



OPERATOR'S MANUAL

Cat. No.

1680-20

1680-21



HEAVY-DUTY SUPER HAWG™

TO REDUCE THE RISK OF INJURY, USER MUST READ AND UNDERSTAND OPERATOR'S MANUAL.

GENERAL POWER TOOL SAFETY WARNINGS

⚠ WARNING READ ALL SAFETY WARNINGS AND ALL INSTRUCTIONS. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. **Save all warnings and instructions for future reference.** The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

WORK AREA SAFETY

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- 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.
- Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

ELECTRICAL SAFETY

- Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
- Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- 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.
- 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.
- If operating a power tool in a damp location is unavoidable, use a ground fault circuit interrupter (GFCI) protected supply. Use of an GFCI reduces the risk of electric shock.

PERSONAL SAFETY

- 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.
- Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.

- 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.
- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

POWER TOOL USE AND CARE

- 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.
- 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.
- Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- 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.
- Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- Use the power tool, accessories and tool bits etc. in accordance with these instructions, 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.

SERVICE

- 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.

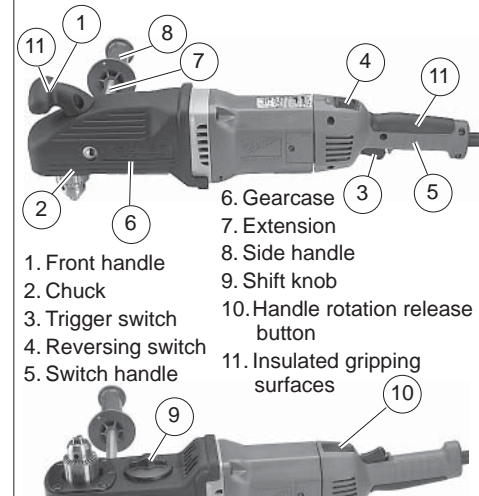
SPECIFIC SAFETY RULES

- Use auxiliary handle(s), if supplied with the tool. Loss of control can cause personal injury.
- Hold power tool by insulated gripping surfaces, when performing an operation where the cutting accessory may contact hidden wiring or its own cord. Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.
- Maintain labels and nameplates. These carry important information. If unreadable or missing, contact a MILWAUKEE service facility for a free replacement.
- WARNING Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
 - lead from lead-based paint
 - crystalline silica from bricks and cement and other masonry products, and
 - arsenic and chromium from chemically-treated lumber.
 Your 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.

SYMBOLGY

A	Amperes
V	Volts
~	Alternating Current
n₀ XXXX min.⁻¹	No Load Revolutions per Minute (RPM)
cULUS	Underwriters Laboratories, Inc. United States and Canada
NOMANCE	Mexican Approvals Marking

FUNCTIONAL DESCRIPTION



SPECIFICATIONS

Cat. No.	Volts AC only	Speed	No Load RPM	Capacity				
				Steel	Wood			
				Twist Bit	Auger Bit	Ship Auger Bit	Selfeed Bit	Hole Saw
1680-20 & 1680-21	120	High Low	1750 450	5/16" 1/2"	1-1/2" 1-1/2"	1-1/2" 1-1/2"	2-9/16" 4-5/8"	4" 6"

GROUNDING

⚠ WARNING Improperly connecting the grounding wire can result in the risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the tool. Never remove the grounding prong from the plug. Do not use the tool if the cord or plug is damaged. If damaged, have it repaired by a **MILWAUKEE** 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
Tools marked "Grounding Required" have a three wire cord and three prong grounding plug. The plug must be connected to a properly grounded outlet (See Figure A). 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. 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.

Your 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 Figure A.

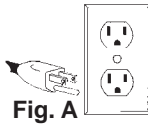


Fig. A

Double Insulated Tools:

Tools with Two Prong Plugs

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. Double Insulated tools may be used in either of the 120 volt outlets shown in Figures B and C.

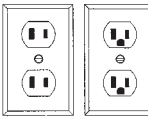


Fig. B Fig. C

EXTENSION CORDS

Grounded tools require a three wire extension cord. Double insulated tools can use either a two or three wire extension cord. 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. Refer to the table shown to determine the required minimum wire size.

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. When using more than one extension cord to make up the total length, be sure each cord contains at least the minimum wire size required. 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 wire size.

Guidelines for Using Extension Cords

- If you are using an extension cord outdoors, be sure it is marked with the suffix "W-A" ("W" in Canada) to indicate that it is acceptable for outdoor use.
- Be sure your extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified person before using it.
- Protect your extension cords from sharp objects, excessive heat and damp or wet areas.

Nameplate Amperes	Extension Cord Length				
	25'	50'	75'	100'	150'
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	16	14	12	10	--
12.1 - 16.0	14	12	10	--	--
16.1 - 20.0	12	10	--	--	--

* Based on limiting the line voltage drop to five volts at 150% of the rated amperes.

READ AND SAVE ALL INSTRUCTIONS FOR FUTURE USE.

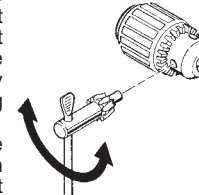
ASSEMBLY

⚠ WARNING To reduce the risk of injury, always unplug tool before attaching or removing accessories or making adjustments. Use only specifically recommended accessories. Others may be hazardous.

Installing Bits into Keyed Chucks

1. Unplug tool.
2. Open the chuck jaws wide enough to insert the bit. Be sure the bit shank and chuck jaws are clean. Dirt particles may prevent the bit from lining up properly.
3. Insert the bit into the chuck. Center the bit in the chuck jaws and lift it about 1/16" off of the bottom. Tighten the chuck jaws by hand to align the bit.
4. Place the chuck key in each of the three holes in the chuck, turning it clockwise to tighten the chuck securely.

NOTE: Never use a wrench or means other than a chuck key to tighten or loosen the chuck.
5. To remove the bit, insert the chuck key into one of the holes in the chuck and turn it counterclockwise.



Bit Selection

- Use sharp bits. Sharp bits are less likely to bind when drilling.
- Use the proper bit for the job. There are many types of bits designed for specific purposes. Check the information on the bit's packaging for proper usage.
- Do not use bits larger than the rated capacity of the drill. Gear damage or motor overload may result (see "Specifications").

Side Handle

The side handle can be installed on either side of the tool. To install the side handle, thread it into the socket on the desired side of the tool and tighten it securely.

Handle Rotation

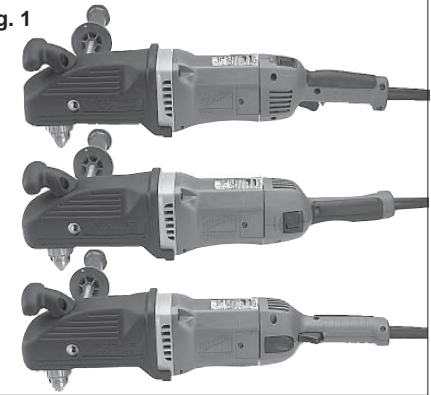
The adjustable switch handle allows the user to adjust the handle to three positions (90° apart) for optimum operating position.

1. Unplug the tool.
2. Press in and hold the handle rotation release button and rotate the switch handle to one of the three handle positions.

3. Release the handle rotation release button. The adjustable handle has detents which allow the handle to snap into position. Make sure the handle snaps firmly into position and does not rotate.

The tool will not operate if the handle is not locked securely in one of the three positions.

Fig. 1



⚠ WARNING To reduce the risk of injury, wear safety goggles or glasses with side shields.

Chuck Removal

This tool is equipped with a threaded spindle to hold the chuck. Before removing the chuck, unplug the tool and open the chuck jaws. A left-handed thread screw is located inside the chuck to prevent the chuck from loosening when the tool is operated in reverse direction. Remove the screw by turning it clockwise.

To remove the chuck, hold the tool so that only the side of the chuck rests firmly and squarely on a solid workbench. Insert the chuck key or a chuck remover bar in one of the keyholes. Turn the chuck so the key is at about a 30° angle to the bench top and strike the key sharply with a hammer so the chuck turns in a counterclockwise direction (looking from the front of the tool). This should loosen the chuck from the spindle which has a right hand thread making it easy to remove the chuck by hand.

NOTE: When replacing the chuck, always replace the left hand thread screw in the chuck.

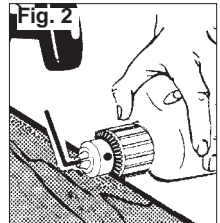


Fig. 2

OPERATION

WARNING To reduce the risk of injury, wear safety goggles or glasses with side shields.

WARNING To reduce the risk of personal injury when drilling, hold the tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its own cord. Contact with a "live" wire will make exposed metal parts of the tool "live" and shock the operator

WARNING To reduce the risk of injury, hold or brace securely. Always be prepared for bit binding and drill reaction.

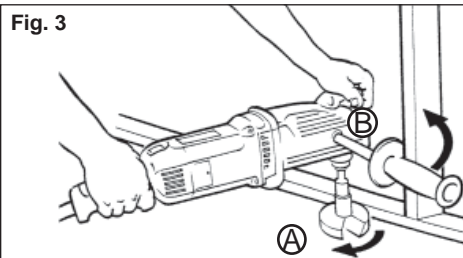
Clutch

The Super Hawg™ has a clutch that is active when the tool is running in low speed only. The clutch disengages the bit from the geartrain to protect the tool. When a high load is encountered, the clutch will slip and a ratcheting sound will be heard. Release the trigger switch when the clutch begins to slip (see "Bit Binding"). Continuous use of the tool when the clutch is slipping will reduce the life of the mechanism.

Bit binding

If the bit binds, the drill will suddenly react in the opposite direction of the rotation of the bit. Figure 3 shows the path of reaction, (B) if the drill bit binds while being driven in forward (A). Reduce the chances of a sudden reaction by following the instructions listed below. Prepare for a sudden reaction by holding or bracing securely.

Fig. 3



To reduce the chance of bit binding:

- Use sharp bits. Sharp bits are less likely to bind when drilling.
- Use the proper bit for the job. There are many types of bits designed for specific purposes.
- Use the proper speed for the size bit. Larger bits should be run at the lower speed (see "Specifications"). Driving larger bits at high speeds will increase the chance of the bit binding and increase the chance of reaction.

- Keep selffeed bits aligned with the work surface so bits go in straight (see "Drilling").
- Avoid drilling warped, wet, knotty, and/or pitchy material if possible.
- Avoid drilling in material that you suspect contains hidden nails or other things that may cause the bit to bind.

The direction of reaction is always opposite of the direction of bit rotation. Reaction is even more likely to occur when enlarging already existing holes and at the point when the bit breaks through the other side of the material.

If the bit does bind:

1. Release the trigger immediately.
2. Reverse the motor.
3. Remove the bit from the work and start again.
4. Do not pull the trigger on and off to attempt to start a stalled bit. This will damage the drill.

Bracing for forward rotation

When drilling in forward, the bit will rotate in a clockwise direction. If the bit binds in the hole, the bit will come to a sudden stop and drill will suddenly react in a counterclockwise direction.

There are two ways to properly brace the Super Hawg™ for forward rotation (Fig. 4 & 5).

- A. Forward (clockwise) rotation
- B. Reaction
- C. Brace drill with side handle here
- D. Brace drill with gearcase here

If the bit binds, the side handle or the gearcase braced against the stud will hold the drill in position.

Fig. 4

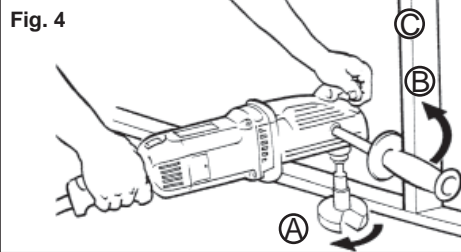
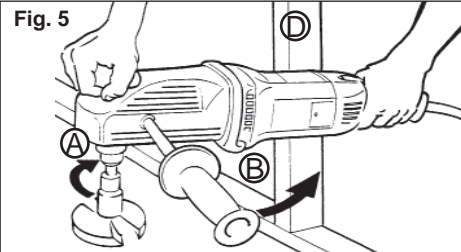


Fig. 5



Bracing for reverse rotation

Fig. 6

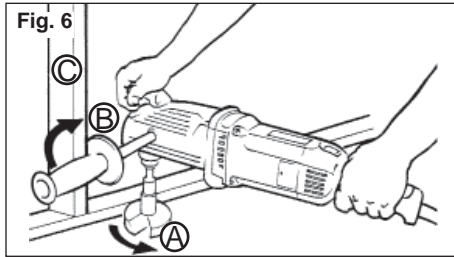
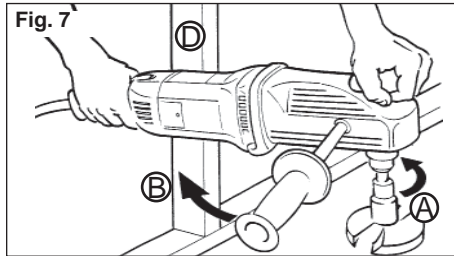


Fig. 7



When drilling in reverse, the bit will rotate in a counterclockwise direction. If the bit binds in the hole, the bit will come to a sudden stop and the drill will suddenly react in a clockwise direction.

There are two ways to properly brace the Super Hawg™ for reverse rotation (Fig. 6 & 7).

- A. Reverse (counterclockwise) rotation
- B. Reaction
- C. Brace drill with side handle here
- D. Brace drill with motor gearcase here

If the bit binds, the side handle or the gearcase braced against the stud will hold the drill in position.

Shifting Speeds

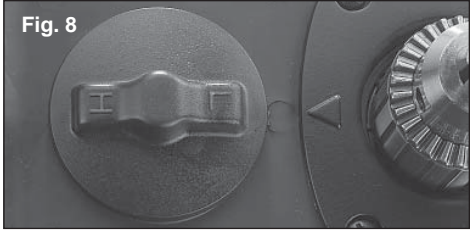
WARNING To reduce the risk of injury and damage to the tool, shift speeds only when the drill is at a stop. The shift knob is located near the chuck and should not be shifted while the chuck is moving.

Use the shift knob to select High or Low speed (Fig. 8). High speed (1750 RPM) is the low torque setting. Low speed (450 RPM) is the high torque setting. See the "Specifications" section for bit capacity limits under high and low speeds.

Always turn off the switch and shift speeds while the tool is stopped. Never shift the drill while it is moving or when it is under load.

NOTE: The clutch is active in low speed only.

Fig. 8



Reversing

A reversing switch is located opposite the trigger switch for removal of bits from holes. Permit the motor to come to a complete stop before reversing. Reversing the tool with the gears in motion may cause severe damage. When removing selffeed bits from partially drilled holes, flick the trigger switch when the tool is in reverse to free the threaded pilot screw. When the threads are loose, lift the bit from the workpiece with the motor stopped.

WARNING To reduce the risk of injury, keep hands and cord away from the bit and all moving parts.

Starting, Stopping and Controlling Speed

1. To start the tool, pull trigger switch.
2. To stop the tool, release the trigger switch.

Drilling

WARNING To reduce the risk of explosion, electric shock and property damage, always check the work area for hidden pipes and wires before drilling.


1. Before drilling, be sure the workpiece is clamped securely. A poorly secured piece of material may result in personal injury or inaccurate drilling. Use backing material to prevent damage to the workpiece during breakthrough. When drilling in light gauge metal or wood, use a wooden block to back up the material to prevent damage to the workpiece.

2. When starting a hole, place the drill bit on the work surface and apply firm pressure. To start a selffeed bit, run the threaded feed screw into the work by flicking the trigger switch, permitting the bit to coast until the teeth contact the work surface. Align the bit properly before proceeding. This will reduce cocking and jamming when starting.

When drilling in metal, mark the center of the hole to be drilled with a center punch to give the bit a start and to prevent it from "walking." Lubricate the drill bit with cutting oil when drilling iron or steel. Use a coolant when drilling nonferrous metals such as copper, brass or aluminum.

3. Always apply pressure in line with the bit. Use enough pressure to keep the drill biting, but do not push hard enough to cause the bit to bind. When using twist drill bits, pull the bit out frequently to clear chips from the flutes. When using selffeed bits, if the clutch slips, pull the bit up very slightly and then push it toward the workpiece. Repeat this several times.
4. Reduce pressure and ease the bit through the last part of the hole. While the tool is still running, pull the bit out of the hole to prevent jamming. When using selffeed bits, decrease the drilling pressure when the feed screw point breaks through the workpiece. Proceed with steady, even pressure.

MAINTENANCE


 **WARNING** To reduce the risk of injury, always unplug your tool before performing any maintenance. Never disassemble the tool or try to do any rewiring on the tool's electrical system. Contact a *MILWAUKEE* service facility for ALL repairs.

Maintaining Tools

Keep your tool in good repair by adopting a regular maintenance program. Before use, examine the general condition of your tool. Inspect guards, switches, tool cord set and extension cord for damage. Check for loose screws, misalignment, binding of moving parts, improper mounting, broken parts and any other condition that may affect its safe operation. If abnormal noise or vibration occurs, turn the tool off immediately and have the problem corrected before further use. Do not use a damaged tool. Tag damaged tools "DO NOT USE" until repaired (see "Repairs").

Under normal conditions, relubrication is not necessary until the motor brushes need to be replaced. After six months to one year, depending on use, return your tool to the nearest *MILWAUKEE* service facility for the following:

- Lubrication
- Brush inspection and replacement
- Mechanical inspection and cleaning (gears, spindles, bearings, housing, etc.)
- Electrical inspection (switch, cord, armature, etc.)
- Testing to assure proper mechanical and electrical operation

 **WARNING** To reduce the risk of injury, electric shock and damage to the tool, never immerse your tool in liquid or allow a liquid to flow inside the tool.

Cleaning

Clean dust and debris from vents. Keep the tool handles clean, dry and free of oil or grease. Use only mild soap and a damp cloth to clean your tool since certain cleaning agents and solvents are harmful to plastics and other insulated parts. Some of these include: gasoline, turpentine, lacquer thinner, paint thinner, chlorinated cleaning solvents, ammonia and household detergents containing ammonia. Never use flammable or combustible solvents around tools.

Repairs

If your tool is damaged, return the entire tool to the nearest service center.

ACCESSORIES

 **WARNING** To reduce the risk of injury, always unplug the tool before attaching or removing accessories. Use only specifically recommended accessories. Others may be hazardous.