Original FINO

FINO VITESSE SF

REF 50862

Mikromotor
Micromotor
Micromoteur
Micromotor
Micromotore
Micromotor
Mikromotor
Mikrosilnik

FINO · der feine Unterschied · the fine difference · la fine différence · la fina diferencia · la fine differenza

Gebrauchsinformation · User Information · Mode d'emploi
Información sobre el uso · Informazioni d'uso
Gebruiksaanwijzing · Instrukcja stosowania

TABLE OF CONTENTS

1. Field of application

The FINO Micromotor is a brush-free micromotor suitable for all work in the dental lab or workshop. It particularly excels in high performance and speed stability. The control unit can either be used as tabletop or knee controlled unit. If used as a tabletop unit an additional foot switch for speed control can be installed. The control unit is equipped with several safety features to avoid any damage to the handpiece. All wearing parts are easily and economically to replace.

2. Safety precautions

Safe operation and protection of the unit are only ensured as long as it is used in compliance with specifications described in the user information using only permitted tools. Additionally the following must be observed:

- The directions of the manufacturer if the tools
- Never exceed the maximum allowed speed of the tool in use
- Always wear eye protection and facemask
- The occupational safety regulations
- The accident prevention regulations
- Never operate the unit with moist hands!

If the safety precautions are not observed the hazard of injuries for you and people in your surroundings exists. FINO does not undertake any guarantee in the case that these safety precautions are not observed!

3. Commencement of operation

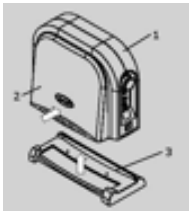
Please check the unit for transportation damages immediately after unpacking. All transportation damages must be claimed promptly. Check the voltage given on the type label of the unit and make sure it corresponds with your mains supply.

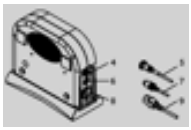
3.1 Assembly

3.1.1 Tabletop unit

Danger of stumbling

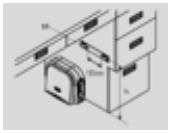
Install all cables in a way that they do not cause any occupational hazard. Place the control unit on an even and dry surface.

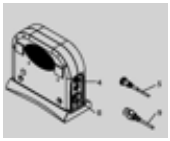


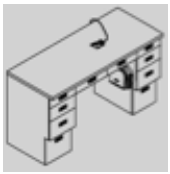


Push the knee-control plate 2 completely in and place the tabletop stand 3 on the bottom surface of the control unit. Subsequently screw on the tabletop stand 3 using the included two screws. Place the control unit on your workplace. Now connect the plug of the motor cable 5 with the socket 4 on the back of the control unit. Thereby make sure that the groove of the socket and the gap of the plug are opposite each other. Tighten the nut firmly. Now you connect the plug of the foot switch 7 with the socket 6. Also here the groove of the socket and the gap of the plug must be opposite each other. Finally you connect the power supply cable 9 with the power supply socket 8. Put the control unit on the therefore selected place on your workplace. Before you connect the power plug with the mains socket check again whether all cables are firmly connected to the control unit.

3.1.2 Knee-control unit







Use only the included screws for the fitting of the attachment bracket. The use of other screws could result in the damage of the unit or your workbench.

We recommend installing the attachment bracket 10 in a height of approx. 520-580 mm depending on your body height. Mark the holes with a pencil.

Make sure that the attachment bracket 10 is kept horizontally. If necessary use a water level. Drill the holes with a thin drill. Screw the screws completely in to ensure a frictionless installation of the control unit.

Slide the control unit forward on the attachment bracket until it markedly catches.
Now connect the plug of the motor cable 5 with the socket 4 on the back of the control unit. Thereby make sure that the groove of the socket and the gap of the plug are opposite each other. Tighten the nut firmly. Finally you connect the power supply cable 9 with the power supply socket 8. Before you connect the power plug with the mains socket check again whether all cables are firmly connected to the control unit.

4. Operation

For the connection of the motor handpiece or the foot switch switch the on/off switch 16 to position 0 (off).

4.1 Basic functions

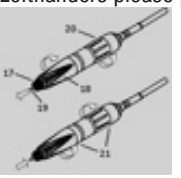
4.1.1 Control unit

Switch the control unit 1 with the on/off switch 16 on. Select the desired maximum speed between 1.000 and 50.000 rpm with the speed control 11. The range between 40.000 and 50.000 rpm is blocked by a lock. Pushing the lock button at the speed control 11 can disengage this lock. Your selected maximum speed is shown in the display 15. By pushing the hand/foot-switch 12 you can switch between hand and foot control. If the control light next to the hand/foot-switch 12 glows the speed can be adjusted with the foot switch or the knee-control plate. Pushing the direction selector 13 sets the direction of rotation. If the control light next to the direction selector 13 glows the motor turns clockwise. If it is not glowing the motor turns anti-clockwise (topview on the axis of rotation). The motor switch 14 allows an automatic locking of the selected speed. If the control light next to the motor switch glows orange the function is activated. If it glows green the function is deactivated. If a speed is kept for more than two seconds it is automatically stored and you can release the foot switch or knee-control plate. The storage of the speed is indicated by an acoustic signal. By actuating the previously used control device afresh the speed can again be changed.

4.1.2 Handpiece

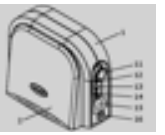
4.1.2.1 Opening of chuck

When the chuck is open the motor is blocked. To prevent damage to the motor or the drive parts make sure that after each change of tools the chuck has been completely closed. Never open the chuck while the motor is in operation! Always operate the device with a tool! Even if the device is not operated it is recommended to insert a tool or the test drill and to close the chuck. To prevent a falling down of the handpiece always place it on the included handpiece tray 22.
The procedure is described for right-handers. Lefthanders please proceed diametrically.



Take the handpiece 21 in your right hand. The motor 20 is thus in the palm of your right hand. Take the crank 18 in your left hand and turn the crank approx. A quarter revolution clockwise until you feel a marked resistance. The chuck is open and the tool can be removed.

4.2 Working with the FINO VITESSE Micromotor



Before you start with your work check the selected speed. Whenever you work with the FINO VITESSE Micromotor wear protective eyewear and a facemask! Never exceed the maximum speed and the maximum allowed processing pressure of the tool in use! Before each use check the firm fit of the tool! During operation never try to hold or to block the tool or the chuck! Never operate the unit with wet or moist hands! If your workplace is unsuitably illuminated a stroboscopic effect may occur. At certain speeds it causes the impression that the tool does not turn. This effect can only be prevented with a suitable illumination. Switch the control unit off as long as it is not in use. Always place the handpiece on the therefore provided handpiece tray. Insert the selected tool into the chuck. See section 4.1.2. Make sure that the tool is firmly fitting in the chuck. Turn the speed selector 11 completely left to the lowest speed. Now switch the control unit with the on/off switch 16 on. Select the desired maximum speed.

4.2.1 Application as tabletop unit without foot switch

If you want to use the unit as tabletop unit without foot switch the control light next to the hand/foot switch 12 must be off. If that is not the case push the hand/foot switch 12. Simultaneously the control light next to the motor switch 14 extinguishes. Select the direction of rotation of the motor by pushing the direction selector 13. Now you can start the motor by pushing the motor switch 14. The selected maximum speed can at any time be changed by turning the speed control 11. Likewise the direction of rotation can at any time be reversed by pushing the direction selector 13. It is not necessary to stop the motor beforehand. The motor stops when the motor switch 14 is pushed again.

4.2.2 Application as tabletop unit with foot switch

If you want to use the unit as tabletop unit with foot switch the control light next to the hand/foot switch 12 must be glowing. If that is not the case push the hand/foot switch 12. Simultaneously the control light next to the motor switch 14 glows. Select the direction of rotation of the motor by pushing the direction selector 13. Now you can start the motor by actuating the foot switch 7. The selected maximum speed cannot be changed during the operation of the motor. The direction of rotation can at any time be reversed by pushing the direction selector 13. It is not necessary to stop the motor beforehand. If the control light next to the motor switch 14 glows orange and you work more than two seconds at a constant speed the speed is stored and you can remove the foot from the foot switch 7. To change the speed or to stop the motor you actuate the foot switch 7 again and subsequently release it completely.

4.2.3 Application as knee-control unit without foot switch

If you want to use the unit as knee-control unit without foot switch the control light next to the hand/foot switch 12 must be glowing. If that is not the case push the hand/foot switch 12.
Simultaneously the control light next to the motor switch 14 glows. Select the direction of rotation of the motor by pushing the direction selector 13. Now you can start the motor by actuating the knee-control plate 2. The selected maximum speed cannot be changed during the operation of the motor. The direction of rotation can at any time be reversed by pushing the direction selector 13. It is not necessary to stop the motor beforehand. If the control light next to the motor switch 14 glows orange and you work more than two seconds at a constant speed the speed is stored and you can release the knee-control plate 2. To change the speed or to stop the motor you actuate the knee-control plate 2 again and subsequently release it completely.

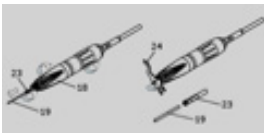
4.2.4 Application as knee-controlled unit with foot switch

If you want to use the unit as knee-control unit with foot switch the control light next to the hand/foot switch 12 must be glowing. If that is not the case push the hand/foot switch 12.
Simultaneously the control light next to the motor switch 14 glows. Select the direction of rotation of the motor by pushing the direction selector 13. Now you can start the motor by actuating the knee-control plate 2 or the foot switch 7. The selected maximum speed cannot be changed during the operation of the motor. The direction of rotation can at any time be reversed by pushing the direction selector 13. It is not necessary to stop the motor beforehand. If the control light next to the motor switch 14 glows orange and you work more than two seconds at a constant speed the speed is stored and you can release the knee-control plate 2 or the foot switch 7. To change the speed or to stop the motor you actuate the knee-control plate 2 or the foot switch 7 again and subsequently release it.

5. Maintenance and cleaning

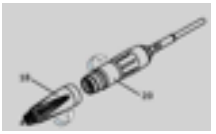
For maintenance work on the unit disconnect the plug from the mains socket. Clean the unit only with a dry cloth! It is recommended to clean the chuck thoroughly at least once a week. The chuck may only be screwed in hand-firm! Do not clean the handpiece with compressed air!

5.1 Removal of chuck



Open the chuck 23 as described in section 4.1.2. Insert a tool or the included test drill 19. Now you place the included maintenance tool 24 on the chuck and unscrew it anti-clockwise. Clean the chuck thoroughly with compressed air or in an ultrasonic bath. Subsequently reinsert the chuck and tighten it.

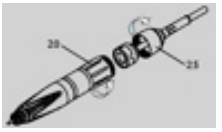
5.2 Separation of crank and motor



The procedure is described for right-handers. Lefthanders please proceed diametrically. Take the handpiece in your right hand. The motor 20 is thus in the palm of your right hand. Take the crank 18 in your left hand and turn the crank clockwise until you feel a marked resistance. Now turn the crank further until motor and handpiece separate from each other. For the assembly of the two parts you proceed in reversed order and screw crank and motor firmly together. Turn the crank a quarter revolution backwards to close the chuck.

5.3 Change of motor cable

The plug of the motor cable only fits in one position on the motor. Do not try to force the plug on the motor. This could damage the connector pins and makes the motor unserviceable. The procedure is described for right-handers. Lefthanders please proceed diametrically.



Take the handpiece backwards in your left hand. The motor thus is in the palm of your left hand. Unscrew with your right hand the protective sleeve anti-clockwise. Carefully pull the motor cable. The plug connection comes loose. Put the new motor cable carefully on the motor and screw the protective sleeve clockwise tightly on.

5.4 Adjustment of magnetic sensor of knee-control plate

The speed is leadlessly controlled through a magnetic sensor on the knee-control plate. It may happen that the sensor must be adjusted from time to time. Switch the control unit off. Press the hand/foot switch 12 and the direction selector 13 simultaneously and keep both switches pressed. Now switch the unit on. After approx. 2 seconds you will hear an acoustic signal and the display shows one of the three options Hi, Lo or rc. Turn the speed control 11 until the display shows Hi. Now push the knee-control plate completely in and keep it there. Acknowledge with the direction selector 13. You will hear an acoustic signal. The maximum knee-control plate position has been stored. Turn the speed control 11 now until the display shows Lo. The knee-control plate must not be pressed. Acknowledge with the direction selector 13. You will hear an acoustic signal. The minimum knee-control plate position has been stored. You can finish the adjustment now.
Turn the speed control 11 now until the display shows rc and acknowledge with the direction selector 13. Switch the control unit off and subsequently on again. The unit is now ready for operation.

5.5 Replacement of unit fuse

Remove the fuse holder using a flat blade driver. Replace the damaged fuse with the spare fuse, which is inside the fuse holder. Put the fuse holder back. Order a new 250 V/3,15 A fuse.

6. Storage

Store thee unit in a dry and dust-free place.

7. Technical data

Control unit:

Voltage:	220 - 240 V; 50/60 Hz
Power consumption:	40 VA
Exterior dimensions:	W 94 x D 268 x H 228 mm
Weight:	2,9 kg

Handpiece:

Dimensions:	L 159 mm, ø 27 mm
Speed:	1.000 - 50.000 rpm
Cable length:	1,4 m
Weight:	230 g (without cable)

Foot switch:

Cable length:	1,8 m
Weight:	384 g

Tabletop stand:

Dimensions:	W 122 x D 268 x H 30 mm
Weight:	152 g

Handpiece tray:

Dimenstions:	W 60 x D 110 x H 45 mm
Weight:	68 g

8. Delivery includes

Control unit, Tabletop stand, Motor handpiece, Motor handpiece tray, Foot switch, Attachment bracket for control unit, Maintenance tools, Test drill.

9. Guarantee

Our technical recommendations of application are based on our own experiences and tests and should only be regarded as guidelines. It rests with the skills and experience of the user to verify that the products supplied by us are suitable for the intended procedures. Our products are undergoing a continuous further development. We reserve the right of changes in construction and composition. It is understood that we guarantee the impeccable quality of our products.

10. Troubleshooting

10.1 Error codes

Error code	Status	Possible reason
1E	Motor sensor error	1. The motor cable is damaged or not connected. 2. The motor sensor is damaged.
2E	Motor blocking error	1. The chuck is open. 2. The handpiece is damaged.
3E	Overload protection error	1. The unit was operated under overload conditions. 2. The motor cable resp. the power cable is damaged.
4E	Over-voltage protection error	1. The control unit is damaged. 2. The power supply is interrupted.
5E	Overheating error	1. The unit was operated under overload conditions. 2. The control unit is overheated. It should never be exposed to direct sunlight.
6E	Overload error	After normal starting the motors has blocked.
7E oder 8E	Self-test error	The control unit has a malfunction.

10.2 Emergency maintenance

Problem		What to check	Help
The unit cannot be switched on.		Check whether the unit is switched on.	Switch the unit on by pressing the on/off switch 16.
		Check whether the power supply cable is connected properly.	Connect the power supply cable properly.
		Check whether the fuses in the unit or your mains circuit breakers have tripped.	Replace fuses.
The motor does not run.	Error code **1E**	Check whether the motor cable is connected properly.	Connect the motor cable properly. If the error is still displayed replace the motor cable.
		Test the function of the motor sensor and the motor cable. See section 5.5.	1. Replace the motor cable. 2. The motor sensor is damaged.
	2E	Make sure that the chuck is closed.	Close the chuck.
	3E	The unit was operated under overload for some time.	Switch the unit off and let it cool for approx. 10 minutes.
	4E	The power voltage fluctuates.	1. Check the power voltage. It must correspond to the voltage indicated on the type label. 2. Switch the unit off. Wait for approx. 5 seconds and switch it on again.
	5E	The unit was operated under overload for some time.	Switch the unit off and let it cool for approx. 10 minutes.
		The control unit is too hot.	Take care that the control unit is never exposed to direct sunlight. Switch the unit off and let cool.
		The temperature sensor is damaged.	Let the technical customer service replace the sensor.
	6E	Make sure that the chuck is closed.	Close the chuck.
		Test the smooth rotation of the motor.	Turn the chuck with your hand. It must move smoothly and without noise.
	7E + 8E	The control unit has determined a malfunction.	Switch the unit off. Wait for approx. 5 seconds and switch it on again. If the error still persists contact the technical customer service.
The foot switch does not work.		Check whether the foot switch cable is connected properly.	Connect the cable properly.
		Test the function of the foot switch.	See section 5.5, Test setting Fc.
The knee-control plate does not work or not properly.		The knee-control plate was pressed while the unit was switched on.	Switch the unit off. Wait for approx. 5 seconds and switch it on again. If the error still persists contact the technical customer service.
		Test the function of the knee-control plate.	See section 5.5, Test setting nc.
The handpiece gets unusually hot during operation.		The ball bearing is worn.	Replace the ball bearing with a new one.
The handpiece vibrates and makes unusual noises.		The chuck is dirty.	Clean the chuck as described in section 5.1.
		The used tool is not balanced or the speed is too high for the tool.	Use a new tool. Observe the maximum allowed speed of the used tool.
		The ball bearing is worn.	Replace the ball bearing with a new one.
The chuck does not hold the tool.		The chuck is loose.	Screw in the chuck hand-firm
		The chuck is worn.	Replace the chuck.
		The used tool is to thin.	Use a tool with a shank diameter of 2,35 mm.

Should the above-mentioned measures not be successful or should you encounter problems that are not described here, please contact the technical customer service.

11. Important!

The FINO GmbH has compiled the present user information to the effect to support the user in the operation of the units and to facilitate the implementation and operation of the unit. The FINO GmbH is not responsible for damages that are attributed to an incorrect application or alterations of the unit. An application for purposes other than the described leads to the loss of the guarantee. According to its policy FINO GmbH permanently further develops its products. FINO reserves the right to put on changes or improvements to the products described in this documentation or the document itself without prior notice. FINO does not undertake any guarantee for the completeness or correctness of the contents of this document.

12. Disposal in accordance with EC Guideline 2002/96/EG

This equipment may not be disposed in domestic waste! Please contact the manufacturer or your dealer!

12.1 Registration number

30926170

13. Accessories

1-6 FINO DIADISC

1+2 Very flexible diamond discs.
Double-sided 3 mm circular coating with fine grain (D 30); for crown and bridge work.

3+4 Very flexible diamond discs.
Double-sided 3 mm circular coating with coarser fine grain (D 54);

5+6 Stable diamond discs with long service-life; cutting on the edge, double-sided full coating with coarser fine grain (D 54).

7-10 FINO TC-Cutters

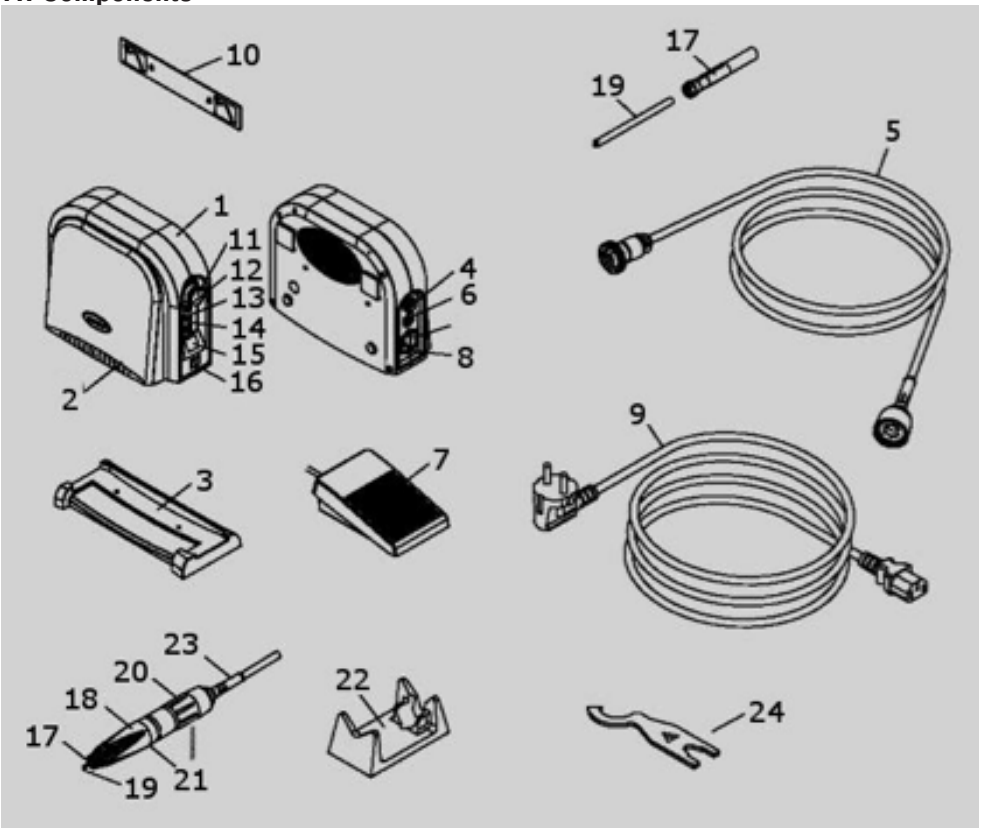
Shank-ø 2,35 mm, ISO 104.
Recommended speed range for all TC milling cutters:

Acc. to ISO 023 5-50.000 rpm
ISO 023-045 15-40.000 rpm
ISO 045-080 15-30.000 rpm

Cross-cut fine
Smoothens surfaces and enables the delicate shaping of each structure.
Suitable for all dental materials.

	1	2	3	4	5	6	7	8	9	10
ISO:	190	220	190	220	190	220				
Thickness:	0,14	0,14	0,20	0,20	0,30	0,30	023	045	060	060
	T-65900	X-65901	Z-65904	Z-65905	Z-65908	Z-65909	P-60364	C-60365	C-60366	C-60367

14. Components



1 Control unit
2 Knee-control plate
3 Tabletop stand
4 Socket for motor cable
5 Motor cable
6 Socket for foot switch
7 Foot switch
8 Socket for power supply
9 Power supply cable
10 Attachment bracket
11 Speed control
12 Hand/foot switch
13 Direction selector
14 Motor switch
15 Display
16 On/off switch
17 Chuck
18 Crank
19 Test drill
20 Motor
21 Handpiece
22 Handpiece tray
23 Protective sleeve
24 Maintenance tool

FINO GmbH
Mangelsfeld 18
D-97708 Bad Bocklet
Tel +49-97 08-90 94 20
Fax +49-97 08-90 94 21
info@fino.com · www.fino.com