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Report Number: 17111511

Taizhou Yahua Forging Co Ltd
East Guanzhuang RD
Taizhou City
Jiangsu

Order Number : Ling
Date of Issue: 13/12/2017
Test Date : 02/12/2017
to 08/12/2017

0136

Scaffolding Testing Report

Report for the testing of Swivel Angle Coupler

Couplers Marked EN74 YH17 BL

This report consists of the report, appendix A and appendix B

Authorised Signatory
L Mangham
Operations Manager

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This report details the results of tests carried out on Swivel Angle Coupler used for connecting steel tubes of 48.3mm outside diameter and of at least 3.2mm nominal wall thickness at a minimum in the construction of working scaffolds and falsework required for the construction, maintenance, repair and demolition of buildings and structures.

Description and Marks on couplings
Swivel Angle Coupler

Marks : EN74 YH17 BL

Basis of Tests
The couplings have been tested in accordance with the relevant sections and requirements of EN 74-1 :2005.

Information supplied by the customer

Manufactured by:	TAIZHOU YAHUA FORGING CO.,LTD
Shape:	As per drawings shown at the end of this report
Dimensions:	As per drawings shown at the end of this report
Mass:	As per drawings shown at the end of this report
Material Characteristics:	As per drawings shown at the end of this report

RESULTS

Design
The design of the coupling complied with the requirements of the relevant items in clause 6.2 of the standard.

Dimensions and Material Characteristics
The measured dimensions, mass and material characteristics, of the couplings, were all within the tolerances as specified by the manufacturer. (Drawings are shown at the end of this report)

Marking
The markings satisfy the requirements laid out in EN74-1.

Mass
10 samples were weighed giving an average mass of 1.389kg With a range between 1.376kg and 1.410kg

Results of all tests performed are detailed on the following pages.
All requirements stated are minimum values.

The samples tested all passed the relevant sections of the above standard for Class B couplers

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Slipping Force Tests, tested in accordance with Clause 7.2.1

Tested using 3.2mm steel tube (RT_{S1})		
Test Number	$\Delta_1 \leq 7mm$ (kN)	$1 \leq \Delta_2 \leq 2mm$ (kN)
1	13.39	30
2	14.6	30
3	13.37	30
4	14.76	30
5	15.35	30
6	14.07	30
7	14.57	30
8	14.98	30
9	13.64	30
10	14.6	30
$F_{S5\%}$	**12.95**	**30.00**

AA or BB resultsTested using 3.2mm steel tube (RT_{S1})			
Test Number	$\Delta_1 \leq 7mm$ (kN)	$1 \leq \Delta_2 \leq 2mm$ (kN)	$1 \leq \Delta_5 \leq 2mm$ (kN)
1a	N/A	N/A	N/A
2a	N/A	N/A	N/A
3a	N/A	N/A	N/A
4a	N/A	N/A	N/A
5a	N/A	N/A	N/A
6a	N/A	N/A	N/A
7a	N/A	N/A	N/A
8a	N/A	N/A	N/A
9a	N/A	N/A	N/A
10a	N/A	N/A	N/A
$F_{S5\%}$	**#NUM!**	**#NUM!**	**#NUM!**

Tested using 4.0mm aluminium tube (RT_A)		
Test Number	$\Delta_1 \leq 7mm$ (kN)	$1 \leq \Delta_2 \leq 2mm$ (kN)
11	14.38	30
12	15.07	30
13	11.68	30
14	14.48	30
15	13.86	30
$F_{S5\%}$	**10.84**	**30.00**

AA or BB results Tested using 4.0mm aluminium tube (RT_A)			
Test Number	$\Delta_1 \leq 7mm$ (kN)	$1 \leq \Delta_2 \leq 2mm$ (kN)	$1 \leq \Delta_2 \leq 2mm$ (kN)
11a	N/A	N/A	N/A
12a	N/A	N/A	N/A
13a	N/A	N/A	N/A
14a	N/A	N/A	N/A
15a	N/A	N/A	N/A
$F_{S5\%}$	**#NUM!**	**#NUM!**	**#NUM!**

The $F_{S5\%}$ figures must be equal to or greater than the requirements stated below.

Requirements from EN 74-1 table 8:

Class B:	$\Delta_1 \leq 7mm$ = 10kN Minimum $1 \leq \Delta_2 \leq 2mm$ = 15kN Minimum
Class A:	$\Delta_1 \leq 7mm$ = 7kN Minimum $1 \leq \Delta_2 \leq 2mm$ = 10kN Minimum

From the results, the prototype is Accepted to Class B for slipping force

Class BB:	$\Delta_1 \leq 7mm$ = 15kN Minimum $1 \leq \Delta_2 \leq 2mm$ = 25kN Minimum $1 \leq \Delta_5 \leq 2mm$ = 25kN Minimum
Class AA:	$\Delta_1 \leq 7mm$ = 10kN Minimum $1 \leq \Delta_2 \leq 2mm$ = 15kN Minimum $1 \leq \Delta_5 \leq 2mm$ = 15kN Minimum

From the results, the prototype is to for slipping force

Load-displacement curves are shown in Appendix A as charts 1 to 15, (1a to 15a for class AA or BB)

Photograph of Setup for Slipping Force

The photograph above shows the setup for slipping force but is not necessarily the coupler under test.

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Failure Force, tested in accordance with clause 7.2.2

Tested using solid steel bar (RB)	
Test Number	Maximum Load $P_{f,ult}$ (kN)
16	40.00
17	33.90
18	35.86
19	36.23
20	40.00

$F_{f,5\%}$	**24.83**

The $F_{f,5\%}$ figures must be equal to or greater than the requirements stated below.

Requirements from EN 74-1 table 8:-
Pf,ult = 30.0kN minimum for Right Angle couplers & 20kN for Swivel couplers

Load-displacement curves are shown in Appendix B as charts 16 to 20

From the results, the prototype is Accepted to Class B for failure force

Photograph of setup for Failure Force

The photograph above shows the setup for failure force but is not necessarily the coupler under test.

Indentation Check, tested in accordance with clause 7.5

Tested using 2.7mm wall steel tube (RT_{S2})	
Test Number	Maximum Indentation Δ_{10} (mm)
26	0
27	0
28	0
29	0.1
30	0.1

The figures must be equal to or greater than the requirements stated below.

Requirements from EN 74-1 table 8:-
Pind = ≤1.5mm

From the results, the prototype is Accepted to Class B for indentation check

Photograph of setup for Indentation Check

The photograph above shows the setup for indentation check but is not necessarily the coupler under test.

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Photograph of coupler under test

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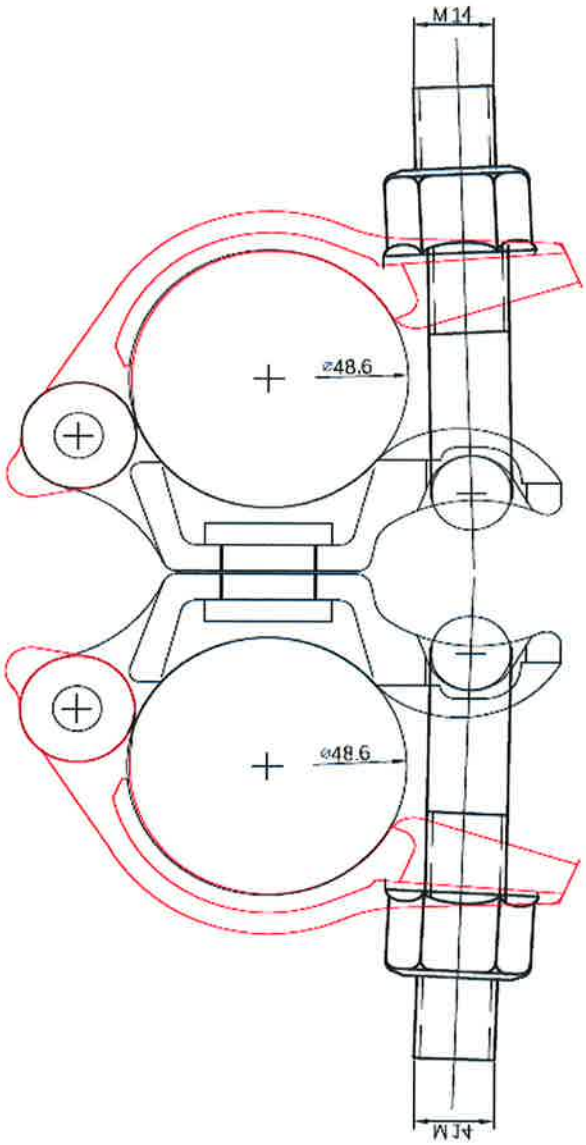
Drawings



			Swivel coupler	TAIZHOU YAHUA FORGING CO., LTD.		
				Qty	Weight	Scale
Drawn		2001/8				
Checked	Wang		Material: Q235B			
Approved	Zhou			Sheet of		

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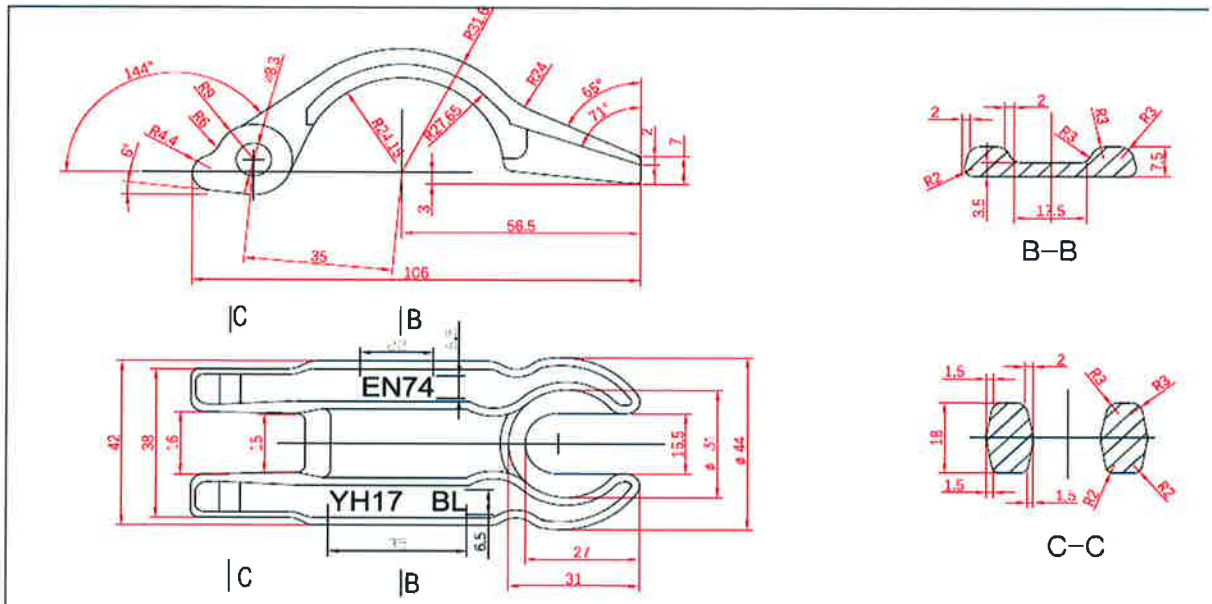
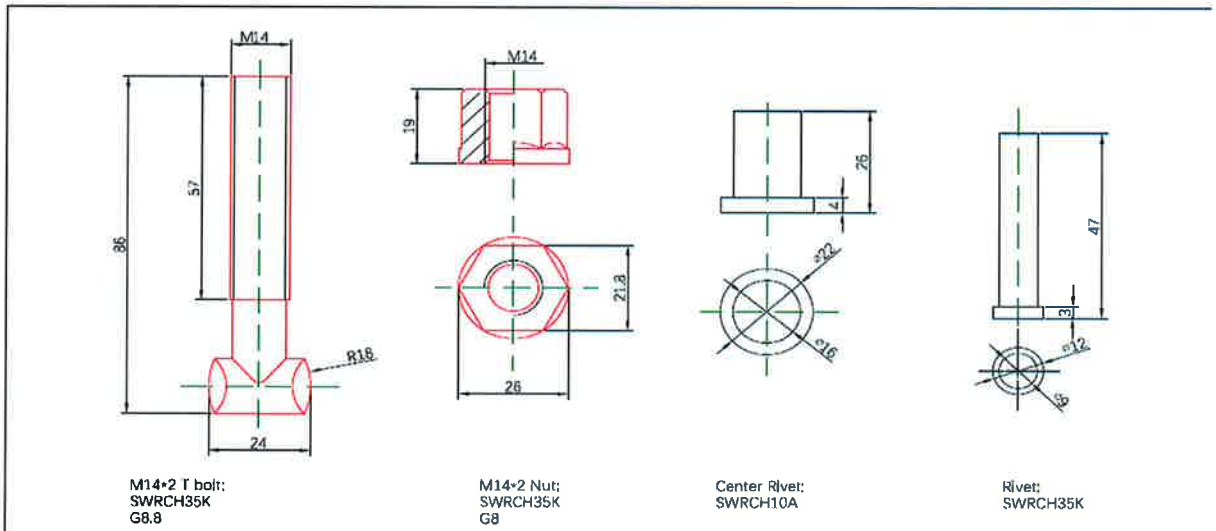


			Flap for Swivel	TAIZHOU YAHUA FORGING CO., LTD.		
Drawn		2001/8		Qty	Weight	Scale
Checked	Wang		Material: Q235B			



			Bolt & Nut & Rivets	TAIZHOU YAHUA FORGING CO., LTD.		
Drawn		2001/8		Qty	Weight	Scale
Checked	Wang		Material:			
Approved	Zhou			Sheet of		

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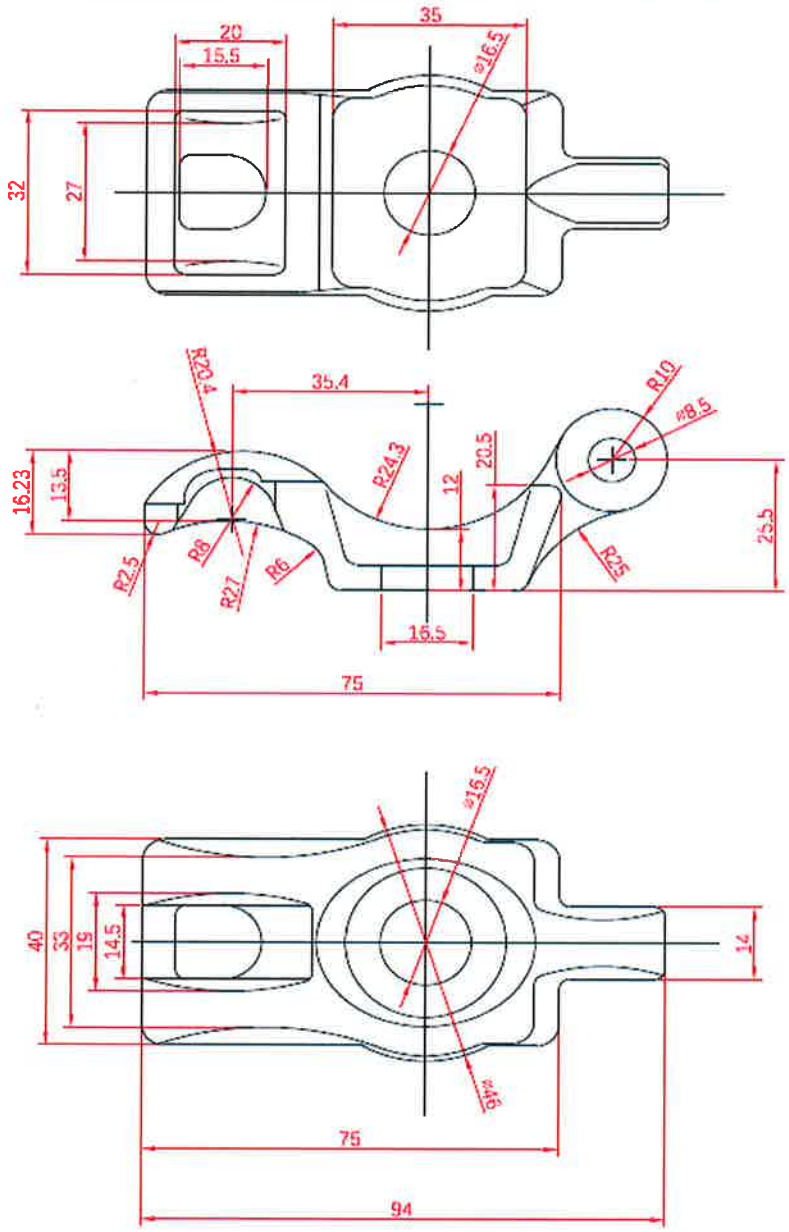

			RA Body	TAIZHOU YAHUA FORGING CO., LTD.		
				Qty	Weight	Scale
Drawn		2001/8				
Checked	Wang		Material: Q235B			
Approved	Zhou			Sheet	of	

End of Report

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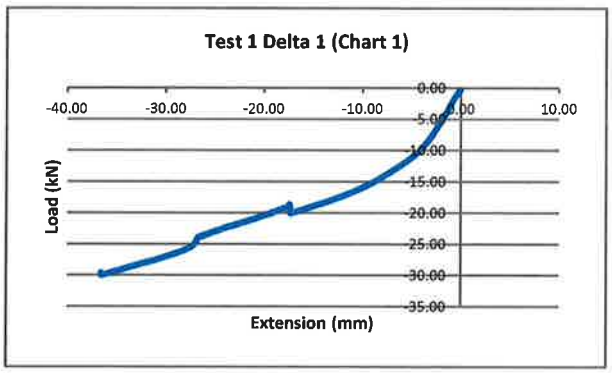
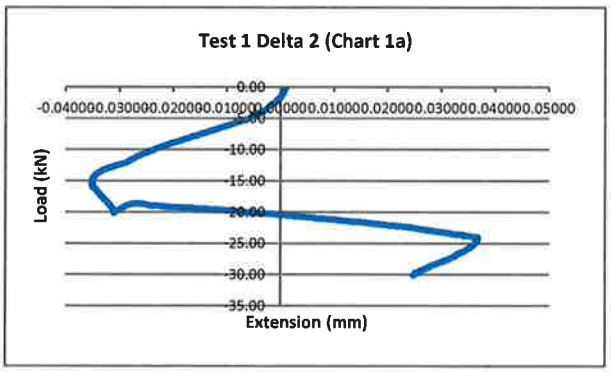
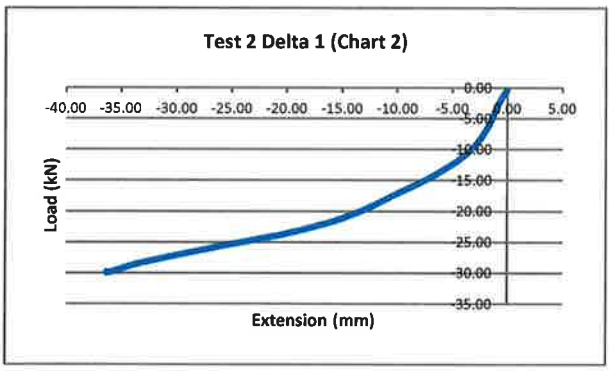
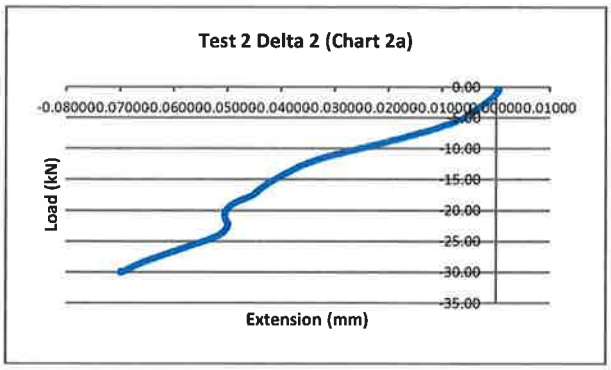
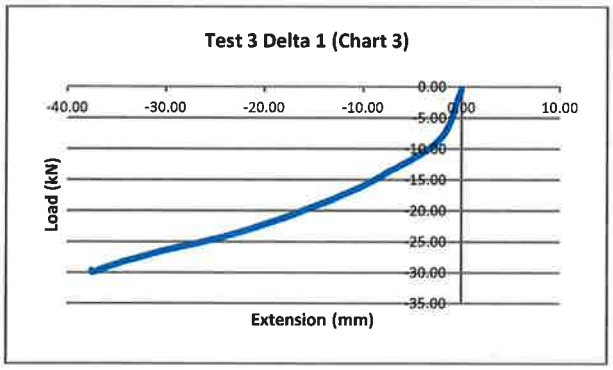
Appendix A

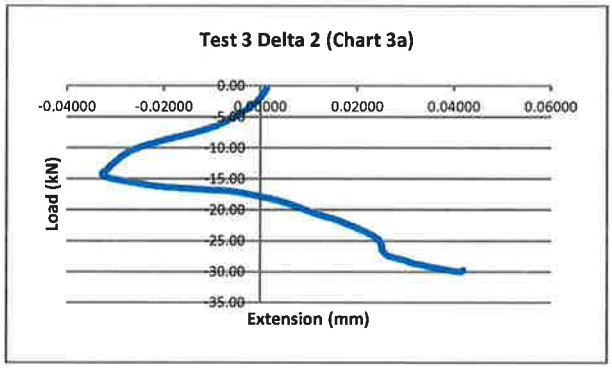


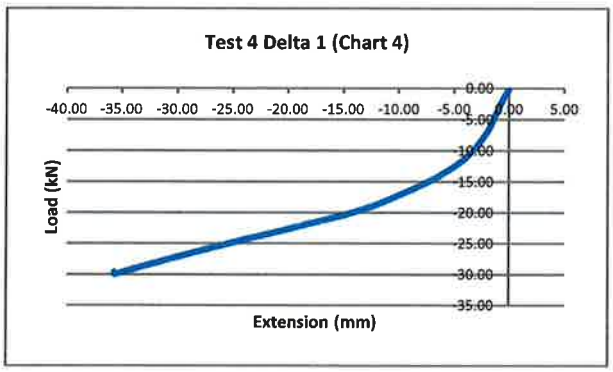


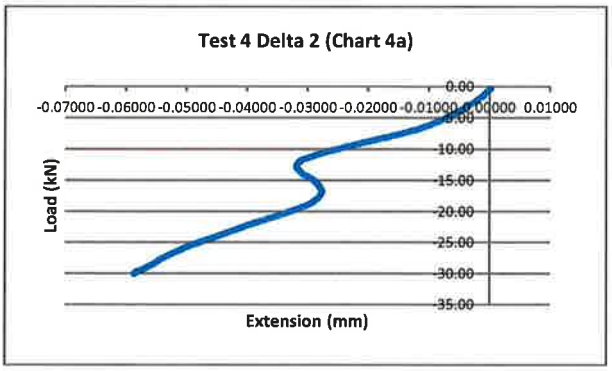












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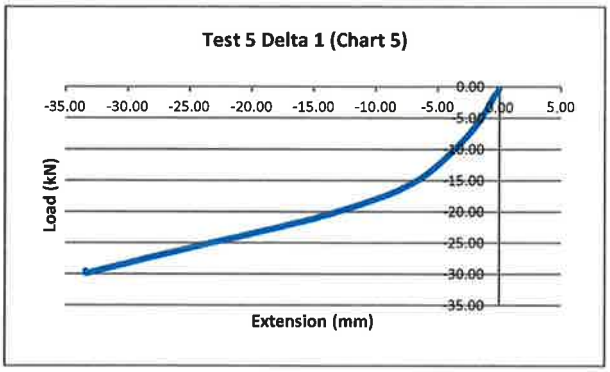

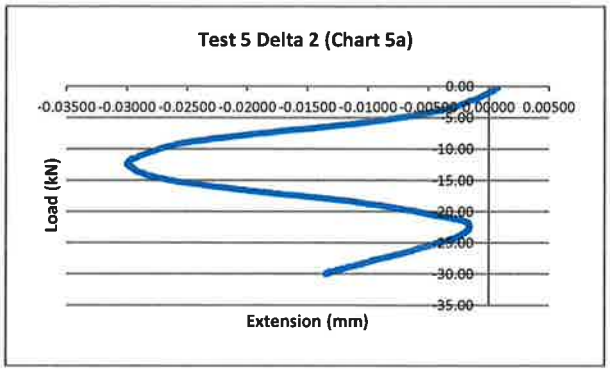

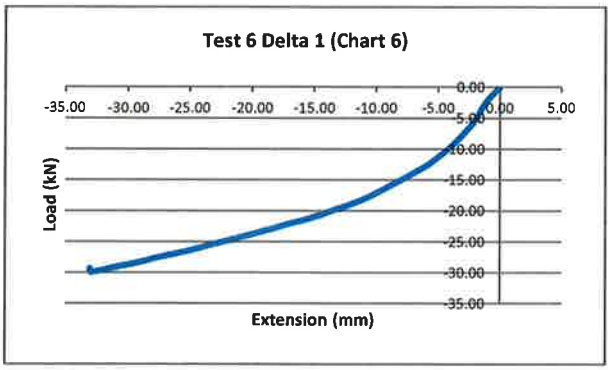

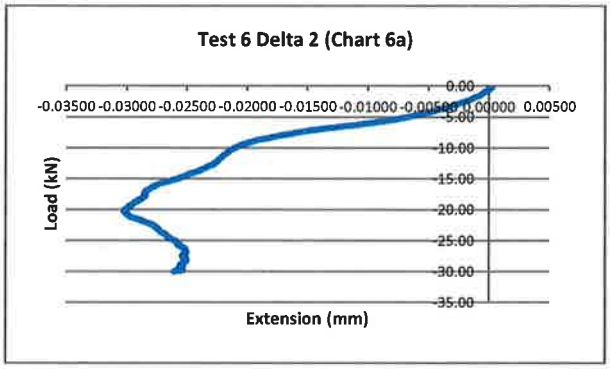

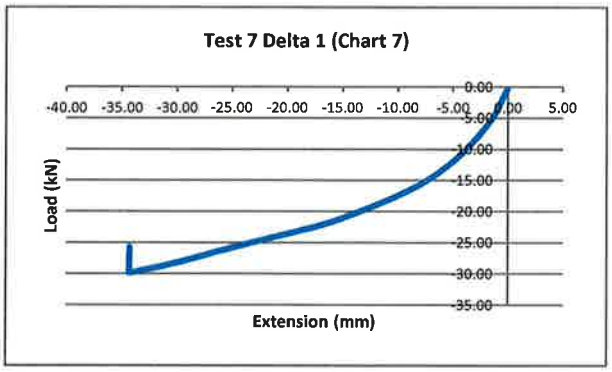

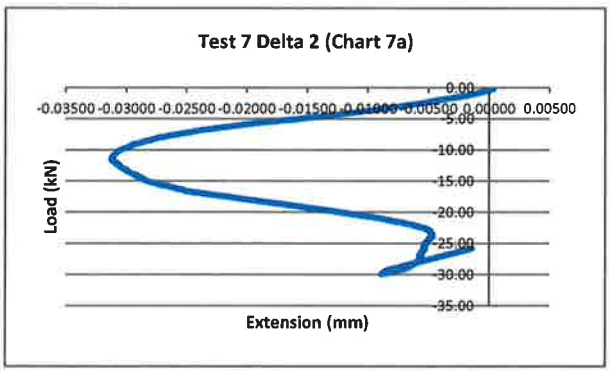

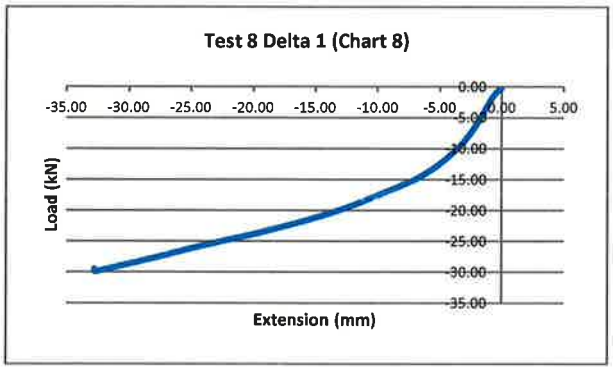

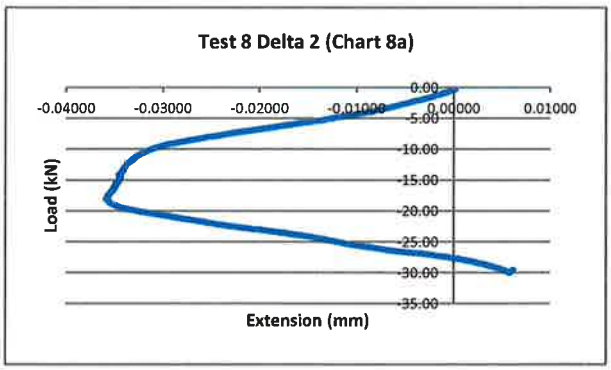

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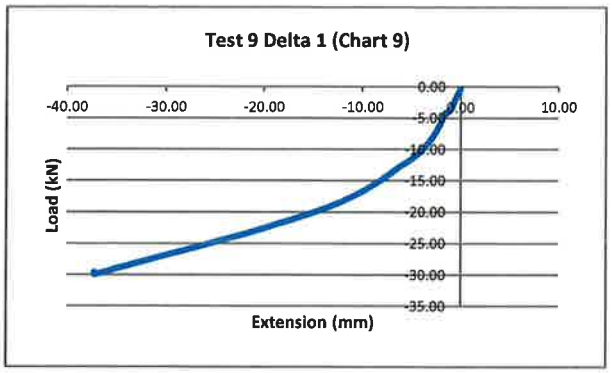

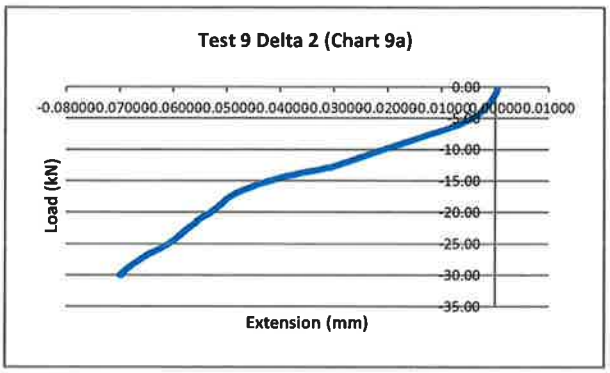

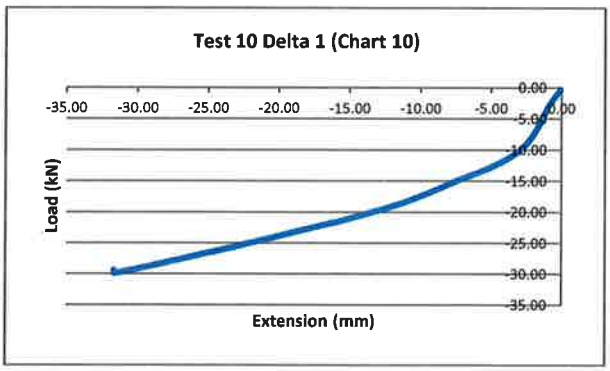

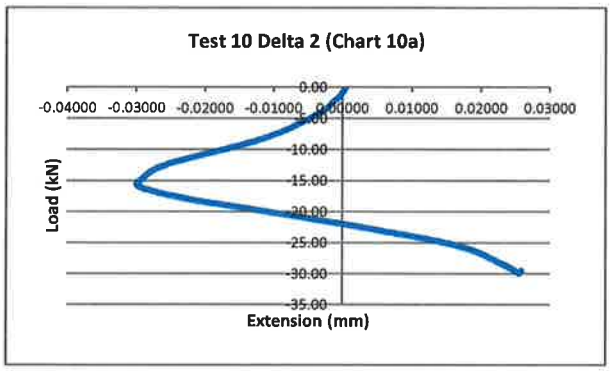

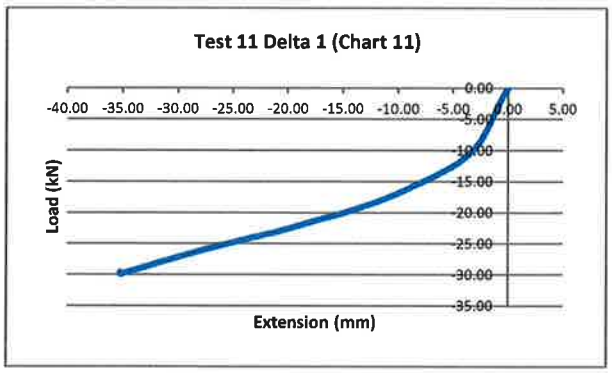

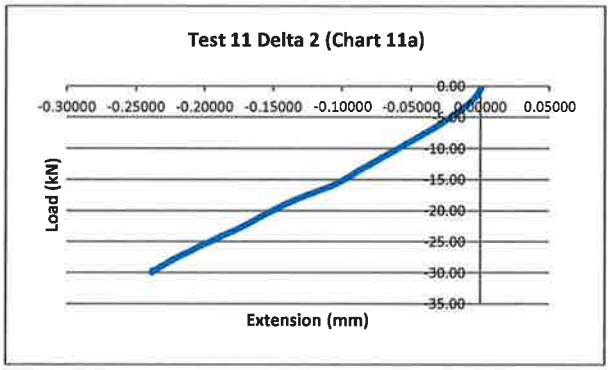

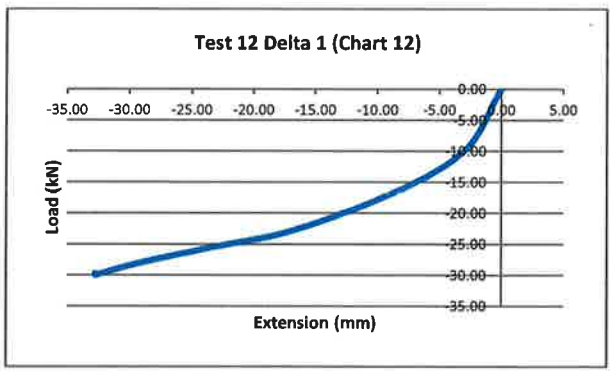

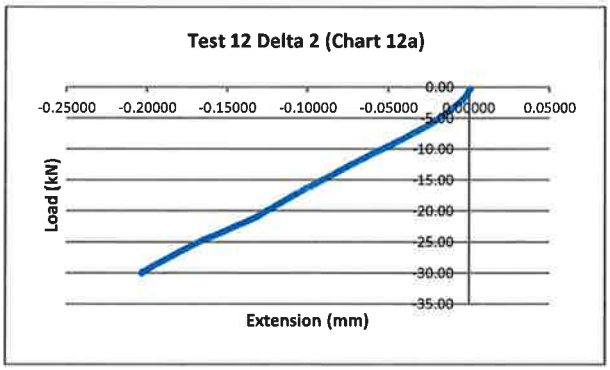

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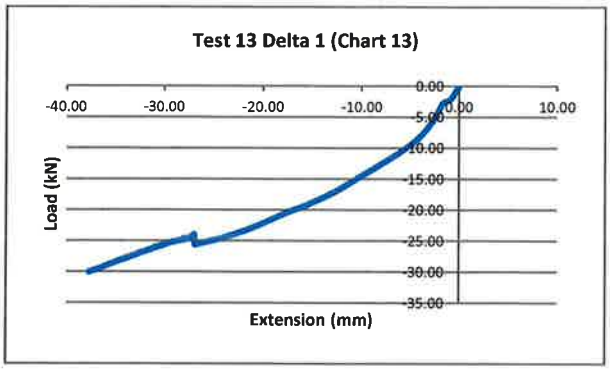

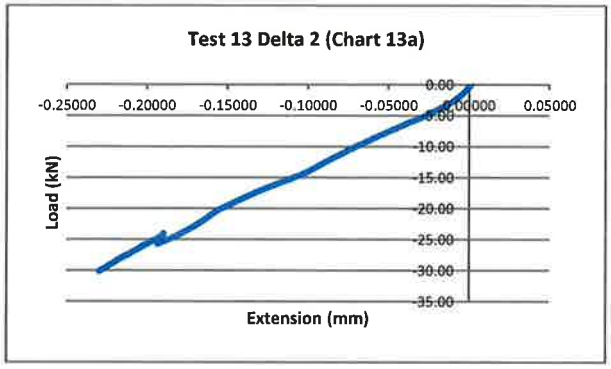

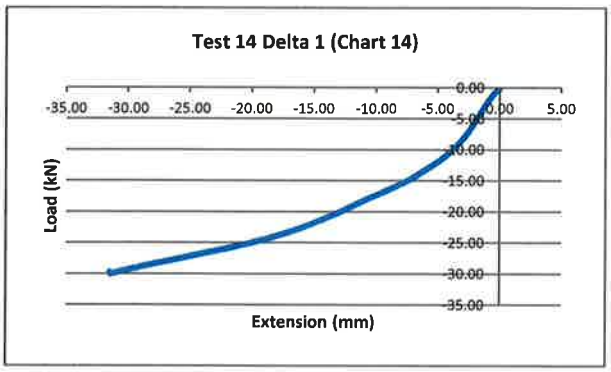

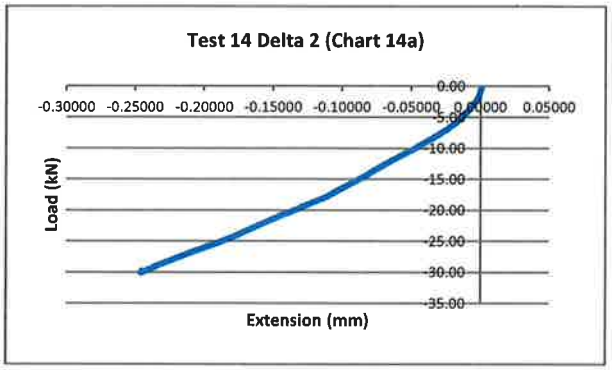

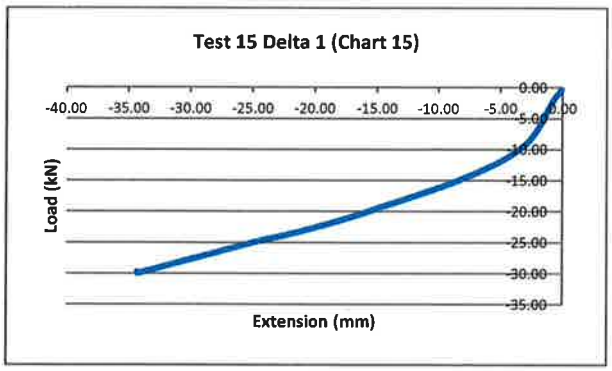

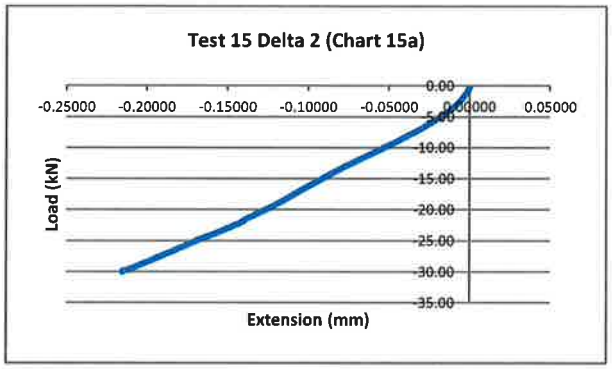

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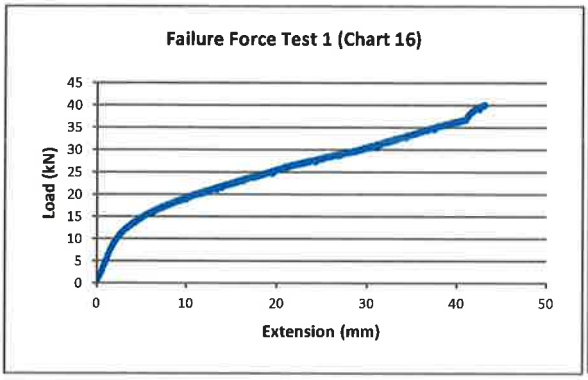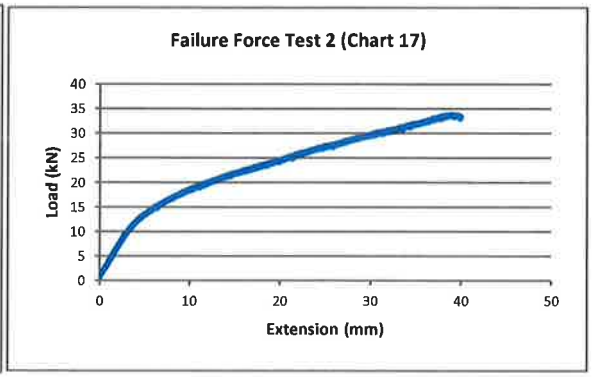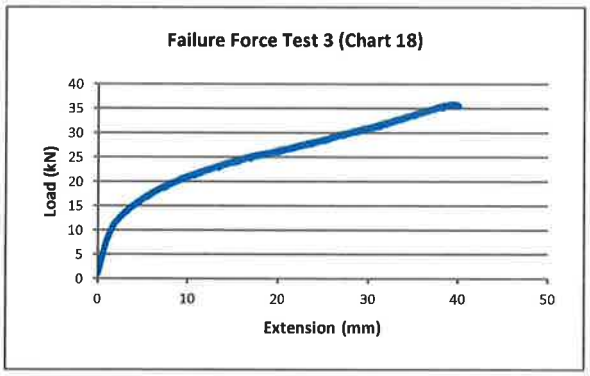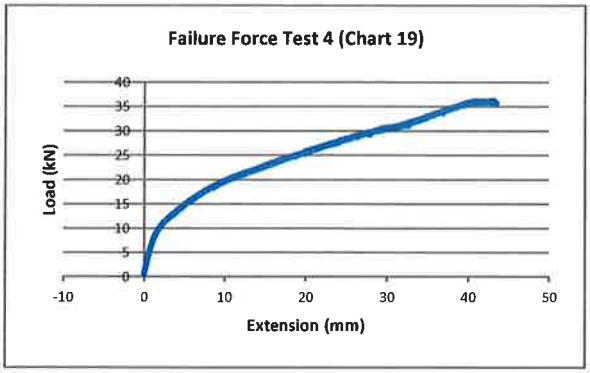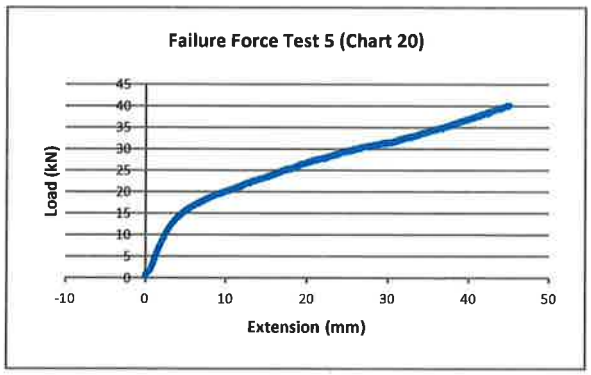
Appendix B