Operating Manual

WECO *trace II*

Edition: 01.05.1999
Product number: 1114-9933-01

Valued customer

congratulations on the purchase of your trace II.

You are now the owner of a device that meets the expectations for the degree of automatization, precision and operator convenience expected in the modern optical laboratory.

The trace II is complements and completes the WECO CMS system.

The manual helps the operator to use the device to its fullest potential and to benefit from the effectiveness and accuracy of the system. The manual contains information for the installation, tips and instruction to effectively operate the trace II when tracing ophthalmic frames and lenses.

Our recommendation:

Please thoroughly read the manual and store it in an easy-to-reach location for better usage.

We wish you enjoyment and the best of luck with your new WECO device.

W E C O
Optical Machinery

Table of Contents

1 Safety Guidelines

Please thoroughly read the Operation Instruction Manual before putting this device into use.

Tips and warnings will be highlighted in block style hatching, respectively with framed boxes as markers.

WARNING!

- Indicated, if /when the incorrect or inexact application of this device might lead to damage of the machine itself or to injury of the user.
-

ADVISORY

- Indicated, if/when it is the purpose to bring attention to special features or to aide in the simplification of operation.

Please ensure that the device is connected to an electrical power outlet of equal voltage as specified on the identification plate. The device must also be grounded according to local requirements. The grounding cable must never be cut, severed or bent in such a way that prevents the machine from being accurately grounded.

Do not tamper with the electrical wiring of the machine or the cooling system as this could impair or interfere with the functioning of the built-in protection features.

Faulty fuses should not be repaired or bridged and should only be replaced by identical fuses or those of the same type.

The device should absolutely be shut off before cleaning or maintenance takes place.

NEVER turn on the device while it is being maintained or repaired.

Be aware that certain operational errors can be caused by the ingestion of medication, which in turn affects vision and reaction ability.

ALWAYS be aware of and follow the safety regulations of your factory, place of work, or laboratory.

Intended or designated application
This device is only designed for processing lens and eye glasses or spectacles. Other objects, i.e. tools, etc. should in no circumstances be handled or worked on with this device.

Never erect or set up the device in a place, where there is a possibility of damage being caused by water or some other fluid, which could make its way into the electrical hardware.

The positioning of the device should without a doubt be stable in order to avoid injuries, which may be caused by the collapse or toppling of the device.

The slots on the device are designed for ventilation purposes and should not be blocked, nor should anything be inserted into these slots. They must be uncovered at all times.

Be sure to carefully place or lay the cable connections so they do not create an accidental trip or fall of someone walking over them.

Never try to stick objects of any kind into the openings of the device, as such an action could lead to a short circuit or electrical shock, putting limbs and lives in danger as a result.

There should be no attempt to open or repair the machine on ones own. There is danger of coming into contact with parts, which may have potential voltage.

In the following cases, the device should be tuned off, unplugged or disconnected, and no longer used until repair is rendered:

- If the plug, cable or outlet are in any way faulty or damaged.
- Should water or any other fluid enter any part of the device.
- If, despite proper execution of the manual instructions, the device still doesn't function correctly.
- Should the device accidentally fall and the casing is damaged.

In addition to the instructions given in this manual, all other regulations and laws, with respect to accident prevention, should be followed accordingly.
Contact your local Occupational Health and Safety Organization for information pertaining to the rules and regulatory requirements.

2 Warranty Conditions

Machines
WECO guarantees the replacement of faulty parts or material of unsatisfactory workmanship, as long as the damage was not caused by incorrect operation or handling of the device or failure to follow manual specifications. Incurred costs of inspecting returned products or parts, which, in spite of having undergone a thorough examination, still show no signs of defect or fault, shall be charged to the customer in addition to shipping and handling fees.

The customer is not entitled to other claims concerning damage of product, especially in the case of the cancellation of a contract, contractual or non-contractual claims for damage. See below for warranty period.

Production or workmanship faults or damage, that upon inspection cannot be determined or are not visible, will NOT be considered our responsibility. In the case of repairs or inspections being made by an unauthorized person or should the utilization of components, replacement parts or tools (i.e. Diamond plates) not issued by WECO, the warranty will be considered null and void.

In no way is WECO responsible for damage or loss caused by the application WECO machines or devices, tools, and/or its software.

Service performed within the warranty period does NOT extend or lengthen the warranty duration.

WECO extends the guarantee of 12 months for its device beginning at the time of delivery, provided that the machine is used in accordance with the warranty specifications, which outlines an average operation period of 8 hours per day.

Power Supply
The operator is responsible for ensuring proper current supply that is in accordance with all local and federal regulations, and for providing a disturbance free power connection for the machine. For your personal protection, it is absolutely necessary that the device be hooked up to a current supply equipped with a circuit breaker.

Transportation damage
Damage incurred to the device during transportation is NOT covered by the WECO warranty.

Hence:

- Delivery is made at consignees own risk.
- Incurred damage must be reported immediately to the delivery or transportation company(i.e. UPS).
- The consignee must claim all damage from the carrier.

Goods and packing must be left in the state in which they were received until an authorized representative of the responsible carrier has examined the damaged shipment.

3 Description

3.1 General information

The main task of the trace II is to record the shape data of spectacle frames, lenses and patterns, and to transfer this data into memory.

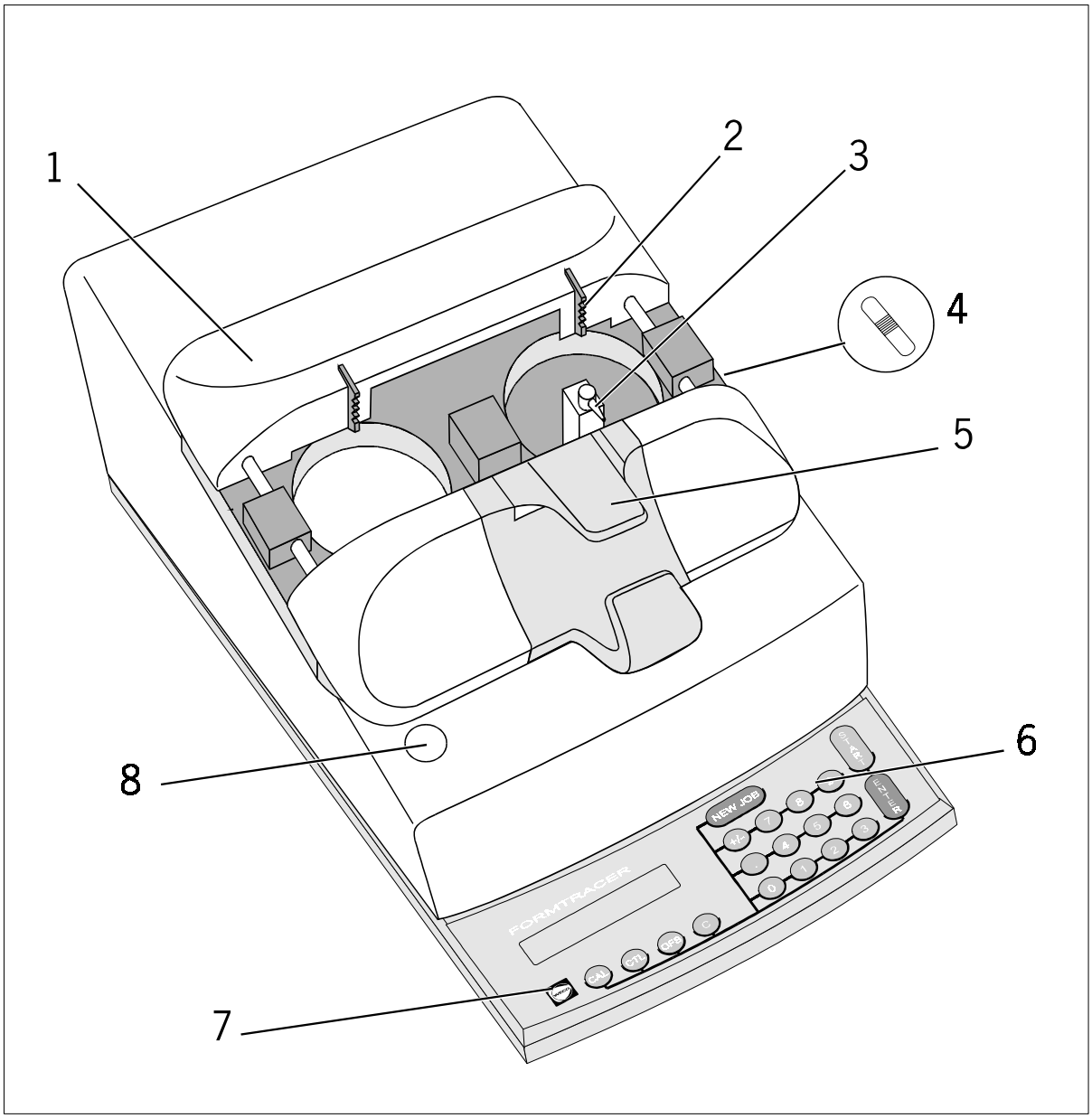
Three-dimensional digital frame measuring guarantees excellent lens fitting accuracy.

The integrated multitasking function allows simultaneous frame tracing and lens decentration and blocking within the system, while lenses can be finished on lens edgers.

The new parallel-driven clamping system allows simplified and precise clamping and restricts bending of thin frames to a minimum. Thanks to the motor-driven table action, both frame sides are traced automatically.

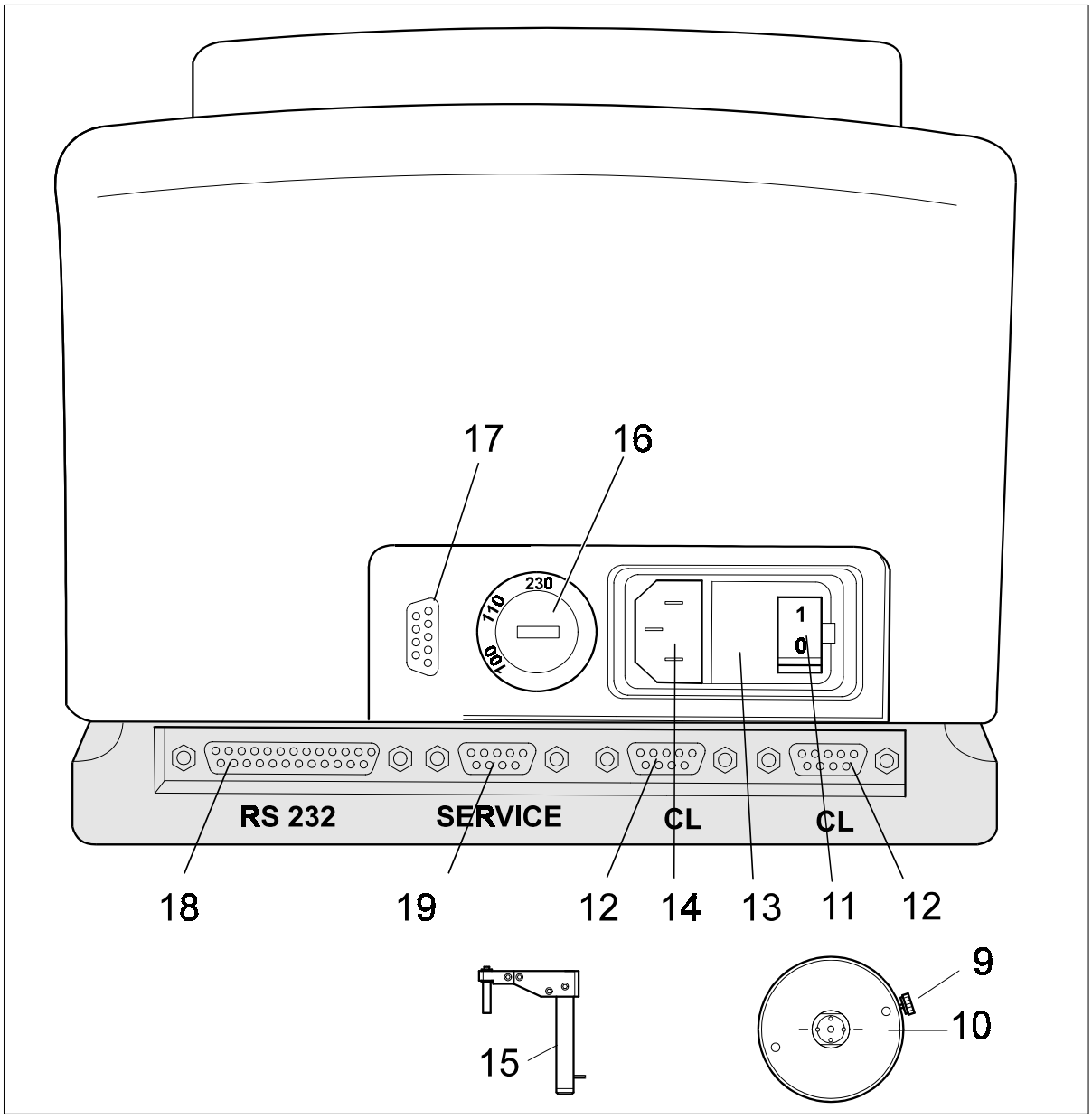
The distance between lenses is measured precisely by dual eye tracing. However, it can also be measured and entered manually.

3.2 Overview



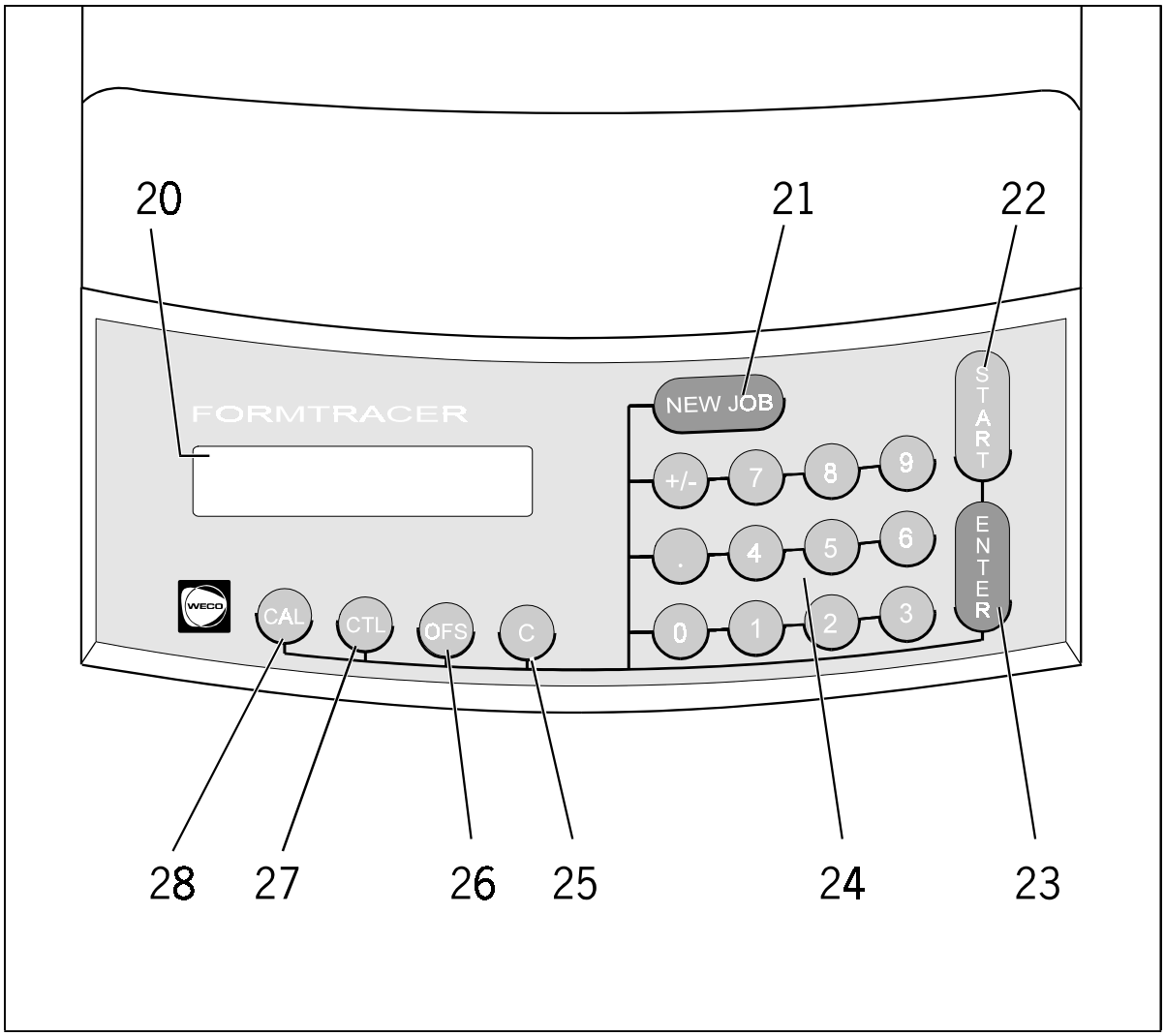
1 - Frame clamping table
2 - Frame retainer
3 - Tracer stylus
4 - not used
5 - Clamping lever
6 - Operating panel
7 - RESET key
8 - not used

3.3 Rear view



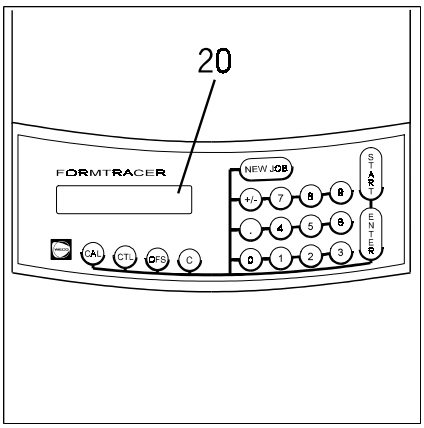
9 - Lens and pattern adapter adjusting screw
10 - Lens and pattern adapter
11 - Power switch
12 - "CL" data transmission ports
13 - Mains fuses
14 - Power cord socket
15 - Lens and pattern tracer
16 - Voltage selector switch
17 - Barcode scanner socket (optional)
18 - CL-RS232 data transmission port
19 - Diagnostics socket

3.4 Keypad



20 - LCD display
21 - "NEW JOB" key
22 - "START" key
23 - "ENTER" key
24 - Data entry keypad
25 - "CLEAR" key
26 - "OFFSET" key
27 - "CTL" key
28 - "CAL" key

3.5 LCD display



Display in German

NOTE

- To set additional languages, please ask your WECO service department.
- The information shown on the LCD display is dependent on the appliance's configuration. The examples given here correspond to the most common settings.

```
V 4.00
FORMTRACER 3D+
```

⇐ **After switching on the appliance**

The appliance designation and software version are displayed as soon as the appliance is switched on or the RESET key is pressed, prior to initialization.

```
#                CL   I
STARTBR.
```

⇐ **Standby**

Standby display (following initialization) for dual eye tracing.

Operating mode CL
Inside tracing I

```
#                RS   I
STARTBR.
```

Operating mode RS232
Inside tracing I

```
#      1         CL  I
STARTB.          d  0.3
```

⇐ **Offset**

Offset of 0.3 mm in relation to the diameter with "OFS" key.

```
#000009      CL    I
TRACE R
```

⇐ **When tracing**

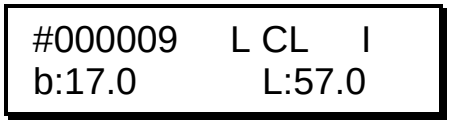
Display during dual eye tracing, right-hand side.

```
#000009      CL    I
TRACE L
```

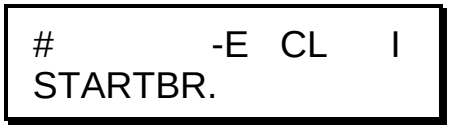
⇐ Display during dual eye tracing, left-hand side.

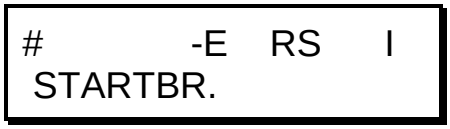
⇐ **After dual eye tracing**

Display after dual eye tracing; values for right-hand side.



⇐ On pressing the " . " (decimal point) key; values for left-hand side.



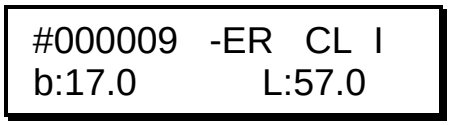


⇐ **Standby**

Standby display (following initialization) for single eye tracing.

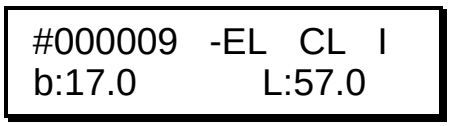
Single eye -E
Operating mode CL
Inside tracing I

Single eye -E
Operating mode RS232
Inside tracing I

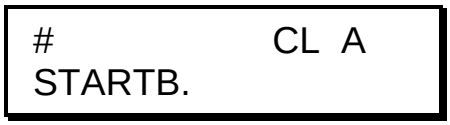


⇐ **After single eye tracing**

Display after single eye tracing on right.



⇐ Display after single eye tracing on left.



⇐ **Lens and pattern tracing**

Outside tracing A

⇐ **Self-calibration**

Display during self-calibration.

⇐ **Centring ON / OFF**

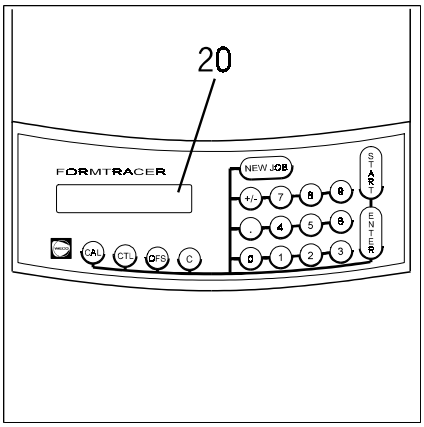
Display automatic centring ON.

⇐ Display automatic centring OFF.

(Switch modes with "CTL" and "OFS")

CAUTION !

- Deactivate the automatic centring only in exceptional cases.
  Your lenses could be centred incorrectly.
- Please refer to the chapter "Exceptional cases".



Display in English

NOTE

- To set additional languages, please ask your WECO service department.
- The information shown on the LCD display is dependent on the appliance's configuration. The examples given here correspond to the most common settings.

```
V 4.00
FORMTRACER 3D+
```

⇐ **After switching on the appliance**

The appliance designation and software version are displayed as soon as the appliance is switched on or the RESET key is pressed, prior to initialization.

```
#                CL  F
READY
```

⇐ **Standby**

Standby display (following initialization) for dual eye tracing.

Operating mode CL
Inside tracing F

```
#                RS  F
READY
```

Operating mode RS232
Inside tracing F

```
#          1     CL  F
READY          d  0.3
```

⇐ **Offset**

Offset of 0.3 mm in relation to the diameter with "OFS" key.

```
#000009          CL F
TRACE R
```

⇐ **When tracing**

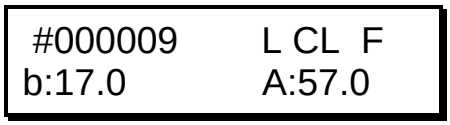
Display during dual eye tracing, right-hand side.

```
#000009          CL F
TRACE L
```

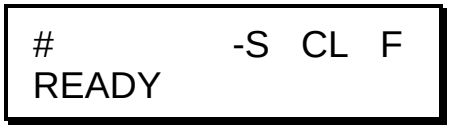
⇐ Display during dual eye tracing, left-hand side.

⇐ **After dual eye tracing**

Display after dual eye tracing; values for right-hand side.



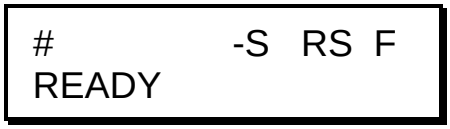
⇐ On pressing the " . " (decimal point) key; values for left-hand side.



⇐ **Standby**

Standby display (following initialization) for single eye tracing.

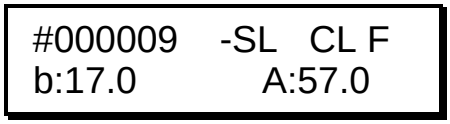
Single eye -S
Operating mode CL
Inside tracing F



Single eye -E
Operating mode RS232
Inside tracing F

⇐ **After single eye tracing**

Display after single eye tracing on right.



⇐ Display after single eye tracing on left.

⇐ **Lens and pattern tracing**

Outside tracing P

⇐ **Self-calibration**

Display during self-calibration.

⇐ **Centring ON / OFF**

Display automatic centring ON, "C" does not appear.

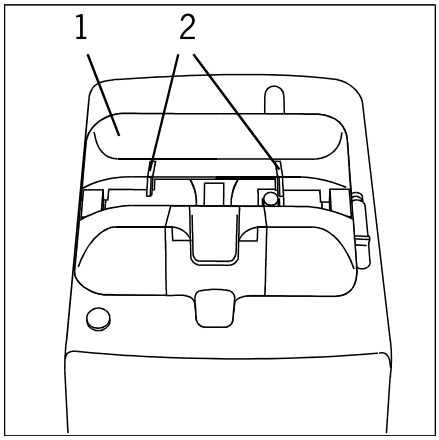
⇐ Display automatic centring OFF, "C" appears.

(Switch modes with "CTL" and "OFS")

CAUTION !

- Deactivate the automatic centring only in exceptional cases. Your lenses could be centred incorrectly.
- Please refer to the chapter "Exceptional cases".

3.6 Operating parts

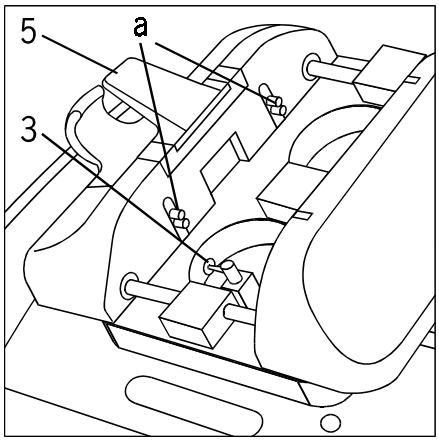


⇐ **Clamping table (1)**

For clamping spectacle frames in position for inside tracing.

⇐ **Retainers (2)**

For securing frames.



⇐ Inside tracer stylus (3)

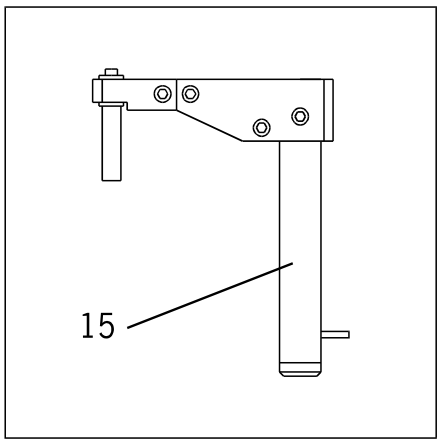
For tracing the shape of the groove in spectacle frames.

⇐ Clamping elements (a)

For clamping the lower eyeglass rims.

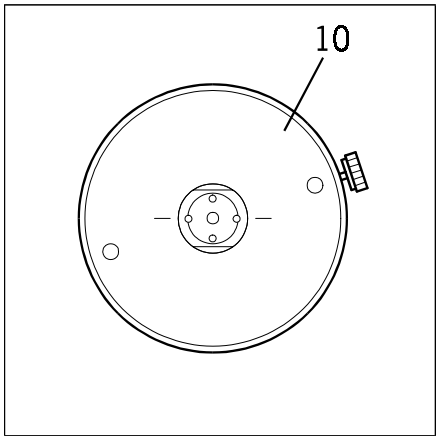
⇐ Clamping lever (5)

For opening the clamping elements and releasing the clamping table locking fixture.



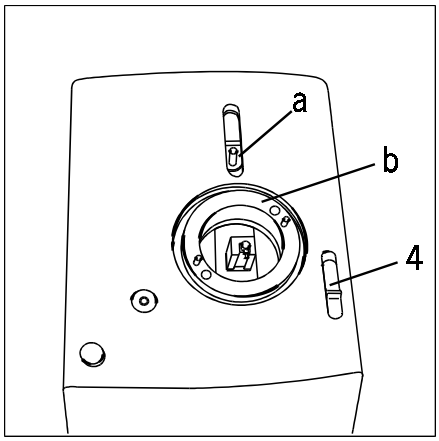
⇐ Outside tracer (15)

For tracing the shape of patterns, lenses and demo lenses.



⇐ Lens and pattern adapter (10)

Device for holding edged lenses, demo lenses and patterns that is placed on the centring ring.



⇐ Adapter for outside tracer (a)

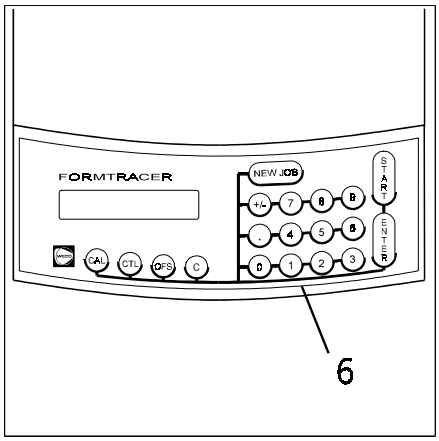
The tracer is pushed into the adapter on the carriage.
When the tracer is in the correct position, an "A" must appear on the LCD display.

⇐ Centring ring (b)

The lens or pattern adapter is placed on this centring ring and held in position by means of magnets.

⇐ Slide (4)

The slide (4) is not used and has no function.

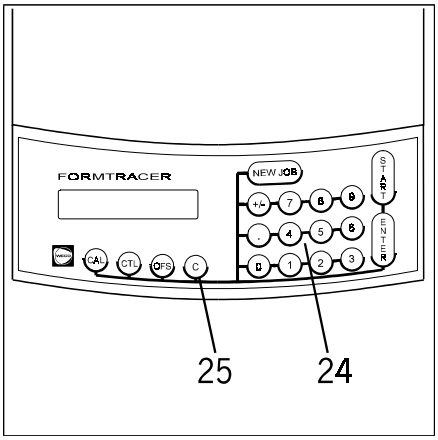


⇐ Operating panel (6)

The operating panel makes for simplified use of the programs.

Error messages help the user to analyse the problem in the event of malfunctions or incorrect use.

3.7 Control elements

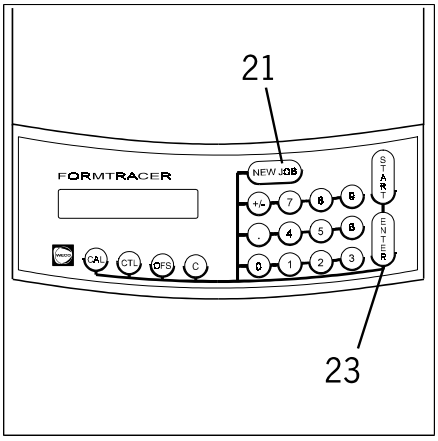


⇐ Data entry keypad (24)

For entry of numerical data.

⇐ “CLEAR” key (25)

Delete key for clearing a value that has been entered and for deleting error messages.

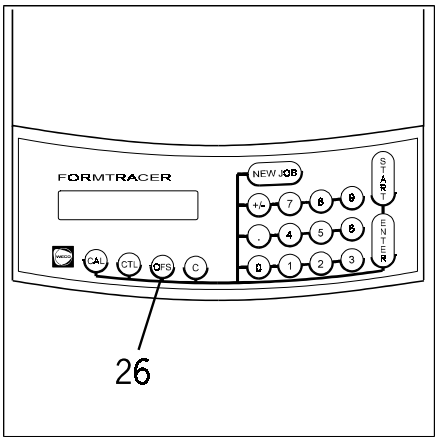


⇐ “NEW JOB” key (21)

For entering a new job number.

⇐ “ENTER” key (23)

Press this key to commit the numbers entered to the control.

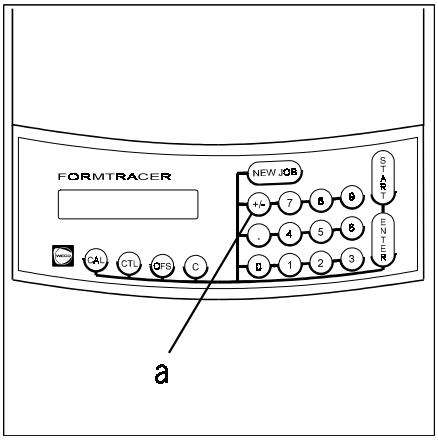


⇐ “OFFSET” key (26)

Press this key to enter an offset of 0.3 mm in relation to the diameter. Press it again to deactivate the offset. The value appears on the LCD display.

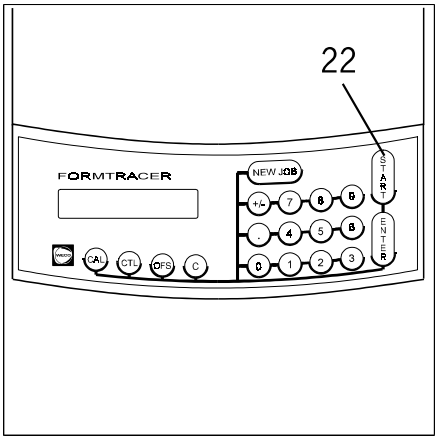
NOTE

- We can make it possible for you to enter any given offset.
  Please ask your WECO service department.



⇐ “+/-” key (a)

To enter negative decentration values during shape decentration using the FormTracer (optional).



⇐ “START” key (22)

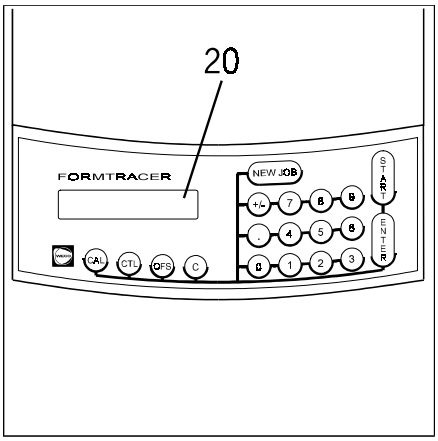
After entering data press this key to start tracing.

Pressing this key again during tracing deactivates the emergency stop function (see error messages, E 49).

If the key is pressed for a third time during tracing, the emergency stop function is reactivated.

NOTE

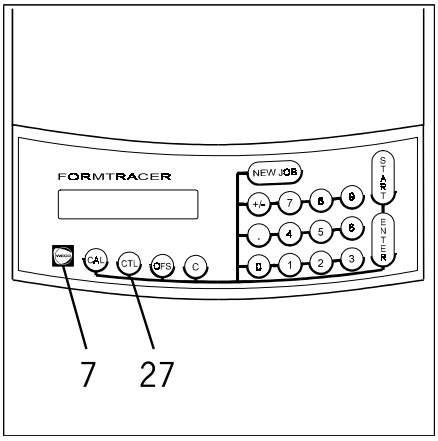
- Deactivate the emergency stop function only if this is absolutely necessary in order to trace exotic frame shapes following an E 49 error message. See also chapter, "Exceptional cases".



⇐ LCD display (20)

Various items of information are shown on the display:

- Offset ON / OFF
- Status display (e.g. ready to trace, calibrate etc.)
- Dual eye tracing with DBL measurement.
- The job number entered.
- "A" and "B" measurements after tracing.
- DBL and "A" measurement after tracing.
- Software version after the power is switched on.
- Error messages.
- Service functions.



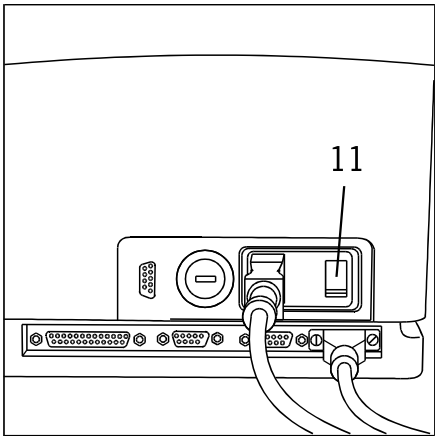
⇐ “RESET” key (7)

When this key is pressed the appliance returns to the position it was in when it was switched on. The tracer stylus is moved forward as far as the drilled hole in the clamping table and then back to its normal position. The clamping table rotates through 360°, the program returns to the beginning and the program version appears on the display. The display indicates that the appliance is ready.

⇐ “CTL” key (27)

Double assignment key. Hold down and simultaneously press the second key. Currently available double assignments:

CTL and C	Switching between single eye/dual eye tracing
CTL and "."	Move stylus forward for manual insertion
CTL and START	Start tracing on left
CTL and ENTER	Move only tracing table to the right
CTL and OFS	Switch automatic centring on/off
CTL and +/-	Switch operating modes (CL or RS232 operation)
CTL and CAL	Initiate calibration function



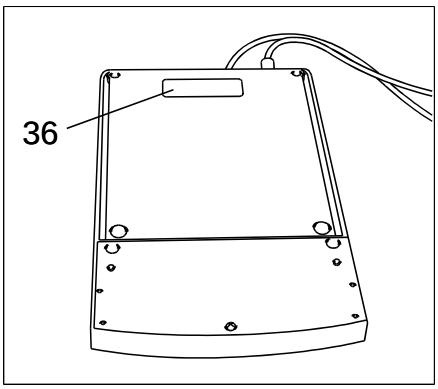
⇐ Power switch (11)

To switch the appliance on or off.

3.8 Specification

Validity

These operating instructions apply to a WECO FormTracer with the order number, 1114-0211-30 (Europe), for the CL and RS232 operating modes.



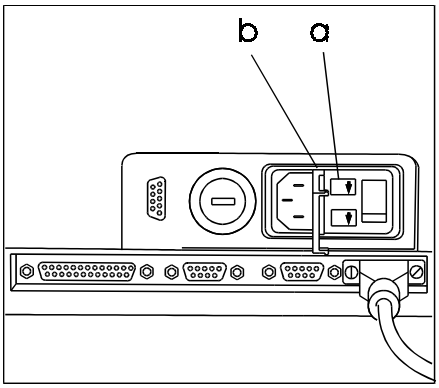
⇐ Mains voltage

See rating plate (36) for the information required.

CAUTION !

- The appliance must be earthed in all cases.

Power consumption: 40 VA



⇐ Mains fuses (36, overview)

230 V/ 50 Hz:	0.315 A (mT)
110 V/ 50/ 60 Hz:	0.63 A (mT)
100 V/ 50/ 60 Hz:	0.63 A (mT)

NOTE

- We recommend a separate power circuit for the appliance.
- mT = medium time-lag fuse.

Weight and dimensions

Width:	approx. 20 cm
Depth:	approx. 34 cm
Height:	approx. 20 cm
Weight:	approx. 6 kg

EU declaration of conformity

In accordance with the EU Machinery Directive 89/392/EEC, Appendix II A, last amended by RL 93/68/EEC

Name of manufacturer:	**Wernicke & Co. GmbH**
Address of manufacturer:	Jägerstr. 58 - D-40231 Düsseldorf, Germany

We hereby declare that the product

Product designation:	**Tracing device (FormTracer)**
Type:	**trace II**
Product identification:	**1114**

conforms with the relevant provisions of the following Directives:

EU Machinery Directive 89/392/EEC - Appendix 1, last amended by RL 93/68/EEC

Testing agency:

TÜV - Rheinland	S-Team Elektronik GmbH
Sicherheits and Umweltschutz GmbH	Untereisesheim
Certificate No.: 941100501	Certificate No. 141.0797

EU Low Voltage Directive 73/23/EEC
EU Directive, Electromagnetic Compatibility 89/336/EEC

Applied harmonized standards and national technical specifications in particular

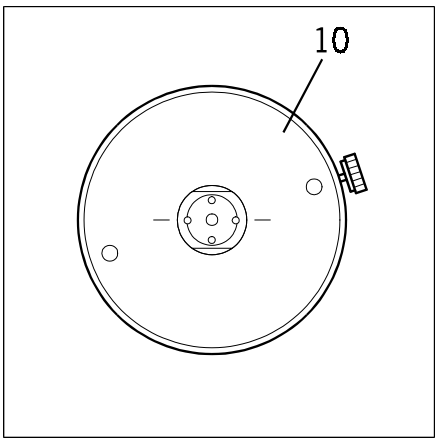
DIN VDE 0160/05.88
DIN EN 292 Part 1/11.91
EN 55011/1991
EN 550082-2
* EN 550081 Part 1 (VDE 0839 Part 81-1)
* EN 550082 Part 1 (VDE 0839 Part 82-1)

Always read the information on how to use the machine properly in accordance with the operating instructions.
This declaration becomes invalid if the machine is modified without our knowledge.

Düsseldorf, 18.07.1997

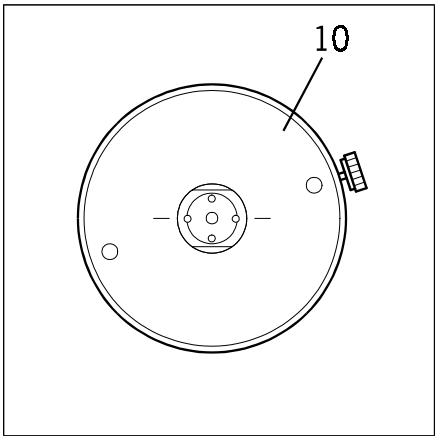
.....
Quality department

3.9 Equipment and accessories



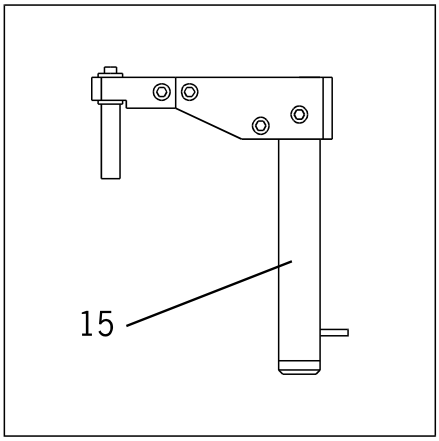
⇐ Lens and pattern adapter (10) Europe

Order No.: 1114-1084-00



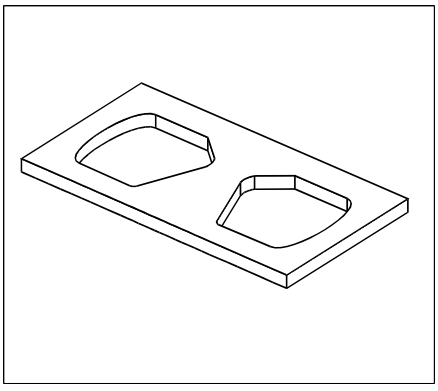
⇐ Lens and pattern adapter (10) USA

Order No.: 1114-1085-00



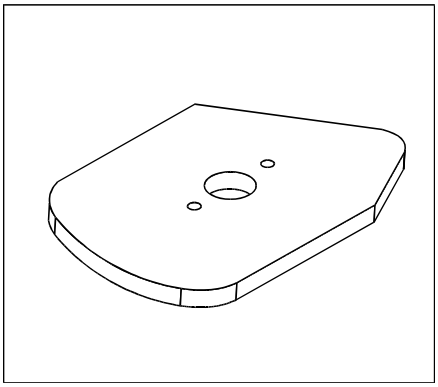
⇐ Outside tracer stylus (15)

Order No.: 1114-1025-00



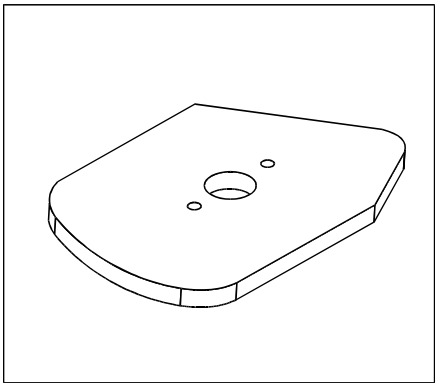
⇐ Frame template for inside tracing

Order No.: 2005-3058



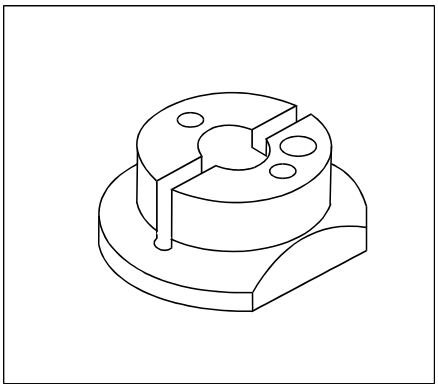
⇐ Axis and size template for outside tracing (Europe)

Order No.: 2005-3041



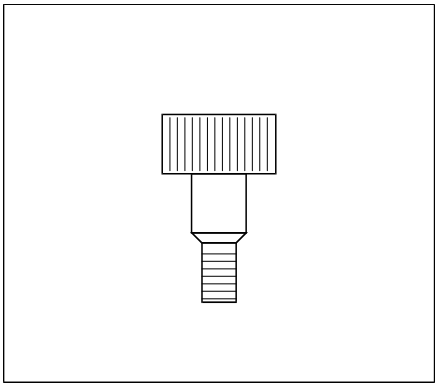
⇐ Axis and size template for outside tracing (USA)

Order No.: 2005-3042



⇐ Adhesive block, white

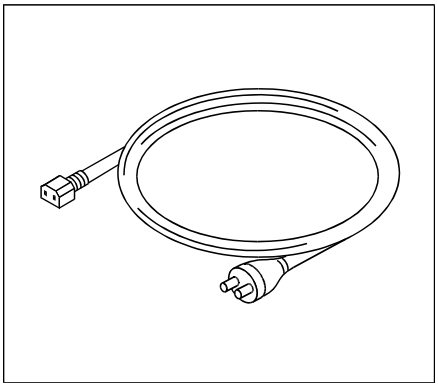
Order No.: 2001-3088-00



Screw

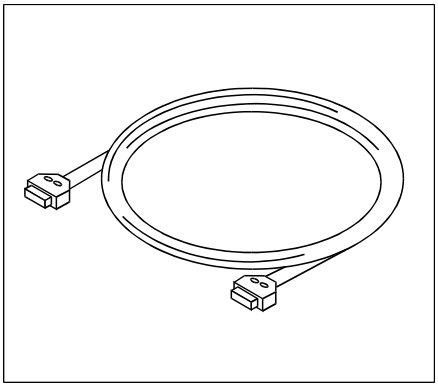
⇐ Screw:

Order No.: 1114-3236-00



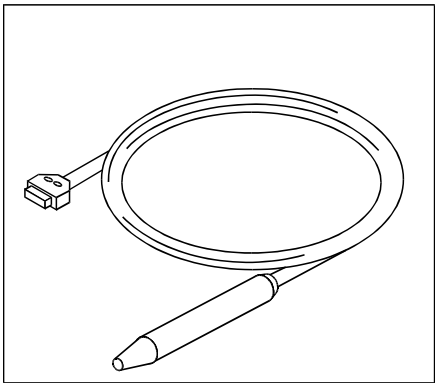
⇐ Power cord

Order No.: 3571-0123 (EU)



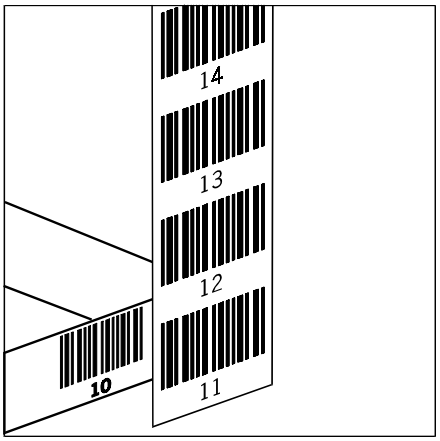
⇐ CL cable (optional)

Order No.: 3652-2501



⇐ Barcode scanner (optional)

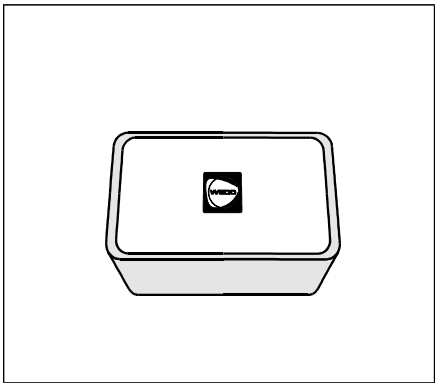
Order No.: 5009-0024-00



⇐ Barcode labels (optional)

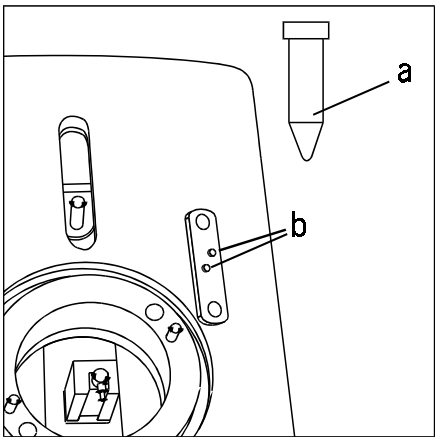
Numbers from 1 - 250

Order No.: 2012-3001-00



⇐ **Container for accessories** (not including accessories)

Order No.: 1114-1100-00



⇐ **Contact grease (a)**

For greasing the electrical contacts (b) on the tracing table.

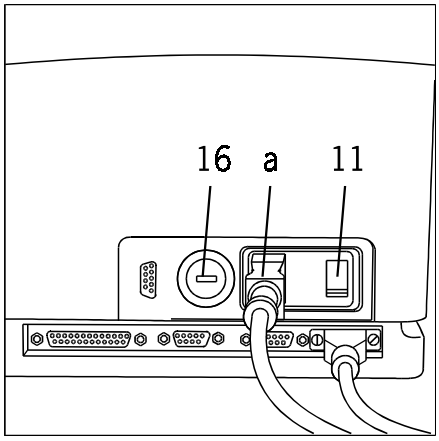
Order No.: 1114-1101-00

4 Startup

4.1 Connecting to the mains power supply and CMS units

NOTE

- The FormTracer is a precise measuring tool and has priority when connected to other WECO CMS appliances.
- As a part of startup we recommend that you perform a full FormTracer self-calibration.
- All other appliances, especially lens edgers, must be adjusted to match the FormTracer in the event of deviations.

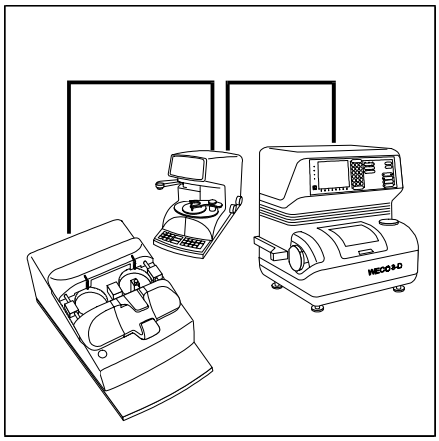


⇐ **Mains connection**

⇐ Ensure that the power switch (11) is in the off position.

⇐ Check that the voltage selector switch (16) is set to the voltage indicated on the rating plate (bottom of appliance), adjust if necessary.

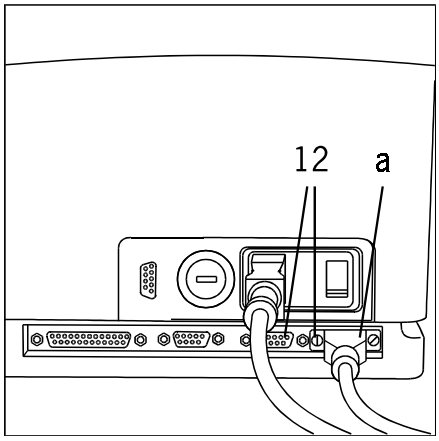
⇐ Connect the power cord (a) at the back of the FormTracer.



⇐ **Connection schematic for CL cable (b) in conjunction with CMS appliances (example)**

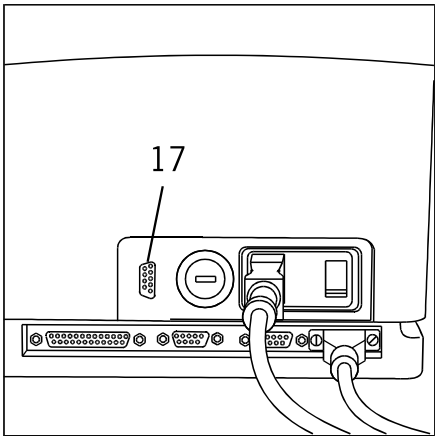
NOTE

- The appliance containing the memory unit (e.g. SM200 memory in the ZET-90 machine) must be switched on to enable the FormTracer to operate.
- The CMS system components can be connected to each other in any given order.
- Example: connect FormTracer to CAD2000, connect CAD2000 to WECO 3-D machine.



⇐ Plug the FormTracer's CL cable (b) into one of the CL ports (12) and connect to a CL port of a different CMS appliance.

Tighten the connectors on the ports.



Socket for barcode scanner (optional)

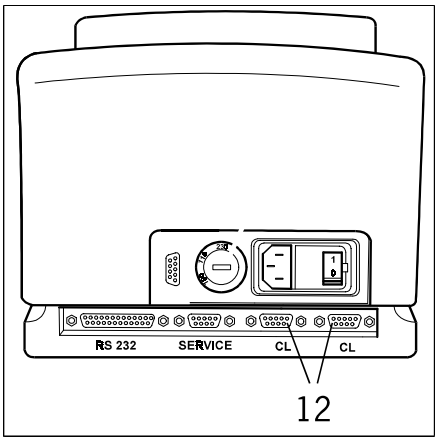
⇐ Insert the barcode scanner cable in the socket (17) and engage.

4.2 Setting the operating mode

CL (current Loop) operating mode

Mode for operation with memory card (in machine) or polling card (in computer) when connected to other WECO CMS appliances.

Display indicates: CL



⇐ Ports for CL operating mode

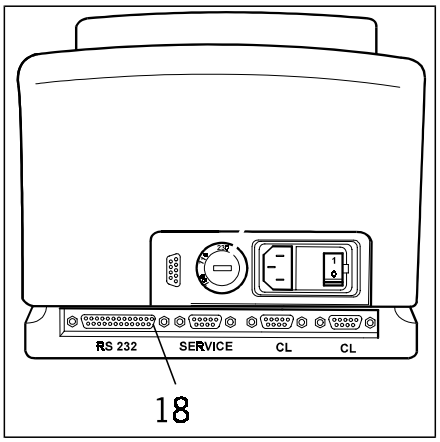
RS 232 operating mode (optional)

Mode for operation at the serial interface of a computer.
Used for: electronic data interchange (EDI)

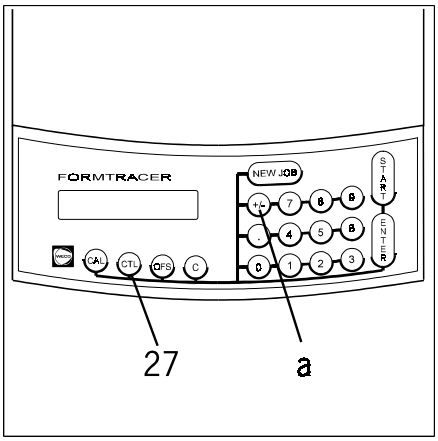
Display indicates: RS

NOTE

- Please consult your WECO service department with regard to transmission protocol settings and transmission parameters.



⇐ Port for RS232 operating mode



Changing the operating mode

⇐ To change the operating mode press the "CTL" (27) and "+/-" (a) keys simultaneously.

Pressing these keys automatically restarts the appliance (reset).

Display for the CL operating mode: CL

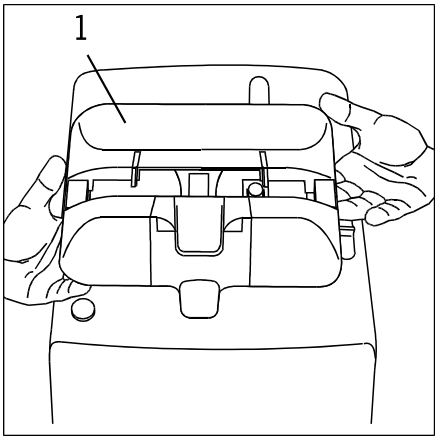
Display for the RS232 operating mode: RS

5 Operation

5.1 Before switching on the power

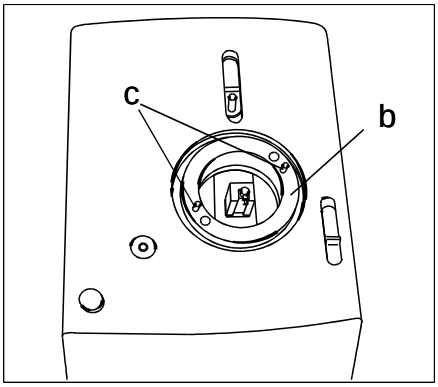
NOTE

- Always ensure that the inside tracing clamping table is in place (1, overview) before switching on the FormTracer.

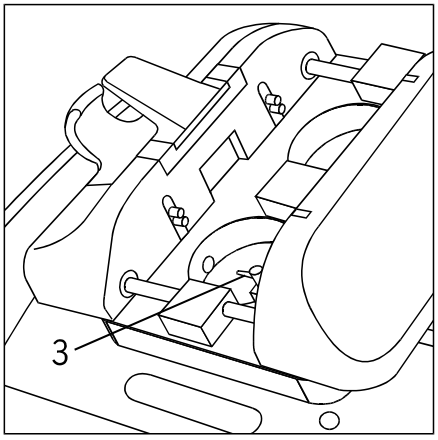


Loading the clamping table

⇐ Take hold of the clamping table (1) with both hands.



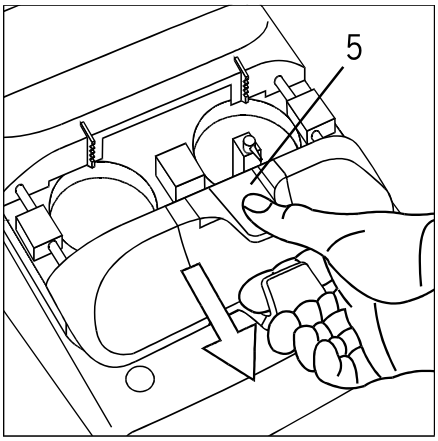
⇐ Place the clamping table on the centring ring (b).
Push the guide holes over the cylindrical pins (c). The table is held in position by means of magnets.



Tracer stylus for spectacle frames

⇐ Ensure that the stylus (3) is in the normal position.

5.2 Preparing to trace spectacle frames

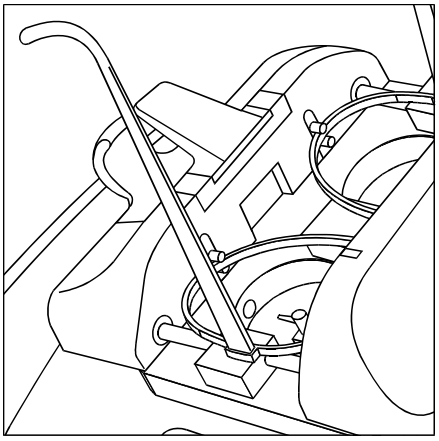


⇐ Opening the clamping elements

Open the clamping elements by pressing the clamping lever (5). This releases the locking fixture on the clamping table.

⇐ Opening the clamping table

Pull the clamping table (1, overview) downwards and then open.



Inserting the spectacle frame

⇐ Insert the frame as illustrated. The bottom frame edges are gripped by the clamping elements.

⇐ Push the clamping table (1, overview) together.

⇐ Let go of the clamping lever (5, overview).

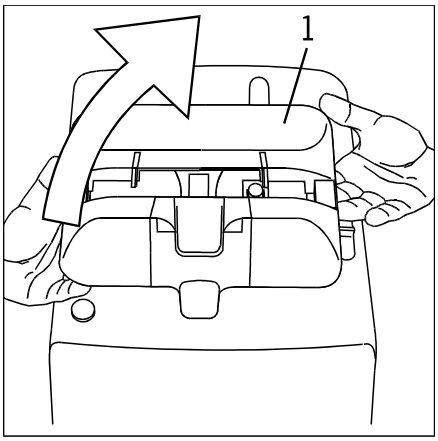
NOTE

- The frame should not move on the clamping table during tracing. Check that the frame is firmly seated.
- The appliance checks electronically that the frame is firmly seated. If the frame moves during tracing, the error message E 06 is output.

5.3 Preparing to trace lenses, demo lenses and patterns

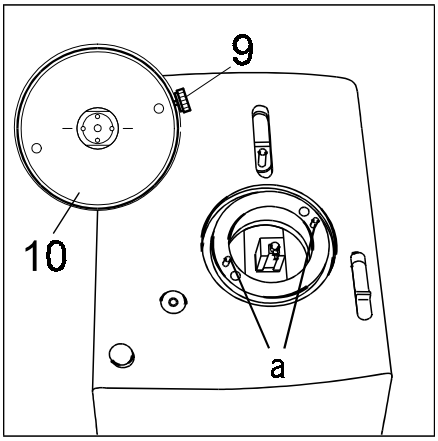
NOTE

- When the appliance is switched on, always check the display to make sure that the FormTracer is ready before removing the clamping table.



⇐ Removing the clamping table

Using both hands tilt the clamping table (1) and take it off the centring ring.



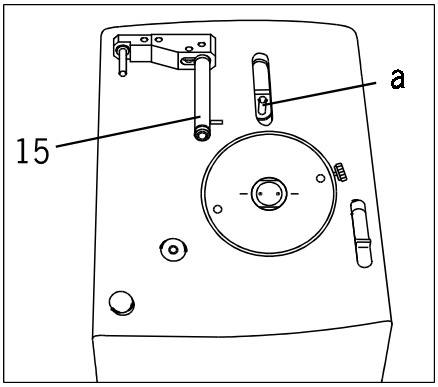
⇐ Loading the lens and pattern adapter

Load the lens and pattern adapter (10).

Place the lens and pattern adapter (10) on the centring ring.

Push the guide holes over the cylindrical pins (a).

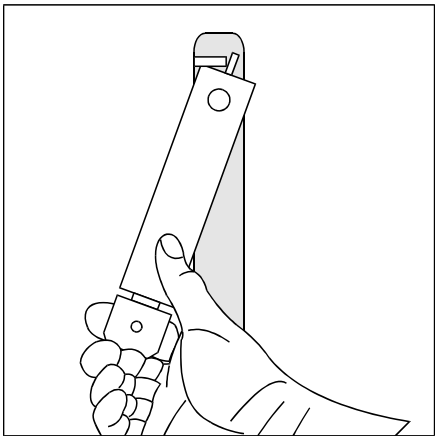
Tighten the lens and pattern adapter (10) with the adjusting screw (9).



⇐ Inserting the tracer

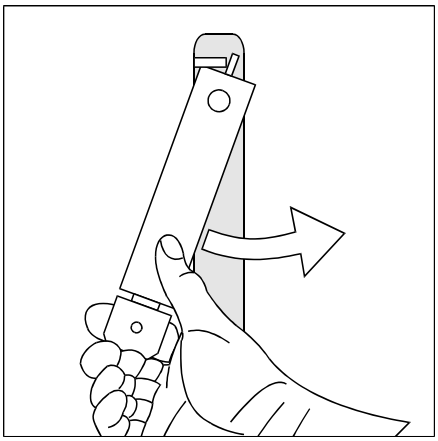
Insert the lens and pattern tracer (15).

Push the lens and pattern tracer (15) into the receiving fixture (a) on the carriage as far as it will go.

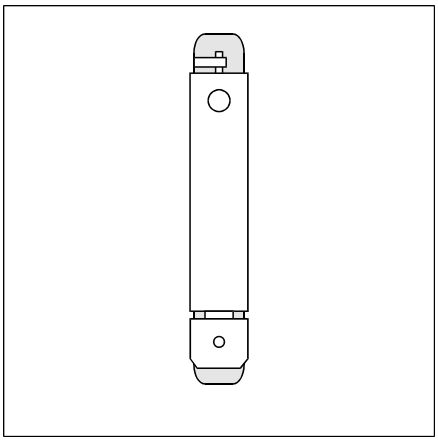


⇐ Insert the outside tracer as illustrated and push it down.

The stylus must go past the holder.

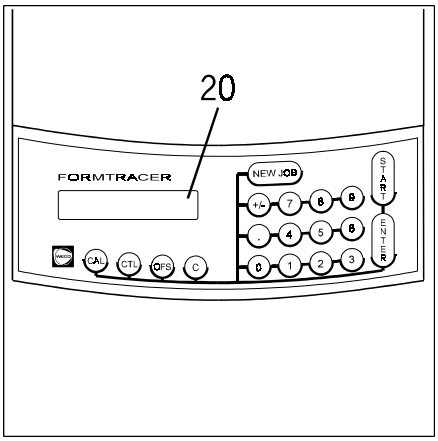


⇐ Turn the outside tracer in an anti-clockwise direction as far as it will go.



⇐ Release the outside tracer.

⇐ The outside tracer is pushed upwards by a spring and now rests in the guide.

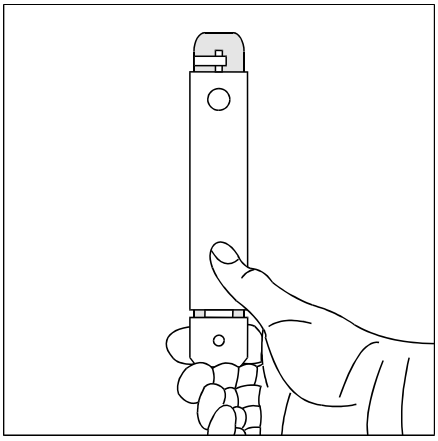


Display

⇐ The display (20) now reads "P" for outside tracing.

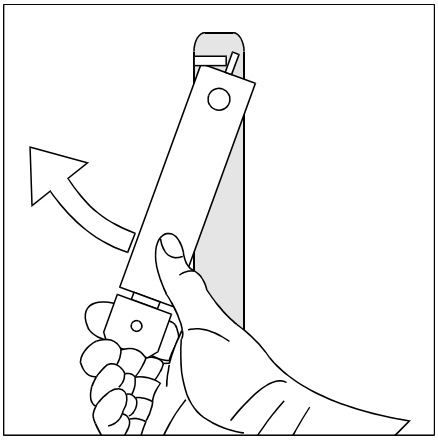
NOTE

- Ensure that the adapter does not contain a lens or a pattern before switching on the appliance for outside tracing. The tracer must contact the adapter. No self-adjustment takes place in outside tracing.
- During tracing of patterns and demo lenses, the DBL is not measured. This must be entered manually when centring.



Removing the outside tracer (15)

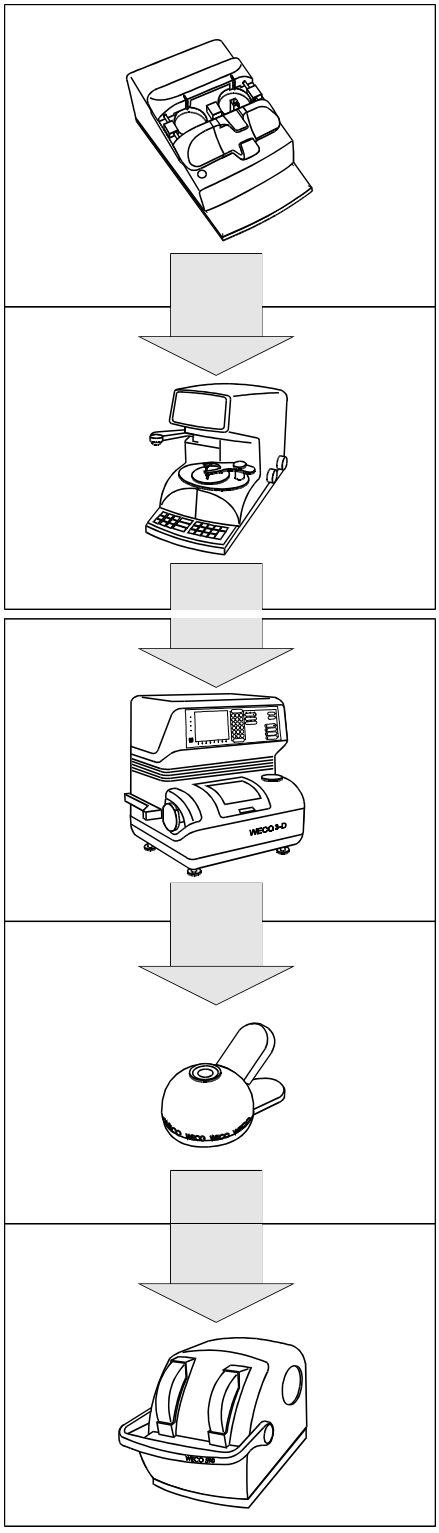
⇐ Push the outside tracer (15) downwards.



⇐ Turn the outside tracer (15) in a clockwise direction and pull it up and out.

6 Operating procedures

6.1 Overview of CMS operating procedure



⇐ Enter job number in FormTracer.

⇐ Clamp spectacle frame in position.

⇐ Press the "Start" key.

⇐ Enter job number in CAD 2000 centring device.
⇐ Enter centring data and insert lens.
⇐ Press the "Block" key and centre the lens.
⇐ Rotate the swivel blocking arm into position and block the lens with WECO block pads.

NOTE

- WECO block pads guarantee you full performance for all individual system components and the WECO block-up system.

⇐ Enter job number in the W 3-D.

⇐ Clamp the lens in position.

⇐ Press the "Start" key.

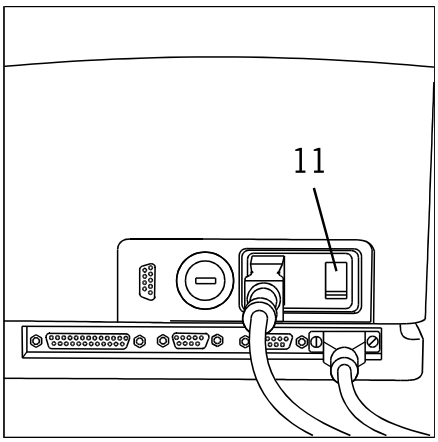
⇐ Carefully deblock the lenses using the WECO Block Paddy.

⇐ Bevel the lens edges using the WECO 590 manual edger.

NOTE

- Depending on the composition of the system components the operating procedure can vary.

6.2 Dual eye frame tracing



Prepare the FormTracer for tracing spectacle frames,
see "Preparing for tracing spectacle frames".

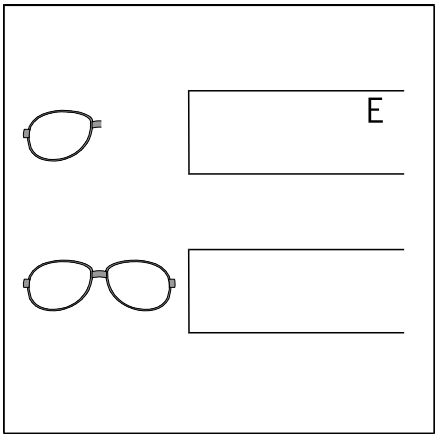
⇐ **Switch on appliance by the mains switch (11).**

The tracer stylus is moved forward to the inner drilled hole of the clamping table, and then back into the normal position.

The clamping table rotates though 360°.

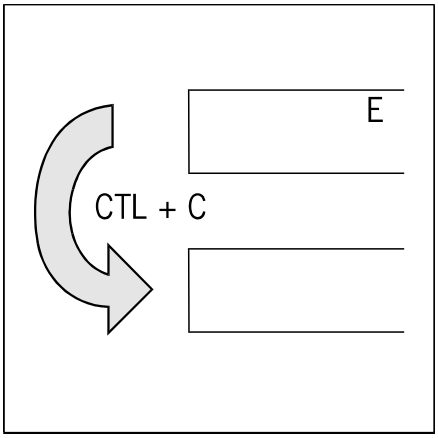
The software version appears on the display.

The display indicates that the appliance is ready.



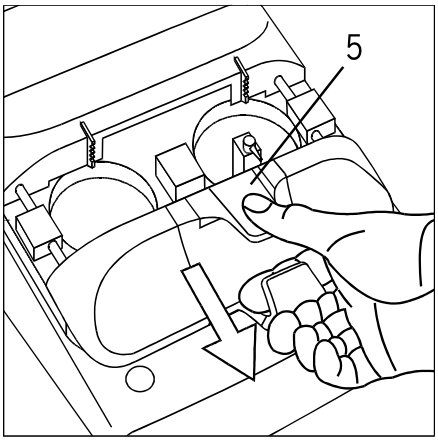
NOTE

- During dual eye tracing, the data for both sides are transferred and stored under one job number.
- During single eye tracing, an "S" appears on the display.
- By pressing "CTL" and "C" the user can switch from dual eye tracing to single eye tracing (see also "Single eye frame tracing").



Checking the display

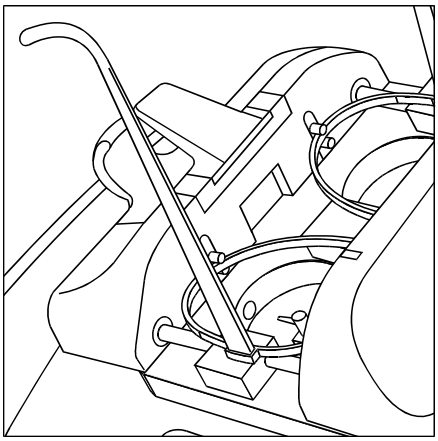
⇐ Now check the display and, if necessary, switch to the correct tracing mode.



Opening the clamping table

⇐ Open the clamping elements by pressing the clamping lever (5). This releases the locking fixture on the clamping table.

⇐ Pull the clamping table downwards and then open.



Inserting the spectacle frame

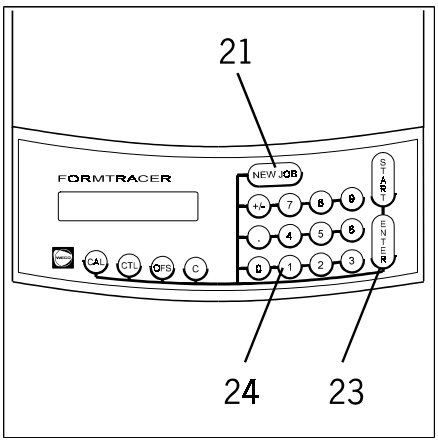
⇐ Insert the frame as illustrated. The bottom frame edges are gripped by the clamping elements.

⇐ Push the clamping table together.

⇐ Let go of the clamping lever.

NOTE

- The frame should not move on the clamping table during tracing. Check that the frame is firmly seated.
- The appliance checks electronically that the frame is firmly seated. If the frame moves during tracing, the error message E 06 is output.



Entering data

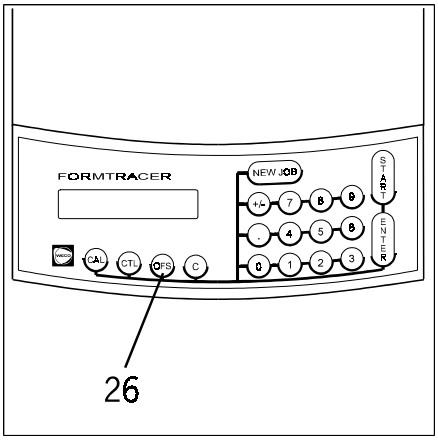
⇐ Press the "NEW JOB" key (21).

⇐ Type in the job number on the keypad (24).

⇐ Press "ENTER" (23) to enter the data.

Valid job number value ranges:

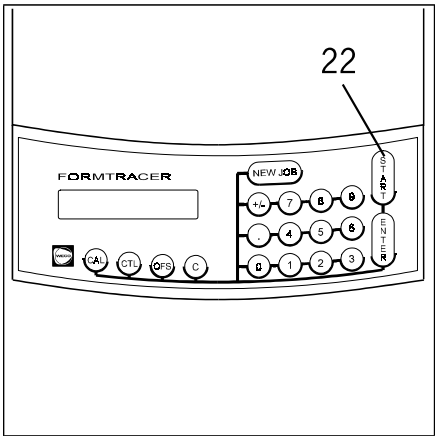
SM200 memory card:	1 - 100
OPTOLAB IV:	1 - 999.999



⇐ An offset of 0.3 mm for plastic frames can be entered by pressing the "OFFSET" key (26). The activated offset appears on the display.

NOTE

- We can make it possible for you to enter any given offset.
  Please ask your WECO service department.

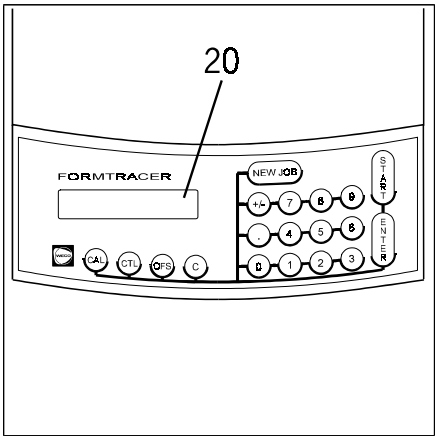


Starting the tracing operation

⇐ Press the "START" key (24).

The tracer stylus is inserted automatically and both sides are traced in sequence automatically.

⇐ The tracing operation is shown on the display.



Data output

Once both sides of the frame have been traced the stylus is moved into the down position automatically .

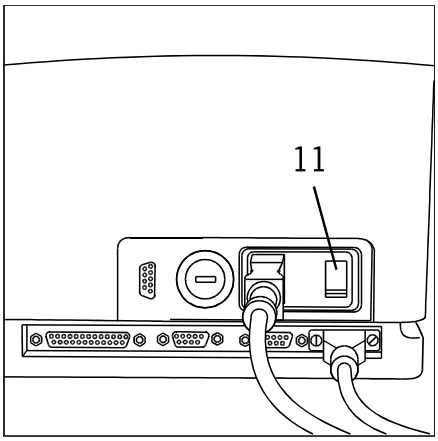
⇐ The a- box of the right-hand side of the frame and the DBL appear on the display (20).

The shape data of both frame sides and the DBL are transferred to memory automatically .

NOTE

- Press the " . " key to display the a- box of the left-hand side of the frame.
- Depending on the program settings, various value combinations can be output. Please ask your WECO service department.

6.3 Single eye frame tracing



Prepare the FormTracer for tracing spectacle frames,
see "Preparing for tracing spectacle frames".

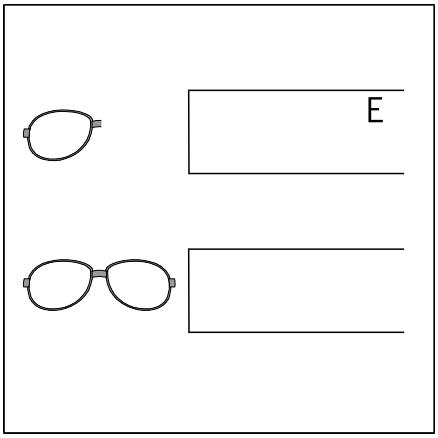
⇐ **Switch on appliance by the mains switch (11).**

The tracer stylus is moved forward to the inner drilled hole of the clamping table, and then back into the normal position.

The clamping table rotates though 360°.

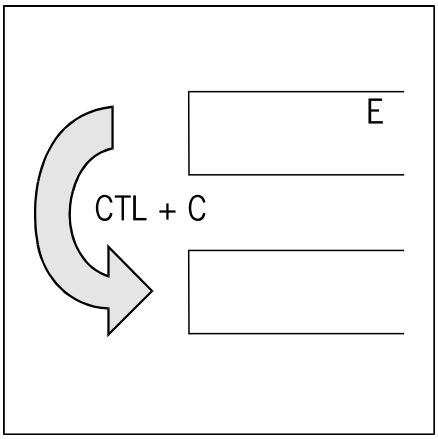
The software version appears on the display.

The display indicates that the appliance is ready.



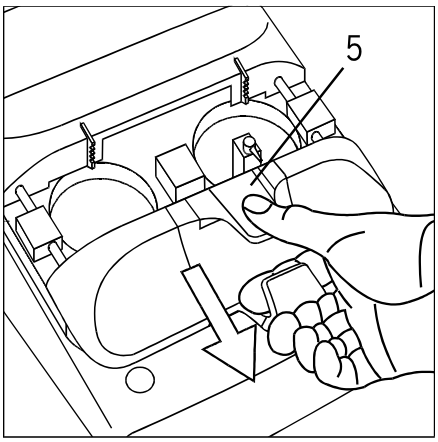
NOTE

- During dual eye frame tracing, the data for both sides is transferred and stored under one job number.
- During single eye tracing, an "S" appears on the display.
- By pressing "CTL" and "C" the user can switch from dual eye tracing to single eye tracing (see also "Dual eye frame tracing").



Checking the display

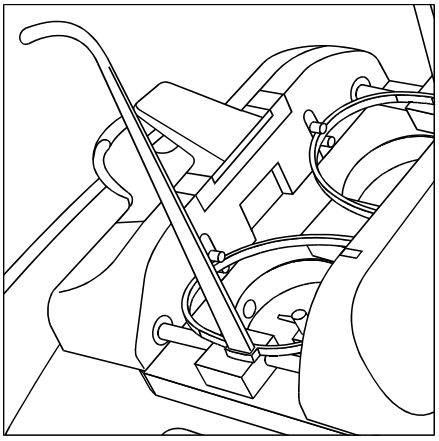
⇐ Now check the display and, if necessary, switch to the correct tracing mode.



Opening the clamping table

⇐ Open the clamping elements by pressing the clamping lever (5). This releases the locking fixture on the clamping table.

⇐ Pull the clamping table downwards and open.



Clamping the spectacle frame in position

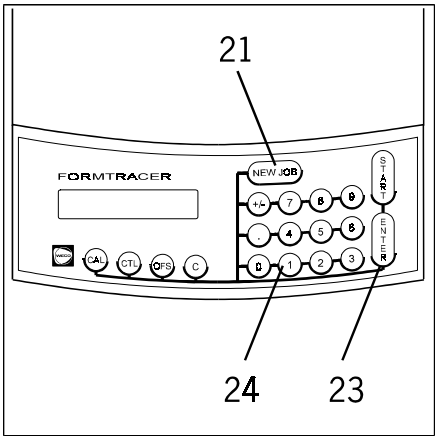
⇐ Insert the frame as illustrated. The bottom frame edges are gripped by the clamping elements.

⇐ Push the clamping table together.

⇐ Let go of the clamping lever.

NOTE

- The frame should not move on the clamping table during tracing. Check that the frame is firmly seated.



Entering data

⇐ Press the "NEW JOB" key (21).

⇐ Type in the job number on the keypad (24).

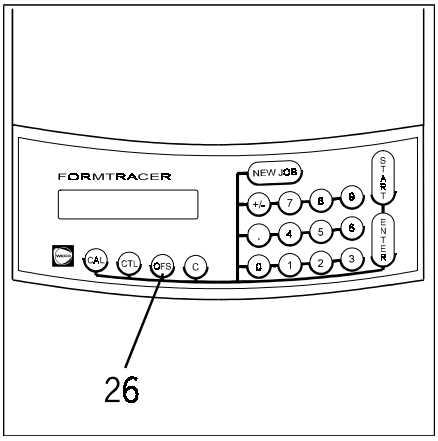
⇐ Press "ENTER" (23) to enter the data.

⇐ Type in the DBL on the keypad (24)

⇐ Press "ENTER" (23) to enter the data.

Valid job number value ranges:

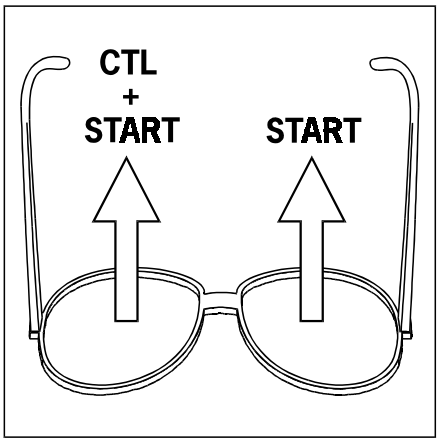
SM200 memory card:	1 - 100
OPTOLAB IV:	1 - 999.999



⇐ An offset of 0.3 mm for plastic frames can be entered by pressing the "OFFSET" key (26). The activated offset appears on the display.

NOTE

- We can make it possible for you to enter any given offset. Please ask your WECO service department.



Tracing the right-hand side

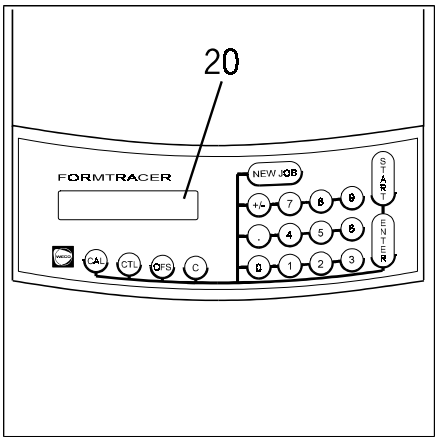
⇐ Press the "START" (22) key.

Tracing the left-hand side

⇐ Press "CTL" (27) and "START" (22) at the same time.

(Press the "CTL" key and hold it down and also press the "START" key.)

The clamping table moves to the right to trace the left-hand side of the frame.



Data output

Once both sides of the frame have been traced the stylus is moved into the down position automatically.

⇐ The a- box of the frame side traced and the DBL appear on the display (20).

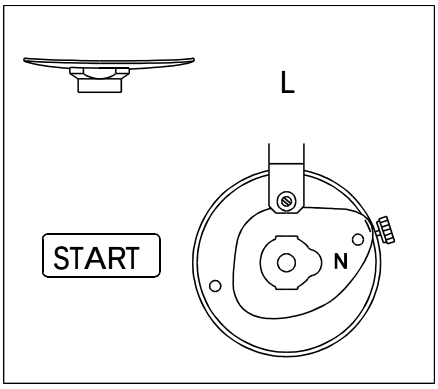
The shape data of the frame side traced and the DBL are transferred to memory automatically.

NOTE

- Depending on the program settings, various value combinations can be output. Please ask your WECO service department.

6.4 Tracing lenses, demo lenses and patterns

Prepare the FormTracer for outside tracing. See "Preparing for tracing of lenses, demo lenses and patterns".



Inserting the pattern, lens or demo lens.

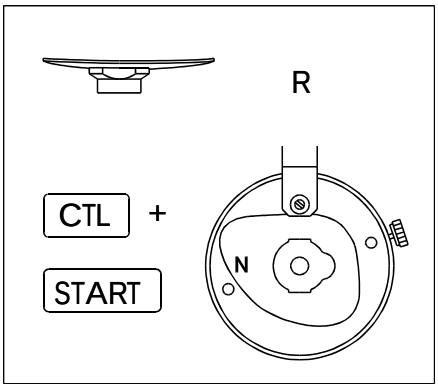
Lenses and demo lenses are centred automatically after tracing. However, they must be blocked 'on-axis' on the outside.

Left-hand lenses

⇐ Clamp left-hand lenses and demo lenses in position as illustrated.

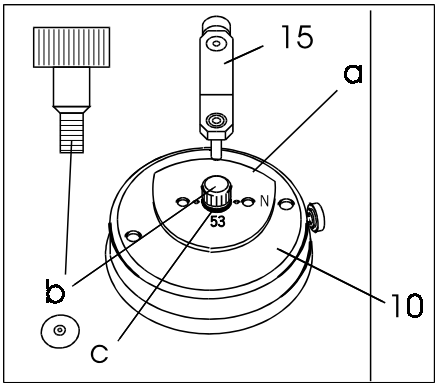
⇐ Patterns must be clamped in position as a left-hand lens.

The form is upright, the nose end faces the right.



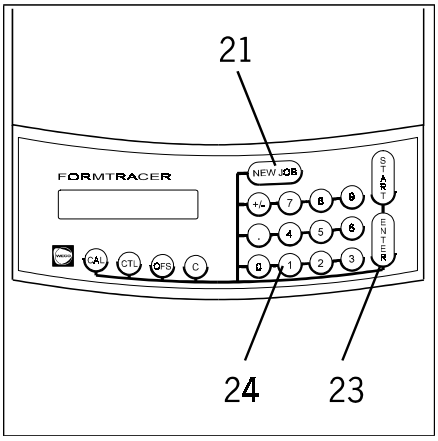
Right-hand lenses

⇐ Clamp right-hand lenses and demo lenses in position as illustrated.



⇐ Tighten pattern (a) with screw (b).

⇐ Move outside tracer (15) up to the pattern (a), lens or demo lens.



Entering data

⇐ Press the "NEW JOB" key (21).

⇐ Type in the job number on the keypad (24).

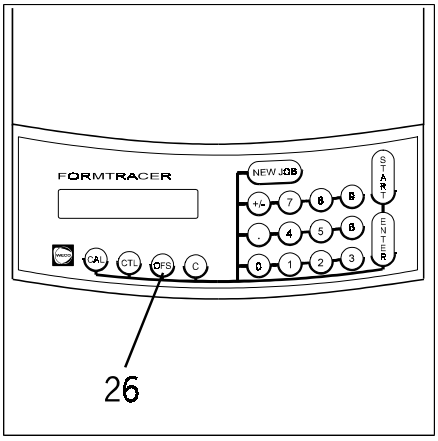
⇐ Press "ENTER" (23) to enter the data.

⇐ Type in the DBL on the keypad (24).

⇐ Press "ENTER" (23) to enter the data.

Valid job number value ranges:

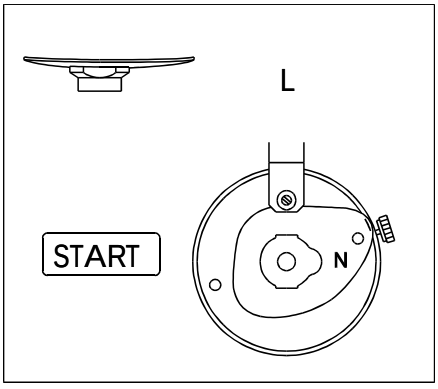
SM200 memory card:	1 - 100
OPTOLAB IV:	1 - 999.999



⇐ An offset of 0.3 mm for plastic frames can be entered by pressing the "OFFSET" key (26). The activated offset appears on the display.

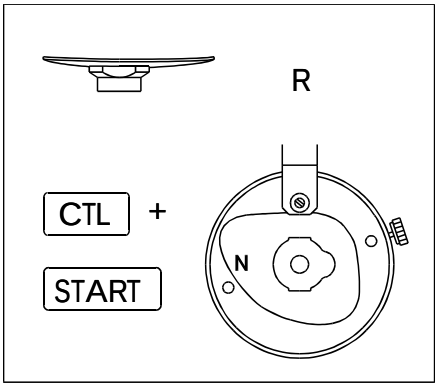
NOTE

- We can make it possible for you to enter any given offset.
  Please ask your WECO service department.



Tracing left-hand lenses

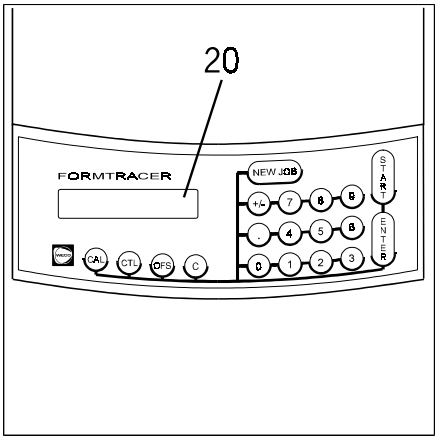
⇐ Press the "START" (22) key.



Tracing right-hand lenses

⇐ Press "CTL" (27) and "START" (22) at the same time.

(Press the "CTL" key and hold it down and also press the "START" key.)



Data output

Once both sides of the frame have been traced the stylus is moved into the down position automatically.

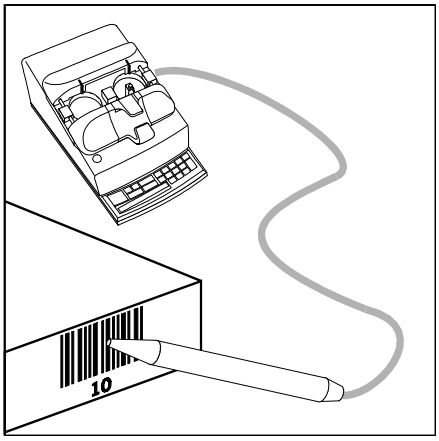
⇐ The a- box of the right-hand side of the frame and the DBL appear on the display (20).

The shape data of both frame sides and the DBL are transferred to memory automatically.

NOTE

- Depending on the program settings, various value combinations can be output. Please ask your WECO service department.

6.5 Barcode (optional)



Entering job numbers with a barcode scanner

⇐ Clamp the frame in position.

⇐ Move the barcode scanner quickly across the barcode label on the job tray.

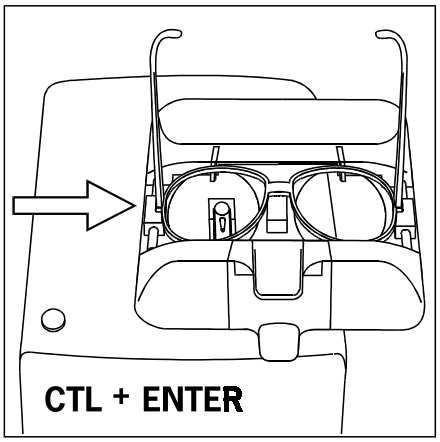
⇐ Press the "START" key (22, overview).

6.6 Inserting the tracer stylus manually

If the stylus cannot be inserted automatically for inside tracing, it can also be inserted by hand.

Entering a job number

Enter the job number as described in the chapter "Dual eye frame tracing".



Single eye tracing?

If only one frame rim is to be traced, switch off the dual eye tracing function by pressing "CTL" and "C".

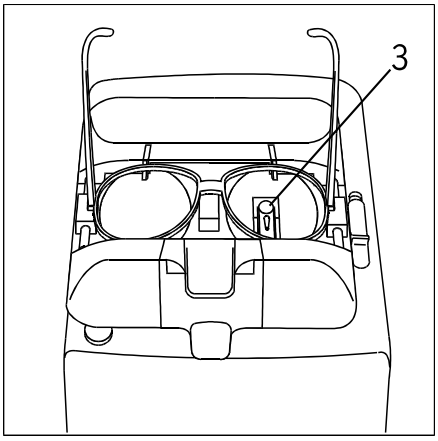
Moving the tracer stylus into the down position
Move the tracer stylus into the down position by pressing "CTL" and " . ".

Inserting in the left-hand rim of the spectacle frame

⇐ Move the clamping table by pressing "CTL" (31) and "ENTER" (26) at the same time.

Inserting in the right-hand rim of the spectacle frame

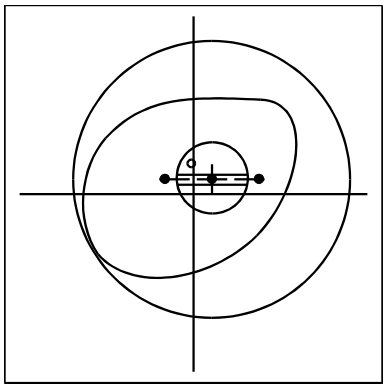
Proceed as described below.

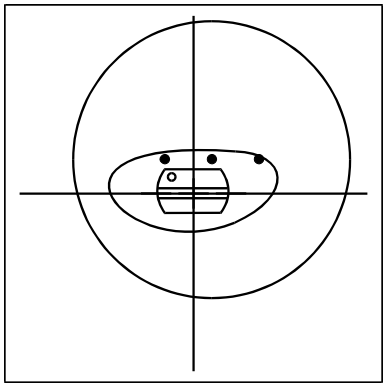


⇐ Take hold of the tracer stylus (3) and insert in the groove on the frame.

⇐ Press the "START" (22) key.

6.7 Pattern decentration with the FormTracer





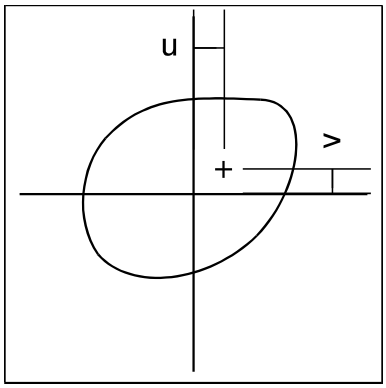
Pattern decentration

Pattern decentration is the making of a prescription specific pattern. The mechanical centre of the pattern is equal to the optical centre of the lens.

- The decentration data are entered before tracing is started.
- The pattern is decentered according the entered values.
- The lens needs to be blocked on the optical centre.

TIP

- This method is not suitable for half-eyes and children’s frames.
- The lenses must then be blocked in the middle of the shape.



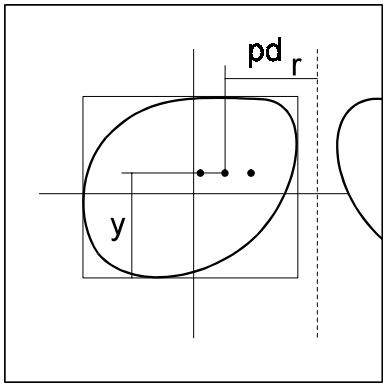
Decentration schematics

"u" - horizontal decentration from the middle of the shape.

(In positive, out negative)

"v" - vertical decentration from the middle of the shape.

(Up positive, down negative)



TIP

- Values for "u" greater than 15 mm will be interpreted as monocular PD values for the right or the left lens.
- In those cases the next request will be for the "y" value entry. The distance of the optical centre to the deepest point of the lens (Box measurement).
- For monocular PD entry the DBL measuring feature has to be switched ON.

Procedure for equal decentration values

- Clamp in the frame
- Press the NEW JOB key
- Enter the job number
- Press the ENTER key
- Press the “+/-“ key
- Enter the horizontal decentration
- Press the ENTER key
- Enter the vertical decentration
- Press the ENTER key
- Press the START key

Both shapes are stored decentered according to the entered values.

Procedure for unequal decentration values

- Clamp in the frame
- Press the NEW JOB key
- Enter the job number for the right lens
- Press the ENTER key
- Press the “+/-“ key
- Enter the horizontal decentration for the right lens
- Press the ENTER key
- Enter the vertical decentration for the right lens
- Press the ENTER key
- Press the START key

Both shapes are stored decentered according to the entered values.

- Press NEW JOB key
- Enter the job number for the left lens
- Press ENTER key
- Press the “+/-“ key
- Enter the horizontal decentration for the left lens
- Press the ENTER key
- Enter the vertical decentration for the left lens
- Press the ENTER key
- Press the START key

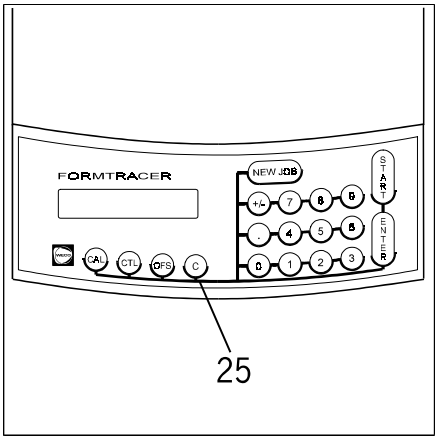
Both shapes are stored decentered according to the entered values.

Procedure for outside tracing

- Prepare the FormTracer for outside tracing
- Press the NEW JOB key
- Enter the job number
- Press the ENTER key
- Press the “+/-“ key
- Enter the horizontal decentration
- Press the ENTER key
- Enter the vertical decentration
- Press the ENTER key
- Enter DBL if necessary
- Press START key

Both shapes are stored decentered according to the entered values.

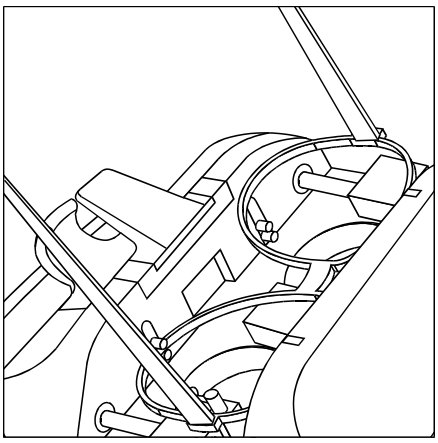
6.8 Cancelling the tracing operation



⇐ The tracing operation can be cancelled during tracing by pressing the "C" key (25).

The tracing operation is completed, but the shape data are not stored.

6.9 Exceptional cases



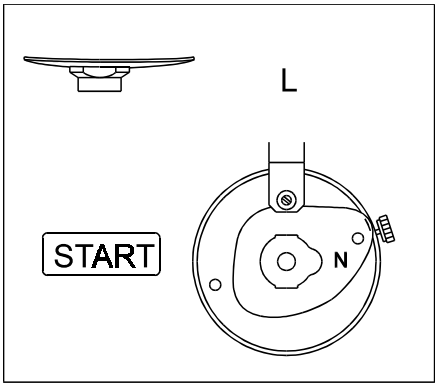
Tracing badly bent spectacle frames

⇐ If, in conjunction with badly bent frames, the tracer stylus does not stay in the groove, the frames can be clamped in **on one side** as illustrated.

Only the right-hand frame rim is held by the clamping elements.

CAUTION !

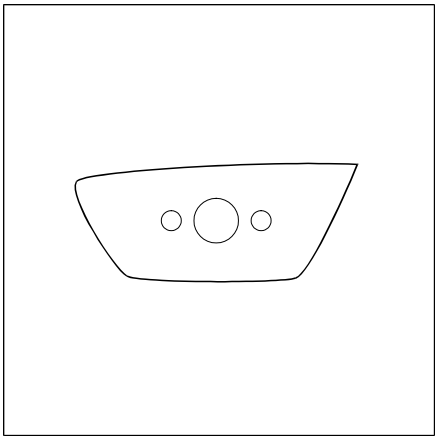
- In this case the frame may be traced only on one side.
- Further procedure: see "Single eye frame tracing".



Spectacle frames with very thin rims

⇐ Frames with very thin rims obtain their shape only by means of demo lenses or the lenses. Without support the shape deviates by too much from the desired result.

In such cases we recommend the tracing of demo lenses.



Exotic lens shapes

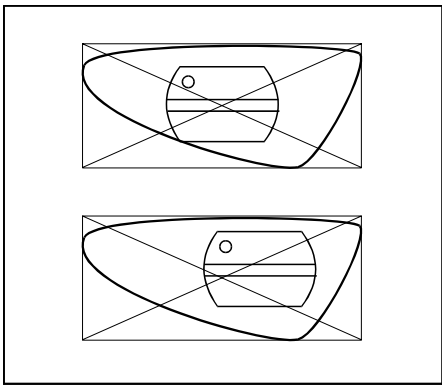
⇐ In conjunction with extremely exotic shapes, the appliance may stop in mid-tracing. The error message E 49 then appears on the job number display.

The emergency stop function has halted the appliance, although the tracer stylus has not come out of the groove.

The emergency stop can be deactivated by pressing the "START" key a second time. See error messages, E 49.

CAUTION !

- Deactivate the emergency stop function only in this exceptional case. When it is deactivated the appliance will not stop if the tracer stylus comes out.



Frame shapes with off-centre STARblock

⇐ There are some lens shapes in conjunction with which the block cannot be attached in the geometric centre because it would be to close to the edge.

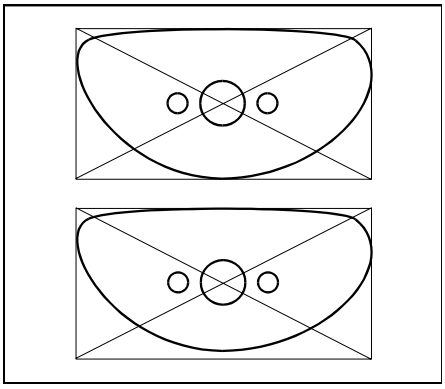
1. Deactivate the automatic centring function by pressing the "CTL" (27) and "OFFSET" (26) keys. This is indicated on the display.

2. Move the form until its centre is at the position in which the STARblock is located. It is easier to trace the demo lens. Trace the shape.

3. Reactivate the automatic centring function by pressing "CTL" (27) and "OFFSET" (26). This is indicated on the display.

4. Once traced, the shape is stored with decentration computation. The precise decentration value appears on the display of the lens edger (ZET-90 and W 3-D) when the shape is loaded. Offset this decentration against the decentration required for the customer and then block the lens accordingly.

If necessary, trace again.



Pattern sets for V-bevel and flat lens edging

⇐ Frames for lenses that in some cases need to be furnished with a V-bevel and flat edges (for grooving) are often supplied with two patterns. The first pattern is centred, the second is off-centre.

1. Trace the first pattern (the larger one) in the normal way.

2. Deactivate the automatic centring function by pressing "CTL" (27) and "OFFSET" (26). This is indicated on the display.

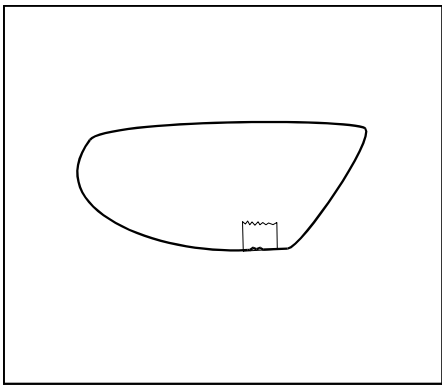
3. Enter a different job number, and trace the second pattern. Reactivate automatic centring by pressing "CTL" (27) and "OFFSET" (26). This is indicated on the display.

4. Finish the first lens shape with a V-bevel edge; leave the lens clamped in position.

5. Finish the second shape with a flat edge.

CAUTION !

- Deactivate the automatic centring function only in this exceptional case, as otherwise this will result in erroneous optical centring.



Lenses with damaged edges

⇐ If lenses with damaged edges have to be traced, the damaged areas are detected thanks to the high tracing accuracy and can be seen afterwards in the edging results.

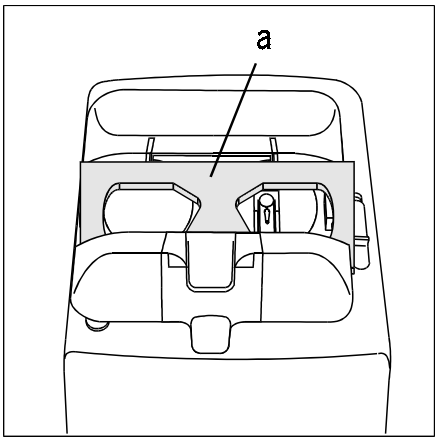
Small chips can be smoothed with thin adhesive tape before tracing.

7 Self-calibration

NOTE

- We recommend a daily self-calibration.
  This should preferably not be done until the appliance has reached its operating temperature.
- After 100 tracing operations the appliance automatically requests a self-calibration. See also "Error messages" W X16.

7.1 Inside tracing

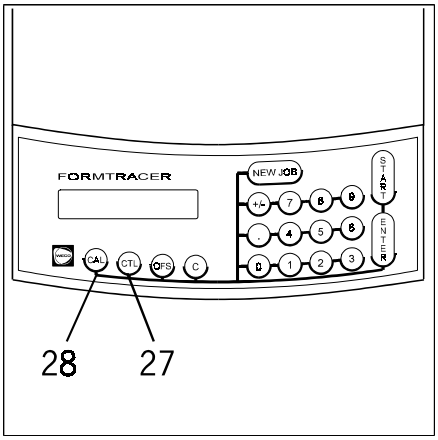


Prepare the FormTracer for tracing spectacle frames (see "Preparing to trace spectacle frames").

⇐ Clamp the frame template (a) in the clamping table.

⇐ Make sure that the template is firmly seated.

The template must rest on the clamping table with its bottom edge parallel to the surface of the table.



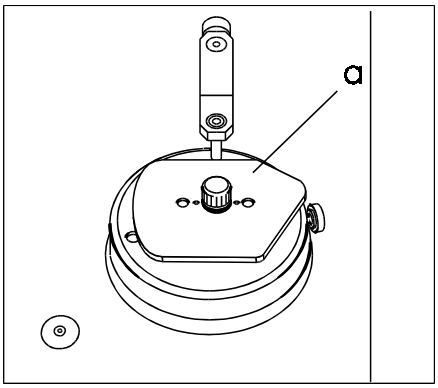
⇐ Press the "CTL" (27) and "CAL" (28) keys at the same time.

Confirmation of the calibration procedure appears on the display.

Once self-calibration has been completed, the display indicates that the appliance is ready for use.

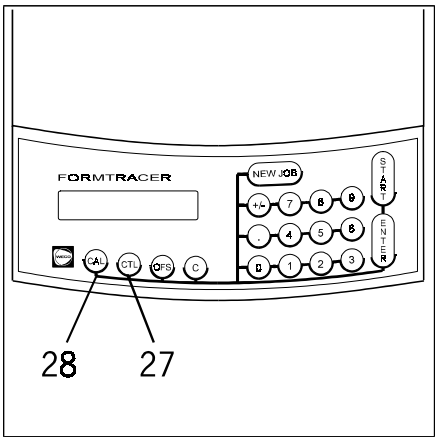
7.2 Outside tracing

Prepare the FormTracer for tracing patterns (see "Preparing to trace lenses, demo lenses and patterns").



⇐ Clamp the outside tracing template (a) in position and screw tight.

The template must be clamped in upright and with the nose end facing right (see diagram).



⇐ Press the "CTL" (27) and "CAL" (28) keys at the same time.

Confirmation of the calibration process appears on the display.

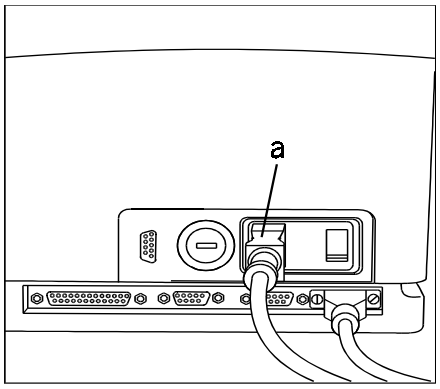
On completion of calibration the display indicates standby mode.

8 Troubleshooting

8.1 Minor faults

Fault	Possible cause	Remedy
The finished lenses are too big.	The "OFFSET" key (26) was pressed.	Press "OFFSET" (26) again.
The shapes traced are not transferred to memory.	The memory is not operational.	Activate the memory.
	The FormTracer address has already been used.	Inform the WECO service department.
The axis is not constant.	The inside or outside stylus is out of position or loose.	Perform self-calibration. Inform the WECO service department.

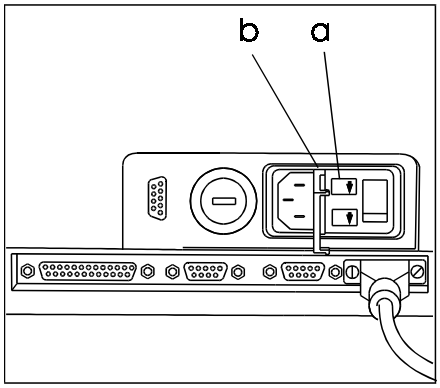
8.2 Fuses



ATTENTION !

- If the appliance stops functioning, check the mains socket first.

⇐ Disconnect the power cord (a) before changing any fuses.



Mains fuses

⇐ Open the safety flap (b).

⇐ Remove the fuses (a) and test.

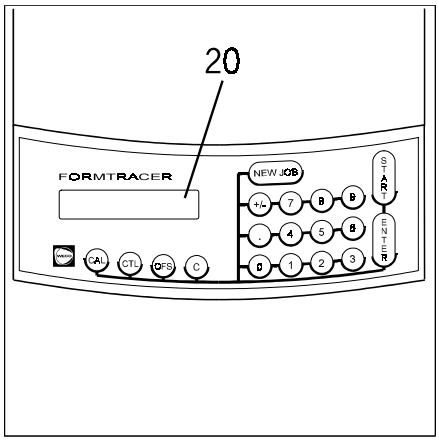
Only use stipulated fuses:

230 V / 50 Hz:	0.315 A (mT)
110 V 50/60 Hz:	0.63 A (mT)
100 V 50/60 Hz:	0.63 A (mT)

NOTE

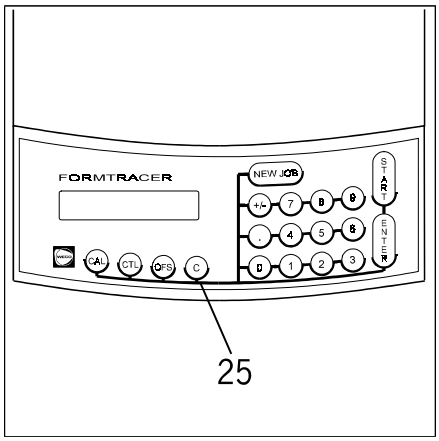
- mT = medium time-lag fuse

8.3 Error and warning messages



The error control system monitors the function of the appliance.

⇐ Error and warning messages appear on the display (20).



⇐ All error and warning messages must be acknowledged with the "C" key (25).

NOTE

- If an error message appears that is not listed below, please make a note of it and notify the WECO service department.

Error/warning message	Possible cause	Remedy
E 04	Not calibrated	Perform self-calibration
E 05	The tracer table does not rotate through 360 degrees.	Check whether the table is hitting anything when rotating.
E 06	Contour not closed. The frame has moved while being traced.	Check whether the frame is firmly seated. Trace once again.
E X21 (121, 221, 321, 421, 521, 621)	Stylus does not work automatically.	Check the position of the frame, insert it manually, if necessary. Notify your WECO service department.
	The tracer table will not move because the electrical contacts are not working properly.	Grease the electrical contacts with grease from the available accessories. See "Equipment and accessories ".
E 24	Tracer stylus is at rear limit stop and the “START“ key has been pressed.	Move stylus to normal position.
E 25	When measuring the DBL it was attempted to trace the same side twice.	Move stylus to normal position. Trace the frame shape once again.
E 35	Stylus not in normal position.	Move stylus to normal position.
E 36	Stylus not down on reset.	Move stylus to normal position.
E 37	During decentration (optional): horizontal decentration u is less than half the DBL.	Enter correct decentration.
E 38	During decentration (optional): smallest radius is less than 12.5 mm and greater than 10.0 mm.	The job is sent. Use small clamping parts for blocking.
E 39	During decentration (optional): smallest radius is less than 10.0 mm.	**The job is not sent.** **Enter smaller decentration.**

E 40	No link to memory.	Switch on memory. **Check cable connections.**
E 41	Incorrect FormTracer configuration.	Please notify your WECO service department.
E 49	Emergency stop has been triggered, the stylus has come out.	Put stylus in down position, allow to rest on the reference surface. Press the "RESET" (7) key. Trace the frame once again.
	Emergency stop has been triggered, an 'exotic' shape was being traced.	Put stylus in down position, allow to rest on the reference surface. Press the "RESET" (7) key. Trace the frame once again. Press the "START" (22) key a second time - emergency stop function is deactivated.
E 57	With OPTOLAB IV: the job number is already in use.	**Select a different job number.**
E X15 (115, 215, 315, 415, 515)	Self-calibration error.	Repeat self-calibration with the correct template (axis geometry). If the error occurs repeatedly, please notify the WECO service department.
W X16 (116, 216, 316)	Self-calibration required.	Perform self-calibration.