

## 6-2.3 TOLERANCES FOR TRACKS ON RIGID SUPPORT

### 6-2.3.1 ALLOWABLE DEVIATION BEFORE RE-ARRANGEMENT

The tolerances specified in this section apply to new fixed ground-bearing tracks.

Tolerances for machine mounted tracks are specified in section 6-2.2.

If, in the course of use, the admissible deviations for the new installation are exceeded by 5 mm or 20 %, the track must be re-arranged.

In certain circumstances, it may be necessary to re-arrange the track before the 20 % limit is reached, if the travelling behaviour is noticeably deteriorating.

### 6-2.3.2 TRACK GAUGE TOLERANCES

The greatest admissible divergence  $\Delta s$  from the nominal span is :

for  $s < 15$  m :  $\Delta s = \pm 3$  mm

for  $s > 15$  m :  $\Delta s = \pm [3 + 0.25 \cdot (s-15)]$  mm (with a maximum of  $\pm 25$  mm)

(s is expressed in metres)

If the machine is guided on one rail only, or if the machine has a pivoted support or is of high elasticity, the tolerance  $\Delta s$  may be increased to three times the above value but must not exceed 25 mm.

### 6-2.3.3 SAG OF RAILS

It is assumed that under normal working conditions, the deflection of both rail tracks under load is approximately equal and does not significantly effect the performance of the machine.

### 6-2.3.4 OVERALL RAIL TOLERANCES

#### Straightness

For each rail, the overall centre-line measured at the running surface, shall not deviate by more than  $\pm 10$  mm from the theoretical line in both the horizontal and vertical planes.

For machines guided on one rail only, the requirement for lateral straightness of the non-guiding rail only may be lowered, in agreement with the manufacturer of the machine.

#### Rail joints

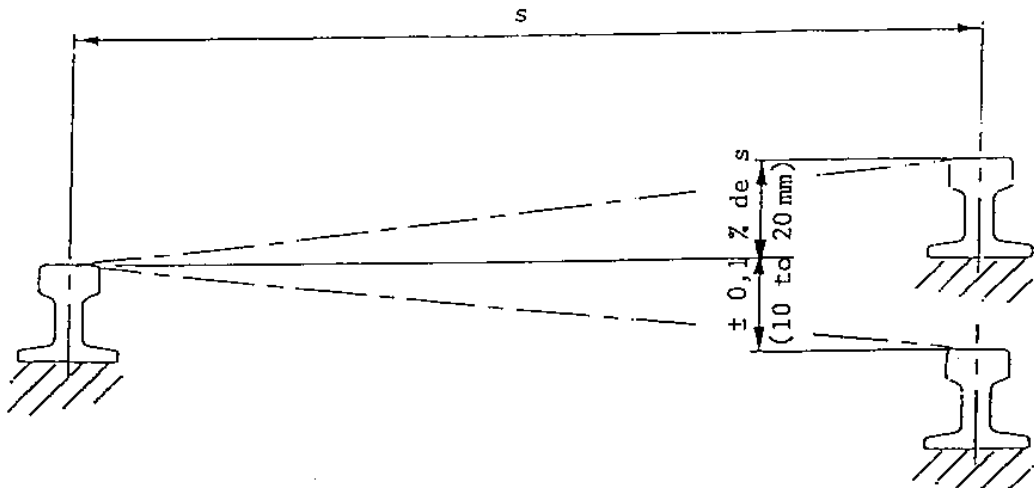
It is recommended that welded rail joints are used.

Misalignment at the rail joints is, therefore, not expected and need not be taken into account.

### 6-2.3.5 RAIL LEVEL TOLERANCES

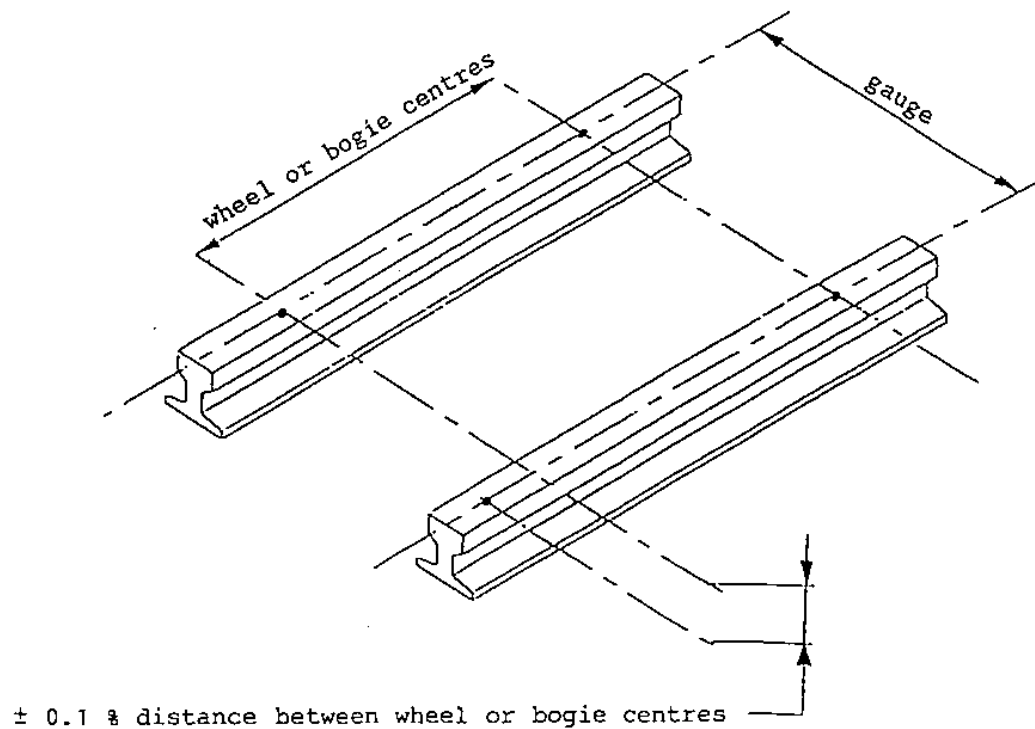
#### Relative rail levels

The greatest divergence in level between the two rails, perpendicular to the track axis, shall be less than 10 mm for tracks up to 10 m centres, and less than 0.1 % of  $s$  above with a maximum of 20 mm.



#### Height tolerance on 4 points

The rails shall be laid in such a way that the greatest unevenness in the bearing surface is not more than  $\pm 0.1$  % of the distance between wheel or bogie centres.



- Local rail curvature (vertical)

The vertical curvature in the longitudinal axis shall not exceed  $\pm 2$  mm in any 2 m length taken at random.

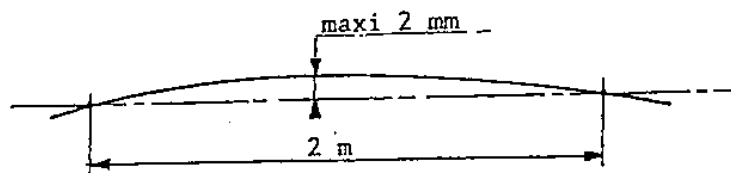
- Rail inclination

The longitudinal inclination of the rail rolling surface must not deviate from the theoretical value by more than 0.3 %.

### 6-2.3.6 LATERAL RAIL TOLERANCES

- Local rail curvature (lateral)

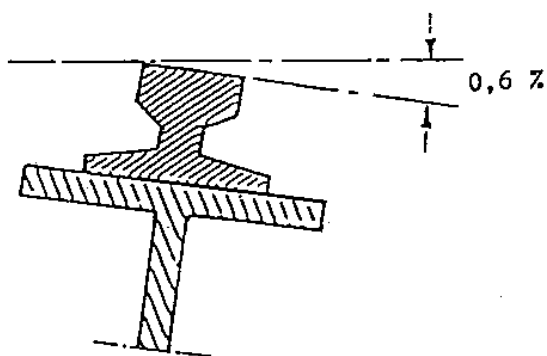
The lateral curvature shall not exceed  $\pm 2$  mm in any 2 m length taken at random.



random sampling

- Rail inclination

The lateral inclination of the rail rolling surface must not deviate from the theoretical value by more than 0.6 %.



## 6-2.4 TOLERANCES FOR TRACKS ON BALLAST

### 6-2.4.1 ALLOWABLE DEVIATION BEFORE RE-ARRANGEMENT

The tolerances specified in this section apply to new fixed ground-bearing tracks.

The maximum allowable deviation, before the rails must be reset, is shown in brackets.

In certain circumstances, it may be necessary to re-arrange the track before the quoted limit is reached, if the travelling behaviour is noticeably deteriorating.

### 6-2.4.2 TRACK GAUGE TOLERANCES

The greatest admissible divergence  $\Delta s$  from the nominal span is  $\pm 10$  mm (with a maximum of  $\pm 40$  mm before re-alignment).

If the machine is guided on one rail only, or if the machine has a pivoted support or is of high elasticity, the initial tolerance may be increased from the above value with the agreement of the machine manufacturer.

### 6-2.4.3 SAG OF RAILS

It is assumed that under normal working conditions, the deflection of both rail tracks under load is approximately equal and does not significantly effect the performance of the machine.

### 6-2.4.4 OVERALL RAIL TOLERANCES

#### Straightness

For each rail, the overall centre-line, measured at the running surface, shall not deviate by more than  $\pm 6$  mm from the theoretical line in both the horizontal and vertical planes, when measured over any 30 m length (with a maximum of  $\pm 12$  mm before re-alignment).

For machines guided on one rail only, the requirement for lateral straightness of the non-guiding rail only may be lowered, in agreement with the manufacturer of the machine.

#### Rail joints

It is recommended that welded rail joints are used.

Misalignment at the rail joints is, therefore, not expected and need not be taken into account.

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#### 6-2.4.5 RAIL LEVEL TOLERANCES

- Relative rail levels

The greatest divergence in level between the two rails, perpendicular to the track axis, shall be less than 0.1 % of the theoretical track centres (with a maximum of 0.3 % before re-alignment).

- Height tolerance on 4 points

The rails shall be laid in such a way that the greatest unevenness in the bearing surface is no more than  $\pm 0.1$  % wheel or bogie centres (with a maximum of 0.3 % before re-alignment) [see scheme in 6-2.3.5].

- Local rail curvature (vertical)

The vertical curvature in the longitudinal axis shall not exceed  $\pm 6$  mm in any 30 m length taken at random (with a maximum of  $\pm 12$  mm before re-alignment).

- Rail inclination

The average longitudinal inclination of the rail rolling surfaces must not deviate from the theoretical value by more than  $\pm 0.1$  % of wheel or bogie centres (with a maximum of  $\pm 0.3$  % before re-alignment).

#### 6-2.4.6 LATERAL RAIL TOLERANCES

- Local rail curvature (lateral)

The lateral curvature in the longitudinal axis shall not exceed  $\pm 6$  mm in any 30 m length taken at random (with a maximum of  $\pm 12$  mm before re-alignment).

- Rail inclination

It is assumed that the track is mounted on resilient pads and that lateral deviation in the level of the rail rolling surface will correct itself under load.

#### 6-2.4.7 DEPTH OF BALLAST

The allowable deviation on the depth of ballast material under the rail sleeper shall be + 150 mm or - 100 mm.

There must be a 300 mm minimum depth of ballast under the sleepers.

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