

TEST REPORT

No. : SHIN2411002845CM01_EN

Date : 2024-12-04

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CUSTOMER NAME: SUZHOU ANTA SCAFFOLDING ENGINEERING CO., LTD
ADDRESS: 2TH FLOOR, RUIKANG PARK, 86 SULI RD, WUZHONG DISTRICT,
SUZHOU, JIANGSU, CHINA (MAINLAND)

Sample Name : DOUBLE COUPLER CLASS B
Product Specification : 48.3mmx48.3mm
Material : Drop Forged; Q235

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

Date of Receipt : 2024-11-22
Testing Period : 2024-11-22 ~ 2024-12-04
Test result(s) : For further details, please refer to the following page(s)
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for
SGS-CSTC Standards Technical
Services (Shanghai) Co., Ltd..

Xander Yang
Authorized signatory



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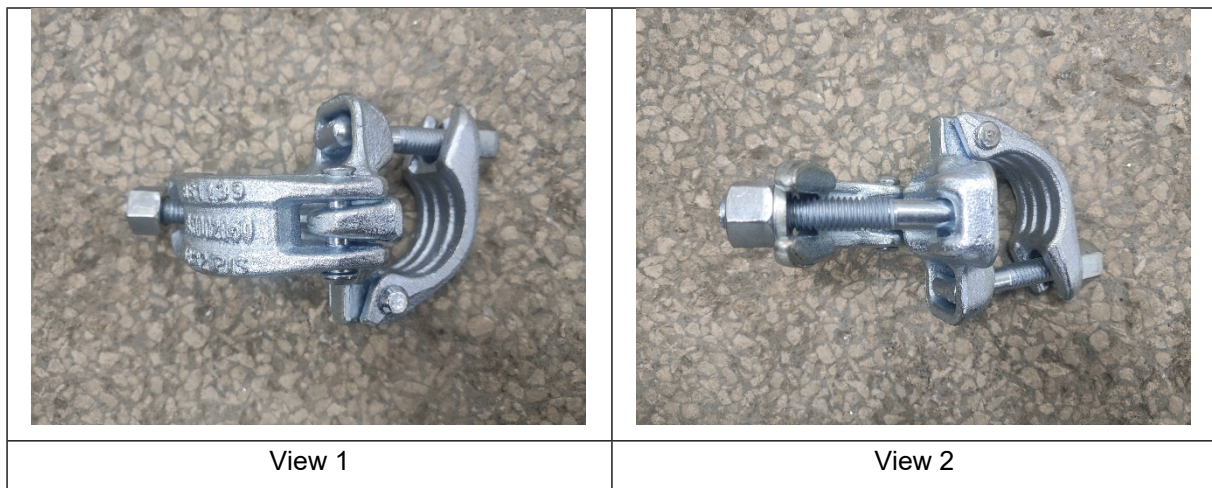
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Summary of Results:

No.	Test Item	Test Method	Result	Conclusion
1	Slipping Force	EN 74-1:2022 Clause 7.2.1	See Result	Pass
2	Failure Force	EN 74-1:2022 Clause 7.2.2	See Result	Pass
3	Pull-apart Force	EN 74-1:2022 Clause 7.3	See Result	Pass
4	Cruciform Bending Stiffness and Cruciform Bending Ultimate Moment	EN 74-1:2022 Clause 7.4.1	See Result	Pass
5	Rotational Moment and the Stiffness	EN 74-1:2022 Clause 7.4.2	See Result	Pass
6	Indentation	EN 74-1:2022 Clause 7.5	See Result	Pass

Note: Pass : Meet the requirements;
Fail : Does not meet the requirements;
N/A : Not Apply to the judgment.

Original Sample Photo(s):



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1. Test Item: Slipping Force

Test Method: EN 74-1:2022 Clause 7.2.1

Test Condition:

Specimen: Right angle coupler, Class B, 10pcs

Test Results:

Test Item	Test Result	Requirement in EN 74-1:2022 Table 8	Conclusion
Slipping Force	$\Delta_1 \leq 7\text{mm}$, $F_{s,5\%} = 18.8\text{kN}$	$\Delta_1 \leq 7\text{mm}$, $F_{s,5\%} \geq 10.0\text{kN}$	Pass
	$1\text{mm} \leq \Delta_2 \leq 2\text{mm}$, $F_{s,5\%} = 20.6\text{kN}$	$1\text{mm} \leq \Delta_2 \leq 2\text{mm}$, $F_{s,5\%} \geq 15.0\text{kN}$	

Note:

- 1) $F_{f,5\%}$: the 5% quantile for the 75% level of confidence.
- 2) Specification of tube for slipping force: Steel tube of $\Phi 48.3\text{mm} \times 3.2\text{mm}$ (wall thickness)
- 3) Please see Annex A for details of test results.



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Annex A Details of Test Results

Failure Force

Specimen No.	F_s (kN, $\Delta_1=7\text{mm}$)	F_s (kN, $1\text{mm}\leq\Delta_2\leq2\text{mm}$)
1	24.36	27.94
2	22.18	24.72
3	20.17	27.20
4	21.63	25.56
5	23.25	24.03
6	19.77	21.40
7	24.98	$F_s=30.0\text{kN}$, $\Delta_2<1\text{mm}$
8	22.62	26.61
9	23.71	$F_s=30.0\text{kN}$, $\Delta_2<1\text{mm}$
10	20.48	23.36
$F_{s,5\%}$	18.8	20.6



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2. Test Item: Failure Force

Test Method: EN 74-1:2022 Clause 7.2.2

Test Condition:

Specimen: Right angle coupler, Class B, 5pcs

Test Results:

Test Item	Test Result	Requirement in EN 74-1:2022 Table 8	Conclusion
Failure Force	$F_{f,5\%}/\gamma R2=54.7\text{kN}$	$F_{f,5\%}/\gamma R2 \geq 30.0\text{kN}$	Pass

Note:

- 1) $F_{f,5\%}$: the 5% quantile for the 75% level of confidence.
- 2) $\gamma R2=1.25$ according to EN 74-1.
- 3) Specification of steel bar for failure force: Steel bar of $\Phi 48.3\text{mm}$.
- 4) Please see Annex B for details of test results.

Annex B Details of Test Results

Failure Force

Specimen No.	F_f (kN)
11	70.33
12	76.24
13	74.45
14	76.79
15	74.94
$F_{f,5\%}/\gamma R2$	54.7



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3. Test Item: Pull-apart Force

Test Method: EN 74-1:2022 Clause 7.3

Test Condition:

Specimen: Right angle coupler, Class B, 5pcs

Test Results:

Test Item	Test Result	Requirement in EN 74-1:2022 Table 8	Conclusion
Pull-apart Force	$F_{p,5\%}/\gamma R2=52.8\text{kN}$	$F_{p,5\%}/\gamma R2 \geq 30.0\text{kN}$	Pass

Note:

- 1) $F_{p,5\%}$: the 5% quantile for the 75% level of confidence.
- 2) $\gamma R2=1.25$ according to EN 74-1.
- 3) Specification of steel bar for pull-apart force: steel bar of $\Phi 48.3\text{mm}$.
- 4) Please see Annex C for details of test results.

Annex C Details of Test Results

Pull-apart Force

Specimen No.	F_P (kN)
16	68.78
17	71.21
18	69.61
19	70.04
20	67.42
$F_{p,5\%}/\gamma R2$	52.8



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4. Test Item: Cruciform Bending Stiffness and Cruciform Bending Ultimate Moment

Test Method: EN 74-1:2022 Clause 7.4.1

Test Condition:

Specimen: Right angle coupler, Class B, 10pcs

Test Results:

Test Item	Test Result	Requirement in EN 74-1:2022 Table 8	Conclusion
Cruciform Bending Stiffness and Cruciform Bending Ultimate Moment	$M_B/1.65=0.48\text{kNm}$, $C_1=27.9\text{kNm/rad}$	$M_B/1.65=0.48\text{kNm}$, $C_1\geq 15.0\text{kNm/rad}$	Pass
	$M_B=0.8\text{kNm}$, $C_2=6.0\text{kNm/rad}$	$M_B=0.8\text{kNm}$, $C_2\geq 6.0\text{kNm/rad}$	
	$M_{ult,5\%}=1.7\text{kNm}$	$M_{ult,5\%}\geq 1.6\text{kNm}$	

Note:

- $M_{ult,5\%}$: the 5% quantile for the 75% level of confidence.
- Specification of tube for cruciform bending stiffness and cruciform bending ultimate moment: Steel tube of $\Phi 48.3\text{mm}\times 3.2\text{mm}$ (wall thickness).
Specification of steel bar for cruciform bending stiffness and cruciform bending ultimate moment: Steel bar of $\Phi 48.3\text{mm}$.
- Please see Annex D for details of test results.

Annex D Details of Test Results

Sample No.	C_1 (kNm/rad, $M_B/1.65=\pm 0.48\text{kNm}$)	C_2^+ (kNm/rad, $M_B=0.8\text{kNm}$)	C_2^- (kNm/rad, $M_B=-0.8\text{kNm}$)	M_{ult} (kNm)
21	26.32	5.03	-	1.71
22	27.62	4.70	-	1.75
23	19.30	5.22	-	1.75
24	24.58	5.11	-	1.70
25	22.64	5.05	-	1.74



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26	34.19	-	5.91	1.69
27	30.43	-	6.55	1.68
28	30.80	-	8.09	1.74
29	38.19	-	9.39	1.72
30	36.84	-	9.48	1.78
-	$C_1=27.9$	$C_2=6.0$		$M_{ult,5\%}=1.7$



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5. Test Item: Rotational Moment and the Stiffness

Test Method: EN 74-1:2022 Clause 7.4.2

Test Condition:

Specimen: Right angle coupler, Class B, 5pcs

Test Results:

Test Item	Test Result	Requirement in EN 74-1:2022 Table 8	Conclusion
Rotational Moment and the Stiffness	$M_T = \pm 0.13 \text{ kNm}$, $C_\varphi = 56.3 \text{ kNm/rad}$	$M_T = \pm 0.13 \text{ kNm}$, $C_\varphi \geq 7.5 \text{ kNm/rad}$	Pass
	$1^\circ \leq \theta \leq 2^\circ$, $M_{T,5\%} = 0.45 \text{ kNm}$	$1^\circ \leq \theta \leq 2^\circ$, $M_{T,5\%} \geq 0.13 \text{ kNm}$	

Note:

- $M_{T,5\%}$: the 5% quantile for the 75% level of confidence.
- Specification of tube for rotational moment and the stiffness: Steel tube of $\Phi 48.3 \text{ mm} \times 3.2 \text{ mm}$ (wall thickness).
- Please see Annex E for details of test results.

Annex E Details of Test Results

Rotational Moment and the Stiffness

Sample No.	$C_\varphi (\text{kNm/rad}, M_T = \pm 0.13 \text{ kNm})$	$M_T (\text{kNm}, 1^\circ \leq \theta \leq 2^\circ)$
31	80.19	0.477
32	51.07	0.540
33	56.45	0.560
34	47.53	0.504
35	55.35	0.544
-	$C_\varphi = 56.3$	$M_{T,5\%} = 0.45$



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6. Test Item: Indentation

Test Method: EN 74-1:2022 Clause 7.5

Test Condition:

Specimen: Right angle coupler, Class B, 5pcs

Test Results:

Test Item	Test Result	Requirement in EN 74-1:2022 Table 8	Conclusion
Indentation	F=10kN, $\Delta < 1.5\text{mm}$	F=10kN, $\Delta \leq 1.5\text{mm}$	Pass

Note:

- 1) Specification of tube for indentation: Steel tube of $\Phi 48.3\text{mm} \times 2.7\text{mm}$ (wall thickness).
- 2) Please see Annex F for details of test results.

Annex F Details of Test Results

Indentation

Specimen No.	Δ_{10} (mm, F=10kN)
36	0.41
37	0.35
38	0.29
39	0.37
40	0.26

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Unless otherwise stated, this report provides a declaration of conformity according to whether the test results are within the specified limits or specifications without considering the measurement uncertainty.

*****End of report*****



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