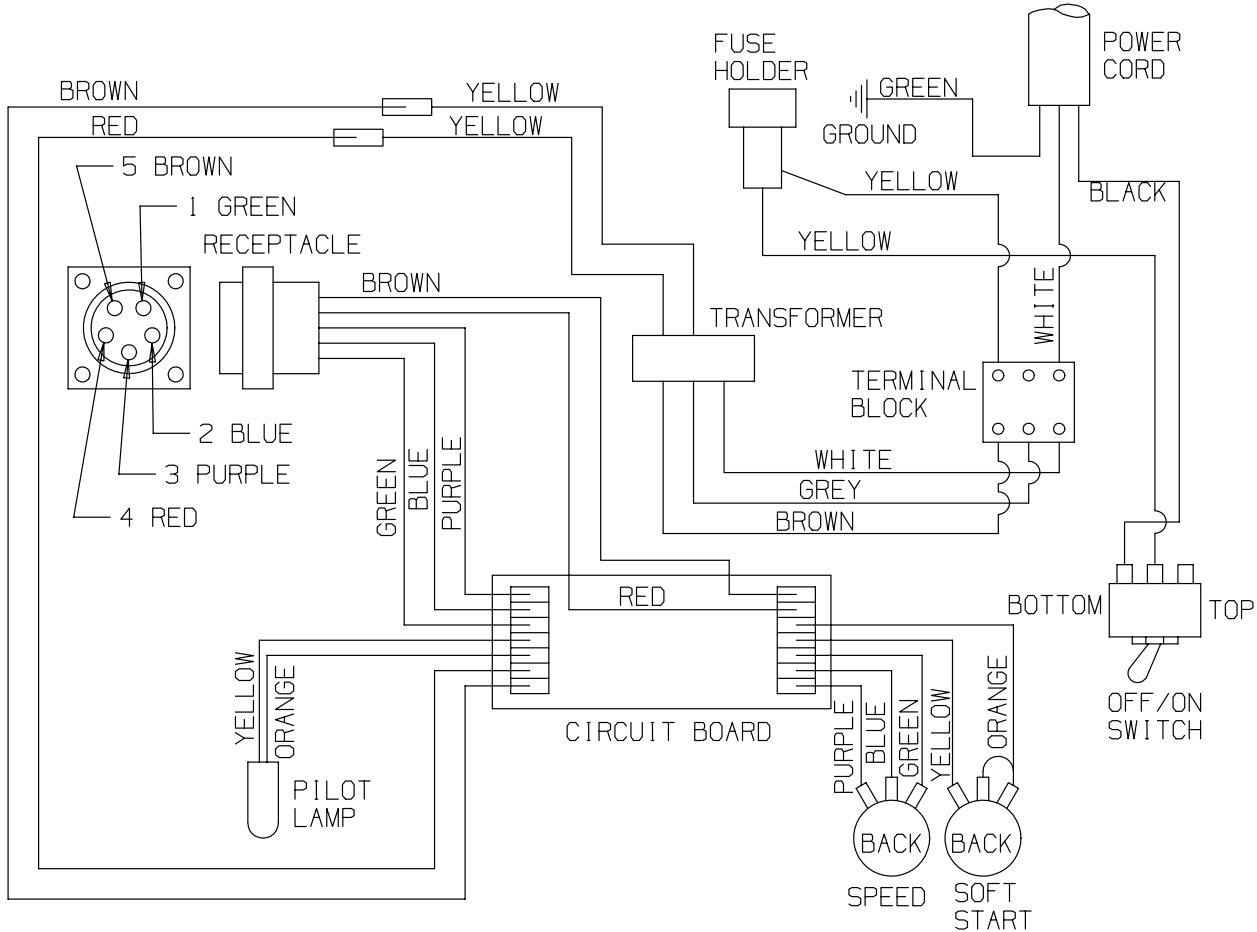
### Power Cord Assembly (4)

1. Install the Cord Assembly and Cord Stop (5) into the rear panel of the Chassis (3).
2. Slip a small piece of heat shrink tubing onto the black wire of the Power Cord. Solder the black wire to the terminal of the Power Switch (25) it was removed from at disassembly. Slide the heat shrink tubing over the soldered connection and heat shrink the tubing.
3. Install the green ground wire on the Ground Screw (9) and tighten the Ground Screw Nuts (12).

4. When facing the front of the Controller and using a thin bladed screwdriver, install the white wire from the Power Cord into the right rear connection on the Terminal Block (17).

### Cover (1)

1. Position the Cover on the Chassis (3) and secure it with the four Cover Mounting Screws (2).



**Wiring Diagram**

**(Dwg. TPD1112)**

## **MAINTENANCE SECTION**

<b>TROUBLESHOOTING GUIDE</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Solution</b>
No power	Fuse	Disconnect Power Cord. Replace fuse.
	Power Switch	Disconnect Power Cord. Use ohmmeter to check yellow and black leads at Switch. Reading should be 0 to full scale when switched from on to off.
	Power Cord	Use Voltmeter to check white lead at terminal block and black lead at Switch. Reading should be 115 VAC.
	Transformer	Use Voltmeter to check the two yellow leads from the Transformer. Reading should be 24 VAC.
	Circuit Board	Replace the Circuit Board.
Faulty braking	Circuit Board	Replace the Circuit Board.
Speed control does not work.	Speed Potentiometer	Disconnect Power Cord
	Circuit Board	Unplug the Socket Assembly (24) from the Circuit Board. Using an ohmmeter, check the blue to purple or blue to green leads at the Potentiometer. Replace the Circuit Board.
Soft start does not work.	Soft Start Potentiometer.	Disconnect Power Cord. Unplug the Socket Assembly (24) from Circuit Board. Using an ohmmeter, check the yellow and orange leads at the potentiometer by rotating the knob. Reading should be 0 to 50 000 ohms.
	Circuit Board	Replace the Circuit Board.

**NOTICE**

**SAVE THESE INSTRUCTIONS. DO NOT DESTROY.**

## **NOTES**

## **NOTES**