

# Track Work Instruction 2G004

## How to measure voids

### Introduction

This Track Work Instruction covers how to use Pell voidmeters for the preparation of measured shovel packing and general track maintenance.

It is not intended to cover the use of voidmeters in connection with derailment surveys.

See also separate instructions:

TWI 2P021 How to recognise longitudinal timber deterioration.

TWI 2T013 How to lift and pack plain line



A Pell Voidmeter

### Competence

You must be competent to carry out this work.  
See TWI 2G086 - Competence requirements

### Risks

The work involves working at sleeper ends and your staff may be foul of other tracks. Make sure your protection is correct.

Voidmeters are operated by the passage of trains. For this reason the track has to be open to normal rail traffic.

**Beware!** Some on-track machines are not heavy enough to press the track down to get a true void reading. You may need to wait for a 'real' train.



### Tools and Equipment

Voidmeters

Stepped measuring gauge – a type that enables you to determine the amount of lift required.

Chalk

Shovels

Notebook and pencil if doing a survey

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### Method

#### **Look at the site.**

Find the stretch of track that may be voided or that requires MSP (measured shovel packing).

The voidmeters are clipped to the underside of the rail and so there has to be enough room to get them in to position.

Check how much ballast you may have to move in order to create enough space.

Work out how many sleepers are involved and number the sleepers with chalk marks in the web or on the foot of the rail.

Clear just enough ballast so that you can clip the voidmeters to each rail.

When preparing for MSP find where the lifting is to start – it is best to choose somewhere where there are no signs of voiding.

At the start point, mark each rail with a zero – i.e. no voids. (Be aware that even track with no voids will deflect slightly under traffic).

#### **Look at the track.**

Check the condition of the fastenings and chair screws. If they are loose then you may get false readings. Arrange for the track to be fettled before starting work.

#### **Placing the voidmeters.**

Position the first two void meters below each rail two sleepers away from the zero point. Position further voidmeters at two sleeper intervals over the extent of the work.

Ensure the voidmeters are correctly positioned, clipped to the rail and close to the sleeper.

Ensure the ballast they are standing on is firm.

Push the sliding part of the voidmeter down onto the ballast and zero the collar by pulling it up to the bottom of the clip whilst holding the base firmly on the ballast. Do this on every voidmeter.

When all the voidmeters are set, make sure that all staff are in a place of safety and wait for a train to pass over the track.



**Voidmeter in Position**

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### Method continued

#### **Measuring the voids**

When the train has passed, you can then measure the amount that the sliders have moved by using the stepped gauge. The stepped gauge gives the amount of void under the sleeper.

Mark the void on the sleeper next to the rail.

If a train passes over the voidmeters before you have zeroed them all, you must only use the readings from those voidmeters that were zeroed.

#### **Site Clearance.**

Unclip and collect up all the voidmeters. Check that you have them all – count them out and count them in.

Ensure that all the bays you have disturbed to insert the voidmeters have been boxed in securely.



**Measure the void with a stepped gauge.**

### Before you leave the site

Check the ballast profile (See TWI 2B004) and check that you have recovered all of the voidmeters.

### Problem solving

#### **What if you do not have enough voidmeters to cover the whole length of track on which you have to work?**

Set all the voidmeters you have.

Wait for the passage of a train.

Note all the void meter readings.

Remove the voidmeters and move them along the track to cover the next section.

Do this until you have covered all of the track section you require.