

TRL ROLLING STRAIGHTEDGE MANUAL

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1. Health & Safety

The A1141 TRL 3 Metre Rolling Straightedge has been designed to meet the requirements of BS EN 292.

Operators should take care when lifting sections from carrying cases and loading and unloading carrying cases from transport. In both cases good lifting practice should be employed.

2. Description

The machine simulates a 3 metre straightedge sliding along the road surface and consists of a rigid frame supported on two parallel rows of rubber-tyred wheels. At the mid-point of the length is a sensing wheel which is free to move in such a way that it detects depressions but not bumps in the road surface. Movement of this wheel is transmitted to a pointer and dial in the instrument's total distance travelled (both in metres).

In Use the straightedge is pushed along the road at a slow walking pace whilst the number of irregularities, size and their distance from the starting point are noted. To avoid the need for constant observation a bell is fitted, set to sound when a 4mm depression is exceeded.

The rolling straightedge is made in three sections, clamped together so that the overall alignment of the wheels is maintained. A case is supplied for each section for storage and transport.

3. General Care

It is absolutely essential that the wheels are kept clean and free of tar, chippings etc. Failure to clean the wheels after use will lead to inaccurate results. In addition, recalibration cannot be carried out with wheels in poor condition.

DO clean wheels using Lamp Oil or similar paraffin-based solvent and a suitable cloth.

DO NOT use any solvent likely to attack rubber and/or plastic.

DO NOT lift assembled straight edge bodily off the ground.

ALWAYS roll sections together and apart on a smooth surface.

DO NOT use excessive force when clamping sections together.

NEVER push the straightedge at speed over badly rolled surfaces.

NEVER tow the straightedge behind a vehicle.

NEVER drag the straightedge sideways when turning round – roll the sections apart and lift them clear of the ground to turn them.

4. Setting Up

Read the Health and Safety instructions in Section 1 and the General Care instructions in Section 3.

Check that the three sections of the straightedge have the same serial number. Each straightedge is calibrated as a complete unit and sections are not interchangeable. This should be particularly noted where more than one straightedge is owned, or where more than one is being used on the same site.

Examine all wheels to ensure that they are free from bitumen, stones and other deposits (see section 3) and that each is able to rotate freely. Damage to any of the supporting wheels will affect the alignment of the straightedge and therefore its accuracy.

Rotate the trailing wheel and check that the distance odometers are functioning correctly. Check that the total distance does not exceed the figure stated on the calibration plate.

Check that the vertical movement of the sensing wheel, in the centre section, is being transmitted smoothly to the pointer and dial in the instrument head.

With the bell on, tilt the middle section sideways to allow the sensing wheel to move downwards. Check that the bell operates as the pointer exceeds 4mm. Switch off after check. If the bell does not operate, remove the hood and check (and replace if necessary) the batteries.

The straightedge can now be assembled. Make sure the section clamp plates are clean and free from any grit or dirt. Each pair of clamp plates are identified A-A or B-B. Please note that they are not interchangeable. Do not use excessive force when clamping sections together.

The handle can now be fitted and the equipment is ready for use.

5. Operation

Read the Health and Safety instructions in Section 1 and the General Care instructions in Section 3.

Check the compliance specification for the carriageway.

The rolling straightedge is operated on a longitudinal test-line or lines, parallel to the centre line of the carriageway.

At the start of a test section, reset the distance odometer to zero and switch on the bell.

For the efficient operation, the straightedge requires two people, one to push and the other to note the locations and sizes of any depressions.

The straightedge should be pushed at a slow walking pace (1-2 km/hour). When an irregularity is indicated by the pointer (or bell) the straightedge should be moved slowly backwards and forwards to locate the position of maximum depression.

At this point the distance reading should be noted and the road surface marked (if required).

At the end of each section, the depressions in each size category are totalled and checked for compliance with the specification.

With some very coarse, heavily chipped, grooved or brush textured surfaces, there may be some difficulty in reading the indicator at the prescribed speed. It is not necessary to maintain a constant speed and it is recommended that the rate of progress be adjusted to suit the type of surface under test. In the case of concrete surfaces, 'worm casts' produced by the texturing process should be removed before making measurements, similarly, and loose chippings should be swept from the surface.

On completion of the test, switch off the bell. The straightedge can then be dismantled and re-boxed.

6. Calibration

The rolling straightedge is a precision measuring instrument and requires care in transportation and operation if it is to retain its accuracy. It is essential to have the equipment checked regularly. Calibration is required at 12 month intervals, or when the RSE has covered 30,000m, whichever occurs first. Or if it is suspected that the equipment is not functioning correctly, or has suffered damage.

A recalibration service is operated by

T & J Farnell Ltd
Unit 9 Halcyon Court
Huntingdon
PE29 6DG
T: 01480 260206
E: sales@tjfarnell.co.uk

Checks should be made:-

At the start of a contract or testing programmes, or in line with any quality procedure used by the operating laboratory.

7. References

Calibration, maintenance and use of the rolling straightedge TRL Report SR290.

Rolling Straight Edge – The Measurement of the Surface Regularity of Road Pavement Surfaces – Calibration Requirements UKAS Technical Policy Statement TPS25.