

MonZon Development AB

Box 5238

402 24 GÖTEBORG

## Annual Verification 2020 - Swivel Coupler

(1 appendix)

Swivel couplers (type examination certificate No. 39 44 01) were selected for the annual verification tests. RISE has tested the slipping force with steel tubes.

The inspected swivel couplers were in accordance with the type examination specifications and RISE recommends continued certification.

### Introduction

In accordance with agreement between RISE and MonZon Development AB, Dnr 210-15-0267 and SPCR 064 Chapter 5, slipping tests of swivel couplers have been carried out.

**Aim** Slipping test to verify that the swivel couplers agree with certified samples.

**Test location** The laboratory of RISE Applied mechanics in Borås.

### Selected test objects

**Component** Swivel coupler, 5 samples.

**Selection of test objects** Due to the corona pandemic a subsampling by a RISE representative could not be carried out. Therefore, the test objects were selected and sent to RISE by the customer.

**Arrival of test objects** The test objects arrived at RISE in April 2020.

### Test method and performance

**Test setup** All couplers in the tests were tightened and loosened 5 times and then retightened. A tightening torque of 50 Nm was applied before the slipping tests were conducted.

**Test method** SS-EN 74-1:2005: Couplers for tubes – Requirements and test procedures, Published 2008-09-18. Five tests were conducted for the annual verification instead of 10 tests as described in SS-EN 74-1.

**Measurements** Load, displacement.

**Dates of testing** 2021-01-28.

### RISE Research Institutes of Sweden AB

Postal address

Box 857  
501 15 BORÅS  
SWEDEN

Office location

Brinellgatan 4  
504 62 Borås  
SWEDEN

Phone / Fax / E-mail

+46 10-516 50 00  
+46 33-13 55 02  
info@ri.se

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.



## Test results

Figures of the test results are presented in *Appendix 1*. A summary of the test results, using steel tubes, are given in *Table 1*.

*Table 1 Test values of the slipping force with steel tube.*

	<b>Lowest force, <math>F_{s,c}</math>, at <math>\Delta_2 = 1 - 2</math> mm [kN]</b>	<b><math>\ln(F_{s,c})</math></b>	<b>Highest force <math>F_{s,c}</math> at <math>\Delta_1 \leq 0-7</math> mm [kN]</b>	<b>Notes</b>
Test 1	--- *)		15.3	
Test 2	--- *)		14.0	
Test 3	--- *)		12.0	
Test 4	--- *)		13.3	
Test 5	--- *)		15.9	
Mean value	---		14.1	
Standard deviation				
Characteristic value, $F_{s,5\%}$	---			

\*) *The tube buckles and the coupler moves backwards on the measured side without slipping. The displacement between 1 and 2 mm was not possible to obtain. The coupler fulfilled the requirements due to that no slipping occurred.*

The inspected swivel couplers were in accordance with type examination specifications according to *Table 2*.

*Table 2 Results from the verification of the swivel couplers.*

<b>Component</b>	<b>Slipping force, <math>F_{s,c}</math></b>	<b>Meets the requirement</b>
Swivel coupler	$F_{s,c} \geq 10$ kN at $\Delta_1 \leq 7$ mm	Yes
	$F_{s,c} \geq 15$ kN at $1 \leq \Delta_2 \leq 2$ mm	Yes

## Measurement uncertainty and miscellaneous

The measurement uncertainty for the load < 1 % and for the displacement < 3 %.

Reported uncertainty corresponds to an approximate 95 % confidence interval around the measured value. The interval has been calculated in accordance with EA-4/16 (EA guidelines on the expression of uncertainty in quantitative testing), which is normally accomplished by quadratic addition of the actual standard uncertainties and multiplication of the resulting combined standard uncertainty by the coverage factor  $k=2$ .

The test results only apply to the tested objects.

## Corrective actions

No deviation was noted when the scaffold components was examined. No corrective actions is necessary.

**RISE Research Institutes of Sweden AB**  
**Department Applied Mechanics, RISE AB - Construction and Infrastructure**

Performed by

Examined by

Johan Angren

Henrik Snygg

**Appendix**

1. Test results (1 page)

Appendix 1

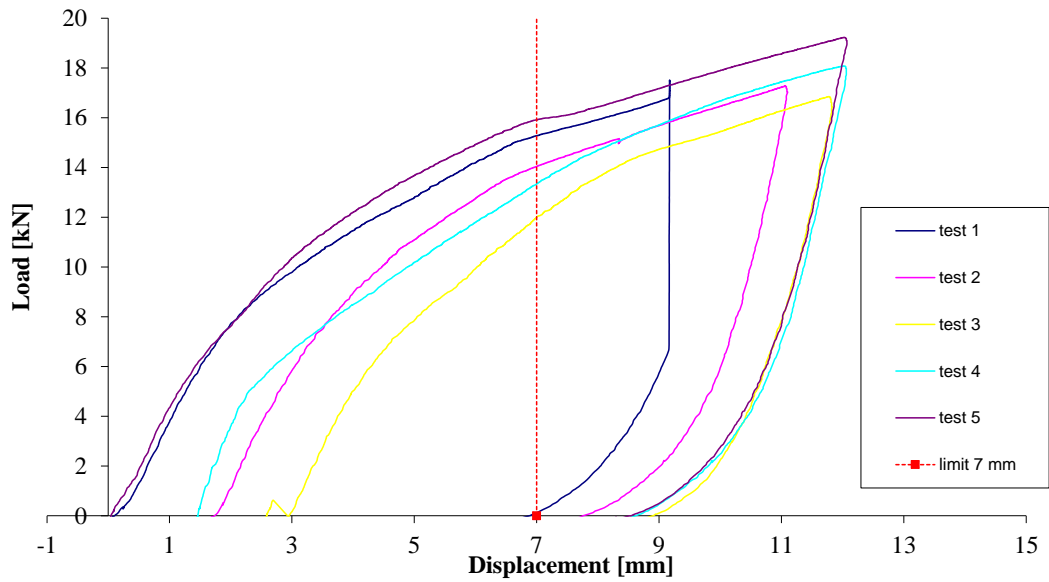


Figure A1:1 The load-displacement,  $\Delta_1$ , relation for the tests with steel tubes.

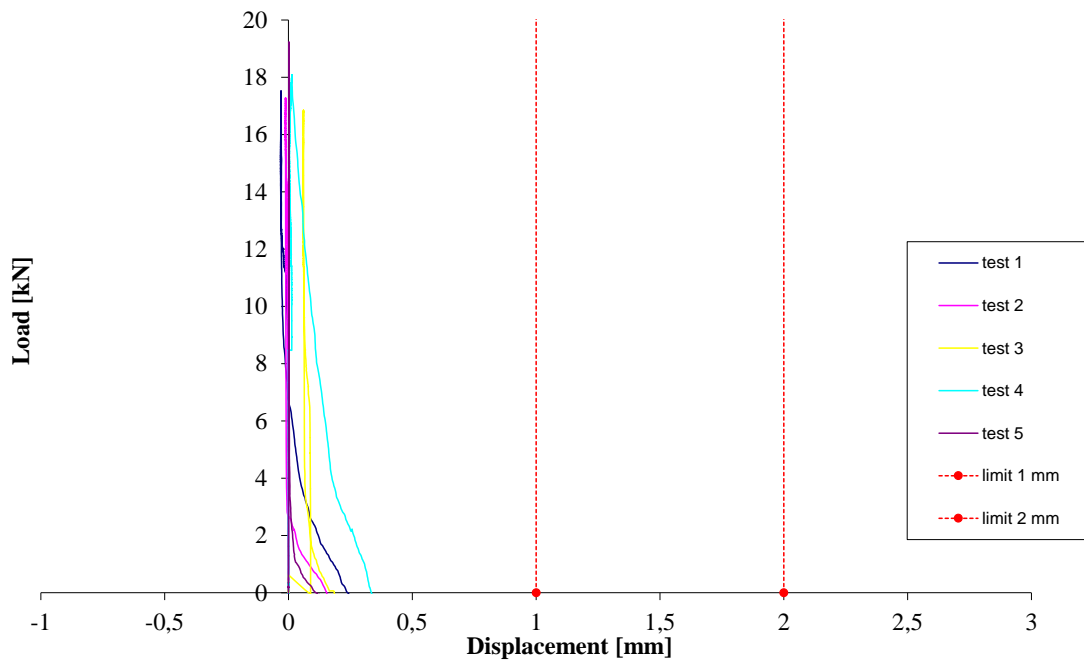


Figure A1:2 The load-displacement,  $\Delta_2$ , relation for the tests with steel tubes.