



## OPERATOR'S MANUAL

### Catalog No.

1670-1

1675-1

1675-6

1676-6



### HEAVY-DUTY HOLE 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

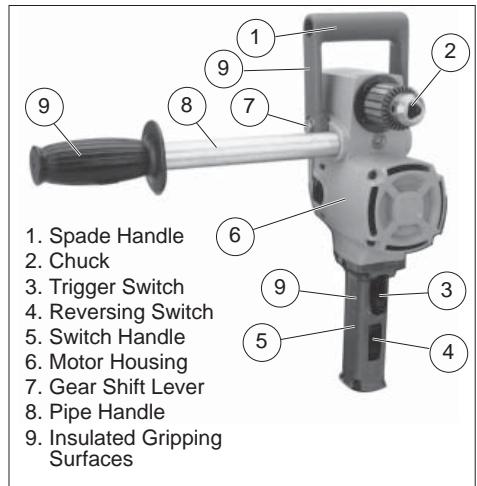
- Use auxiliary handle(s), if supplied with the tool. Loss of control can cause personal injury.
- Hold power tool by insulated gripping surfaces, when performing an operation where the cutting accessory may contact hidden wiring or its own cord. Cutting accessory contacting a "live" wire may make exposed 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.

## SYMBOLLOGY

<b>A</b>	Amps
<b>V</b>	Volts
<b>~</b>	Alternating Current Only
<b>n<sub>0</sub> XXXXmin.<sup>-1</sup></b>	No Load Revolutions per Minute (RPM)
<b>cULUS</b>	Underwriters Laboratories, Inc. United States and Canada
<b>NOMANCE</b>	Mexican Approvals Marking

## FUNCTIONAL DESCRIPTION



1. Spade Handle
2. Chuck
3. Trigger Switch
4. Reversing Switch
5. Switch Handle
6. Motor Housing
7. Gear Shift Lever
8. Pipe Handle
9. Insulated Gripping Surfaces

## SPECIFICATIONS

Cat. No.	Volts AC	Speed	No Load RPM	Steel Capacity		Wood Capacity	
				Twist Bit	Auger Bits	Ship Auger Bits	Selffeed Bit
1670-1	120	-	900	7/16"	1-1/2"	1-1/2"	2-9/16"
1675-1	120	High Low	1200 300	5/16" 1/2"	1-1/8" 1-1/2"	1-1/4" 1-1/2"	1-3/8" 4-5/8"
1675-6	120	High Low	1200 300	5/16" 1/2"	1-1/8" 1-1/2"	1-1/4" 1-1/2"	1-3/8" 4-5/8"
1676-6	120	High Low	1200 300	5/16" 1/2"	1-1/8" 1-1/2"	1-1/4" 1-1/2"	1-3/8" 4-5/8"

## 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.

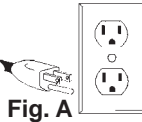


Fig. A

### 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.

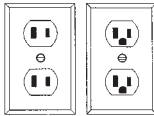


Fig. B Fig. C

## 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.

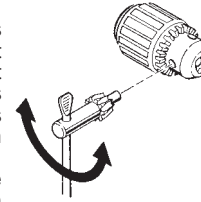
**READ AND SAVE ALL INSTRUCTIONS FOR FUTURE USE.**

## 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. Tighten securely.
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.

### Pipe Handle

The pipe handle may be used on either side of the tool. Thread pipe handle into one of the threaded holes in the motor housing.

### Spade Handle

The spade handle can be attached to the tool in three positions. Remove the hex head screws which secure the handle. Remove the handle and move it to the desired position. To mount the handle in position C, it is necessary to reverse the mounting holes by turning the handle around.

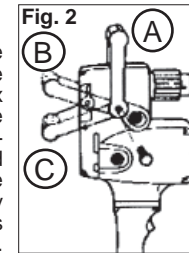


Fig. 2

## 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 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** When drilling with a single speed drill or in HI with a two speed drill, always hold the drill securely using the pipe handle, or brace the drill against a solid fixed object in preparation for a sudden reaction. When drilling in LO with a two speed drill, always brace the drill against a solid fixed object in preparation for a sudden reaction. When drilling, never use your body to brace drill.

Never put your hands (or other body parts) between the part of the drill being braced and the object it is being braced against. Hands (or other body parts) that are in the path of the reaction can be pinched, crushed and broken.

### Bit binding

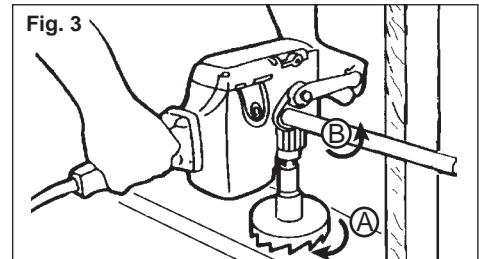


Fig. 3

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). The operator should reduce the chances of a sudden reaction by following the instructions listed below.



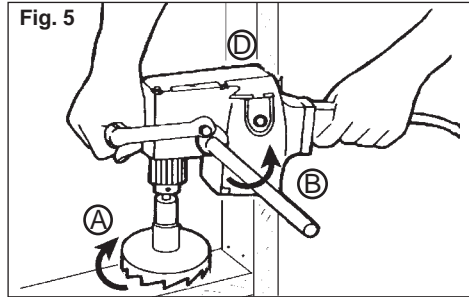
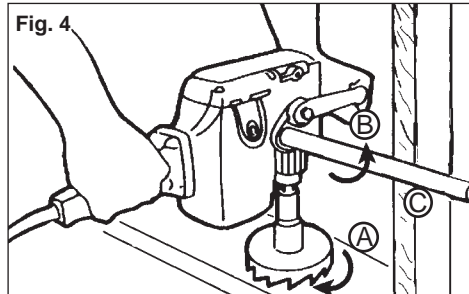
The operator should also prepare for a sudden reaction by holding securely using the pipe handle or bracing against a solid fixed object.

#### 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. Driving larger bits at high speeds will increase the chance of the bit binding and increase the chance of reaction.
- 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.

#### Bracing for forward rotation



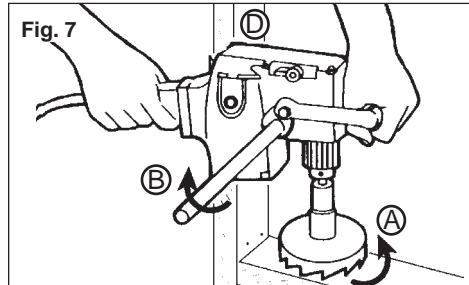
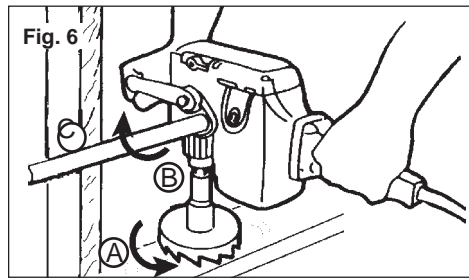
When drilling in forward, the bit will rotate in a clockwise direction. If the bit binds in the hole, the bit will come to a sudden stop and drill will suddenly react in a counterclockwise direction.

Figures 4 and 5 show examples of a Hole Hawg® properly braced for forward rotation.

- A. Forward (clockwise) rotation
- B. Reaction
- C. Brace drill with pipe handle here
- D. Brace drill with motor housing here

If the bit binds, the pipe handle or the motor housing braced against the stud will hold the drill in position.

#### Bracing for reverse rotation



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. Figures 6 and 7 show examples of the Hole Hawg® properly braced for reverse rotation.

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

If the bit binds, the pipe handle or the motor housing braced against the stud will hold the drill in position.

#### Reversing

A reversing switch is located below 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, a flick of the trigger switch will free the threaded pilot screw. When the threads are loose, lift the bit from the workpiece with the motor stopped.

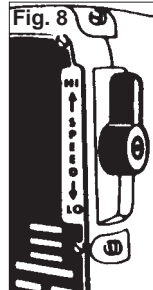
#### Shifting Speeds

Cat. No. 1675-1 has a gear shift lever on the right side of the gear case.

The high setting (1200 RPM HI) is the low torque setting and is designed for driving Selffeed bits 1-3/8" in diameter and smaller.

The low setting (300 RPM LO) is the high torque setting and is designed for driving Selffeed bits 1-1/2" in diameter and larger.

Always turn off the switch and shift while the tool is coasting to a stop. Never shift the drill while it is moving at full speed, when it is under load, or when it is stopped.



**WARNING** To reduce the risk of electric shock, check work area for hidden pipes and wires before drilling or driving screws.

#### Drilling

Before drilling, clamp down the material securely. A poorly secured piece of material may result in personal injury or inaccurate drilling. When drilling in light gauge metal or wood, use a wooden block to back up the material to prevent damage to the workpiece.

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.

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. To reduce jamming on breakthrough, decrease the drilling pressure when the feed screw point breaks through the workpiece. Proceed with steady, even pressure.

**WARNING** To reduce the risk of injury, always wear eye protection.

#### Chuck Removal

To remove the chuck from the drill:

1. Unplug tool.
2. Fully open the chuck jaws
3. Remove the left-handed thread screw from inside the chuck by turning it clockwise.
4. Pull the chuck off of the spindle.

**NOTE:** If the chuck does not pull off of the spindle easily, tap the side of the chuck with a hammer to loosen it. If this doesn't work, contact a MILWAUKEE 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.

#### 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.

**READ AND KEEP THIS FOR FUTURE REFERENCE**

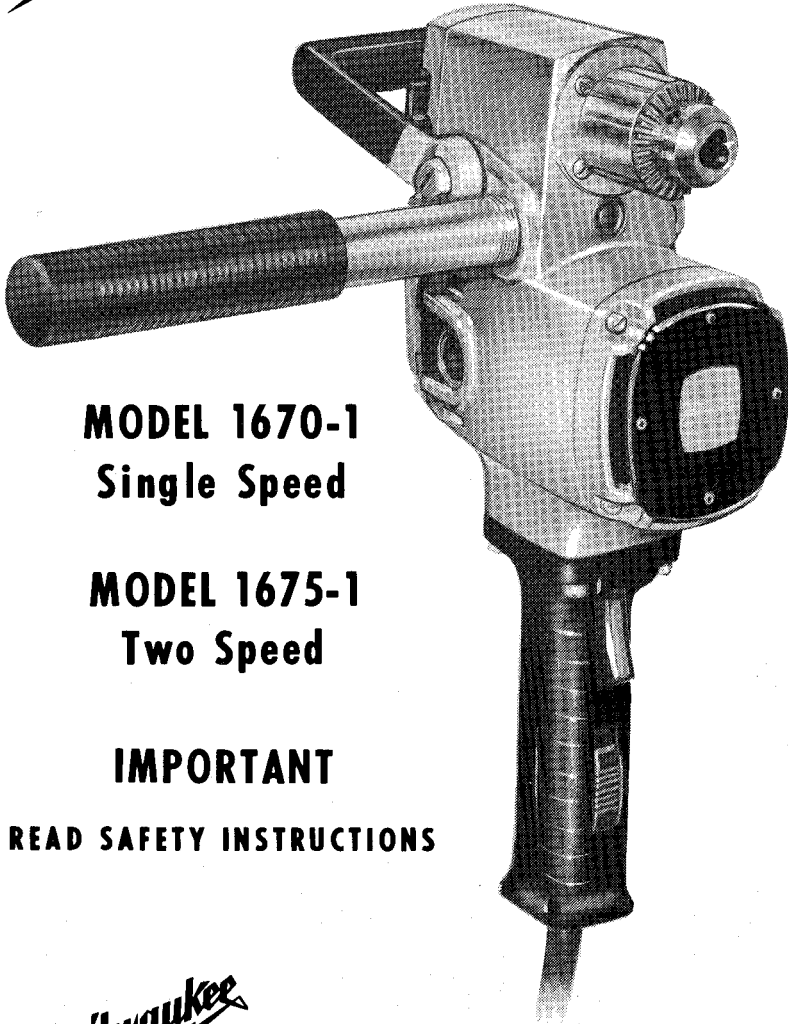
# The Care and Operation of

YOUR NEW

**Milwaukee**

HEAVY-DUTY

# HOLE HAWG



**MODEL 1670-1**  
**Single Speed**

**MODEL 1675-1**  
**Two Speed**

**IMPORTANT**

**READ SAFETY INSTRUCTIONS**

**Milwaukee**  
A SUBSIDIARY OF  
**Amstar**  
CORPORATION

*Quality Products of*

**MILWAUKEE ELECTRIC TOOL CORP.**

THIS SYMBOL



IS YOUR ASSURANCE –

1. That every tool manufactured by MILWAUKEE is produced in accordance with applicable Standards for Safety of Underwriters' Laboratories and American National Standards (ANSI).
2. That compliance with applicable safety standards is assured by independent inspection and testing conducted by Underwriters' Laboratories (UL).
3. That every motorized tool manufactured by MILWAUKEE is fully inspected.
4. That every tool has with it adequate instructions and a list of safety rules for the protection of the user.

### SAFETY INSTRUCTIONS FOR ALL POWER TOOLS

1. **KNOW YOUR POWER TOOL.** Read owner's manual carefully. Learn its applications and limitations as well as the specific potential hazards peculiar to this tool.
2. **GROUND ALL TOOLS—UNLESS DOUBLE-INSULATED.** If tool is equipped with three-prong plug, it should be plugged into a three-hole electrical receptacle. If adapter is used to accommodate two-pronged receptacle, the adapter wire must be attached to a known ground. Never remove third prong.
3. **KEEP GUARDS IN PLACE** and in working order.
4. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
5. **AVOID DANGEROUS ENVIRONMENT.** Don't expose power tools to rain or use in damp, wet, or gaseous or explosive locations. Keep work area well lit.
6. **KEEP CHILDREN AWAY.** All visitors should be kept safe distance from work area.
7. **STORE IDLE TOOLS.** When not in use, tools should be stored in dry, high or locked-up place—out of reach of children.
8. **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was designed.
9. **USE RIGHT TOOL.** Don't force small tool or attachment to do the job of a heavy-duty tool.
10. **WEAR PROPER APPAREL.** No loose clothing or jewelry to get caught in moving parts. Rubber gloves and footwear are recommended when working outdoors.
11. **USE SAFETY GLASSES** with most tools. Also face or dust mask if cutting operation is dusty.
12. **DON'T ABUSE CORD.** Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil and sharp edges.
13. **SECURE WORK.** Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.
14. **DON'T OVERREACH.** Keep proper footing and balance at all times.
15. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean at all times for best and safest performance. Follow instructions for lubricating and changing accessories. **CAUTION:** Do not use carbon tetrachloride.
16. **DISCONNECT TOOLS.** When not in use, before servicing; when changing accessories such as blades, bits, cutters, etc.

17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
18. **AVOID ACCIDENTAL STARTING.** Don't carry plugged-in tool with finger on switch. Be sure switch is off when plugged in.
19. **WEAR EAR PROTECTORS** when using for extended periods.
20. **ACCESSORIES.** The use of any accessories other than those listed or recommended for this particular tool may be hazardous.
21. **KEEP HANDS AWAY FROM CUTTING EDGES AND ALL MOVING PARTS.**
22. **USE INSULATED SURFACES.** A double insulated or grounded tool may be made live if the blade or bit comes in contact with live wiring in a wall, floor, ceiling, etc. Always check the work area for live wires and hold the tool by the insulated surfaces when making "blind" or plunge cuts.
23. **GRINDING WHEELS.** Use only grinding wheels with "Safe Speed" at least as high as "No Load RPM" marked on the name plate.

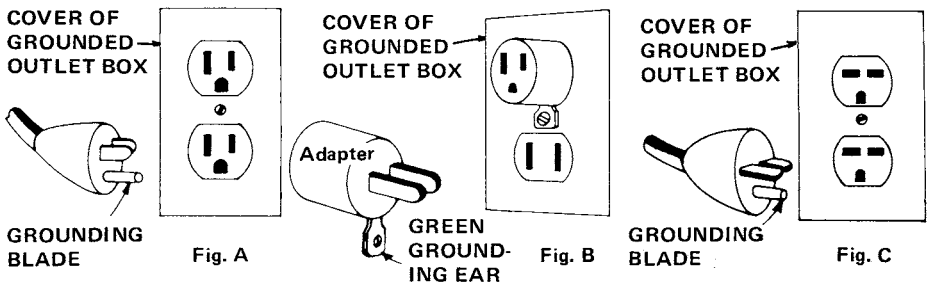
## GROUNDING INSTRUCTIONS

This tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with an approved three-conductor cord and three-prong grounding-type plug to fit the proper grounding-type receptacle. The green conductor in the cord is the grounding wire. Never connect the green wire to a live terminal. If your unit is for use on less than 150 volts, it has a plug that looks like Fig. "A". If it is for use on 150 to 250 volts, it has a plug that looks like Fig. "C".

### NOTE

The use of 3-prong adapters in Canada is prohibited by the Canadian Electrical Code.

An adapter, Fig. "B" is available for connecting Fig. "A" plugs to two-prong receptacles. The green grounding ear extending from the adapter must be connected to a permanent ground such as to properly grounded outlet box. No adapter is available for Fig. "C" plugs.



**NOTE: RECEPTACLE MUST BE GROUNDED FOR SAFE USE OF ADAPTER; IF IN DOUBT CALL A QUALIFIED ELECTRICIAN AND HAVE THE RECEPTACLE CHECKED FOR GROUND.**

## EXTENSION CORDS

Use only three-wire extension cords which have three-prong grounding-type plugs and three-pole receptacles which accept the tool's plug. Replace or repair damaged cords.

## EXTENSION CORD CHART

When an extension cord is used, it should also be a 3 wire cord to permit proper grounding of the tool. As the distance from the supply outlet increases, heavier gauge extensions are required. The use of extension cords of inadequate size wire causes a serious drop in voltage, loss of power and possible motor damage. This table is based on limiting line voltage drop to 5 volts at 150% of rated amperes.

Ampere rating (on Nameplate)	0- 2,00	2,10- 3,4	3,5- 5,00	5,10- 7,0	7,10- 12,0	12,1- 16,0	
Ext. Cable Length	Wire Size						
25 Ft.	18	18	18	18	16	14	Not normally available as flexible extension cord.
50 Ft.	18	18	18	16	14	12	
75 Ft.	18	18	16	14	12	10	
100 Ft.	18	16	14	12	10	8	
150 Ft.	16	14	12	12	8	8	
200 Ft.	16	14	12	10	8	6	
300 Ft.	14	12	10	8	6	4	
400 Ft.	12	10	8	6	4	4	
500 Ft.	12	10	8	6	4	2	
600 Ft.	10	8	6	4	2	2	
800 Ft.	10	8	6	4	2	1	
1000 Ft.	8	6	4	2	1	0	

IF USING EXTENSION CORD OUT OF DOORS, BE SURE IT IS RATED FOR OUTDOOR USE.

## SPECIFICATIONS

Model No.	Shift	No Load RPM	Capacity		Volts	Amps
			In Steel	In Wood*		
1670-1	None	900	7/16"	2-9/16"	115	7-1/2
1675-1	Low High	300 1200	1/2" 5/16"	4-5/8" 1-3/8"	0 to 60 Cycles	

\*Selffeed Bits

## JACOBS CHUCK

This drill is furnished with a 1/2" Jacobs chuck. To insert bit, open jaws wide enough to allow bit to strike the bottom of chuck. Be sure shank of the bit and chuck jaws are clean. Dirt particles may cause bit to line up improperly. When using drill bits with flatted shanks, the flat surfaces of the bit shank must rest squarely on the chuck jaws to prevent slippage. Tighten chuck by hand to align bit before tightening with chuck key. Never use a wrench or means other than chuck key to tighten or loosen the chuck. Removing chuck from tool requires special tools. If the chuck must be removed, send complete tool to a Milwaukee Service Station.

Do not use bits larger than the rated capacity of drill. Gear damage or motor overload may result. For maximum drilling performance, be sure bits are properly sharpened before using.

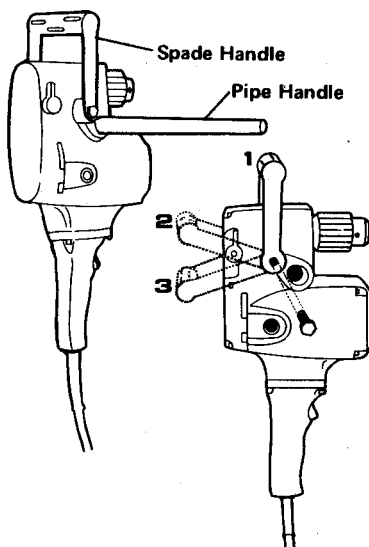
The MILWAUKEE Electric Tool Corporation assumes no responsibility for any damage or accidents resulting from the use, misapplication, or nonadherence to safety precautionary measures.



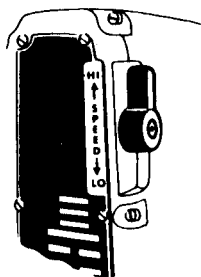
## SPADE AND PIPE HANDLES

A three-position spade handle and an auxiliary pipe handle are furnished with Models 1670-1 and 1675-1 to provide safe control of tool at all times. The pipe handle may be used on either side of tool depending on application (see "Safety").

To change the spade handle to any of the three positions shown, completely remove hex head screws which secure handle and move it to the desired position. To mount handle in position number 3, it is necessary to reverse the mounting holes by turning the handle around.

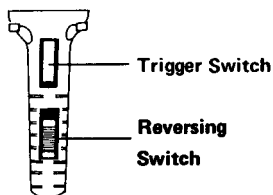


## SHIFTING SPEEDS (Model 1675-1)



A gear shift lever is provided on the right side of gear case to permit changing the speed from 300 rpm to 1200 rpm to suit specific drilling applications. For smooth, easy shifting, always turn off switch and shift while tool is coasting to a stop. Never shift the drill at full speed, when under load or when stopped.

## REVERSING (Models 1670-1 and 1675-1)



A reversing switch is located beneath the trigger switch for fast removal of bits from holes. Permit motor to come to a complete stop before reversing. Reversing with gears in motion may cause serious damage. When backing Selfeed bits from partially drilled holes, a flick of the trigger switch will free the threaded pilot screw. When thread is loose, lift bit from hole with motor stopped. (See "Safety" for proper bracing procedure.)

**CAUTION:** Applications which could cause this tool to be driven at speeds more than 25% in excess of its rated speed are potentially dangerous and constitute misuse. This includes the use of voltage boosters. When coupling this tool to a potential driving source an over-riding clutch should be used to allow for disengagement. The Milwaukee Electric Tool Corporation assumes no responsibility for damage or accidents resulting from the use of this tool, its misapplication, or nonadherence to safety precautionary measures.

## DRILLING PROCEDURE

Before drilling, clamp material down securely. A poorly secured piece of material may result in personal injury or inaccurate drilling. When drilling in light gauge metal or wood, back up the material with a wooden block to prevent damage to the work.

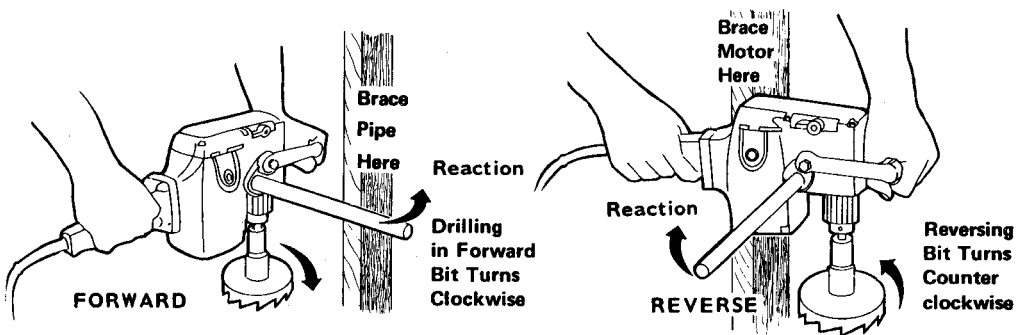
Mark the center of the hole to be drilled with a center punch to give the bit a start and to prevent it from "walking". Lubricate drill bit with cutting oil when drilling iron or steel. Use a coolant when drilling non-ferrous metals such as copper, brass or aluminum.

When using selffeed bits, auger bits or large twist bits, always brace drill as shown below. (See Safety.) To start selffeed bits, run threaded feed screw into work by flicking trigger switch, permitting the bit to coast until teeth contact work surface. Properly align bit before proceeding. This will reduce cocking and jamming when starting. To reduce jamming on breakthrough, decrease drilling pressure when feed screw point breaks thru work. Proceed with steady, even pressure.

## SAFETY

**CAUTION:** This is a powerful tool. High torque is developed and it is important that the tool be securely held and properly braced.

The pipe handle should be used as a brace to maintain safe control of the drill. When drilling action is forward (clockwise), the drill should be braced to prevent a counterclockwise reaction if the bit should bind. When reversing, brace the drill to prevent a counterclockwise reaction if the bit should bind. When reversing, brace the drill to prevent a clockwise reaction. (See below.) Do not use trigger switch lock button in situations where the bit may bind, making it necessary to stop the drill suddenly. If a selffeed bit must be removed from a partially drilled hole, be sure drill is properly braced before reversing. (See below.)



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The Milwaukee Electric Tool Corporation assumes no responsibility for damage or accidents resulting from the use or misapplication of this tool, the use of improper accessories, or the failure to adhere to safety precautionary measures.

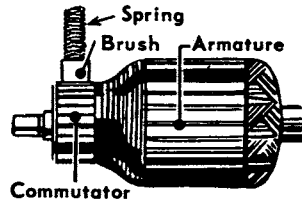
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## MAINTENANCE

All servicing other than recommended in this instruction manual must be done by an Authorized Milwaukee Service Station.

### BRUSHES AND COMMUTATOR

Failure of the motor to start or to operate efficiently can usually be attributed to worn or damaged brushes, brushes sticking in the holders and failing to make proper contact with the commutator, or to the commutator being dirty or rough. Frequent inspection of brushes and commutator is recommended.



To inspect brushes, pull plug from power source and unscrew brush retainer caps located on the motor housing. Pull out brush retainer springs and brushes. Replace both brushes when either is worn down to 1/4". Always replace both brushes. When inspecting brushes, also check the commutator for wear. If worn badly, send the complete tool to a MILWAUKEE Service Station for undercutting and dressing of the commutator.

### LUBRICATION

Proper and regular lubrication is the most important single factor in determining the useful life of this drill. It has been lubricated at the factory and this lubrication should be sufficient for six months to one year depending upon the amount of use. Tools used constantly on heavy-duty production jobs require lubrication more often. Tools which have not been used for extended periods of time should be relubricated before being put back in service.

To lubricate the tool, remove six screws which secure gear case cover. Be sure shift lever on 1675-1 is in LO position before loosening screws. Carefully lift cover from motor housing. Pack gear case 2/3 full with MILWAUKEE Type "C" grease. 1 lb. Can, Cat. No. 49-08-1000. Check all bearing housings to be sure bearings are in proper position before assembling.

**ALL MAJOR REPAIRS SHOULD BE PERFORMED AT AN AUTHORIZED MILWAUKEE SERVICE STATION.**