ERL MAINTENANCE SUPPORT SDN BHD

(Company No. 498574-T)

E-MAS

Effective Railway Operations; Reliable System Maintenance

ROLLING STOCK DEPARTMENT

IN-HOUSE TECHNICAL INSTRUCTION

PRIMARY SPRING TEST GUIDELINE

R00.OMR.M91123.BT.0001.B

Release

Released:	Norazaman	RST HOD		
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	Name	**Dept./Position**	**Date**	**Signature**

Amendments or additions to this procedure must be indicated with a vertical black line in the adjacent left margin.

Change Record and Configuration Control

B	07.06.16	Updated to new RST Technical Instruction template & change the reference from DOCS to EDMS. All the contents are remain unchanged	Siti Masitah
A	24.01.08	New	Saravanan
Revision	**Date**	**Modification**	**Name**

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1 Purpose

The purpose of this technical instruction is to provide a guideline for carry out primary spring testing, by using a test machine model Zwick/Roell Z100. Where applicable or necessary, this technical instruction shall be read together with Zwick/Reoll Z100 Operating Instruction Manual.

2 Scope, Distribution & Access

This technical instruction is applicable to all RST personnel who are responsible to carry out the primary spring testing. The distribution and access shall be available for all RST and could be viewed and retrieved via EDMS and RST Portal [http://express50/ E-MAS_Portal/RST.html]. The hardcopy of this procedure is available in RST foreman room for reference. The full access for editing this document is only granted to RST MGT.

3 Primary Spring Test Instruction

Before commencing the testing, the users have to observe all the safety precautions as outlined in Zwick/Reoll Z100 Operating Instruction Manual.

The Zwick/Roell Z100 Machine consists of four components, i.e.:

a) Machine frame with manual and automatic crosshead
b) MCE Unit (Measurement Control Electronics)
c) PC rack
d) ZWICK-Remote control

3.1 Operating Instruction

Users have to read the Zwick/Roell Z100 machine instruction manual before operating the machine and follow the steps outlined herein.

3.1.1 Initial Setup

Step 1: Switch “ON” the materials testing machine as shown below.

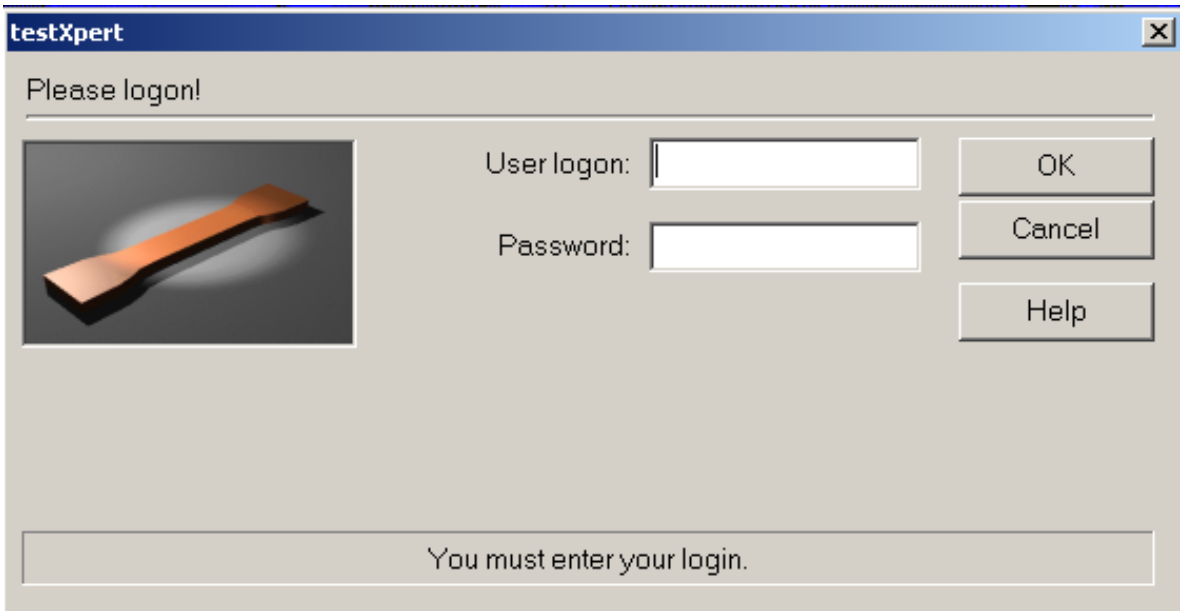
When the Zwick/Roell Z100 machine has been turn “ON”, the *testControl* electronics will carry out a system check. The control buttons illuminate during this period of time.

The testControl electronics must have a constant temperature. Thus switch the materials machine “ON” an hour before beginning of a testing.

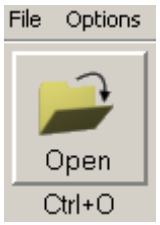
Step 2: Switch “ON” the PC
A login dialogue box will appear for password, click “OK”.

Step 3: Call up the test program by double clicking the “testXpert” icon on desktop

Step 4: A login dialogue box will appear for user logon. The user logon is ‘’USER’’ and the password is ‘’USERRST’’.



Step 5: To open a test program click ‘’File’’ and ‘’Open’’



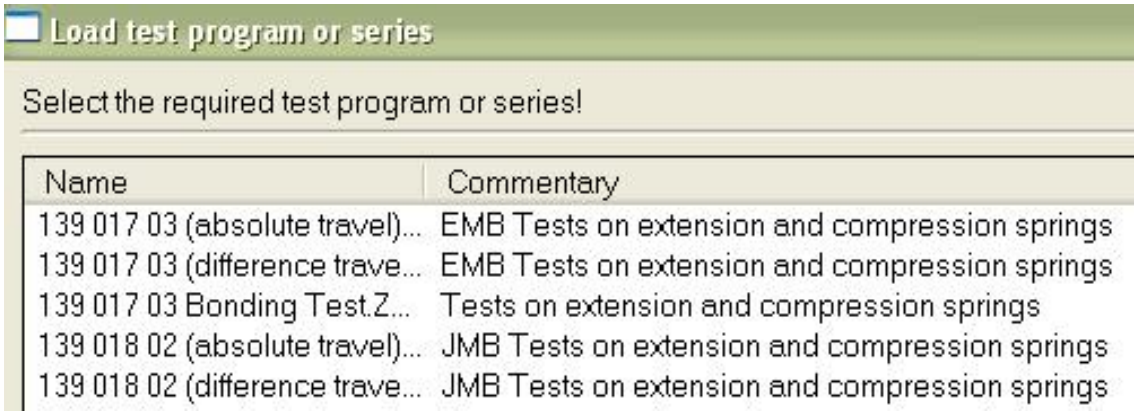
Step 6: Select the required test program and click “OK”

a) Test program for End Motor Bogie Primary Springs

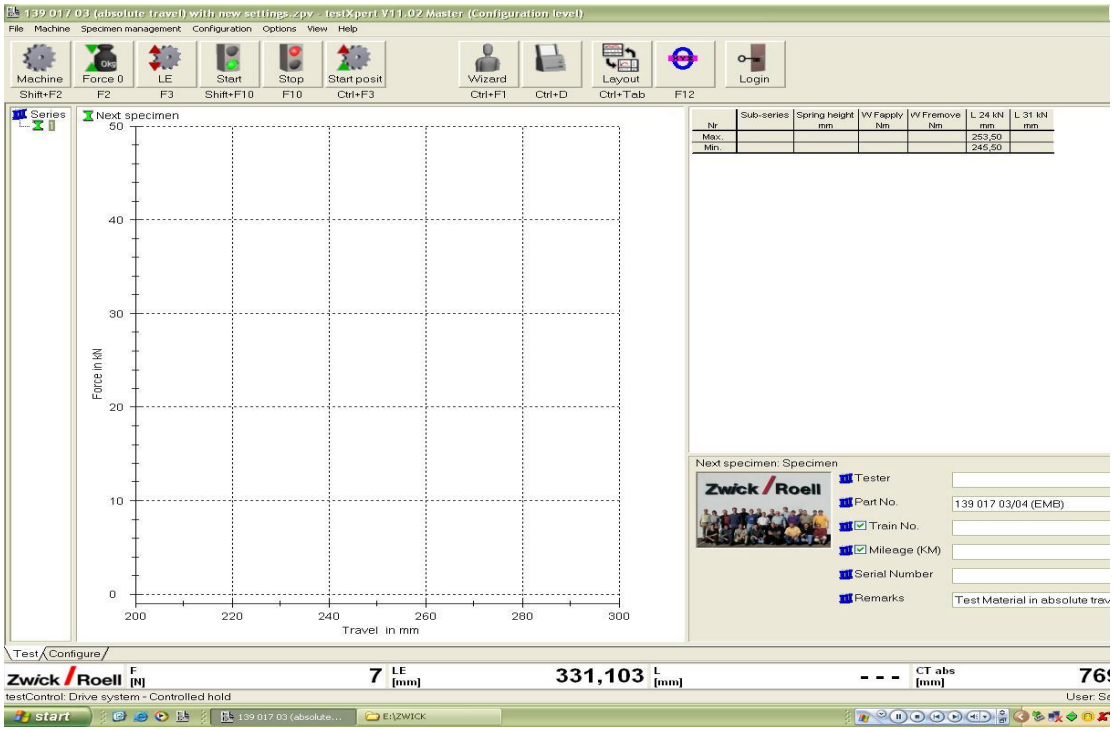
i. 139 017 03 (absolute travel).ZPV
ii. 139 017 03 (difference travel).ZPV
iii. 139 017 03 (Bonding test).ZPV

b) Test program for Jacob Motor/Trailer Bogie Primary Springs

i. 139 018 02 (absolute travel).ZPV
ii. 139 018 02 (difference travel).ZPV



Step 7: The selected test program page will appear.



Step 8: Press the “ON” button located on the MCE, the lamp in the “ON” button illuminates

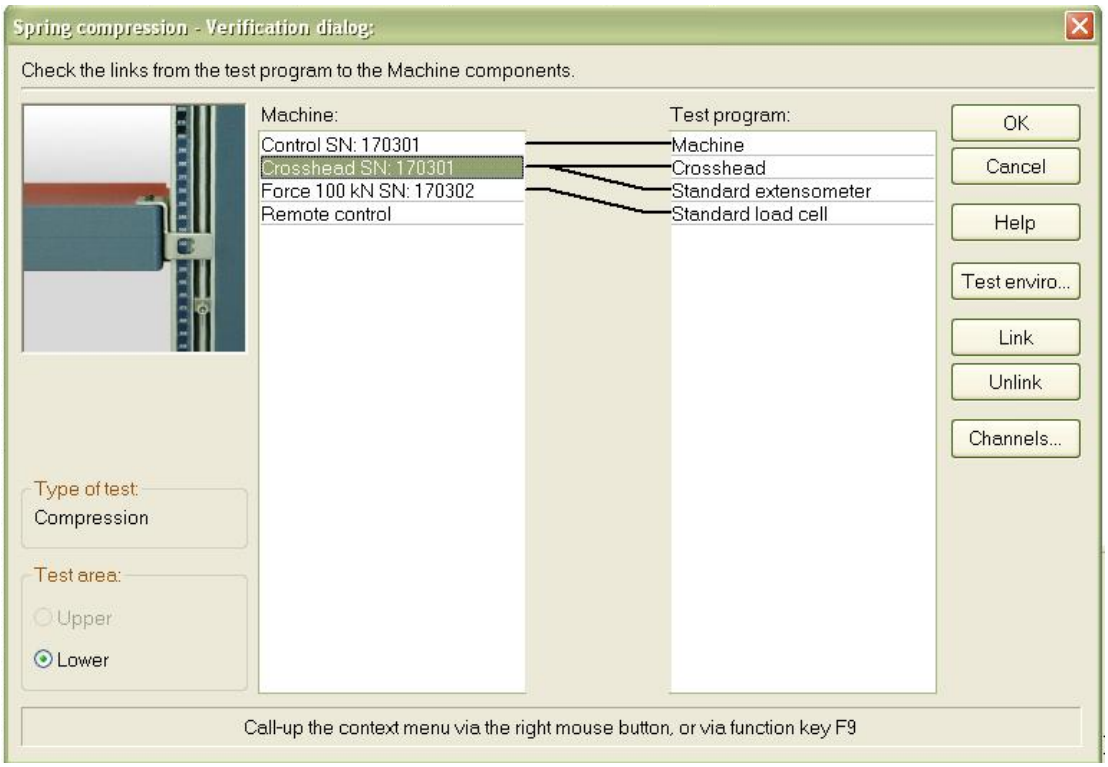
Step 9: Click “LE” to move the upper crosshead to it’s home position

Step 10: Warm up the upper crosshead by moving it up and downwards for several times by means of push button or remote control. This is compulsory if the Zwick/Roell has been shut down for a lengthy period of time.

3.1.2 Crosshead verification

Step 1: Select Machine, a verification dialogue will appear

Step 2: On the verification dialogue, double click on the *Crosshead SN: 170301.* A crosshead travel monitor will appear

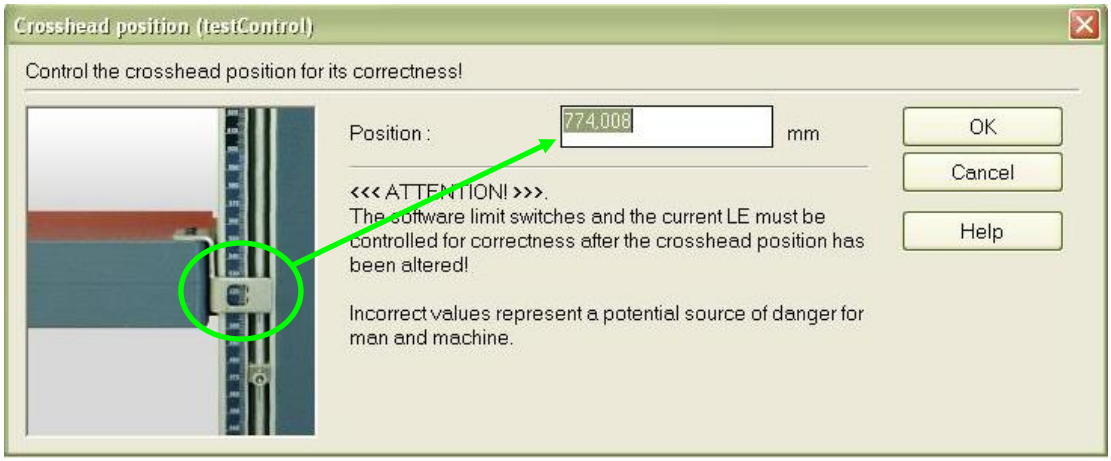


Step 3: The *position* of crosshead on the crosshead travel monitor and the upper crosshead must be the same *e.g. 744.008mm*

Step 4: If differ click *position,* a dialogue box *'crosshead position' (test control)* will appear. Enter the value by referring the upper crosshead position and click OK to accept

ATTENTION!

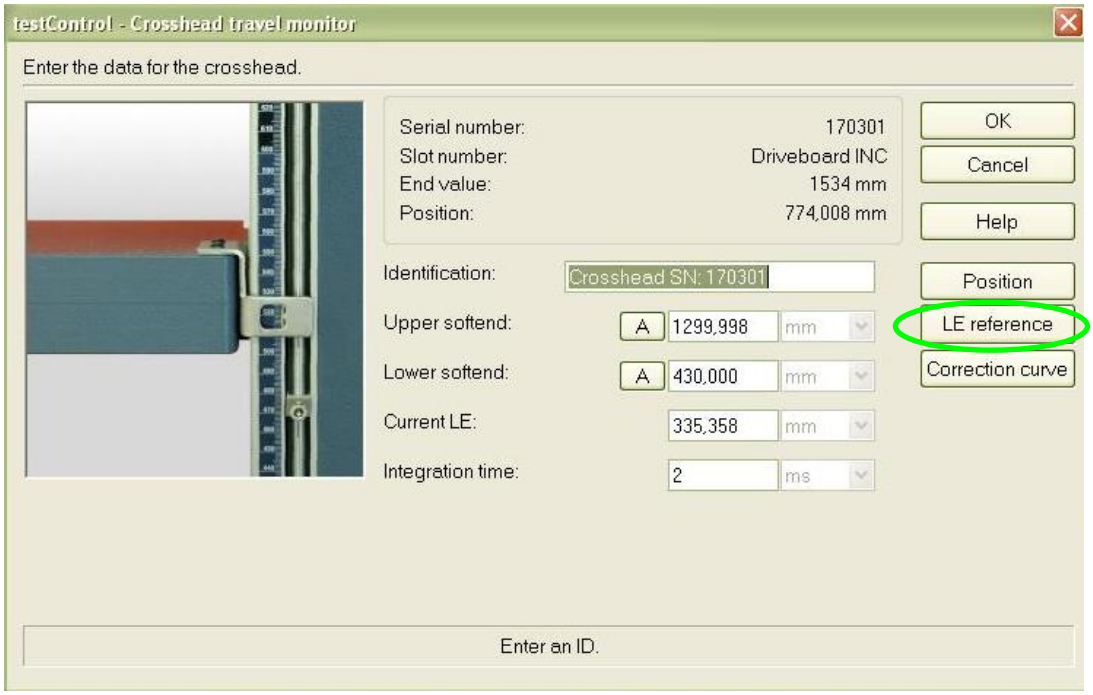
Incorrect values represent a potential source of danger for man and machine.



3.1.3 LE setting

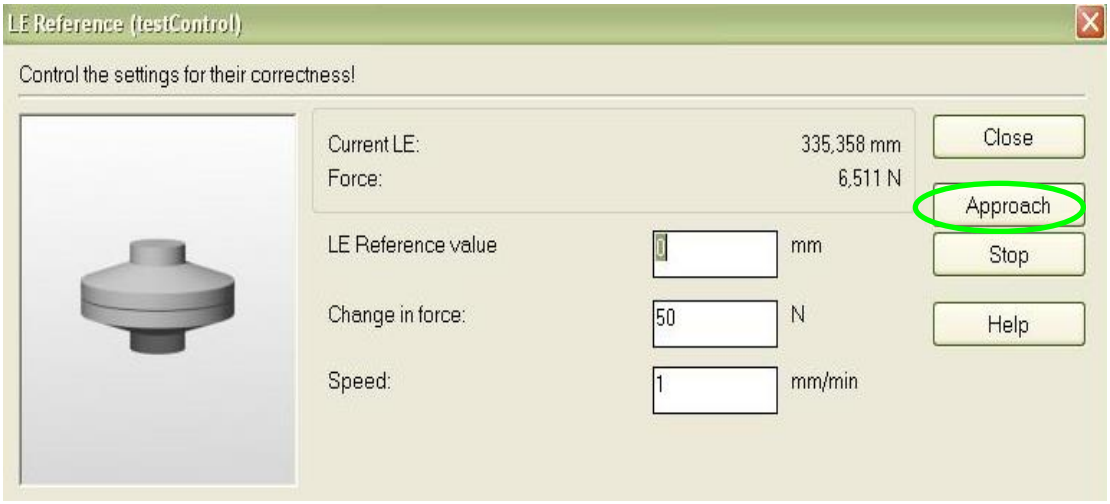
LE reference (le reference point) corresponds to a free grip to grip separation of LE = 0. LE Reference is determined so as to correlate the position LE in relation to the actual grip to grip separation. For this purpose the specimen grips or compression platens are brought into contact with one another (i.e. until they just touch). LE Reference is determined with a specimen for flexure fin to flexure support separation. The program calculates the actual LE reference using the information on the specimen thickness.

Step 1: In the crosshead travel monitor click *LE reference*



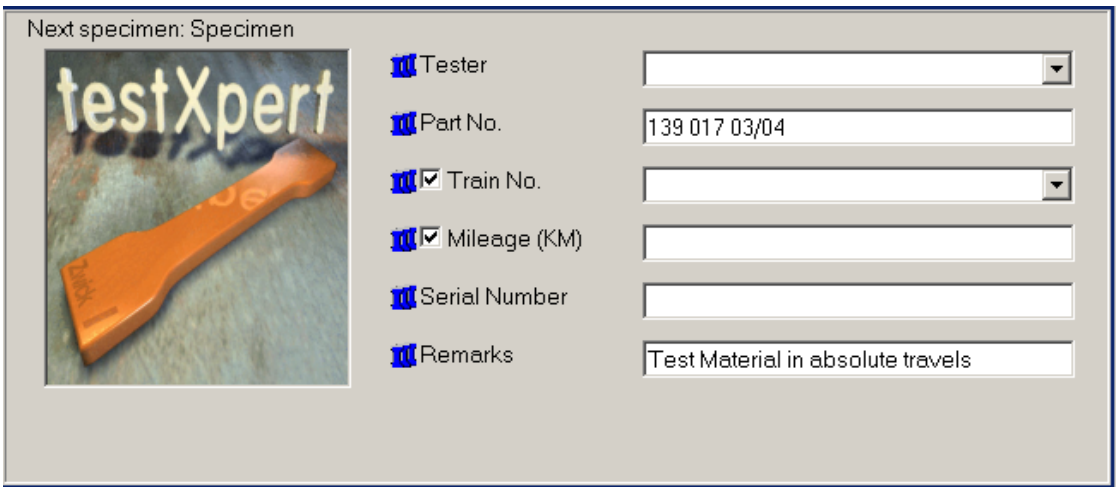
Step 2: Place the jig on the bottom crosshead and move the upper crosshead down by using remote control until it almost touches the jig

Step 3: Select approach. The machine will then automatically calculate LE Reference value. Upon completion, click close

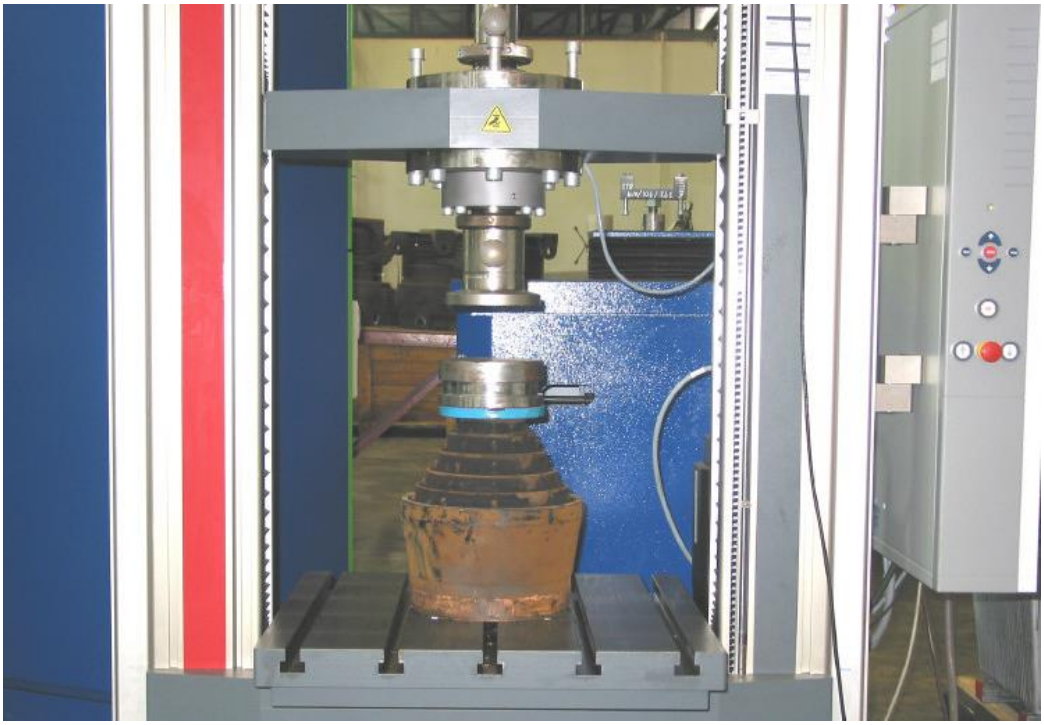


3.1.4 Testing

Step 1: Input all the related information for parameters of the specimen



Step 2: Place the test piece onto the bottom crosshead together with the primary spring jig



Step 3: Click "Start" for a test. A test can be start directly at the testing machine or via testXpert. The upper crosshead will return to the initial position (LE) once a test is complete

Step 4: To stop a test at anytime, click "Stop"

Step 5: To print a test report, click "print"

Step 6: Save the test results in PDF format

1side2KLSdif.pdf

Note: To continue testing on other primary springs, repeat all the steps in section 3.1.4 Testing.

3.1.5 Shutting down the material testing machine

The following measures should be taken if the Zwick/Roell machine to be shut down for a lengthy period of time:

a) Switched “OFF” Zwick/Roell machine.
b) Disconnect the Zwick/Roell from the power supply

Sample 1 - Sample of Difference Travel test report

Zwick/Roell ERL- Maintenance Support SB 17.05.07 14:13

Parameter table:

Company name: ERL Maintenance Support SB
Train No. : X103
Mileage (KM) : 1.2 M
Remarks : Test Material in absolute travel

Tester : Saifullah
Part No. : 139 017 03/04 (EMB)
Serial Number : M511 1/1 klia

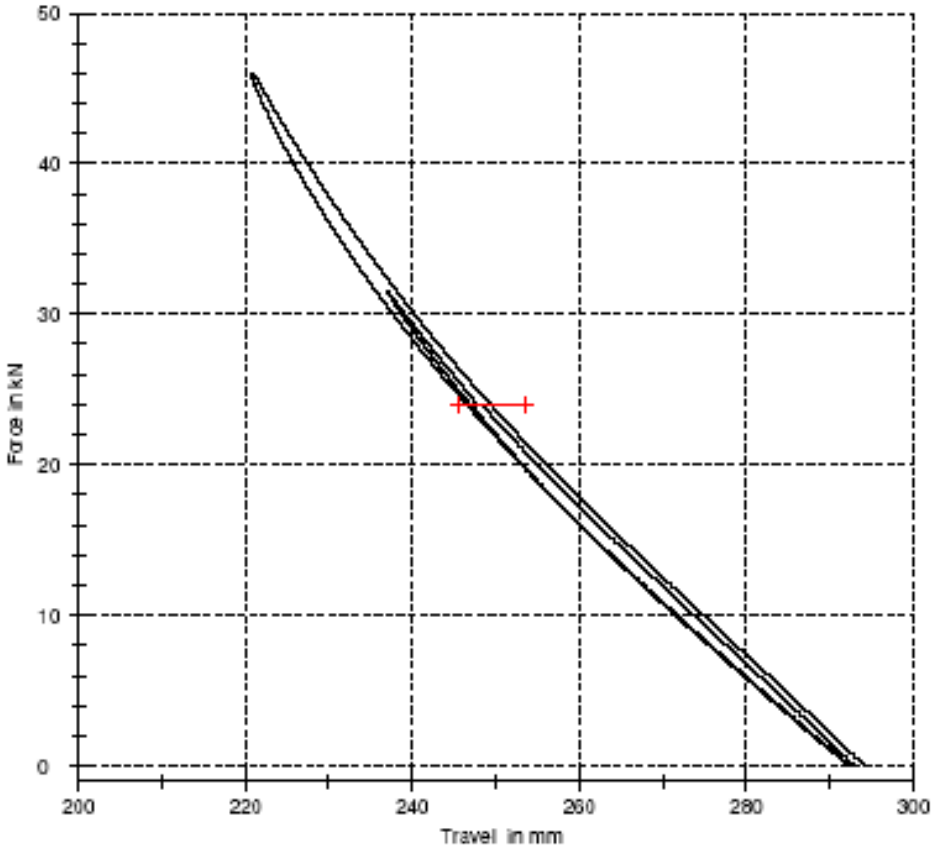
Cycle speed: 90 mm/min Other speed for load removal: 90 mm/min
Number of conditioning cycles: 2
Pre-load: 50 N

Results:

Nr	Sub-series	Spring height mm	W Fapply Nm	W Remove Nm	L 24 kN mm	L 31 kN mm
Max.					253,50	
Min.					245,50	
1		294,15	832,69	783,84	247,69	237,74

Specimen graph:

Sub-series number 1



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Sample 2- Sample of Absolute test report

Zwick / Roell ERL- Maintenance Support SB 17.05.07 14:19

Parameter table:

Company name: ERL Maintenance Support SB
Train No. : X103
Mileage (KM) : 1.2 M
Remarks : Test Material in difference travel

Tester : Saifullah
Part No. : 139 017 03/04 (EMB)
Serial Number : M511 1/1 klia

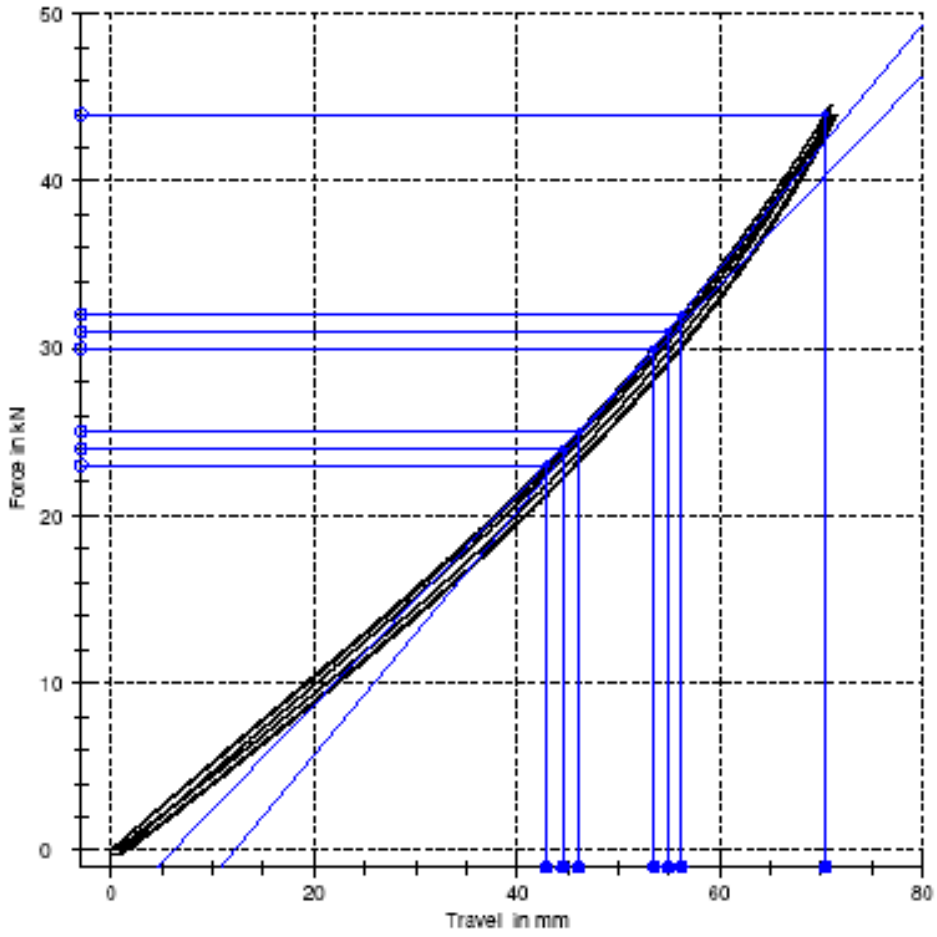
Cycle speed: 90 mm/min Other speed for load removal: 90 mm/min
Number of conditioning cycles: 2
Pre-load: 200 N

Results:

Nr	Sub-series	W Fapply Nm	W Remove Nm	L 23 kN mm	L 24 kN mm	L25 kN mm	L 30 kN mm	L 31 kN mm	L 32 kN mm	L 44 kN mm	c 23/25 kN kN/mm	c 30/32 kN kN/mm
Max.											0,66	
Min.											—	
1		1410,45	1338,54	42,91	44,53	46,11	53,53	54,92	56,28	70,52	0,63	0,73

Specimen graph:

Sub-series number 1



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Appendix

Appendix 1 - Zwick/Roell Z100 Operating Instruction Manual, [R00.OMR.M12980.PE.1001.A]