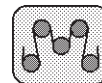


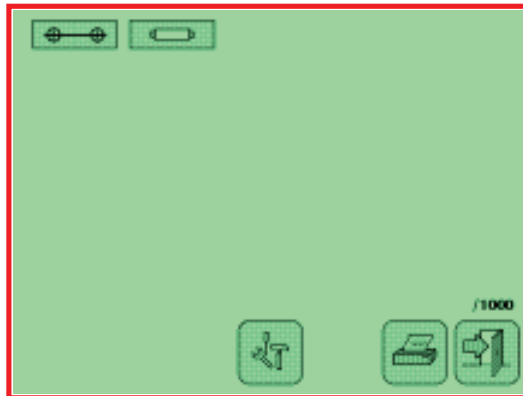
Fixturlaser Alignment System



ROLL P ARALLELISM

INTRODUCTION

The principle of roll parallelism measurement is to select a reference and measure each roll in relation to this reference. The reference can be either an existing floor reference line, running alongside the machine, or any of the rolls. The laser beam is used to replace the reference and the Angular Prism to transpose it to the roll to be measured. When you are taking readings on the roll you are actually measuring the deviation in the distances between the roll surface and the reference in two measurement points . The procedure described in this chapter is for using a floor reference.





APPLICATION SETUP

In this program settings specific for the Roll Parallelism application can be made.

Resolution



Sets the displayed measurement resolution to 0.1 – 0.01 – 0.001 mm in metric mode and 1 – 0.1 – 0.01 mils in imperial mode.

Sampling time

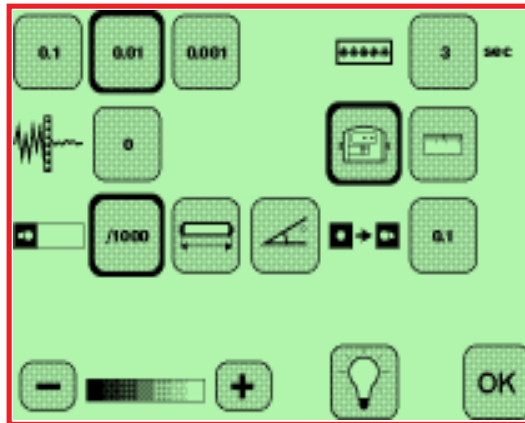


Sets the time (in seconds) used to collect calculation base for measurement values. Choose between 1 and 99 seconds.

Screen filter

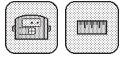


Sets the screen filter on a scale from 0 to 10 where 0 is disabled and 10 is maximum filtration. This slows down the update frequency of the screen values without reducing the accuracy. A high value gives a delay before the live values displays on the screen.





Measurement registering



Choose between registering with Detector or by manual entry.

Result display



Sets how the measurement result is displayed. Chose between per 1000 mm (per 1"), per roll length or as an angle.

Tolerance



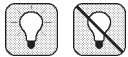
Set the tolerance for when the zero-value of the roll symbol should be displayed.

Contrast



Touch either side of the symbol to increase or decrease the screen contrast.

Backlight



Turns on or off the screen backlight.



COARSE ADJUSTMENT

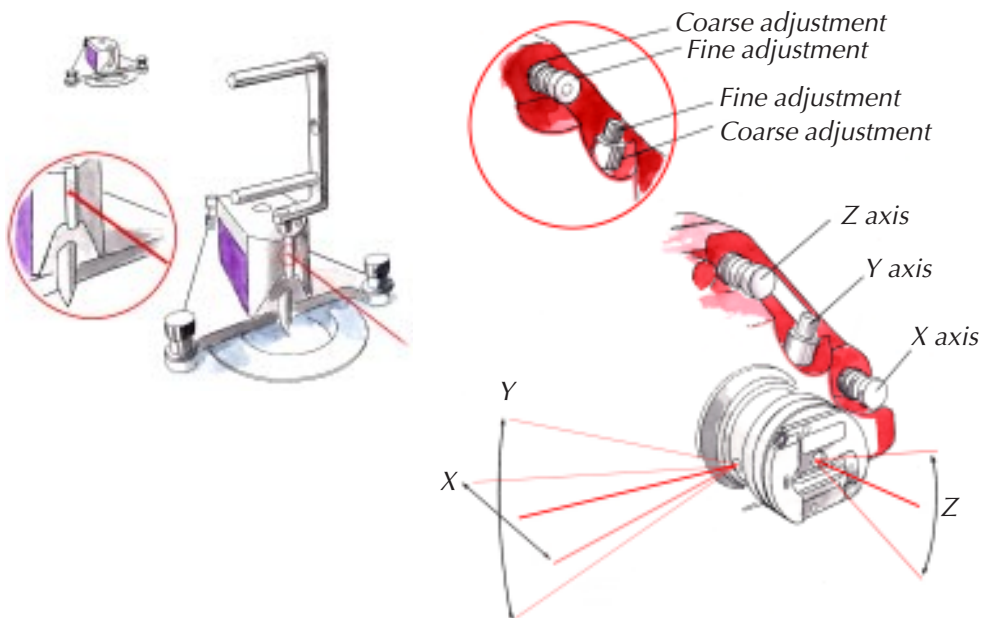
The first thing you will need to do in a roll parallelism measurement is to line up the laser beam parallel to a reference. It is not necessary to do this accurately. It is only required that you adjust the beam to hit the detector surface. The software in the Fixturlaser Roll²⁰⁰ handles the deviation between the laser beam and the reference.

The reference can be either floor datum marks (floor monuments) or a roll. The following procedure will describe how you set up the equipment using floor datum marks as reference. Rough line up of the laser using a roll as the reference is described in the application notes.



COARSE SETTING OF THE LASER TRANSMITTER FL100

1. Position the Triangular Bases over two of the datum floor marks. The Triangular Base is leveled using the spirit level on the Detector Probe Guide and the adjustment screws on the Triangular Base. Adjust the level in two directions. Position the Detector Probe Guide with the Detector Probe and fix it with the tip of the probe on the datum mark. The reflecting tape should face the FL100. When one of the Triangular Bases is correctly positioned carefully lift up the Detector with the Detector Probe and repeat the procedure for the second Triangular Base.
2. Position the tripod with the FL100 so that the laser beam lines up as close to the reflecting tape as possible. Note that the entire laser spot must hit the Detector surface without being blocked. A too steep angle between the laser beam and the Detector may result in unreadable signals. Carefully move the tripod until you reach the best possible position.



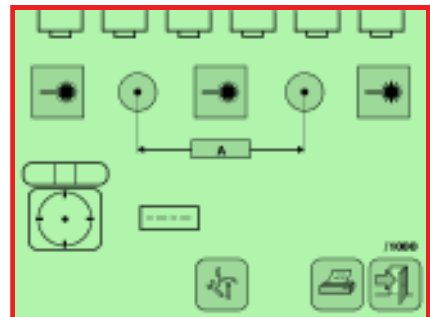


3. Aim the laser beam to the center of reflecting tape on the closest Datum Mark Pick-Up Fixture. Turn the turret on the FL100 until the beam hits the reflecting tape on the furthest Datum Mark Pick-Up Fixture.
4. Center the beam on the furthest reflecting tape. If the distance is large you may need to rotate the tripod head, if not you can use the lower micrometer screw on the FL100.
5. Turn the turret until the laser beam hits the reflecting tape on the closest Datum Mark Pick-Up Fixture. Centre the beam by adjusting the FL100 sideways with the Slide Table.
6. Repeat step 4 and 5 until the laser beam hits both reflecting tapes by just turning the turret.



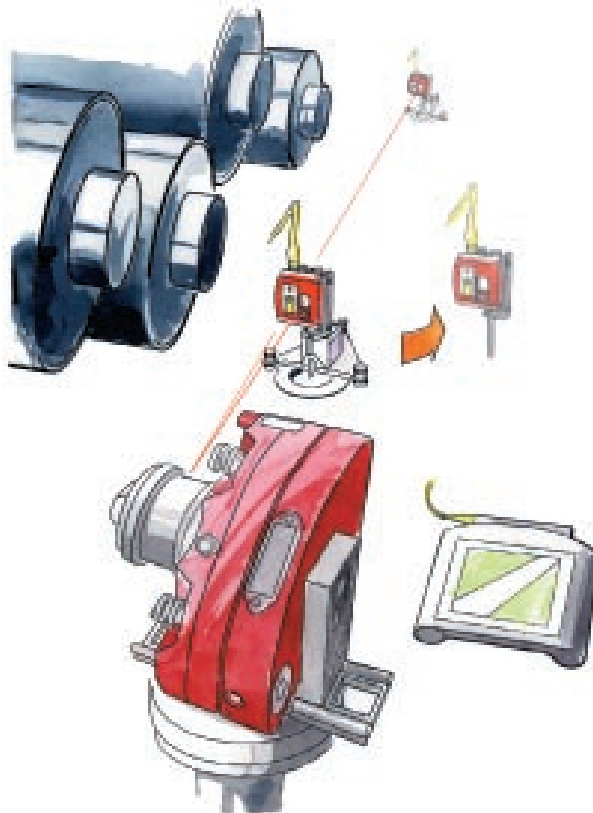
ESTABLISHING THE REFERENCE

1. Connect the Detector unit to the Display unit and turn on the system. Select the Roll Parallelism Program. Select the function Reference Line.
2. The screen displays a top view of your working area with three possible positions for your FL100. Select the one according to your situation.
3. Measure the distance between the two datum marks where you have positioned the Datum Mark Pick-Up Fixtures with a tape measure. Touch the "A"-icon and enter the distance in mm or inch depending on the System setup. Touch OK.



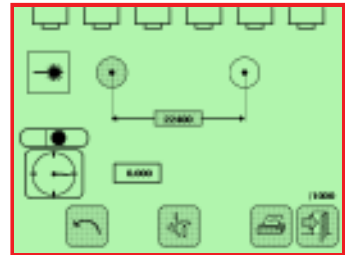


4. Mount the Detector unit on one of the floor fixtures. Note that the cable connection must be pointing upwards. Turn the FL100 turret until the laser beam hits the Detector surface. Use the cross hair on the Detector if necessary. Touch the Datum Mark icon on the Display unit corresponding to the actual position of the Detector. Wait until measurement values appear on the screen before you remove the Detector. This may take a few seconds depending on the selected Sampling Time in the Application setup.
5. Move the Detector to the second Datum Mark Pick-Up Fixture and repeat the procedure. Touch the OK icon. Touch the re-measure icon if you need to re-measure.

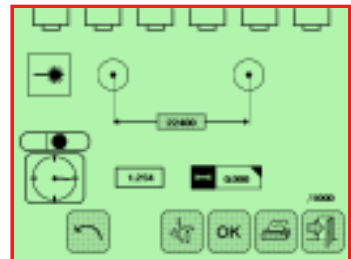




The reference is now established and measurement of the rolls can start. You can always go back and re-check the reference at any time during the measurement process. To do so touch the Re-check icon at the far right in the Summary screen. This might be necessary if there are people working in the area. It is essential to the measurement result that the FL100 remains untouched during the process. If moved, only the slightest, it is devastating to the measurement result and you will have to start over again.



The Reference Screen with one point measured.



The Reference Screen with both points measured.



The Summary Screen when the reference is established.



SETTING UP THE ANGULAR PRISM

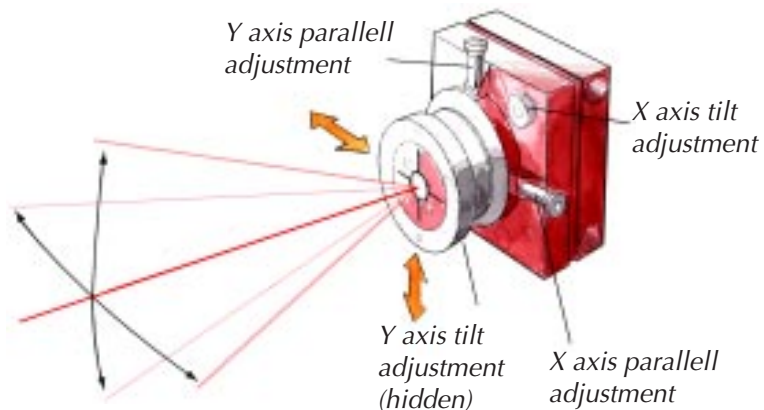
1. Before the centering process can start the laser beam has to be leveled. The easiest way to achieve this is to use the tape measure to set the distance between the laser beam and the floor equally on two locations; the first location close to the FL100, the second location close to the Angular Prism.
2. Position the tripod with the Angular Prism over the reference line at the roll you want to measure. Roughly adjust the Angular Prism horizontally and vertically, by raising/lowering the tripod and using the Slide Table, so that the laser beam hits the center of the Angular Prism. The deflected beam should run along the roll to be measured at a distance from the roll between 50 – 200 mm (2" – 7,5"). The tripod should rest stable on the floor and the tripod platform be roughly leveled.





COURSE CENTERING AND COLLIMATING OF THE ANGULAR PRISM

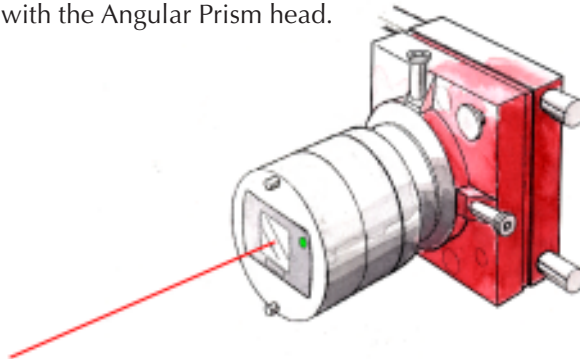
1. Uncover the mirror by removing the Prism Turret. Coarsly adjust the Angular Prism adjusting the tripod height and using the Slide Table.
2. Make a fine adjustment to the Angular Prism using the adjustment screws for parallel movement in the X and Y directions so that the laser spot hits the centre of the mirror..
3. Adjust the reflected beam so it hits the laser aperture on the FL100 by using the tilt adjustment screws on the Angular Prism. Check that the laser beam still hits the center of the mirror. If necessary, adjust parallel and then angular again.





FINE CENTERING OF THE ANGULAR PRISM

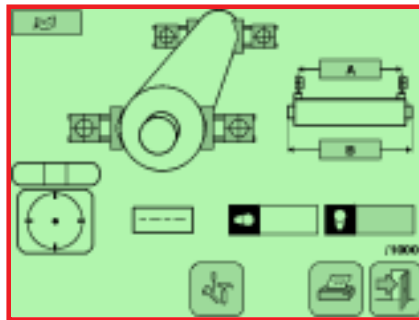
1. Attach the FD15 (the centering Detector) on the Angular Prism turret and turn on its power. The LED flashes green light when turned on, and not reading any laser spot. When the laser beam hits the detector surface the light turns to permanently green or red. Rotate the turret so that the color marks are on each side (left – right).
2. The LED on the FD15 is now permanently green or red. Green light indicates that the Angular Prism needs to be adjusted horizontally, e.g. moved towards red and vice versa. Use the adjustment screws on the side of the turret for adjustments horizontally. The moment when the light turns from red to green or green to red, the correct position is reached.
3. Rotate the turret 90 degrees, color marks at top – bottom. Repeat the above procedure. Use the adjustment screw for vertical movements until the LED changes color.
4. Check that the laser beam is reflected back to the laser aperture on the FL100.
5. Replace the FD15 with the Angular Prism head.



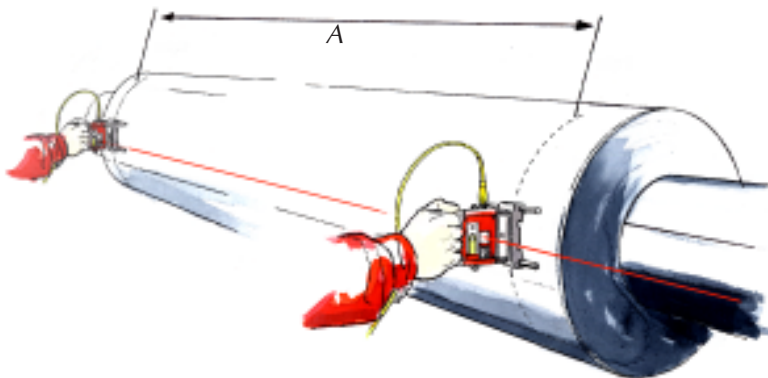


ROLL MEASUREMENT

1. Select the Roll Parallelism Program and then the Roll measurement function. The screen shows the roll viewed from the drivers side.
2. Touch the ID icon and enter the Roll ID. (This is mandatory). You can 8 alphanumerical characters. Touch OK.

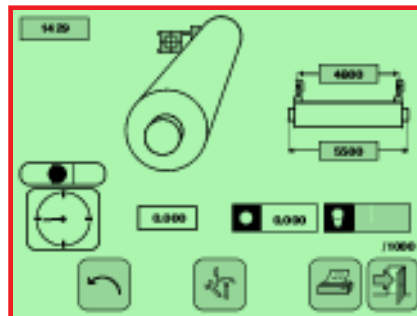
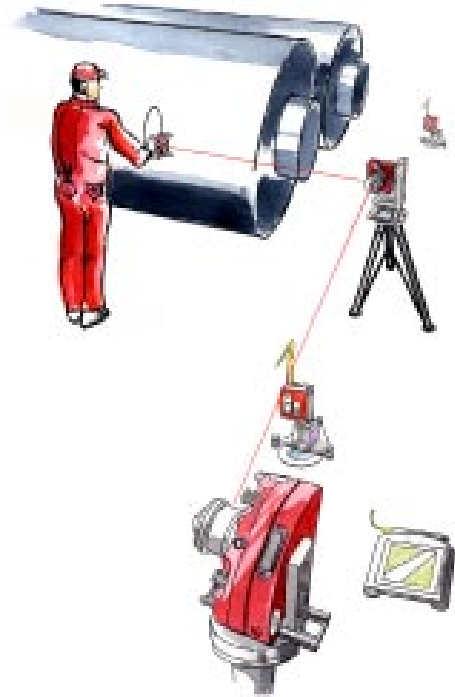


3. Measure the distance between the positions on the roll, where you are going to take readings. Touch the "A" symbol and enter the distance (mm or inch depending on system settings). Touch OK. If you have chosen to display the result per roll length you will also need to enter the B value (roll length).





4. Position the Detector on one of the desired measurement points. Adjust the Detector angle so it is leveled using the inclinometer display on the screen, or, until the LED on the Detector turns from flashing green to red, or vice versa. Direct the laser beam to the Detector by rotating the turret on the Angular Prism. Touch the icon corresponding to the Detector position.
5. Move the Detector to the second measurement point, adjust the angle, direct the beam and touch the Detector icon on the screen. The deviation is now displayed. The symbol indicates the direction of the deviation.
6. The vertical deviation can now be entered. Measure the deviation using a machine level. Touch the icon for manual entry and enter the deviation. Touch OK.
7. Touch OK to confirm the measurement results. You will now return to the Summary Screen.

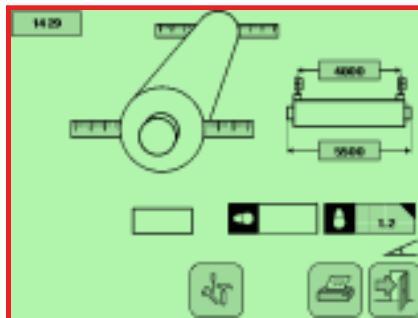




MANUAL ENTRY OF MEASUREMENT VALUES

Sometimes it is impossible to measure a roll with the Detector. In those cases it can be necessary to enter the values manually.

1. Select Manual Entry in the Application Setup Program.
2. Position a ruler, in level, on the first measurement point and direct the laser beam. Read the value where the laser beam hits the ruler. Touch the Ruler icon that corresponds to the measurement position and enter the value. Values are entered in mm or mils. Touch OK.
3. Repeat the procedure above for the second measurement point.
4. Touch OK to confirm the measurement result and return to the Summary Screen.





THE SUMMARY SCREEN

The Summary Screen is updated as new rolls are measured. To the right of the most recently measured roll there is a new symbol for rolls to be measured. Up to 50 rolls can be measured.

Functions in the Summary Screen:

- Change of reference. Chose any roll or the Reference line to become the new reference by touching its icon. All values are recalculated.
- Re-check of reference. (See next page)
- Re-measurement of a roll. Touch the Roll ID to enter the measurement screen for that particular roll.
- Alignment of a roll. Touch the Roll ID to enter the measurement screen for that particular roll.
- Sort the rolls. Touch the sort icon and the rolls are sorted on ID in ascending order. The most left sign is sorted firstly. Sort order: 0-9, a-z (I.e. 11 comes before 2, and 02 comes before 11).
- Touch the print icon and the screen image is sent to the printer.
- Save measurement. Touch the icon to save the measurement.





CHECK THE REFERENCE LINE

To ensure yourself that the FL100 has not been moved during the measurement procedure a check of the reference line is recommended.

1. Select the icon for the reference line at the far right in the Summary Screen. (This appears only if you have established a reference line previously.)
2. Accomplish the measurement procedure as described in Establishing the reference line.
3. This reference line check will appear as one of the measurements made. Compare this one with the original reference line measurement to check that the reference laser beam has not moved. If it has move, previous measurements has to be re-made.

ALIGNMENT

1. Touch the Roll ID of the roll you want to align.
2. Touch the re-measure icon.
3. Position the Detector on the measurement point at the end of the roll that is considered as fixed (non-adjustable) and direct the laser beam. Touch the icon corresponding to the Detector position. The deviation is zeroed.
4. Move the Detector to the second measurement point and direct the laser beam. The measurement values are continuously updated. Adjust the roll towards zero until the deviation is within tolerances.
5. Re-measure the roll when the adjustments are finished. Touch OK to confirm the measurement result.

Note! If you first measure and then adjust, the result stored in the memory will be the “as is” value. To keep the “as found” value in the memory the adjustments should be registered in a new measurement.



DOCUMENTATION

There are three possibilities to document the measurement.

- Save the measurement to the system memory.
- Print the result.
- Export the result to a computer.

