

INSTRUCTION MANUAL

HF-750

3MT Portable Magnetic Drilling Unit (240V) Ø75mm Drill Capacity Manual Feed



D9507

Portable Magnetic Core Drilling System

- 1 Speed Drilling System
- 1 Speed Drilling System (N)
- Semi Auto Feed Drilling System
- Semi Auto Feed Drilling System (N)
- 2 Speed Drilling System
- 4 Speed Drilling System
- 4 Speed Swivel Base Drilling System



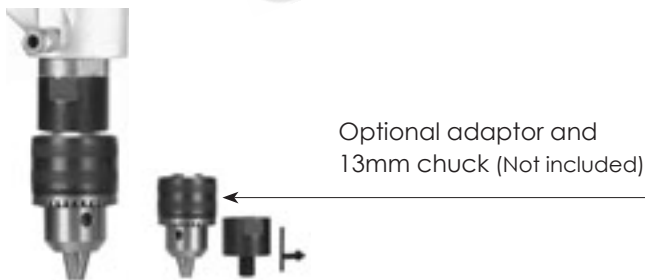
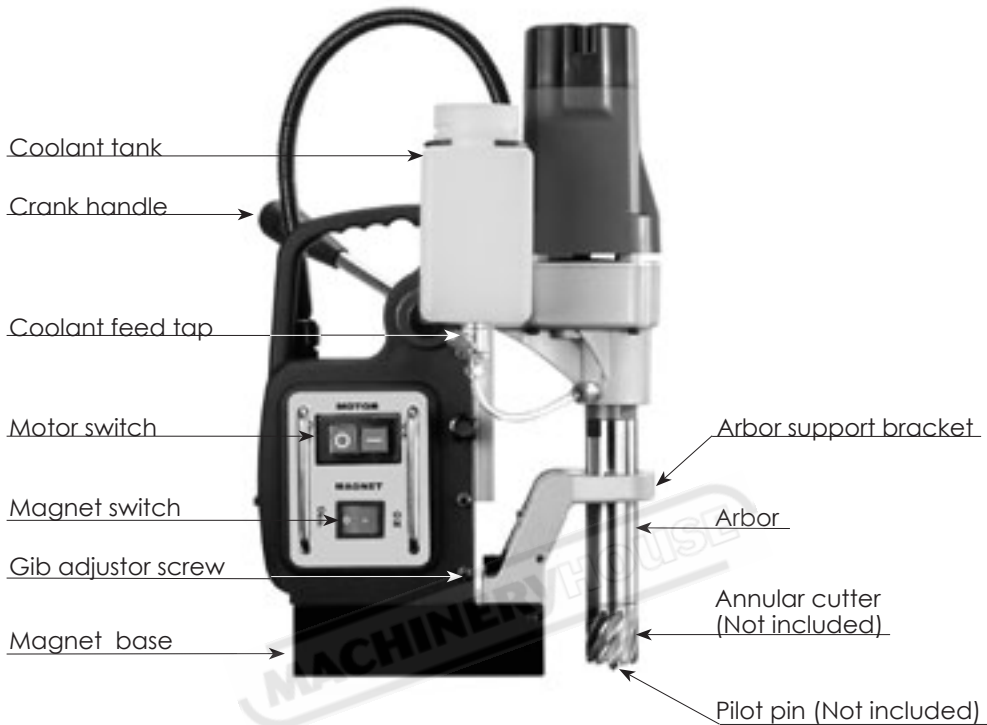
SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.



Warning:

Only tools equipped with over load protection, when motor has been cut off due to over load, always switch on machine with no load for at least 3 minutes to reduce temperature before switch on again to avoid burn out to the motor.

1 Speed Drilling System & 1 Speed Drilling System (N)



MODEL		1 Speed	1Speed(N)
POWER INPUT		1100 W	
NO / FULL LOAD min ⁻¹		620/350	550/330
CAPACITY	DIA. X DEPTH OF CUT	35MM X 50MM	
	DIA. X DEPTH OF TWIST DRILL BIT	13MM X 110MM	
	DIA. X DEPTH OF TAPS	NA	
MAGNETIC ADHESION		15,000 N	
NET WEIGHT		12.6 kg (27.72 Lbs)	

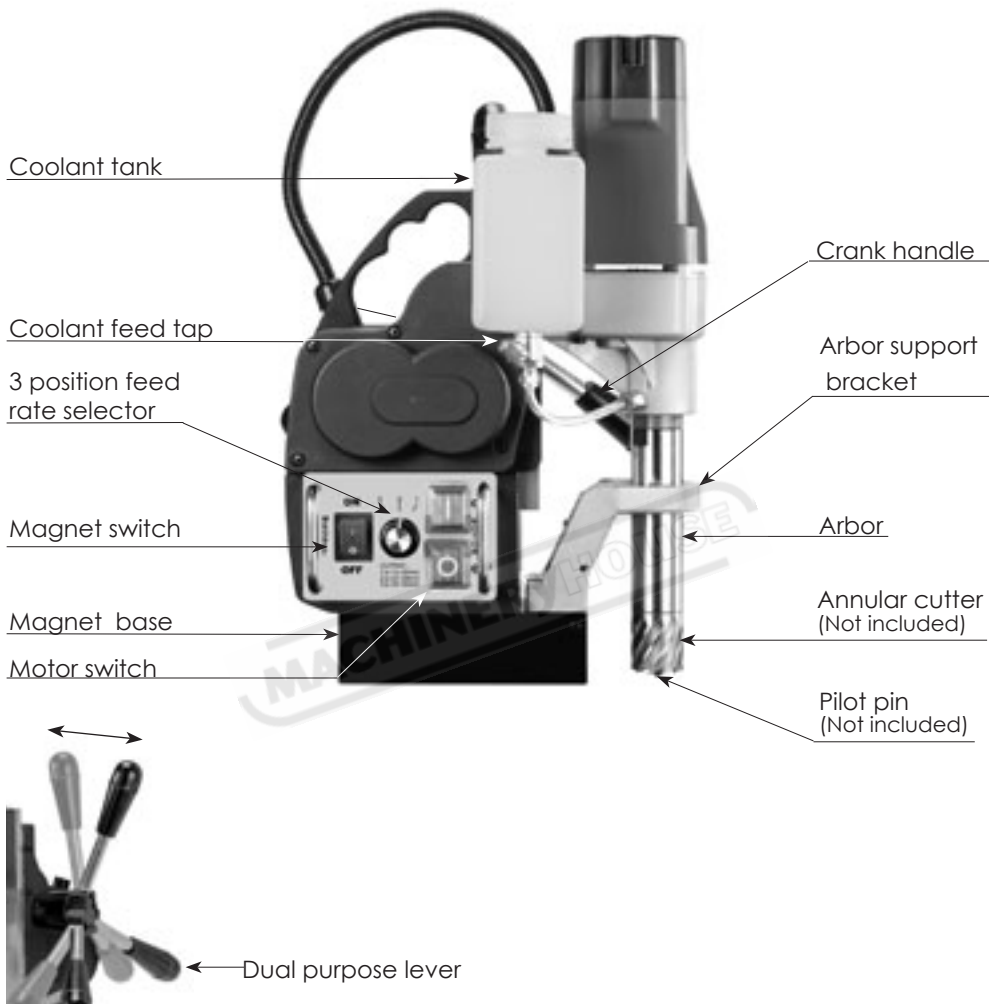
STANDARD ACCESSORIES

- * WRENCH M8
- * HEX. KEY M2.5
- * HEX. KEY M4
- * CHIP GUARD KIT
- * COOLANT TANK KIT
- * SAFETY CHAIN

OPTIONAL ACCESSORY

- * CHUCK ADAPTOR
- * 13MM CHUCK & KEY

Semi Auto Feed Drilling System & Semi Auto Feed Drilling System (N)

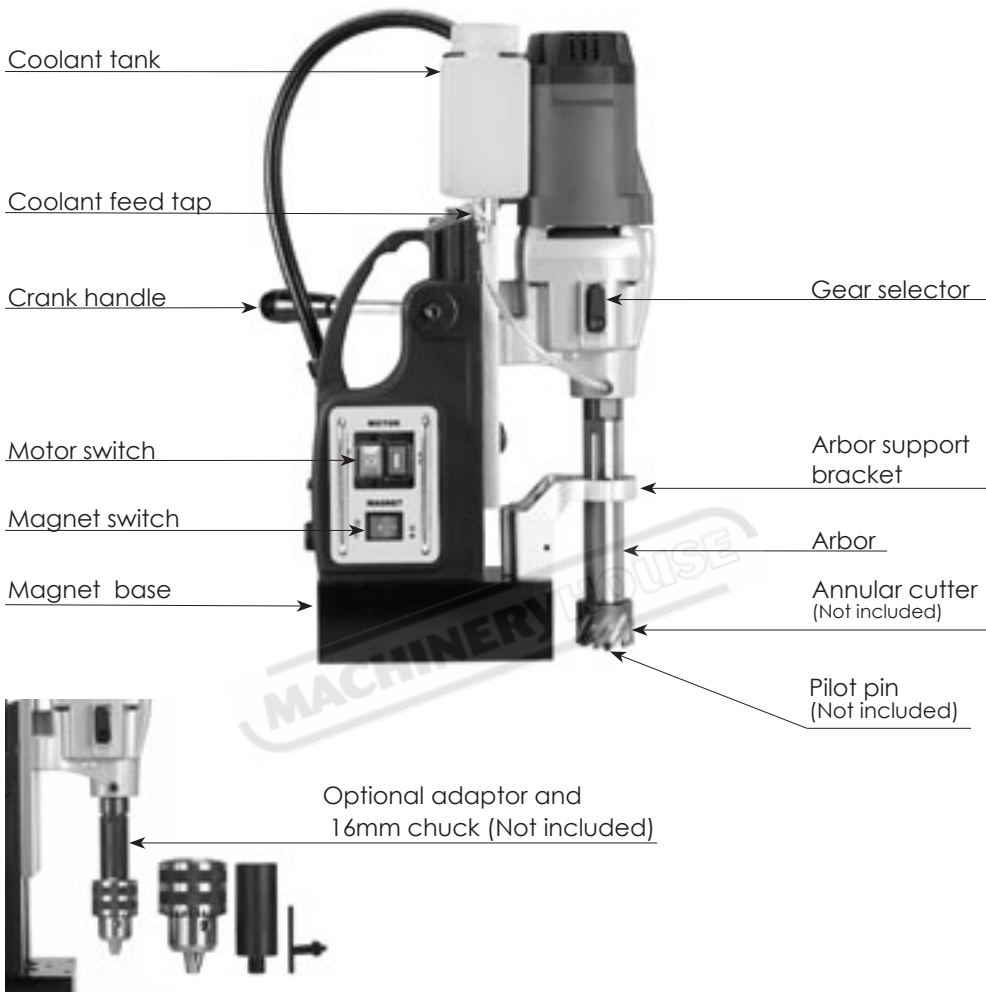


MODEL		Semi Auto Feed	Semi Auto Feed(N)
POWER INPUT		1100 W	
NO / FULL LOAD min ⁻¹		620/350	550 / 330
CAPACITY	DIA. X DEPTH OF CUT (HAND FEED)	35MM X 50MM	
	DIA. X DEPTH OF CUT (AUTO FEED)	30MM X 45MM	
	DIA. X DEPTH OF TWIST DRILL BIT (HAND FEED ONLY)	13MM X 110MM	
	DIA. X DEPTH OF TAPS	NA	
MAGNETIC ADHESION		15,000 N	
NET WEIGHT		16.5 kg (36.3 Lbs)	

STANDARD ACCESSORIES

- * WRENCH M8
- * HEX. KEY M2.5
- * HEX. KEY M4
- * CHIP GUARD KIT
- * COOLANT TANK KIT
- * SAFETY CHAIN

2 Speed Drilling System



POWER INPUT		1800 W
NO/FULL LOAD min ⁻¹	SPEED 1	380 / 230
	SPEED 2	500 / 300
CAPACITY	DIA. X DEPTH OF CUT	50MM X 75MM
	DIA. X DEPTH OF TWIST DRILL BIT	16MM X 110MM
	DIA. X DEPTH OF TAPS	NA
MAGNETIC ADHESION		32,000 N
NET WEIGHT		22.9 kg (50.38Lbs)

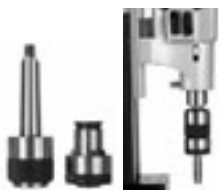
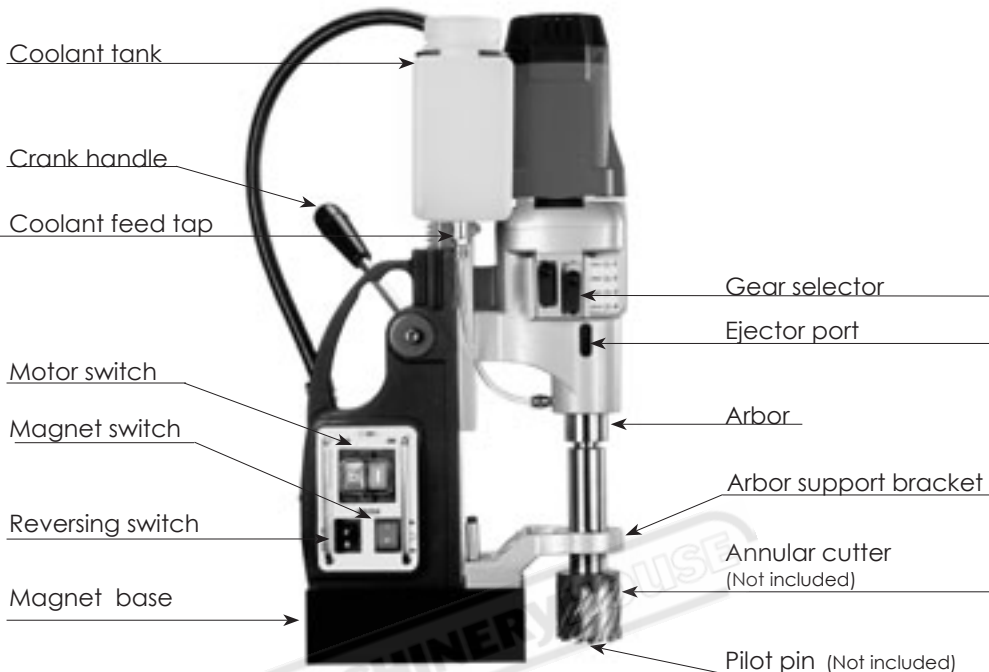
STANDARD ACCESSORIES

- * WRENCH M8
- * HEX. KEY M2.5
- * HEX. KEY M4
- * CHIP GUARD KIT
- * COOLANT TANK KIT
- * SAFETY CHAIN

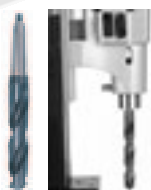
OPTIONAL ACCESSORY

- * CHUCK ADAPTOR
- * 16MM CHUCK & KEY

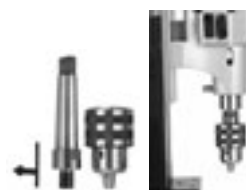
4 Speed Drilling System



MT3 Tapping adaptor and Tapping unit (Not included)



MT3 Twist drill bit (Not included)



MT3 Chuck adaptor and Chuck (Not included)

POWER INPUT		1800 W
NO/FULL LOAD min ⁻¹	SPEED 1	150 / 90
	SPEED 2	200 / 120
	SPEED 3	300 / 180
	SPEED 4	380 / 230
CAPACITY:	DIA. X DEPTH OF CUT (HAND FEED)	75MM X 50MM
	DIA. X DEPTH OF MT3 TWIST DRILL BIT	32MM X 150MM
	DIA. X DEPTH OF MT3 CHUCK ADAPTOR WITH TWIST DRILL BIT	16MM X 110MM
	DIA. X DEPTH OF TAPS	25.4MM X 40MM
MAGNETIC ADHESION		32,000N
NET WEIGHT		24.8 kg (54.56 Lbs)

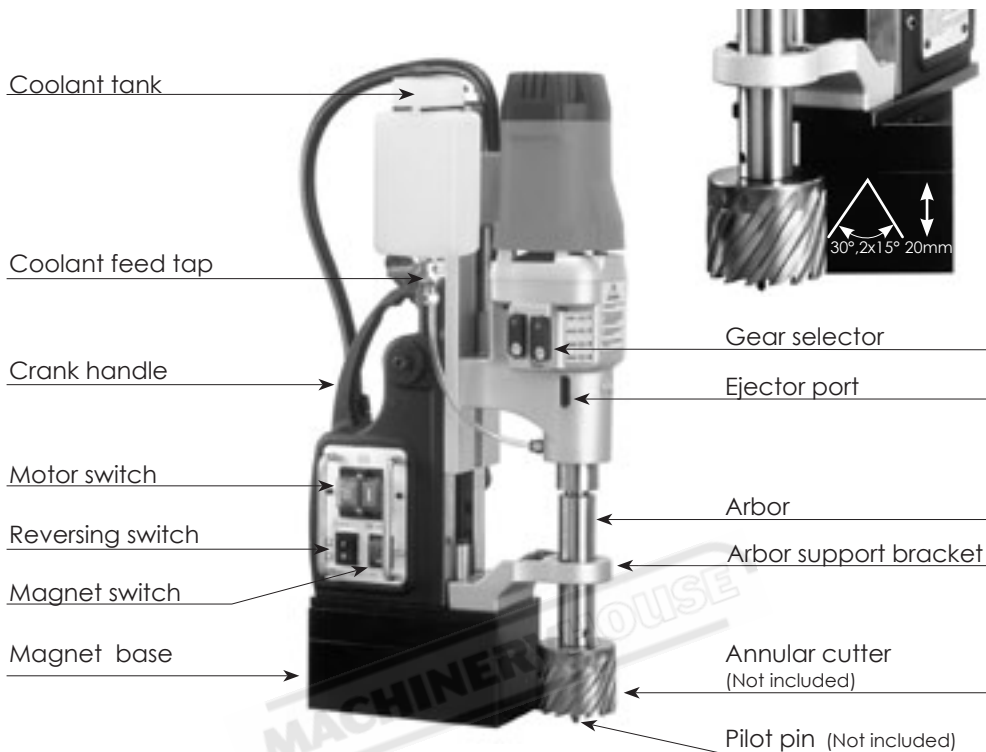
STANDARD ACCESSORIES

- * WRENCH M8
- * HEX. KEY M2.5
- * HEX. KEY M4
- * CHIP GUARD KIT
- * COOLANT TANK KIT
- * SAFETY CHAIN
- * DRIFT

OPTIONAL ACCESSORY

- * MT3 CHUCK ADAPTOR
- * 16MM CHUCK & KEY
- * MT3 TAPPING ADAPTOR
- * TAPPING ATTACHMENT

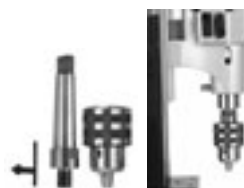
4 Speed Swivel Base Drilling System



MT3 Tapping adaptor and Tapping unit (Not included)



MT3 Twist drill bit (Not included)



MT3 Chuck adaptor and Chuck (Not included)

POWER INPUT		1800 W
NO/FULL LOAD min ⁻¹	SPEED 1	150 / 90
	SPEED 2	200 / 120
	SPEED 3	300 / 180
	SPEED 4	380 / 230
CAPACITY	DIA. X DEPTH OF CUT (HAND FEED)	75MM X 50MM
	DIA. X DEPTH OF MT3 TWIST DRILL BIT	32MM X 150MM
	DIA. X DEPTH OF MT3 CHUCK ADAPTOR WITH TWIST DRILL BIT	16MM X 110MM
	DIA. X DEPTH OF TAPS	25.4MM X 40MM
MAGNETIC ADHESION		32,000N
NET WEIGHT		27 kg (59.4 Lbs)

STANDARD ACCESSORIES

- WRENCH M8
- HEX. KEY M2.5
- HEX. KEY M4
- CHIP GUARD KIT
- COOLANT TANK KIT
- SAFETY CHAIN
- DRIFFT

OPTIONAL ACCESSORY

- MT3 CHUCK ADAPTOR
- 16MM CHUCK & KEY
- MT3 TAPPING ADAPTOR
- TAPPING ATTACHMENT

PORTABLE MAGNETIC CORE DRILLING SYSTEM

WARNING! Read and understand all instruction before operating any drilling system. Failure to follow all instructions listed below may result in electrical shock, damage to drilling system and even personal injury.

GENERAL SAFETY INSTRUCTIONS

Work area

Keep your working area clean and well lighted. Cluttered benches and working stations causes accidents as well as dark spaces. Always ensure working stations are clean and well lit.

Do not operate power tools in explosive atmosphere, such as in the presence of flammable liquids, gases or extreme dust. Power tools create sparks that may ignite gases as well as flammable liquids. Dust may enter the ventilation system causing clogging and causing overheating.

Keep bystanders, children and visitors away from moving parts of the power tool. Any distractions can cause you to loose control of the power tool and an injury could take place.

Electrical Safety

Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the ground prong or modify the dance plug in any way. Do not use any adaptor plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. If tools should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.

Never carry a tool by the cord or hose and “yanking” the cord or the hose to disconnect it from the receptacle. Always carry the power tools properly and store in dry and dust free place.

Keep cords and hoses away from heat, oil and sharp edges. Damaged cords increase the risk of electric shock.

Don't expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

When operating a power tool outside, use an outdoor extension cord marked .W-A. or. W.. These cords are rated for outdoor use and reduce 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 tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.

Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.

Avoid accidental starting. Be sure switch is off before plugging in. Carrying tools with your finger on the switch or plugging in tools that have the switch on invites accidents.

Remove adjusting keys or switches before turning the tool on. A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.

Do not overreach. Keep a proper footing and balance at all times. Proper footing and balance enables better control of the tool in unexpected situations.

Use safety equipment. Always wear eye protection. Dust mask, non-skid safety shoes, hardhat, or hearing protection must be used for appropriate conditions.

Tool use and care

Use clamps or other practical way to secure and support the work piece to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.

Do not force tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

Do not use tool if switch does not turn it on or off. Any tool that cannot be controlled with the switch is dangerous and must be repaired.

Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

Store idle ling tools out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.

Maintain tools with care. Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.

Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tools operation. If damaged, have the tool serviced before using. Poorly maintained tools cause many accidents.

Use only accessories that are recommended by the manufacturer for your model.

Accessories that may be suitable for one tool may become hazardous when used on another tool.

Service



Only qualified repair personnel must perform tool service. Service or maintenance performed by unqualified personnel could result in a risk of injury.

When servicing tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual. Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

Symbols used in this manual

IMPORTANT: Some of the following symbols may be used on your tool. Please study them and learn their meaning. Proper interpretation of these symbols will allow you to operate the tool better and safer.

Symbol	Name	Designation/Explanation
V	Volt	Voltage (potential)
A	Amperes	Current
Hz	Hertz	Frequency (cycles per second)
W	Watt	Power
kg	Kilograms	Weight
min	Minutes	Time
s	Seconds	Time
ϕ	Diameter	Size of drill bits
n_0	No load speed	Rotational speed, at no load
min^{-1}	Revolutions per minute	Revolutions, strokes, surface speed per minute.
0	Off position	Zero speed, zero torque...
1, 2, 3, ...	Selector settings	Speed setting, higher number means greater speed
~	Alternating current	Type or a characteristic or current
	Class I construction	With electrical earth
	Warning symbol	Alerts user to warning messages

Terminology used in the manual

- 1. Warning:** This term means that there is a risk of physical harm or death to the operator or people nearby.
- 2. Caution:** This term means that there is a risk of damage to the machine, cutting tool or other equipment.
- 3. Note:** These terms offer useful information relating to the operation of the machine or its maintenance.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

SPECIFIC SAFETY RULES AND REGULATIONS

Always use safety chain. Mounting can release.

The magnet's adhesion depends on the thickness of the work piece. Always ensure that the work piece is a minimum of 12mm (7/16 in.) thick. If it is not, then use a piece of steel plate at least 12mm thick and larger than the magnet below the work piece to supplement the magnetic adhesion.

Metal chips and other debris will seriously hamper magnetic adhesion. Always ensure that the magnet is clean.

Other units used on the same receptacle will cause uneven voltage that could lead to the magnet releasing. Always use the tool alone on the receptacle.

It is hazardous to use the drill upside-down. Do not exceed 90 degrees from horizontal.

Avoid the magnet releasing. Ensure that the magnet has properly adhered to the work piece before beginning drilling.

Avoid operating annular cutters without coolant fluid. Always check coolant level before operating.

Do not operate with dull or damaged cutting tools. This may overload the motor.

Protect the motor. Never allow cutting fluid, water, or other contaminants enter the motor.

Metal chips are often very sharp and hot. Never touch them with bare hands. Clean up with a magnetic chip collector and a chip hook or other appropriate tool.

CAUTION: NEVER position machine on a work piece between the electrode and the ground of any arc type welder. Damage to the machine will result, as the welder will ground through the machine's ground cable.

WARNING: NEVER attempt to use machine with incorrect current or abnormally low voltage. Check machine nameplate to ensure that correct voltage and Hz are used.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

ASSEMBLY

Coolant tank assembly required. First attach clear tube to the bottom of the coolant tank. To do this, first loosen the nut and slide nut onto the tube. Then slide tube onto the nipple. Then tighten the nut. Slide tank hanger over the screw on the upper right hand side of slide and tighten. Finally insert the other end of the tube into the quick-release connector in the gearbox. Just directly push in to install. **(To remove, first firmly push the red collar of the connector and pull the tube out.)** Cutting coolant fluid is always required when using annular cutters. Open tank cover and fill. Check coolant fluid level often. Keep coolant tap closed when not in use.

Chip guard must be used. To attach the chip guard, use the supplied butterfly bolts to bolt to the magnet. It is not necessary to remove guard to clean chips. Simply raise guard to its upper position.

Safety chain must be used. Loop chain around the work piece and feed through the machine's handle and clip in place.

MOUNTING ANNULAR CUTTERS

CAUTION: Never use a cutting tool that is larger than the maximum rated capacity of the machine.

1. To insert an annular cutter, first insert the pilot pin into the cutter. Then slide the cutter into the arbor, align the proper flat with the locking screw(s) and tighten securely with the supplied hex wrench.



CAUTION: Ensure that the locking screw is on a flat of the cutter and not just against the rounded shank.

2. Ensure that the oil feed tap is on and coolant feeds properly by pushing the pilot pin. If it feeds too quickly or slowly, adjust the tap accordingly. Keep the tap closed when not in use.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

2-SPEED MODULES

GEAR SELECTION

On 2-speed models, before drilling select desired gear range by first pushing in on spring-loaded gear selector slider switch and then sliding selector up for high speed or down for low speed. (It may be necessary to turn the arbor slightly in order for the gears to mesh properly). Follow the recommended speed ranges on the cutting speed chart to set the proper speed and gear range.

2 SPEED GEAR CHART

GEAR	NO LOAD min ⁻¹	FULL LOAD min ⁻¹	CUTTER SIZE
1	380	230	40~50mm (1~9/16 to 2 in.)
2	500	300	40mm (1~9/16 in.) or less.

NOTE: These speeds are general recommendations only. Actual speeds should be determined by the material and the cutting speed recommended by the cutting tool manufacturer.

CAUTION: Ensure that that gears engage fully.

CAUTION: ALWAYS ensure that the machine is fully stopped before attempting to change gears! NEVER change gears on a running machine!

OPERATION-GENERAL

WARNING: Always ensure that the magnet is adhered properly to the work piece before beginning drilling.

NOTE: If mounting to a curved surface beam, mount the machine parallel to the curve in the work piece.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

WARNING: Avoid operating at more than 90 degrees from horizontal. When drilling at such an angle take precautions to prevent cutting coolant from entering the motor. Paste-type coolant should be used.

1. First fit tool into arbor and line up with intended center of cut. Then switch magnet on.
2. Press green motor on button to start motor. Use the crank handle to feed to work. Always use very light pressure when beginning the cut and just as the tool is breaking through. The crank handle offers tremendous leverage; so do not use too much force. Allow the cutting tool to determine the pace. With experience, the operator will be able to determine the best pace to feed to the work. There should be some degree of audible slowing of the motor but not bogging in the cut. Correct cutting speed with a properly sharp annular cutter will produce long unbroken chips, which produce a "bird's" nest shaped bundle of chips around the cut.



NOTE: Always ensure that the cutting tool is sharp. A dull cutter typically will have finer and/or choppy shavings.

WARNING: ALWAYS clear chips when there is too much build-up. Excessive chip build-up could result in a jammed cutter or other hazardous situation.

WARNING: the slug ejects at end of cut and is very hot. Always provide a method of catching the slug, where the ejected slug may cause injury to people below.

Note: Lock the slide lock on the side of the machine in the fully raised position when at rest to prevent the slide from accidentally slamming down - remember to unlock it again before commencing drilling.

CAUTION: Never attempt to cut half-circles or to stitch drill (drill overlapping holes) with a TCT cutter. This may destroy the cutter.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

CAUTION: Never attempt to re enter a half-finished cut if the magnet has been turned off and the machine shifted in the interim. This may destroy the cutter.

TWIST DRILLING

If twist drilling is desired, the arbor support bracket must be removed by removing the three socket-head bolts. Then an optional chuck adaptor arbor and chuck must be fitted. Follow the special instructions below to replace the arbor support bracket. (For 1 speed & 2 speed model only).

Arbor support bracket replacement

1. Replace arbor support bracket and screw in the 3 hex head bolts finger tight only (ensure that the needle bearing is clean and adequately greased.)
2. Replace the annular cutter arbor.

WARNING: use extreme care to avoid contacting the rotating arbor shaft!

3. Double check to ensure that there is no binding anywhere throughout the stroke.



SPECIAL INSTRUCTIONS FOR AUTO-FEED MODELS

WARNING: NEVER attempt to use machine in auto feed mode when using twist drills. THIS WILL RESULT IN MAGNET LIFTING.

WARNING: NEVER use poor quality, incorrect sized or dull cutters in auto feed mode. THIS MAY RESULT IN MAGNET LIFTING.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

The Auto-Feed Feature

A lever incorporated into the feed handle engages or disengages the feed drive gears. If the auto-feed mode is not engaged, the machine may be used in the same fashion as the manual machine as described above. Below are the additional instructions needed to operate in auto-mode.

IMPORTANT: When in manual mode, the three lever handles will be pointing outward slightly (out). When in auto-feed mode, the lever handles will be parallel with the side of the machine (in).

NOTE: Do not operate the auto machine banked to one side in the plane of the lever as this may allow the machine to slip into or out of auto-feed mode unexpectedly.

WARNING: Do not attempt to drill a work piece which is thicker than the maximum cutting depth of the cutter being used. Never exceed 30mm diameter cutters when using auto-feed mode.

THE FEED RANGE SELECTOR

There is a 3-position range selector switch on the switch panel which allows ideal feed rate for various sized cutters. Select the feed range which corresponds to the cutter diameter being used.



POSITION	RANDE
1	14~20mm
2	21~24mm
3	25~30mm

AUTO-FEED OPERATION

1. Always begin drilling manually (with the handles pointing out) as described above in "OPERATION-GENERAL".
2. Only after the cutter has begun cutting for a few seconds and has raised a chip should the auto feed be engaged.



PORTABLE MAGNETIC CORE DRILLING SYSTEM

NOTE: Do not cut manually for more than 10 seconds before shifting into auto feed. If manual cutting continues for more than 10 seconds, as soon as auto feed is engaged, rather than cutting, it will directly stop.

3. To engage auto-feed, push any of the lever handles in. The gears may not always line up perfectly. If the handle will not push in, simply raise the feed upward slightly and the lever will engage.
4. As a precaution, always keep one hand near to the motor shut off switch in order to shut off quickly in the event of any problem.
5. Once the hole is drilled, the machine will continue to feed for 3 seconds (to fully finish hole) and then will automatically shut off.

NOTE: This machine is equipped with safety override systems which will automatically engage: If the load exceeds maximum for 2 seconds or more, the motor and feed will stop and stay in that position. Only the magnet will stay on. This will alert the operator of an overload problem. If this happens repeatedly, stop operation and find the cause of the excessive load. It could be a bad cutter or other problem.

WARNING: WHENEVER THE MACHINE STOPS DUE TO OVERLOAD IN THIS WAY, RAISE THE CUTTER CLEAR OF THE WORKPIECE BEFORE RESTARTING

NOTE: when drilling very deep holes with long reach cutters, there is considerable build up of chips. This may interfere with operation and even cause the machine to stop from overload. In this situation, we recommend stopping to clear the chips after the first 25mm (1 inch) or so, then continuing to finish the cut.

45mm IS THE MAXIMUM DEPTH OF CUTTING WITH AUTO FEED.

NOTE: the maximum rated thickness of material with the auto feed function is 45mm. For drilling thickness up to 50mm, finish by hand feed.

WARNING: PAY ATTENTION TO THE CONDITION OF THE CUTTER. This is particularly important with an auto feed machine. A dull or damaged cutter may cause a dangerous situation.

WARNING: NEVER ATTEMPT TO DRILL MATERIAL THICKER THAN THE DEPTH CAPACITY OF THE CUTTER. If the cutter is allowed to "bottom out" the feed system may cause the magnet to lift (usually it will overload first).

PORTABLE MAGNETIC CORE DRILLING SYSTEM

NOTE: In very light load conditions, such as when using very small cutters or drilling a very thin work piece, often the load drop will not be enough to signal the machine's electronic control board to automatically stop. If this occurs, it does not indicate a malfunction.

SPECIAL INSTRUCTIONS FOR SWIVEL BASE EQUIPPED MODELS:

The swivel base allows the drill to be precisely positioned under difficult circumstances.

To use: first position the magnet base in the desired position and turn magnet on.

Loosen the Locking Lug, then swivel the machine body into the desired position. Finally lock the Locking Lug.



SPECIAL INSTRUCTIONS FOR 4-SPEED MT3 EQUIPPED MODELS

CHANGING TOOLS & ADAPTORS WITH MT3 SHANK

To insert a tool, turn the tool until the tang lines up and firmly push into place. It is helpful to tap with a soft-faced mallet to fully engage the taper. If it is properly in position, one will not be able to pull it back apart by hand. To remove, line up the ejector slot of the arbor with the ejector port in the gear case, slide the ejector drift into the slot and tap with a hammer to eject the tool.

CAUTION: When removing, take care that the cutting tool does not crash down and get damaged or injure anyone below.



PORTABLE MAGNETIC CORE DRILLING SYSTEM

MT3 ANNULAR CUTTER ADAPTOR

This machine is equipped with a unique annular cutter adaptor system with built-in coolant directly to the gearbox. No stop bar is needed.

1. To install the annular cutter adaptor, first insert the taper end of the adaptor into the arbor of the machine as described above.
2. Attach the coolant tank to the slide and ensure that the tube is attached properly.
3. To insert an annular cutter, first insert the pilot pin. Then slide the cutter into the adaptor, align the proper flat with the locking screw(s) and tighten securely with the supplied hex wrench.
4. Ensure that the oil feed tap is on and coolant feeds properly by pushing the pilot pin. If it feeds too quickly or slowly, adjust the tap accordingly. Keep the tap closed when not in use.

OPERATION

The operation instructions under "OPERATION-GENERAL" also apply to this machine. Please see the additional instructions specific to the 4-speed Morse taper model below:

WARNING: NEVER operate 60mm (2-3/8 in.) or larger cutters unless the plate thickness is minimum 20mm (13/16 in.) MAGNET LIFTING MAY RESULT. If the plate thickness is not enough, supplement the magnetic adhesion by adding a 10mm or thicker plate directly the magnet's position under the work piece.

CAUTION: Machine is equipped with a reversing switch. Always ensure that direction of rotation is correct before operating. Operating in the wrong direction could result in damage to the cutter.

Select desired gear range by first popping the tab out of its detent and then sliding selectors up or down in the proper combination. Refer to the chart to achieve the correct combination for the desired speed. (It may be necessary to turn the arbor slightly in order for the gears to mesh properly). Follow the recommended speed ranges on the cutting speed chart to set the proper speed and gear range.

$$1 = \frac{150}{90} = \begin{matrix} \uparrow & \uparrow \\ \oplus & \oplus \end{matrix}$$

$$2 = \frac{200}{120} = \begin{matrix} \oplus & \uparrow \\ \downarrow & \oplus \end{matrix}$$

$$3 = \frac{300}{180} = \begin{matrix} \uparrow & \oplus \\ \oplus & \downarrow \end{matrix}$$

$$4 = \frac{380}{230} = \begin{matrix} \oplus & \oplus \\ \downarrow & \downarrow \end{matrix}$$

PORTABLE MAGNETIC CORE DRILLING SYSTEM

4 SPEED GEAR CHART:

GEAR	NO LOAD min ⁻¹	FULL LOAD min ⁻¹	CUTTERS	TAPS
1	150	90	60~75mm (2-3/8 to 3 in.)	15~25.4mm or less (9/16 to 1 in.)
2	200	120	45~60mm (1-3/4 to 2-3/8 in.)	N/A
3	300	180	35~45mm (1-3/8 to 1-3/4 in.)	N/A
4	380	230	35mm or less (1-3/8 in.)	N/A

NOTE: These speeds are general recommendations only. The material should determine actual speeds and the cutting speed recommended by the cutting tool manufacturer.

NOTE: the left and right side gear selectors have a different engagement design:

For The LEFT HAND SLIDER must ALWAYS ensure that the machine is FULLY STOPPED before attempting to change gears! NEVER change the Left hand slider gears on a running machine!

For the RIGHT HAND SLIDER the gears select by engagement dogs, similar to a motorcycle transmission design. These MUST BE SELECTED BY TURNING THE ARBOR to allow the dogs to engage. They may also be engaged while the motor is running, provided that it is not under load.

Select desired direction of rotation. This switch has 3 positions: up is forward, middle is neutral, and down is reverse rotation.

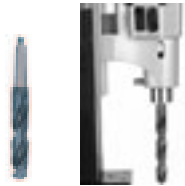
WARNING: If the motor is switched on with the direction switch in the neutral position, the machine will not turn but will be "live", as soon as either forward or reverse is selected, the arbor will begin turning! Take due care to avoid surprises. This is NOT the proper order of operations. Proper order of operations for normal drilling (not tapping) is as follows: magnet: on. direction: forward. motor: on. motor: off. magnet: off.



PORTABLE MAGNETIC CORE DRILLING SYSTEM

TWIST DRILLS

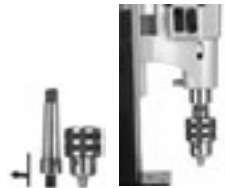
NOTE: A pilot hole may be necessary when drilling with larger twist drills. If a MT3 twist drill is used, it may not be necessary to remove the arbor support bracket.



CHUCK

If a MT3 chuck adaptor & chuck are used, then the bracket must be removed.

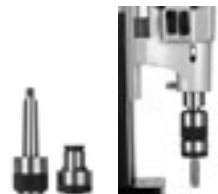
To replace, see the instructions above under "ARBOR SUPPORT BRACKET REPLACEMENT".



TAPPING

CAUTION: To avoid damage to the tap, always very carefully line the tap up with the hole and ensure that the size of the hole is correct for the tap to be used.

CAUTION: To avoid damage to the tap or machine, be very careful to stop the machine in time to NOT allow the tap bottom out. The motor continues to coast for a while after being shut off, so plan for this and anticipate. This machine does NOT have a clutch.



CAUTION: To avoid damage to the machine, ALWAYS allow the machine to come to a full stop before reversing rotation.

1. Select the proper speed according to the chart for the size of tap used.
2. Begin with forward direction of rotation with standard right hand threads.
(Opposite with left-hand threads)
3. Allow the tap to determine the feed rate. A light touch on the feed handle is all that is needed once it is started in the hole.

PORTABLE MAGNETIC CORE DRILLING SYSTEM

4. When the desired thread is tapped, hit the red motor stop switch. Allow the machine to come to a full stop. Then reverse direction and restart machine by pressing the green motor switch to remove tap. Guide the tap back out with the feed handle. Proper order of operations for normal tapping is as follows: magnet: on. direction: forward. motor: on. motor: off. THEN: direction: reverse. motor: on. motor: off - magnet: off.

MAINTENANCE

1. Keep the machine clean and free of chips.
2. Check for loose fittings and tighten as needed.
3. Ensure that the ventilation slots are clear so that motor can be cooled normally. Blow low-pressure compressed air through the ventilation slots with the motor running to keep motor clean.

THE ARBOR SHAFT

Keep the arbor shaft free of dirt and lightly grease as needed. If the arbor support bearing is noisy, it may be dirty or have a chip lodged in it. Remove the arbor shaft to clean and re-grease the arbor support bearing.

THE GIBS (DOVETAIL SLIDES)

The gibs require adjustment if too loose. To adjust, loosen the lock nuts and adjust the adjustor screws evenly while moving the handle up and down. Adjust so that there is no free play, yet any binding anywhere in its range of travel. Then retighten the lock nuts. Periodically check, lubricate, and adjust as needed.



PORTABLE MAGNETIC CORE DRILLING SYSTEM

THE CARBON BRUSHES

The carbon brushes are a normal wearing part and must be replaced when they reach their wear limit.

Caution: Always replace the brushes as a pair.

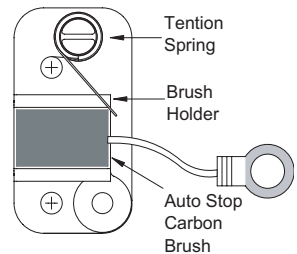
To replace:

1. Remove the 4 screws and remove the motor tail cover.
2. Using pliers rotate the brush spring out of the way and slide the old carbon brush out of the brush holder.
3. Unscrew the screw to remove the brush lead. The old carbon brush may now be lifted away.
4. Install a new brush. Installation is the reverse of removal.
5. Replace the motor tail cover.

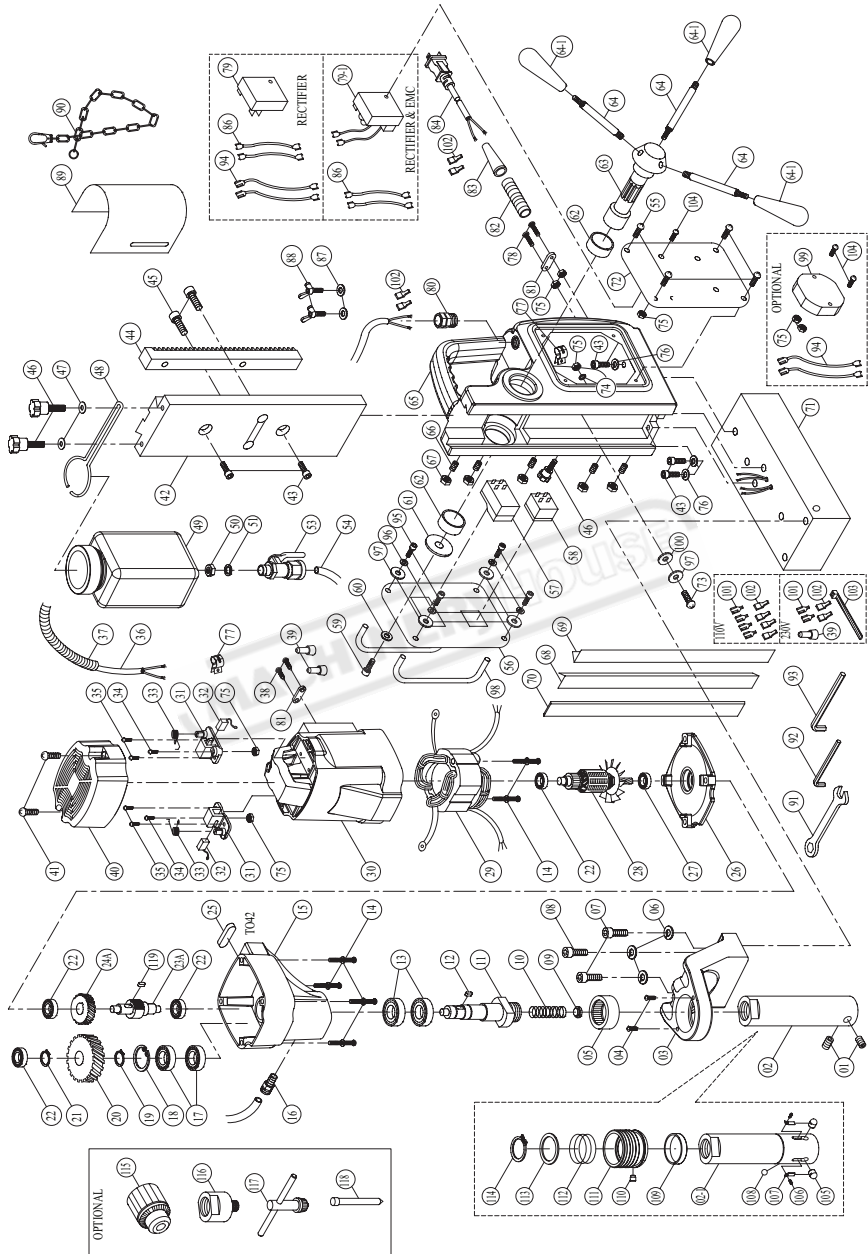


AUTO STOP CARBON BRUSH

Due to the new auto stop carbon brush if the machine comes to a stop without any reason, the brushes have to be checked. The auto feature stops the machine before the carbon brushes are finished and protects the motor.

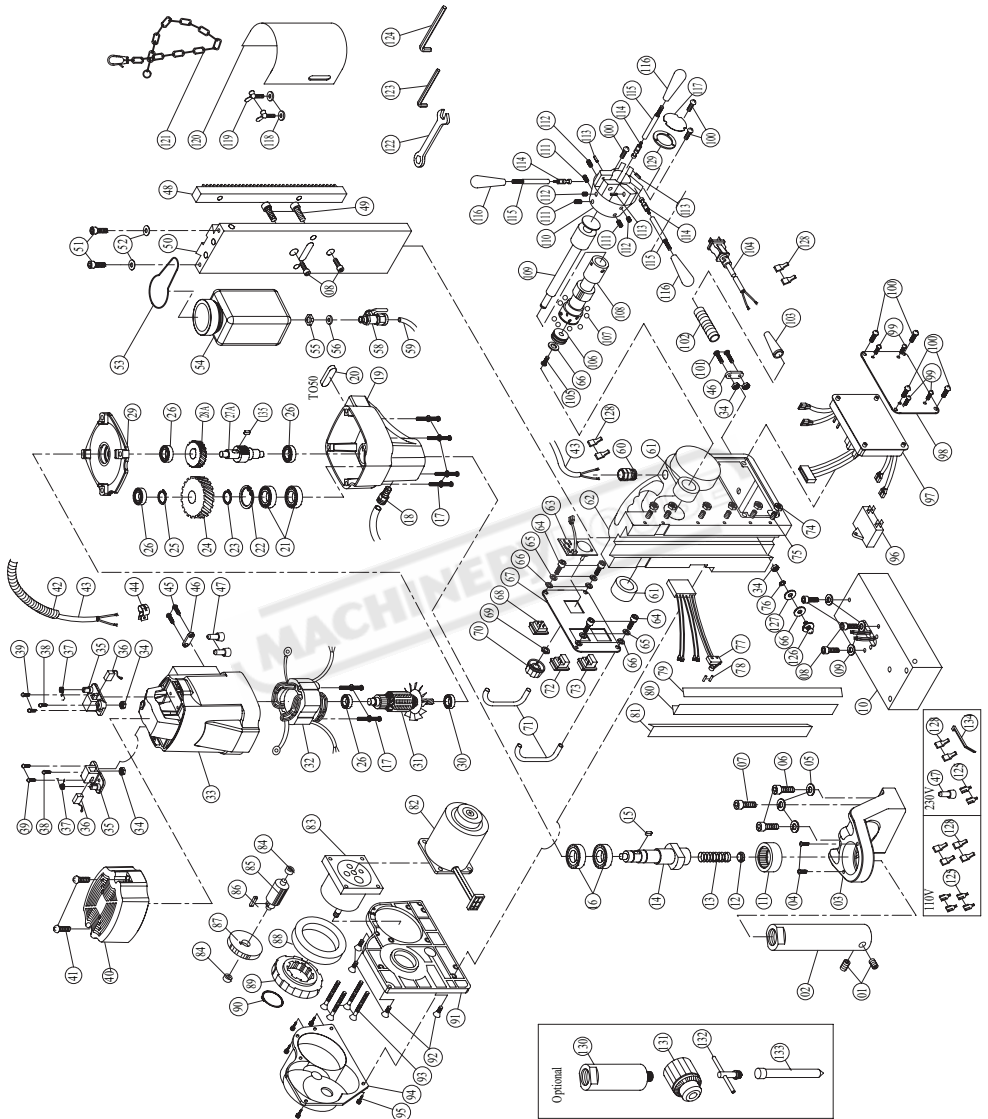


1 Speed Drilling System Exploded View & Parts list



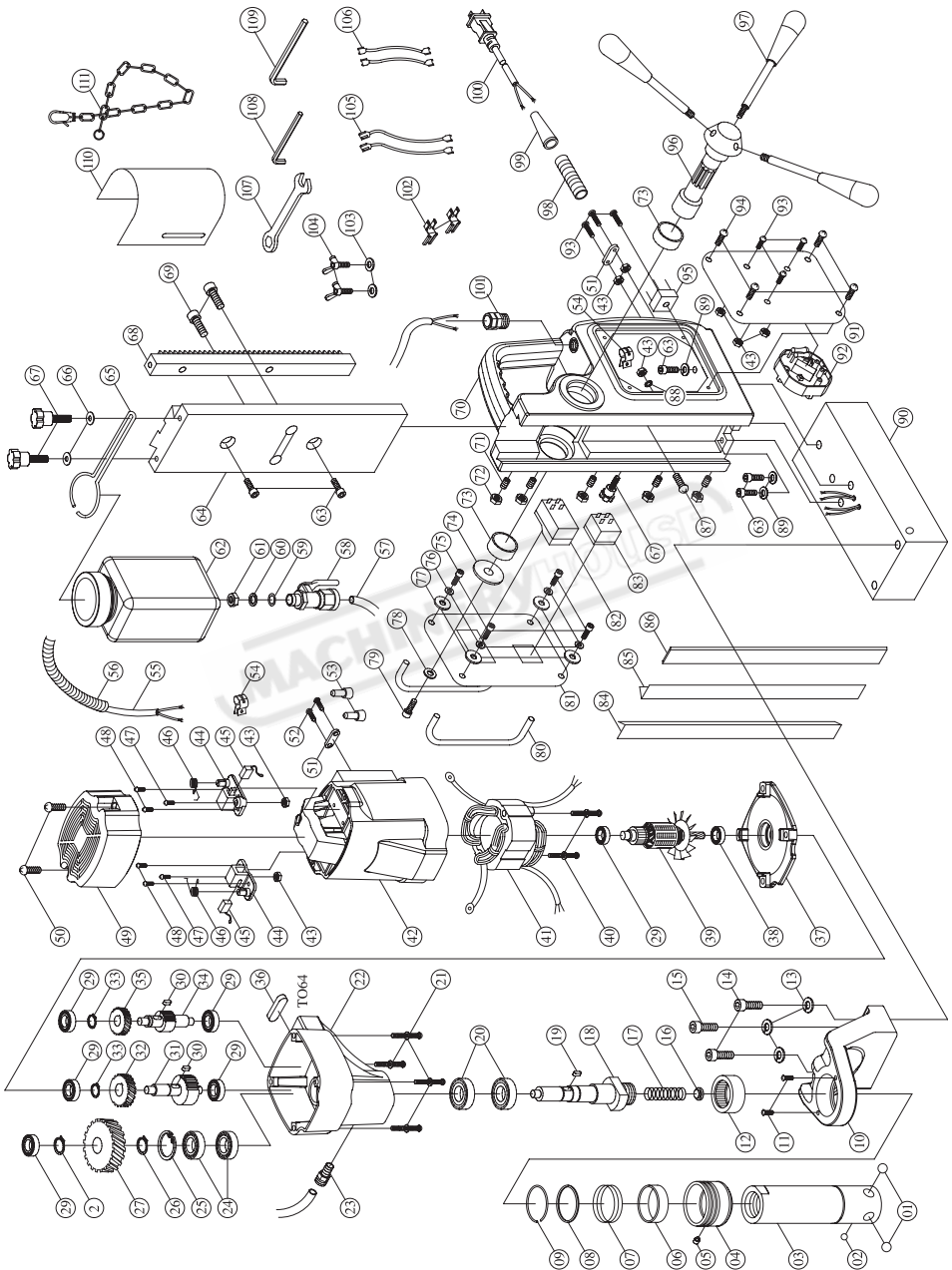
No.	Parts Name	Q'TY	No.	Parts Name	QTY
1	SET SCREW M8 x 7	2	61	FLAT WASHER $\phi 6 \times \phi 40 \times 2.5$	1
2	ARBOR	1	62	BUSHING $\phi 28 \times \phi 32 \times 12$	2
2-1	QUICK RELEASE ARBOR SHAFT	1	63	CRANK SPINDLE	1
3	ARBOR SUPPORT BRACKET	1	64	CRANK LEVER	3
4	SCREW M5 x 8	2	64-1	CRANK GRIP	3
5	BEARING HK3516	1	65	STAND BODY	1
6	SPRING WASHER M8	3	66	GIB SET SCREW M5 x 20	5
7	CAP BOLT M8 x 55	2	67	GIB LOCK NUT M5	5
8	CAP BOLT M8 x 30	1	68	GIB WEAR STRIP - LEFT	1
9	WATER SEAL	1	69	GIB WEAR STRIP - RIGHT	1
10	SPRING	1	70	GIB TENSIONER $260 \times 11 \times 2.3$	1
11	SPINDLE	1	71	MAGNET BASE $164 \times 80 \times 48$	1
12	WOODRUFF KEY $5 \times 5 \times 10$	1	72	SIDE PANEL	1
13	OIL SEAL $\phi 28 \times \phi 40 \times 7$	2	73	SCREW M4 x 16	1
14	SCREW M5 x 60	6	74	SUN WASHER M5	1
15	GEAR CASE	1	75	NUT M4 x 8	8
16	COOLANT CONNECTOR	1	76	SPRING WASHER M6	3
17	BEARING 6003 zz	2	77	CABLE CLAMP	2
18	INTERNAL CIR CLIP R-35	1	78	SCREW M4 x 30	2
19	EXTERNAL CIR CLIP S-17	1	79	RECTIFIER	1
20	OUTPUT GEAR 52T	1	79-1	RECTIFIER & EMC	1
21	EXTERNAL CIR CLIP S-15	1	80	CABLE GLAND	1
22	BEARING 608 zz	4	81	CABLE CLIP	2
23A	INTERMEDIATE GEAR PINION 8T	1	82	STRAIN RELIEF 7cm	1
24A	INTERMEDIATE GEAR 50T	1	83	CORD ARMOR	1
25	WOODRUFF KEY $4 \times 4 \times 30$	1	84	POWER SUPPLY CABLE	1
26	GEAR PLATE	1	85	N/A	-
27	BEARING 609-2RS	1	86	LEAD WIRE 18CM	2
28	ARMATURE 7T	1	87	FLAT WASHER $\phi 6 \times \phi 13 \times 1$	2
29	STATOR	1	88	BUTTERFLY SCREW M6 x 10	2
30	MOTOR HOUSING	1	89	CHIP GUARD	1
31	BRUSH HOLDER	2	90	SAFETY CHAIN	1
32	CARBON BRUSH $7 \times 11 \times 17$	2	91	WRENCH M8	1
33	BRUSH SPRING	2	92	HEX. WRENCH M2.5	1
34	SCREW M4 x 10	2	93	HEX. WRENCH M4	1
35	SCREW M4 x 12	4	94	LEAD WIRE 18CM	4
36	MOTOR CABLE $1.25 \times 2C \times 65CM$	1	95	SCREW M4 x 16	4
37	CABLE PROTECTOR 40CM	1	96	SPRING WASHER M4	4
38	SCREW M4 x 14	2	97	FLAT WASHER $\phi 4 \times \phi 10 \times 1$	5
39	WIRE CONNECTOR C4	3	98	SWITCH GUARD BAR	2
40	MOTOR TAIL COVER	1	99	OVER LOAD PROTECTION (OPTIONAL)	1
41	SCREW M4 x 25	2	100	RUBBER WASHER M4	1
42	SLIDE PLATE 230cm	1	101	TERMINAL FDV1-250	4
43	CAP BOLT M6 x 20	5	102	TERMINAL SIRIES	8
44	GEAR RACK	1	103	TIE	1
45	CAP BOLT M8 x 16	2	104	SCREW M4 x 25	3
46	THUMB SCREW M5 x 16	3	105	LOCKING PIN	2
47	FLAT WASHER $\phi 5 \times \phi 12 \times 1$	2	106	SET SCREW M3 x 4	2
48	COOLANT TANK BRACKET	1	107	LOCKING PIN SPRING	2
49	COLLANT TANK	1	108	CHECK BALL $\phi 8$	1
50	BRASS NUT	1	109	RING $\phi 40 \times \phi 44 \times 9$	1
51	FLAT WASHER $\phi 10 \times \phi 23 \times 2$	1	110	COLLAR PIN	1
52	N/A	-	111	QUICK-RELEASE COLLAR	1
53	COLLANT VALVE	1	112	SPRING $\phi 39 \times \phi 43 \times 3T \times 30L$	1
54	COOLANT TUBE 15cm	1	113	SPRING SEAT RING $\phi 35.1 \times \phi 44.5 \times 2$	1
55	SCREW M4 x 8	4	114	EXTERNAL CIRCLIP S-35	1
56	SWITCH PANEL	1	115	CHUCK	1
57	MOTOR SWITCH	1	116	CHUCK ADAPTOR	1
58	MAGNET SWITCH	1	117	CHUCK KEY	1
59	CAP BOLT M6 x 16	1	118	PILOT PIN	1
60	FLAT WASHER $\phi 6 \times \phi 25 \times 1$	1	119	WOODRUFF KEY $4 \times 4 \times 8$	1

Semi Auto Feed Drilling System Exploded View & Parts list



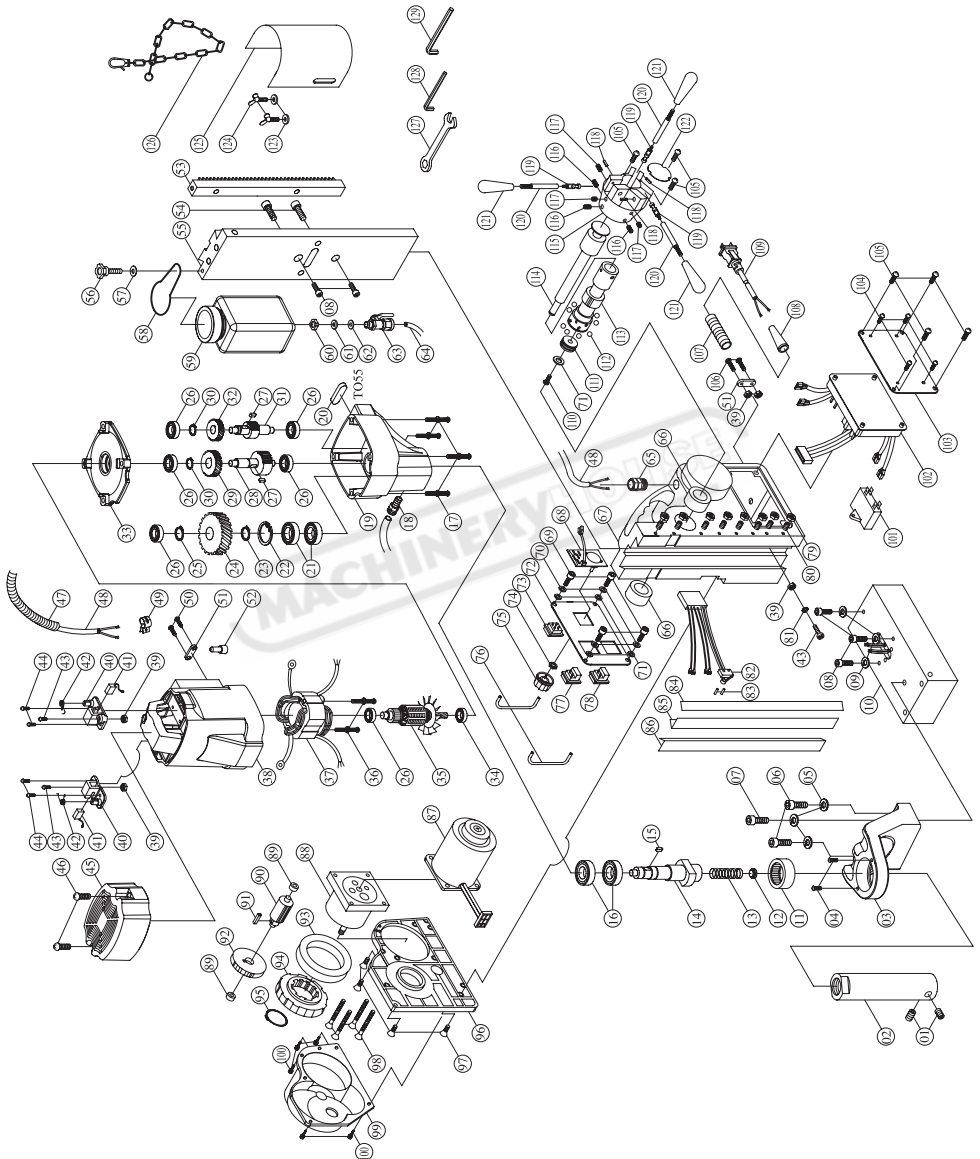
No.	Parts Name	Q'TY	No.	Parts Name	Q'TY
1	SET SCREW M8 x 7	2	69	NUT	1
2	ARBOR	1	70	SELECTOR SWITCH	1
3	ARBOR SUPPORT BRACKET	1	71	SWITCH GUARD	2
4	SCREW M5 x 8	2	72	MOTOR ON SWITCH (GREEN)	1
5	SPRING WASHER M8	3	73	MOTOR OFF SWITCH (RED)	1
6	CAP BOLT M8 x 55	2	74	NUT M5	6
7	CAP BOLT M8 x 30	1	75	SET SCREW M5 x 20	6
8	CAP BOLT M6 x 20	5	76	SUN WASHER M5	1
9	SPRING WASHER M6	3	77	LIMIT SWITCH	1
10	MAGNET	1	78	PIN ϕ 2.2 x 10	2
11	BEARING HK 3516	1	79	GIB TENSIONER 260 x 11 x 2,3	1
12	WATER SEAL	1	80	GIB STRIP - LEFT 260L	1
13	SPRING	1	81	GIB STRIP - RIGHT 260L	1
14	SPINDLE	1	82	FEED MOTOR	1
15	WOODRUFF KEY 5 x 5 x 10	1	83	FEED MOTOR GEAR BOX	1
16	OIL SEAL ϕ 28 x ϕ 40 x 7	2	84	BUSHING ϕ 8 x ϕ 12 x 6	2
17	SCREW M5 x 60	6	85	FEED INTERMEDIATE GEAR 10T	1
18	COLLANT CONNECTOR	1	86	WOODRUFF KEY 4 x 4 x 10	1
19	GEAR CASE	1	87	FEED OUTPUT GEAR 80T	1
20	WOODRUFF KEY 4 x 4 x 30	1	88	BEARING 6809 zz	1
21	BEARING 6003 zz	2	89	ENGAGEMENT GEAR 63T	1
22	INTERNAL CIRCLIP R-35	1	90	EXTERNAL CIRCLIP S-29	1
23	EXTERNAL CIRCLIP S-17	1	91	FEED SUPPORT BASE	1
24	OUTPUT GEAR 52T	1	92	SCREW M5 x 15	4
25	EXTERNAL CIRCLIP S-15	1	93	SCREW M5 x 30	4
26	BEARING 608 zz	4	94	AUTO FEED COVER	1
27A	INTERMEDIATE GEAR PINION 8T	1	95	SCREW M5 x 20	5
28A	INTERMEDIATE GEAR 50T	1	96	CAPACITOR	1
29	GEAR PLATE	1	97	ELECTRONICS BOARD	1
30	BEARING 609-2RS	1	98	SIDE PLATE	1
31	ARMATURE 7T	1	99	SCREW M3.5 x 6	4
32	STATOR	1	100	SCREW M4 x 8	7
33	MOTOR HOUSING	1	101	SCREW M4 x 30	2
34	NUT M4 x 8	5	102	CABLE PROTECTOR 7CM	1
35	BRUSH HOLDER 7 x 11	2	103	CORD ARMOR	1
36	CARBON BRUSH 7 x 11 x 17	2	104	POWER SUPPLY CABLE	1
37	SPRING	2	105	SCREW M4 x 8	1
38	SCREW M4 x 10	2	106	SELECT CAM	1
39	SCREW M4 x 12	4	107	BALL ϕ 5	8
40	MOTOR TAIL COVER	1	108	CRANK SPINDLE	1
41	SCREW M4 x 25	2	109	SELECTOR ROD	1
42	CABLE PROTECTOR 40CM	1	110	CRANK HUB	1
43	MOTOR CABLE 1.25 x 2C x 80CM	1	111	SET SCREW M8 x 10	3
44	CABLE CLAMP	1	112	DETEN UNIT M6 x 13	3
45	SCREW M4 x 14	2	113	PIN ϕ 4.2 x 25	3
46	CORD CLIP	2	114	CRANK LEVER TIP	3
47	WIRE CONNECTOR C-4	3	115	CRANK LEVER	3
48	GEAR RACK	1	116	CRANK GRIP	3
49	SCREW M8 x 16	2	117	HUB COVER	1
50	SLIDE PLATE	1	118	FLAT WASHER ϕ 6 x ϕ 13 x 1	2
51	CAP BOLT M5 x 16	2	119	BUTTERFLY SCREW M6 x 10	2
52	FLAT WASHER ϕ 5 x ϕ 12 x 1	2	120	CHIP GUARD	1
53	COLLANT TANK BRACKET	1	121	SAFET CHAIN	1
54	COLLANT TANK BRACKET 400c.c.	1	122	WRENCH M8	1
55	BRASS NUT	1	123	HEX. WRENCH M2,5	1
56	FLAT WASHER ϕ 10 x ϕ 23 x 2	1	124	HEX. WRENCH M4	1
57	N/A	-	125	TERMINAL	4
58	COLLANT VALVE	1	126	SCREW M4 x 16	1
59	COLLANT TUBE 15CM	1	127	WASHER 4 x 11 x 1	1
60	CABLE GLAND	1	128	TERMINAL SIRIES	8
61	BUSHING ϕ 28 x ϕ 32 x 12	2	129	HUB DISC	1
62	STAND BODY	1	130	CHUCK ADAPTOR	1
63	SPEED CONTROL BOARD	1	131	CHUCK	1
64	SCREW M4 x 16	4	132	CHUCK KEY	1
65	SPRING WASHER M4	4	133	PILOT PIN	1
66	FLAT WASHER ϕ 4 x ϕ 10 x 1	6	134	TIE	1
67	SWITCH PLATE	1	135	WOODRUFF KEY 4 x 4 x 8	1
68	MAGNET SWITCH	1			

1 Speed Drilling System Exploded View & Parts list (N)



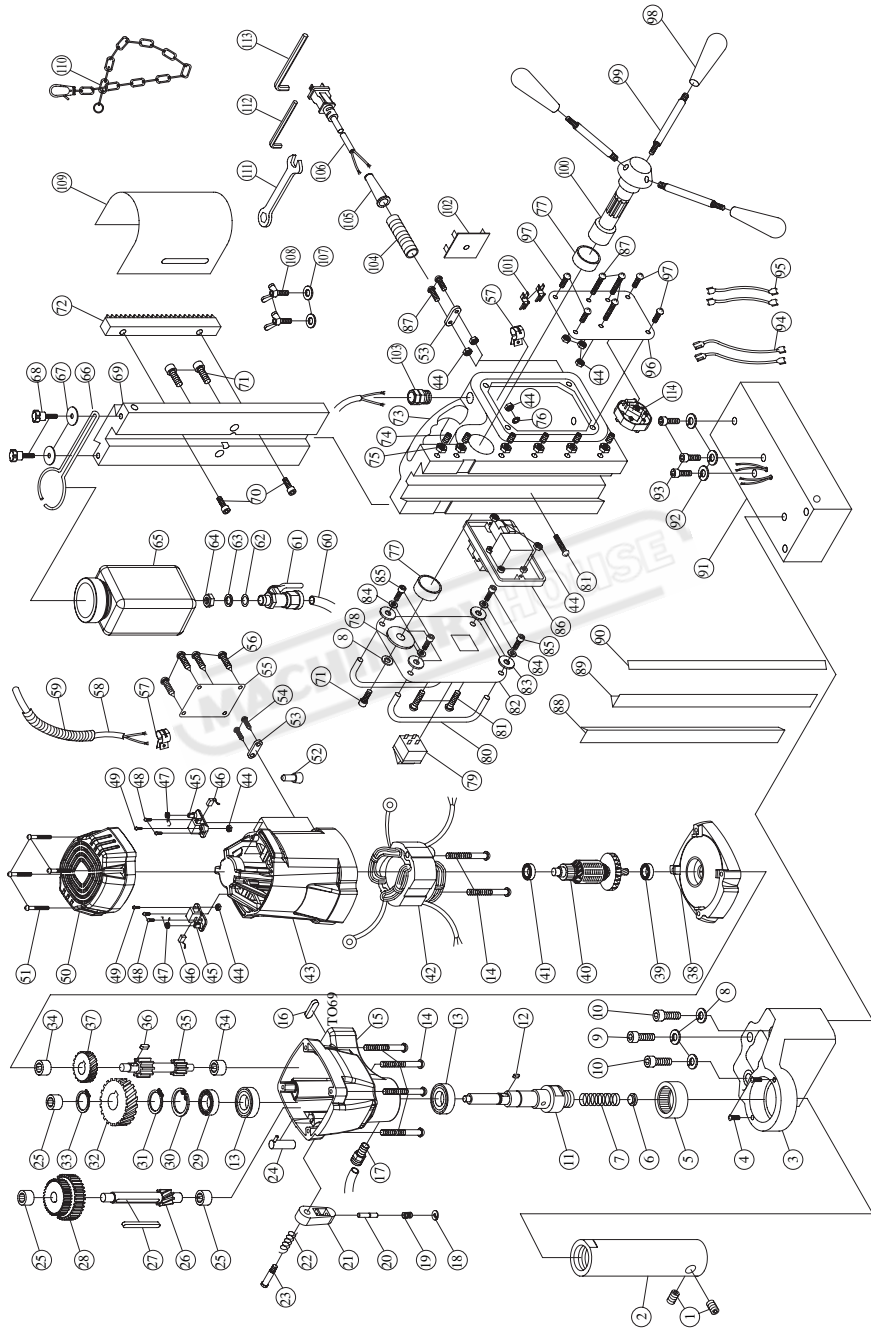
No.	Parts Name	Q'TY	No.	Parts Name	Q'TY
1	STAINLESS STEEL BALL ϕ 12	2	57	COOLANT TUBE	1
2	STAINLESS STEEL BALL ϕ 8	1	58	COOLANT VALVE	1
3	QUICK RELEASE ARBOR SHAFT	1	59	O-RING 10.7 x 2	1
4	COLLAR	1	60	FLAT WASHER 10 x 23 x 2	1
5	SMALL PIN	1	61	BRASS NUT	1
6	RUBBER RING ϕ 40 x ϕ 44 x 9	1	62	COOLANT TANK	1
7	SPRING ϕ 2 x ϕ 43 x 3 x 30	1	63	CAP BOLT M6 x 20	5
8	STEEL RING ϕ 35.1 x ϕ 44.5 x 2	1	64	SLIDE PLATE	1
9	C RING ϕ 2 x ϕ 32 x 3	1	65	COOLANT TANK BRACKET	1
10	ARBOR SUPPORT BRACKET	1	66	FLAT WASHER M5	2
11	SCREW M5 x 8	2	67	THUMB SCREW M5 x 16	3
12	BEARING HK3516	1	68	GEAR RACK	1
13	SPRING WASHER M8	3	69	CAP BOLT M8 x 16	2
14	CAP BOLT M8 x 55	2	70	STAND BODY	1
15	CAP BOLT M8 x 30	1	71	GIB SET SCREW M5 x 20	5
16	WATER SEAL	1	72	GIB LOCK NUT M5	5
17	SPRING	1	73	BUSHING ϕ 32 x ϕ 28 x 12	2
18	SPINDLE	1	74	FLAT WASHER ϕ 40 x ϕ 6 x 3	1
19	WOODRUFF KEY 5 x 5 x 10	1	75	SCREW M4 x 16	4
20	OIL SEAL ϕ 28 x ϕ 40 x 7	2	76	SPRING WASHER M4	4
21	SCREW M5 x 70	4	77	FLAT WASHER M4	4
22	GEAR CASE	1	78	FLAT WASHER ϕ 6 x ϕ 25 x 1	1
23	COOLANT CONNECTOR	1	79	CAP BOLT M6 x 16	1
24	BEARING 6003ZZ	2	80	SWITCH GUARD BAR	2
25	INTERNAL CIR CLIP R35	1	81	SWITCH PANEL	1
26	EXTERNAL CIR CLIP S17	1	82	MOTOR SWITCH	1
27	OUTPUT GEAR 37T	1	83	MAGNET SWITCH	1
28	EXTERNAL CIR CLIP S15	1	84	GIB WEAR STRIP - LEFT	1
29	BEARING 608ZZ	6	85	GIB WEAR STRIP - RIGHT	1
30	WOODRUFF KEY 4 x 4 x 8	2	86	GIB TENSIONER 260 x 11 x 2.3	1
31	INTERMEDIATE GEAR PINION 12T	1	87	SCREW M4 x 12	1
32	INTERMEDIATE GEAR 34T	1	88	SUN WASHER M5	1
33	EXTERNAL CIR CLIP S10	2	89	SPRING WASHER M6	3
34	MAINSHAFT PINION 9T	1	90	MAGNET BASE 164 x 80 x 48	1
35	INPUT GEAR 30T	1	91	SIDE PANEL	1
36	WOODRUFF KEY 4 x 4 x 30	1	92	OVER LOAD PROTECTION (OPTIONAL)	1
37	GEAR PLATE	1	93	SCREW M4 x 25	6
38	BEARING 6001 2RS	1	94	SCREW M4 x 8	4
39	ARMATURE 7T	1	95	RECTIFIER & EMC	1
40	SCREW M5 x 60	2	96	CRANK SPINDLE	1
41	STATOR	1	97	CRANK HANDLE	3
42	MOTOR HOUSING	1	98	STRAIN RELIEF	1
43	NUT M4	8	99	CORD ARMOR	1
44	BRUSH HOLDER	2	100	POWER SUPPLY CABLE	1
45	CARBON BRUSH 7 x 11	2	101	CABLE GLAND	1
46	BRUSH SPRING	2	102	WIRE CONNECTOR	2
47	SCREW M4 x 10	2	103	FLAT WASHER M6	2
48	SCREW M4 x 12	4	104	BUTTERFLY SCREW M6 x 10	2
49	MOTOR TAIL COVER	1	105	LEAD WIRE	2
50	SCREW M4 x 25	2	106	LEAD WIRE	2
51	CABLE CLIP	2	107	WRENCH M8	1
52	SCREW M4 x 14	2	108	HEX. WRENCH M2.5	1
53	WIRE CONNECTOR C4	2	109	HEX. WRENCH M4	1
54	CABLE CLAMP	2	110	CHIP GUARD	1
55	MOTOR CABLE	1	111	SAFETY CHAIN	1
56	CABLE PROTECTOR	1			

Semi Auto Feed Drilling System Exploded View & Parts list (N)



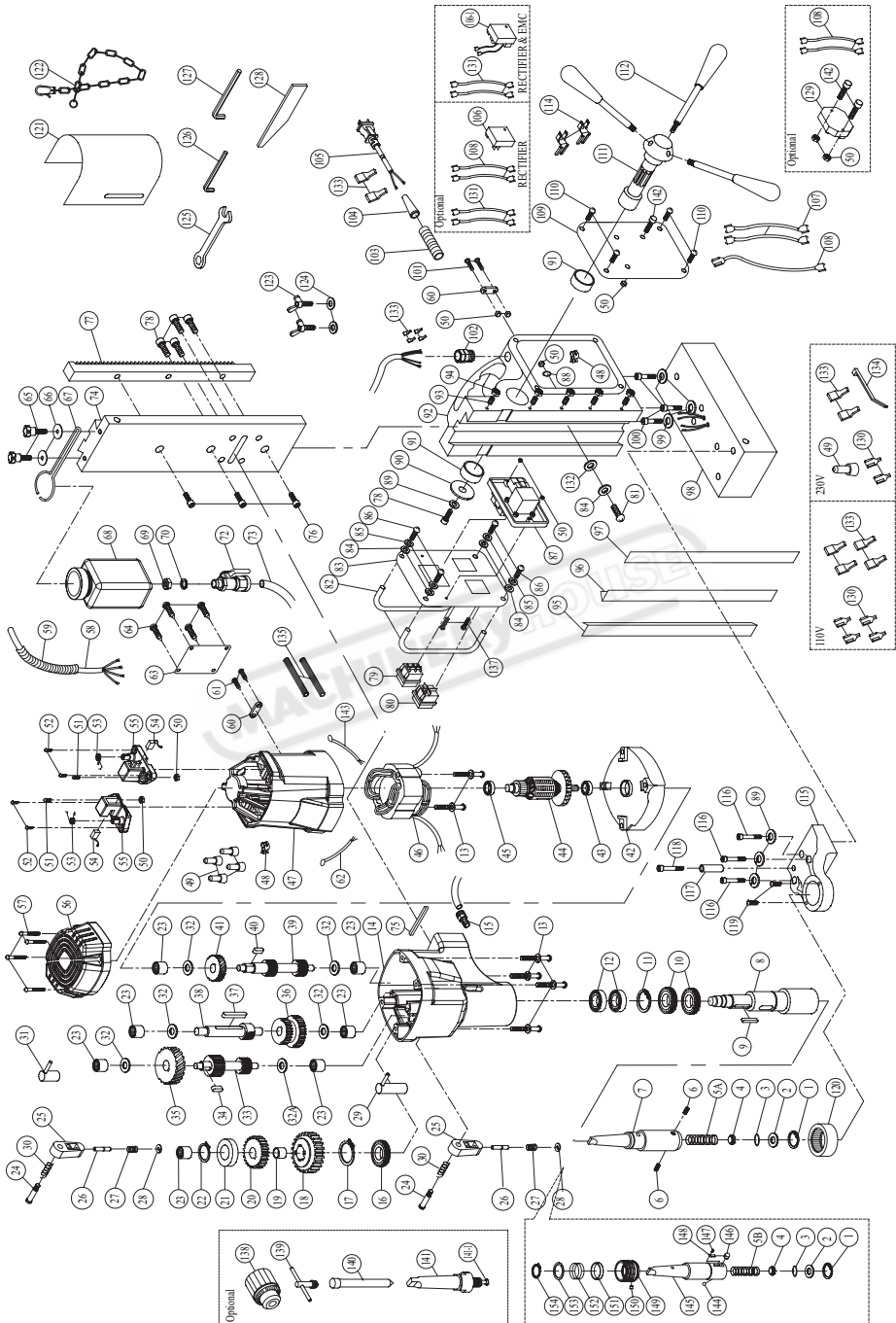
No.	Parts Name	QTY	No.	Parts Name	QTY
1	SET SCREW M8 x 6	2	66	BUSHING $\varnothing 28 \times 32 \times 12$	2
2	ARBOR	1	67	STAND BODY	1
3	ARBOR SUPPORT BRACKET	1	68	SPEED CONTROL BOARD	1
4	SCREW M5 x 8	2	69	SCREW M4 x 16	4
5	SPRING WASHER M8	3	70	SPRING WASHER M4	4
6	CAP BOLT M8 x 55	2	71	FLAT WASHER M4	5
7	CAP BOLT M8 x 30	1	72	SWITCH PLATE	1
8	CAP BOLT M6 x 20	5	73	MAGNET SWITCH	1
9	SPRING WASHER M6	3	74	NUT	1
10	MAGNET	1	75	SELECTOR SWITCH	1
11	BEARING HK3516	1	76	SWITCH GUARD BAR	2
12	WATER SEAL	1	77	MOTOR ON SWITCH (GREEN)	1
13	SPRING	1	78	MOTOR OFF SWITCH (RED)	1
14	SPINDLE	1	79	NUT M5	8
15	WOODRUFF KEY 5 x 5 x 10	1	80	SET SCREW M5 x 20	8
16	OIL SEAL 28 x 40 x 7	2	81	SUN WASHER M5	1
17	SCREW M5 x 70	4	82	LIMIT SWITCH	1
18	COLLANT CONNECTOR	1	83	PIN $\varnothing 2.2 \times 10$	2
19	GEAR CASE	1	84	GIB TENSIONER 260 x 11 x 2.3	1
20	WOODRUFF KEY M4 x 4 x 30	1	85	GIB STRIP - LEFT	1
21	BEARING 6003ZZ	2	86	GIB STRIP - RIGHT 260L	1
22	INTERNAL CIRCLIP R35	1	87	FEED MOTOR	1
23	EXTERNAL CIRCLIP S-17	1	88	FEED MOTOR GEAR BOX	1
24	OUTPUT GEAR 37T	1	89	BUSHING $\varnothing 8 \times 12 \times 6$	2
25	EXTERNAL CIR CLIP S-15	1	90	FEED INTERMEDIATE GEAR 10T	1
26	BEARING 608ZZ	6	91	WOODRUFF KEY M4 x 4 x 10	1
27	WOODRUFF KEY 4 x 4 x 8	2	92	FEED OUTPUT GEAR 80T	1
28	INTERMEDIATE GEAR PINION 12T	1	93	BEARING 6809ZZ	1
29	INTERMEDIATE GEAR 34T	1	94	ENGAGEMENT GEAR 63T	1
30	EXTERNAL CIR CLIP S10	2	95	EXTERNAL CIRCLIP S-30	1
31	MAINSHAFT PINION 9T	1	96	FEED SUPPORT BASE	1
32	INPUT GEAR 30T	1	97	SCREW M5 x 15	4
33	GEAR PLATE	1	98	SCREW M5 x 35	4
34	BEARING 6001 2RS	1	99	AUTO FEED COVER	1
35	ARMATURE 7T	1	100	SCREW M5 x 20	5
36	SCREW M5 x 60	2	101	CAPACITOR	1
37	STATOR	1	102	ELECTRONICS BOARD	1
38	MOTOR HOUSING	1	103	SIDE PLATE	1
39	NUT M4	5	104	SCREW M3.5 x 6	4
40	BRUSH HOLDER	2	105	SCREW M4 x 8	7
41	CARBON BRUSH	2	106	SCREW M4 x 30	2
42	SPRING	2	107	CABLE PROTECTOR	1
43	SCREW M4 x 10	3	108	CORD ARMOR	1
44	SCREW M4 x 12	4	109	POWER SUPPLY CABLE	1
45	MOTOR TAIL COVER	1	110	SCREW M4 x 8	1
46	SCREW M4 x 25	2	111	SELECT CAM	1
47	CABLE PROTECTOR	1	112	BALL 5mm	8
48	MOTOR CABLE 1.25 x 2C x 80cm	1	113	CRANK SPINDLE	1
49	CABLE CLAMP	1	114	SELECTOR ROD	1
50	SCREW M4 x 14	2	115	CRANK HUB	1
51	CORD CLIP	2	116	SET SCREW M8 x 8	3
52	WIRE CONNECTOR C-4	1	117	DEFEN UNIT M6 x 13	3
53	GEAR RACK	1	118	PIN $\varnothing 4.2 \times 25$	3
54	SCREW M8 x 16	2	119	CRANK LEVER TIP	3
55	SLIDE PLATE	1	120	CRANK LEVER	3
56	CAP BOLT	1	121	CRANK GRIP	3
57	FLAT WASHER M5	1	122	HUB COVER	1
58	COLLANT TANK BRACKET	1	123	FLAT WASHER M6	2
59	COLLANT TANK BRACKET	1	124	BUTTERFLY SCREW M6 x 10	2
60	BRASS NUT	1	125	CHIP GUARD	1
61	FLAT WASHER 10 x 23 x 2	1	126	SAFETI CHAIN	1
62	O-RING 10.7 x 2	1	127	WRENCH M8	1
63	COLLANT VALVE	1	128	HEX. WRENCH M2.5	1
64	COLLANT TUBE	1	129	HEX. WRENCH M4	1
65	CABLE GLAND	1			

2 Speed Drilling System Exploded View & Parts list



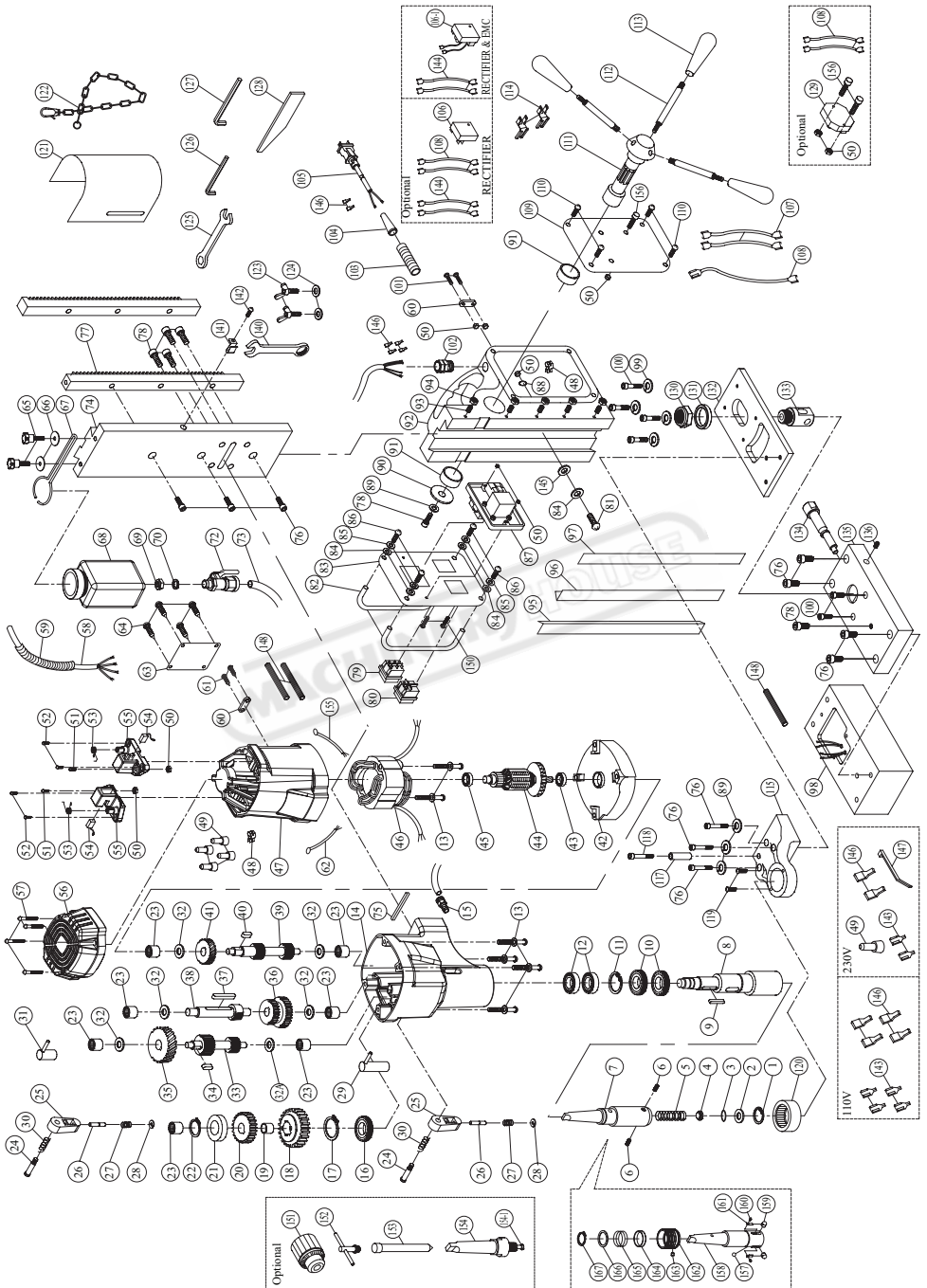
No.	Parts Name	Q'TY	No.	Parts Name	Q'TY
1	SET SCREW M8x6	2	58	MOTOR CABLE	1
2	ARBOR	1	59	CABLE PROTECTOR	1
3	ARBOR SUPPORT BRACKET	1	60	COOLANT TUBE	1
4	SCREW M4x6	2	61	COOLANT TAP	1
5	BEARING HK3516	1	62	O-RING 10.7x2	1
6	WATER SEAL	1	63	FLAT WASHER 10x23x2	1
7	SPRING	1	64	BRASS NUT	1
8	SPRING WASHER M8	4	65	COOLANT TANK 400CC	1
9	CAP BOLT M8x60	1	66	COOLANT TANK BRACKET	1
10	CAP BOLT M8x70	2	67	FLAT WASHER M5	2
11	SPINDLE	1	68	THUMB SCREW	2
12	WOODRUFF KEY M5x5x12	1	69	SLIDE PLATE	1
13	OIL SEAL 22x37x7	2	70	CAP BOLT M8x20	2
14	SCREW M5x60	6	71	CAP BOLT M8x16	3
15	GEAR CASE	1	72	GEAR RACK 161.5	1
16	WOODRUFF KEY M4x4x30	1	73	STAND BODY	1
17	COOLANT INLET	1	74	SET SCREW M5*25	6
18	E-CLIP E-4	1	75	NUT M5	6
19	SPRING WASHER	1	76	SUN WASHER M4	1
20	DETENT PIN	1	77	BUSHING 32x38x12	2
21	SELECTOR TAB	1	78	FLAT WASHER ø40x8x2.5	1
22	SPRING	1	79	MAGNET SWITCH	1
23	SELECTOR SCREW	1	80	GUARD BAR	2
24	SELECTOR FORK	1	81	SCREW M4x12	3
25	BEARING HK1010	3	82	SWITCH PANEL	1
26	INTERMEDIATE GEAR PINION 10T	1	83	FLAT WASHER M4	4
27	WOODRUFF KEY 5x5x50	1	84	SPRING WASHER M4	4
28	INTERMEDIATE GEAR 30T.33T	1	85	CAP BOLT M4x16	4
29	BEARING 6204zz	1	86	MOTOR SWITCH	1
30	INTERNAL CIR CLIP R-47	1	87	SCREW M4x25	5
31	EXTERNAL CIR CLIP S-20	1	88	GIB STRIP-LEFT	1
32	OUTPUT GEAR 39T	1	89	GIB STRIP-RIGHT	1
33	EXTERNAL CIR CLIP S-15	1	90	GIB TENSIONER	1
34	BEARING HK0810	2	91	MAGNET BASE	1
35	MAIN SHAFT PINION 10T.13T	1	92	SPRING WASHER M6	3
36	WOODRUFF KEY 5x5x8	1	93	SCREW M6x20	3
37	INPUT GEAR 29T	1	94	WIRE DEADER	2
38	GEAR PLATE	1	95	WIRE DEADER	2
39	BEARING 6202 2RS	1	96	SIDE PLATE	1
40	ARMATURE	1	97	SCREW M4x8	4
41	BEARING 6200ZZ	1	98	CRANK GRIP	3
42	STATOR	1	99	CRANK LEVER	3
43	MOTOR HOUSING	1	100	CRANK SPINDLE	1
44	NUT M4	10	101	WIRE CONNECTOR	2
45	BRUSH HOLDER	2	102	RECTIFIER & EMC	1
46	CARBON BRUSH	2	103	CABLE GLAND	1
47	BRUSH SPRING	2	104	STRAIN RELIEF	1
48	SCREW M4x12	4	105	CORD ARMOR	1
49	SCREW M4x10	2	106	POWER SUPPLY CABLE	1
50	MOTOR TAIL COVER	1	107	FLAT WASHER M6	2
51	SCREW M4x20	4	108	BUTTERFLY SCREW M6x8	2
52	WIRE CONNECTOR C-4	1	109	CHIP GUARD	1
53	CORD CLIP	2	110	SAFETY CHAIN	1
54	SCREW M4x16	2	111	WRENCH	1
55	MOTOR COVER PLATE	1	112	HEX. WRENCH	1
56	SCREW M5x10	4	113	HEX. WRENCH	1
57	CABLE CLAMP	2	114	OVER LOAD PROTECTION (OPTIONAL)	1

4 Speed Drilling System Exploded View & Parts list



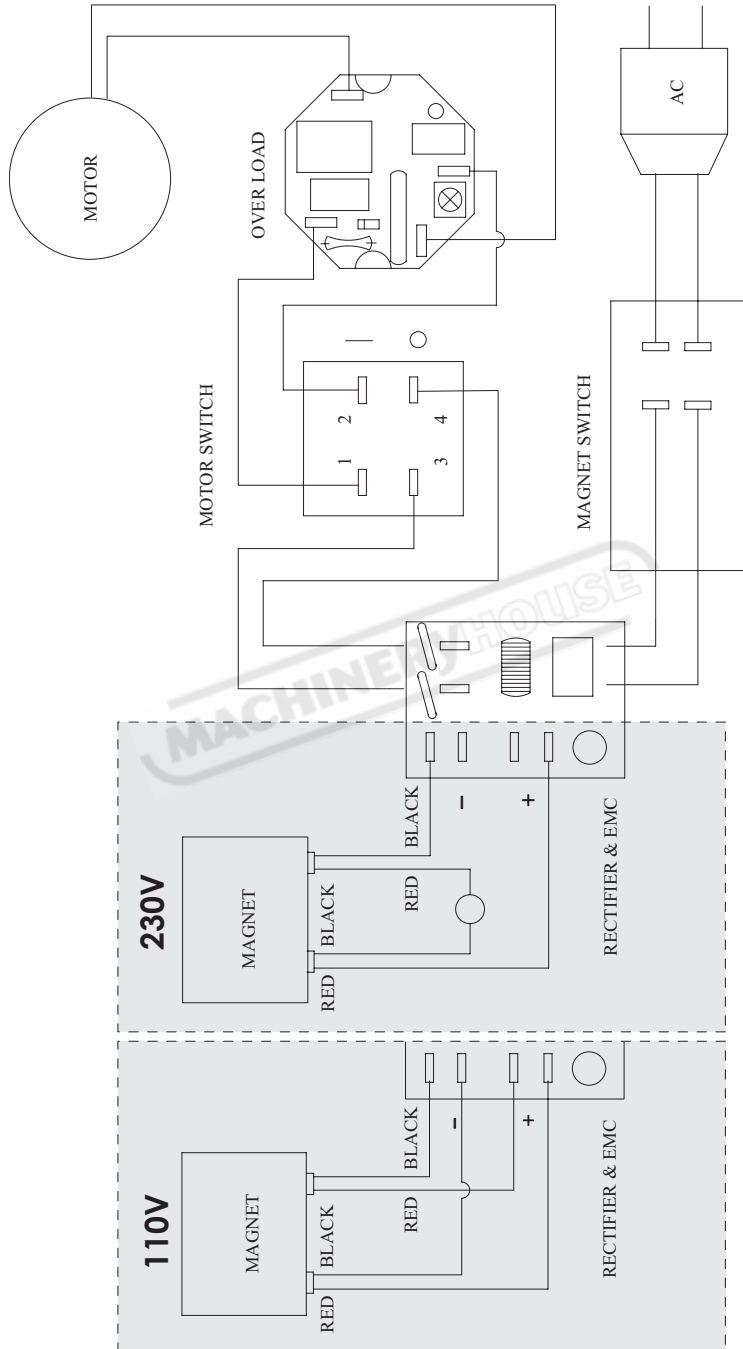
No.	Parts Name	QTY	No.	Parts Name	QTY
1.	INTERNAL CIRCLIP R-19	1	77	GEAR RACK 270cm	1
2	ARBOR WASHER $\phi 10 \times \phi 18.5 \times 0.8$	1	78	CAP BOLT M8 x 16	5
3	RING $\phi 12 \times 4$	1	79	REVERSING SWITCH	1
4	WATER SEAL $\phi 12 \times \phi 10.2 \times 15$	1	80	MAGNET SWITCH	1
5A	SPRING $\phi 1.2 \times \phi 10 \times \phi 12.4 \times 24T \times 140L$	1	81	SCREW M4 x 16	1
5B	SPRING $\phi 1.2 \times \phi 10 \times \phi 12.4 \times 15T \times 100L$	1	82	GUARD BAR	2
6	SET SCREW M8 x 7	2	83	SWITCH PANEL	1
7	MT3 ARBOR	1	84	FLAT WASHER $\phi 4 \times \phi 10 \times 1$	5
8	SPINDLE	1	85	SPRING WASHER M4	4
9	WOODRUFF KEY 5 x 5 x 40	1	86	CAP BOLT M4 x 16	4
10	OIL SEAL $\phi 40 \times \phi 55 \times 7$	2	87	MOTOR SWITCH	1
11	INTERNAL CIRCLIP R-55	1	88	SUN WASHER M5	1
12	BEARING 6006 zz	2	89	SPRING WASHER M8	4
13	SCREW M5 x 60	6	90	FLAT WASHER $\phi 8 \times \phi 40 \times 2.5$	1
14	GEAR CASE 75/KG	1	91	BUSHING 32 x 38 x 12	2
15A	COOLANT INLET	1	92	STAND BODY	1
15B	COOLANT INLET	1	93	SET SCREW M5 x 25	5
16	OIL SEAL $\phi 30 \times \phi 45 \times 5$	1	94	NUT M5	5
17	EXTERNAL CIRCLIP S-30	1	95	GIB STRIP-LEFT 308mm	1
18	LOW SPINDLE GEAR 21T	1	96	GIB STRIP-RIGHT 308mm	1
19	BUSHING $\phi 18 \times \phi 20 \times 11.5$	1	97	GIB STRIP TENSIONER 308 x 1.5 x 2.3	1
20	HIGH SPINDLE GEAR 25T	1	98	MAGNET	1
21	SPACER	1	99	SPRING WASHER M6	3
22	INTERNAL CIRCLIP S-14	1	100	CAP BOLT M6 x 20	3
23	BEARING HK 1010	7	101	SCREW M4 x 30	2
24	SELECTOR SCREW	2	102	CABLE GLAND	1
25	SELECTOR TAB	2	103	STRAIN RELIEF 7CM	1
26	DETENT PIN	2	104	CORD ARMOR	1
27	SPRING $\phi 0.6 \times \phi 5.3 \times \phi 6.5 \times 5T \times 17L$	2	105	POWER SUPPLY CABLE	1
28	E-CLIP E-3	2	106	RECTIFIER & EMC	1
29	FIRST SELECTOR FORK	1	106-1	RECTIFIER & EMC	1
30	SPRING $\phi 1 \times \phi 9 \times \psi 11 \times 4T$	2	107	WIRE LEADS 16AWG 9cm	2
31	SECOND SELECTOR FORK	1	108	WIRE LEADS 16AWG 18cm	5
32	THRUST WASHER 1024	5	109	SIDE COVER	1
32A	THRUST WASHER $\phi 13 \times \phi 24 \times 1$	1	110	SCREW M4 x 8	4
33	LAY SHAFT 16T x 7T	1	111	CRANK SPINDLE	1
34	WOODRUFF KEY 5 x 5 x 10	1	112	CRANK HANDLE	3
35	LAY GEAR 36T	1	113	N/A	-
36	INTERMEDIATE GEAR 28T x 30T	1	114	WIRE CONNECTOR	2
37	WOODRUFF KEY 5 x 5 x 50	1	115	ARBOR SUPPORT BRACKET	1
38	COUNTERSHAFT PINION 12T	1	116	CAP BOLT M8 x 25	3
39	MAINSHAFT PINION 10T x 12T	1	117	TRAVEL STOP	1
40	WOODRUFF KEY 5 x 5 x 8	1	118	CAP BOLT M6 x 45	1
41	INPUT GEAR 29T	1	119	SCREW M4 x 6	2
42	GEAR PLATE	1	120	BEARING HK 3516	1
43	BEARING 6202-2RS	1	121	CHIP GUARD	1
44	ARMATURE	1	122	SAFETY CHAIN	1
45	BEARING 6200-2RS	1	123	BUTTERFLY SCREW M6 x 10	2
46	STATOR	1	124	FLAT WASHER $\phi 6 \times \phi 13 \times 1$	2
47	MOTOR HOUSING	1	125	WRENCH M8	1
48	CABLE CLAMP	2	126	HEX. KEY M2.5	1
49	WIRE CONNECTOR C4	5	127	HEX. KEY M4	1
50	NUT M4	10	128	DRIFT	1
51	SCREW M4 x 10	2	129	OVERLOAD	1
52	SCREW M4 x 12	4	130	TERMINAL	4
53	BRUSH SPRING	2	131	WIRE LEADS 16AWG 18cm	2
54	CARBON BRUSH 7 x 17 x 17	2	132	RUBBER WASHER $\phi 4 \times \phi 11 \times 1$	1
55	BRUSH HOLDER 7 x 17	2	133	TERMINAL SIRIES	10
56	MOTOR TAIL COVER	1	134	TIE	1
57	SCREW 4 x 20	4	135	SILICON TUBE M4 x 12CM	2
58	MOTOR CABLE 2.0 x 4c x 90cm	1	136	N/A	-
59	CABLE PROTECTOR 50cm	1	137	SCREW M4 x 20	2
60	CORD CLIP	2	138	CHUCK	1
61	SCREW M4 x 16	2	139	CHUCK KEY	1
62	WIRE LEADS 16AWG 20cm	1	140	PILOT PIN 112L	1
63	MOTOR COVER PLATE	1	141	MT3 CHUCK ADAPTOR	1
64	SCREW M5 x 12	4	141-1	SCREW M6 x 25	1
65	THUMB SCREW M5 x 16	2	142	SCREW M4 x 25	3
66	FLAT WASHER $\phi 5 \times \phi 12 \times 1$	2	143	WIRE LEADS 16AWG 20cm	1
67	COOLANT TANK BRACKET	1	144	STAINLESS STEEL BALL $\phi 8$	1
68	COOLANT TANK 400CC	1	145	QUICK-RELEASE ARBOR	1
69	BRASS NUT	1	146	LOCK PIN	1
70	FLAT WASHER $\phi 10 \times \phi 23 \times 2$	1	147	SCREW M3 x 4	1
71	NA	-	148	LOCKING PIN SPRING	1
72A	COOLANT TAP	1	149	QUICK-RELEASE COLLAR	1
72B	COOLANT TAP	1	150	SMALL PIN	1
73	COOLANT TUBE 18cm	1	151	RUBBER RING $\phi 40 \times \phi 44 \times 9$	1
74	SLIDE PLATE 348mm	1	152	SPRING $\phi 2 \times \phi 39 \times \phi 43 \times 30L \times 3T$	1
75	WOODRUFF KEY M4 x 4 x 30	1	153	STEEL RING $\phi 35.1 \times \phi 44.5 \times 2$	1
76	CAP BOLT M8 x 20	3	154	C RING S-35	1

4 Speed Swivel Base Drilling System Exploded View & Parts list

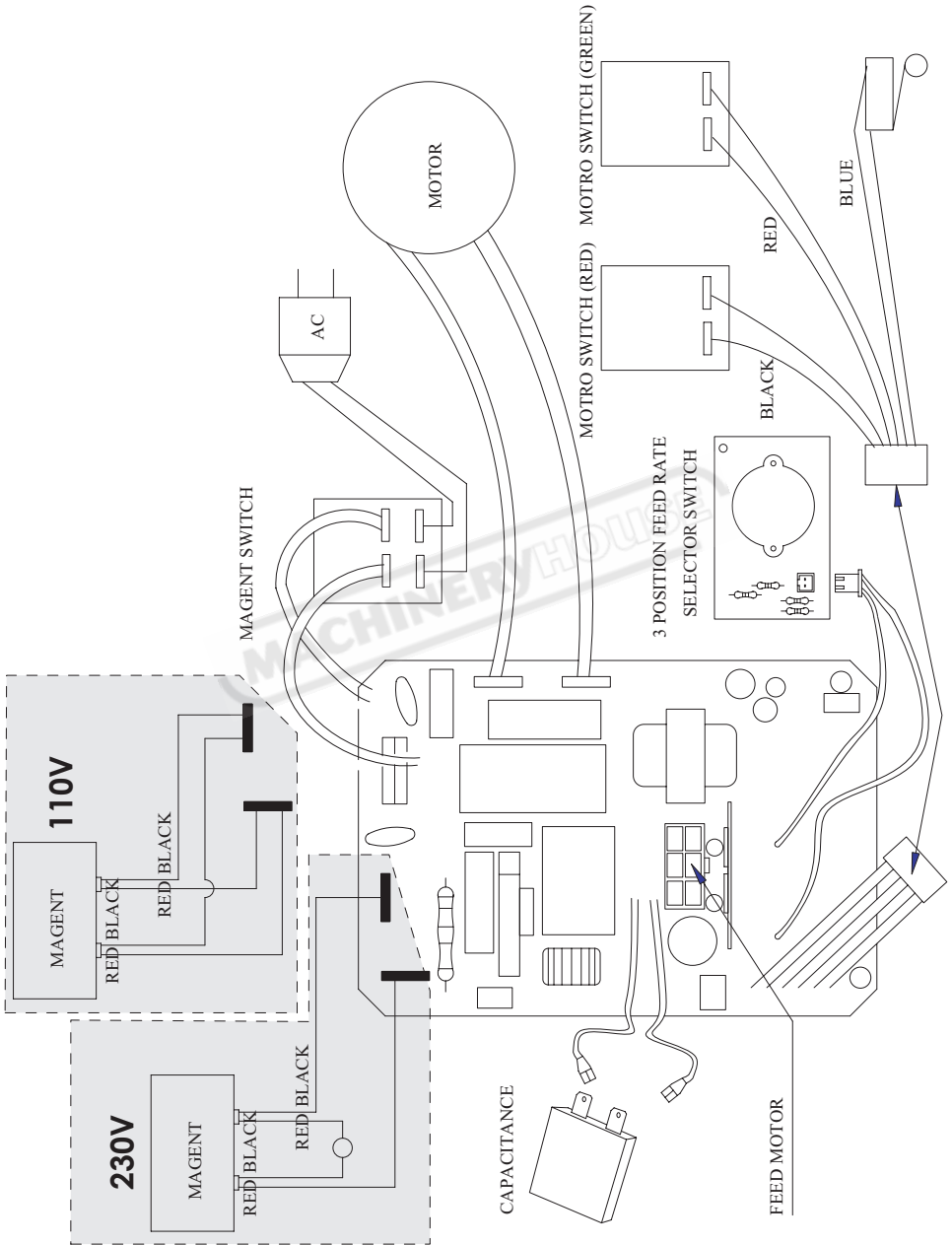


No.	Parts Name	QTY	No.	Parts Name	QTY
1	INTERNAL CIRCLIP R-19	1	85	SPRING WASHER M4	4
2	ARBOR WASHER $\phi 10 \times \phi 18.5 \times 0.8$	1	86	CAP BOLT M4 x 16	4
3	RING 12 x 4	1	87	MOTOR SWITCH	1
4	WATER SEAL $\phi 10.2 \times \phi 12 \times 1.5$	1	88	SUN WASHER M5	1
5	SPRING $\phi 1.2 \times \phi 10 \times \phi 12.4 \times 241 \times 140L$	1	89	SPRING WASHER M8	4
6	SET SCREW M8 x 7	2	90	FLAT WASHER $\phi 8 \times \phi 40 \times 2.5$	1
7	M3 ARBOR	1	91	BUSHING $\phi 32 \times \phi 38 \times 12$	2
8	SPINDLE	1	92	STAND BODY	1
9	WOODRUFF KEY 5 x 5 x 40	1	93	SET SCREW M5 x 25	5
10	OIL SEAL $\phi 40 \times \phi 55 \times 7$	2	94	NUT M5	5
11	INTERNAL CIRCLIP R-55	1	95	GIB STRIP-LEFT 308mm	1
12	BEARING 6006 zz	2	96	GIB STRIP-RIGHT 308mm	1
13	SCREW M5 x 60	6	97	GIB STRIP TENSIONER 308 x 1.5 x 2.3	1
14	GEAR CASE	1	98	MAGNET	1
15A	COOLANT INLET	1	99	SPRING WASHER M6	4
15B	COOLANT INLET	1	100	CAP BOLT M6 x 12	6
16	OIL SEAL $\phi 30 \times \phi 45 \times 5$	1	101	SCREW M4 x 30	2
17	EXTERNAL CIRCLIP S-30	1	102	CABLE GLAND	1
18	LOW SPINDLE GEAR 21T	1	103	STRAIN RELIEF 7CM	1
19	BUSHING $\phi 18 \times \phi 20 \times 11.5$	1	104	CORD ARMOR	1
20	HIGH SPINDLE GEAR 25T	1	105	POWER SUPPLY CABLE 3 x 3.5M x 1.5	1
21	SPACER	1	106	RECTIFIER & EMC	1
22	INTERNAL CIRCLIP S-14	1	106-1	RECTIFIER & EMC	1
23	BEARING HK 1010	7	106	RECTIFIER & EMC	1
24	SELECTOR SCREW	2	106-1	RECTIFIER & EMC	1
25	SELECTOR TAB	2	107	WIRE LEADS 16AWG 9cm	2
26	DETENT PIN	2	108	WIRE LEADS 16AWG 18cm	5
27	SPRING $\phi 0.6 \times \phi 5.3 \times \phi 6.5 \times 51 \times 17L$	2	109	SIDE COVER	1
28	E-CLIP E-3	2	110	SCREW M4 x 8	4
29	FIRST SELECTOR FORK	1	111	CRANK SPINDLE	1
30	SPRING $\phi 1.0 \times \phi 9 \times \phi 11 \times 4T$	2	112	CRANK HANDLE 140mm	3
31	SECOND SELECTOR FORK	1	113	HANDLE GRIP	3
32	THRUST WASHER 1024	5	114	WIRE CONNECTOR	2
32	THRUST WASHER $\phi 13 \times \phi 24 \times 1$	1	115	ARBOR SUPPORT BRACKET	1
33	LAY SHAFT 16T x 7T	1	116	N/A	-
34	WOODRUFF KEY 5 x 5 x 10	1	117	TRAVEL STOP	1
35	LAY GEAR 36T	1	118	CAP BOLT M6 x 45	1
36	INTERMEDIATE GEAR 28T x 30T	1	119	SCREW M4 x 6	2
37	WOODRUFF KEY 5 x 5 x 50	1	120	BEARING HK 3516	1
38	COUNTERSHAFT PINION 12T	1	121	CHIP GUARD	1
39	MAINSHAFT PINION 10T x 12T	1	122	SAFETY CHAIN	1
40	WOODRUFF KEY 5 x 5 x 8	1	123	BUTTERFLY SCREW M6 x 10	2
41	INPUT GEAR 29T	1	124	FLAT WASHER $\phi 6 \times \phi 13 \times 1$	2
42	GEAR PLATE	1	125	WRENCH M8	1
43	BEARING 6202-2RS	1	126	HEX. KEY M2.5	1
44	ARMATURE	1	127	HEX. KEY M4	1
44	ARMATURE	1	128	DRIFT	1
45	BEARING 6200-2RS	1	129	OVERLOAD	1
46	STATOR	1	129	OVERLOAD	1
46	STATOR	1	130	NYLOCK NUT M22	1
47	MOTOR HOUSING	1	131	WASHER $\phi 30.1 \times \phi 40 \times 5$	1
48	CABLE CLAMP	2	132	SWIVEL PLATE	1
49	WIRE CONNECTOR C4	5	133	LOCKING POST	1
50	NUT M4 x 8	10	134	LOCKING LUG	1
51	SCREW M4 x 10	2	135	MOUNTING PLATE	1
52	SCREW M4 x 12	4	136	SOCKET SET SCREW M8 x 7	1
53	BRUSH SPRING	2	137	N/A	-
54	CARBON BRUSH 7 x 17 x 17	2	138	N/A	-
55	BRUSH HOLDER 7 x 17	2	139	N/A	-
56	MOTOR TAIL COVER	1	140	OPEN-END WRENCH M17	1
57	SCREW M4 x 20	4	141	CLIP	1
58	MOTOR CABLE 2.0 x 4c x 90cm	1	142	SCREW M5 x 8	1
59	CABLE PROTECTOR 50cm	1	143	TERMINAL	4
60	CORD CLIP	2	144	WIRE LEADS 16AWG 18cm	2
61	SCREW M4 x 16	2	145	RUBBER WASHER $\phi 4 \times \phi 11 \times 1$	1
62	WIRE LEADS 16AWG 20cm M4	1	146	TERMINAL SIRIES	10
63	MOTOR COVER PLATE	1	147	TIE	1
64	SCREW M5 x 12	4	148	SILICON TUBE M4 x 12CM	3
65	THUMB SCREW	2	149	N/A	-
66	FLAT WASHER $\phi 5 \times \phi 12 \times 1$	2	150	SCREW M4 x 20	2
67	COOLANT TANK BRACKET	1	151	CHUCK	1
68	COOLANT TANK 400CC	1	152	CHUCK KEY	1
69	BRASS NUT	1	153	PILOT PIN 112L	1
70	FLAT WASHER $\phi 10 \times \phi 23 \times 2$	1	154	M3 CHUCK ADAPTOR	1
71	N/A	-	154-1	SCREW	1
72A	COOLANT TAP	1	155	WIRE LEADS 16AWG 20cm M4	1
72B	COOLANT TAP	1	156	SCREW M4 x 25	3
73	COOLANT TUBE 18cm	1	157	STAINLESS STEEL BALL $\phi 8$	1
74	SLIDE PLATE 348mm	1	158	QUICK-RELEASE ARBOR	1
75	WOODRUFF KEY 4 x 4 x 30	1	159	LOCK PIN	2
76	CAP BOLT M8 x 20	10	160	SCREW M3 x 4	2
77	GEAR RACK 270cm	1	161	LOCKING PIN SPRING	2
78	CAP BOLT M8 x 16	6	162	QUICK-RELEASE COLLAR	1
79	REVERSING SWITCH	1	163	SMALL PIN	1
80	MAGNET SWITCH	1	164	RUBBER RING $\phi 40 \times \phi 44 \times 9$	1
81	SCREW M4 x 16	1	165	SPRING $\phi 2 \times \phi 39 \times \phi 43 \times 30L \times 3T$	1
82	GUARD BAR	2	166	STEEL RING $\phi 35.1 \times \phi 44.5 \times 2$	1
83	SWITCH PANEL	1	167	C RING S-35	1
84	FLAT WASHER $\phi 4 \times \phi 10 \times 1$	5			

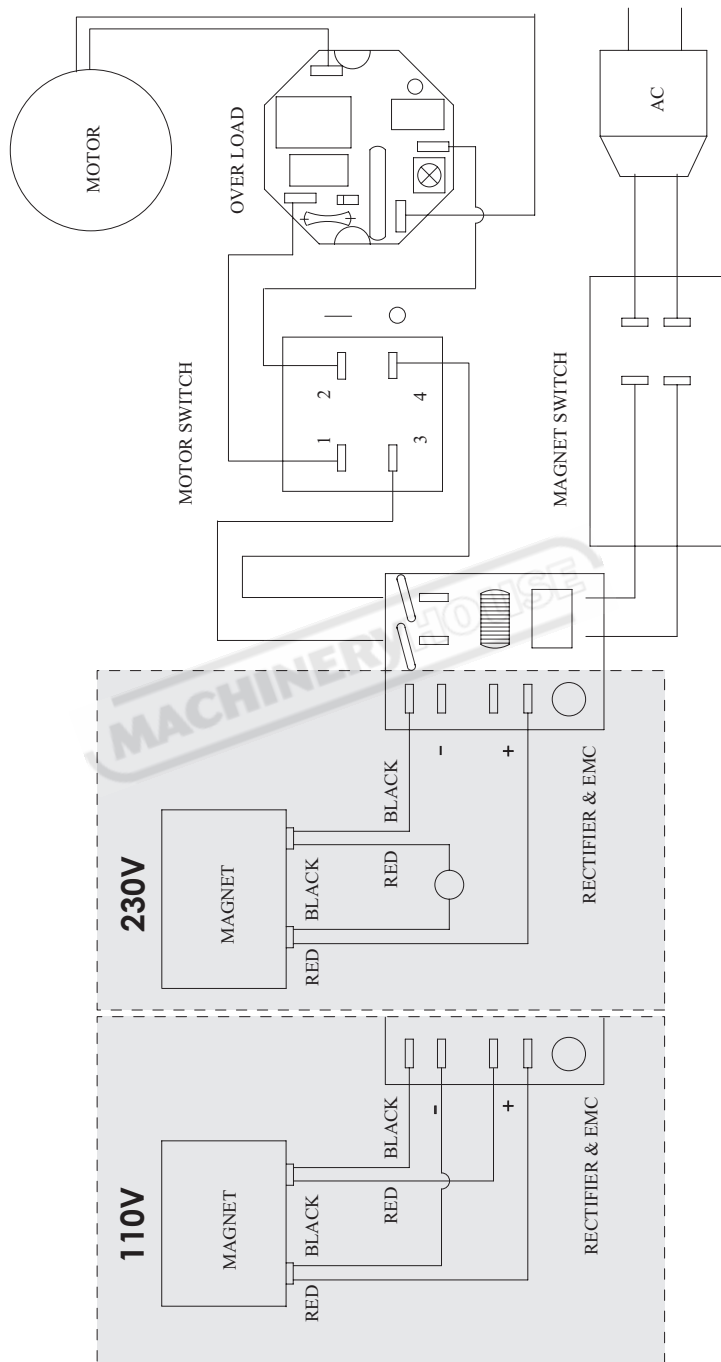
1 Speed Drilling System & 1 Speed Drilling System(N) (Wiring)



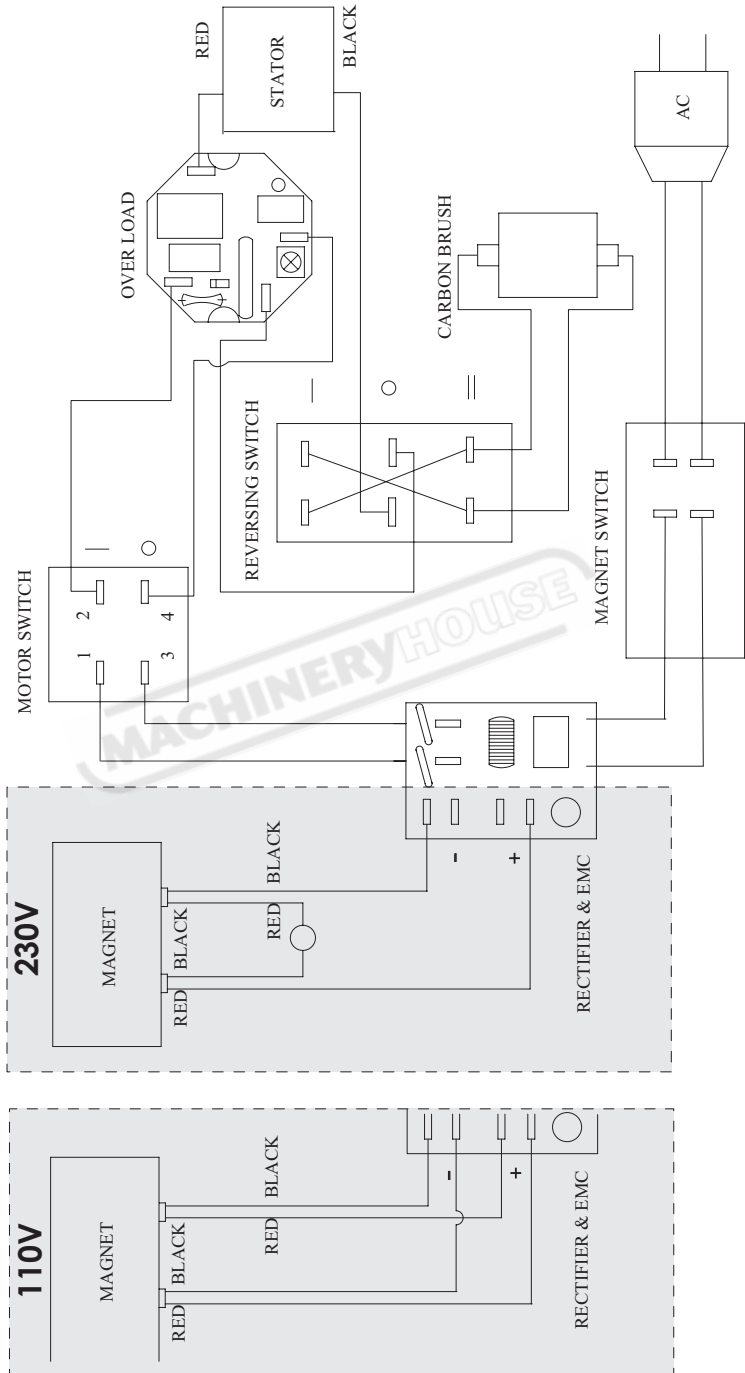
Semi Auto Feed Drilling System & Semi Auto Feed Drilling System (N) (Wiring)



2 Speed Drilling System (Wiring)



4 Speed Drilling System & 4 Speed Swivel Base Drilling System (Wiring)





WARNING

General Machinery Safety Instructions

Machinery House
requires you to read this entire Manual before using this machine.

- 1. Read the entire Manual before starting machinery.** Machinery may cause serious injury if not correctly used.
- 2. Always use correct hearing protection when operating machinery.** Machinery noise may cause permanent hearing damage.
- 3. Machinery must never be used when tired, or under the influence of drugs or alcohol.** When running machinery you must be alert at all times.
- 4. Wear correct Clothing.** At all times remove all loose clothing, necklaces, rings, jewelry, etc. Long hair must be contained in a hair net. Non-slip protective footwear must be worn.
- 5. Always wear correct respirators around fumes or dust when operating machinery.** Machinery fumes & dust can cause serious respiratory illness. Dust extractors must be used where applicable.
- 6. Always wear correct safety glasses.** When machining you must use the correct eye protection to prevent injuring your eyes.
- 7. Keep work clean and make sure you have good lighting.** Cluttered and dark shadows may cause accidents.
- 8. Personnel must be properly trained or well supervised when operating machinery.** Make sure you have clear and safe understanding of the machine you are operating.
- 9. Keep children and visitors away.** Make sure children and visitors are at a safe distance for you work area.
- 10. Keep your workshop childproof.** Use padlocks, Turn off master power switches and remove start switch keys.
- 11. Never leave machine unattended.** Turn power off and wait till machine has come to a complete stop before leaving the machine unattended.
- 12. Make a safe working environment.** Do not use machine in a damp, wet area, or where flammable or noxious fumes may exist.
- 13. Disconnect main power before service machine.** Make sure power switch is in the off position before re-connecting.
- 14. Use correct amperage extension cords.** Undersized extension cords overheat and lose power. Replace extension cords if they become damaged.
- 15. Keep machine well maintained.** Keep blades sharp and clean for best and safest performance. Follow instructions when lubricating and changing accessories.
- 16. Keep machine well guarded.** Make sure guards on machine are in place and are all working correctly.
- 17. Do not overreach.** Keep proper footing and balance at all times.
- 18. Secure workpiece.** Use clamps or a vice to hold the workpiece where practical. Keeping the workpiece secure will free up your hand to operate the machine and will protect hand from injury.
- 19. Check machine over before operating.** Check machine for damaged parts, loose bolts, Keys and wrenches left on machine and any other conditions that may effect the machines operation. Repair and replace damaged parts.
- 20. Use recommended accessories.** Refer to instruction manual or ask correct service officer when using accessories. The use of improper accessories may cause the risk of injury.
- 21. Do not force machinery.** Work at the speed and capacity at which the machine or accessory was designed.
- 22. Use correct lifting practice.** Always use the correct lifting methods when using machinery. Incorrect lifting methods can cause serious injury.
- 23. Lock mobile bases.** Make sure any mobile bases are locked before using machine.
- 24. Allergic reactions.** Certain metal shavings and cutting fluids may cause an allergic reaction in people and animals, especially when cutting as the fumes can be inhaled. Make sure you know what type of metal and cutting fluid you will be exposed to and how to avoid contamination.
- 25. Call for help.** If at any time you experience difficulties, stop the machine and call you nearest branch service department for help.



WARNING

Drilling Machine Safety Instructions

Machinery House
requires you to read this entire Manual before using this machine.

- 1. Maintenance.** Make sure the Drill is turned off and disconnect from the main power supply and make sure all moving parts have come to a complete stop before any inspection, adjustment or maintenance is carried out.
 - 2. Drill Condition.** Drill must be maintained for a proper working condition. Never operate a Drill that has damaged or worn parts. Scheduled routine maintenance should be performed on a scheduled basis.
 - 3. Leaving a Drill Unattended.** Always turn the Drill off and make sure all moving parts have come to a complete stop before leaving the Drill. Do not leave Drill running unattended for any reason.
 - 4. Avoiding Entanglement.** Remove loose clothing, belts, or jewelry items. Never wear gloves while machine is in operation. Tie up long hair and use the correct hair nets to avoid any entanglement with the Drill spindle or moving parts.
 - 5. Chuck key & wrench safety.** Always remove chuck keys, wrenches and any service tools immediately after use. Chuck keys left in the chuck can cause serious injury.
 - 6. Understand the machines controls.** Make sure you understand the use and operation of all controls.
 - 7. Drill bit selection.** Always use the correct Drill bit for the job you are Drilling. Make sure you use the correct shank drill bit for your drilling machine.
 - 8. Secure the Drill Bit.** Properly tighten and securely lock the drill bit in the chuck.
 - 9. Cutting Tool inspection.** Inspect Drill for sharpness, chips, or cracks before use. Replace any cutting tools immediately if dull, chipped or cracked. Handle new cutting tools with care. Cutting edges are very sharp and can cause lacerations.
 - 10. Reversing the spindle.** Make sure the spindle has come to a complete stop before changing the direction of the spindle.
 - 11. Stopping the spindle.** Do not slow or stop the spindle by using your hand.
 - 12. Speed selection.** Select the appropriate speed for the type of work, material, and tool bit. Allow the Drill to reach full speed before beginning a cut.
 - 13. Changing Belts for speed selection.** Always allow the machine to come to a complete stop and turn power off before changing belts. Not turning power off when changing belts can cause serious injury.
 - 14. Clearing chips.** Always use a brush to clear chips. Never clear chips when the drill is running.
 - 15. Power outage.** In the event of a power failure during use of the drill, turn off all switches to avoid possible sudden start up once power is restored.
 - 16. Clean work area.** Keep the area around the drill clean from oil, tools, chips.
 - 17. Surface/workpiece area.** Before turning the drill on, make sure the table is clear of any objects (tools, scraps, off-cuts etc.) Do not drill material that does not have a flat surface unless a suitable support is used.
 - 18. Table Lock.** Make sure the table is tightened before starting the drill.
 - 19. For - Radial Drill Arm Lock.** Make sure the arm is locked before leaving or starting a radial arm drill. An unlocked radial drill arm can swing and cause serious injury.
 - 20. Drilling Sheet metal.** All sheet metal should be clamped to the table before drilling.
 - 21. Mounting workpieces.** Use clamps or vices to secure workpiece before drilling. Position work so you avoid drilling into table.
 - 22. Guarding.** Do not operate the drill when chuck guard is removed.
 - 23. Eye and hand protection.** A face shield with safety glasses is recommended. Always keep hands and fingers away from the drill bit. Never hold a workpiece in your hand while drilling. Do not wear gloves while operating the drill.
 - 24. Drill operation.** Never start the drill with the drill bit pressed against the workpiece. Feed the drill evenly into the workpiece. Back the drill out of deep holes. Turn the machine off and clear chips and scrap pieces with a brush. Turn power off, remove drill bit, and clean the table before leaving the machine.
 - 25. Call for help.** If at any time you experience difficulties, stop the machine and call your nearest branch service department for help.
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PLANT SAFETY PROGRAM

NEW MACHINERY HAZARD IDENTIFICATION, ASSESSMENT & CONTROL

Drilling Machine

Developed in Co-operation Between A.W.I.S.A and Australia Chamber of Manufactures
This program is based upon the Australian Worksafe Standard for Plant(NOHSC:1010-1994)

Item No.	Hazard Identification	Hazard Assessment	Risk Control Strategies <small>(Recommended for Purchase / Buyer / User)</small>
A	ENTANGLEMENT	HIGH	Eliminate, avoid loose clothing / Long hair etc.
B	CRUSHING	LOW	Secure & support work material on drill table.
C	CUTTING, STABBING, PUNCTURING.	MEDIUM	Isolate power to machine prior to any checks or maintenance being carried out. Do not adjust or clean until the machine has fully stopped.
D	SHEARING	MEDIUM	Isolate power to machine when changing speeds or maintenance is being carried out. Make sure all guards are secured shut when machine is on.
F	STRIKING	MEDIUM	Ensure workpieces are tightly secured on machine. Wear safety glasses. For Radial Arm Drills ensure that arm is locked before drilling. Ensure correct spindle direction when drilling..
H	ELECTRICAL	MEDIUM	All electrical enclosures should only be opened with a tool that is not to be kept with the machine. Never clean or dust machine when power is on. Machine should be installed & checked by a Licensed Electrician.
M	HIGH TEMPERATURE	LOW	Wear appropriate protective clothing to prevent hot swarf.
O	OTHER HAZARDS, NOISE.	LOW	Wear hearing protection as required.
Plant Safety Program to be read in conjunction with manufactures instructions			



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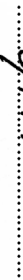


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Authorised and signed by:
Safety officer:



Manager:



Revised Date: Aug-08