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RotabroachTM
COMMANDO 40
Magnetic drilling machine

Model Number COMMANDO40/1, COMMANDO40/3

This machine (Serial Number) is CE approved.

Rotabroach[®]

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**Thank you for purchasing our Commando 40 magnetic drill.
We would really like your feedback on the machine.**

Other Products by Rotabroach™:



Thank you for your purchase of our product.

For more information please visit our website at www.rotabroach.co.uk

Or contact our sales department on +44 (0) 114 2212 510

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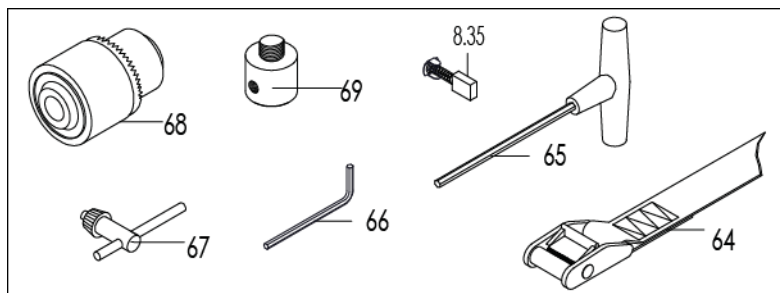
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P/N	Drawing number	List of Contents with Magnetic Drill Unit	Check list (Y/N)
RD4329	64	Safety Strip	
RD4088	65	Hexagon Spanner 4mm	
RD4152	66	Hexagon Spanner 3mm	
RD33154	67	Drill Chuck Key	
RD43099	68	13mm Drill Chuck	
RD33153	69	Drill Chuck Adaptor	
RD35612	8.35	Replacement Carbon Brush	



1) INTENDED USE

The intended use of this magnetic drill is to drill holes in ferrous metals. The magnet is used to hold the drill in place whilst the drill is functioning. 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.

2-3) GENERAL SAFETY RULES

WARNING! Read all safety warnings, instructions, illustrations, and specifications provided with this power tool.

Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

Save all warnings and instructions for future reference.

The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

Work area safety

Keep work area clean and well lit. *Cluttered or dark areas invite accidents.*

Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.

Power tools create sparks which may ignite the dust or fumes.

Keep children and bystanders away while operating a power tool. *Distractions can cause you to lose control.*

Electrical safety

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 a residual current device (RCD) protected supply.

Use of an RCD reduces the risk of electric shock.

NOTE The term "residual current device (RCD)" can be replaced by the term "ground fault circuit interrupter (GFCI)" or "earth leakage circuit breaker (ELCB)".

Personal safety

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) Use personal protective equipment. Always wear eye protection. *Protective equipment such as a 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 jewellery. Keep your hair and clothing away from moving parts. *Loose clothes, jewellery 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.*

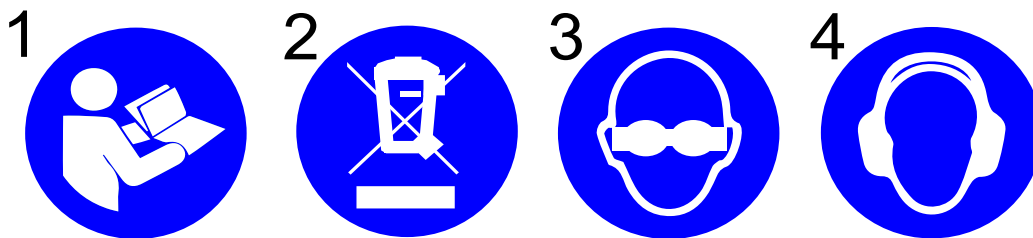
h) Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles. *A careless action can cause severe injury within a fraction of a second*

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 remove the battery pack, if detachable, 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 and accessories. 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.*
- h) **Keep handles and grasping surfaces dry, clean and free from oil and grease.** *Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.*

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*

4) INFORMATION PLATE SYMBOLS

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

5) SPECIFICATION

Maximum hole cutting capacity in .2/.3C steel = 40mm dia. x 50mm deep

Arbor bore = 19.05mm (3/4" dia.

Motor Unit (Nominal values)	COMMANDO40/1	110V 50-60Hz	1100W
	COMMANDO40/3	230V 50-60Hz	1100W
Electro Magnet	COMMANDO40/1	110V 50-60Hz	45W
	COMMANDO40/3	230V 50-60Hz	45W
Overall Dimensions	Height (maximum extended)		510 mm
	Width (including Hand Wheel)		180 mm
	Length Overall (including Guard)		265 mm
	Magnet Footprint		165mm x 80mm
Nett Weight			14.6 kg
Stroke			85mm
No Load speed	All voltages		270-610 rpm
Tractive Force of Magnet at 20° C (25mm min. plate thickness) The use on any material less than 25mm 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. Failure to do so may result in personal injury.			8000N
Maximum hand/arm vibration magnitude (measured at handle during operation in accordance with ISO5349, using a 22mm dia cutter through a 13mm mild steel plate).			2.892 m/s ²
Estimate of vibration exposure. Operation 30 holes @ 1 minute/hole.			0.13 m/s ² A(8)
Average noise level during cutting at operator's ear position.			L _{PA} Max. 88.4 dB(A) L _{WA} Max. 101.4dB(A)

Vibration and Noise

The declared vibration total value(s) and the declared noise emission value(s) have been measured in accordance with a standard test method and maybe used for comparing one tool with another.

The declared vibration total value(s) and declared noise emission values(s) may also be used in a preliminary assessment of exposure.

The vibration and noise emissions during actual use of the power tool can differ from the declared total value depending on the ways in which the tool is used and especially what kind of workpiece is being processed

The need to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).

Ear and eye defenders 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 to 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. SUPPLY

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

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

WARNING: THIS APPLIANCE MUST BE EARTHED!

NB: ANY MODIFICATIONS TO THIS MACHINE WILL INVALIDATE THE GUARANTEE

6) OPERATIONAL SAFETY PROCEDURES

READ BEFORE USING THE MACHINE

- Always take care when lifting and transporting this machine. The maximum lifting weight for one person is 25kgs. See Fig.1
- When using electrical 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 activating the machine, inspect all electrical supply cables (including extension leads), and replace if damaged. DO NOT use if there are any signs of damage.
- Only use extension cables approved for site conditions.
- BEFORE activating the machine, ALWAYS check the correct function of all operational systems, switches, magnet etc.
- BEFORE operating, the machine MUST be securely restrained to a fixed independent feature (by using safety strap RD4329B, or other means) 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 eye protectors, ear defenders and recommended PPE at ALL times when operating the machine.
- Disconnect from power source when changing cutters or working on the machine.
- Cutters and swarf are sharp, ALWAYS ensure that hands are adequately protected when changing cutters or removing swarf. Use a tool or brush where necessary to remove any swarf or the cutter from the arbor.
- Before operating the machine, ALWAYS ensure cutter-retaining screws are secured tightly.
- Regularly clear the work area and machine of swarf and dirt, paying particular attention to the underside of the magnet base.
- ALWAYS remove tie, 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 to and fro. 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. DO NOT operate the machine as the ejected slug may cause injury.
- When not in use ALWAYS store the machine in a safe and secure location.
- ALWAYS ensure that approved ROTABROACH™ agents conduct repairs.



Fig.1

7) OPERATING INSTRUCTIONS

Keep the inside of the cutter clear of swarf. It restricts the operating depth of the cutter.

- Ensure that the coolant bottle contains sufficient cutting oil to complete the required operating duration. Refill as required.
- Occasionally depress the pilot to ensure cutting fluid is being correctly metered.
- To start the machine, follow the control panel operation instructions.
- ALWAYS switch off the motor by depressing the MOTOR stop button. DO NOT switch off the motor by depressing the MAGNET switch.
- Apply light pressure when commencing the cut of a hole until the cutter is introduced into the work surface. 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 has been ejected from the previous hole before commencing to cut the next.
- 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 make contact with 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 and arbor support bearing.
- Cutter breakage is usually caused by insecure anchorage, a loosely fitting slide or a worn bearing in the arbor support. (Refer to routine maintenance instructions).
- Only use approved neat cutting fluid, do not use water diluted oil. Rotabroach cutting fluid has been specially formulated maximize the cutters performance. It is available in 1 litre (RD208) and 5 litre (RD229).
- When using the coolant bottle accessory, ensure the machine is unplugged from the power supply, when re-filling.

8) EXTENSION CABLE SELECTION

The machines are factory fitted with a 3-metre length of cable having three conductors 1.5mm² LIVE, NEUTRAL and EARTH. If it becomes necessary to fit an extension cable from the power source, care must be taken in using a cable 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.

Should the mains cable become damaged and need replacing, please ensure this is carried out only by an approved Rotabroach Engineer.

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

For 110v supply: 3.5metres of 3 core x 1.5mm²

For 230v supply: 26metres of 3 core x 1.5mm²

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

9) MOUNTING OF CUTTERS

- The machine has been made to accept cutters having 19.05mm (3/4") dia. Weldon shanks.

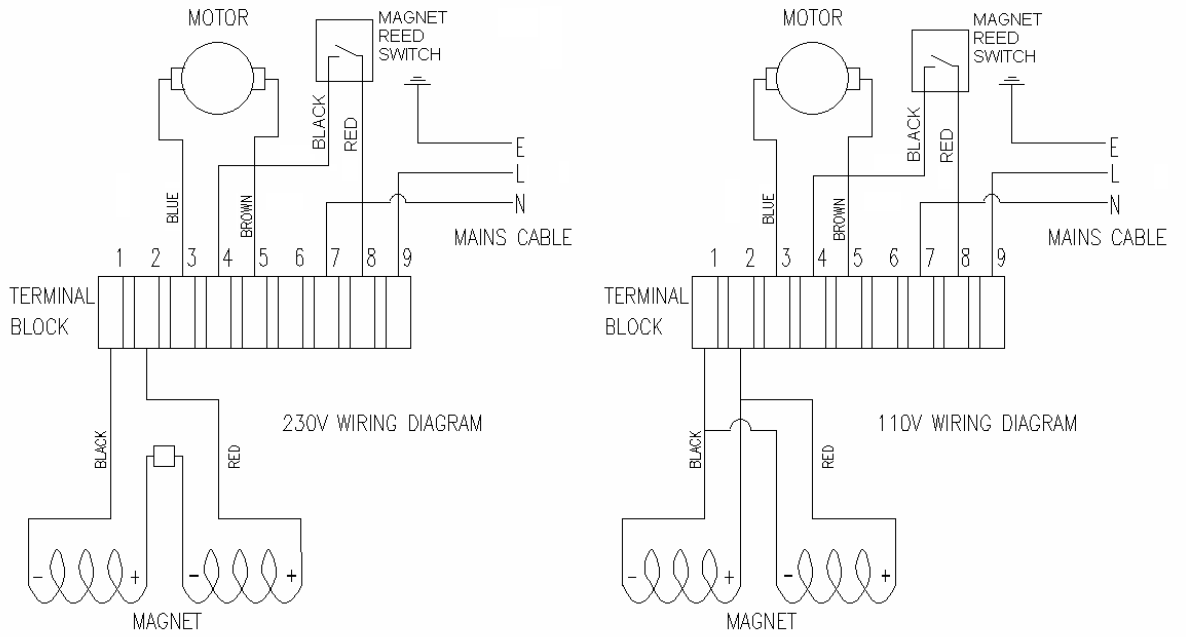
The following procedure is to be used when mounting cutters:

- Lay the machine on its side with feed handles uppermost, ensuring arbor is wound down to its lowest point to enable access to socket screws RD4066.
- Take appropriate pilot and place through the hole in cutter shank. Insert shank of cutter into bore of arbor, ensuring alignment of two drive flats with socket screws.
- Tighten both screws using hexagon key.

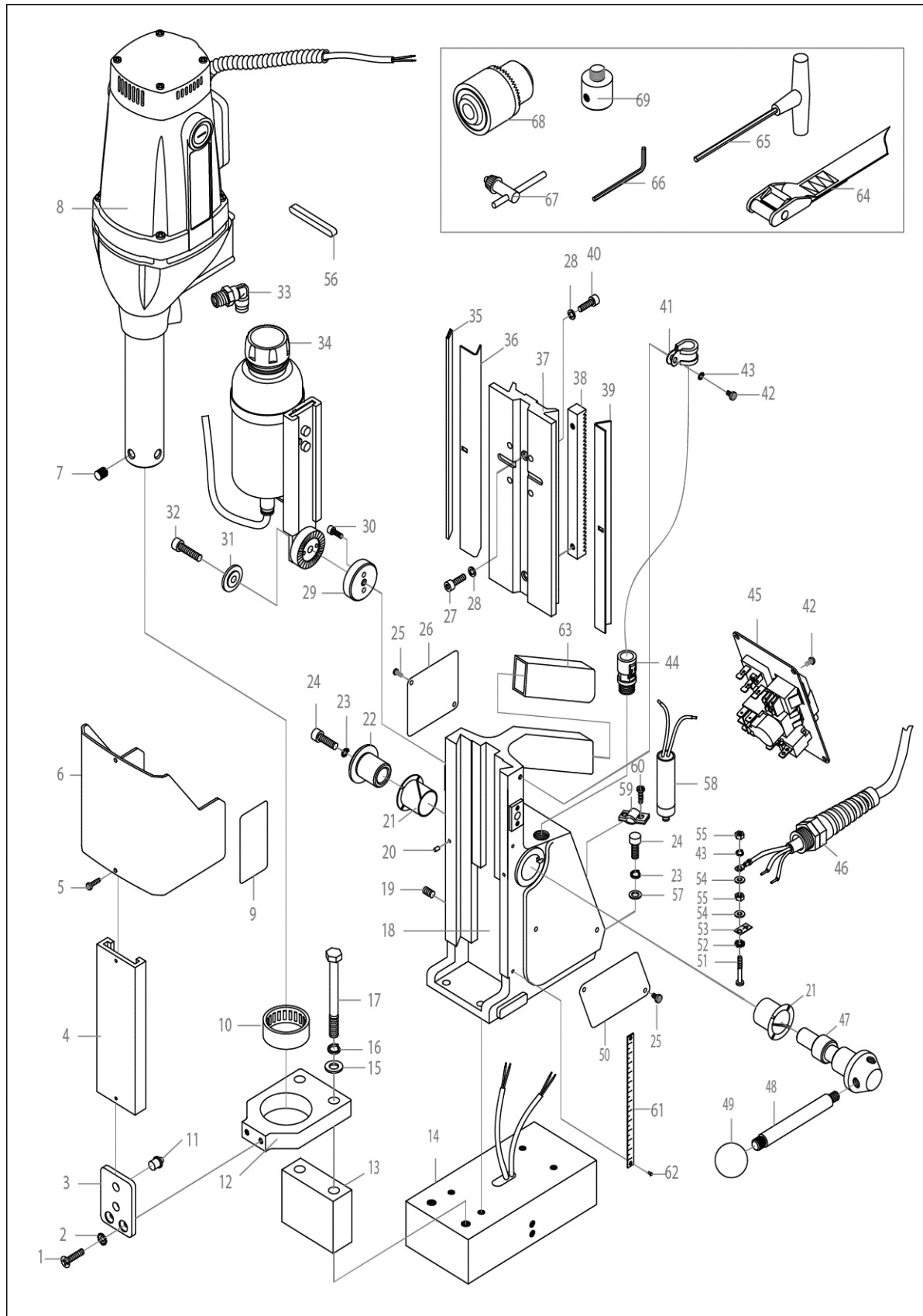
10) REMEDIES FOR HOLE MAKING PROBLEMS

<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.	Attach an additional piece of metal under work-piece where magnet will be located, or mechanically clamp magnetic base to work-piece.
	Swarf or dirt under magnet.	Clean magnet.
	Irregularity on magnet contact or work-piece.	Use extreme care; file any imperfections flush to surface.
	Insufficient current going to magnet during drilling cycles.	Confirm power supply and output from control unit, check supply cable.
2) Cutter skips out of centre-punch mark at initiation of cut	Magnetic base is not holding effectively.	See causes and remedies above.
	Worn arbor bushing and/or ejector collar.	Replace! Only a few thousandths wear permissible. New arbor bushing is needed. Light pressure only is needed until a groove is cut. The groove then serves as a stabiliser.
	Too much feed pressure at start of cut.	Replace or re-sharpen. Sharpening service is available.
	Cutter is dull, worn, chipped or incorrectly sharpened.	Improve centre-punch and/or replace worn parts
	Poor centre-punch mark; weak pilot spring; pilot not centred in centre-punch mark.	Replace part or parts
	Worn or bent pilot, worn pilot hole.	Replace part or parts
	Loose bolts on motor bushing support bracket, main casting or loose gib adjusting set screws.	Adjust where necessary
3) Excessive drilling pressure required	Incorrectly re-sharpened, worn or chipped cutter.	Re-sharpen or replace.
	Coming down on swarf lying on surface of work-piece.	Take care not to start a cut on swarf.
	Gibs out of adjustment or lack of lubrication.	Adjust setscrews, and lubricate.
	Swarf accumulated (packed) inside cutter.	Clear cutter.
4) Cutter breakage	Steel swarf or dirt under cutter.	Remove cutter, clean part thoroughly and replace.
	Incorrectly re-sharpened or worn cutter.	Always have a new cutter on hand to refer to for correct tooth geometry, together with instruction sheet.
	Cutter skipping.	See causes and remedies (2).
	Gib Strip need adjustment.	Tighten Gib Strip.
	Cutter not attached tightly to arbor.	Retighten.
	Insufficient use of cutting oil or unsuitable type of oil.	Inject oil of light viscosity into the coolant-inducing ring 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).
5) Excessive cutter wear	See cause and remedy above	
	Incorrectly re-sharpened cutter.	Do not use. Refer to instructions and a new cutter for proper tooth geometry.
	Exercise, insufficient or spasmodic cutting pressure.	Use sufficient steady pressure to slow the drill down. This will result in optimum cutting speed and chip load.

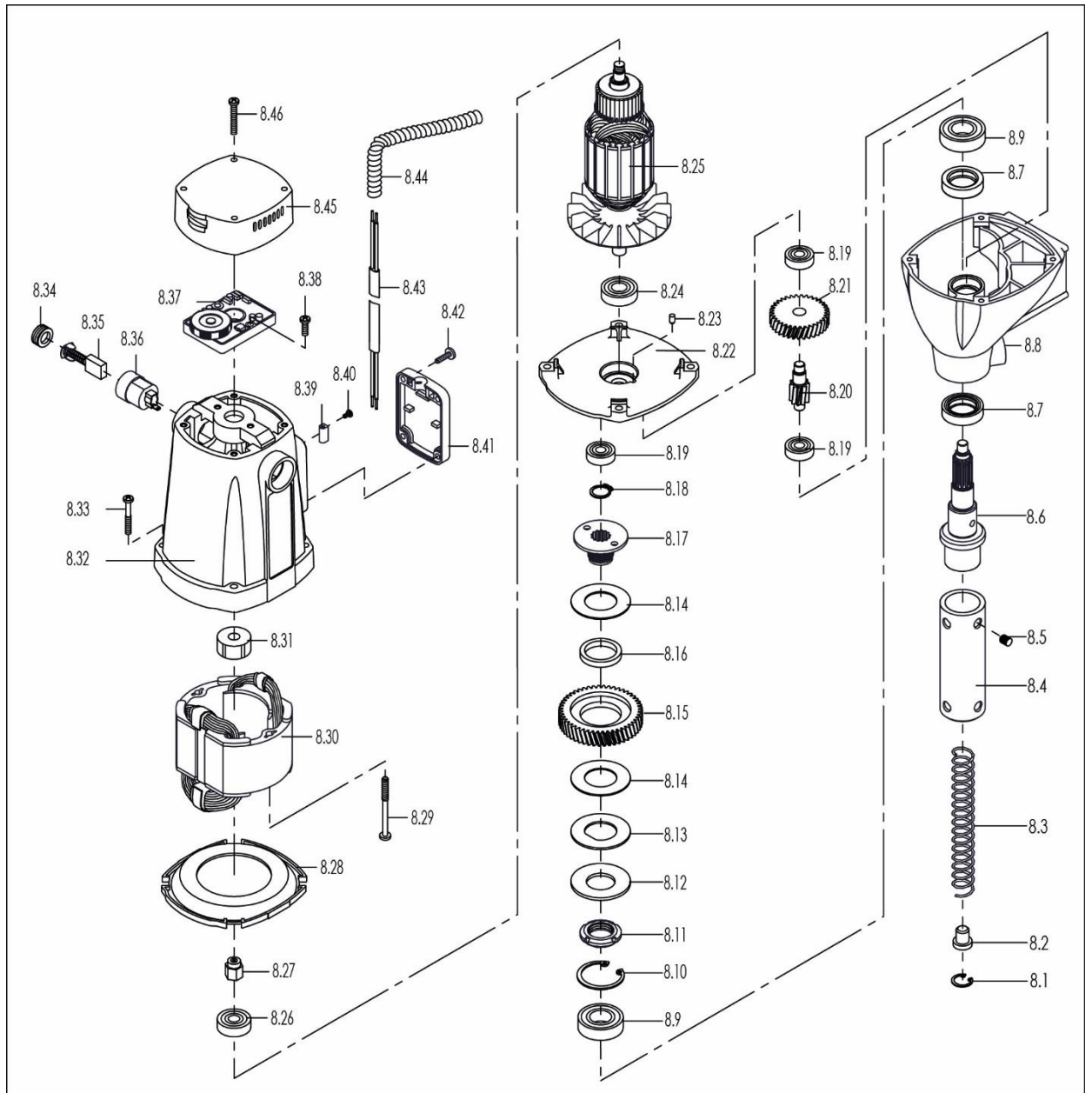
11) WIRING DIAGRAM



12) EXPLODED VIEW OF MACHINE



13) EXPLODED VIEW OF MOTOR AND GEARBOX



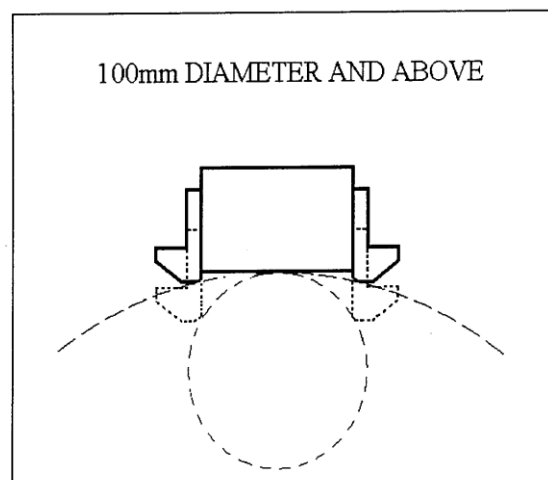
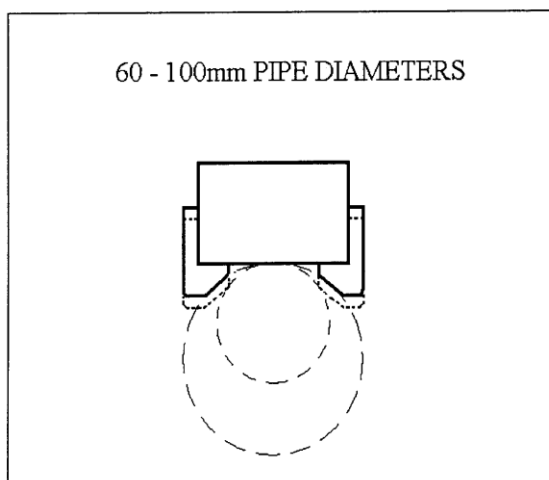
14) PARTS LIST

Item	Rotabroach P/N	Description	Qty/pcs
1	RD4347	M5x16 Cross Sunk Screw	2
2	RD45607	M5 Lock Washer	2
3	RD33344	Guard Support	1
4	RDA3031	Side Channel	1
5	RD4201	Screw M4x14 BTTN HD	2
6	RD33345	Guard	1
7	RD4066	M8x8 Lock Screw	2
8	RD23114/RD23115	Motor Assembly 110V/230V	1
8.1	RD4056	Circlip 19-Hole	1
8.2	RA354	Button	1
8.3	RA3118	Spring	1
8.4	RD33155	Arbor	1
8.5	RD4066	Screw M8x8	2
8.6	RD33156	Arbor Spindle	1
8.7	RD43304	Oil Seal	2
8.8	RD33602	Gearbox	1
8.9	RD43305	Ball Bearing 6003	2
8.10	RD43306	Circlip 35-Hole	1
8.11	RD43607	Lock Assembly	1
8.12	RD43626	Dishing Washer	1
8.13	RD43608	Washer	1
8.14	RD33603	Brass Washer	2
8.15	RD33604	Big Gear	1
8.16	RD43609	Gear Bushing	1
8.17	RD33606	Internal Tooth Bushing	1
8.18	RD43310	Circlip 14-Shaft	1
8.19	RM17134	Ball Bearing 608	3
8.20	RD33607	Gear-Shaft	1
8.21	RD33608	Small Gear	1
8.22	RD33609	Inner Gearplate	1
8.23	RD45614	Bearing Pin	1
8.24	RD45522	Ball Bearing 6001	1
8.25	RD33610/RD33623	Armature 110V/230V	1
8.26	RD43603	Ball Bearing 629	1
8.27	RD35639	Inductor	1
8.28	RD33611	Fan Baffle	1
8.29	RD43625	Tapping Screw St4.8x60	2
8.30	RD33631/RD33633	Field Leadwire Sa 110V/230v	1
8.31	RDB3069	Bearing Sleeve	1
8.32	RD33186	Motor Frame	1
8.33	RD43624	Screw SA M5x42	4
8.34	RD33616	Brush Cover	2
8.35	RD35612	Brush	2
8.36	RD33614	Brush Holder	2
8.37	RD23630/RD23643	Speed Controller 110V/230V	1
8.38	RD45610	Tapping Screw St3.9x16	2
8.39	RD35617	Terminal	2
8.40	RD45613	Screw M3x6	4
8.41	RD35619	Protector	1
8.42	RD45612	Tapping Screw St3.9x12	4
8.43	RD23623	Motor Cable Assembly	1
8.45	RD35615	End Cap	1
8.46	RD43618	Tapping Screw St3.9x32	4
9	RD33070	Information Plate	1
10	RD45624	Needle Bearing Hk354216	1
11	RD45620	Ball	2
12	RD33635	Bearing Bracket	1

Item	Rotabroach P/N	Description	Qty/pcs
13	RD33148	Spacer For Bearing Bracket	1
14	RD23625/RD23626	Magnet Assembly 110V/ 230V	1
15	RD4078	M8 Flat Washer	2
16	RD4079	M8 Elastic Washer	2
17	RD43619	M8x88 Hex Head Tap Bolt	2
18	RD33632	Housing Assembly	1
19	RD4312	M6x12 Lock Screw	4
20	RD45622	Pin 3x8	2
21	RD4313	Sleeve	2
22	RD3303	Pinion Shaft Sleeve	1
23	RD4096	M6 Elastic Washer	5
24	RD4098	M6x20 Socket Cap Screw	5
25	RD4077	M4x6 Cross Panhead Screw	4
26	RD4302	Warning Label	1
27	RD4325	M5x16 Socket Cap Screw	2
28	RD4092	M5 Elastic Washer	6
29	RD33338	Dirigible Wheel	1
30	RD4414	M4x10 Socket Cap Screw	2
31	RD33320	Clamp Assembly	1
32	RD4269	M6x25 Socket Cap Screw	1
33	RD45605	Infal Connector	1
34	RD23603	Cooling Bottle Assembly	1
35	RD33644	Gib Support Strip	1
36	RD33645	Adjustable Gib Strip	1
37	RD33630	Slide	1
38	RD33600	Rack	1
39	RD33646	Fixed Gib Strip	1
40	RD4091	M5x25 Socket Cap Screw	4
41	RD4210	Coil Pipe Clamp	1
42	RD4077	M4x8 Cross panhead Screw	5
43	RD43357	M4 Elastic Washer	2
44	RD43600	Connector	1
45	RD23109/RD23110	Control Panel 110V/230V	1
46	RD25619/RD25620	Cable Assembly 110V/230v	1
47	RD33643	Capstan Spindle	1
48	RD33642	Capstan Arm	3
49	RD43091	Capstan Ball	3
50	RD33178	Brand Label	1
51	RD45621	M4x22 Cross Panhead Screw	1
52	RD4069	M4 External Tooth Washer	1
53	RD45604	Earth Tag	1
54	RD4070	M4 Flat Washer	2
55	RD4068	M4 Hexagon Nut	2
56	RD33341	Flat Key	1
57	RD4095	M6 Flat Washer	4
58	RD45606	Protecting Switch	1
59	RD43117	Cable Gland	1
60	RD43093	M4x14 Cross Panhead Screw	2
61	RD33145	Depth Gauge	1
62	RD33146	Label-Plate Rivet	2
63	RD33144	Handle Sheath	1
64	RD4329	Safety Strip	1
65	RD4088	Hexagon Spanner 4mm	1
66	RD4152	Hexagon Spanner 3mm	1
67	RD33154	Drill Chuck Key	1
68	RD43099	13mm Drill Chuck	1
69	RD33153	Drill Chuck Adaptor	1

15) PIPE ADAPTOR KIT RD2311**FITTING INSTRUCTIONS**

- Dependent upon the size of the pipe to be cut (see illustrations) attach adjustable angle plates RD3328 with cap screws RD4325 and washers RD4205 (4 off each) to the magnet sides. Do not tighten.
- Locate the machine on the centreline of the pipe taking care that the magnet is in line with the longitudinal axis of the pipe.
- Switch on the magnet and move the sliding plates down to the outside diameter of the pipe. Tighten the screws on both sides by hand then check once again that the full length of the moving plates is touching the pipe at the front and back, fasten the plate securely. Feed the safety strap through the lugs at the front of the housing, around the pipe and pull tight.
- When cutting the hole DO NOT use excessive pressure but rather let the cutter ease into the cutting surface.



16) FITTING THE CHUCK

- To remove the arbor lay the machine on its side.
- Unscrew the two grub screws at the top of the arbor.
- When the arbor has become detached from the spindle this can then be removed.
- Remove the arbor support bracket and guard with the arbor retained.
- Mount the chuck using the chuck adaptor RD33153.
- Replacing the chuck is the reverse sequence.

17) MAINTENANCE

In order to 'get the best life' out of your Rotabroach machine always keep it in good working order.

A number of items must always be checked on Rotabroach machines.

Always before starting any job 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 mains cable, 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 $\frac{2}{3}$ 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 screws thus allowing free movement of the arbor support bracket.
3. Commencing with the middle screws, gently feed in 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.
5. Now raise the slide to its highest position. Slightly undo the arbor bearing bracket and, using fingers only, tighten the screws.
6. Place the machine on a steel plate, connect to power supply and switch on the magnet. Start up the motor. If the arbor is incorrectly aligned, the arbor support bracket will be seen to oscillate. Make any necessary further adjustments to the bracket to ensure correct alignment of the spindle and finally tighten the screws using a spanner. Lastly tighten the arbor bearing bracket.

Check machines 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 gain the best from your machine.

Check Armature of the machine.

This should be checked at least once a month to check 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 a period of 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.

18) TROUBLE SHOOTING

Magnet and motor do not function	<ul style="list-style-type: none"> - The magnet switch is not connected to the power supply - Damaged or defective wiring - Defective fuse - Defective magnet switch - Defective control unit - Defective power supply
Magnet does function, the motor does not	<ul style="list-style-type: none"> - Damaged or defective wiring - Carbon brushes are stuck or worn out - Defective magnet switch - Defective on / off switch - Defective Control Unit - Defective armature and/or field - Defective magnet protective switch
Magnet does not function, the motor does	<ul style="list-style-type: none"> - Defective magnet - Defective control unit
Hole cutters break quickly, holes are bigger than the hole cutter	<ul style="list-style-type: none"> - Play in the guide - Bent spindle - Defective magnet causing movement - Shaft extending from the motor is bent - Uneven work surface causing lack of magnetic adhesion. - Bent pilot
Motor running roughly and/or seizing up	<ul style="list-style-type: none"> - Bent spindle - Shaft extending from the motor is bent - Triangular guide not mounted straight - Dirt between spindle and triangular guide
Motor making a rattling sound	<ul style="list-style-type: none"> - Gear bearing (bottom of the armature) worn out - Gear(s) worn out - No grease in gear box
Motor humming, big sparks and motor has no force	<ul style="list-style-type: none"> - Armature burned - Field burned - Carbon brushes worn out
Motor does not start or fails.	<ul style="list-style-type: none"> - Damaged or defective wiring - Dirt in sensor of speed control unit - Defective speed control unit - Defective speed control or its wiring - Defective or loose magnet on top of armature - Damaged or defective brushes
Guiding takes a great deal of effort	<ul style="list-style-type: none"> - Guide is set too tight - Guide is dry - Guide/gear- rack/rotation system dirty or damaged
Insufficient magnetic force	<ul style="list-style-type: none"> - 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
Motor only runs at maximum rpm	<ul style="list-style-type: none"> - Defective speed switch - Damaged / defective wiring - Defective control unit

Frame under voltage	<ul style="list-style-type: none">- Damaged / defective wiring- Defective magnet- Motor seriously dirty
Fuse blows when magnet switch is turned on	<ul style="list-style-type: none">- Damaged or defective wiring- Wrong value fuse- Defective magnet switch- Defective control unit- Defective magnet
Fuse blows when motor is started up	<ul style="list-style-type: none">- Damaged or defective wiring- Wrong value fuse- Motor running roughly- Defective armature and / or field- Carbon brushes worn out- Defective control unit
Rotation system free stroke too long	<ul style="list-style-type: none">- Loose or defective gear-rack- Defective rotation system

19) CUTTER SELECTION AND SPEEDS

Material	Material Hardness	Cutter
Mild and free cutting steels	<700N/mm ²	RAP or RAPL
Mild and free cutting steels	<850N/mm ²	SRCV or SRCVL
Steel angle and joists	<700N/mm ²	RAP or RAPL
Steel angle and joists	<850N/mm ²	SRCV or SRCVL
Plate and sheet steel	<700N/mm ²	RAP or RAPL
Plate and sheet steel	<850N/mm ²	SRCV or SRCVL
Aluminium	<750N/mm ²	RAP or RAPL
Aluminium	<850N/mm ²	SRCV or SRCVL
Brass	<700N/mm ²	RAP or RAPL
Brass	<850N/mm ²	SRCV or SRCVL
Cast iron	<700N/mm ²	RAP or RAPL
Cast iron	<850N/mm ²	SRCV or SRCVL
Stainless steel	<700N/mm ²	RAP or RAPL
Stainless steel	<850N/mm ²	SRCV or SRCVL
Stainless steel	>850N/mm ²	CWC to CWCX
Rail track	>850N/mm ²	SCRWC or SCRWCL
Tool steel	>850N/mm ²	CWC to CWCX
Die Steel	>850N/mm ²	CWC to CWCX

Possible speed selection for mild steel with ideal conditions at 30 M/min.

Speed selector position.	Cutter diameter	Nominal RPM
1	40	270
2	32	330
3	24	400
4	19	470
5	16	570
6	14	610

This data is presented for guidance only, and should be adjusted to suit site and material condition.

The data listed below is for reference purposes only, and indicate potential starting conditions. It is the responsibility of the site operation manager to determine correct application requirements.

<i>Rotabroach</i>	Cutting surface speed Meters/min	Cutter diameter/Material/RPM relationship													
		13		14		18		22		30		50		65	
Material to be cut	Lower - Upper	L	U	L	U	L	U	L	U	L	U	L	U	L	U
Aluminium	60 - 90	1469	2203	1364	2046	1061	1591	868	1302	637	955	382	573	294	441
Brass & Bronze	40 - 50	979	1224	909	1137	707	884	579	723	424	530	255	318	196	245
Iron: cast(soft)	30 - 50	734	1224	682	1137	530	884	434	723	318	530	191	318	147	245
cast(hard)	15 - 21	367	514	341	477	265	371	217	304	159	223	95	134	73	103
cast(malleable)	15 - 30	367	734	341	682	265	530	217	434	159	318	95	191	73	147
Steel: mild	24 - 30	588	734	546	682	424	530	347	434	255	318	153	191	118	147
high tensile	3 - 5	73	122	68	114	53	88	43	72	32	53	19	32	15	24
stainless (free cutting)	15 - 18	367	441	341	409	265	318	217	260	159	191	95	115	73	88
stainless (heat resisting)	6 - 13	26	318	136	296	106	230	87	188	64	138	38	83	29	64

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

Material or Application Type	Feed Per Tooth (mm)
Thin Walled Workpieces Oblique Entry / Curved Surfaces Semi-Circles / Fragile Setups	.0254 / .0508 (.0762 FPT with Work Hardening Materials)
Soft / Gummy Materials	.1016 / .127
Typical / Average Applications	.0762 / .1016
Deep Holes	.1016 / .127

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

RotabroachTM

20) WARRANTY AND CE STATEMENT

RotabroachTM warrants its machines to be free from faulty materials, under normal usage of machines, for a period of 12 months from initial date of purchase. All other parts (excluding cutters) are under warranty for 90 days, provided that the warranty registration card (or online registration) has been completed and returned to RotabroachTM or its designated distributor within a period of (30) days from the purchase date. Failure to do so will void the warranty. If the stated is adhered to, RotabroachTM will repair or replace (at its option) without charge any faulty items returned.

This Warranty does not cover:

1. Components that are subject to natural wear and tear caused by the use not in accordance with the operators 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 RotabroachTM parts.
4. Tools to which changes or additions have been made.
5. Electrical components are subject to manufacturer's warranty.

Your online registration can be submitted at www.rotabroach.co.uk

The warranty claim must be logged within the warranty period. This requires the submission or sending of the **complete** tool in question with the original sales receipt which must indicate the purchase date of the product. A complaint form must also be submitted prior to the return.

This can be found online at www.rotabroach.co.uk. Failure to complete this form will result in the delay of your claim.

All goods returned defective must be returned pre-paid to RotabroachTM, in no event shall RotabroachTM be liable for subsequent direct, or indirect loss or damage.

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

Known and Trusted Worldwide for Quality, Performance and Reliability

**EC Declaration of Conformity**

Based on the referenced test reports, the below product has been found to comply with the relevant harmonised standard(s) to the directive(s) listed on this verification at the time the tests were carried out.

Name and address of manufacturer: Rotabroach Ltd
Burgess Road, Sheffield Road, Sheffield
S9 3WD, United Kingdom

Product tested: COMMANDO 40/1
COMMANDO 40/3

Application of product: Hole drilling metal

Relevant standards/directives EN12717 : 2001+A1 : 2009
The EMC Directive 2014/30/EU
The Machinery Directive 2006/42/EC – Annex I
EN 62841-1:2015
EN55014-1:2017
EN55014-2:2015
EN61000-3-2:2014
EN61000-3-3:2013

Name and Address of
Responsible person.

Mr Mathew Grey
Managing Director
Burgess Road,
Sheffield
S9 3WD
United Kingdom

Date:

Signature:

28th July 2020

A handwritten signature in black ink, appearing to read 'Mathew Grey', is written over a horizontal line.