EN

FL 220HV

USER MANUAL

www.geo-fennel.com

Dear customer,

Thank you for your confidence in us having purchased a ***geo-FENNEL*** instrument.
This manual will help you to operate the instrument appropriately.

Please read the manual carefully - particularly the safety instructions. A proper use only guarantees a longtime and reliable operation.

geo-FENNEL
Precision by tradition.

Contents

A SUPPLIED WITH

- Rotating Laser FL 220HV
- Receiver FR 45 with clamp for levelling staff
- Rechargeable battery and charger
- Battery case for Alkaline batteries
- Carrying case
- User manual

CHARACTERISTICS

- Working range up to 400 m Ø
- Dust / water protection IP 54
- Permanent 90° plumb beam
- Automatic TILT alarm function
- Auto-shut-off when out of level
- Manual mode

Technical data

Self-levelling	horizontal / vertical
Self-levelling range	± 5°
Laser class	2
Accuracy	
· horizontal	± 1,0 mm / 10 m
· vertical	± 1,5 mm / 10 m
Working range with FR 45 Ø	400 m
Permanent 90° plumb beam	yes
TILT mode	yes
Manual mode	yes
Rotating speed	600 rpm
Power supply / operating time	20 h (NiMH)
Temperature range	-20°C - +50°C
Dust / water protection	IP 54

B POWER SUPPLY

Both the standard NiMH battery pack and Alkaline batteries can be used.

1) Insert Alkaline batteries into the Alkaline battery box (ensure correct polarity) and mount the battery box into the instrument.

OR

2) Mount the rechargeable battery box into the instrument.

1)

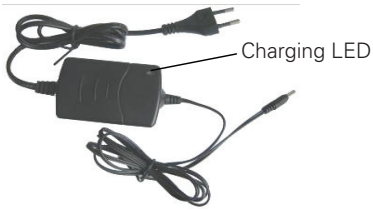
2)

CHARGING THE BATTERY

Connect the charger with the charging plug of the instrument and the power source. If the charging LED is red the battery is being charged; if the LED is green the battery is fully charged.

ATTENTION
The rechargeable battery can be charged if it is in the instrument or if it is ouside.

Battery status indication: If the ON/OFF LED flashes the battery has to be recharged.



FEATURES C

1. Laser emitting window
2. Rotating head
3. Handle
4. Battery compartment
5. Keypad
6. Support for vertical use
7. 5/8“ thread hole vertical
8. 5/8“ thread hole horizontal
9. Charging plug

OPERATION D

HORIZONTAL USE

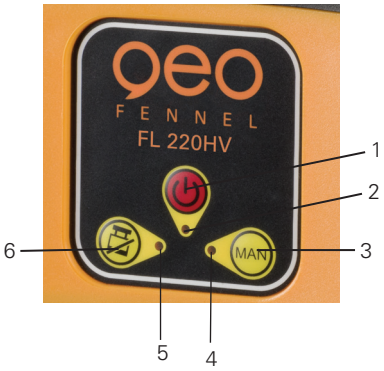
Set up the instrument on an even surface or mount it onto a tripod.

VERTICAL USE

Set up the instrument vertically (on the side with the vertical 5/8“ hole) or mount it onto a tripod with its vertical 5/8“ thread.

HORIZONTAL USE

After powering on the unit a flashing laser diode indicates that the automatic self-levelling procedure is working. The laser starts rotating when it is self-levelled. If not the laser was set up outside of its self-levelling range. In this case set up the instrument on a more even surface.



1. ON/OFF button
2. ON/OFF LED
3. MANUAL button
4. MANUAL LED
5. TILT LED
6. TILT button

POWER ON/OFF (1)

Power the laser on/off with button **(1).** If the red ON/OFF LED **(2)** is illuminated the laser is powered on. First the laser dot is flashing, then the self-levelling procedure starts automatically; meanwhile the TILT LED **(5)** is flashing. When the self-levelling procedure is completed the laser rotates with 600 rpm and the TILT LED **(5)** is illuminated permanently (= TILT function activated).

If in normal use the ON/OFF LED **(1)** flashes the battery has to be recharged.

TILT MODE (6)

After completion of the self-levelling procedure the TILT mode is automatically enabled.
If the level is now disturbed the rotation stops and the TILT LED is flashing.

1. Press the TILT button **(6)** once: The rotation of the laser starts - but the TILT mode is **disabled.**
2. Press the TILT button **(6)** twice: The rotation of the laser starts, the self-levelling procedure is completed and the laser restarts working with enabled TILT mode.

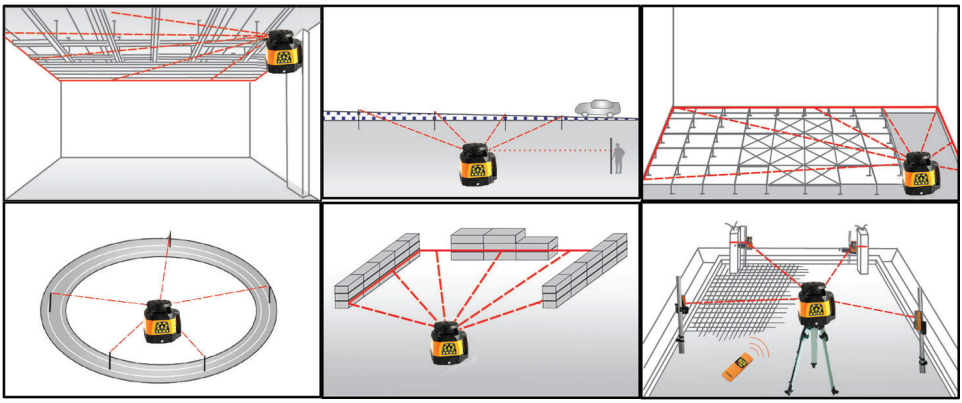
Press button **(6)** to disable the TILT mode after completion of the self-levelling procedure.

MANUAL MODE (3)

Power on the laser with button **(1)**. After completion of the self-levelling procedure press button **(3)**. The TILT LED **(5)** will power off and the MANUAL LED **(4)** will be illuminated permanently. Now the laser can be used in slope position, i. e. it can be used with a grade mount without giving TILT alarm.

In vertical position a required alignment can be made quick and safe by means of the MAN function. When the alignment has been made quit the MAN function.

APPLICATION



E RECEIVER FR 45

FEATURES

1. Vial (2)
2. Display
3. Reference indicator
4. Receiving window
5. ON / OFF switch
6. Loudspeaker
7. Battery compartment (back side)
8. Sound on / off
9. Accuracy coarse / normal / fine
10. Light on / off
11. Magnets (2)
12. 1/4“-thread for clamp (back side)

SUPPLIED WITH

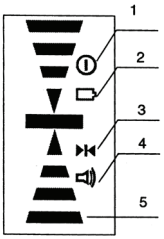
Receiver FR 45, battery, clamp, user manual

Technical Data

Indication	Front display
Accuracy coarse	± 10 mm
Accuracy normal	± 4 mm
Accuracy fine	± 2 mm
Tones	3
Operating time	400h
Power supply	1 x 9V

SYMBOLS

1. Power ON / OFF
2. Battery status indicator
3. Detection indicator
4. Sound ON / OFF
5. Detected position indicator



ACCURACY COARSE / NORMAL / FINE

The FR 45 is equipped with three precision modes. They can be chosen by pressing button (9):

Accuracy coarse ± 10 mm
Symbol on display: without symbol

Accuracy normal ± 4 mm
Symbol on display: ⏭

Accuracy fine ± 2 mm
Symbol on display: |

INSTALLATION OF THE BATTERIES

- Open the battery compartment cover (7).
- Insert 1 x 9 V AA battery according to the installation symbol (ensure correct polarity!). Close the cover.
- In order to save battery power the receiver will automatically turn off if it has not received laser scanning singal for 5 minutes.

USE OF RECEIVER

Press the button (5) to switch the unit on.

Move the receiver up and down **carefully** to detect the laser beam.

A Move the receiver down
Acoustic signal : ultra-short requent beep

B Move the receiver up
Acoustic signal: short requent beep

C On level
Acoustic signal: continuous beep

A+B: The closer the distance to „on level“ (C) is,
the shorter the arrows become.

CLAMP FOR LEVELLING STAFF

If required the FR 45 can be attached to laser poles or any other equipment by means of the clamp supplied with.

F SAFETY NOTES

SPECIFIC REASONS FOR ERRONEOUS MEASURING RESULTS

Measurements through glass or plastic windows; dirty laser emitting windows; after the instrument has been dropped or hit. Please check the accuracy.
Large fluctuation of temperature: If the instrument will be used in cold areas after it has been stored in warm areas (or the other way round) please wait some minutes before carrying out measurements.

CARE AND CLEANING

Handle measuring instruments with care. Clean with soft cloth only after any use. If necessary damp the cloth with some water. If the instrument is wet clean and dry it carefully. Pack it up only if it is perfectly dry. Transport in original container / case only.

ELECTROMAGNETIC ACCEPTABILITY (EMC)

It cannot be completely excluded that this instrument will disturb other instruments (e.g. navigation systems); will be disturbed by other instruments (e.g. intensive electromagnetic radiation nearby industrial facilities or radio transmitters).

CE-Conformity

The instrument has the CE mark according to EN 61010-1:2001 + corrig. 1+2.

WARRANTY

This product is warranted by the manufacturer to the original purchaser to be free from defects in material and workmanship under normal use for a period of two (2) years from the date of purchase. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or similar model at manufacturers option), without charge for either parts or labour. In case of a defect please contact the dealer where you originally purchased this product. The warranty will not apply to this product if it has been misused, abused or altered. Without limiting the foregoing, leakage of the battery, bending or dropping the unit are presumed to be defects resulting from misuse or abuse.

EXCEPTIONS FROM RESPONSIBILITY

1. The user of this product is expected to follow the instructions given in the user manual. Although all instruments left our warehouse in perfect condition and adjustment the user is expected to carry out periodic checks of the product's accuracy and general performance.
2. The manufacturer, or its representatives, assumes no responsibility of results of a faulty or intentional usage or misuse including any direct, indirect, consequential damage, and loss of profits.
3. The manufacturer, or its representatives, assumes no responsibility for consequential damage, and loss of profits by any disaster (earthquake, storm, flood etc.), fire, accident, or an act of a third party and/or a usage in other than usual conditions.
4. The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits due to a change of data, loss of data and interruption of business etc., caused by using the product or an unusable product.
5. The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits caused by usage other than explained in the user manual.
6. The manufacturer, or its representatives, assumes no responsibility for damage caused by wrong movement or action due to connecting with other products.

INTENDED USE OF INSTRUMENT

The instrument emits a visible laser beam in order to carry out the following measuring tasks (depending on the instrument): Setting up heights, horizontal and vertical planes, right angles.

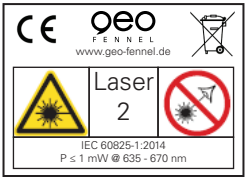
SAFETY INSTRUCTIONS

- Follow up the instructions given in the user manual.
- Do not stare into the beam. The laser beam can lead to eye injury. A direct look into the beam (even from greater distance) can cause damage to your eyes.
- Do not aim the laser beam at persons or animals.
- The laser plane should be set up above the eye level of persons.
- Use the instrument for measuring jobs only.
- Do not open the instrument housing. Repairs should be carried out by authorized workshops only. Please contact your local dealer.
- Do not remove warning labels or safety instructions.
- Keep the instrument away from children.
- Do not use the instrument in explosive environment.
- The user manual must always be kept with the instrument.

LASER CLASSIFICATION

The instrument is a laser class 2 laser product according to DIN IEC 60825-1:2014.
It is allowed to use the unit without further safety precautions.
The eye protection is normally secured by aversion responses and the blink reflex.

The laser instrument is marked with class 2 warning labels.



Please note:

If you return instruments for repair / for adjustment to us please disconnect batteries or rechargeable batteries from the instrument - this is for safety reasons!
Thank you.

geo-FENNEL GmbH
Kupferstraße 6
D-34225 Baunatal
Tel. +49 561 / 49 21 45
Fax +49 561 / 49 72 34
info@geo-fennel.de
www.geo-fennel.de

Technische Änderungen vorbehalten.
All instruments subject to technical changes.
Sous réserve de modifications techniques.

10/2019

Precision by tradition.

geo FENNEL