

AUTO-REVERSE TAPPING & CORE DRILL MACHINE

INSTRUCTION MANUAL

ORIGINAL INSTRUCTIONS

For your personal safety,
READ and UNDERSTAND before
using.

**SAVE THESE INSTRUCTIONS FOR
FUTURE REFERENCE.**



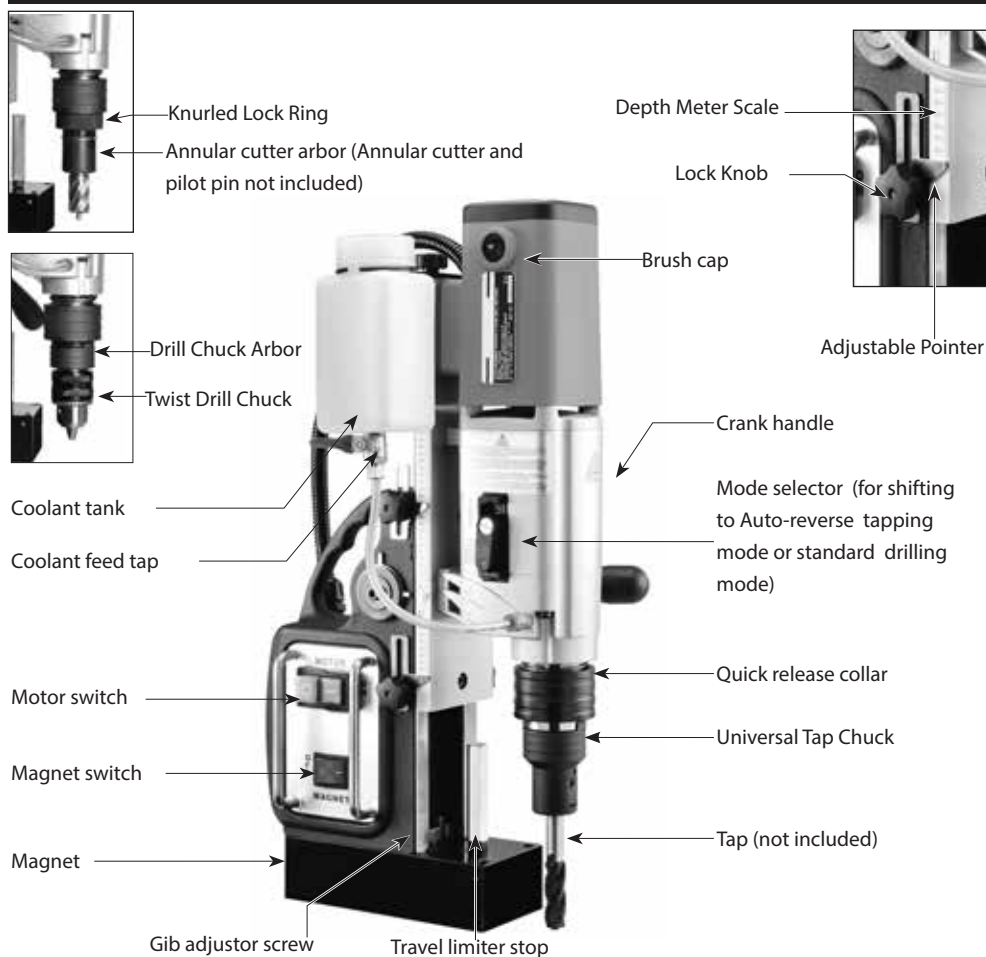
CECB

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.

Version:20151120

FUNCTIONAL DESCRIPTION



Power input	1100W
Voltage	See machine nameplate
Drilling Mode No / Full Load min ⁻¹	550 / 330
Tapping Mode No / Full Load min ⁻¹	150 / 90
Coupling	31mm (no.2)
Annular Cutter Arbor	Set Screw Type, 19mm Weldon Shank
Annular Cutters	Dia. 35mm (1-3/8 in.)
Taps	20mm (13/16 in.)
Twist Drills	13mm (1/2 in.)
Total Stroke	150mm (6 in.)
Magnetic Ashesion	15,000 N (3,372 lb-f)
Net Weight	13.7 kg (30.8 Lbs)

GENERAL SAFETY INSTRUCTIONS



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 mainsoperated (corded) power tool or battery-operated (cordless) power tool.

1) WORK AREA SAFETY

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

2) ELECTRICAL SAFETY

- a. **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.**
Unmodified plugs and matching outlets will reduce risk of electric shock.
- b. **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.
- c. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- d. **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.

- e. **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.
- f. **If operating a power tool in a damp location is unavoidable, use an earth leakage circuit breaker.** Use of an earth leakage circuit breaker reduces the risk of electric shock.

3) PERSONAL SAFETY

- a. **a) Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- b. **b) 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.
- c. **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.
- d. **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- e. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- f. **Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts.** Loose clothes, jewelry or long hair can be caught in moving parts.
- g. **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.

4) POWER TOOL USE AND CARE

- a. **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
- b. **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c. **Disconnect the plug from the power source 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.
- d. **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
- e. **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
- f. **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g. **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.

5) 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.

Symbols used in this manual

V.....volts

A.....amperes


Hz.....hertz


W.....watt


~.....alternating current


n_0no load speed


min⁻¹.....revolutions or reciprocation
per minute


warning of general danger


class II tool


with electrical earth


read these instructions


always wear eye protection


always wear a dust mask.


always wear hearing protection

wear safety-approved hard hat

Keep hands clear – pinching hazard.

 DANGER! Keep hands away from cutting area and the blade.

 rotating parts - entanglement hazard. Keep hands, loose clothing and long hair away from moving parts

 do not dispose of electric tools, accessories and packaging together with household waste material

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: This term offers useful information relating to the operation of the machine or its maintenance.

SPECIFIC SAFETY RULES

Magnetic mounting can release, so always use a safety chain.

- 1. 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 workpiece to supplement the magnetic adhesion.
- 2. Metal chips and other debris will seriously hamper magnetic adhesion.** Always ensure that the magnet is clean.
- 3. Other units used on the same receptacle will cause uneven voltage which could lead to the magnet releasing.** Always use the tool alone on the receptacle.
- 4. It is hazardous to use the drill upside-down.** Do not exceed 90 degrees from horizontal.
- 5. Avoid the magnet releasing.** Ensure that the magnet has properly adhered to the work piece before beginning drilling.
- 6. Avoid operating annular cutters without coolant fluid.** Always check coolant level before operating.
- 7. Do not operate with dull or damaged cutting tools.** This may overload the motor.
- 8. Protect the motor.** Never allow coolant fluid,

water, or other contaminants to enter the motor.

- 9. 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 workpiece 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.

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.

SPECIAL INSTRUCTIONS FOR AUTO-REVERSE TAPPING MODELS:

THIS MACHINE IS THE FIRST OF ITS KIND SO SPECIAL CARE MUST BE PAID TO THE OPERATING INSTRUCTIONS BELOW TO UNDERSTAND ITS TAPPING FUNCTION.



CAUTION: Before beginning tapping ensure that the hole is the correct size for the tap. An undersize hole will cause the tap to jam causing a hazardous situation.

CAUTION: When tapping a blind hole always correctly use the travel limiter stop to ensure that there is enough clearance so that you do not bottom-out the tap. Bottoming will cause the tap to jam, causing a hazardous situation.

CAUTION: Never attempt to tap with the

gearbox selector in standard drilling mode. The much higher speed of the standard drilling mode will damage the tap and cause a hazardous situation .

COOLING: The automatic through-the-spindle cooling function is only effective when using annular cutters. When tapping or using twist drills, cutting oil must be added manually.

SETTING UP FOR TAPPING

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

CAUTION: Always follow the tap manufacturer's recommendation for selecting the correct size hole for tapping.

CAUTION: Never attempt to change gears on a running machine! Only change gears when the machine is at rest.

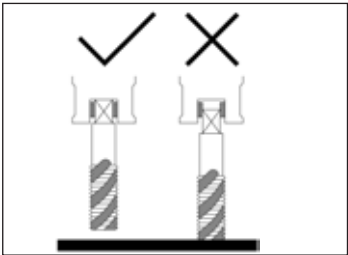
- 1. For tapping, select the universal tap chuck. Or, if you are using an outside sourced tap collet or quick change adapter, you may mount it directly into the machine's coupling. If there is already another arbor in the machine, simply push up on the Quick-Release Collar and remove.
- 2. To insert the universal tap chuck or accessory, push up on the Quick-Release Collar and insert the shank into the coupling. Turn until the tangs line up and the Collar is able to close. Ensure that it is securely in place.



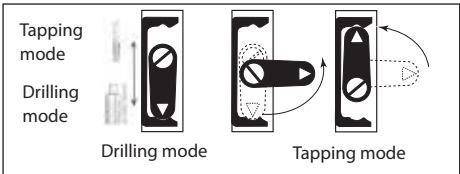
- 3. Using the universal tap chuck, use the key to

turn it to open its jaws enough to fit the square of the tap. Ensure that the corners of the square are properly located in the jaws. Then use the key to securely tighten the chuck.

NOTE: Make sure that the tap is inserted as deeply as possible into the jaws. An improperly seated tap will run off center and could result in damage to the jaws or tap.



- 4. If it is in drilling mode, shift the gearbox to tapping mode by swinging the gear selector tab out of the detent slot then shifting downwards into tapping mode. Then pop the selector tab back into the detent. It will sometimes be necessary to turn the spindle by hand a little to get it to shift all the way. Only grab the arbor when turning the spindle, never the quick-release collar. Otherwise, it will be easy to accidentally release the arbor and it will fall out. Follow the "TAP" symbol on the gear case. (The small arrow on the tab will be pointing upwards when it is shifted correctly).



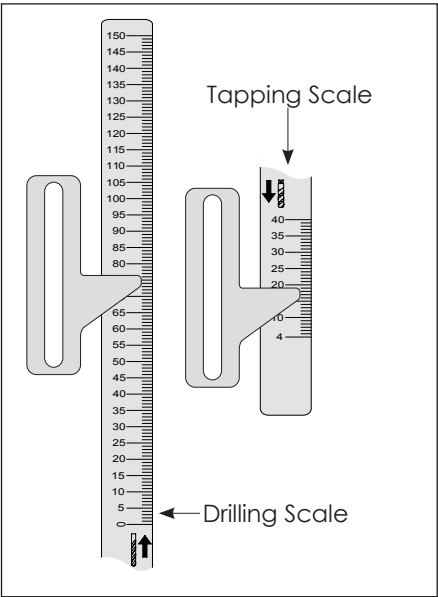
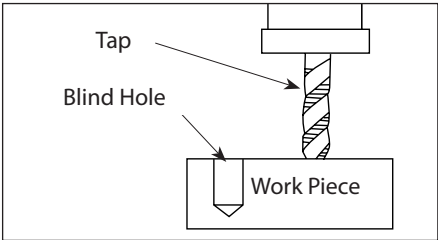
SETTING THE DEPTH METER

THE PROPER USE OF THE TAPPING DEPTH METER

Whenever tapping blind holes, the Tapping Depth Meter in conjunction with the Travel Limiter Stop must be used for ensuring the prevention of possible damage to the gearbox and the tap.

ALWAYS ENSURE THAT THE HOLE ISN'T OVER TAPPED. THE HOLE'S DEPTH MUST BE LONGER THAN THE NEEDED THREADING DEPTH!!

1. Pre-place the tap against the work piece. To zero-in the needle.
2. While keeping the tap against the workpiece, adjust the pointer to the 4mm datum position on the left-hand tapping scale.



(The tapping function has an extra 4mm movement when the crank handle is released, a 4mm pre-adjustment has been made on the scale. Therefore, when "zeroing-in" the tapping scale, the 4mm mark is the effective datum point. A minimum depth of 5mm can be tapped and a maximum of 40mm).

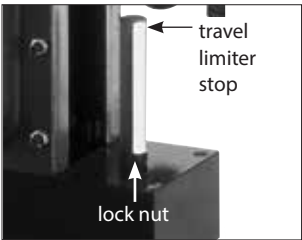
Now that you have the depth scale calibrated, you may use the meter reading to set the Travel Limiter Stop.

SETTING THE TRAVEL LIMITER STOP

When at its lowest position, the travel limiter stop will not effect the stroke of the slide. When tapping blind holes the travel limiter stop must be used to avoid the tap bottoming. When tapping through holes or when drilling, the limiter stop is not needed.

To properly set

1. With the tap mounted on the machine, place the machine on the workpiece.
2. Using the depth meter, Carefully measure the furthest depth that the tap is intended to go. With the tap overhanging the edge of the workpiece, lower the slide to the intended depth.
3. Loosen the lock nut then adjust the stop to just meet the slide, retighten the lock nut.
4. When no longer needed, lower the stop to its lowest position.



TAPPING OPERATION

NOTE: It is recommended to always use cutting oil on the tap to give longer tap life and better results. The automatic coolant system only works for annular cutters. Taps must be lubricated manually.

1. Before tapping begins, there must be a proper sized hole. Make sure that the hole is the correct size for the tap.
2. With the magnet switch still off, maneuver the tap and machine to ensure that the tap is perfectly aligned with the hole. Actually insert the nose of the tap into the hole slightly to ensure perfect alignment, then switch on the magnet.
3. If you are tapping a blind hole, please use the Travel Limiter Stop and the tapping depth meter see "THE PROPER USE OF THE TAPPING DEPTH METER" and "SETTING THE TRAVEL LIMITER STOP" above.
4. To begin tapping, start the machine by turning on the motor switch and use the crank to feed the tap to the work. When there is no feed pressure from the crank, the spindle will be in neutral and will not spin. When there is forward feed pressure, the spindle will automatically spin in the forward (right hand) direction. Tap the hole, then simply back out the crank to reverse the spindle and remove the tap. When there is backward pressure from the crank, the spindle will automatically spin in the reverse (left hand) direction. (Note that it is not possible to tap left-hand threads with this machine).

CAUTION: Do not too much reverse pressure when backing out the tap or the tap could pull out of the chuck. This could lead to premature wear of the chuck.



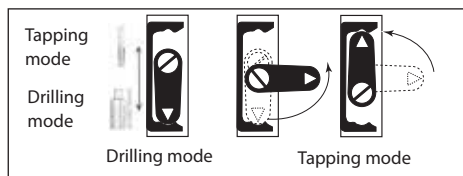
SETTING UP FOR TWIST DRILLING

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

NOTE: It is recommended to always use cutting oil on the twist drill to give longer drill life and better results. The automatic coolant system only works for annular cutters. Twist drills must be lubricated manually

1. If it is not mounted, mount the chuck to the Drill Chuck Arbor.
2. Push up on the Quick-Release Collar to mount the Drill Chuck Arbor to the machine. Double check to ensure that the arbor is locked in place.
3. Insert the drill bit into the chuck and tighten with the chuck key.

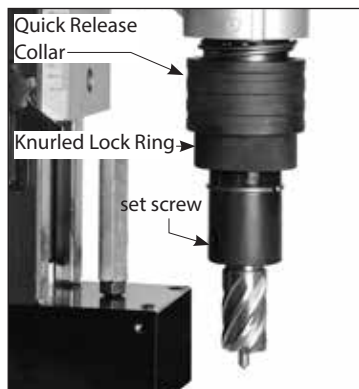
4. If it is in tapping mode, shift the gearbox to drilling mode by swinging the gear selector tab out of the detent slot then shifting upwards into drilling mode. Then pop the selector tab back into the detent. It will usually be necessary to grab the arbor and push the spindle upwards while turning a little by hand to get the selector to shift all the way up. Only grab the Arbor when turning the spindle, never the Quick-Release Collar. Otherwise, it will be easy to accidentally release the arbor and it will fall out. Follow the Twist drill & annular cutter" symbol on the gear case. (The small arrow on the tab will be pointing downwards when it is shifted correctly).
5. Proceed to drill as described below titled: "OPERATION-GENERAL (Annular cutters & twist drills only)".



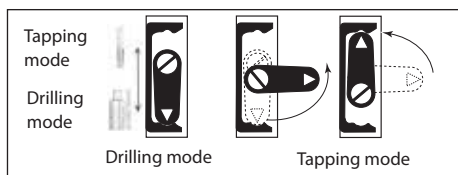
SETTING UP FOR ANNULAR CUTTERS

1. If another arbor or accessory is in place, remove it from the machine.
2. Insert the Coolant Feed Spring with the Seal facing downwards into the shaft of the Annular Cutter Arbor.
3. Mount the Annular Cutter Arbor into the machine by pressing up on the Quick Release Collar and turning the arbor until the collar snaps closed. Once it is closed, tighten the Knurled Lock Ring by turning clockwise by hand.
4. Insert the proper sized pilot pin in the annular cutter. Using the L-hex key, loosen the 2 set

screws to allow the mounting of the annular cutter. Ensure that the flat of the cutter shank is facing the set screw and then tighten.



5. If it is in tapping mode, shift the gearbox to drilling mode by swinging the gear selector tab out of the detent slot then shifting upwards into drilling mode. Then pop the selector tab back into the detent. It will usually be necessary to grab the arbor and push the spindle upwards while turning a little by hand to get the selector to shift all the way up. Only grab the Arbor when turning the spindle, never the Quick-Release Collar. Otherwise, it will be easy to accidentally release the arbor and it will fall out. Follow the Twist drill & annular cutter" symbol on the gear case. (The small arrow on the tab will be pointing downwards when it is shifted correctly).
6. Proceed to drill as described below titled: "OPERATION-GENERAL (Annular cutters & twist drills only)"



OPERATION-GENERAL (Annular cutters & twist drills only)

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.

WARNING: Avoid operating at more than a 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 the tool 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 situations.

WARNING: The slug ejected at end of cut is very hot. Always provide a method of catching the slug, as 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.

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

MAINTENANCE

Every 50 hours of operation blow compressed air through the motor while running at no load to clean out accumulated dust. (If operating in especially dusty conditions, perform this operation more

often.)

Keep the machine clean and free of chips.

Check for loose fittings and tighten as needed.

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.

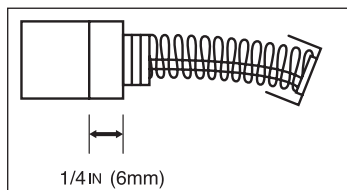
THE GIBS (DOVETAIL SLIDES)

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, and no binding anywhere in its range of travel. Then retighten the lock nuts. Periodically check, lubricate, and adjust as needed.



THE CARBON BRUSHES

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



To replace:

simply remove the brush caps and withdraw the old brushes. Replace with new brushes (always replace as a pair) ensuring that they align properly and slide freely. Then replace the brush caps.

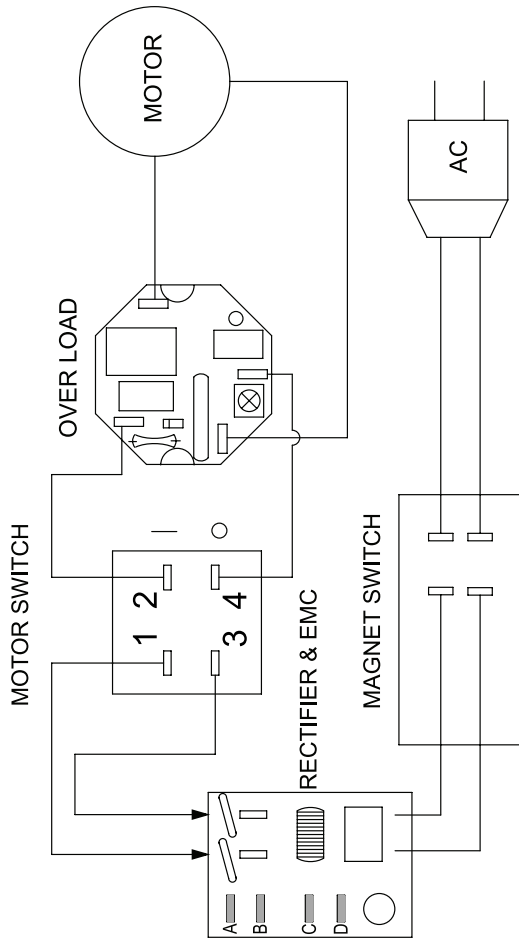
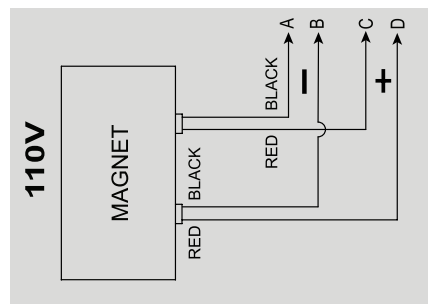
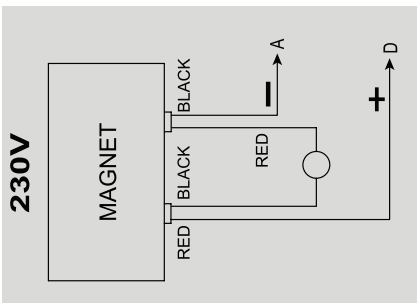


Always entrust all repairs to an authorized service agent.

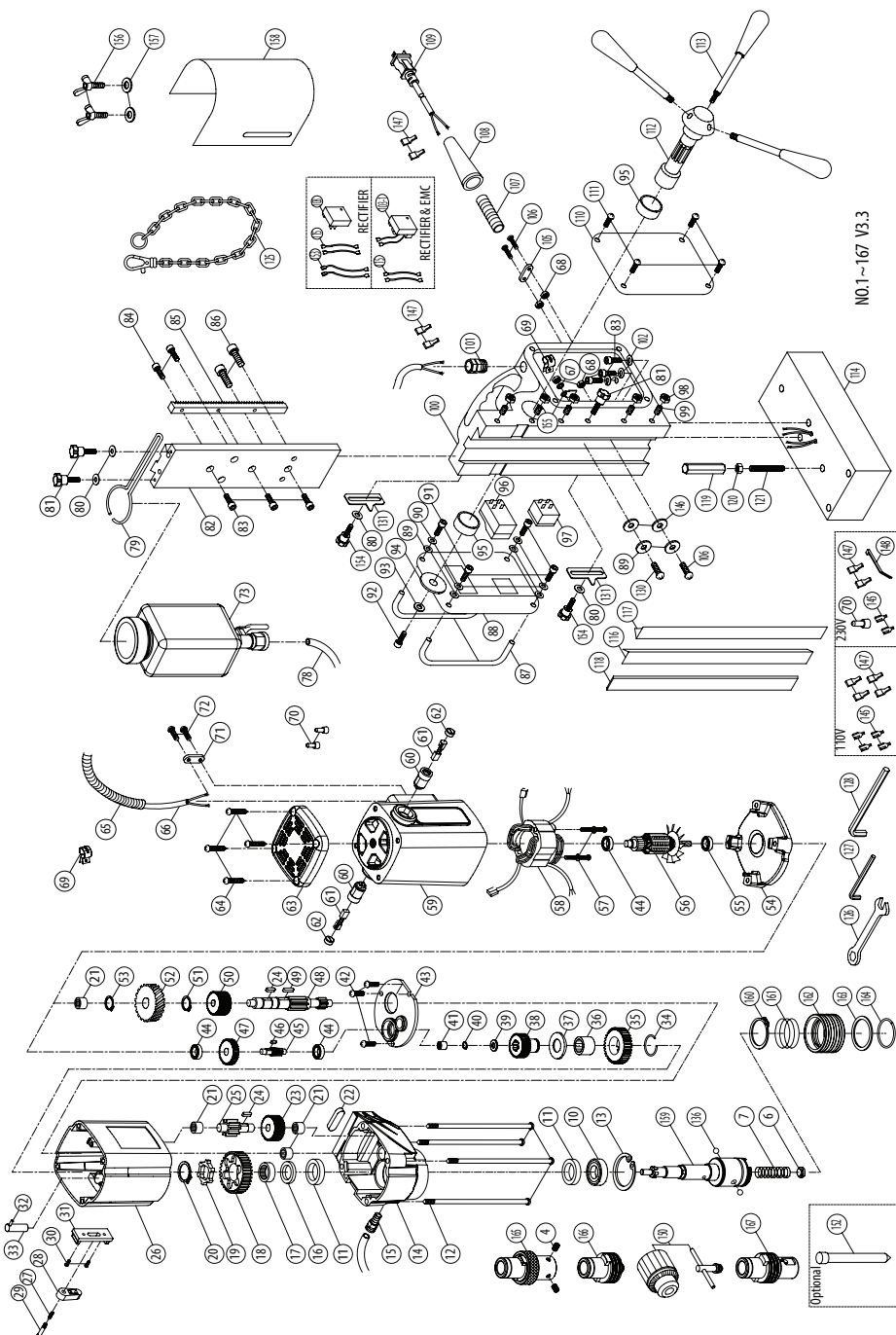
If the replacement of the power supply cord is necessary, this has to be done by the manufacturer or their agent in order to avoid a safety hazard.

WARNING: All repairs must be entrusted to an authorized service center. Incorrectly performed repairs could lead to injury or death.

WIRING



Auto-Reverse Tapping & Core Drill Machine Exploded View & Parts list



NO.1~167 V3.3

NO.	Parts Name	Q'TY	NO.	Parts Name	Q'TY
1~3	N/A	-	43	SECONDARY GEAR PLATE	1
4	ARBOR SET SCREW M8 x 7	2	44	BALL BEARING 608 zz	3
5	N/A	-	45	INPUT GEAR SPINDLE 8T	1
6	PILOT PLUNGER	1	46	PARALLEL KEY 4 x 4 x 10	1
7	PILOT SPRING Ø1.5 x Ø13.3 x Ø16.3 x 16T x 100L	1	47	INPUT GEAR 50T	1
8~9	N/A	-	48	INTERMEDIATE PINION 11T	1
10	BALL BEARING 6205 zz	1	49	PARALLEL KEY 5 x 5 x 15	1
11	OIL SEAL Ø22 x Ø32 x 7	2	50	DRILLING INTERMEDIATE GEAR 26T	1
12	GEAR CASE SCREW M5 x 170	4	51	EXTERNAL CIRCLIP S-16	1
13	INTERNAL CIRCLIP R-52	1	52	INTERMEDIATE GEAR 52T	1
14	LOWER GEAR CASE	1	53	EXTERNAL CIRCLIP S-14	1
15	PUSH LOCK FITTING	1	54	MAIN GEAR PLATE	1
16	BUSHING	1	55	BALL BEARING 609-2RS	1
17	NEEDLE BEARING TA 2210	1	56	ARMATURE	1
18	TAP REVERSING GEAR 33T	1	57	STATOR SCREW M5 x 60	2
19	TAP SPINDLE ENGAGEMENT GEAR	1	58	STATOR	1
20	EXTERNAL CIRCLIP S-17	1	59	MOTOR HOUSING	1
21	NEEDLE BEARING HK 1010	4	60	BRUSH HOLDER 7 x 11	2
22	LOCATOR TENON 4 x 4 x 30	1	61	CARBON BRUSH 7 x 11 x 17	2
23	REVERSING DRIVE GEAR 24T	1	62	BRUSH CAP 7 x 11	2
24	PARALLEL KEY 5 x 5 x 12	2	63	MOTOR TAIL COVER	1
25	REVERSING GEAR PINION 12T	1	64	SCREW M5 x 12	4
26	UPPER GEAR CASE	1	65	CABLE PROTECTOR 40cm	1
27	SPRING Ø1 x Ø9 x Ø11 x 4T x 10L	1	66	MOTOR CABLE 1.25 x 2C x 65cm	1
28	SELECTOR TAB	1	67	STAR WASHER M5	1
29	SHOULDER SCREW	1	68	NUT M4 x 8	4
30	FLAT HEAD SCREW M4 x 8	2	69	CABLE CLAMP	2
31	SELECTOR BASE	1	70	WIRE CONNECTOR C4	3
32	SHIFT PIN	1	71	CABLE CLIP	1
33	SELECTOR FORK	1	72	SCREW M4 x 14	2
34	SNAP RING Ø1.5 x Ø23 x Ø26 x 12mm	1	73	COOLANT TANK ASSEMBLY 400cc	1
35	TAP FORWARD GEAR 42T	1	74~77	N/A	-
36	NEEDLE BEARING TA 2515	1	78	COOLANT TUBE 20cm	1
37	THRUST WASHER Ø25 x Ø40 x 1.5	1	79	COOLANT TANK BRACKET	1
38	DRILLING SPINDLE GEAR 27T	1	80	FLAT WASHER Ø5 x Ø12 x 1	4
39	THRUST RING	1	81	THUMB SCREW M5 x 16	3
40	EXTERNAL CIRCLIP S-8	1	82	SLIDE PLATE 290.5L	1
41	NEEDLE BEARING HK 0810	1	83	CAP BOLT M6 x 20	6
42	SCREW M5 x 10	3	84	CAP BOLT M5 x 16	2

NO.	Parts Name	Q'TY	NO.	Parts Name	Q'TY
85	GEAR RACK	1	125	SAFETY CHAIN	1
86	CAP BOLT M8 x 16	2	126	WRENCH M8 M8	1
87	GUARD BAR	2	127	HEX WRENCH M2.5 M2.5	1
88	SWITCH PLATE	1	128	HEX WRENCH M4 M4	1
89	FLAT WASHER Ø4 x Ø10 x 1	6	129	N/A	-
90	SPRING WASHER M4	4	130	SCREW M4 x 16	1
91	CAP BOLT M4 x 16	4	131	POINTER	2
92	CAP BOLT M6 x 16	1	132~135	N/A	-
93	FLAT WASHER Ø6 x Ø25 x 1	1	136	BALL Ø8	2
94	FLAT WASHER Ø6 x Ø40 x 2.5	1	137~144	N/A	-
95	BUSHING Ø32 x Ø28 x 12	2	145	TERMINAL	4
96	MOTOR SWITCH	1	146	RUBBER WASHER Ø4 x Ø11 x 1	2
97	MAGNET SWITCH	1	147	TERMINAL SIRIES	8
98	NUT M5	5	148	TIE	1
99	SET SCREW M5 x 20	5	149	N/A	-
100	STAND BODY	1	150	CHUCK 1/2"	1
101	CABLE GLAND	1	151	N/A	-
102	SPRING WASHER M6	3	152	PILOT PIN (OPTIONAL) TCTx91LxØ8	1
103	RECTIFIER	1	153	WIRE LEAD	2
103-1	RECTIFIER & EMC	1	154	THUMB SCREW M5 x 8	2
104	N/A	-	155	EARTHING MARKING	1
105	CORD CLIP	1	156	BUTTERFLY SCREW M6 x 10	2
106	SCREW M4 x 30	3	157	FLAT WASHER Ø6 x Ø13 x 1	2
107	STRAIN RELIEF 7CM	1	158	CHIP GUARD	1
108	CORD ARMOR	1	159	SPINDLE	1
109	POWER SUPPLY CABLE	1	160	EXTERNAL CIRCLIP IS-42	1
110	SIDE COVER	1	161	SPRING Ø2.5 x Ø43 x Ø48 x 3T x 25L	1
111	SCREW M4 x 8	4	162	QUICK-RELEASE COLLAR	1
112	CRANK SPINDLE	1	163	RING Ø42.6 x Ø51.8 x 2	1
113	CRANK LEVER	3	164	RETAINING RING Ø2.5 x Ø39.6 x Ø44.6 x 1mm	1
114	ELECTROMAGNET 179 x 80 x 48	1	165	ANNULAR CUTTER ARBOR	1
115	WIRE LEAD	2	166	DRILL CHUCK ARBOR 1/2"-20	1
116	GIB STRIP-LEFT 260L	1	167	UNIVERSAL TAP CHUCK	1
117	GIB STRIP-RIGHT 260L	1			
118	GIB TENSIONER 260 x 11 x 2.3	1			
119	TRAVEL LIMITER STOP M8	1			
120	LIMITER LOCK NUT M8	1			
121	LIMITER STUD M8 x 100	1			
122~124	N/A	-			

