

USER MANUAL

TO REDUCE THE RISK OF INJURY USER MUST READ AND UNDERSTAND INSTRUCTION MANUAL



RTC.100/4 Magnetic Drilling Machine

SERIAL NO. _____ DATE OF PURCHASE _____

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Read these directions and safety instructions completely and attentively and carefully follow these recommendations.

All safety measures must be observed at all times when using magnetic drilling machines. Improper use and carelessness increase the risk of accidents.

This is for your own safety.

Should you have any doubts about the use of this machine, please contact your supplier.



2 - Safety

1. During any work on non-horizontal components, the machine must always be secured with the supplied safety chain.
2. The magnetic drilling machine may only be used on a flat and clean foundation.
3. If the machine or the lead show signs of damage, the magnetic drilling machine must be switched off immediately.
4. Wearing safety glasses, hearing protection and protective clothing is necessary.
5. Do not wear any loose clothing or jewelry that may get entangled in the moving parts of the magnetic drilling machine.
6. Use only accessories or parts that are recommended by Rotec.
7. During drill operations, the hole cutter must be cooled and lubricated with good quality cutting or lubrication oil.
8. The motor must be switched off when tightening the machine with the safety chain.
9. When changing a hole cutter, the magnetic drilling machine must be disconnected from power supply.
10. Clean the area around the machine regularly. Keep the bottom of the magnet and keep it clean and dry.
11. Regularly inspect whether all screws, nuts and bolts are tight.
12. Remove the burr or slug from the hole cutter after each hole. Caution, the part may be hot!
13. Before using the machine make sure it is connected to the correct voltage and that all grips and parts are tightly attached.
14. When using the drill on non-horizontal surfaces, you must use a drilling compound or cutting paste.
15. Do not use oil because the oil can drip into the motor unit.

When using this machine, you MUST wear ear and eye protection. Rotec has included these articles as standard accessories for your own safety. Do NOT touch the drill when it is running. Always follow the recommendations for personal protection when using this tool.



Before use

Rotec magnet drilling machines are specially designed for drilling holes in steel, possibly expanded by the possibility of tapping/reaming/countersinking (depending on model). Rotec magnetic drilling machines may not be adapted and/or used for applications other than those they were designed for, including driving other machines.

Make sure that you can oversee the entire work areas from where you are operating this machine. Use barriers to keep others away. Do not use the machine in places subject to hazard of explosion- electrical tools produce sparks which may ignite flammable materials or gasses. To prevent electrical shocks, do not use the machine in moist or wet conditions or environments. Always operate this tool using both hands. Make sure the work piece is always clamped down safely.

This magnetic drilling machine is equipped with a lead and plug approved for the country or region it is to be used in. The yellow-green wire in the lead is the earth wire. Never connect this to a pole under voltage. All Rotec magnetic drilling machines are manufactured to use with AC current and not suitable to work on DC current. Make sure the magnetic drilling machine is connected to a stable power supply. Rotec do not recommend the use of a generator or other mobile power supply for power supply. Rotec does not recommend the use of extension cables. If there is no other way, use good quality cables and keep extension cables as short as possible. Be aware that long power leads can cause less current.

3 - Items Included in Delivery

Magnetic Drilling Machine	YES	Pilot Pin	NO
Carrying Case	YES	Morse Taper	YES
Drill Chuck 13mm	NO	Morse Taper Ejector Pin	YES
Tap Collets M10-M12-M14-M16	NO	Manual	YES
Allen Key 2.5	YES	Safety Chain	YES
Allen Key 4	YES	Drilling Oil	YES
Allen Key 5	YES	Safety Ear Protection	YES
Allen Key 6	YES	Safety Glasses	YES
Wrench 8	YES	Safety Gloves	YES

4 - The Hole Cutter

Hole Cutter selection

There are many different types of steel. It is not possible to drill all these types of steel with 1 type of cutter. Rotec recommended the following :

Rotec Silver Line 536 For drilling holes in general 37/52 steel and aluminium

536.xxx0	12 mm - 60 mm	Hole cutters with cutting depth 25 mm	increasing by 1 mm
536.xxx1	12 mm - 60 mm	Hole cutters with cutting depth 50 mm	increasing by 1 mm

Rotec Gold-Line 537 For processing steel, stainless steel and other high-quality steel alloy types

537.xxxx	12 mm - 60 mm	Hole cutters with cutting depth 30 mm	increasing by 1 mm
538.xxx0	12 mm - 60 mm	Hole cutters with cutting depth 55 mm	increasing by 1 mm
538.xxx1	18 mm - 50 mm	Hole cutters with cutting depth 80 mm	increasing by 1 mm
538.xxx2	18 mm - 50 mm	Hole cutters with cutting depth 110 mm	increasing by 1 mm

Rotec Hard-Line 546/547 Tungsten Carbide Tipped. Cutters with hard metal teeth

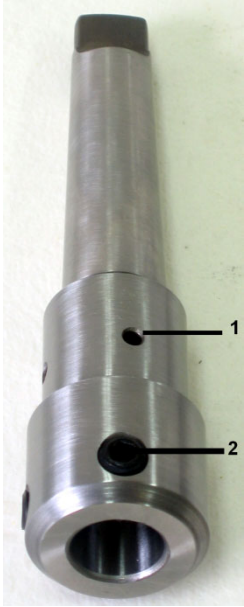
546.xxxx	12 mm - 65 mm	Hole cutters with cutting depth 40 mm	increasing by 1 mm
547.xxx0	12 mm - 150 mm	Hole cutters with cutting depth 55 mm	increasing by 1 mm
547.xxx2	18 mm - 100 mm	Hole cutters with cutting depth 110 mm	increasing by 1 mm

Rotec Rail-Line 548 With hard metal teeth, For drilling holes in rails

548.xxxx	18 mm - 36 mm	Hole cutters with cutting depth 40 mm	increasing by 1 mm
548.xxxx	18 mm - 36 mm	Hole cutters with cutting depth 55 mm	increasing by 1 mm

NOTE : Hole cutters 12mm - 60mm have a 19,05 mm Weldon shank
Hole cutters 61mm - 130mm have a 31,75 mm Weldon shank

Cooling/Lubrication



- 1 Holes for cooling and lubrication oil
- 2 Fixing screws of Morse Taper

Rotec recommends the use of cooling and lubrication agents. Not only do these assist in drilling but they will also lengthen the lifespan of your tools. One of the advantages of the use of hole cutters is that cooling and lubrication agent can be supplied from the inside, so that the agents end up in the right place.

All magnetic drilling machines from Rotec can be equipped with a automatic cooling system which provides a guaranteed supply of the cooling and lubrication agents from the inside. If your machine is not be equipped with an automatic coolant system it will still be possible to cool from the inside.

Use the holes in the Morse Taper (number 1 in picture) for this purpose by squirting the cooling and lubrication agent through them and fill the Morse Taper.

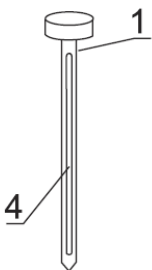
NOTE : For vertical or upside-down processing, Rotec recommends the use of a drilling compound or paste like 901.4045 or 901.4046.

4 - Tool Assembly

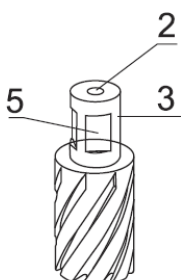
Morse Taper Assembly

Mount the Morse Taper into your machine by push it firm into the shaft extending from the motor unit. Beware that the tip on top of the Morse Taper is in line with the shaft. To take the Morse Taper out use the Ejector Pin to force it out.

Hole Cutter Assembly



- 1 : Pilot Pin
- 2 : Center hole in shank of Hole Cutter
- 3 : Shank of Hole Cutter
- 4 : Groove or flatted surface for oil pass
- 5 : Flat surface for fixing Hole Cutter



Clean the inner wall and the shaft of the Hole Cutter to ensure proper oil supply. First insert the Pilot Pin into the center hole of the Shank. After that you can slide the Hole Cutter assembly into the spindle or Morse Taper of your Magnetic Drilling Machine. After sliding the Hole Cutter Assembly into the Morse Taper, make sure the two flat surfaces (number 5 in picture) are located exactly in front of the two fixing screws of your spindle (see number 2 in picture of cooling/lubrication. Tighten them both subsequently with the included 5mm Allen Key.

Drill Chuck Assembly

The option of making our machines suitable for the use of standard spiral drills and other tools by using a cylindrical shaft is an important characteristic of Rotec magnetic drilling machines. Please see the technical data for maximum capacity.

Installation of 13mm Chuck by using adapter IBK.14

The 545.1021 is a adaptor from 1/2"x20 UNF to 19mm Weldon.

Attach a Drill Chuck with internal 1/2"x20 UNF on the 545.1021 adaptor.

To attach the assembly into your Spindle, follow the instructions (with exception of the Pilot Pin) for installation of a Hole Cutter. Adaptor IBK.14 can be used on most machines in our program.

Installation of 13mm Chuck directly on the motor unit

For the RTC.100/4 magnetic drilling machine it is possible to install a drill Chuck directly to the shaft extending from the motor unit. Attach to the drill chuck with article number 181.1005 a adaptor with article number 180.2016. This way the drill chuck can be mounted as a Morse Taper in your machine.

4 - The Magnetic Drilling Machine

The Magnetic base

Material of minimum 10mm thickness is required for the magnet to work the best.

The attachment force generated by the magnet depends on various factors.

- Thickness of the material the magnet is placed on
- Paint or coating of the material the magnet is placed on.
- Metal chips, oil or other dirt under the magnet.

If the LED indicator lights up GREEN, the magnet is generating sufficient attachment force. If the LED indicator lights up RED, the magnet may not generating sufficient attachment force.

We would like to point out that this is only an indication and not a certainty that the magnet will not release from the material. Rotec accepts no liability ensuring from the magnet indicator not functioning or functioning poorly.

Make sure that the magnet attaches tightly to the work piece before turning on the motor unit of the magnetic drilling machine. Rotec magnets have 2 coils; make sure that both coils are in contact with the material. Do not connect any other machines to the electrical outlet the magnetic drilling machine is plugged into, as it may result in the loss of magnetic force. Always use the safety chain included. Drilling above your head is extremely dangerous and is not recommended. For the use of magnetic drilling machines on pipes, not-flat or non-magnetic materials, we refer to our brochure or our website www.Rotec.com where several vacuum tightening systems and pipe clamping systems are mentioned.

The Control Panel

The control panel on your magnetic drilling machine is designed for maximum operating facility and safety.

1 - The Magnet Switch:

This switch is used to switch the main power and also the magnet On and Off. This switch is included on every Rotec magnetic drilling machine

2 - The On/Off Switch:

This switch is used to switch the motor unit On and Off and is included on every Rotec Magnetic Drilling Machine

3 - The Fuse holder with Fuse:

This Fuse holder is included on every Rotec Magnetic Drilling Machine and holds the fuse type : 5x20, F2A.

4 - The Magnet LED Indicator:

This LED indicator shows the generated magnetic force.

5 - The L/R Switch:

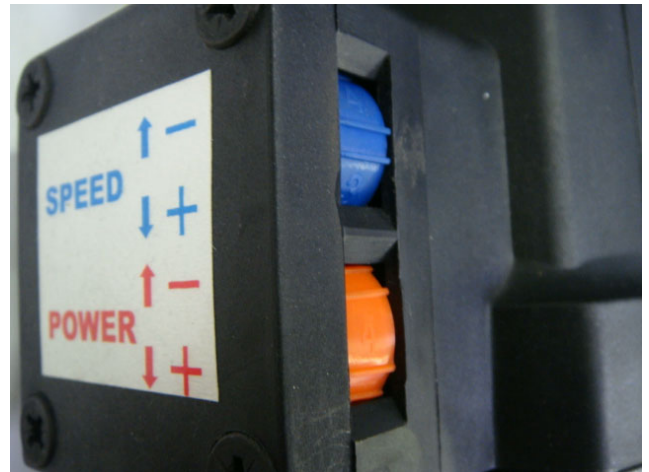
This switch controls the direction of the motor unit.



The Electronic Controls

On the side of the motor unit are the variable electronic control wheels. The blue wheel regulate the rotation speed and the red wheel regulate the torque power of the motor unit.

When drilling with big diameter cutters or deep holes start drilling with the torque wheel in a low position to prevent cutter damage. Increase the power setting a bit when the machine stops too fast. When the machine stops cause of torque overload, press the 0 and then the I button of the On/Off switch to start drilling again.



Continuous electronic Temperature protection :

The RTC.100/4 is equipped with a all-time electronic temperature protection. If the temperature of the motor unit reaches 70° Celsius, the motor unit will stop. After a few minutes it can be started again and we recommend to let the motor run unloaded with the electronic speed adjustment set on 100% to let the motor unit cool down.

4-speed Manual Gearbox

The RTC.100/4 is equipped with a 4-speed gearbox. The two gear switches makes it possible to choose 4 manual speeds. Also does the RTC.100/4 have a electronic speed adjustment so every wanted speed can be selected. Important is that the closest mechanical gear is selected first and after that the speed can be decreased by the electronic adjustment. Therefore, always try to keep the electronic speed wheel above 50% to prevent the armature to build up heat due low running speed.

- 600rpm: left switch up, right switch down
For twist drills and hole cutters till 25mm
- 370rpm: left switch up, right switch up
For hole cutters 25-50mm
- 175rpm: left switch down, right switch down
For hole cutters 50-75mm
- 110rpm: left switch down, right switch up
For hole cutters 75-100mm and tapping.

("left" and "right" is seen from front of motor unit)



Note that the mentioned cutter sizes is only a indication. Depending on variables as the condition of the used cutter, hardness of material or if oil is used the best drilling speed can be different as mentioned above.

To select other gear, turn off motor unit and main power. Push the black switch on the side of the gearbox and slide to other position. A slight turn of the output shaft by hand while sliding the black switch to the other position can be necessary to line up the gears inside. Proof that the gear is locked if the black switch comes back to front.

Drilling

Now that you have read the explanatory information and safety recommendations above, you are ready to actually start drilling. Follow these 10 steps for best drilling result :

- 1 Use the tip of the pilot pin to determine the center of the hole to be drilled.
- 2 Turn the magnet on and verify that the drill is in the right position and that the machine is pushed tight against the work piece.`
- 3 If your machine is equipped with a auto coolant system, put open the valve to release the oil. If your machine does not have a auto coolant system, fill the holes of the spindle with oil.
- 4 Turn the motor on at the highest setting and allow it to run at full speed.
- 5 Turn the arms to start drilling. Apply only a slight pressure when the hole cutter touch the metal. Do not push the hole cutter with force into the metal.
- 6 Apply a regular pressure while drilling. The drilling performance does not improve by putting more pressure on the tool. Too much pressure will overload the motor and your hole cutter will be worn sooner. ***Let the cutter do the job and give it time to cut the metal !!!***
- 7 Adjust the oil supply when necessary, if your drill does not have a auto coolant system, stop drilling regularly, refill the holes of the spindle and continue drilling.
- 8 Apply less pressure when the drill cuts through the material.
- 9 Turn the arms to put the motor in highest position and turn off the motor unit.
- 10 Remove the burr, metal chips and clean the cutter and surface without getting injuries.
Caution : The metal piece drilled out can be sharp and very hot!!

Tapping RTC.100/4

Drill the hole on the recommended size of the tap. Do not turn the magnet off to keep the machine on its position. Take the cutter out and use a tap collet to fix the tap to the machine. These adapters exist in several DIN and ISO norms and are based on the shaft diameter of the tap that is used. Use the low gear and low rpm for tapping. Stop the machine manually before the tap is completely through the hole. Select the Reverse (Left) and let the tap run back slowly but also support the run back by turning back the handles. Do not let your tap push back the motor unit by itself! If your tap have to make the whole way through the material, then remove the tap out of the collet when the hole is completely tapped.

5 - Maintenance

Just as every magnetic drilling machine with moving parts, your Rotec magnetic drilling machine also needs regular maintenance service. A few recommendations follow :

- Clean all dirt, dust, metal chips and burrs of your magnetic drilling machine
- Regularly check the carbon brushes for wear
- Replace any defective parts immediately. This prevents properly function parts from being damaged.
- Adjust your guide regularly and make sure it is clean and greased. This prevents any movement from being created and the spindle, triangular guide (steady) and guide parts from excessive wear or damage. The guide can be adjusted by loosening the setting nut (#7 on spare part drawing) with included wrench 8, tightening the setting screws (#5 on spare part drawing) with included Allen key 2.5 and tightening the setting nut (#7) again with included wrench 8. The adjustment is done well when the motor unit can be turned to every possible position without falling down by its own weight.
- Check the grease in the gearbox regularly and replace it if necessary. We recommend you to store your machine on its side regularly so that the gear box grease can run back to where the gears are. This is very important when you have used your machine non-horizontal or upside down.

Repair, modification and inspection of Rotec Magnetic drilling machines must be done by a Rotec authorized dealer. The parts list will be helpful if presented with the machine to the Rotec dealer for service when requesting repair or other maintenance.

Rotec machines are constantly being improved and modified to incorporate the latest technological advancements. Accordingly, some parts (i.e. part numbers and/or design) may be changed without prior notice. Also, due to Rotec's continuing program of research and development, the specifications of machines are subject to change without prior notice.

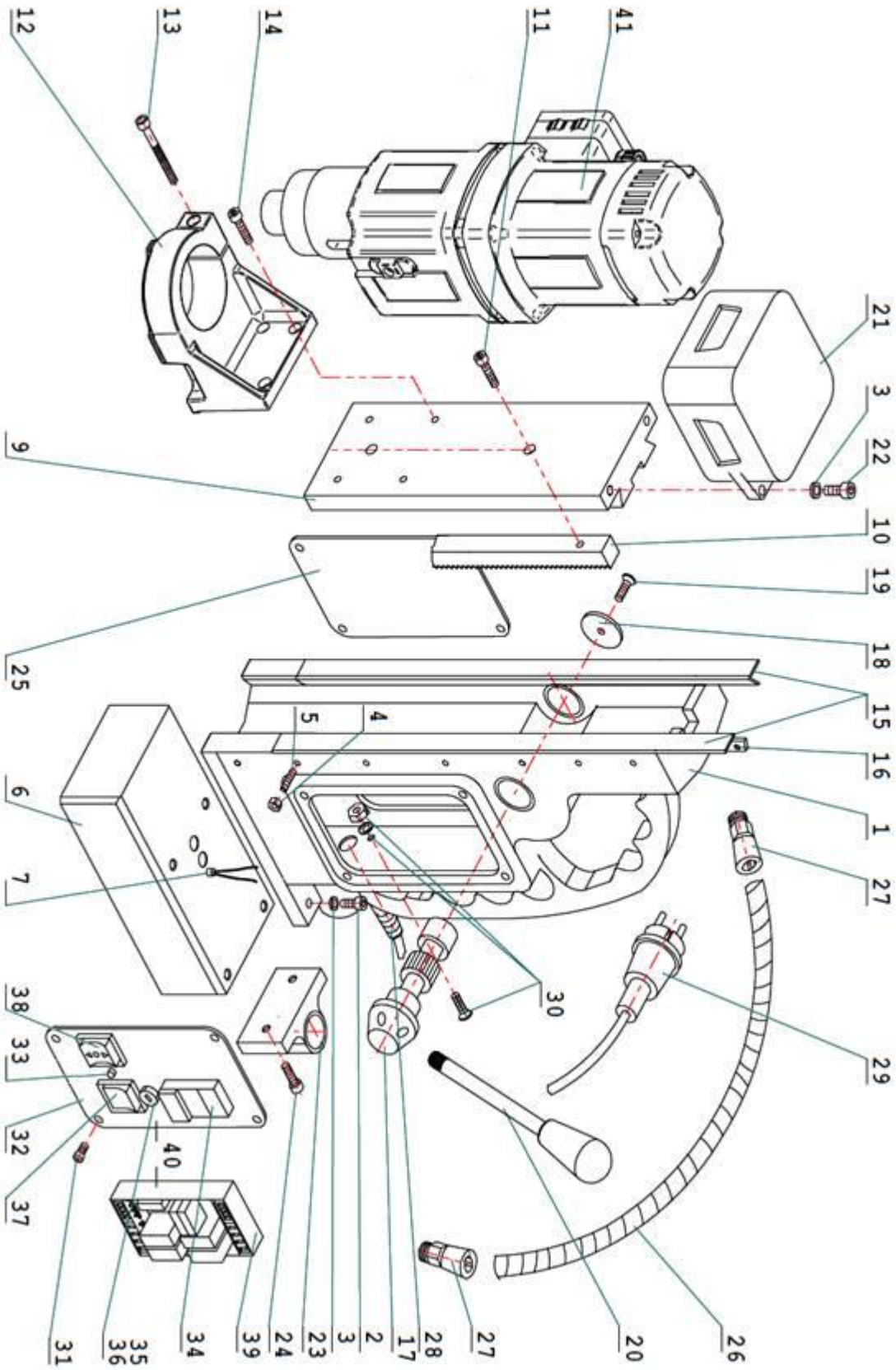
!!! IMPORTANT !!!

When using your magnetic drilling machine non-horizontal or upside-down be aware that no oil, drilling compound or metal chips can fall into the motor unit.

Rotec accepts no responsibility for damage done to your machine by such action under coverage of the warranty.

6 - Spare parts & Exploded view

1	Frame	62	Friction Clutch complete
2	Screw SSM8x25	63	Carbon Brush Holder
3	Washer M8	64	Field 230v
4	Setting Nut		Field 110v
5	Setting Screw	65	Housing
6	Magnet Base	66	Baffle
7	Sensor	67	Inner Gear Plate
9	Slide	68	Gasket
10	Rack	69	Needle Bearing
11	Screw SSM6x30	70	Double Gear 2
12	Motorholder	71	Axle 1
13	Screw SSM6x55	72	Circlip
14	Screw SSM6x16	73	Spindle Key
15	Brass rail set (stick)	74	Spindle Gear (38T)
16	Pressing strip	75	Adaptor Ring
17	Capstan hub assembly	76	Bearing
	Power Assist (big)	77	Circlip
18	End Plate	78	Gear Casing
19	End Screw	79	Spindle Drive Shaft
20	Arm for Capstan	80	Bearing
21	Motor Fixing	81	Circlip
22	Screw SSM8x35	82	Adaptor Ring
23	Magnet spring ball	83	Needle Bearing
24	Screw SSM6x16	84	Washer
25	Rear plate	85	Double Gear 1
26	Motorcable	86	Key
27	Coupling nut for motorcable	87	Axle 2
28	Coupling nut for maincable	88	Bearing
29	Main Cable Euro	89	Axle 3 (13T)
30	Screw+washer+nut	90	Clutch Shaft 2
31	Panel screw		
32	Front plate	92	Key 3 (L)
33	Sensor LED+cable	93	Plate for Gear Casing
34	On/Off Switch	94	Clutch Shaft 1
35	Fuse holder	95	Gear Switch
36	Fuse F2A	96	First Gear
37	Magnet Switch	97	Cylinder
38	L/R switch (push)	98	Shell 25
39	Control Unit 220v	99	Nut
	Control Unit 110v	99A	Washer
40	Panel Plate Assembly	99B	Friction Disk 1
41	Motor unit 1800W / 220v	99C	Brass Disk 1
	Motor unit 1800W / 110v	99D	Brass Disk 2
		99E	Friction Disk 2
51	Screw	100	Shell 28
52	Screw	101	Circlip
53	Armature 230v	102	Bearing
	Armature 110v	103	Circlip
54	End Cover	104	T/S Switch housing Red/Blue
55	Screw	105	T/S Switch Cover
56	Speed Control Unit 230v	106	Speed Potentiometer 100K
	Speed Control Unit 110v	107	Torque Potentiometer 1K
57	Rubber Fitting Ring	108	Red Wheel
58	Washer	109	Blue Wheel
59	Armature Speed Disk	110	Casing Pin
60	Bearing	111	Screw 6x45
61	Carbon Brush set	112	T/S Switch Housing complete



Important notice :

Because of minor changes to our machines it is recommended to provide the frame number of your machine when ordering spare parts. This number can be found on front of machine at magnetic base and frame. When you have any doubt when ordering spare parts, please contact your supplier before ordering.

