



November 2015_JS

DG813 & DG613 Pipe Laser

How to use the pipe lasers – step by step



DG813/DG613 Components

DG813



DG613



SF803



RC803



Recharge kit



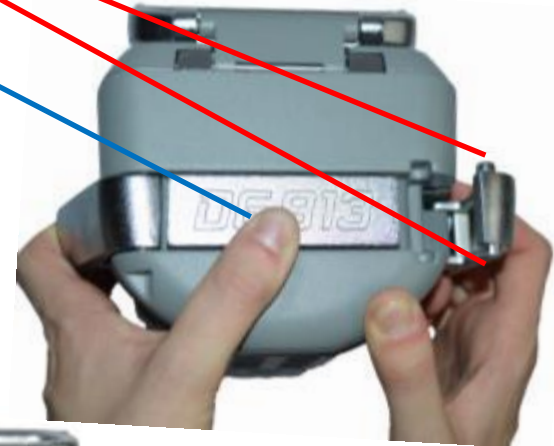
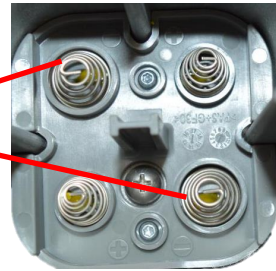
Powering the Laser

- 1 – DG's are shipped with a rechargeable NiMH battery pack (Q104667). Only the original rechargeable battery pack allows charging with the provided charger.
- 2 – An optional external charger Cable, 12V Battery w/Cigarette Lighter Plug (P25) is also available
- 3 – Alkaline batteries can be used as a backup
- 4 – Plus and minus symbols indicate how to put the alkaline batteries into the battery compartment



Installing Batteries

- Open the battery door by pulling out the battery door latches.
- Push down the battery door and lift up the locking lever that has the two pins
- Insert batteries (or a rechargeable battery pack) into the housing so that the negative poles are on the bigger battery spiral springs.
- Close the battery door and lock it by pushing the door latches back to the housing.



Powering the Remote Control RC803

1. Open the battery door using a coin or similar pry device to release the battery door tab on the RC803.
RC803 will be shipped with alkaline batteries
Rechargeable batteries can be used optional
but need to be charged externally.
2. Insert two AA batteries noting the plus (+) and minus (-) diagrams inside the battery housing.
3. Close the battery door. Push down until it “clicks” into the locked position.



Using the Remote Control RC803

1. Press the  button to turn on the Radio/IR remote control.

If the RC803 is outside the radio operating range the remote switches automatically into the IR connection capability.



Note: When the remote control is initially turned on, the standard display (model number and software version) appear for the first 3 seconds, then the grade value and line direction indications briefly appear in the LCD.

With every button press, the LCD backlight is activated and turns off automatically if no button is pressed for 8 seconds.

To turn off the radio remote control, press and hold the  button for two seconds.

Note: 5 minutes after the last button press, the remote control turns off automatically.



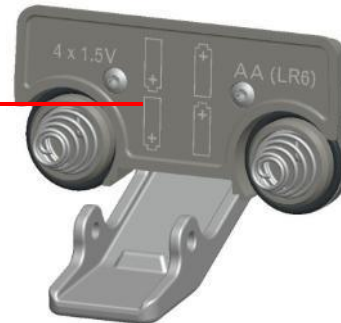
Powering the Spot Finder SF803

1. Open the battery door pulling the battery door latch.
The SF803 will be shipped with 4 AA alkaline batteries.

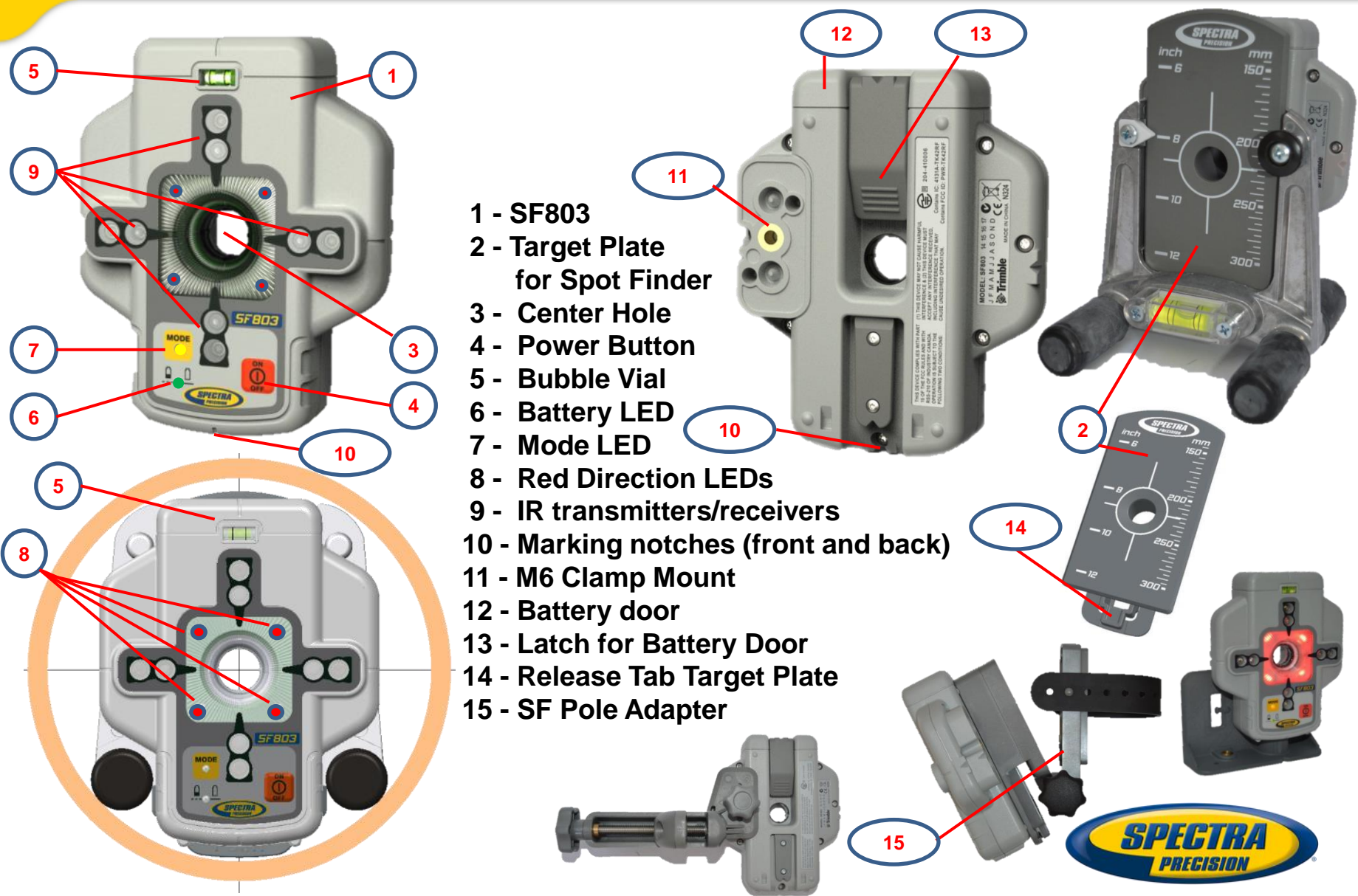


Rechargeable batteries can be used optional but need to be charged externally.

2. Insert four AA batteries noting the plus (+) and minus (-) diagrams inside on the battery door.
3. Close the battery door. Push down until it “clicks” into the locked position.



Components Spot Finder SF803

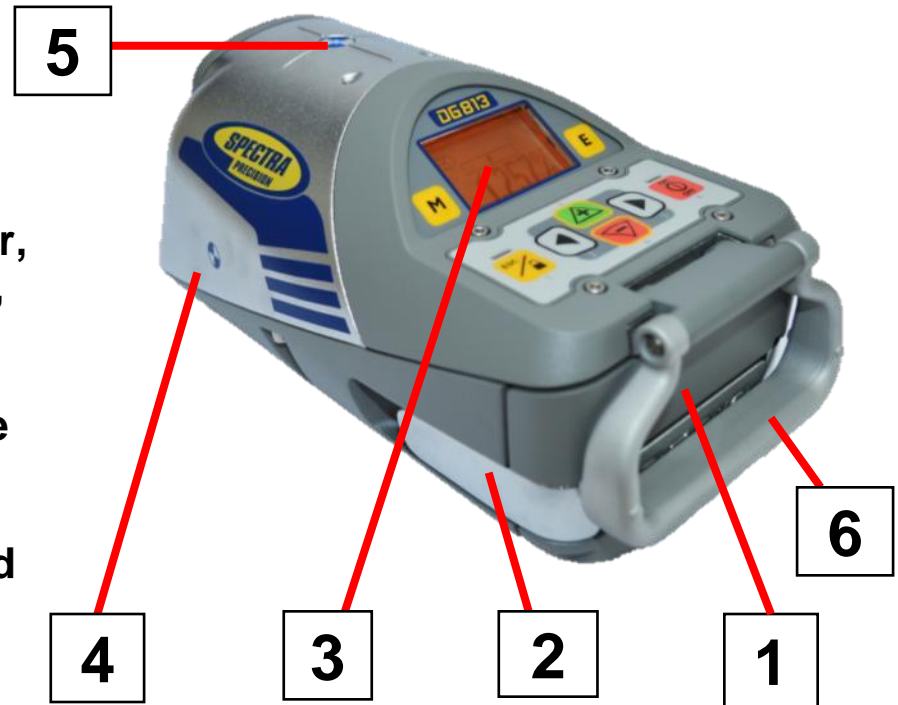


- 1 - SF803
- 2 - Target Plate for Spot Finder
- 3 - Center Hole
- 4 - Power Button
- 5 - Bubble Vial
- 6 - Battery LED
- 7 - Mode LED
- 8 - Red Direction LEDs
- 9 - IR transmitters/receivers
- 10 - Marking notches (front and back)
- 11 - M6 Clamp Mount
- 12 - Battery door
- 13 - Latch for Battery Door
- 14 - Release Tab Target Plate
- 15 - SF Pole Adapter



DG813/DG613 Components

1. **Battery Compartment** – holds the NiMH battery pack. (D-Cell alkaline batteries can be used as a backup.)
2. **Battery Door Latches** – locks/unlocks and holds the battery compartment in place.
3. **LCD Graphic Display** - shows the power, grade, battery, out-of-level, beam position, menu information and status of the laser.
4. **Grade Axis Pivot Marker** - identifies the pivot point for the grade system
5. **Line-Axis Pivot Marker and LED** - used to align a transit over the top of the laser; lights for 15 minutes after turning on the laser or pressing one of the buttons.
6. **Handle** - to carry the laser easily and to attach a safety rope in manholes with water.



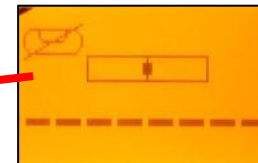
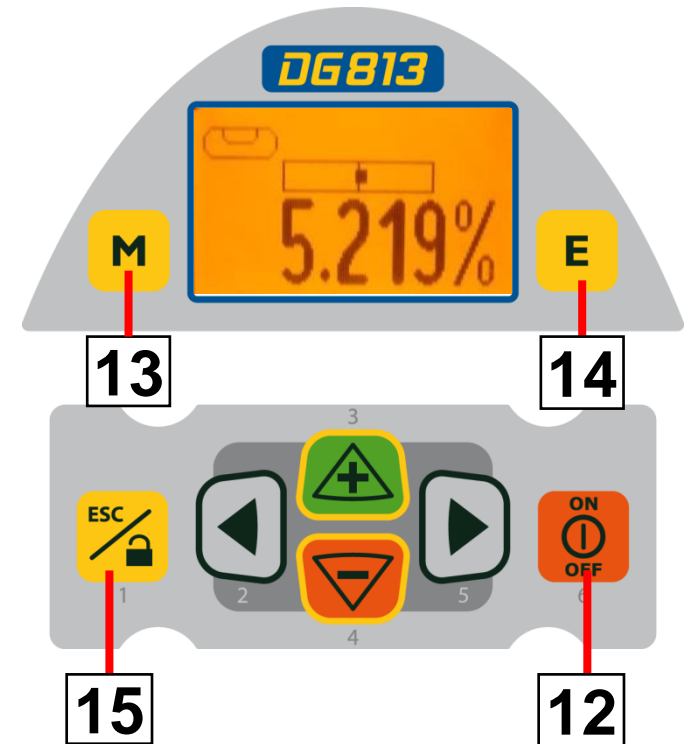
DG813/DG613 Components

- 7. **Axis Alignment Markers** - used to align the laser when the line system is centered.
- 8. **Mounts for scope adapter** – to attach the optional scope adapter for the „Over the Top“ application
- 9. **5/8"-11 Threaded Mount** – to attach the laser to various setup accessories
- 10. **Remote Receiver Window** – receives signals from the RC803 and SF803
- 11. **Beam-Exit Window** – provides a clear window for the laser beam to exit the pipe laser.



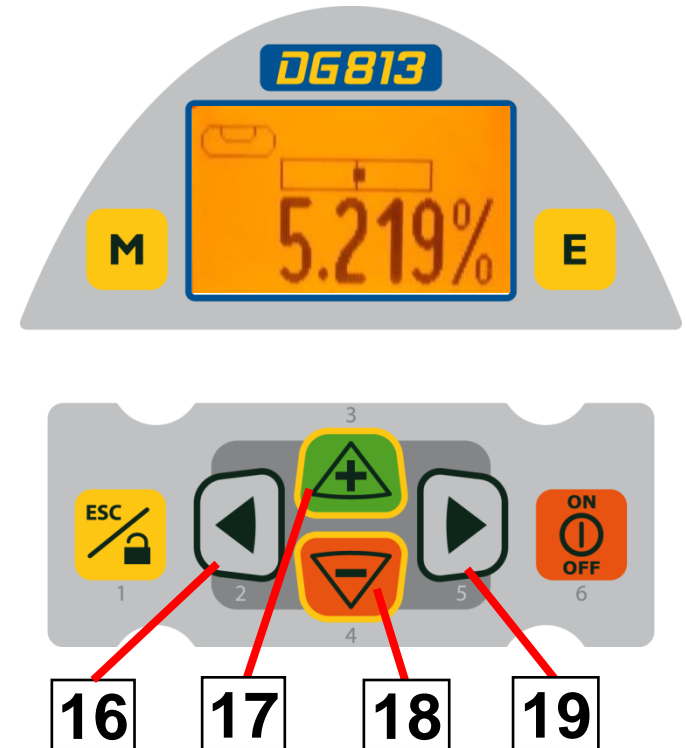
DG813/DG613 Controls

12. **Power Button** - turns the laser On/Off
(To turn off the laser, press and hold the button for 2 seconds).
13. **M – Menu Button** - Quickly press and release starts the menu entry. Use the +/- and Left/Right buttons to toggle through the menu.
14. **E - Enter Button** - Quickly press and release to activate a selected menu function and show the actual laser and remote control battery status.
15. **Escape/Lock (ESC) Button** - If pressed simultaneously with one of the left/right or +/- buttons, it locks/unlocks the +/- or the left/right buttons, so that the unit can't be unintentionally changed.
If pressed for 5 seconds, the unit switches to the manual mode (steep grade).



DG813/DG613 Controls

16. **Left Line Control Button** - moves the laser beam to the left.
(Simultaneously pressed with the Right Line Button, centers the line.)
17. **Plus Button** - increases the grade.
(Press and hold this button simultaneously with the Minus button to zero the grade when in Step & Go mode.)
18. **Minus Button** - decreases the grade.
(Press and hold this button simultaneously with the Plus button to zero the grade when in Step & Go mode.)
19. **Right Line Control Button** - moves the laser beam to the right.
(Simultaneously pressed with the Left Line Button, centers the line.)



SF803 – Controls, Features and Functions

1. Power Button:

Press and release the  button to turn ON the SF803. All display LED's will light for 1.0 sec.

Press and hold  button for >2 sec. to turn OFF the Spot Finder.

2. Battery LED:

solid green when SF803 is on and batteries are OK

blinking red if battery voltage is $3,8V < V_{bat} < 4V$

solid red if battery voltage is $< 3,8V$; SF803 turns off automatically after 5 min.

3. Mode LED:

yellow solid: paired and radio connection OK

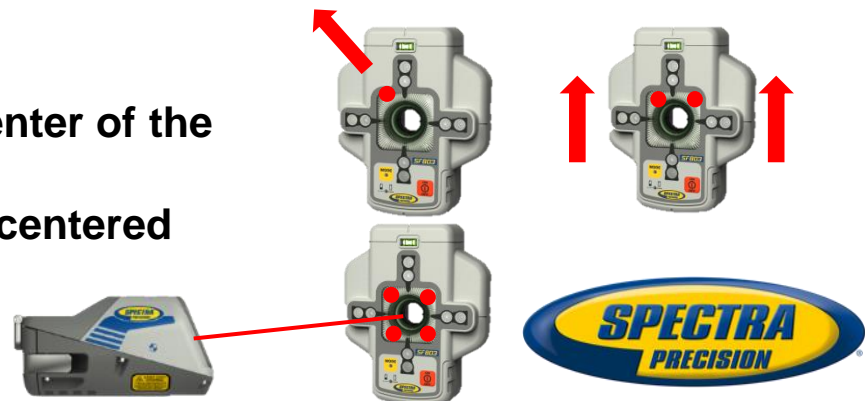
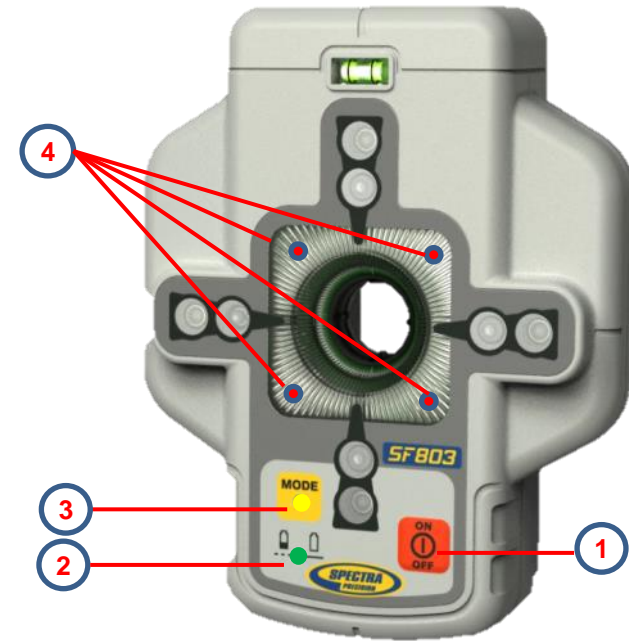
yellow flashing: none or lost radio signal

4. Red Direction LEDs:




Spot Search mode: pointing towards the center of the beam.

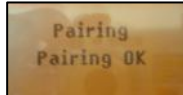
All 4 LEDs are solid red when the SF803 is centered at the beam.

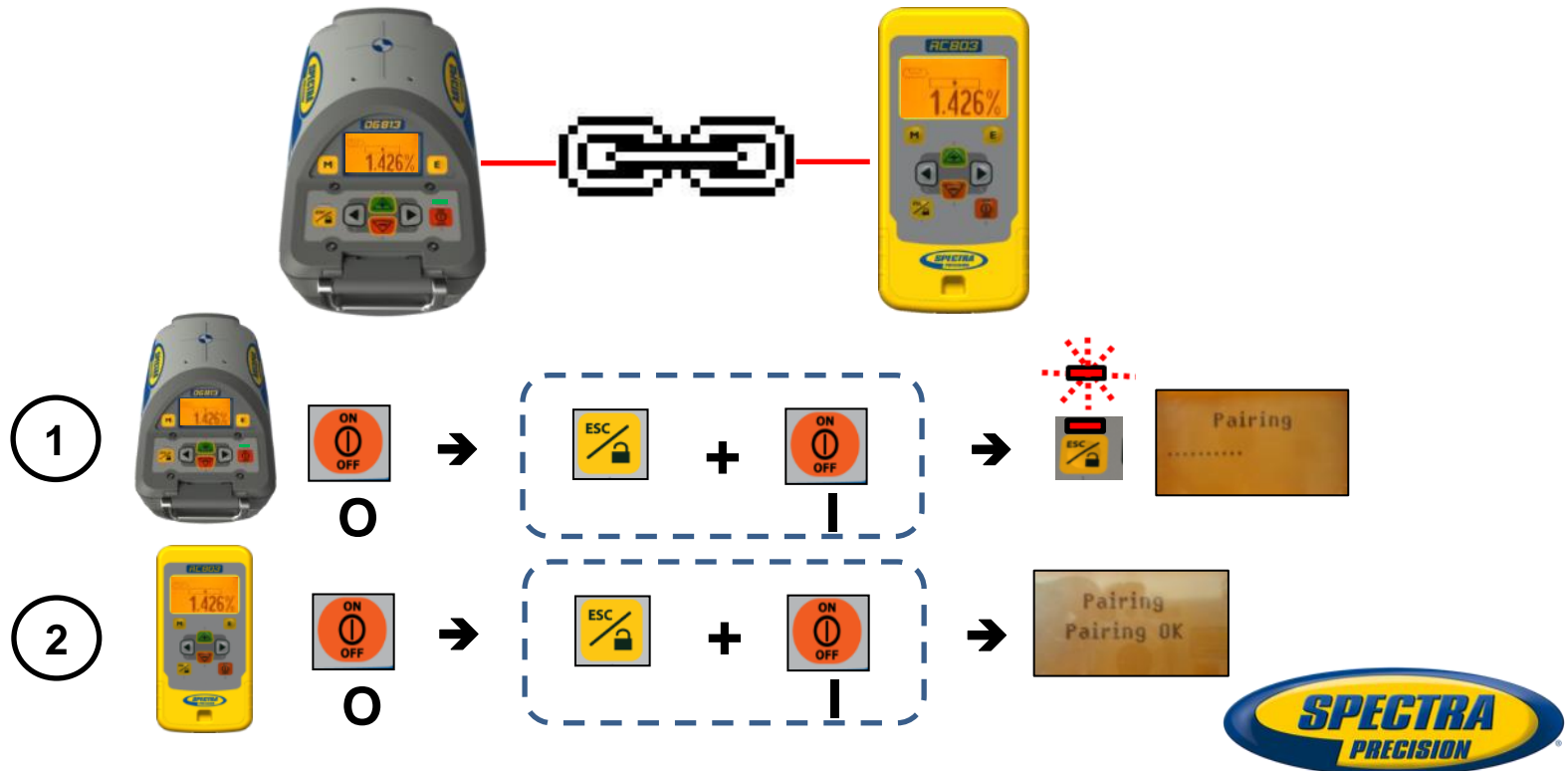
Automatic SpotLok mode: solid for 5 min., then the LED's flash every 5 seconds.



Pairing DG813/DG613 with RC803

First, make sure the transmitter and the remote control are turned off. Then press and hold the  button and turn on  the transmitter. During the next 6 seconds (the red LED flashes fast ) while the display shows **Pairing**  repeat the same steps on the remote control.

The remote's display show **Pairing OK**  for one second and then the same function as the laser is actually working to indicate the transmitter has been matched with the remote control.



Pairing DG813 with SF803

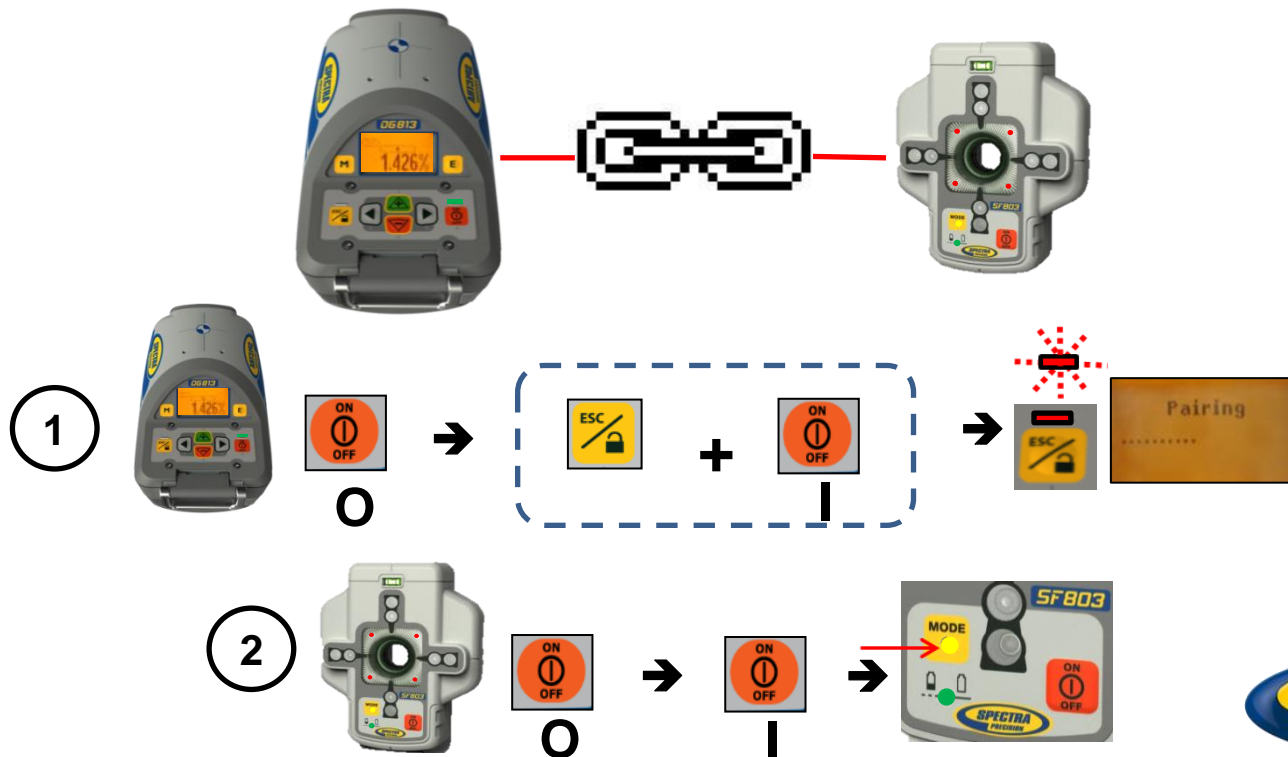
First, make sure the transmitter and the Spot Finder are turned off.

Then press and hold the  button and turn on  the transmitter.

During the next 6 seconds (the red LED flashes fast  while the display shows Pairing.

Turn On  the Spot Finder; the SF803 pairs now automatically with the transmitter.

After a successful pairing, the Laser shows the standard display while the yellow SF803 LED is solid.

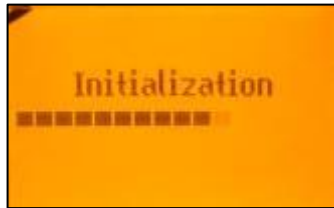



DG813/DG613 Setup

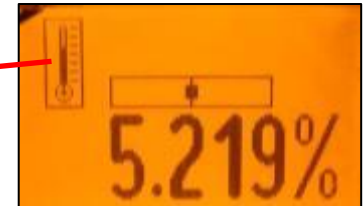
Position the laser at the manhole invert or on bottom of the trench at the desired elevation.

Press the power button  to turn On the laser.


The LCD shows Initialization for one second, then the model number (red and green LEDs are on for one second - diagnostic mode).



The standard display appears and the temperature/reference check will start while the thermometer symbol  is flashing.






Don't start automatic functions at the menu before the reference check has been finished.

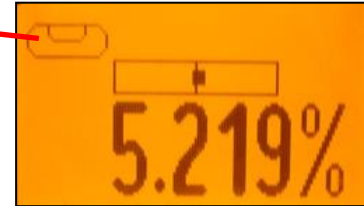
If an automatic function will be selected and then confirmed with the  button during the reference check, the display shows the reference check is still running.



DG813/DG613 Setup

The unit starts the self-leveling when the temperature check has been completed indicated by the flashing beam  and flashing vial symbol at the display. 

The unit is leveled when the laser beam  is no longer flashing (once every second).



If the laser is positioned beyond its self-leveling range of -12% to + 40%, the laser beam remains flashing. 

Note: If the laser can't level during two minutes, the error message **141 "Time Out"** appears.

Reposition the laser within its self-leveling range.

The laser's cross axis is completely compensated over the entire roll range.



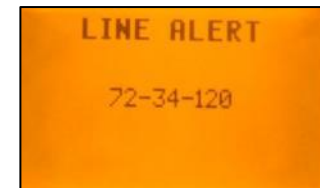
DG813/DG613 Setup


Line Alert

Once leveled, the unit constantly monitors its level condition by checking if the setup will be disturbed caused by vibrations or bumps. Depending on the selection at settings, the setup control (Line alert) is activated 5 minutes or 30 seconds after self-leveling was performed. If Line Alert condition comes Off, the beam flashes two times, pauses for 2 seconds and flashes again two times.



In addition, both LEDs flash at the same rate and the display shows the error message.



Delete the Line Alert by pressing the  button, then check the correct beam position using the pipe target at the last pipe which was laid before the Line alert came off.

To turn Off the laser, press and hold the  button for two seconds.



Standard Display Laser and RC803

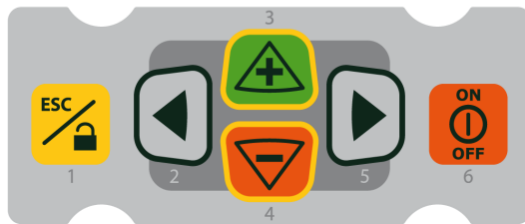
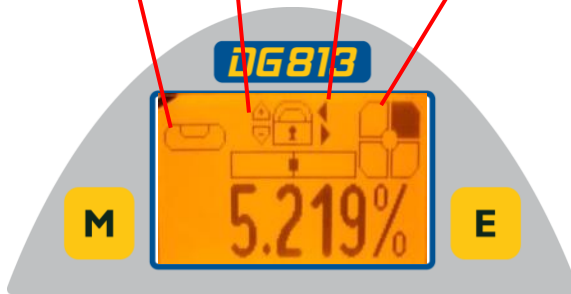
The remote control mirrors the functionality of the pipe laser keypad

Automatic mode

+/- buttons locked

Line buttons locked

Beam position at SF803



Beam line position related to the housing

actual grade value

- 1 - Escape/Lock Button
- 2 - Left Line Control Button
- 3 - Plus Button
- 4 - Minus Button
- 5 - Right Line Control Button
- 6 - Power Button
- M - Menu Button
- E - Enter Button
- Hole for hand loop

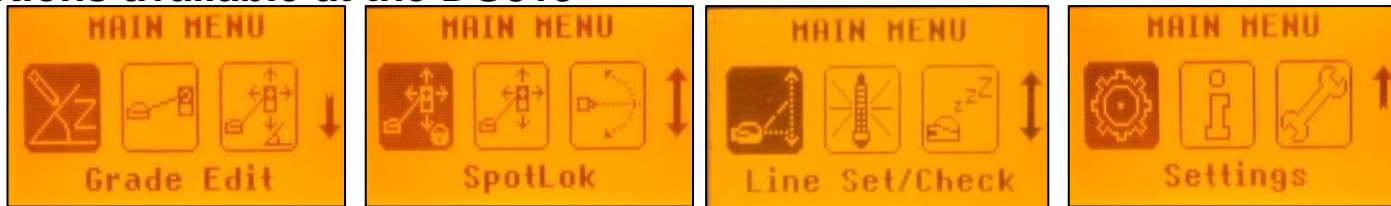


Menu functions – Radio controlled

Press and release **M** button at the Standard Display to enter the MENU.

The menu offers always only the available features depending which pipe laser (DG813 or DG613) is used.

Menu functions available at the DG813




Menu functions available at the DG613





The icon of the selected function will be highlighted.








A down arrow at the the right site indicates that the user can scroll down through the menu using the  (-) button.


Menu functions – Radio and IR controlled

After going to the next menu row, an up/down arrow at the right site indicates that the user can scroll up/down through the menu using the   buttons.



Pressing and releasing button  changes the unit always back to the standard or previous display.

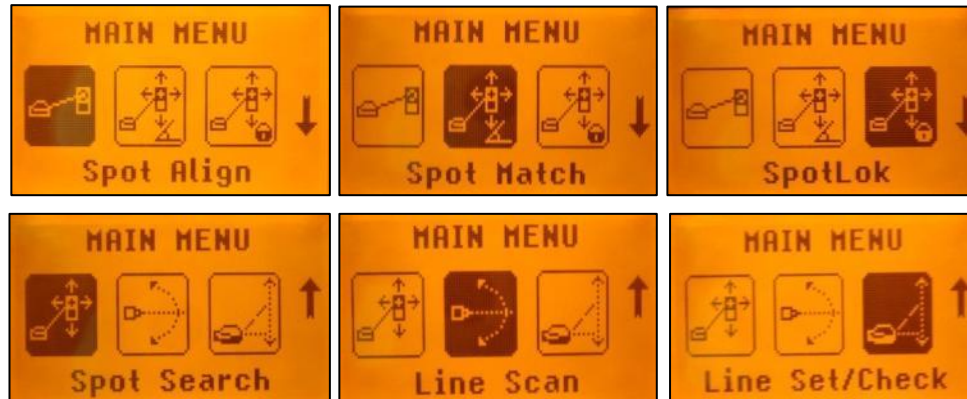
Press and release the   and   buttons until the desired function at the selected menu row is marked with a dark background.

Press and release button  to open the submenu OR start the selected function.

Menu Functions (IR controlled)

If the RC803 is paired with a transmitter and the radio connection gets lost, e.g., when used through a pipe, the IR connection offers the following functions.

IR-menu functions available at the DG813



Menu functions

IR-menu functions available at the **DG613**



Note: If a remote is paired with a transmitter the IR signals of the remote (in case of an interrupted radio connection) will be transmitted in a private mode so that only the paired transmitter can receive these IR commands.

Don't start automatic functions at the menu before the reference check has been finished. If an automatic function will be selected and then confirmed with the **E** button during the reference check, the display shows the reference check is still running.



Menu functions – Entering Grade



Entering Grade – changing the grade value in Step + Go or Digit Select (Default) mode.
Press and release the  button; icon **Grade Edit** will be highlighted.




Digit Select Mode (Default):


Press/release button  → A cursor at the sign of the grade value is flashing.

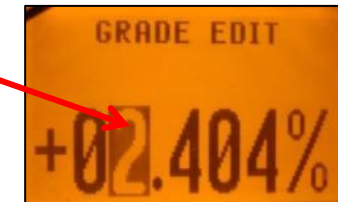
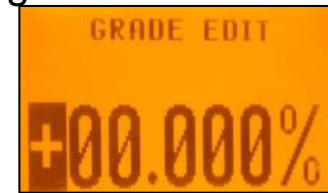
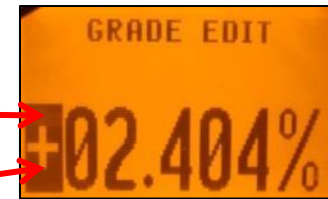
Press/release  or  button → change the sign of the grade value.

Press and hold the  button → quick set to 0%.

Pressing and releasing  or  button moves the cursor to the right/left.

Press and release   buttons to change the selected digit.
The laser will self-level to the required grade position after confirming the grade change with  button.

Grade Entering can be exited any time by pressing and releasing  button.



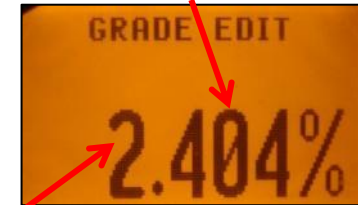
Menu functions – Entering Grade



Step + Go Mode:

Press and hold  or  button for changing the grade value **after the comma**.


Press/release button  or  change the sign of the grade value.

The Plus sign won't be displayed.



Press and hold   buttons simultaneously starts the **Quick change mode** where the grade value will be **set to 0%** and then starts **in front of the comma** changing in **1% increments**.

Note: When the grade value reaches its highest amount, the grade value switches to the lowest value. For example, the value switches from +40% to -12%.

The laser will self-level to the required grade position after confirming the grade change with  button.

Note: The bubble symbol at the laser's and remote's LCD and the laser beam will flash until the laser has been self-leveled to the requested grade position.






Menu functions – Spot Align (only DG813)

Automatic Spot Align



The Spot Finder SF803 guides the beam to the target point, while the grade value will be maintained.



Don't start Spot Align while the Reference Check is running.

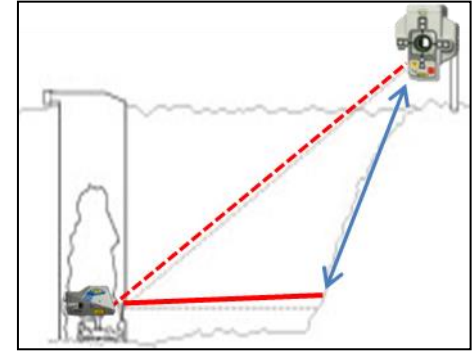
Press and release the **M** button at the standard display and select icon **Spot Align** using the   and   buttons.



Press/release button **M** → escape/return to the standard display.


Pressing and releasing **E** button activates the Spot Alignment function while the beam moves to the **0% position**. A bubble vial  appears while the beam and a Spot Finder symbol  will flash.

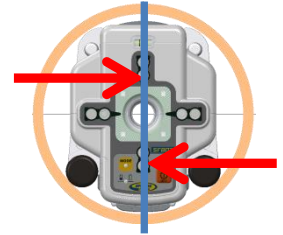
To make sure the beam moves plumb, roll the unit at the invert or use the screws of the invert plate until the vial is centered  and the beam and SF symbol  stop flashing.





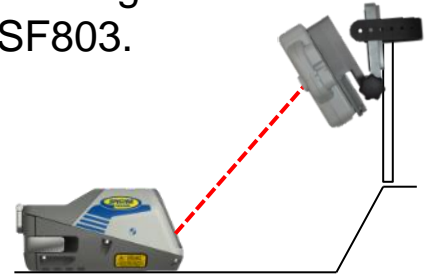
Menu functions – Spot Align (only DG813)

Spot Align (cont.)

Pressing and releasing  button **again** starts the automatic Spot Alignment while the beam becomes a rotating fan beam which will search automatically for the SF803's center position in a range up to $+45^\circ$ / 100%.



Note: The left SF symbol  flashes while an additional SF symbol  at the right side of the display indicates the beam movement until the beam is centered at the SF803.



Note: The SF803 needs to be tilted into the direction of the DG813 using the pole adapter when placed at a steep slope position.

When the alignment is finished, the beam moves plumb down to the dialed in grade value.



Automatic Spot Align can be exited any time by pressing and releasing  button.



Spot Align at the jobsite - First day setup

Place the Spot Finder at the correct position using the direction pole

Automatic Spot Align
is the most accurate
choice to align the
laser beam quickly
and correctly to the
next manhole



Spot Align at the jobsite

Place the Spot Finder at the direction stake or correct line position



Select Spot Align at the menu and press E



Roll the unit at the invert or use the screws of the invert plate until the vial is centered and the left SF symbol and the beam stop flashing

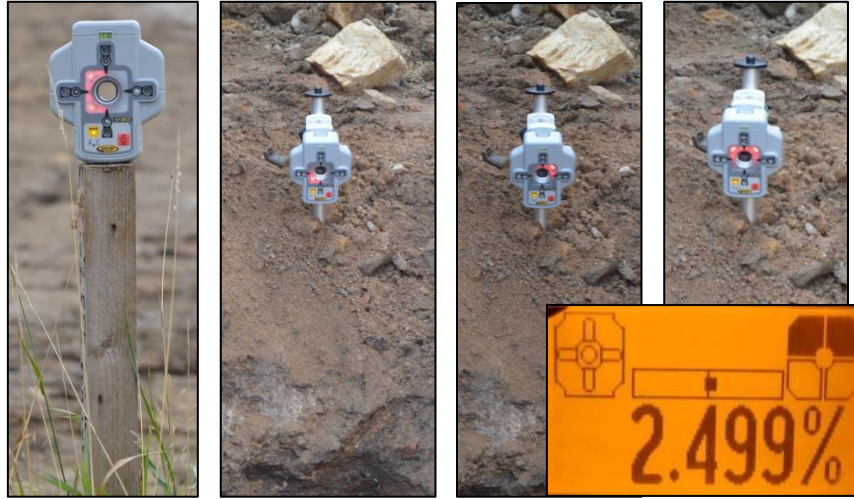


Spot Align at the jobsite

Press E **again** to start Spot Align



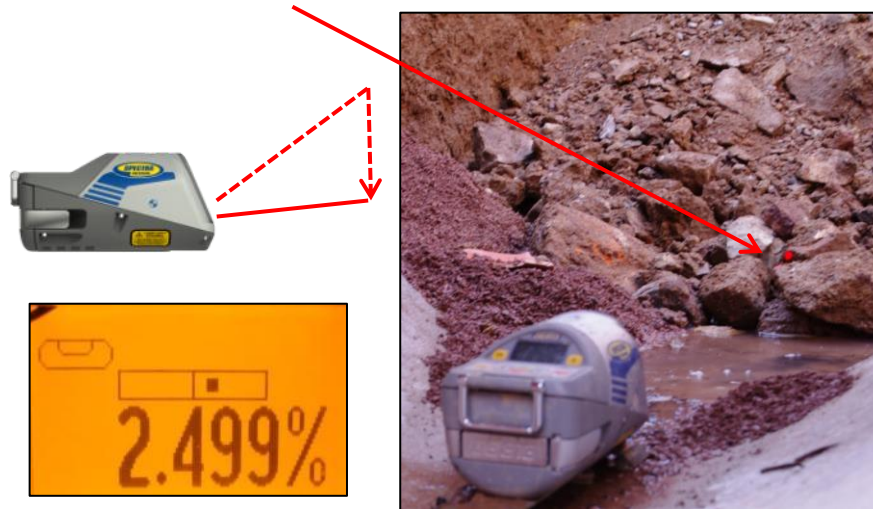
Rotating Fan beam searches for the Spot Finder's center; LEDs indicate the beam movement



All LEDs On confirm alignment completed



Beam moves down plumb to the dialed in grade value







If the beam stops flashing, start laying pipes using the target plate

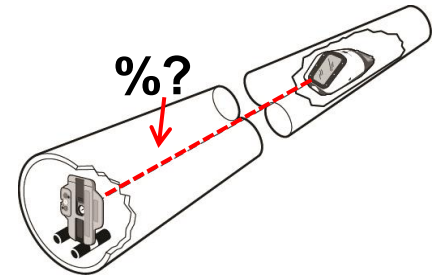


Menu functions – Spot Match (only DG813)

Automatic-Spot-Match can be used for measuring an unknown grade value in an existing pipe or open trench.

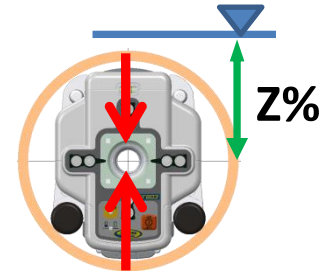
Don't start Spot Match while the Reference Check is running.


Press and release the **M** button at the standard display and select **Spot Match** using the   and   buttons.



Pressing and releasing **E** button starts the automatic Spot Match while the beam becomes a rotating fan beam which will be automatically aligned to the SF803's center position.

Note: The left SF symbol along with a grade symbol  flashes while an additional SF symbol  at the right site of the display indicates the beam movement until the beam is centered.



When Spot Match has finished, the beam goes through the SF hole  and the measured grade value will be displayed.

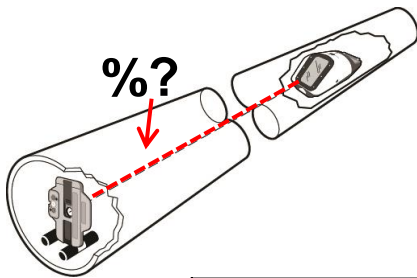


Automatic Spot Match can be exited any time by pressing and releasing the **ESC** button.



Spot Match at the jobsite

Automatic Spot Match can be used to measure the grade value of an existing pipe which needs to be replaced but also to check if the pipes have laid correctly the day before



Adjust the Spot Finder's center hole to the center of the laser beam then set up the laser at the manhole or at the first pipe



Place the Spot Finder at the last pipe



Select Spot Match at the menu and press E

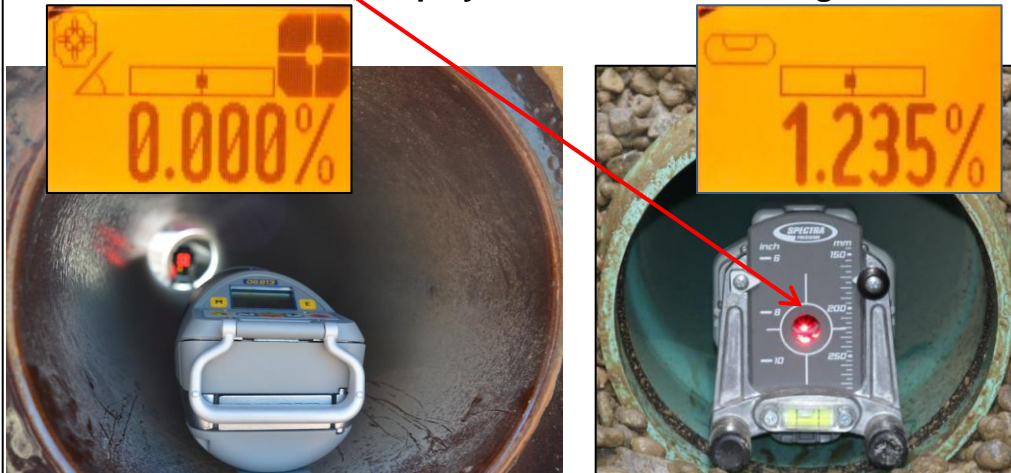


Spot Match at the jobsite

Rotating Fan beam searches for the Spot Finder's center;
LEDs indicate the beam movement



All LEDs On confirm Spot Match completed; beam goes through
the SF center hole: display shows the measured grade value



Replace the Spot Finder with the target plate
and proceed laying pipes







Menu functions – SpotLok (only DG813)

Automatic SpotLok (like PlaneLok) can be used to align and hold the beam automatically to the SF803's center point in automatic or manual mode. It can also be used in manual mode for establishing an automatic steep slope reference in mountain areas.





Don't start SpotLok while the Reference Check is running.

Press and release the **M** button at the standard display and select **SpotLok** using the   and   buttons.




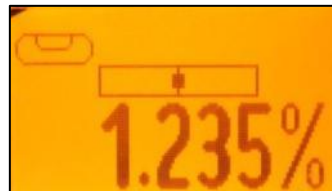
Pressing and releasing **E** button starts automatic SpotLok while the beam becomes a rotating fan beam which will be automatically aligned to the SF803's center position.

Note: The left SF symbol together with a lock symbol  flashes while an additional SF symbol  at the right site of the display indicates the beam movement until the beam is centered.



Automatic SpotLok complete: LEDs solid for 5 min., then flashing every 5 seconds to confirm SpotLok is OK.






Automatic SpotLok can be exited any time by pressing and releasing  button where the unit switches back to automatic or manual mode.




Menu functions – Manual Spot Search (only DG813)

Spot Search mode is used for pipe laying by detecting the beam manually using the **Spot Finder SF803** and can be activated in **automatic and manual mode**.




Using the “Over the Top” application, the Spot Finder detects the fan beam while the remote control’s display provides the information for positioning the pipe correctly at the required direction and elevation.

Press and release the  button at the standard display and select **Spot Search** using the   and   buttons.




Pressing and releasing  button starts the manual Spot Search mode while the beam becomes a rotating fan beam.

The empty SF symbol  indicates the Spot Search mode has been activated.

A black block  at the SF symbol indicates the beam position at the Spot Finder and gives the direction for finding the center of the beam. Two black blocks  on top or the bottom  of the SF symbol confirm the correct direction.

4 black blocks  at the SF symbol confirm the Spot Finder has been adjusted to the center of the beam which means the pipe has been placed correctly.








Manual Spot Search can be exited any time by pressing and releasing  button.





Menu functions – Line Scan / Line Set Check

Line Scan - For a faster **second day setup**, line scan enables complete automatic movement of the laser beam to the left and right limits.

Press and release the **M** button at the standard display and select **Line Scan** using the   and   buttons.


Pressing and releasing **E** button activates the Line Scan mode while the laser beam moves horizontally to the right/left limits and stops at the center position. When the beam crosses the target press the  button to stop the automatic beam movement.

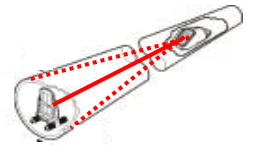
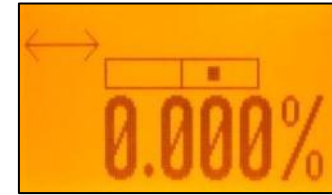
Corrections for centering the beam at the target's bulls-eye can be done using the   buttons.

Line Set/Check - Moves the laser beam vertically to its maximum limit for setting line in a **first day setup** without a SF803.



Press and release the **M** button and select **Line Set/Check** using the   and   buttons.

Pressing and releasing **E** button activates the Line Set/Check mode.

The beam moves to the **0% position** while the flashing Line Set/Check symbol appears together with a bubble  vial.





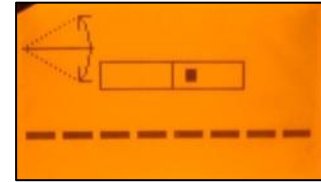
Menu functions – Line Set Check (cont.)

Roll the unit at the invert or use the screws of the invert plate until the vial is centered  and the Line Set/Check symbol  stops flashing.




Pressing and releasing the  **button again** starts the beam moving vertical automatically up to 45° / 100%.

Using the  or  button at the RC803 remote control or at the laser stops the automatic upwards beam movement.



Adjust the beam using   buttons until the beam is centered at the line stake.

After aligning the beam to the required direction position, pressing and releasing the  button starts the beam plumb down movement to the previous dialed in grade value.




Menu functions – Reference Check / Standby mode

Start Reference Check – Before starting some sensitive pipe work, an additional Reference Check can be started manually.

Press and release the **M** button at the standard display and select **Reference Check**



using the   and   buttons.

Pressing and releasing **E** button starts the Reference Check considering the current temperature inside the housing. While the unit checks the correct **0%** reference the beam flashes once a second simultaneously with a thermometer symbol  at the display.



Standby Mode – activating/deactivating the Standby Mode.

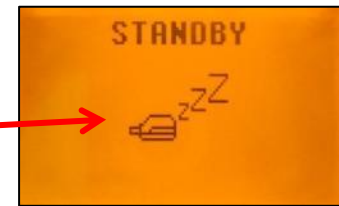
Press and release the **M** button at the standard display and select **Standby**



using the   and   buttons.

Pressing and releasing **E** button activates the Standby mode.

The self-leveling will be stopped and the beam will be turned off while the Line alert is still active. The display shows the Standby symbol.



To deactivate Standby mode and restore full operation of the laser, press and release **E** button again.



Menu functions – Info



Info - The DG/RC information (software version, ID, etc.), runtime of the DG or the actual used radio channel will be displayed.

Press and release the **M** button at the standard display and select **Info**

using the   and   buttons.



Pressing and releasing **E** button opens the Info's submenu.

The   buttons can be used to toggle between

About Laser, Runtime and Radio.



Press and release **E** to show the **Laser Info (Serial number, Software version, internal temperature)**, **Runtime (endless counter)** or **Radio (actual radio channel)** information



Menu functions – Service / Entering Setting Details

Service – capability to recalibrate the level sensors.

Press and release the **M** button at the standard display and select **Service**

using the   and   buttons.



Pressing and releasing **E** button starts the Z-axis calibration process at 0%.




The Service submenu also offers access to special features for technicians only.







Setting Menu Details – offers the different setting features.

Press and release the **M** button at the standard display and select **Settings**

using the   and   buttons.



Pressing and releasing **E** button opens the Setting's menu.

  and   buttons can be used to select the desired Setting function then press **E** button to open the selected submenu.



Settings – Grade Entry / Grade Display



Grade Entry – offers selection of Step + Go or Digit Select Mode.

Press and release the buttons until **Grade Entry** is displayed.



Pressing and releasing button opens the submenu.

Use the buttons to toggle between **Step + Go** and **Digits Select**. (Default).



Press and release to confirm the selection.

Grade Display – offers the different Grade Display options.

Press and release the buttons until **Grade Display** will appear.



Pressing and releasing button opens the submenu.

The buttons can be used to toggle between

Percent, (Default) Per Mille Degree.



Press the button to confirm the selection.



Settings – Sensitivity / Line Alert

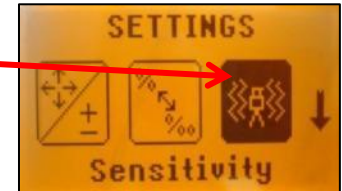


Sensitivity Selection – offers three different sensitivity options.

Press and release buttons until **Sensitivity** is displayed.

Pressing and releasing button opens the submenu.

Use the buttons to **toggle** between **Low, Mid (Default) and High.**



Press the button to confirm the selection.

Line Alert– offers three different Line Alert options.

Press and release and buttons until **Line Alert** is displayed.

Pressing and releasing button opens the submenu.

Use the buttons to **toggle** between **LA 5 min (Default), LA 30 sec and LA Off.**



Press the button to confirm the selection.



Settings – User Name / Set Password



User Name – offers the activation of the user name.

Press and release   and   buttons until **User Name** is displayed.


Pressing and releasing  button opens the submenu; **cursor** flashes.

Use the  button to **toggle** between **both lines**.

Pressing and releasing button   moves the **cursor** to the right/left.

Press and release buttons   to change the **character** (letters and numbers).

If the button will be hold for a longer time, the speed of changing the characters is increasing.

Press the  button to store the user name.

Set Password – a password can be entered.

Press and release   and   buttons until **Set Password** is displayed.

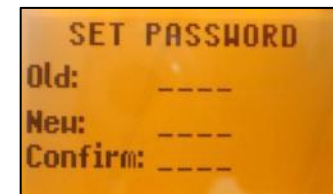
Pressing and releasing  button opens the submenu.

Use **button 1 to 6** to type in a password at the second row containing of **4 digits** and repeat the password at the third row.

A previous used password needs to be typed in at the row “Old”.



Press and release  button to **store the selected password**; unit falls back to the standard display.



Settings – Password On/Off / RF Channel



Password ON/OFF – activating/deactivating Password function.

Press and release   and   buttons until **Password On/Off** is displayed.

Pressing and releasing  button opens the submenu.

Use the   buttons to **toggle** between **Password On** and **Password Off**.



Press the  button to confirm the selection.

Any time when the DG will be turned on, the password has to be entered after the password function has been confirmed.

Typing in a wrong password turns off the DG immediately.

Radio RF Channel – offers the selection of a different radio channel.

Press and release   and   buttons **at the laser** until **RF Channel** is displayed.

Pressing and releasing  button opens the submenu.

Use the   and   buttons to **toggle** between **RF Channel k=1** and **Channel k=6**

Press the  button to confirm the channel.

After changing the radio channel, the **RC803 and SF803 need to be paired again.**



Settings – Language / Position Info



Select Language – offers language selection for the main menu text.

Press and release and buttons until **Language** is displayed.

Pressing and releasing button opens the submenu.

Use the and buttons **to toggle** between the different language options.



Press the button to confirm the selection.

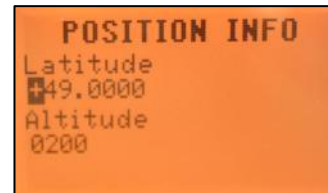
Position Info – capability of changing transmitters geographical location

Press and release and buttons until **Position Info** is displayed.

Pressing and releasing button opens the submenu; the cursor flashes.

Pressing and releasing button **moves the cursor** to the right/left.

Use the button **to toggle** between **Latitude** and **Altitude**.



Use the buttons for editing the required numbers, then press the button to confirm the dialed in numbers.



Troubleshooting DG813/DG613

Any error message can be deleted with a short press of the  button.

The table shows the related description and possible solutions.

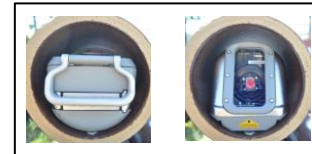
The next service center should be contacted if a different error message as shown at the table will be displayed.

Error codes	Description	Solution
21	Temporary EEprom problem	Repeat pairing and re-enter the customer settings
120	LA alert - Unit setup has been changed	Check laser beam elevation/direction
130	Mechanical Limit during Spot Match - only at DG813	Re-align the closer to the alignment point; check if existing slope is below/above -12% to +40%
140	Laser beam blocked - only at DG813	Make sure there are no obstacles between the transmitter and the SF803
141	Time Out – Automatic alignment or self-leveling could not be completed in the allowed time	Check radio operating range/ connection; ensure a stable laser setup



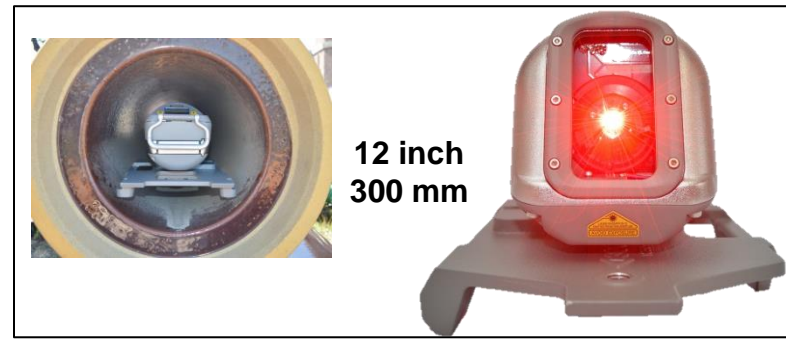
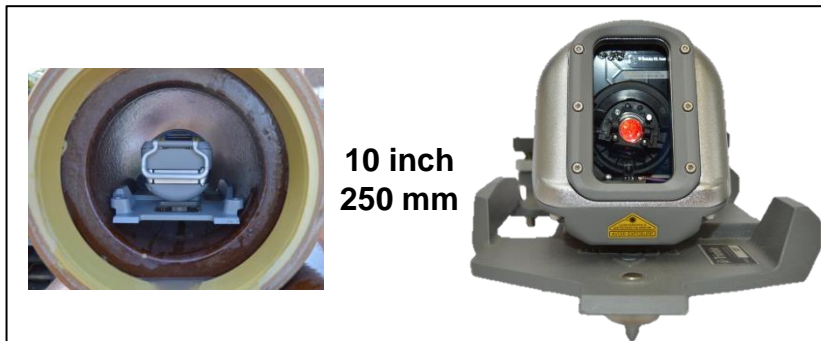
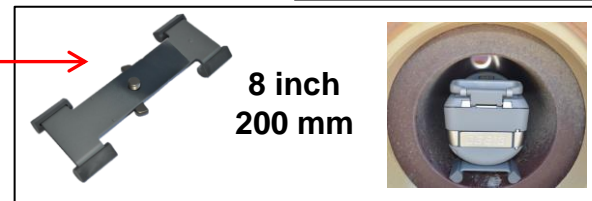
Laser setup - Existing accessories

- DG613/DG813 fit into a 6 inch/150 mm pipe



- 1238 → 1248

- 1230/1237 heavy duty invert plate

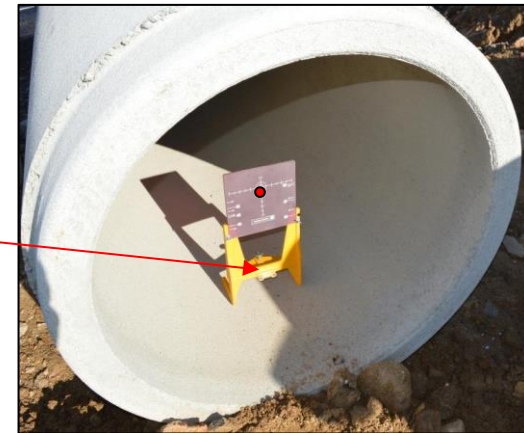
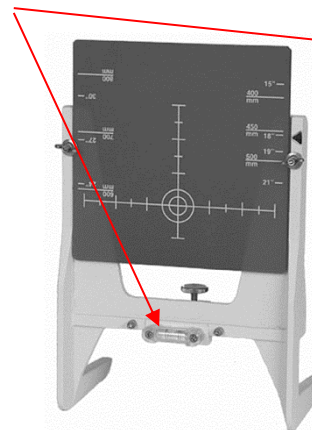


- 1239 vertical pole



Laser Setup using 1230/1239

- After mounting the pipe laser to the pole, dial in 0% and measure the distance from the invert to the beam's center
- Place the 936 target in front and adjust the bulls-eye to the beam – disregard the scale but check the bubble vial when laying the pipes.



Laser Setup using T-bar/1239

- T - bar with 1239 fixed pole for big pipes

