SERVICE INSTRUCTIONS FOR
8800ES 3/8" PROFESSIONAL COMPACT DRILL

SIOUX TOOLS INC.
250 SNAP-ON DRIVE ■ PO BOX 1596 ■ MURPHY, NC 28906 ■ USA ■

SERVICE INSTRUCTIONS FOR MODEL NO. 8800ES

⚠ WARNING

Disconnect power before doing any repairs!

SAFETY

Hypot Testing

Each 8800ES series tool that is serviced must be Hypot tested before being shipped back to the customer. If you do not have this equipment, you can not service this tool.

Hypot testing is a safety test required by Underwriter's Laboratories. It basically ensures that there are no live metal parts exposed on the product. This condition could occur if, for instance:

1. A housing screw went through a wire.
2. A wire was stripped back too far and the bare wire contacted a bearing or the driveshaft.
3. A wire was damaged and came into contact with a bearing or the driveshaft.

This is a very serious safety issue so please take care to test the tool as specified below.

The tool is to be Hypot tested at 3000 VAC for 1 second between:

A. Both power cord prongs and the chuck with the power switch in the ON position.

B. Between the power cord prongs and all of the housing screws with the power switch in the ON position.

The maximum allowable current is 0.5mA.

REPAIR

The following are specific instructions for repairing the 8800ES drill. For a list of available service parts and an exploded-view product drawing, please refer to the last page of this manual.

These repair instructions start with the very basic repairs such as replacing a chuck and progress to the more complicated such as replacing a housing. They are done this way so all of the information does not have to be repeated. For this reason you may want to read the entire instruction before proceeding with one of the more complicated repairs.

CHUCK REMOVAL / INSTALLATION

Removal

1. Open chuck jaws to maximum capacity.
2. Remove retaining screw on tool by turning it in a clockwise direction (screw has a left-hand thread).
3. Insert the shorter end of a 1/4" or greater hex key into chuck and tighten.
4. Place tool on its side and hold firmly.
5. Using a wooden mallet strike the longer end in the clockwise direction.

Installation

1. Screw the chuck on by hand as far as it will go.
2. Insert screw (left-hand thread), and tighten screw securely.
3. Tighten the chuck around the shorter end of a 1/4" or larger hex key, then strike the longer end in the clockwise direction with a wooden mallet while holding down the tool securely.
4. Tighten the screw once again by turning in a counterclockwise direction.

BRUSH REMOVAL / INSTALLATION

Removal

1. Remove brush cap using a flat-head screwdriver.
2. Remove brush assembly from the brush holder.

Installation

1. Installation is the reverse of the removal instruction above.

GEARBOX REMOVAL / INSTALLATION

Currently, the gearbox components are not individually available, and in the event of a failure, the entire gearbox must be replaced.

The procedure for removing / installing the gearbox is as follows:

Removal

1. Remove the chuck as described above.
2. Remove the brush caps and take out the brushes. The brushes should always be removed before disassembling the housing.
3. Remove the (8) housing screws and remove the right housing half. While removing the right housing half, disconnect the yellow brush lead from the brush holder. This can usually be disconnected with your fingers. If not, a needle-nose pliers will suffice.
4. Remove the chuck shroud.
5. Lift up the gearbox so that the motor assembly tips upward. Once the gearbox is above the left housing half, pull it away from the motor so the input shaft pulls out of the motor coupling.

Installation

1. Remove the armature while leaving the field in place. In order to remove the armature, you will have to tip up the field so that the fan clears the housing.
2. Ensure that there is grease in the motor coupling and that the o-ring is in place in the end of the coupling. If grease must be added, a light film of any moly based grease will be adequate.

3. Insert the gearbox into the coupling assembly.
4. Tip up the field and slide the gearbox/armature assembly into location.
5. Reseat the field and make sure the armature spins freely.
6. Remainder of assembly is the reverse of the removal procedure above.

MOTOR COUPLING REMOVAL / INSTALLATION

Removal

1. Remove the chuck as described above.
2. Remove the top housing half and gearbox as described above.
3. Remove the armature from the tool as described above.
4. The coupling is press fit onto the knurled end of the motor shaft. Remove the coupling using an arbor press or other suitable press. With the armature pointed upward, the coupling should be held from the bottom side and the armature pressed down.

Installation

1. Install a light film of moly based grease to the inside of the coupling – both in the large and small diameter bores.
2. Remainder of the installation is the reverse of the removal instruction above.

NOTE: It is very important that the coupling be lined up properly during installation. Failure to install the coupling straight will result in tool vibration.

MOTOR REMOVAL / INSTALLATION

Removal

1. Remove the chuck as described above.
2. Remove the top housing half and gearbox as described above.
3. Remove the armature from the tool.
4. Disconnect the black and white lead wires from the field and remove it. The thicker black jumper wire should not be disconnected

NOTE: During disassembly, take note of wire routing so the wires can be routed the same way upon reassembly. Also take note of the way the two dowel pins on the fan end of the field engage the lower housing.

Installation

1. Installation is the reverse of the removal instruction above.

SWITCH REMOVAL / INSTALLATION

Removal

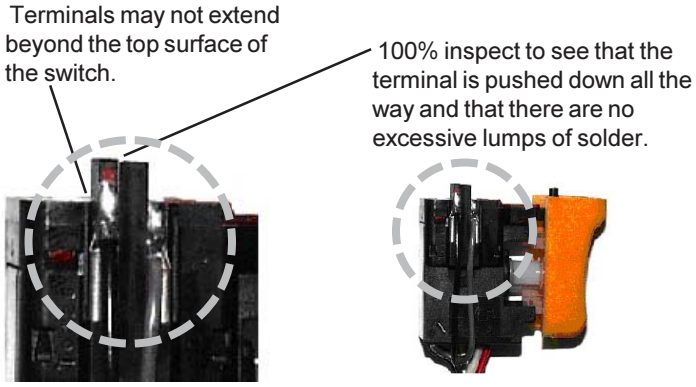
1. Remove the chuck as described above.
2. Remove the top housing half as described above.
3. Remove the reversing shuttle from the top of the switch.
4. Disconnect the 4 leads from the reversing module (top portion) of the switch. These should slide straight up and disengage.
5. Loosen the two Phillips head machine screws on the side of the switch and remove the power cord wires.
6. The red brush wire installed in the bottom of the switch can be removed by pushing a small diameter pin in the wire opening. This will open the wire trap and the wire can be pulled out.

NOTE: Again, take note of the wire routing before disassembly so they can be properly routed upon reassembly.

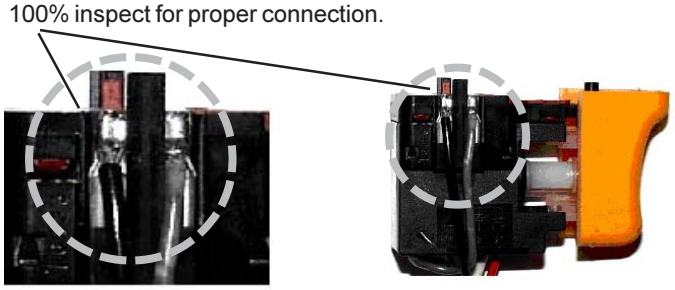
Installation

1. Installation is the reverse of the removal instruction above.

CAUTION: It is extremely important that the wires that terminate in the reversing module of the switch be properly installed. When properly installed, the top of the terminals will be about flush with the top of the switch. Proper installation ensures adequate spacing between the switch terminals, which are live, and the gearbox, which is metal and has a conductive path to the chuck. Ensure that the spacing between the switch terminals and gearbox is adequate before reassembling the top housing half.



Improper Switch Wire Assembly



When properly installed, the terminals on the switch wires are fllush with the top of the switch as shown in the pictures above.

Proper Switch Wire Assembly

HOUSING REPLACEMENT

Removal

1. Remove the chuck as described above.
2. Remove the top housing half and gearbox as described above.
3. Remove the armature from the tool.
4. Remove the field as described above
5. Remove the switch as described above.
6. Remove the power cord from the tool. It should just pull out of the wire channel.
7. Disconnect the red brush lead from the brush holder in the left housing half and remove the switch wiring harness. Like the power cord, this should pull right out.
8. Press the brush holders out of each housing half.

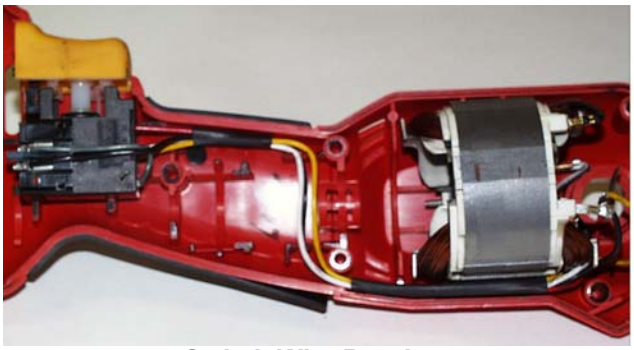
Installation

1. Install a service warning label on the new housing. The service warning label is only partially laminated. Half of the label has a backing on the lamination that can be peeled off allowing the technician to write on the label and finish laminating it him/herself. Record the tool serial number with a pen on the label, peel the backing off of the lamination, and laminate the service warning label.
2. Install new decorative and brand labels if desired.
3. The remainder of assembly is the reverse of the removal instruction above.

WIRE ROUTING / REPLACEMENT

As noted in the above sections, it is very important to note the routing of the wires before disassembly. They must be routed exactly the same way upon assembly. Some additional detail on proper wiring follows.

It is very easy to pinch a wire when reassembling a tool if care is not given to wire routing. Take note of which ribs contact the switch and field, and where wires must be routed to clear them. The bundle of 4 switch wires must be placed with 2 of the wires in each of the 2 wire slots provided as the wires pass under the motor coupling.



Switch Wire Routing

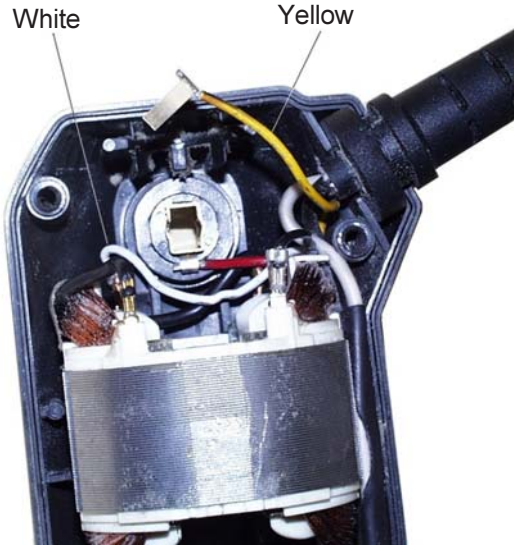
One of the wires from the power cord must be placed in on top of each bundle of switch wires and pressed firmly into place. This will hold the wires down and away from the motor coupling.

Power Cord Routing

As an aid to reassembly, take note of wire routing and position in wire guides and traps while dismantling tool.

White wire #5 is to be routed around the lower brush boss between the boss and the field.

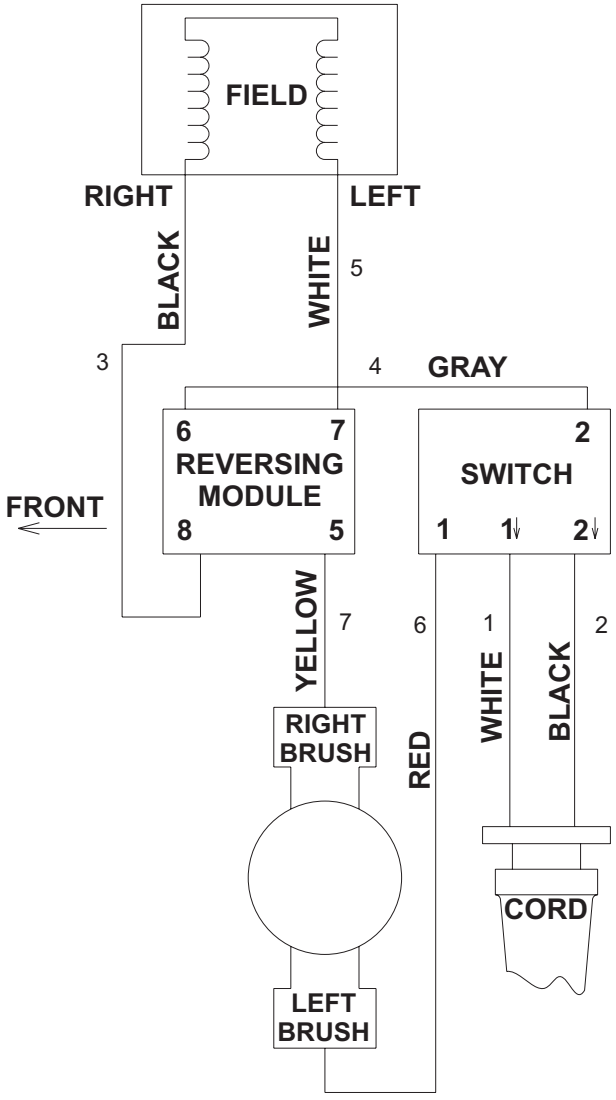
Yellow wire #7 must pass under the power cord wire and exit between the cord strain relief and the screw boss. This allows enough slack to attach the wire to the upper brush holder while lowering the housing.



WIRING SPECIFICATIONS			
Wire No.	Wire Color	Origin or Gauge	Length
1	White	Cord	8.6"
2	Black	Cord	8.6"
3	Black	R. Field	10.2"
4	Grey	Switch	2.5"
5	White	L. Field	11"
6	Red	L. Brush	8.7"
7	Yellow	R. Brush	11"

NOTE:

All lead lengths are overall.



TORQUE SPECIFICATIONS

The following torque specifications are recommended for the 8800ES drill:

Chuck: 40-60 in-lb

Chuck Retaining Screw: 35-45 in-lb

Switch Terminal Screws: 3-6 in-lb

Housing Screws 10-14 in-lb

When tightening the housing screws, if you do not have a tool with which you can limit the tightening torque, they should be tightened by hand to prevent stripping. If a screw hole is stripped, the tool housing must be replaced.

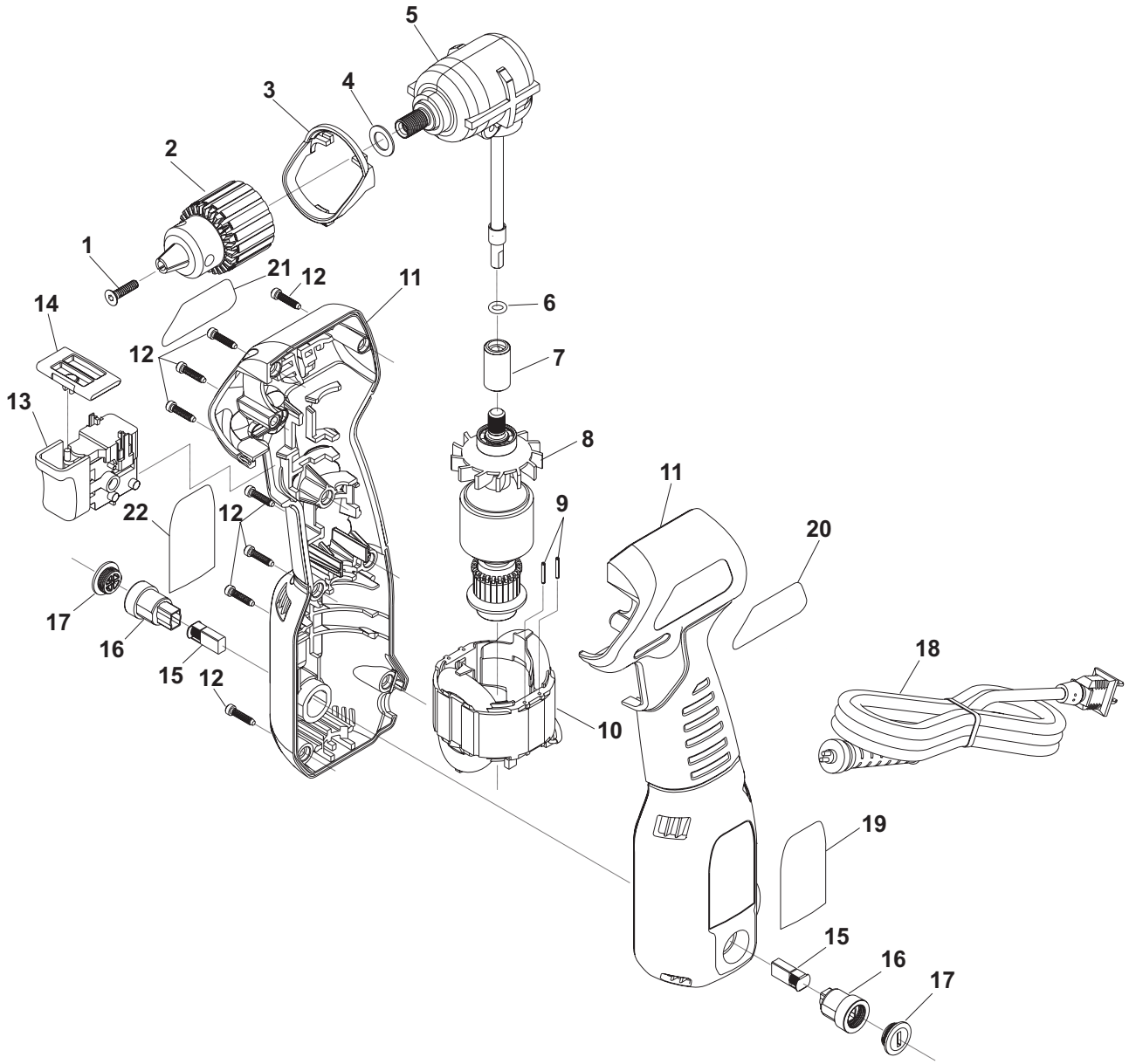
PERFORMANCE SPECIFICATIONS

An acceptable tool is expected to perform as follows:

	8800ES
No-Load Speed	1350-1650 RPM
No-Load Amp Draw	< 1.7A

NOTE: Tool may run slower than above after installation of new brushes. It takes about 10 minutes of run time to fully seat new brushes.

PARTS LIST FOR MODEL NO. 8800ES



Key No.	Part No.	Description
1	SP57250R	Screw (M5 x .8 x 20 LH Torx Mach)
2	SP68393	Chuck
3	SP68398	Chuck Shroud
4	SP25680	Washer
5	SP68624	Gear Box
6	SP68406	O-Ring
7	SP68395	Coupling
8	SP68411	Armature
9	SP30632	Roll Pin (2)*
10	SP68410	Field
11	SP68788	Housing Set
12	SPME3L26A	Housing Screw (8)*
13	SP6868719	Switch
14	SP68718	Reversing Shuttle
15	SP68245	Brush Set
16	SP68244	Brush Holder (2)*
17	SP68243	Brush Cap (2)*
18	SP68099	Cord

Key No.	Part No.	Description
19	SP68723	Decorative Label
20	SP68722	Brand Label, Left
21	SP68721	Brand Label, Right
22	SP68790	Service Warning Label
Not Shown		
	SP30002	Key—Not Shown
	Z718	Owner's Manual
	SP68238	Switch Jumper Wire Assembly
	SP68587	Wiring Harness Assembly
	8800ESLC	8800ES 3/8" Drill Less Chuck and Key