

KIMBALL MIDWEST



Kimball Midwest Roto-Kut™
Magnetic Base Drilling & Tapping Machine
82-6627

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List of Contents Included with the Roto-Kut™ Drill

Stationary ring
Safety belt
1/8" Hex key
1/2" Chuck
Arbor assembly – 15/64" Hex key included
Drift
Arbor shank
Safety glasses
Spare brush

1) INTENDED USE

The intended use of the Roto-Kut™ Drill is to drill holes in ferrous metals. The magnet is used to hold the drill in place while the drill is operating. It is designed for use in fabrication, construction, railways, petrochemical and any other applications when drilling ferrous metal. Any deviation from its intended use will not be covered by warranty.

2) GENERAL SAFETY RULES

WARNING! Please read these instructions before attempting to operate the machine. When using electric tools basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury, including the following -

1. Disconnect from the power supply before carrying out any adjustment, servicing or maintenance.
2. Keep the work area clear - cluttered areas and benches invite injuries.
3. Consider the work area environment;
 - Do not expose tools to rain.
 - Do not use tools in damp or wet locations.
 - Keep the work area well lit.
 - Do not use tools in the presence of flammable liquids or gases.
 - Ensure there is adequate space to gain access to the plug, outlets and motor on/off switches.
4. Guard against electric shock:
 - Avoid body contact with grounded surfaces (e.g. pipes, radiators, etc.). Electric safety can be further improved by using a Ground Fault Circuit Interrupter (GFCI).
5. Keep other persons away. Do not let untrained persons, especially children, touch the tool or the extension cord and keep them away from the work area.
6. Store tools when not in use. All tools should be stored in a dry locked-up place, out of reach of children.
7. Do not apply too much force through the machine. It will do a better and safer job at the feeds for which it was designed.
8. Use the right tool;
 - Do not force small tools to do the job of a heavy-duty tool.
 - Do not use this tool for purposes not intended.
9. Dress properly;
 - Do not wear loose clothing or jewelry; they can be caught in moving parts.
 - Non-skid footwear is recommended when working outdoors.
 - Wear a protective hair covering to contain long hair. This will reduce the risk of entanglement.
10. Use protective equipment when using this machine;
 - Use safety glasses to prevent debris from damaging eyes.
 - Use hearing protection.
 - Use face or dust masks if cutting operations create dust.
 - Use protective gloves to prevent debris from cutting the skin.
11. When using the drill, always ensure a safe operating distance from any cut material and do not reach into the cutting area, or near the cutter, when the machine is running.
12. Connect dust extraction and collecting equipment, if devices are provided, ensuring these are properly connected and used.
13. Do not abuse the cord; never pull the cord to disconnect it from the socket. Keep the cord away from heat, oil and sharp edges.
14. Secure work where possible, use clamps or a vice to hold the work. It is safer than using your hand.
15. Do not overreach! Keep proper footing and balance at all times.
16. Maintain tools with care;

- Keep cutting tools sharp and clean for better and safer performance.
 - Regularly check the machine for any wear or damage.
 - Ensure the machine is clean and free from debris prior to use.
 - Disconnect from power prior to any maintenance.
 - Follow instructions for lubricating and changing accessories.
 - Inspect tool cords periodically and if damaged have it repaired by an authorized Kimball Midwest service facility.
 - Inspect extension cords periodically and replace if damaged.
 - Keep handles dry, clean and free from oil and grease.
17. Disconnect tools from the power supply when not in use, before servicing or when changing accessories such as cutters.
 18. Check to verify that keys and adjusting wrenches are removed from the tool before turning it on.
 19. Avoid unintentional starting. Ensure the magnet is off before plugging the machine in.
 20. Use extension cords intended for outdoor use when the tool is used outdoors.
 21. Watch what you are doing, use common sense and do not operate the tool when you are tired. Do not operate the machine when under the influence of alcohol or any illegal substances.
 22. Check for damaged or missing parts before using the tool; it should be carefully checked to determine that it will operate properly for its intended function.
 23. The use of any accessory or attachment, other than ones recommended in this instruction manual, may present a risk of personal injury.
 24. Have your machine repaired by the qualified Kimball Midwest authorized service facility. This electric tool complies with the relevant safety rules. Only qualified persons using original replacement parts should carry out repairs, otherwise this may result in considerable danger to the user.
 25. Never operate the machine if parts are missing or damaged.
 26. Never direct jets of water or flammable liquids over the drill.
 27. Operator must be physically able to handle the weight of the machine.
 28. Operator should be trained in the use of the machine.

3) INFORMATION PLATE SYMBOLS



1. Refer to the user manual for operational and safety issues with regards to this machine.
2. Dispose of the machine and electrical components correctly.
3. Eye protection must be worn when operating the machine.
4. Ear protection must be worn when operating the machine.
5. Hand protection must be worn when operating the machine.

4) SPECIFICATION

Maximum hole cutting capacity in steel = 2" dia. x 2" deep

Arbor bore = Morse Taper #2

Motor Unit	
Voltages	120V 50-60Hz
Normal full load	14.0 A
Electro Magnet	0.53 A
Size	7-7/8" long 3-55/64" wide
Holding Force at 68°F (20°C) with 1" minimum plate thickness The use on any material less than 1" thick will progressively reduce the magnetic performance. If possible, substitute material should be positioned under the magnet and work piece to equate to a suitable material thickness. If this is not possible, an alternative secure method of restraining the machine must be used.	3,035 Lbs
Total Load (magnet + motor)	14.53A
Overall Dimensions	
Height - maximum extended	22-¼"
Height - minimum	17-9/16"
Width (including capstan fitting)	7-43/64"
Length Overall (including guard)	12-13/32"
Net Weight	34.2 Lbs

Ear and eye protection must be worn when operating this machine. Wear gloves to protect hands when operating the machine.

These tools are UK designed and manufactured with globally sourced components and conform with the requirements of EEC Document HD.400.1 and BS.2769/84

Suitable only for a single phase 50-60Hz A.C. power supply

DO NOT USE ON D.C. VOLTAGE

Do not use your magnetic drill on the same structure when arc welding is in progress.

D.C. current will ground back through the magnet and cause irreparable damage.

WARNING: THIS APPLIANCE MUST BE GROUNDED!

ANY MODIFICATIONS TO THIS MACHINE WILL INVALIDATE THE WARRANTY

5) OPERATIONAL SAFETY PROCEDURES

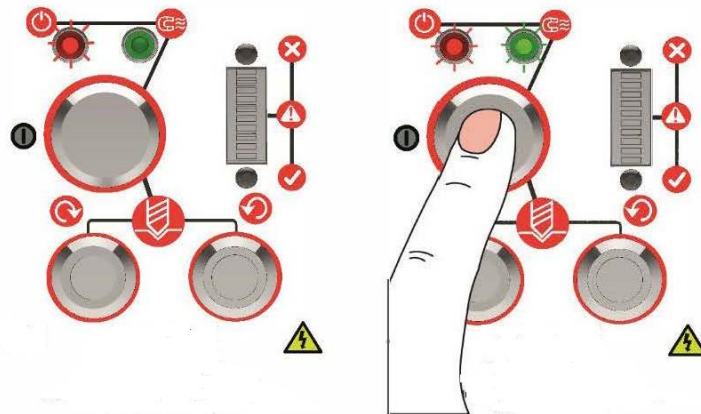
READ BEFORE USING THE MACHINE

- When using electric tools, basic safety precautions should always be followed to reduce the risk of electric shock, fire and personal injury.
- Ensure the magnet is off before plugging in the machine.
- Do not use in wet or damp conditions. Failure to do so may result in personal injury.
- Do not use in the presence of flammable liquids, gases or in high risk environments. Failure to do so may result in personal injury.
- Before operating the machine, inspect all electrical supply cables (including extension cords) and replace if damaged. Do not use if there are any signs of damage.
- Only use extension cords approved for the site conditions.
- Before operating the machine, always check for the correct functioning of all operational systems, switches, magnet etc.
- Before operating, the machine must be securely restrained to a fixed object by using the safety strap and stationary rings. Attach the stationary rings onto the magnets uppermost side holes to reduce the potential free movement should the magnet become detached from the work piece. Failure to do so may result in personal injury.
- Always wear approved safety glasses, hearing protection and other recommended PPE when operating the machine.
- Disconnect from power source when changing cutters or working on the machine.
- Cutters and cuttings are sharp, always ensure that hands are adequately protected when changing cutters or removing cuttings. Use a tool or brush where necessary to remove any cuttings from the arbor.
- Before operating the machine, always ensure cutter-retaining screws are secured tightly.
- Regularly clear the work area and machine of cuttings and dirt, paying attention to the underside of the magnet base.
- Always remove ties, rings, watches and any loose adornments that might entangle with the rotating machinery before operating.
- Always ensure that long hair is securely enclosed by an approved restraint before operating the machine.
- Should the cutter become stuck in the work piece, stop the motor immediately to prevent personal injury. Disconnect from power source and turn arbor back and forth. Do not attempt to free the cutter by switching the motor on and off. Wear safety gloves to remove the cutter from the arbor.
- If the machine is accidentally dropped, always thoroughly examine the machine for signs of damage and check that it functions correctly before resuming drilling.
- Regularly inspect the machine and check for any damaged or loose parts.
- Always ensure when using the machine in an inverted position that only the minimum amount of coolant is used and that care is taken to ensure that coolant does not enter the motor unit.
- Cutting tools may shatter, always position the guard over the cutter before activating the machine. Failure to do so may result in personal injury.
- On completion of the cut, a slug will be ejected.
- When not in use always store the machine in a safe and secure location.
- Always ensure that an approved Kimball Midwest service center conducts repairs.

6) OPERATING INSTRUCTIONS

- Keep the inside of the cutter clear of cut material. It restricts the operating depth of the cutter.
- Ensure that the coolant bottle contains sufficient cutting oil to complete the required operations. Refill as required.
- Occasionally depress the pilot to ensure cutting fluid is being correctly metered.
- To start the machine, follow the control panel operating instructions. The Kimball Midwest Roto-Kut™ machine is fitted with a dual motor protection system to fully ensure safety and extend the life of the motor. The CutSmart™ protection (found on the control panel) gives a clear and visible indication to the user of torque being applied to the motor, if too much pressure is applied the drill will shut off automatically. To re-start the machine, press the start button again. If the speed controller protection is activated, press the start button twice to re-activate the machine.
- Always switch off the motor by depressing the green start/stop button (or blue button) depending upon operation. Do not switch off the motor by pressing the magnet switch.
- Apply light pressure when starting the cut until the cutter is cutting into the work piece. Pressure can then be increased sufficiently to load the motor. Excessive pressure is undesirable; it does not increase the speed of penetration and will cause the safety overload protection device to stop the motor (the motor can be restarted by operating the motor start button) and may cause excessive heat which may result in inconsistent slug ejection
- Always ensure that the slug from the previous hole has been ejected before starting to cut the next hole.
- If the slug sticks in the cutter, move the machine to a flat surface, switch on the magnet and gently bring the cutter down to contact the surface. This will usually straighten a cocked slug and allow it to eject normally.
- Apply a small amount of light oil lubricant regularly to the slide.
- Cutter breakage is usually caused by insecure anchorage or a loosely fitting slide (Refer to routine maintenance instructions).
- Only use approved cutting fluid. Kimball Midwest offers several cutting fluids that have been formulated to maximize cutter performance.

7) CONTROL PANEL OPERATION

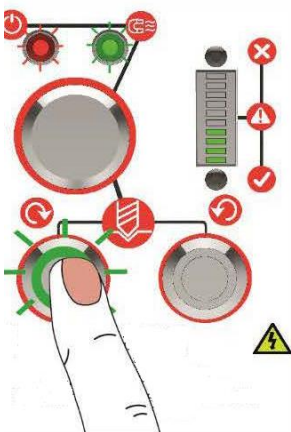


1) Power

When the drill is connected to the power supply, the RED LED will indicate power to the drill.

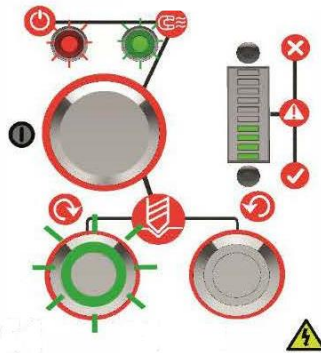
2) Magnet ON

To turn the magnet ON or OFF, press the large button on the control panel. The LED will illuminate either GREEN or RED depending on the material thickness – too thin materials will indicate red.



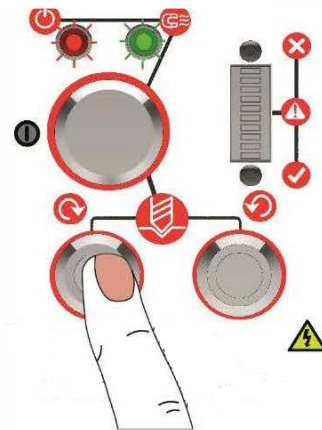
3) Motor ON

Press the GREEN switch to turn the motor on. Proceed with cutting- following all safety guidelines.



4) Cutting

See below for detailed description of the CutSmart™ visual indicator.



5) Motor OFF

To stop the motor press the GREEN switch. The motor will stop and the magnet will remain on. The GREEN switch will turn off.

Go back to step 3 to start over.

CutSmart™ Technology



Green Zone

Perfect, try to keep in the green zone for the best cut and optimum machine performance.



Yellow Zone

A little too much pressure on the drill - ease off to get back to the green zone.



Red Zone

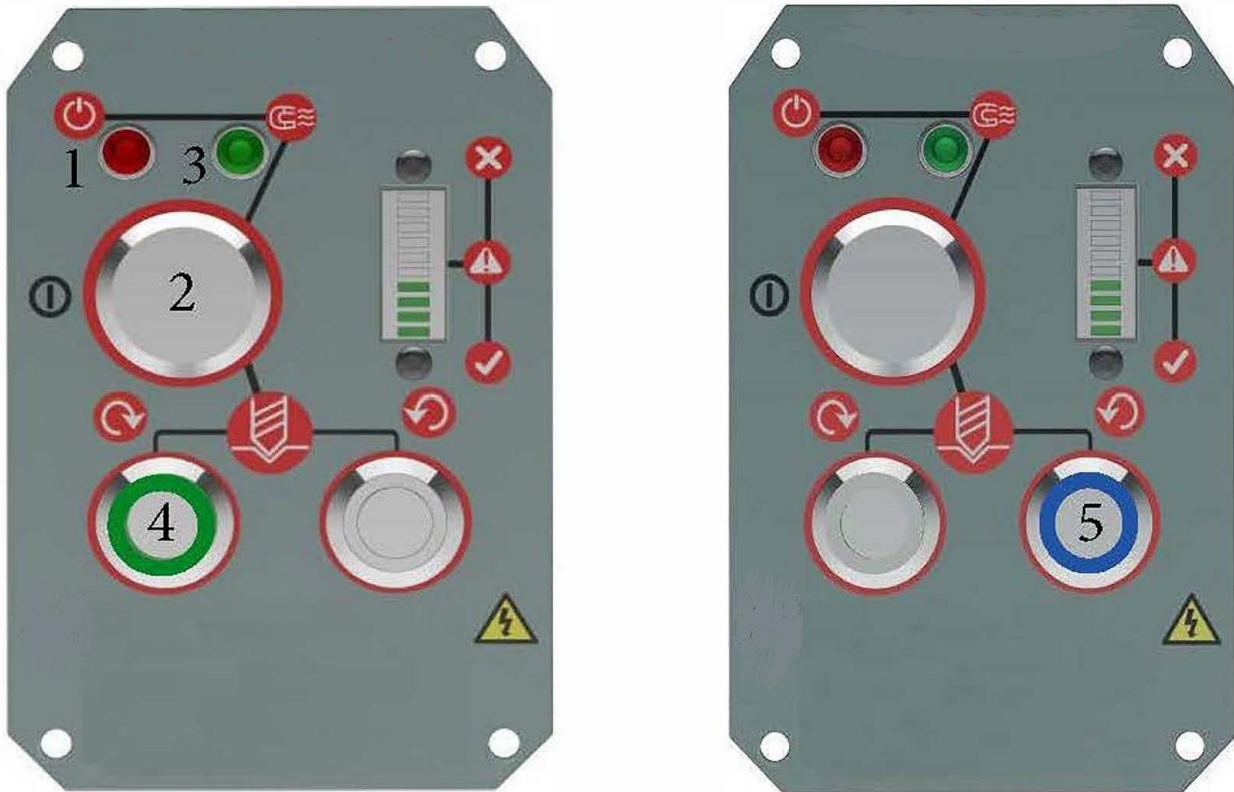
Overload: Back off immediately as too much force will cause the motor to cut off if you continue.

CutSmart™ Technology

Designed for you to get the most out of your machine and your cutters. CutSmart™ has an easy to read panel that indicates when you are drilling with too much force, which will damage the machine and the cutters.

Allow the cutter to do the work and you will find that a much smoother hole and faster drilling time is achieved.

8) TAPPING FUNCTION

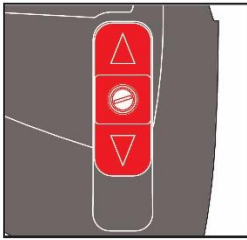


1. Ensure power to the machine, red LED will illuminate (#1).
2. Press the magnet switch on (#2) to engage the magnet. The LED will light up in either green or red (#3). Depending on the material thickness and magnetic adhesion, the green magnet LED will indicate that optimum adhesion is achieved. Drilling operation is then available.
- Warning** if the red magnet LED is illuminated, this indicates optimum adhesion is not achieved. The drilling operation is still available.
3. Use the speed controller on the top cap housing to dictate the speed, always use speeds that are recommended for the cutter size being used (see page 24).
4. Turn the motor on in the forward direction (#4).
5. Drill the hole the recommended size for the thread to be cut.
6. Without disengaging the magnet replace the drill with the tap.
7. Set the spindle speed to the required tapping speed required.
8. Start the drill spindle in the forward direction (#4) and feed the tap into the hole until it begins to cut. Once cutting the tap will feed itself through, only gentle pressure on the feed handles should be necessary.
9. Once the tap has threaded the hole the drill should be stopped immediately (#4).
10. The drill spindle should then be switched to reverse (#5) and the tap can be fed back out of the hole, then allowing the tap to be safely extracted from the hole at a reduced RPM.

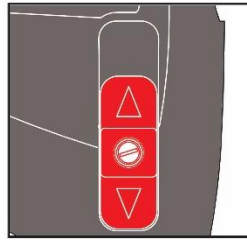
9) GEAR SELECTION

The Roto-Kut™ magnetic base drill is fitted with a 2-speed gearbox. The gear is used to reduce the output speed when using larger cutters.

Slide Selector Position	Speed Controller Setting	
	Level 1	Level 6
∧	200 RPM	500 RPM
∨	100 RPM	265 RPM



Slide Selector Position Up

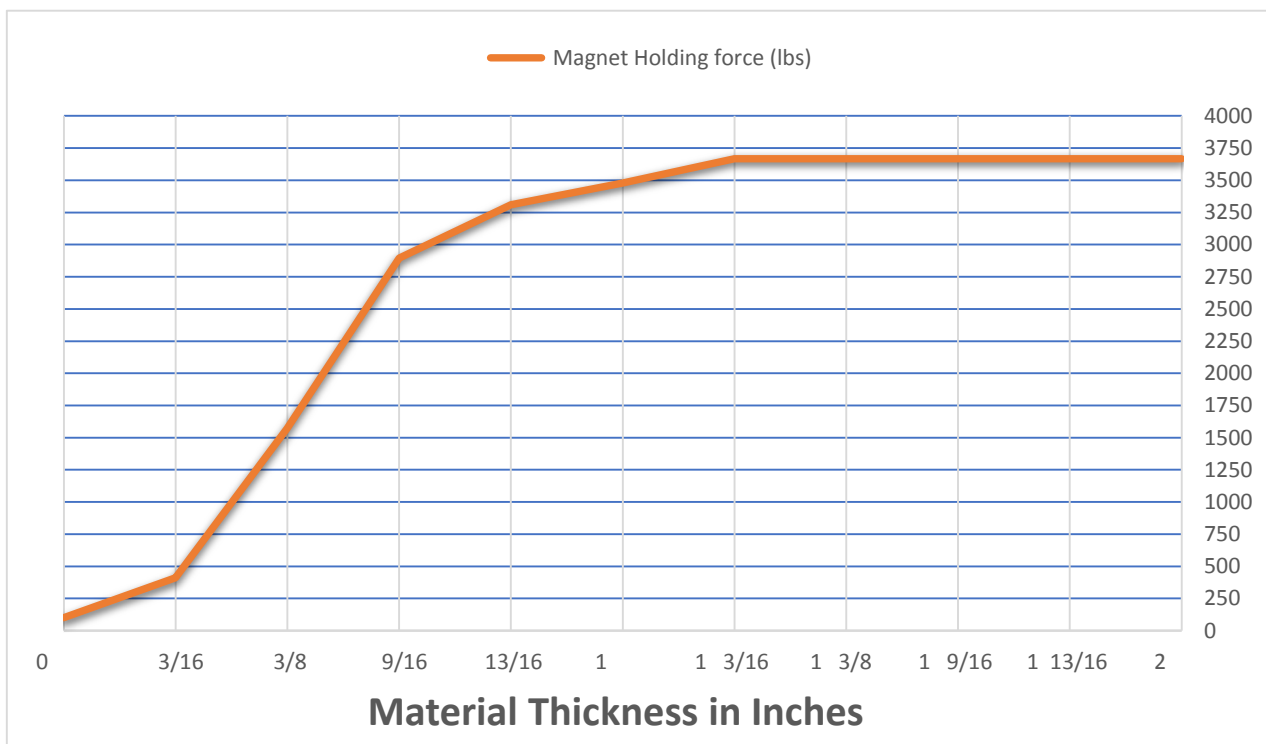


Slide Selector Position Down

10) MAGNET DETECTION

It is advised that, when working on thin material, a backing piece should be used to increase the material thickness under the magnet. Working on thin material without a backing piece will reduce the magnet's holding force.

It is advised that the drill is to be operated on ferrous material $\frac{1}{2}$ " thick and above. Damage to the magnet base, such as pitting, will affect the strength of the magnet's holding force.



11) EXTENSION CORD SELECTION

The machines are factory fitted with a 9 ¾ foot length of cable having three 16AWG conductors, LIVE, NEUTRAL and GROUND. If it becomes necessary to attach an extension cord, care must be taken in using a cord of adequate capacity. Failure to do so will result in a loss of traction by the magnet and a reduction of power from the motor.

Assuming a normal AC supply of the correct voltage, it is recommended that the following extension cord lengths not be exceeded:

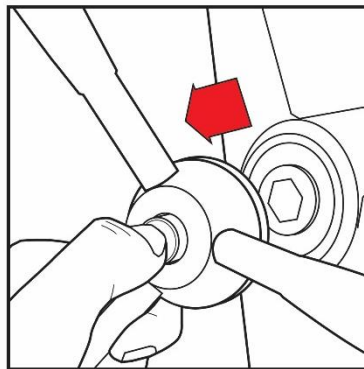
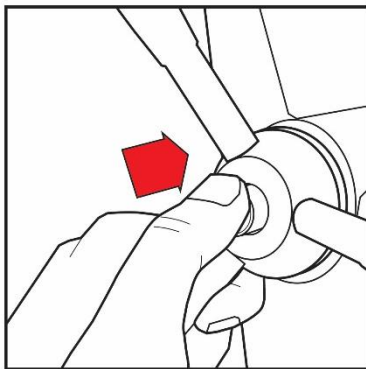
For 120v supply: 11 ½ feet of 3 conductor 16AWG

ALWAYS DISCONNECT THE MACHINE FROM THE POWER SOURCE BEFORE CHANGING CUTTERS.

12) MOUNTING OF CUTTERS

- The machine has been made to accept cutters having 3/4" dia. Weldon shanks. The following procedure is to be used when mounting the cutters:
- With the machine in the upright position, ensure the Arbor Assembly (#56 on page 12) is fully inserted into the Arbor Spindle (#8.3 on page 14).
- Take the appropriate pilot and place it through the hole in the cutter shank. Insert the shank of the cutter into bore of the Arbor Assembly, ensuring alignment of the two drive flats with the socket screws.
- Tighten both screws using the hex key.

13) CAPSTAN OPERATION



The quick release capstan is a feature that offers the user simple dual side operation.

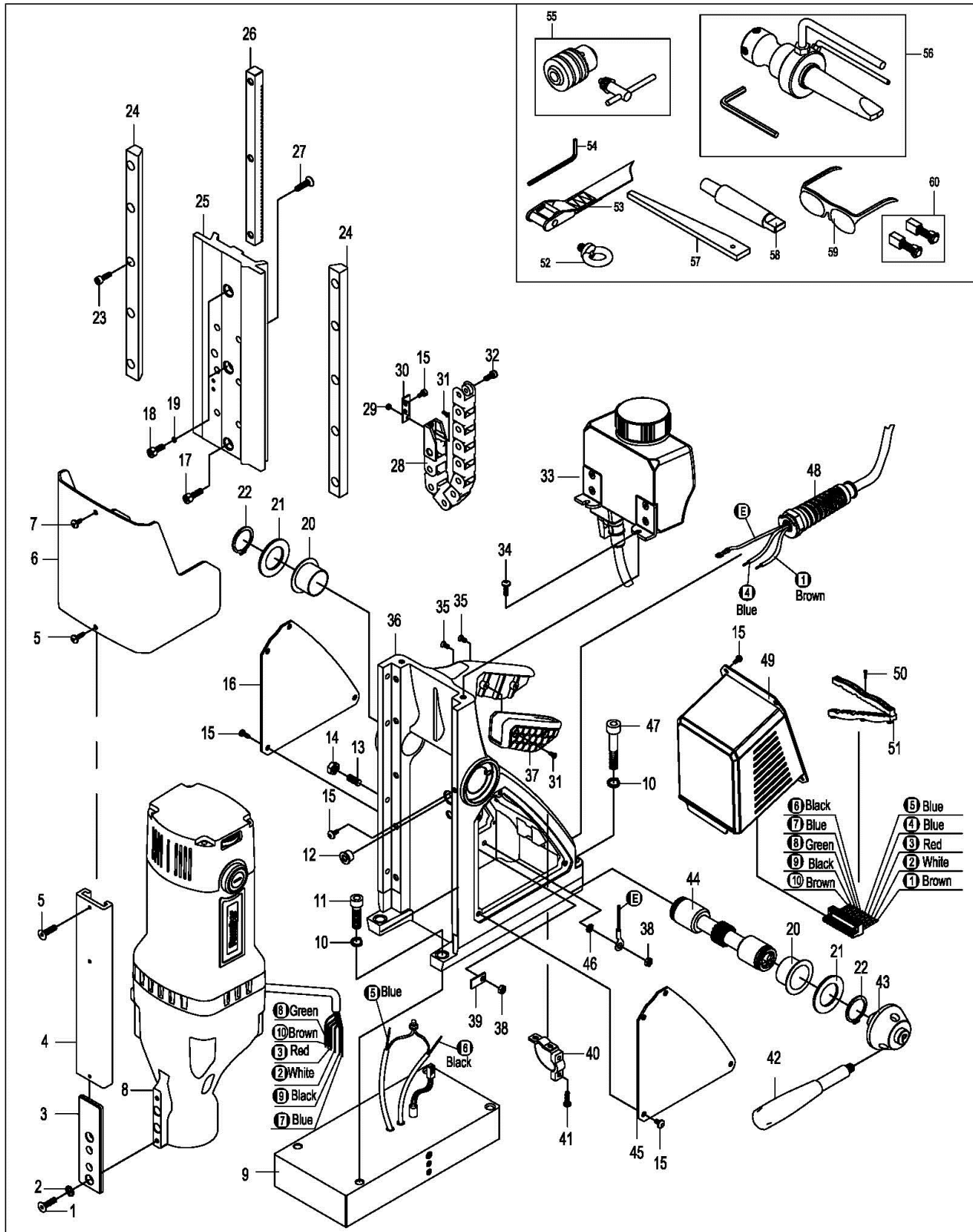
To remove the capstan, simply do the following;

- 1: Press in the central button on the capstan hub, holding onto the capstan arms.
- 2: With the button pressed in, pull the capstan away from the main body, holding on to the capstan arms.
- 3: Re-insert the hex shaft into the hex slot to attach the capstan.

14) TROUBLESHOOTING DRILLING PROBLEMS

<i>Problem</i>	<i>Cause</i>	<i>Remedy</i>
1) Magnetic base won't hold effectively	Material being cut may be too thin for efficient holding. Cuttings or dirt under magnet. Irregularity on magnet contact or work surface. Insufficient current going to magnet during drilling cycles.	Attach an additional piece of metal under the magnet, or mechanically clamp magnetic base to the work surface. Clean magnet. Use extreme care; file any imperfections flush to surface. Confirm power supply and output from control unit, check supply cable.
2) Cutter skips out of centerpunch mark at initiation of cut	Magnetic base is not holding effectively. Worn arbor bushing and/or ejector collar. Too much feed pressure at start of cut. Cutter is dull, worn, chipped or incorrectly sharpened. Poor centerpunch mark; weak pilot spring; pilot not centered in centerpunch mark. Worn or bent pilot, worn pilot hole. Loose bolts on motor bushing support bracket, main casting or loose slide adjusting set screws.	See causes and remedies above. New arbor bushing is needed. Light pressure only is needed until a groove is cut. The groove then serves as a stabilizer. Replace or sharpen. Improve centerpunch and/or replace worn parts Replace part or parts Adjust where necessary
3) Excessive drilling pressure required	Incorrectly resharpened, worn or chipped cutter. Coming down on cuttings lying on the surface of the workpiece. Slide strips out of adjustment or lack of lubrication. Cuttings accumulated (packed) inside cutter.	Resharpen or replace. Take care not to start a cut on cuttings. Adjust set screws and lubricate. Clear cutter.
4) Excessive cutter breakage	Steel cuttings or dirt under cutter. Incorrectly resharpened or worn cutter. Cutter skipping. Slide needs adjustment. Cutter not attached tightly to arbor. Insufficient use of cutting oil or unsuitable type of oil. Incorrect speed	Remove cutter, clean part thoroughly and replace. Always have a new cutter on hand to refer to for correct tooth geometry, together with instruction sheet. See causes and remedies (2). Tighten set screws supporting the slide. Retighten. Inject light viscosity oil into the coolant line and check that oil is being metered into cutter when pilot is depressed. If not, check pilot groove and arbor internally for dirt or apply oil externally. (Even a small amount of oil is very effective). Ensure correct gear is used for the cutter.
5) Excessive cutter wear	See cause and remedy above Incorrectly resharpened cutter. Insufficient or irregular cutting pressure.	Refer to instructions and a new cutter for proper tooth geometry. Use sufficient steady pressure to slow the drill down. This will result in optimum cutting speed and chip load.

15) EXPLODED VIEW OF MACHINE

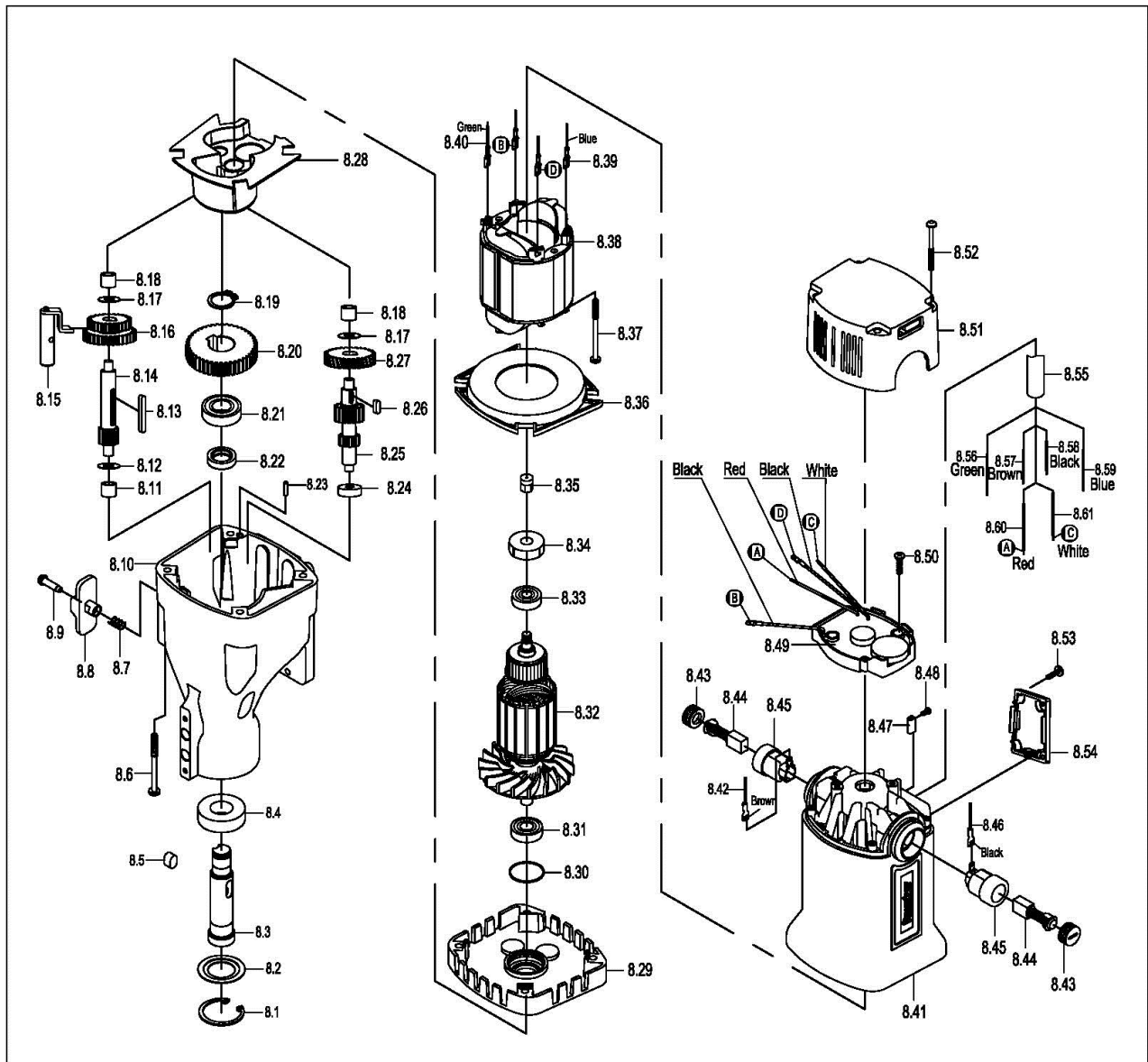


PARTS LIST

Item#	Description	Qty/pcs
1	Screw	2
2	M5 CSK Washer	2
3	Guard support	1
4	Slide channel	1
5	Screw M4×14 Button Head	2
6	Guard	1
7	Screw M4×8 Button Head	1
9	Magnet	1
10	Spring washer	4
11	Screw	2
12	Cable bush	1
13	Screw	4
14	Nut	4
15	Screw M4×8 Button Head	13
16	Right side plate	1
17	Screw M6×20 CAP HD	1
18	Screw M6×16 CAP HD	2
19	Spring washer	2
20	Bush	2
21	Capstan Washer	2
22	Circlip	2
23	Screw	10
24	Guide bar	2
25	Slide	1
26	Rack	1
27	Screw	6
28	Chain	1
29	M3 Nut	2
30	Chain	1
31	Screw M3×8 CSK HD	14
32	Screw	1
33	Coolant bottle assembly	1

Item#	Description	Qty/pcs
34	Screw M4×12 Button Head	2
35	Screw	2
36	Housing	1
37	Handle insert	1
38	M4 nut	2
39	Earth label	1
40	Cable clamp	1
41	Screw M6×16 CAP HD	2
42	Capstan arm	3
43	Capstan Hub	1
44	Capstan spindle	1
45	Left side panel	1
46	Washer	1
47	Screw	2
48	Cable plug assembly	1
49	Control panel assembly- PB50/1T	1
50	Tapping screw ST2.9×12	3
51	Clamp	1
52	Stationary ring	2
53	Safety belt	1
54	3mm hexagonal spanner	1
55	13mm Chuck	1
56	Arbor assembly	1
57	Drift	1
58	Arbor shank	1
59	Safety Glasses	1
60	Spare brush	1pair

16) EXPLODED VIEW OF MOTOR AND GEARBOX

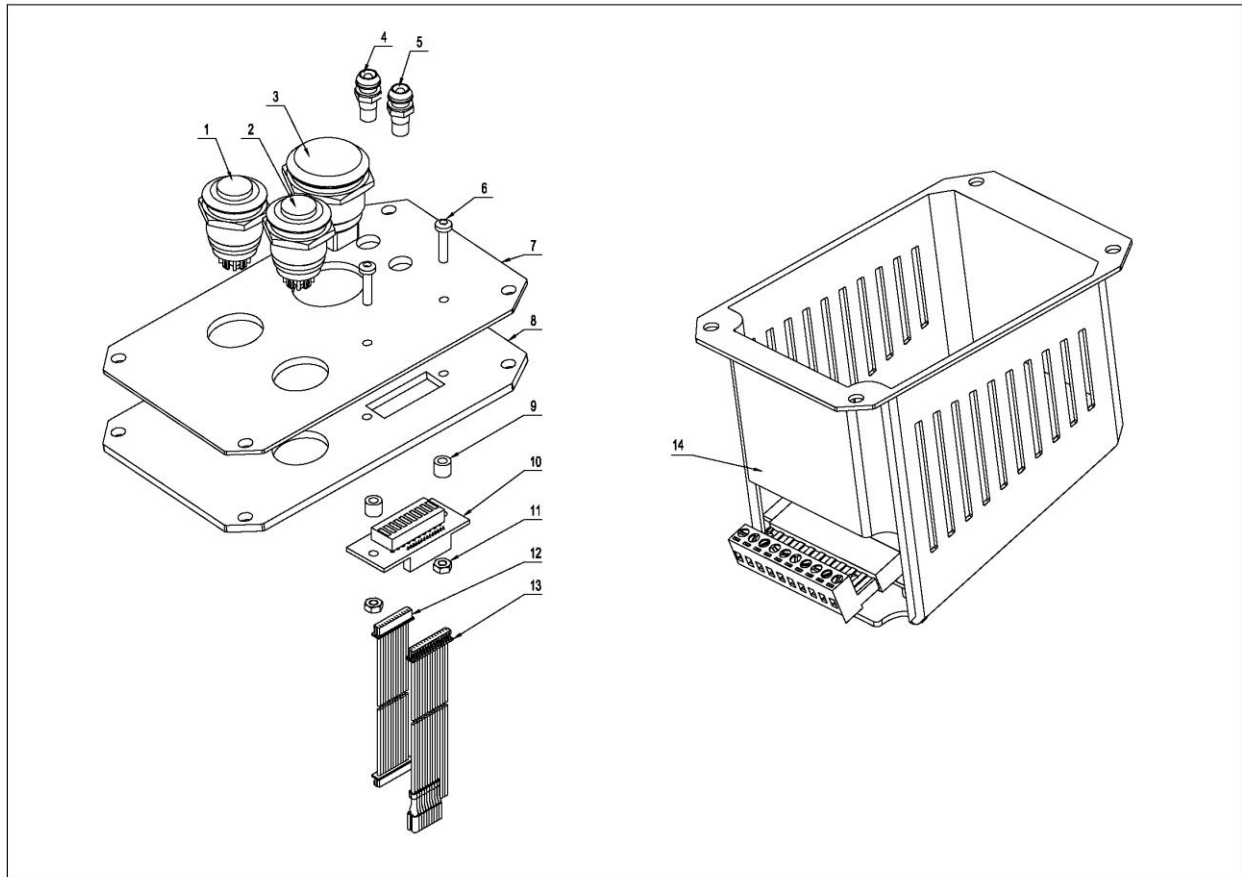


PARTS LIST

Item#	Description	Qty/pcs
8	Motor assembly	1
8.1	Circlip	1
8.2	Oil seal washer	1
8.3	Arbor spindle	1
8.4	Roll Bearing	1
8.5	Flat Key	1
8.6	Tapping Screw	4
8.7	Spring	1
8.8	Gear lever	1
8.9	screw	1
8.10	Gear box	1
8.11	Needle bearing	1
8.12	Gear shaft washer 10mm ID	1
8.13	Key steel	1
8.14	Gear axel	1
8.15	Gear lever shaft	1
8.16	Dual gear	1
8.17	Washer	2
8.18	Needle bearing	2
8.19	Circlip	1
8.20	Big gear	1
8.21	Roll Bearing	1
8.22	Oil seal	1
8.23	Straight Pin	1
8.24	Rolling bearing 608	1
8.25	Shaft gear	1
8.26	Flat Key	1
8.27	Gear	1
8.28	Oil baffle plate	1
8.29	Inner gear plate	1
8.30	Seal washer	1
8.31	Rolling bearing 6001	1
8.32	Armature	1
8.33	Rolling bearing 629	1
8.34	Bearing Sleeve	1
8.35	Inductor	1

Item#	Description	Qty/pcs
8.36	Baffle plate	1
8.37	Tapping Screw	2
8.38	Field coil	1
8.39	Lead wire	1
8.40	Lead wire	1
8.41	Motor casing	1
8.42	Lead wire	1
8.43	Brush cap	2
8.44	Carbon brush	2
8.45	Brush holder	2
8.46	Lead wire	1
8.47	Terminal	6
8.48	Screw M3×6 Button Head	12
8.49	Speed controller module	1
8.50	Tapping Screw	2
8.51	Top Cap	1
8.52	Tapping Screw	4
8.53	Tapping Screw ST2.9×8	4
8.54	Outlet clamp	1
8.55	Plastic tube	1
8.56	Lead wire(green)	1
8.57	Lead wire(brown)	1
8.58	Lead wire(black)	1
8.59	Lead wire(blue)	1
8.60	Lead wire(red)	1
8.61	Lead wire(white)	1

17) CONTROL PANEL AND PARTS LIST



Item#	Description	Qty/pcs
1	Green Motor Switch	1
2	Blue Motor Switch-Tapping	1
3	Magnet Switch	1
4	Red LED	1
5	Green LED	1
6	Screw M3×12 Button Head	2
7	Control Panel Cover	1
8	Control Plate	1
9	Nylon Spacer	2
10	Array Board	1
11	M3 Nut	2
12	Connection line	1
13	Connection line	1
14	E50PCBA	1

18) FITTING THE CHUCK

- The machine comes supplied with an Arbor Shank & ½" Chuck.
- Insert the arbor shank into the Arbor Spindle, ensure a good and tight fit is achieved.
- Insert the ½" chuck into the arbor shank, ensure a good and tight fit is achieved.
- Replacing the chuck is the reverse sequence, by utilizing the supplied drift.

19) MAINTENANCE

In order to obtain the best performance and life from your Kimball Midwest Roto-Kut™ machine always keep it in good working order.

A number of items must always be checked before use.

Before starting any job, always make sure the machine is in good working order and that there are no damaged or loose parts. Any loose parts must be tightened.

Before proceeding with any maintenance work be certain that the power supply is disconnected.

Description	Every operation	1 week	1 Month
Visual check of machine for damage	X		
Operation of machine	X		
Check brush wear		X	
Check magnetic base	X		
Check alignment of the machine			X
Check grease			X
Check armature			X

Visually check the machine for damage.

The machine must be checked before operation for any signs of damage that will affect the operation of the machine. Particular notice must be taken to the power cord, if the machine appears to be damaged it should not be used, failure to do so may cause injury or death.

Check operation of the machine.

The machines operation must be checked to ensure that all components are working correctly.

Machine Brushes

Should be checked to make sure there is no abnormal wear present (this should be checked at least once a week if used frequently). If the brush has worn more than 2/3 of the original length, the brushes should be changed. Failure to do so may cause damage to the machine.

Magnetic base

Before every operation the magnetic base should be checked to make sure that the base is flat and there is no damage present. An uneven magnet base will cause the magnet not to hold as efficiently and may cause injury to the operator.

Adjustment of slide and bearing bracket alignment.

An essential requirement of the machine is that the slide can move in a smooth and controlled manner, free of lateral movement and vibration.

This situation can be maintained by periodic adjustment of the slide and is accomplished in the following manner:

1. Place the machine in an upright position and, by means of the capstan, raise the slide to its highest position. Clean the brass gib strips and apply a small amount of light machine oil to the wear surfaces.
2. Now lower the slide back to its lowest position. Bring the slide into the center of the dovetail slide housing and loosen the screws to allow free movement of the arbor support bracket.
3. Starting with the middle screws, gently tighten all the screws until slight resistance is encountered.
4. Operate the slide up and down a few times to test the movement and make any further necessary adjustments. Try to ensure that all the screws are exerting a uniform pressure on the slide from top to bottom. A perfectly adjusted slide will operate freely up and down without any sideways movement.

Check machine grease.

The gearbox grease should be checked once a month to ensure all moving components are covered to prevent wear. The grease should be changed at least once a year to ensure you obtain maximum performance from your machine.

Check Armature of the machine.

This should be checked at least once a month to verify that there are no visual signs of damage to the body or to the commutator. Some signs of wear will be seen on the commutator over time, but this is normal (this is the part that comes into contact with the brushes) however, if there are any signs of abnormal damage the part should be replaced.

20) TROUBLESHOOTING

Magnet and motor do not function	- The magnet switch is not connected to the power supply - Damaged or defective wiring - Blown fuse* - Defective magnet switch - Defective control unit - Defective power supply
Magnet does function, the motor does not	- Damaged or defective wiring - Carbon brushes are stuck or worn out - Defective on / off switch - Defective control unit - Defective armature and/or field - Defective protective reed switch
Magnet does not function, the motor does	- Defective magnet - Blown fuse* - Defective control unit
Hole cutters break quickly, holes are bigger than the hole cutter	- Play in the guide - Bent spindle - Shaft extending from the motor is bent - Pilot bent
Motor running roughly and/or seizing up	- Bent spindle - Shaft extending from the motor is bent
Motor making a rattling sound	- Gear ring (bottom of the armature) worn out - Gear(s) worn out - No grease in gear box
Motor humming, sparks and motor has no force	- Armature damaged - Field coil burned - Carbon brushes worn out
Motor does not start or fails.	- Damaged or defective wiring - Damage to armature or field coil - Damaged or defective brushes
Guiding takes a great deal of effort	- Slide is set too tight - Slide is dry - Slide /gear - rack/rotation system is dirty or damaged
Insufficient magnetic force	- Damaged or defective wiring - Bottom of magnet not clean and dry - Bottom of magnet not flat - Work piece is not bare metal - Work piece is not flat - Work piece is too thin less than 10mm - Defective control unit - Defective magnet
Fuse blows when magnet switch is turned on	- Damaged or defective wiring - Wrong amperage fuse* - Defective magnet switch - Defective control unit - Defective magnet
Fuse blows when motor is started	- Damaged or defective wiring - Wrong amperage fuse* - Motor running roughly - Defective armature and / or field - Carbon brushes worn out - Defective control unit

*The fuse can be accessed by removing the rear panel of the drill. Replace only with a 5x20mm fast acting power fuse with a 250V rating [K-M No. 28-1199].

Worn out or defective parts must be replaced by an authorized Kimball Midwest service center, return to Kimball Midwest for evaluation.

21) CUTTER SELECTION AND SPEEDS

The data listed below is for reference purposes only and indicates potential starting conditions. It is the responsibility of the user to determine correct application requirements.

Material to be cut	Cutter Diameter/Material/RPM relationship											
	9/16"		3/4"		7/8"		1-1/4"		2"		2-9/16"	
Minimum/Maximum	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Iron: cast (soft)	360	480	280	300	200	240	140	180	100	120	75	93
Iron: cast (hard)	250	320	200	230	160	200	110	147	80	105	60	81
Iron: cast (malleable)	250	660	200	420	160	380	110	290	80	160	60	130
Steel: mild	440	660	340	420	310	380	220	290	140	160	110	130
Steel: high tensile	265	340	190	250	150	185	125	145	90	100	65	80
Steel: stainless (free cutting)	280	320	150	200	110	140	90	120	60	85	50	65
Steel: stainless (heat resisting)	250	210	180	150	100	130	80	105	55	70	35	55

These are only starting points, they will vary with application and work piece condition.

Difficult-to-machine materials will require reduced feed rates.

22) WARRANTY STATEMENT

Kimball Midwest warrants the Roto-Kut™ magnetic base drill [82-6627] to the original buyer (“Buyer”) to be free from manufacturing defects and defects in workmanship, under normal usage of the machine, for a period of 12 months from the initial date of purchase. Coverage under this warranty only applies if the tool has been submitted to Kimball Midwest for inspection.

This Limited Warranty does not cover:

1. Components that are subject to natural wear and tear caused by use that is not in accordance with the operator’s instructions
2. Defects in the tool caused by non-compliance with the operating instructions, improper use, abnormal environment conditions, inappropriate operating conditions, overload or insufficient servicing or maintenance.
3. Defects caused by using accessories, components or spare parts other than original parts.
4. Tools to which changes or additions have been made.
5. This warranty does not cover and damage to parts due to alteration, modification, improper installation, accident, post-installation misuse, abuse, negligence, inadequate maintenance, or malfunction of associated parts or equipment not supplied by Kimball Midwest.
6. This warranty is in lieu of any other warranty, expressed or implied, including any warranty of merchantability or fitness for a particular purpose. Replacement or repair as provided under this warranty is the exclusive remedy of the buyer. Kimball Midwest shall not be liable for any incidental or consequential damages resulting from breach of this warranty. Kimball Midwest neither assumes, nor authorizes and person to assume for it, any other liability in connection with the sale of its products.

All warranty claims must be submitted within the warranty period. This requires the return of the **complete** tool and should include the original sales invoice which indicates the purchase date and serial number of the product.

All goods returned for warranty repair must be returned to Kimball Midwest.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, (EXPRESSED OR IMPLIED) INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. KIMBALL MIDWEST RESERVES THE RIGHT TO MAKE IMPROVEMENTS AND MODIFICATIONS TO DESIGN WITHOUT PRIOR NOTICE.