EUROBOOR

FOR PROFESSIONALS BY PROFESSIONALS

USER MANUAL

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

ECO.100/4

Magnetic Drilling Machine

SERIAL NO._____ DATE OF PURCHASE _____

1 - Table of Contents

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 jewellery that may get entangled in the moving parts of the magnetic drilling machine.
6. Use only accessories or parts that are recommended by Euroboor.
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. Euroboor 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

Euroboor magnet drilling machines are specially designed for drilling holes is steel, possibly expanded by the possibility of tapping/reaming/countersinking (depending on model). Euroboor 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 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 Euroboor 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. Euroboor do not recommend the use of a generator or other mobile power supply for power supply. Euroboor 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. Euroboor recommended the following :

Euroboor+ HSS Series	**For drilling holes in general 37/52 steel and aluminium**		
HCS	12 mm - 130 mm	Hole cutters with cutting depth 30 mm	increasing by 1 mm
HCL	12 mm - 130 mm	Hole cutters with cutting depth 55 mm	increasing by 1 mm
HCY	20 mm - 50 mm	Hole cutters with cutting depth 75 mm	increasing by 1 mm
HCX	20 mm - 50 mm	Hole cutters with cutting depth 100 mm	increasing by 1 mm

Also available in inch sizes:

HCS	7/16" - 5"	Hole cutters with cutting depth 30 mm	increasing by 1/16"
HCL	7/16" - 5"	Hole cutters with cutting depth 55 mm	increasing by 1/16"
HCY	3/4" - 2 1/16"	Hole cutters with cutting depth 75 mm	increasing by 1/16"
HCX	3/4" - 2 1/16"	Hole cutters with cutting depth 100 mm	increasing by 1/16"

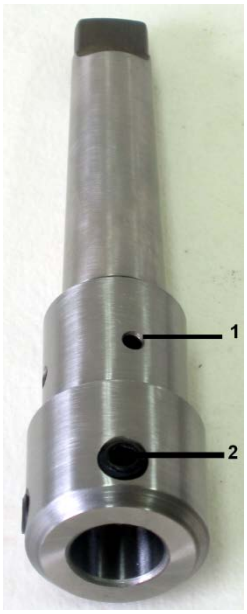
Euroboor Cobalt Series	**For processing steel, stainless steel and other high-quality steel alloy types**		
IBS	12 mm - 130 mm	Hole cutters with cutting depth 30 mm	increasing by 1 mm
IBL	13 mm - 130 mm	Hole cutters with cutting depth 55 mm	increasing by 1 mm

Euroboor TCT Series	**Tungsten Carbide Tipped. Cutters with hard metal teeth**		
HMS	14 mm - 50 mm	Hole cutters with cutting depth 35 mm	increasing by 1 mm
HML	14 mm - 130 mm	Hole cutters with cutting depth 50 mm	increasing by 1 mm

Euroboor TRC Series	**With hard metal teeth, For drilling holes in rails**	
TRCS.190	19 mm	Hole cutter with cutting depth 35 mm
TRCS.300	30 mm	Hole cutter with cutting depth 35 mm
TRCS.330	33 mm	Hole cutter with cutting depth 35 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 Conus

Euroboor 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 scan be supplied from the inside, so that the agents end up in the right place.
All magnetic drilling machines from Euroboor 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 conus (number 1 in picture) for this purpose by squirting the cooling and lubrication agent through them and fill the morse conus.

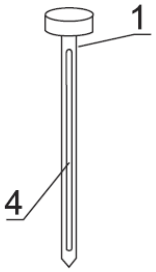
NOTE : For vertical or upside-down processing, Euroboor recommends the use of a drilling compound or paste like IBP50/2.

4 - Tool Assembly

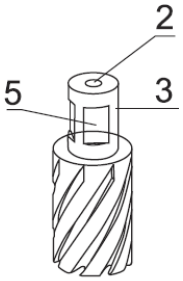
Morse Taper Assembly

Mount the Morse Taper into your machine by push it firm into the shaft ectending from the motorunit. Beware that the tip on top of the Morse Conus is in line with the shaft. To take the Morse Conus 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 conus of your Magnetic Drilling Machine. After sliding the Hole Cutter Assembly into the morse conus, 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 Euroboor magnetic drilling machines. Please see the technical data for maximum capacity.

Installation of 13mm Chuck by using adapter IBK.14

The IBK.14 is a adaptor from 1/2"x20 UNF to 3/4" Weldon.
Attach a Drill Chuck (like Euroboor IBK.13) with internal 1/2"x20 UNF on the IBK.14 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 ECO.80 and ECO.100/4 magnetic drilling machines 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 IBK.13-B16 a adaptor with article number B16-MC3. This way the drill chuck can be mounted as a Morse Conus 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 certainly that the magnet will not release from the material. Euroboor 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. Euroboor 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.euroboor.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 Euroboor 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 Euroboor Magnetic Drilling Machine

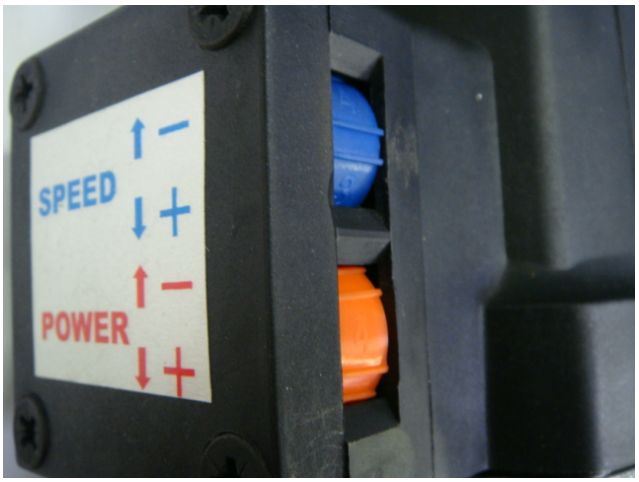
3 - The Fuse holder with Fuse:
This Fuse holder is included on every Euroboor Magnetic Drilling Machine and holds the fuse type : 5x20, F2A.

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 motorunit.

The Electronic Controls

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



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.

All-time electronic Temperature protection :
The ECO.100/4 is equipped with a all-time electronic temperature protection. If the temperature of the motorunit runs upto 70 Degree Celsius the motorunit 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 motorunit cool down.

4-speed Manual Gearbox

The ECO.100/4 is equipped with a 4-speed gearbox. The two gear switches makes it possible to choose 4 manual speeds. Also does the ECO.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 motorunit)

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 motorunit 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 ECO.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 (Euroboor TCM series) to fix the tap to the machine. These TCM 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.

For quick change of taps Euroboor have also special tapholders like the GSW.333 with a insert for every tap size and the GSW830 with a variable clamp system. See www.euroboor.com for more details about these tapholders.

5 - Maintenance

Just as every magnetic drilling machine with moving parts, your Euroboor 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 Euroboor Magnetic drilling machines must be done by a Euroboor authorized dealer. The parts list will be helpful if presented with the machine to the Euroboor dealer for service when requesting repair or other maintenance.
  Euroboor 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 Euroboor's continuing program of research and development, the specifications of machines are subject to change without prior notice.

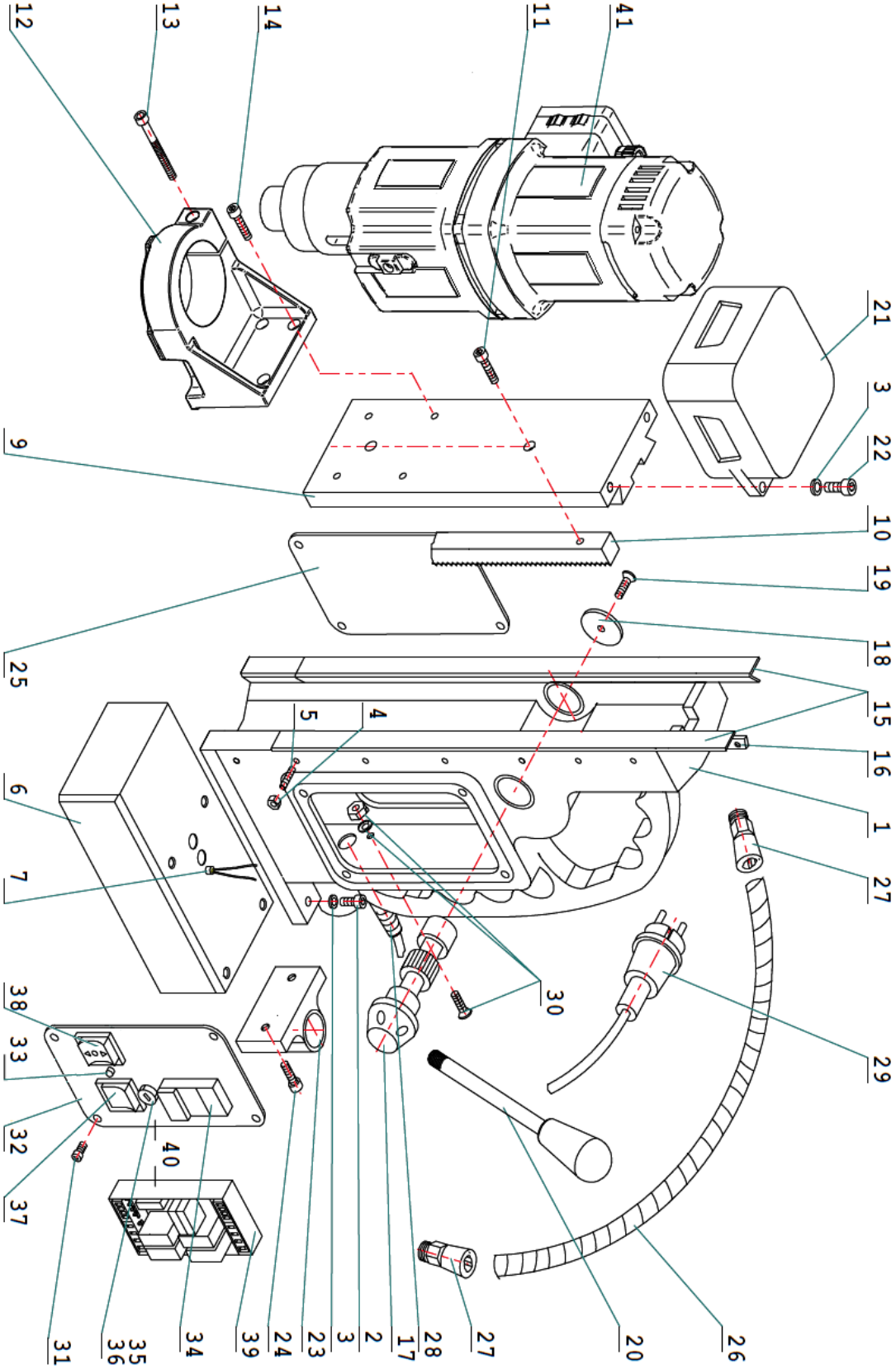
!!! IMPORTANT !!!

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

6 - Spare parts & Exploded view

1	100.4001	Frame
2	100.0006	Screw SSM8x25
3	100.0031	Washer M8
4	020.0096	Setting Nut
5	020.0138	Setting Screw
6	100.0038	Magnet Base
7	020.0201	Sensor
9	100.4041	Slide
10	100.0076	Rack
11	100.0066	Screw SSM6x30
12	100.0046	Motorholder
13	100.0071	Screw SSM6x55
14	020.0106	Screw SSM6x16
15	100.0081	Brass rail set (stick)
16	100.0084	Pressing strip
17	100.0101	Capstan hub assembly
	020.0336	Power Assist (big)
18	020.0077	End Plate
19	020.0081	End Screw
20	100.0116	Arm for Capstan
21	100.0122	Motor Fixing
22	100.0126	Screw SSM8x35
23	020.0151	Magnet spring ball
24	020.0106	Screw SSM6x16
25	PP.RLEU	Rear plate
26	100.0136	Motorcable
27	020.0041	Coupling nut for motorcable
28	020.0031	Coupling nut for maincable
29	020.0036	Main Cable Euro
30	020.0182	Screw+washer+nut
31	020.0101	Panel screw
32	PP.100/4	Front plate
33	020.0206	Sensor LED+cable
34	020.0006	On/Off Switch
35	020.0016	Fuse holder
36	020.0017	Fuse F2A
37	020.0011	Magnet Switch
38	100.0152	L/R switch (push)
39	100.0002	Control Unit 220v
	100.0003	Control Unit 110v
40	PPA.100/4	Panel Plate Assembly
41	100.4303	Motorunit 1800W / 220v
	100.4304	Motorunit 1800W / 110v
51	100.0306	Screw
52	100.0459	Screw
53	100.4318	Armature 230v
	100.4319	Armature 110v
54	100.0322	End Cover
55	100.0536	Screw
56	100.4333	Speed Control Unit 230v
	100.4334	Speed Control Unit 110v
57	100.0346	Rubber Fitting Ring
58	100.1310	Washer
59	100.0348	Armature Speed Disk
60	100.0506	Bearing
61	100.0368	Carbon Brush set
62	100.4312	Friction Clutch complete
63	100.0372	Carbon Brush Holder
64	100.4383	Field 230v
	100.4384	Field 110v
65	100.4388	Housing
66	100.0391	Baffle
67	100.4401	Inner Gear Plate
68	100.0458	Gasket
69	040.0161	Needle Bearing
70	100.4320	Double Gear 2
71	100.4321	Axle 1
72	100.0426	Circlip
73	100.4431	Spindle Key
74	100.4324	Spindle Gear (38T)
75	100.4411	Adaptor Ring
76	100.0446	Bearing
77	100.0451	Circlip
78	100.4326	Gear Casing
79	100.0461	Spindle Drive Shaft
80	100.0466	Bearing
81	100.0471	Circlip
82	100.0476	Adaptor Ring
83	100.0481	Needle Bearing
84	100.0486	Washer
85	100.4491	Double Gear 1
86	100.4496	Key
87	100.4332	Axle 2
88	080.0351	Bearing
89	100.4334	Axle 3 (13T)
90	100.4336	Clutch Shaft 2
92	100.4526	Key 3 (L)
93	100.4621	Plate for Gear Casing
94	100.4342	Clutch Shaft 1
95	040.0286	Gear Switch
96	100.4344	First Gear
97	100.4346	Cylinder
98	100.4348	Shell 25
99	100.4350	Nut
99A	100.4351	Washer
99B	100.4338	Friction Disk 1
99C	100.4340	Brass Disk 1
99D	100.4349	Brass Disk 2
99E	100.4353	Friction Disk 2
100	100.4352	Shell 28
101	100.0581	Circlip
102	080.0576	Bearing
103	100.0571	Circlip
104	100.4571	T/S Switch housing Red/Blue
105	100.0611	T/S Switch Cover
106	100.4572	Speed Potentiometer 100K
107	100.4573	Torque Potentiometer 1K
108	100.4574	Red Wheel
109	100.4575	Blue Wheel
110	100.0549	Casing Pin
111	100.0617	Screw 6x45
112	100.4569	T/S Switch Housing complete

Frame ECO.100/4



Important notice :

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

Motorunit ECO.100/4