Lawton Tools
Rail Products Limited
Specialist Solutions & Supply Chain Partner

Instructions

Weld Alignment Inspection Gauge: LT/RG/29

General Description:

The gauge is used by Weld Inspectors to check the alignment of welds both vertically and also horizontally across the foot of the rail section. The gauge can be used on either side of the weld. It is produced from aluminium for lightness, but with stainless steel contact nibs for durability. Once in position, the gauge 'self supports' by means of an integral magnet and clamping screw. The gauge is designed to show the permissible limits for vertical alignment and alignment across the foot. The contact outer nibs are positioned at a height that is the maximum allowable height for burring at the collar relative to the foot edge.

Part A

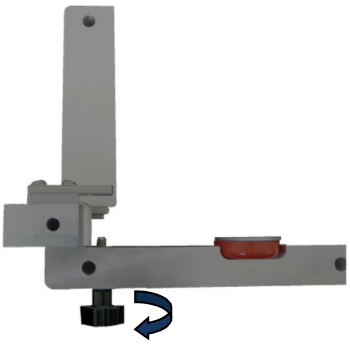
The gauge is supplied in two parts:

Part (A) is attached to the rail. The two inboard stainless steel nibs locate on the upper edge of the foot of the rail, ensuring that the gauge is positioned vertically. The two outer stainless nibs are used to align the gauge relative to the edge of the weld collar. The distance from the edge of the weld to the vertical edge of the gauge is 50mm, therefore the datum lines at the mid-point in the two slot positions marked foot and web on part B are also positioned at 50mm from each edge. The slot width (marked web) is 4mm, providing a tolerance of +/- 2mm for the vertical alignment and for the horizontal alignment, the slot width (marked foot) is 6mm, therefore providing a tolerance of +/- 3mm across the foot of the rail section.

Part B

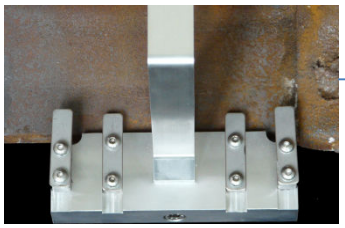
The gauge is designed to be used on both Railtech and Thermit welds. However, part B also includes a recess which enables the collar width on Thermit SKV-E welds to be checked. Please refer to Thermit's procedures for checking the width of the weld collar.

Checking the alignment of a weld:

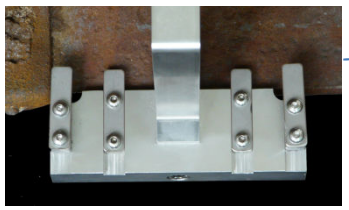


Remove the protective cover from the magnet

Release the locking screw by turning anticlockwise

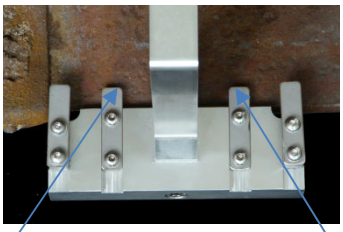


Positioned to the left of the weld collar

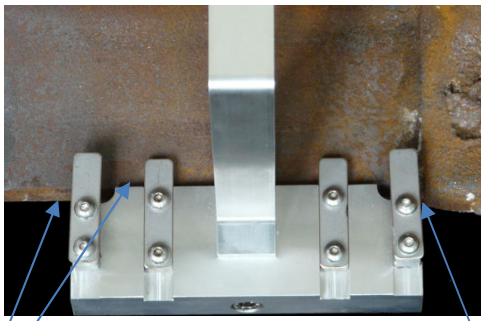


Positioned to the right of the weld collar

Check that the edge of the rail foot is clean and free of burrs. Position the gauge on the rail ensuring that the underside of the 2 contact nibs are sitting correctly on the upper edge of the rail foot.
The gauge can be positioned either to the left or the right hand side of the weld.



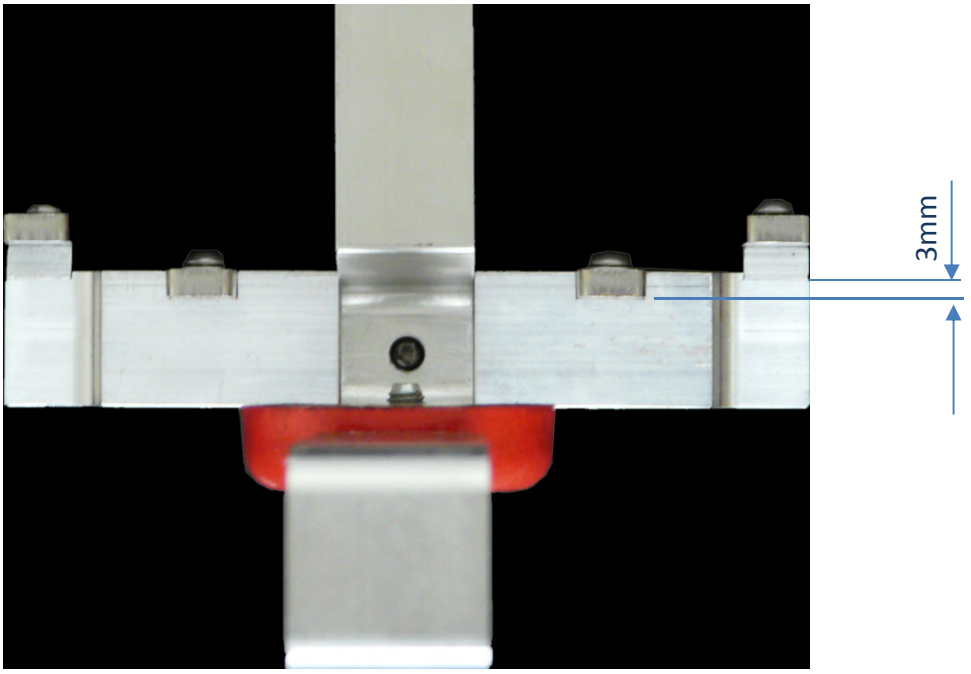
These nibs ensure that the gauge is aligned vertically to the foot



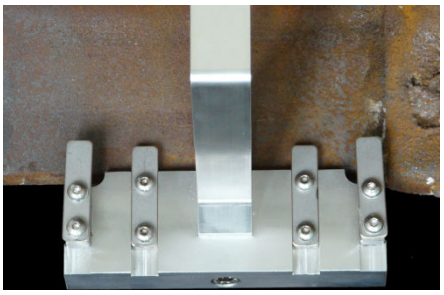
Ensure that the gauge is flush to the edge of the foot

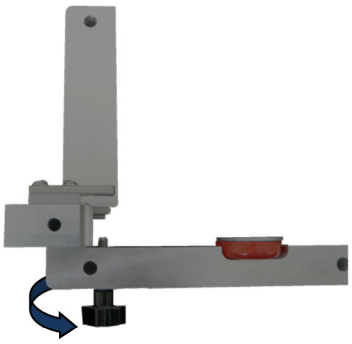
Ensure that the nib is in-line to the edge of the weld.

Ensure that the gauge is flush with the edge of the rail foot as this aligns the gauge square to the rail. Also check that the outer edge of the nib is in-line to the edge of the weld.

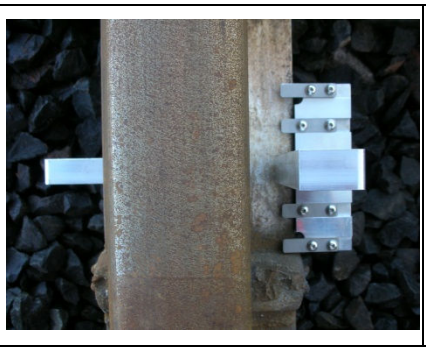
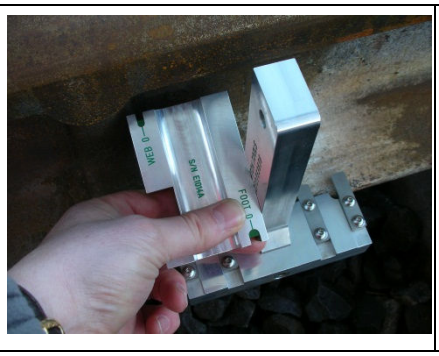


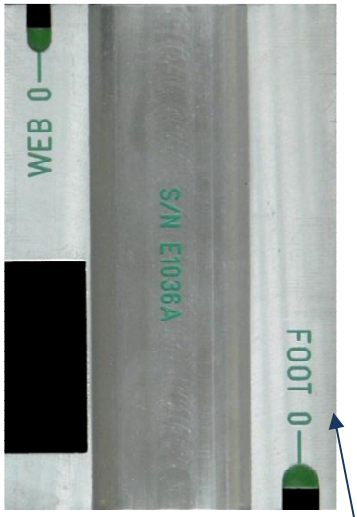
Please note: The outer nibs have been set 3mm higher than inside nib. This is to allow for any weld flashing. If the weld flashing is more than 3mm, the nib will foul, so that the gauge cannot be properly aligned with the side of the weld. Potentially the weld may fail inspection if there is an excessive amount of weld flash. Therefore please refer to current Network Rail requirements.



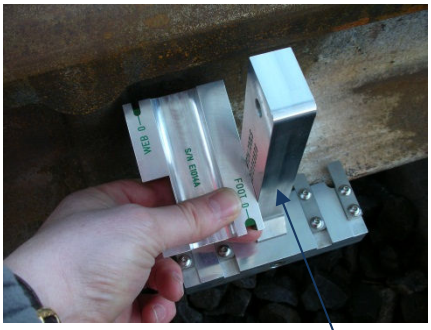


When the gauge is in position tighten the locking by turning clockwise. *Please note, do not over tighten a light clamping force is all that is required.

	The gauge is now in position on the rail. The weld can now be inspected for both vertical alignment and also for horizontal alignment across the foot.
	View of gauge from above the rail.
	Using the separate checking block (Part B) the weld can now be checked for vertical alignment….
	…and also to check the alignment of weld across the foot of the rail.

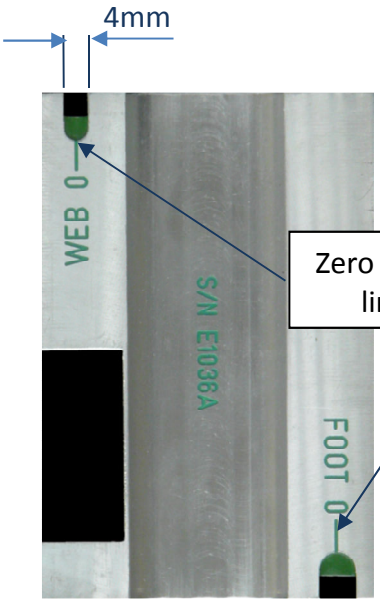


The checking block is double sided, allowing the block to be used either left or right handily.
For checking the vertical alignment of the weld, hold the side marked **FOOT** against the vertical column on the alignment gauge as shown below. The vertical alignment of the weld can then be assessed using the slot marked **WEB**.



This side of the checking block to be held against vertical column.

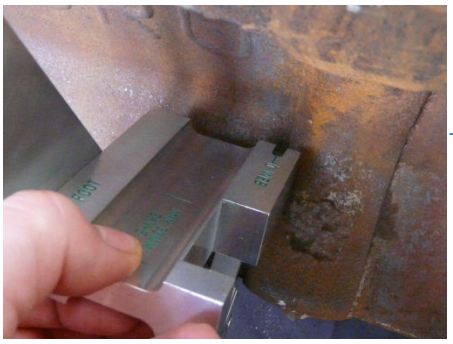
Vertical column



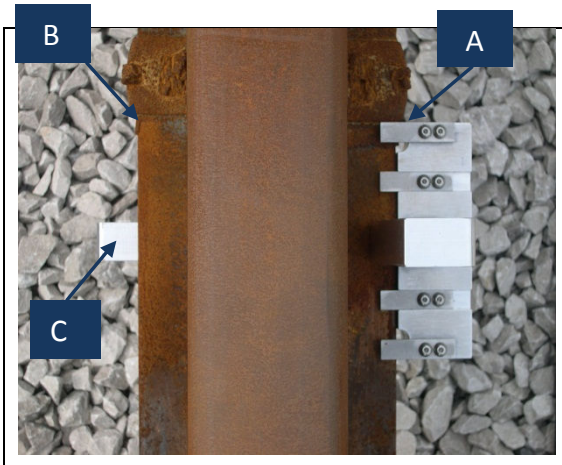
Tolerances: Vertical Alignment:

The datum line marked '0' denotes the centre of each slot. The weld would be perfectly vertical or square across the section of the rail, provided that the weld aligns to these marks. There are however allowable tolerances:

For vertical alignment the tolerance is +/- 2mm from the datum line, therefore the slot width is 4mm. If the weld does not align within this slot the weld is outside the specified tolerance.



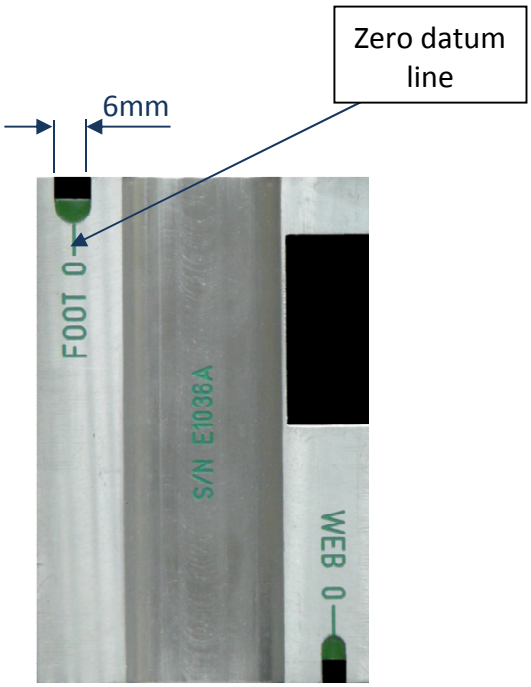
The weld can be assessed for vertical alignment at the foot, in the web and under the head of the rail.



Alignment of the weld across the rail section, point A and point B is assessed by again using the checking block.

'C' hi-lights the extended 'toe', which protrudes beyond the edge of the foot. The checking block is held against the 'toe' when assessing the weld for alignment across the foot of the rail section.

Hold the side of the checking block marked **WEB** against the toe, so that the alignment of the weld can be assessed by noting the position relative to the slot marked **FOOT**.



Tolerances: Alignment across the foot.

Again the datum line marked '0' denotes the centre of the slot. The weld would be perfectly square across the section of the rail provided that the weld aligns to this mark. There are however allowable tolerances:

For horizontal alignment the tolerances are +/-3mm from the datum line, therefore the actual slot width is 6mm. If the weld does not align within this slot the weld is outside the specified tolerance.

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