

# USER MANUAL

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



## RTC.50-T Magnetic Drilling Machine

SERIAL NO. \_\_\_\_\_ DATE OF PURCHASE \_\_\_\_\_

# 1 - Table of Contents

1	Table of Contents .....	page 1
2	Safety .....	page 2
	Before Use .....	page 3
3	Items Included in Delivery .....	page 4
4	The Hole Cutter	
	Hole Cutter Selection .....	page 5
	Cooling/Lubrication .....	page 6
4	Tool Assembly	
	Morse Taper Assembly .....	page 6
	Hole Cutter Assembly .....	page 6
	Drill Chuck Assembly .....	page 7
	Installation of 13mm Chuck by using Adaptor 545.1021.....	page 7
	Installation of 13mm Chuck directly on the motor unit .....	page 7
4	The Magnetic Drilling Machine	
	The Magnetic Base .....	page 7
	The Control Panel .....	page 8
	All-time electronic protections .....	page 8
	Drilling .....	page 9
5	Maintenance .....	page 10
6	Spare parts & Exploded View.....	page 11



**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 surface.
3. If the machine or the lead shows 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 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 drill might still 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 specifically designed for drilling holes in steel, expanded by the possibility of tapping/reaming/countersinking (RTC.50-T). Rotec magnetic drilling machines are not suitable for applications other than those they were designed for, including driving other machines.

Make sure that you can oversee the entire work area 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 a moist or wet environment. Always operate this tool using both hands. Make sure the work piece is always clamped down safety.

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 does 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 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 3	NO	Drilling Oil	NO
Allen Key 4	YES	Safety Ear Protection	YES
Allen Key 5	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 aluminum**

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**

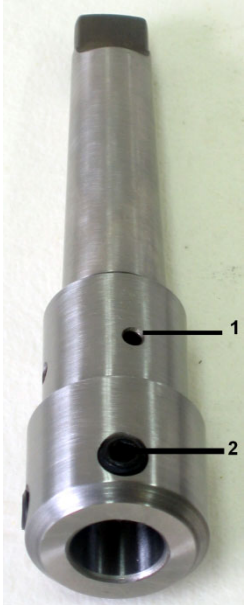
546.xxxx	12 mm - 65 mm	Hole cutters with cutting depth 40 mm	increasing by 1 mm
547.xxx0	12 mm - 150 mm	Hole cutters with cutting depth 55 mm	increasing by 1 mm
547.xxx2	18 mm - 100 mm	Hole cutters with cutting depth 110 mm	increasing by 1 mm

### **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 agents 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 an automatic cooling system which provides a guaranteed supply of the cooling and lubrication agents from the inside. If your machine is not equipped with an automatic coolant system it is still possible to cool from the inside by using the holes in the Morse Taper (number 1 in picture) by squirting the cooling and lubrication agent through them and filling the Morse Taper.

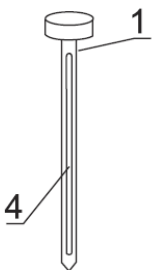
**NOTE :** For vertical or upside-down processing, Rotec recommends the use of a drilling compound or paste like 901.4045 or 901.4046.

## 4 - Tool Assembly

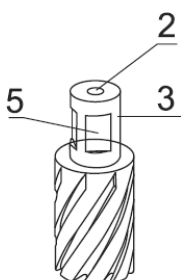
### Morse Taper Assembly

Mount the Morse Taper into your machine by pushing it firmly 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.50 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](http://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.

### 6 - The Potentiometer:

This controls the running speed of the motor unit. Note that a lower position will decrease the power of the motor unit.

### Continuous electronic Torque protection:

The RTC.50T is equipped with a all-time electronic torque protection. It will stop the motor unit when it gets overloaded in any rpm. In that case just push the OFF switch to reset and ON switch to start drilling again.

### Continuous electronic Temperature protection :

The RTC.50T is equipped with a all-time electronic temperature protection. If the temperature of the motor unit runs up to 70 Degree 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.

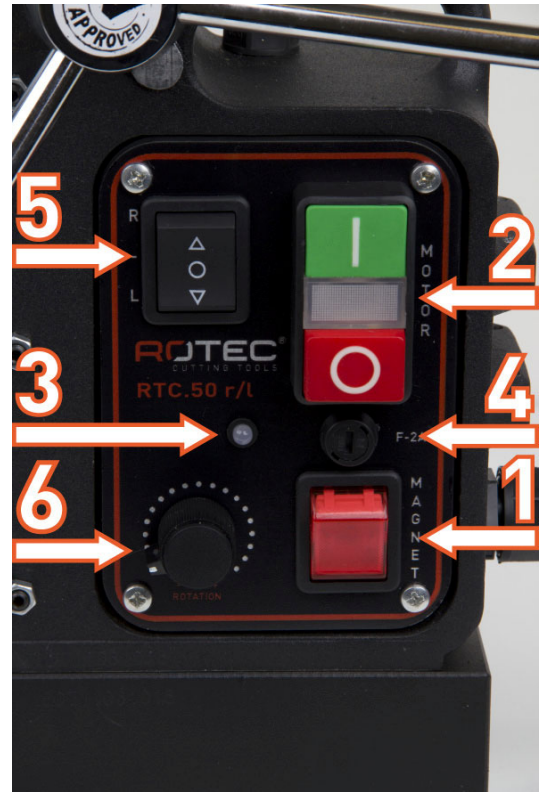
### **!!! IMPORTANT !!!**

**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.**

## 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!!

The RTC.50-T have a 2-speed gearbox and a electronic speed adjustment. To prevent heat build-up always try to keep the electronic speed adjustment as high as possible. Use the upper gear (high) for hole cutters up to 20 mm and the lower gear for hole cutters above 20mm. The RTC.50-T have a fully electronic motor unit which measures its speed continuously to have the maximum power available. When you start drilling the RPM can go down for a moment until the machine itself will increase the RPM. This is completely normal.

To select another gear, turn off the motor unit and the main power. Push the black switch on the side of the gearbox and slide it to the 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.

### **Tapping 50T**

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 motorunit 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.

### **!!! 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.**

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## **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 :

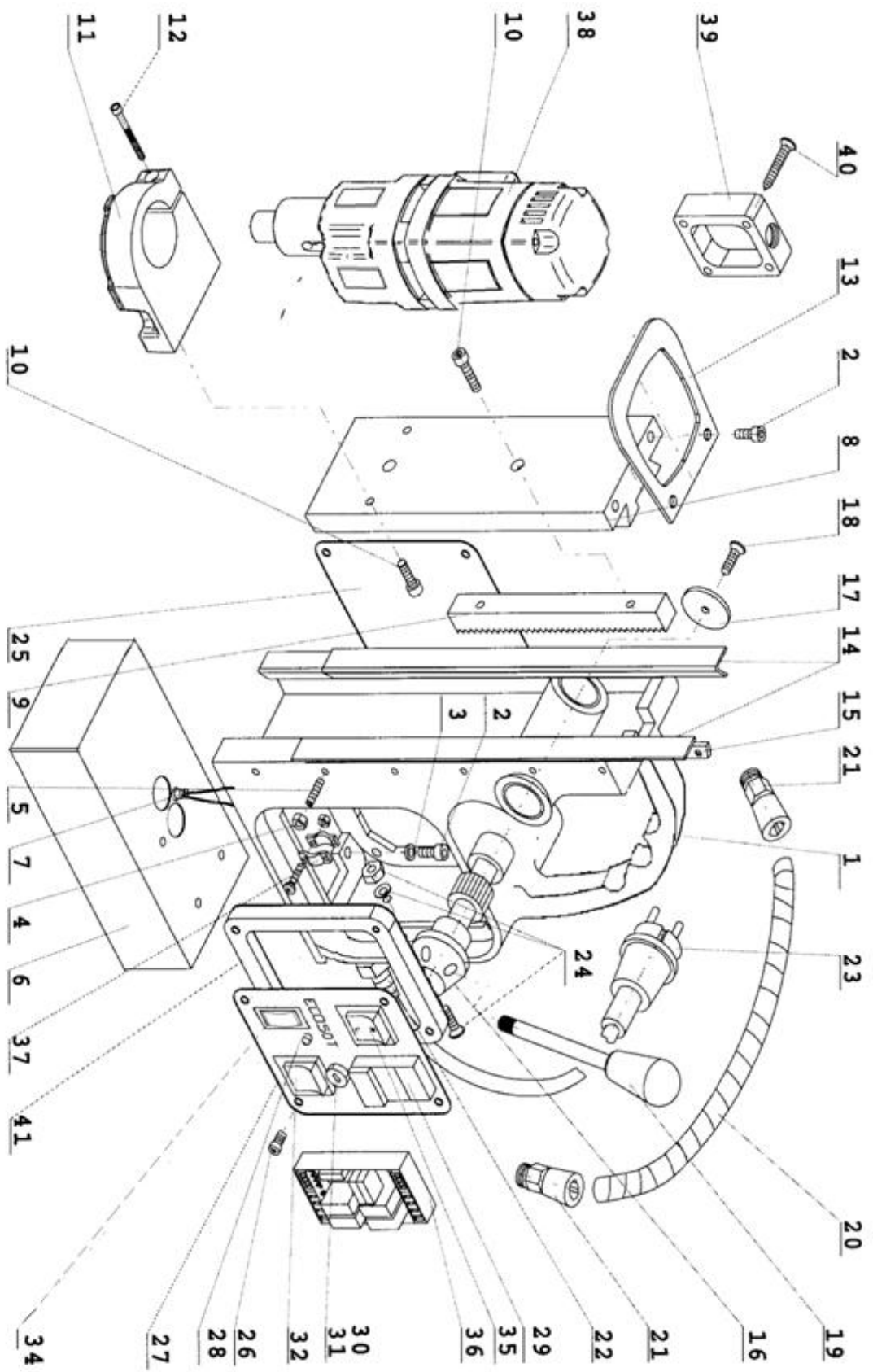
- Clean all dirt, dust, metal chips and burrs of your magnetic drilling machine
- Regularly check the carbon brushes for wear
- Replace any defective parts immediately. This prevents properly function parts from being damaged.
- Adjust your guide regularly and make sure it is clean and greased. This 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.

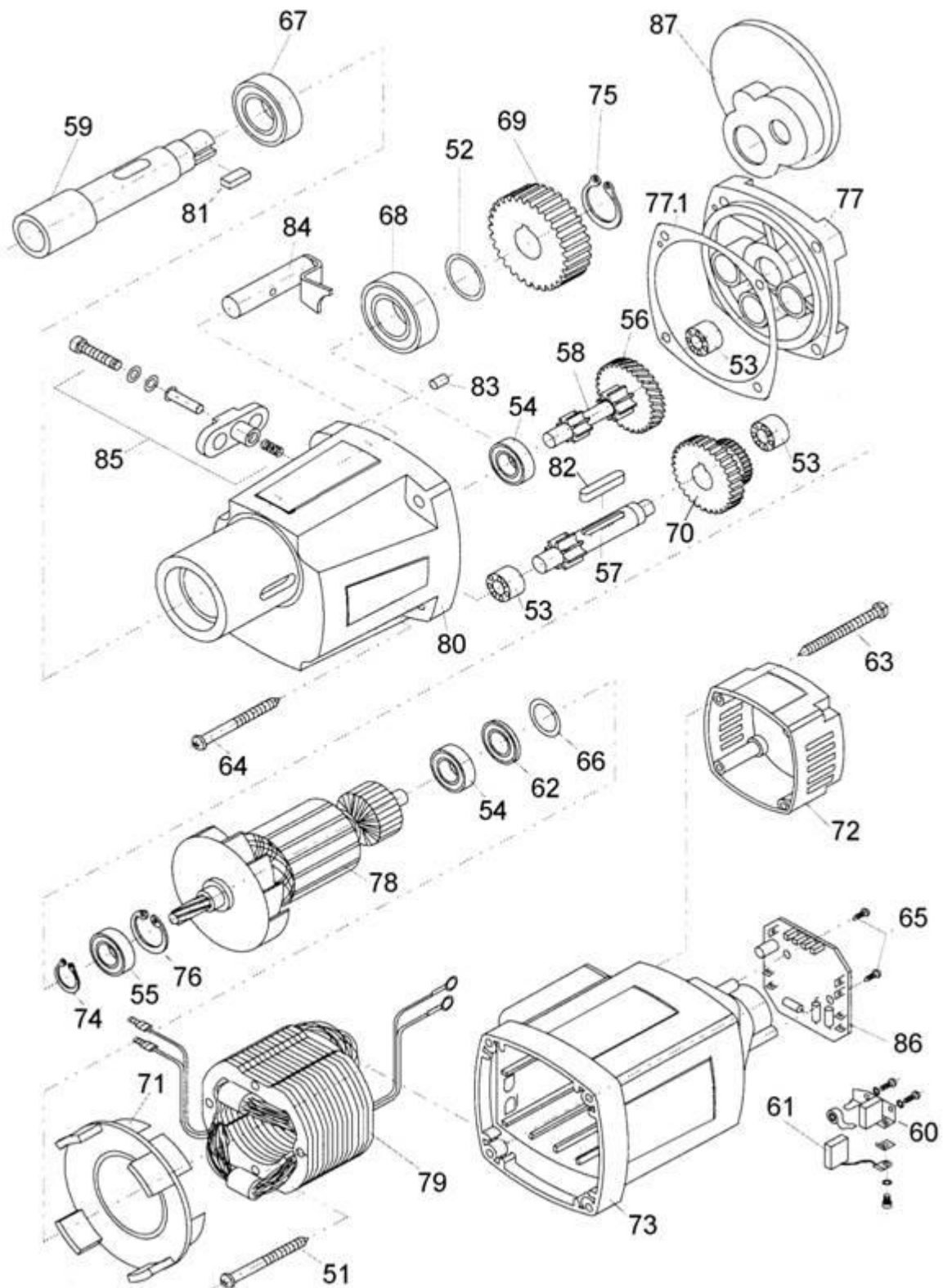
Repair, modification and inspection of Rotec Magnetic drilling machines must be done by a Rotec authorized dealer. The parts list will be helpful if presented with the machine to the Rotec dealer for service when requesting repair or other maintenance.

Rotec machines are constantly being improved and modified to incorporate the latest technological advancements. Accordingly, some parts (ie 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.

## 6 - Spare parts & Exploded view of RTC50

1	Frame	51	Screw 3,9x60
2	Screw SSM6x16	52	Adaptor ring 22x0,2
3	Washer M6	53	Needle bearing
4	Setting Nut	54	Bearing 8x22x7
5	Setting Screw	55	Bearing 12x28x8
6	Magnet Hi/Lo	56	First gear
7	Sensor	57	Axle
8	Slide	58	Gear shaft
9	Rack	59	Spindle drive shaft
10	Screw SSM6x20	60	Carbon brush holder
11	Motorholder	61	Carbon brush set
12	Screw SSM6x25	62	Ringmagnet
13	Top fixing plate 110mm	63	Screw 4,8x45
14	Brass rail set (stick)	64	Screw 4,8x50
15	Pressing Strip 4 holes	65	Screw 2,8x12
16	Capstan hub assembly	66	Adaptor ring rubber 22x2,5
17	End plate	67	Bearing 20x37x9
18	End screw	68	Bearing 17x40x12
19	Arm for Capstan	69	Spindle gear
20	Motorcable	70	Gear 34/40
21	Coupling nut for motorcable	71	Baffle
22	Coupling nut for maincable	72	End cover
23	Main Cable	73	Housing
24	Screw+washer+nut	74	Circlip 471/10
25	Rear plate	75	Circlip 471/15
26	Panel screw M4x8 (rearplate)	76	Circlip 472/28
	Panel screw long M4x20 (frontplate)	77	Inner gear plate
27	Front plate	77.1	Gasket for gearcasing
28	Sensor LED+cable	78	Armature 220v
29	On/Off switch		Armature 110v
30	Fuse holder	79	Field 220v
31	Fuse F2A		Field 110v
32	Magnet switch	80	Gear casing
34	Potentiometer	81	Key for spindle
35	L/R switch	82	Key
36	Control Unit Hi/Lo 220v	83	Casing pin
	Control Unit Hi/Lo 110v	84	Clutch shaft
37	Cable clamp	85	Gear switch
38	Motorunit 220v	86	Speed Control Unit 220v
	Motorunit 110v		Speed Control Unit 110v
39	Cable housing	87	Plate for gear casing
40	Screw PKVZ4,8x35		





**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.