

CHICAGO

Electric[®] Power Tools

ELECTRIC SAW BLADE SHARPENER

Model 96687

SET UP AND OPERATING INSTRUCTIONS



Visit our website at: <http://www.harborfreight.com>



**Read this material before using this product.
Failure to do so can result in serious injury.
SAVE THIS MANUAL.**

Copyright© 2007 by Harbor Freight Tools®. All rights reserved. No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

For technical questions or replacement parts, please call 1-800-444-3353.

Revised Manual 10b

SAVE THIS MANUAL

Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

IMPORTANT SAFETY INFORMATION

In this manual, on the labeling, and all other information provided with this product:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

CAUTION

CAUTION, without the safety alert symbol, is used to address practices not related to personal injury.

GENERAL SAFETY RULES



WARNING! Read all instructions

Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury. The term “power tool” in all of the warnings listed below refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

SAVE THESE INSTRUCTIONS


1. Work area safety

- a. Keep work area clean and well lit. *Cluttered or dark areas invite accidents.*
- b. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. *Power tools create sparks which may ignite the dust or fumes.*
- c. **Keep children and bystanders away while operating a power tool.** *Distractions can cause you to lose control.*

2. Electrical safety

- a. Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with grounded power tools. *Unmodified plugs and matching outlets will reduce risk of electric shock.*
- b. Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. *There is an increased risk of electric shock if your body is grounded.*
- c. **Do not expose power tools to rain or wet conditions.** *Water entering a power tool will increase the risk of electric shock.*
- d. **Do not abuse the cord.** Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. *Damaged or entangled cords increase the risk of electric shock.*
- e. When operating a power tool outdoors, use an extension cord suitable for outdoor use. *Use of a cord suitable for outdoor use reduces the risk of electric shock.*

3. Personal safety

- a. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. *A moment of inattention while operating power tools may result in serious personal injury.*
- b.  **Use safety equipment. Always wear eye protection and a full face shield.** *Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.*

- c. Avoid accidental starting. Ensure the switch is in the off-position before plugging in. *Plugging power tools in with the switch on invites accidents.*
- d. Remove any adjusting key or wrench before turning the power tool on. *A wrench or a key left attached to a rotating part of the power tool may result in personal injury.*
- e. Do not overreach. Keep proper footing and balance at all times. *This enables better control of the power tool in unexpected situations.*
- f. Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. *Loose clothes, jewelry or long hair can be caught in moving parts.*

4. **Power tool use and care**

- a. Do not force the power tool. Use the correct power tool for your application. *The correct power tool will do the job better and safer at the rate for which it was designed.*
- b. Do not use the power tool if the switch does not turn it on and off. *Any power tool that cannot be controlled with the switch is dangerous and must be repaired.*
- c. **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.**
- d. **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.**
- e. Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use. *Many accidents are caused by poorly maintained power tools.*
- f. Use the power tool in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed. *Use of the power tool for operations different from those intended could result in a hazardous situation.*

5. **Service**

- a. Have your power tool serviced by a qualified repair person using only identical replacement parts. *This will ensure that the safety of the power tool is maintained.*

SPECIFIC SAFETY RULES

1. Maintain labels and nameplates on the tool. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
2. Avoid unintentional starting. Prepare to begin work before turning on the tool.
3. Do not leave the tool unattended when it is plugged into an electrical outlet. Turn off the tool, and unplug it from its electrical outlet before leaving.
4. This product is not a toy. Keep it out of reach of children.
5. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. In addition, people with pacemakers should:
 - Avoid operating alone.
 - Do not use with power switch locked on.
 - Properly maintain and inspect to avoid electrical shock.
 - Any power cord must be properly grounded. Ground Fault Circuit Interrupter (GFCI) should also be implemented – it prevents sustained electrical shock.
6. Some dust created by power sanding, sawing, grinding, drilling, and other construction activities, contains chemicals known [to the State of California] to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
 - Lead from lead-based paints
 - Crystalline silica from bricks and cement or other masonry products
 - Arsenic and chromium from chemically treated lumberYour risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles. (California Health & Safety Code § 25249.5, *et seq.*)
7. Always operate with shields in place.
8. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.



SAVE THESE INSTRUCTIONS.

GROUNDING

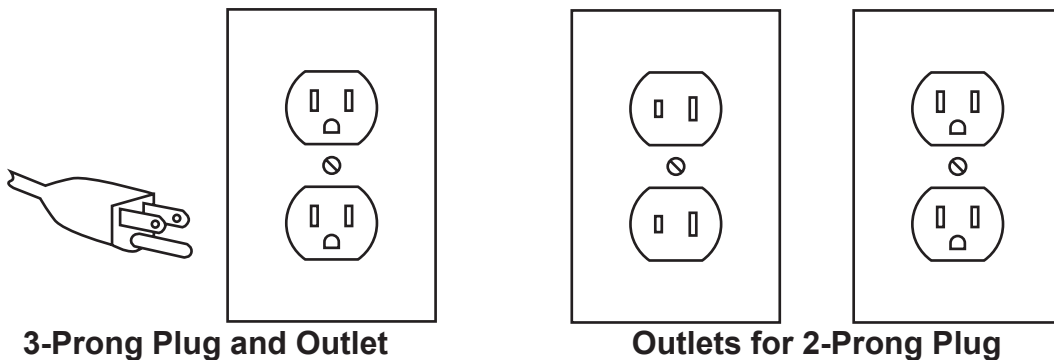
⚠️WARNING

Improperly connecting the grounding wire can result in electric shock.

Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. Do not modify the power cord plug provided with the tool. Never remove the grounding prong from the plug. Do not use the tool if the power cord or plug is damaged. If damaged, have it repaired by a service facility before use. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician.

Grounded Tools: Tools with Three Prong Plugs

1. Tools marked with “Grounding Required” have a three wire cord and three prong grounding plug. The plug must be connected to a properly grounded outlet. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user, reducing the risk of electric shock. **(See 3-Prong Plug and Outlet.)**
2. The grounding prong in the plug is connected through the green wire inside the cord to the grounding system in the tool. The green wire in the cord must be the only wire connected to the tool’s grounding system and must never be attached to an electrically “live” terminal. **(See 3-Prong Plug and Outlet.)**
3. The tool must be plugged into an appropriate outlet, properly installed and grounded in accordance with all codes and ordinances. The plug and outlet should look like those in the following illustration. **(See 3-Prong Plug and Outlet.)**



Double Insulated Tools: Tools with Two Prong Plugs

1. Tools marked “Double Insulated” do not require grounding. They have a special double insulation system which satisfies OSHA requirements and complies with the applicable standards of Underwriters Laboratories, Inc., the Canadian

Standard Association, and the National Electrical Code.
(See Outlets for 2-Prong Plug.)




2. Double insulated tools may be used in either of the 120 volt outlets shown in the preceding illustration. **(See Outlets for 2-Prong Plug.)**

Extension Cords

1. ***Grounded*** tools require a three wire extension cord. ***Double Insulated*** tools can use either a two or three wire extension cord.
2. As the distance from the supply outlet increases, you must use a heavier gauge extension cord. Using extension cords with inadequately sized wire causes a serious drop in voltage, resulting in loss of power and possible tool damage.
(See Table A.)
3. The smaller the gauge number of the wire, the greater the capacity of the cord. For example, a 14 gauge cord can carry a higher current than a 16 gauge cord.
(See Table A.)
4. When using more than one extension cord to make up the total length, make sure each cord contains at least the minimum wire size required. **(See Table A.)**
5. If you are using one extension cord for more than one tool, add the nameplate amperes and use the sum to determine the required minimum cord size.
(See Table A.)
6. If you are using an extension cord outdoors, make sure it is marked with the suffix "W-A" ("W" in Canada) to indicate it is acceptable for outdoor use.
7. Make sure the extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified electrician before using it.
8. Protect the extension cords from sharp objects, excessive heat, and damp or wet areas.

RECOMMENDED MINIMUM WIRE GAUGE FOR EXTENSION CORDS* (120/240 VOLT)					
NAMEPLATE AMPERES (at full load)	EXTENSION CORD LENGTH				
	25 Feet	50 Feet	75 Feet	100 Feet	150 Feet
0 – 2.0	18	18	18	18	16
2.1 – 3.4	18	18	18	16	14
3.5 – 5.0	18	18	16	14	12
5.1 – 7.0	18	16	14	12	12
7.1 – 12.0	18	14	12	10	-
12.1 – 16.0	14	12	10	-	-
16.1 – 20.0	12	10	-	-	-
TABLE A * Based on limiting the line voltage drop to five volts at 150% of the rated amperes.					

Symbology

	Double Insulated	V~	Volts Alternating Current
	Canadian Standards Association	A	Amperes
	Underwriters Laboratories, Inc.	n0 xxxx/min.	No Load Revolutions per Minute (RPM)

SPECIFICATIONS

Electrical Requirements	120 V~ / 60 Hz
Load Current	140 Watt
Rotations Per Minute	3800
Arbor Diameter	10mm
Power Cord	6' 18 AWG 3C
Sharpens Blade Sizes	4" - 15-3/4" Diameter
Angle Gauge Range	0 - 25° Left/Right
Mounting Hole Size	3/8" Diameter (4 holes)

UNPACKING

When unpacking, check to make sure that the item is intact and undamaged. If any parts are missing or broken, please call Harbor Freight Tools at the number shown on the cover of this manual as soon as possible.

SET UP INSTRUCTIONS



Read the **ENTIRE** IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

⚠ WARNING

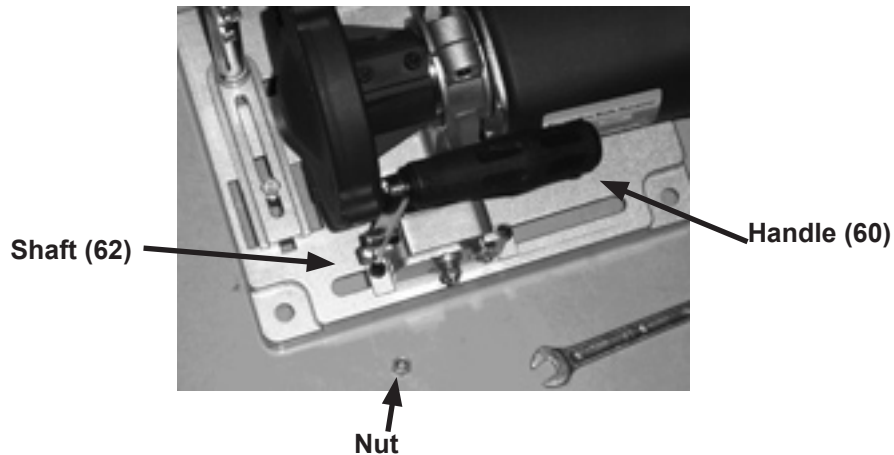
Risk of accidental starting; resulting in serious personal injury. Turn the Power Switch of the tool to its "OFF" position and unplug the tool from its electrical outlet before assembling or making any adjustments to the tool.

Note: For additional information regarding the parts listed in the following pages, refer to the Assembly Diagram near the end of this manual.

Mounting

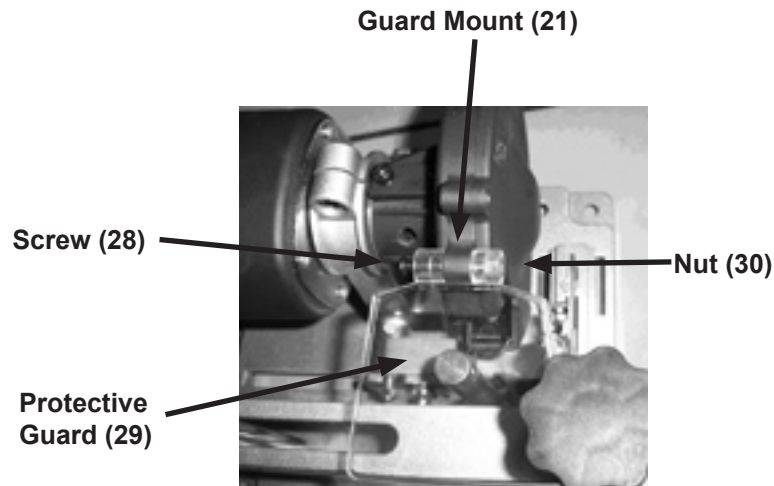
1. Only mount the Blade Sharpener on a solid, level surface capable of bearing the weight and vibration of the equipment while it is running. Verify that there are no hidden wires, utility lines, or hardened surfaces beneath the surface of the intended mounting area before drilling.
2. Using the holes in the Base (74) as a template, mark the area where the Blade Sharpener is to be mounted.
3. Drill four 3/8" holes in the surface and secure Blade Sharpener with appropriate hardware (not included).

Installing the Handle (60)



1. Unscrew the nut on the Handle (60), install the Handle (60) onto the Shaft (62) and secure the Handle with the Nut. See above.

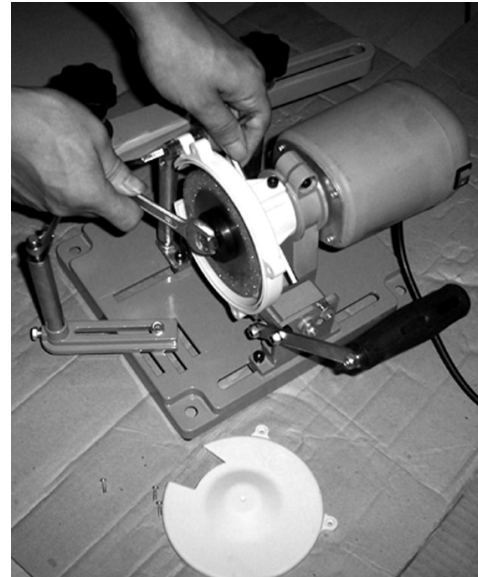
Installing the Protective Guard



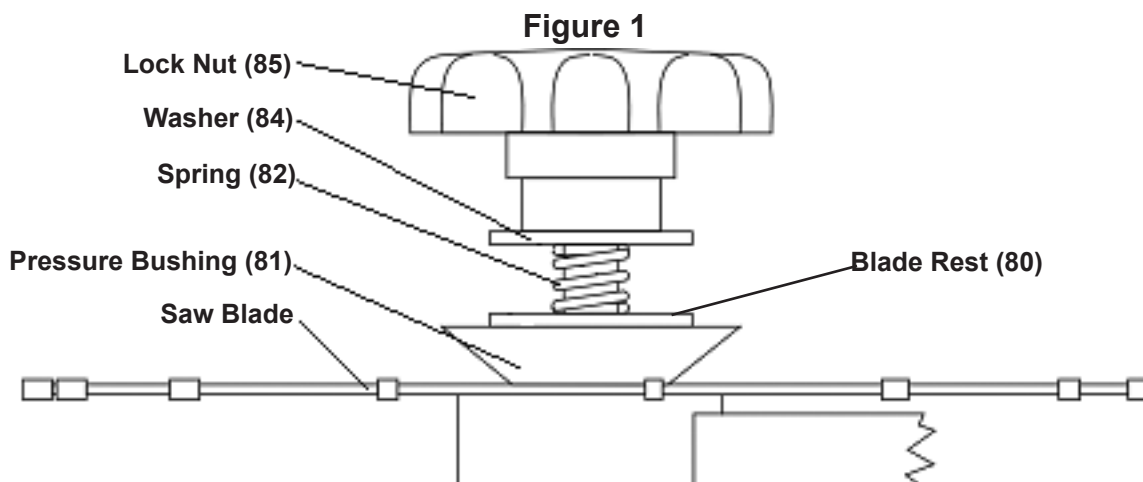
1. Place the Protective Guard (29) over the Guard Mount (21) eyelet and secure with Screw (28) and Nut (30)

Installing the Grinding Wheel

1. Remove the three Screws (27) then take off the Disk Cover (26).
2. Insert the hex key wrench into the hole, turn the wrench counterclockwise to unscrew the M10 nut (25).



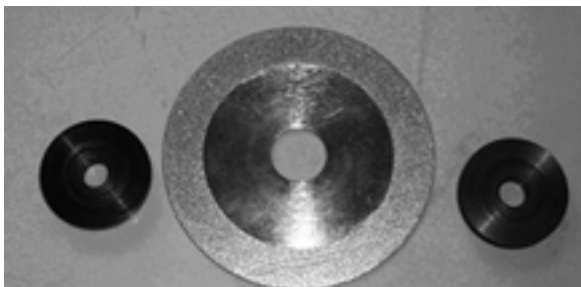
3. Remove the Grinding Wheel Base (24) and the Grinding Wheel (23), then take off the Grinder Lock Cap (22).
4. Put one of the washers onto the Arbor (19) and install the emery grinding wheel on the arbor (19). The bevel edge of the grinding wheel should face the M10 nut (25); adjust to fit properly. Place the other washer onto the Arbor (19).
5. Fasten the M10 nut (25) clockwise, put on the Disk Cover (26), secure using the three Screws (27).
6. Remove the hex key wrench. Never operate tool before taking off the hex key wrench or without the Disk Cover (26) mounted.



7. Remove Lock Nut (83), Spring (82), Pressure Bushing (81) and all washers from Blade Rest (80). Assemble saw blade onto the Screw as shown in Figure 1.

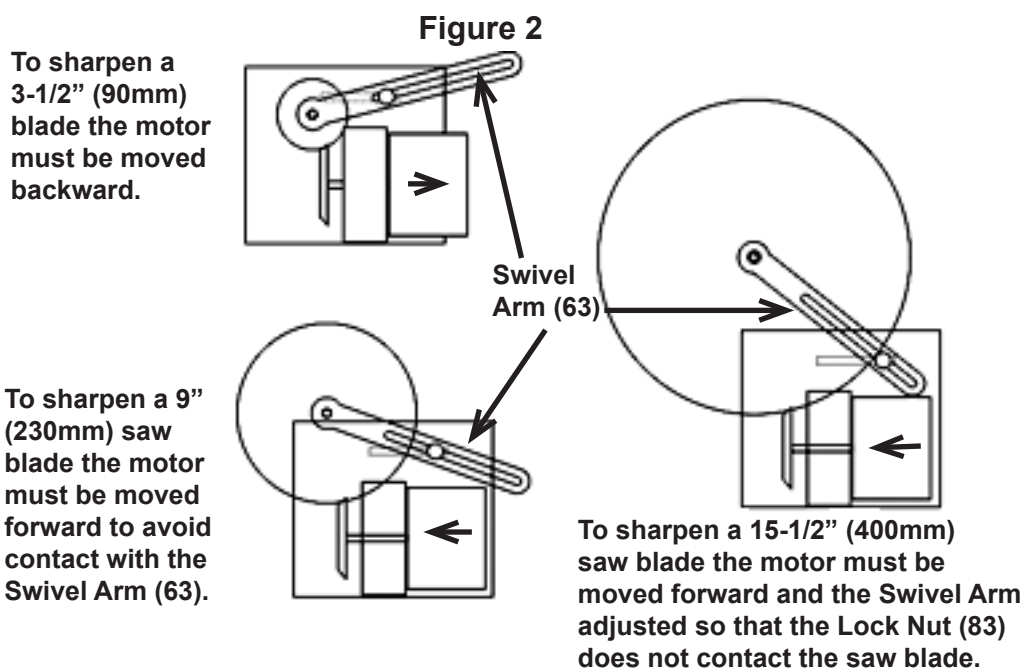
8. Center the saw blade and secure it in place. Do not overtighten; the Blade should still be able to turn. Make sure the blade is level (perpendicular to axis of the screw).

9. The shaft of diamond grinding wheel is 20mm diameter, and is mounted on the Arbor (19) using the Grinder Lock Cap (22) and the Grinding Wheel Base (24).



Grinder Lock Cap (22) Grinding Wheel (23) Grinding Wheel Base (24)

10. Adjust the Swivel Arm (63) of the Saw Sharpener to compensate for the size of the saw blade. Loosen the Lock Nut (83), and rotate and/or extend the Swivel Arm as necessary, so that the saw blade face or the cutting edge is mounted towards the Grinding Wheel (23). To make room for larger blades, the motor may also have to be moved.
11. To move the motor, loosen the Screws (49) that secure it to the Base (74) and slide it along the track to the new position. Tighten Screws. The Motor can be moved to a variety of positions, depending on the intended size of the blade to be sharpened, as shown in Figure 2.



12. For greater stability and accuracy, position the Saw Blade Support (66) as close as possible to the Grinding Wheel.

OPERATING INSTRUCTIONS



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

General operating instructions

1. Risk of serious personal injury from accidental starting or electric shock. Turn the Power Switch of the tool to its "OFF" position and unplug the tool from its electrical outlet before attaching the saw blade to be sharpened.
2. Position the blade according to which saw surface will be sharpened, the tooth face, or the tooth back, as shown in Figure 3. The Diamond Grinding Wheel can only be used to sharpen the tooth face. The emery grinding wheel can be used to sharpen either the tooth face, or the tooth back.

Figure 3

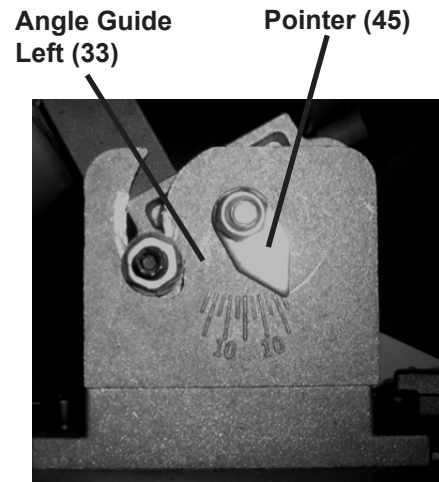
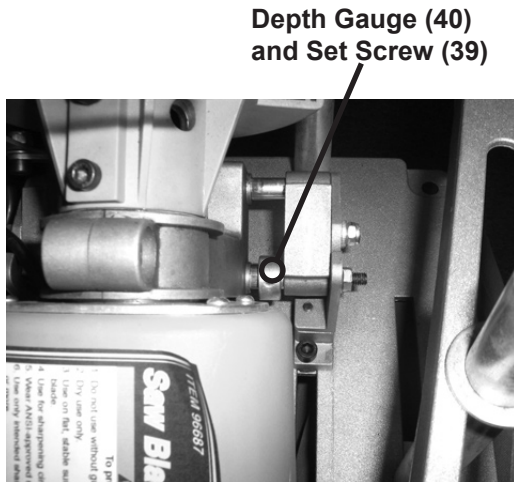


Position the Grinding Wheel here to sharpen the tooth face.



Position the Grinding Wheel here to sharpen the tooth back (emery grinding wheel only)

3. Loosen the Set Screw (39) in the middle of the Depth Gauge (40) and adjust the saw blade so that the Grinding Wheel (23) is positioned to sharpen the tips, but does not touch the tooth bottom.



4. The Motor can be tilted to set an angle in the saw blade or to sharpen blades with set teeth. Loosen the screws set in both sides to the Angle Guide (33, 46) and move the Motor to set the desired angle.
5. After all adjustments are complete, position the Blade Stop (79) lightly against the saw blade.
6. Plug the Saw Blade Sharpener into a standard 120V electrical outlet. Wearing safety goggles, face guard and protective clothing, secure the saw blade and flip the Switch (2) to the "ON" position.
7. Use the Handle (60) to apply the Grinding Stone to the saw blade until it reaches the Depth Gauge (40).
8. Pull the Handle back, turn the saw blade, and sharpen the next tooth. Repeat this process until all saw teeth are sharpened.
9. To prevent accidents, turn off the tool and disconnect its power supply after use. Clean, then store the tool indoors out of children's reach.

MAINTENANCE AND SERVICING

WARNING

Risk of serious personal injury from accidental starting or electric shock. Turn the Power Switch of the tool to its “OFF” position and unplug the tool from the electrical outlet before performing any inspection, maintenance, or cleaning procedures.

Damaged equipment can fail, causing serious personal injury. Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.

Cleaning, maintenance, and lubrication

1. **BEFORE EACH USE**, inspect the general condition of the tool. Check for loose screws, misalignment or binding of moving parts, cracked or broken parts, damaged electrical wiring, and any other condition that may affect its safe operation.
2. **AFTER USE**, clean external surfaces of the tool with clean, moist cloth.
3. Make sure all ventilation slots are kept clear to prevent motor damage.
4. Replace Grinding Wheel when it becomes worn.
5. **WARNING! If the supply cord of this power tool is damaged, it must be replaced only by a qualified service technician.**

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

PARTS LIST

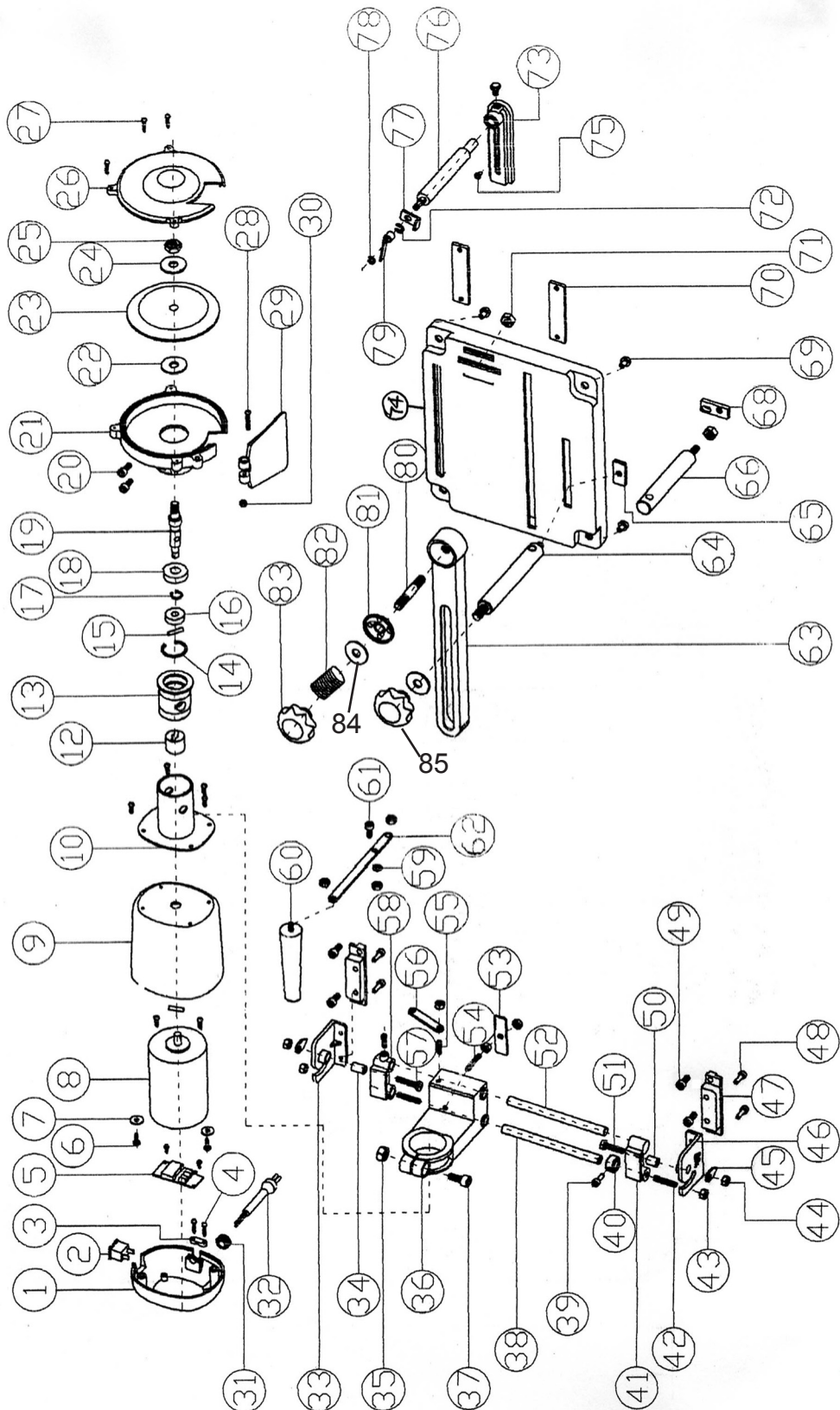
Part	Description	Part	Description	Part	Description
1	Motor Cover	30	Nut	58	Left Bushing Guide
2	Switch	31	Power Cord Protector	59	Washer
3	Power Cord Support	32	Power Cord	60	Handle
4	Screw	33	Left Angle Guide	61	Screw
5	Switch Circuit Board	34	Steel Bushing	62	Shaft
6	Screw	35	Nut	63	Swivel Arm
7	Washer	36	Motor Retainer	64	Swivel Arm Arbor
8	Motor	37	Screw	65	Washer
9	Motor Housing	38	Rear Guide Rod	66	Saw Blade Support
10	Motor Neck	39	Set Screw	67	Screw
12	Connector	40	Depth Gauge	68	Washer
13	Bearing Bushing	41	Right Bushing Guide	69	Rubber Feet
14	Retaining Pin	42	Screw	70	Washer
15	Pin	43	Screw	71	Screw
16	Bearing	44	Screw	72	Retaining Ring
17	Retaining Ring	45	Angle Gauge	73	Saw Blade Catch
18	Bearing	46	Right Angle Guide	74	Base
19	Arbor	47	Right Guide	75	Screw
20	Screw	48	Screw	76	Swivel Arm
21	Guard Mount	49	Screw	77	Washer
22	Grinder Lock Cap	50	Steel Bushing	78	Ring
23	Grinding Wheel	51	Screw	79	Blade Stop
24	Grinding Wheel Base	52	Front Bushing Guide	80	Blade Rest
25	Nut M10	53	Adjust Base	81	Pressure Bushing
26	Disk Cover	54	Screw	82	Spring
27	Screw	55	Screw	83	Lock Nut
28	Screw	56	Pull Rod	84	Mounting Washer
29	Protective Guard	57	Screw	85	Lock Nut

Record Product's Serial Number Here: _____

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

ASSEMBLY DIAGRAM



LIMITED 90 DAY WARRANTY

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

3491 Mission Oaks Blvd. • PO Box 6009 • Camarillo, CA 93011 • (800) 444-3353