ENDOMATIC

Microprocessor Controlled Endomotor

- Speed Range of 126rpm to 625 rpm
- Torque Range of 3mNm to 52mNm
- Auto reverse / Auto Stop / Auto 1 cycle reverse
- 9 adjustable programs
- The endomotor works with standard contra angle handpiece
- Works with all rotary file systems

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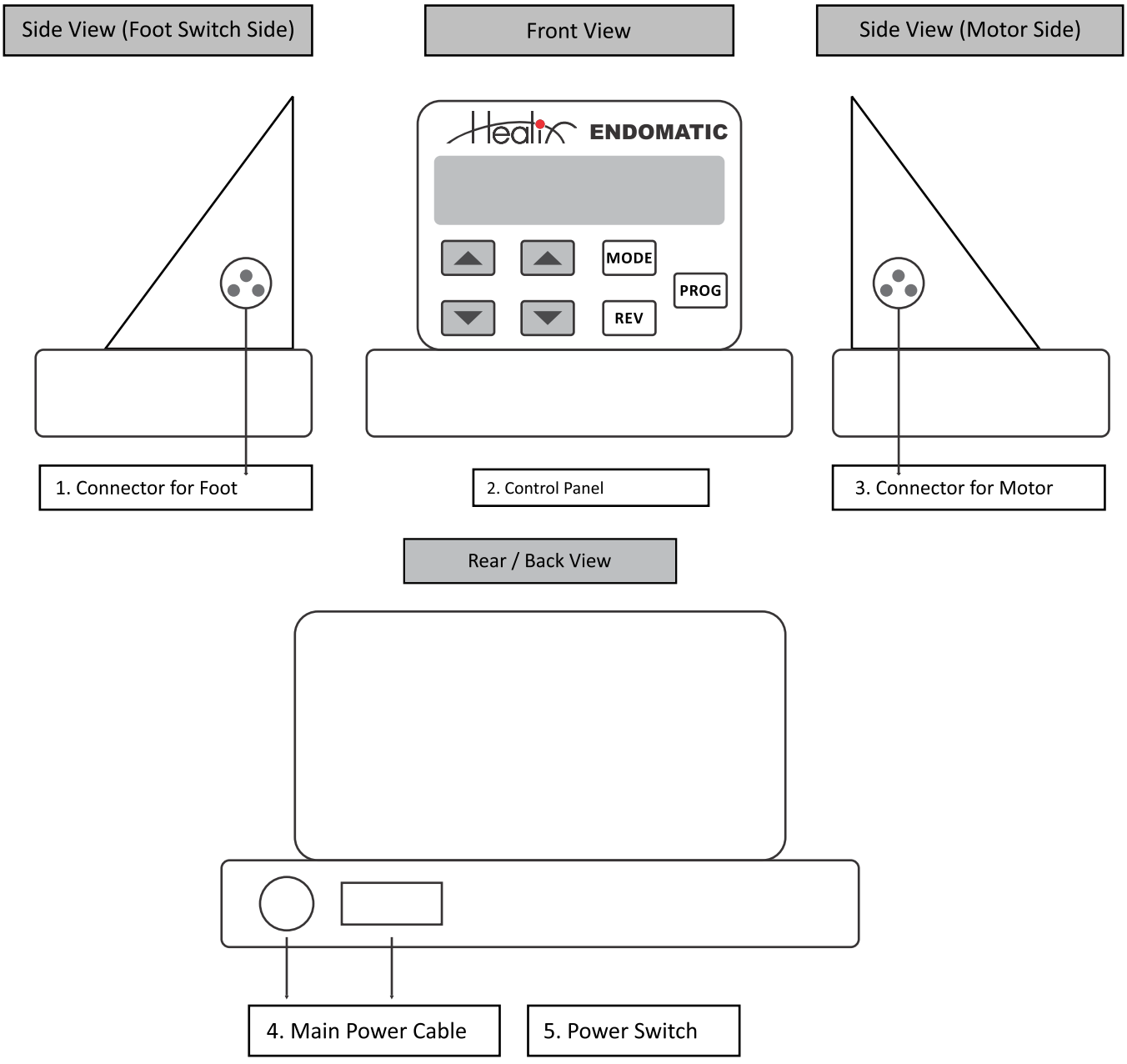

Parts

1. **Control Panel**
2. **Motor**
3. **Foot Switch**

How to Connect the Parts:

- Connect the Foot Switch Connector to the Foot Switch Connector on the Control Panel
- Connect the Motor Connector to the Motor Connector on the Control Panel
- Plug the Power Cable into the Power Socket of 230V

Directions for Use:

- Plug the Main Power Cable in the 230 V Power Socket.
- Turn on the Power Switch on the back of the main control unit.
- Pressing the Foot Pedal would rotate the File in the Contra- Angle.

Settings:

Speed Setting:

The Speed of the motor can be adjusted between 125 rpm to 625 rpm. This can be done by pressing the SPEED buttons (▼ ▲) on the control panel.

Torque Setting:

The limiting Torque of the motor can be adjusted between 3mNm to 52mNM by pressing the TORQUE buttons (▼ ▲) on the control panel.

Mode:

There are three modes available for the limiting torque on the motor. Any one of the three modes can be selected by pressing the MODE button

Auto Stop:

When the load / resistance to the file on the motor exceeds the set torque value, the motor would automatically stop. It would start only when you lift the foot off the switch and press it again.

Auto Reverse:

When the load / resistance to the file on the motor exceeds the set torque value, the motor would automatically rotate in the reverse direction. It would continue to reverse untill lift the foot off the switch and press it again.

Auto One Cycle Reverse:

When the load / resistance to the file on the motor exceeds the set torque value, the motor would automatically rotate in the reverse direction for a few turns and again start rotating in the normal direction.

Programs:

The PROGRAM button is used to set 10 programs for specific Torque and Speed Settings. This product has 0 to 9 programmable settings. You can change any preset values and have them saved to your desired settings (rotation speed, torque limit value, mode).

- Press the PROGRAM key until it turns to the program number that you want to memorize.
- Adjust the rotation speed, torque limit value, gear ratio and auto reverse mode by each key according to your needs.
- Hold down the PROGRAM key for more than one second. The Screen would then show that the Program has been saved.

Speed and Torque Settings for Typical File Systems:

Protaper System	Speed rpm	Torque mNm
S1	375	25
S2	375	15
F1	375	20
F2-F3	375	30
SX	375	35

Gates Gliddens	Speed rpm	Torque mNm
#1	625	9
#2	625	15
#3	625	20
#4-5-6	625	35

PROTAPER USE PROTOCOL

The ProTaper **Healix M-3 Gold** system is the alternative to all other file systems in which each file has a fixed taper. Each ProTaper file has a variable changing taper over the length of its cutting blades. Specifically, the ProTaper shaping files have small-sized tips, which act as guides to follow the path of the canal previously secured with hand files. Progressively tapered shaping files work away from their apical extents and, importantly, selectively cut dentin toward their larger, stronger and more active blades

The Protocol

Step 1 Cut an access cavity.

Step 2 Refine the canal orifices with the X-Gates at 700rpm to get a straight line access Place the X-gates along the natural axis of the orifice without working the instrument. Then, starting rotation, use a circular motion without pressure to create a funnel at this level. This should be followed by a brushing outstroke motion away from the furcation until the head of the X-Gates gets passively inside the canal orifice.

Step 3 Fill the pulp chamber with a lubricant

Step 4 Scout the coronal two-thirds

- Select an ISO 10 K file precurved, and scout the canal to light resistance. Then, use a watch-winding-pull motion to create space at this level.
- Repeat the same procedure with the 15 K file and the 20 K file.
- Transfer the length of the 15 K file to S1.

Step 5 Shape the coronal two-thirds (300rpm) with NaOCl irrigation
At this stage, the apical three or four millimeters of S1 should be loose inside the root canal.

- Start working S1 with a firm brushing outstroke action away from the furcation.to progressively reach the level of the 15 K file. Use a slow motion with a 4mm amplitude. Visually check the location of the debris on the flutes. No debris should be observed on the apical aspect of S1
- As described for S1, work S2 slightly shorter than S1.

Step 6 Scout the apical one-third

- A10K file, pre curved, is used with a lubricant to negotiate the apical third of the root canal and reach the apical limit.
- Determine the working length with an apex locator or an X-ray. Smooth the path of the canal using an up-and-down motion with a short amplitude (2mm) until the file is loose.
- Do the same with the 15K file to get a long (4 to 5mm) and reproducible glide path.

Step 7 Shape the apical one-third

- Switch to NaOCl and work S1 with the same brushing action to the working length, but stop brushing I mm shorter and let the file passively reach the apical limit.
- By hand, drop the rotary S2 to resistance in order to assess the distance of work to be done with that file. After an adequate work by S1, S2 should never have more than 2mm of work to accomplish.
- Then use the engine-driven S2 as described for S1. Due to the brushing outstroke motion, the operator should feel that the previous resistance met in step 2, has been completely relieved.
- Disconnect the handpiece from S2 and confirm precisely the working length with an apex locator connected on S2.

Step 8 Finish and blend the apical one-third with the coronal two -thirds

- By hand, drop the rotary F1 to resistance in order to assess the distance of work to be done with that file. After an adequate work by S1 and S2, F1 should never have more than 2mm of work to accomplish. Then, the engine-driven F1 is passively allowed to progress apically, in one or more passes, to reach the canal terminus. F1 must be used in a non -brushing manner with no vertical pressure. The author preference for this stage is to use a manual F1 with an apex locator connected on it, to precisely achieve the apical shape. For manual ProTapers, the recommended motion is : half a turn clockwise- three quarter turns anti-clockwise while withdrawing the file.
- Following F1, a 0.2/20 K file is dropped inside the canal to gauge the apical diameter. If the file is snug at the working length, the apical size is 20 . In this case, F2 and F3 must systematically be used in a step-back fashion to increase the deep shape. F2 is placed ½ mm shorter than F1 and F3 one mm shorter than F2. The finishing files F2 and F3 should never have more than 2mm of work to do.
- If the 0.2/20 K file moves beyond the foramen, gauge again with the ? 0.2/25 K file. If the file is snug at the working length, the apical size is 25. Use F2, shy from the working length, as described for F1. Then use F3 one millimeter shorter than F2.
- The same gauging procedure with ISO K files is repeated for larger apical sizes.
- Root canal obturation will be discussed in separate post. After BMP is completed you can use protaper Guttapercha (6%) for obturating the canal. mostly single cone obturation is enough connected on it, to precisely achieve the apical shape. For manual ProTapers, the recommended motion is : half a turn clockwise- three quarter turns anti-clockwise while withdrawing the file
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Note : Between each active file, the root canal system is irrigated with 2ml of NaOCl, apical patency is confirmed and the canal re-irrigated.

Healix Healthcare Pvt. Ltd.
110, Manish Ind. Estate. No. 4, Navghar Road, Vasai (East),
Dist: Palghar - 401210, Maharashtra, India.
Tel:+91-9324607948, 0250-2390707
email: healixhealthcare@gmail.com
website: www.healix.in