

## LABORATORY MICROMOTOR

# HP35 ON-OFF



## USER AND MAINTENANCE MANUAL



### 1. DESCRIPTION

**HP35 on-off** is a powerful and reliable micromotor, expressly designed for daily use in the Dental, Gold and Jewellery fields.

The speed of the collector motor varies from 1.000 to 35.000 rpm and can be adjusted by means of the potentiometer knob on the control panel.

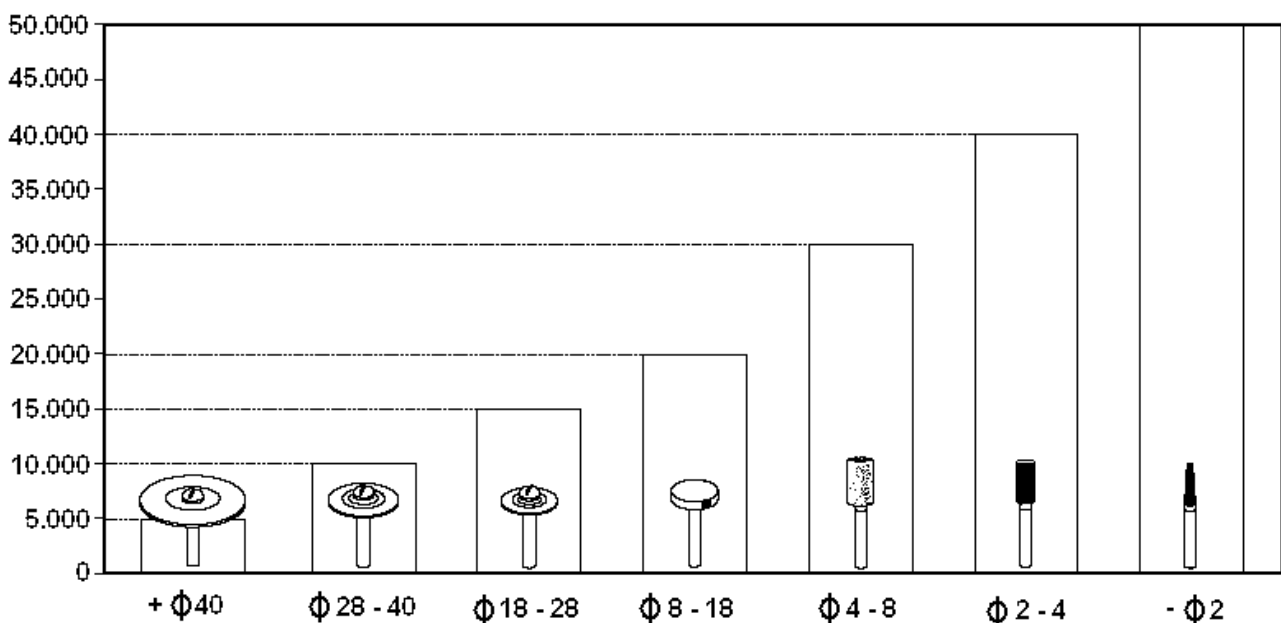
The electronic power and control circuit is embodied in a sturdy shock-absorbing case which is ideally positioned on the working bench.

The handpiece is perfectly balanced, ergonomic and very light. The chuck pliers support a Ø 2.35mm bur, but additional pliers for Ø 3.00mm burs can be fitted upon request.

## 2. GENERAL PRECAUTIONS

- Read carefully the present manual before carrying out any starting, operating or maintenance operation on the machine.
- Safety of the User depends on the skill ability, on the good sense and on the caution when using the machine; for this reason, it is of utmost importance to know in detail the allocation and the function of all the controls.
- The final User of the machine is a skilled and well trained professional and not merely an occasional worker.
- Check regularly the parts which tend to wear out due to the specific working conditions.
- Do not tamper the electrical wiring system of the machine
- The built-in safety mechanisms shall in no way be removed or modified.
- Do not allow unauthorised persons to try to repair the machine.
- Do not utilise petrol, solvents or any other inflammable fluids to clean some parts of the machine – use exclusively non-toxic and non-inflammable products available on the market for this specific purposes.
- Always use high-quality, well balanced and rectified burs and tips.
- Do not exceed maximum recommended speed according to the size of the instrument in use, in order to prevent vibrations and potential damages.
- Carefully handle the handpiece, protecting it from shocks and accidental drops. When not in use, place always the handpiece on the support supplied with the micromotor.
- Accurately clean the pliers every time a tool is replaced.

### MAXIMUM RECOMMENDED SPEED ACCORDING TO THE TOOL SIZE



### 3. INSTALLATION INSTRUCTIONS

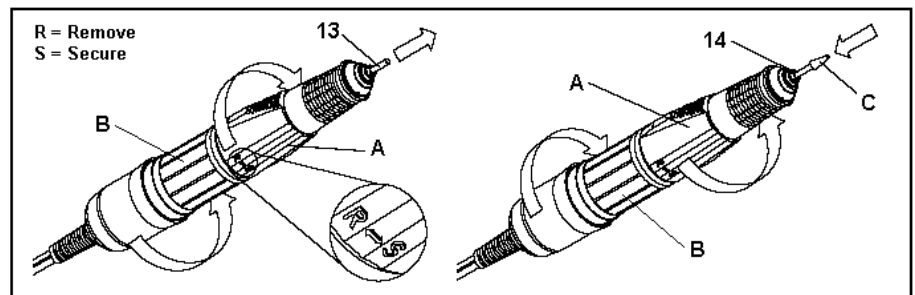
1. First of all, find a proper location to position the control unit.
2. Secure the handpiece support in the proper seat on the right side the control unit
3. Connect the round handpiece coupling to the fixed base on front of the control unit
4. Connect the round foot-control coupling to the fixed base assembled on the control unit rear panel
5. Check the data label (stuck aside the control unit) for electrical connection and absorption. Plug in the feeding cable to an homologated ground socket (be careful that AC Input commutator is on 220V)
6. Place the handpiece on the rubber support or secure it to the support aside the control unit.

### 4. INSTRUCTIONS FOR USE

Push on the main switch (POWER), the activation led will start lighting.

The micromotor will not start working unless a tool has been properly inserted and locked in the pliers,

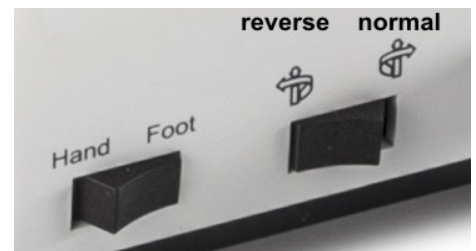
- turn the handpiece central ring nut leftwards up to the click
- fully insert the tool shank
- turn the ring nut back to its initial position.





**In normal mode** (switch on Foot), the unit will start by pushing the foot-control.

**In manual mode** (switch on H), the foot control is excluded and the rotating speed is adjusted by turning the potentiometer knob (SPEED). To switch to manual mode, it will be necessary to stop the micromotor and turn the knob down to the minimum; then switch to H, seize the handpiece and turn the knob till the desired speed. Under this operating mode, the motor works till the potentiometer knob is set again to the lowest limit.

It may be requested, when carrying out specific working procedures, **to reverse rotation of the motor**: in idle mode, it will be sufficient to commute the key from FWD to REV.



 <b>ATTENTION</b>	Ensure that the tools you work with are carefully and deep inserted in the plier. The shank should be well inside the plier, and should not come out of the handpiece too much, which could cause the tool to be unbalanced, tend to excessive vibrations and susceptible to become dangerous.
 <b>ATTENTION</b>	Avoid touching the rotating tips. Use glasses, masks and other protective devices to prevent small particles from getting into your eyes or from being inhaled.


## 5. SPECIFIC FEATURES AND SAFETY DEVICES

The electronic control system features an efficient torque compensation device which allows to use the micromotor with adequate power even at lower speed. This safety device automatically starts when the motor detects an excessive fatigue.

With the aim to protect the motor, its maximum absorption is electronically limited: when this limit is attained and kept for some seconds, the power supply blocks automatically and cuts off tension.

To restart the motor, turn it off and wait for the unit to cool down.

## 6. MAINTENANCE

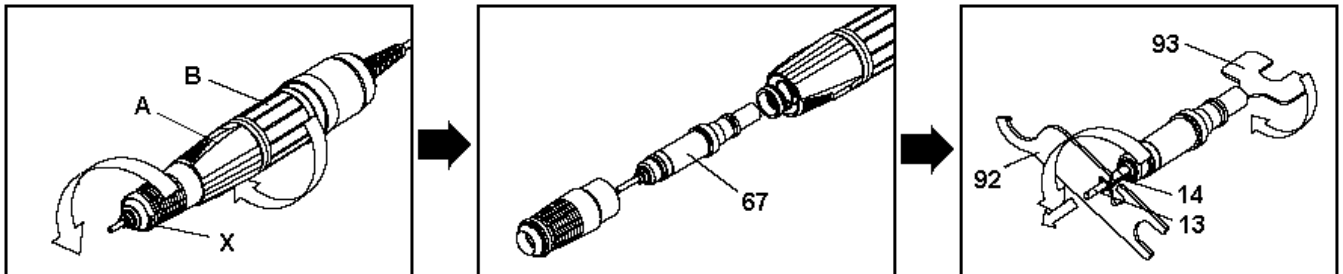
 <b><u>ATTENTION</u></b>	<p>Before carrying out any maintenance operation inside the machine or any technical service to the connections, disconnect the electric cable from the socket; in such a way the machine will be completely insulated from the electric wiring system.</p> <p>If you still have any doubts, difficulties or any possibility of mistake, contact our Technical Service to avoid any risks or damages.</p>
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### Cleaning the pliers and the handpiece front part

We recommend to keep the front part of the handpiece always clean from dust particles. Unlock the plier opening nut and blow in compressed air. If necessary, uncover internal part as explained in next paragraph.

If necessary access to the internal part as explained in next paragraph.

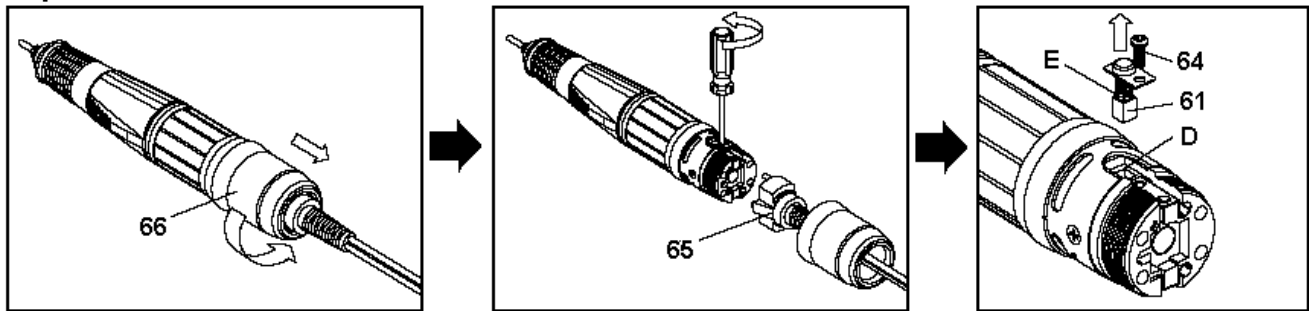
### Replacing or removing the pliers



To remove or replace the pliers 14, follow the operating sequence and comply with the procedure by help of the above pictures (work with the sample test bur inserted - 13).

1. Unscrew the whole handpiece front part (X) and separate it from the motor unit B
2. extract the transmission unit 67 paying utmost attention to the positioning of the components
3. by means of key 93, hold the shaft in place and lock the pliers by means of the special key 92 supplied with the machine
4. unscrew the worn out pliers 14, extract it, replace with a new one, screw tight
5. reassemble all components following the procedure in reverse sequence.

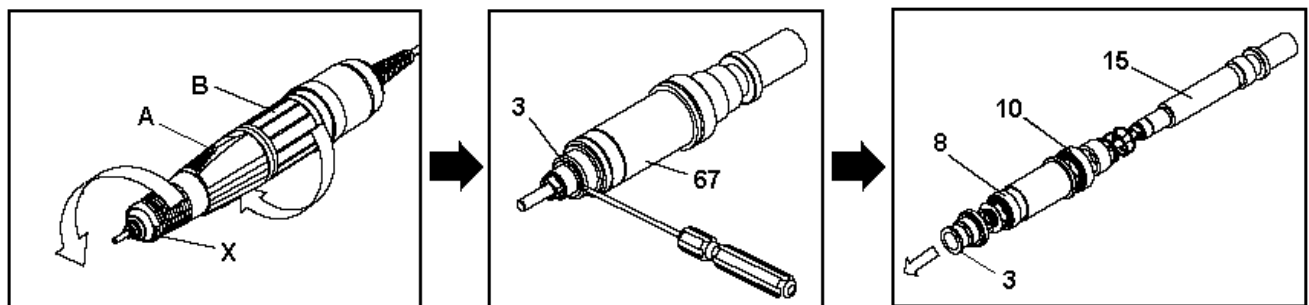
## Replacement of carbon brushes



To replace carbon brushes (61), follow carefully the operating sequence and refer to the above pictures.

1. Unscrew contact protection cap 66 and disconnect feeding cable 65
2. Unscrew the carbon brushes fixing screw 64 and remove them
3. Insert new carbon brushes in the seat D with the spring E deeply inserted. Re-assemble
4. Turn on the motor in manual mode at about 20.000rpm, letting it turn free (no load) for about 30 minutes. Then restart normal working.

## Replacement of bearings

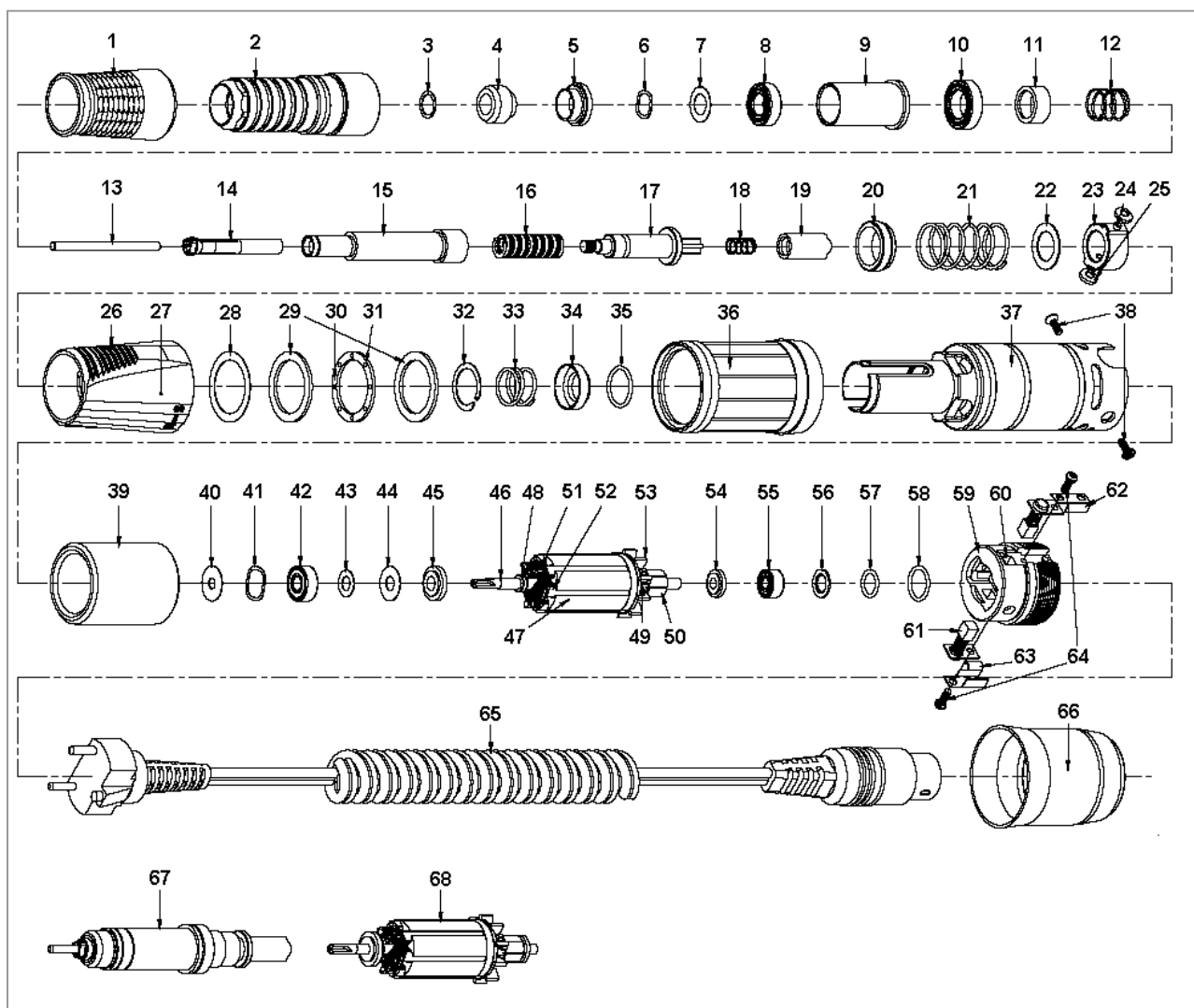


To replace bearings (8-10), follow carefully the operating sequence and refer to the above pictures.

1. Unscrew the whole front part (X) of the handpiece, and separate it from the motor unit B.
2. Extract the transmission unit 67 paying utmost attention to the positioning of the components
3. Remove the front locking ring fixing the assembly elements
4. Remove carefully every bearing, then reassemble them
5. Turn on the motor in manual mode at about 20.000rpm, letting it turn free for about 15-20 minutes. Then re-start working.

## 7. EXPLODED DRAWING AND SPARE-PART LIST HP35 ON/OFF (A5030) Handpiece

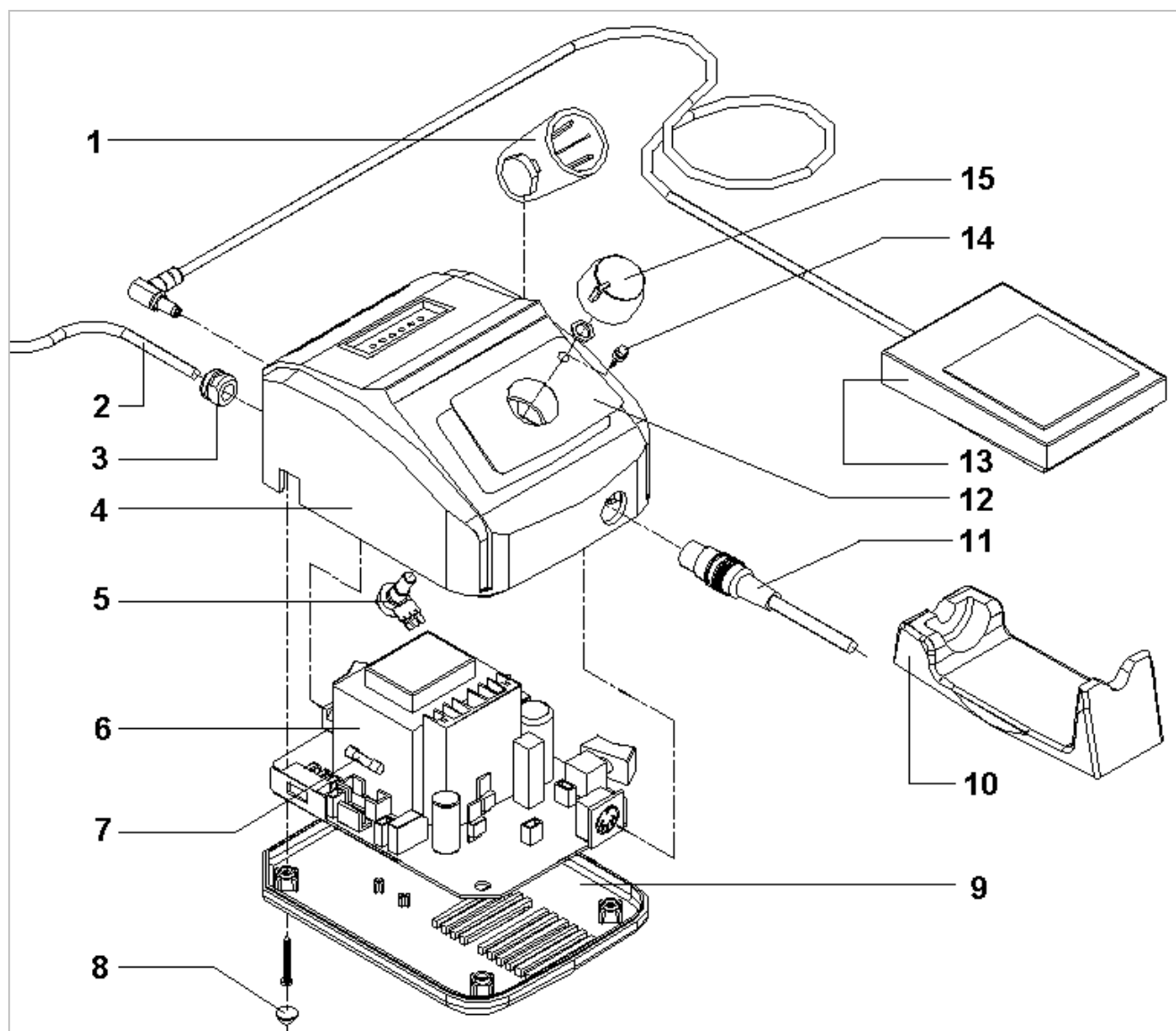
NO.	CODE	DESCRIPTION
1	<b>5035015</b>	COVER ON REAR HOUSING
2	<b>5035030</b>	REAR HOUSING
3	<b>5035031</b>	STOP RING
4	<b>5035032</b>	COLLAR
5	<b>5035033</b>	SPACER ON BEARING
6	<b>5035034</b>	WAVE WASHER 1260
7	<b>5035035</b>	WASHER 1260
8	<b>5035036</b>	BEARING 1260ZZ
9	<b>5035037</b>	SPACER BUSH
10	<b>5035038</b>	BEARING 1480ZZ
11	<b>5035039</b>	SPRING SHEET
12	<b>5035040</b>	FRONT SPRING
13	<b>5035041</b>	TEST BUR
14	<b>5035042</b>	CHUCK PLIERS Ø2.35
15	<b>5035043</b>	PLIERS HOUSING
16	<b>5035044</b>	SPRING ON PLIERS
17	<b>5035045</b>	DRIVESHAFT
18	<b>5035046</b>	JOINT SPRING
19	<b>5035047</b>	JOINT
20	<b>5035048</b>	SPRING SHEET
21	<b>5035049</b>	JOINT SPRING
22	<b>5035050</b>	ANTIFRICTION WASHER
23	<b>5035051</b>	ROLLER BODY
24	<b>5035052</b>	ROLLER BODY PIN
25	<b>5035053</b>	ROLLER GUIDE
26	<b>5035054</b>	PLIERS RING NUT
27	<b>5035055</b>	CAM
28	<b>5035056</b>	TEFLON WASHER
29	<b>5035057</b>	SLIDE WASHER
30	<b>5035058</b>	BALL GUIDE
31	<b>5035059</b>	BALL
32	<b>5035060</b>	LOCKING RING
33	<b>5035061</b>	MOTOR CASE SPRING
34	<b>5035062</b>	MOTOR CASE SPRING SHEET
35	<b>5035063</b>	FIXING RING 1030
36	<b>5035064</b>	MOTOR CASE COVER
37	<b>5035065</b>	MOTOR CASE
38	<b>5035066</b>	MOTOR CASE SCREW
39	<b>5035067</b>	MAGNET
40	<b>5035068</b>	COPPER WASHER
41	<b>5035069</b>	WAVE WASHER 1030
42	<b>5035070</b>	BALL BEARING 1030ZZ
43	<b>5035071</b>	COPPER WASHER
44	<b>5035072</b>	TEFLON WASHER 1030
45	<b>5035073</b>	SPACER 1030
46	<b>5035074</b>	DRIVESHAFT
47	<b>5035075</b>	CORE
48	<b>5035076</b>	FRONT WASHER
49	<b>5035077</b>	REAR WASHER
50	<b>5035078</b>	SLIP RING
51	<b>5035079</b>	WINDING
52	<b>5035080</b>	INSULATION
53	<b>5035081</b>	FAN
54	<b>5035082</b>	SPACER 830
55	<b>5035083</b>	BEARING 830ZZ



NO.	CODE	DESCRIPTION
56	<b>5035084</b>	WASHER ON REAR COVER
57	<b>5035085</b>	REAR OR RING
58	<b>5035086</b>	LOCKING RING 830
59	<b>5035087</b>	REAR COVER
60	<b>5035088</b>	CARBON BRUSH HOUSING
61	<b>5035089</b>	PAIR OF CARBON BRUSHES
62	<b>5035090</b>	LEFT TERMINAL
63	<b>5035091</b>	RIGHT TERMINAL
64	<b>5035092</b>	CARBON BRUSH FIXING SCREW
65	<b>5035093</b>	MOTOR CABLE
66	<b>5035094</b>	CONTACTS PROTECTION CAP
67	<b>5035095</b>	SPINDLE UNIT
68	<b>5035096</b>	ROTOR UNIT
-	<b>A5030M</b>	35.000PRM BRUSH HANDPIECE COMPLETE

## 8. EXPLODED DRAWING AND SPARE-PART LIST HP35 ON/OFF (A5030)

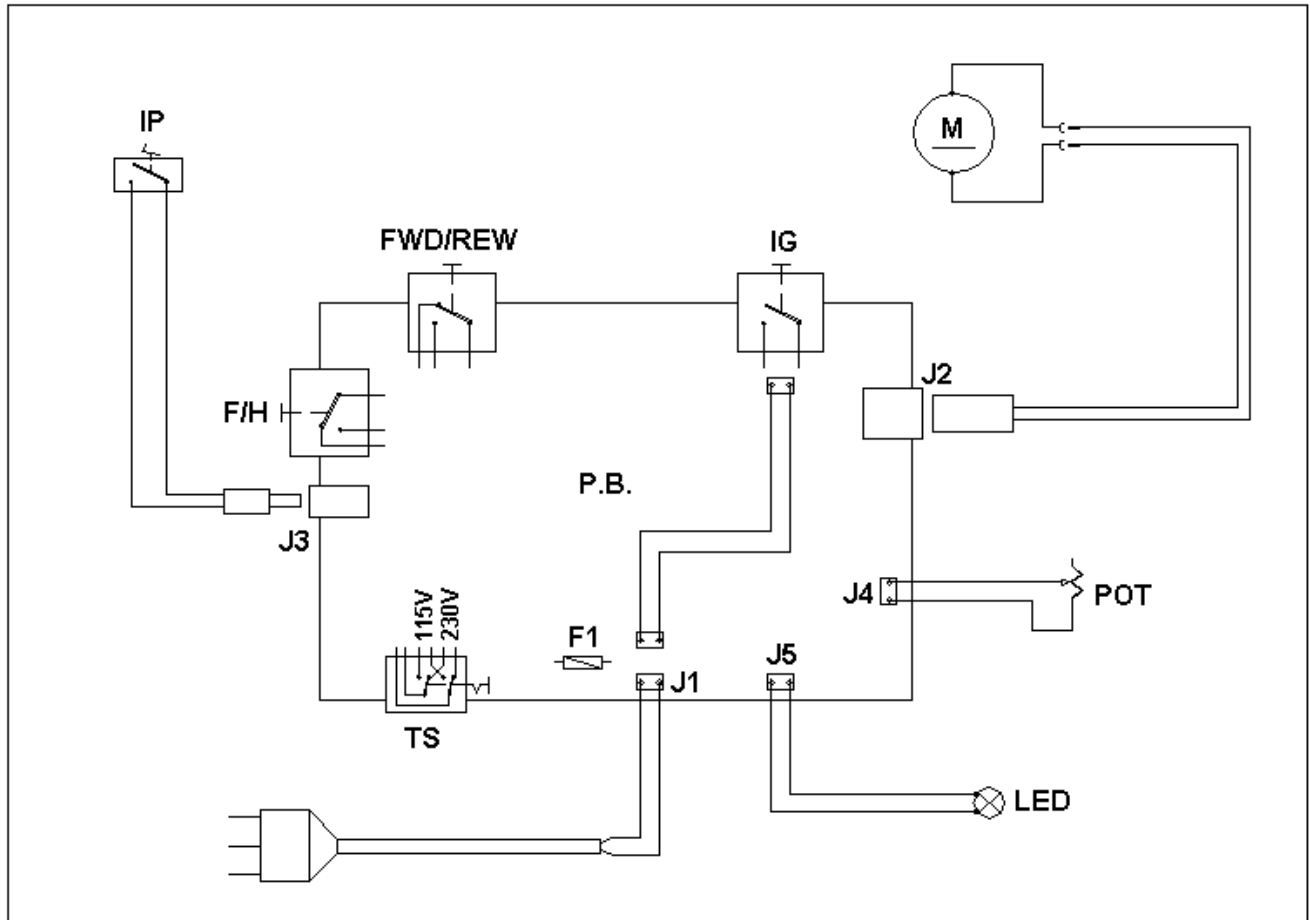
### Control unit



No.	ITEM	DESCRIPTION
1	<b>5030006</b>	HANDPIECE SUPPORT (ON CONTROL UNIT)
2	<b>5025039</b>	FEEDING CABLE 2X0.75 WITH PLUG
3	<b>NEA107</b>	CABLE LOCKING RING
4	<b>5030004</b>	UPPER SHELL
5	<b>5030007</b>	POTENTIOMETER – SPEED REGULATION
6	<b>5030002</b>	POWER BOARD
7	<b>NEA070</b>	FUSE
8	---	RUBBER FEET
9	<b>5030005</b>	LOWER SHELL
10	<b>5030010</b>	RUBBER HANDPIECE SUPPORT
11	---	MOTOR CONNECTOR
12	<b>5030001</b>	MARK LABEL
13	<b>5030003</b>	ON-OFF FOOT CONTROL
14	<b>5030009</b>	SIGNAL LAMP
15	<b>5030008</b>	POTENTIOMETER KNOB



## 9. WIRING DIAGRAM



<b>POS.</b>	<b>DESCRIPTION</b>
<b>P.B.</b>	Power board
<b>TS</b>	Voltage change-over switch
<b>F1</b>	Fuse
<b>IG</b>	Main switch
<b>LED</b>	Signal lamp
<b>POT</b>	Potentiometer - speed regulation
<b>F/H</b>	Switch - foot control / manual use
<b>FWD/REW</b>	Switch - direction of rotation
<b>M</b>	Brush motor
<b>J2</b>	Motor cable connector
<b>IP</b>	ON-OFF foot control
<b>J3</b>	Foot control cable connector

## 10. TECHNICAL REFERENCE REGULATIONS AND TEST PROCEDURES

Dentalfarm HP micromotors (30.000-45.000rpm) are mass-manufactured by Dentalfarm in compliance with technical and safety rules in force, as provided for by the 2006/42 EEC Community Directive on machinery.

Careful inspection and full testing is carried out singularly on each machine which is furtherly tested by an automatic test installation assuring compliance with the fixed limits is printed.

## 11. DEMOLITION AND WASTE DISPOSAL

According to International regulations, this unit has been classified as AEE (electric and electronic device, whose correct operation depends on electric currents and electromagnetic fields) and as a consequence, at the end of its lifetime, it can not be treated as normal waste material but it must be disposed separately, complying with the Directive 2002/96/EEC.



## 12. TECHNICAL SPECIFICATIONS

Description	
Control unit width	120 mm
Control unit depth	160 mm
Control unit height	85 mm
Net and gross weight	2,0 kg – 2,3 kg
Feeding tension	230 v AC – 50/60 Hz
Absorption	70 W
Motor type	DC collector motor
Motor tension	Low voltage (0-25v DC)
Rotating speed	1.000 – 35.000 rpm
Rotation	Reverse
Motor power	50W
Max torque	27 mNm
Handpiece size	Ø 29 mm (MAX) – length 152 mm
Chuck pliers	Ø 2.35 mm – (Ø 3.00 mm optional)

### **DENTALFARM s.r.l.**

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