

TEST REPORT

No. : SHIN2503000511CM01-1_EN

Date : 2025-04-25

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CUSTOMER NAME: NANJING EK METALWORK CO., LTD
ADDRESS: NO.2 GAOXIONG ROAD, LUHE DISTRICT, NANJING CITY, CHINA.

Sample Name : DROP FORGED DOUBLE COUPLER
Material : Ø48.3

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 : 2025-03-13
Testing Period : 2025-03-13 ~ 2025-04-24
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

Xander Yang
Authorized signatory



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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

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

Original Sample Photo(s):

	
Slipping Force / Failure Force / Pull-apart Force / Rotational Moment and the Stiffness - View 1	Slipping Force / Failure Force / Pull-apart Force / Rotational Moment and the Stiffness - View 2

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Cruciform Bending Stiffness and Cruciform
Bending Ultimate Moment - View 1



Cruciform Bending Stiffness and Cruciform
Bending Ultimate Moment - View 2

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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	$\Delta_1 \leq 7\text{mm}$, $F_{s,5\%} = 20.9\text{kN}$	$\Delta_1 \leq 7\text{mm}$, $F_{s,5\%} \geq 10.0\text{kN}$	Pass
	$1\text{mm} \leq \Delta_2 \leq 2\text{mm}$, $F_{s,5\%} = 25.0\text{kN}$	$1\text{mm} \leq \Delta_2 \leq 2\text{mm}$, $F_{s,5\%} \geq 15.0\text{kN}$	

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

Specimen No.	F_s (kN, $\Delta_1=7\text{mm}$)	F_s (kN, $1\text{mm}\leq\Delta_2\leq2\text{mm}$)
1	22.18	26.59
2	23.06	26.35
3	21.97	25.88
4	23.14	27.06
5	22.85	26.37
6	22.91	27.24
7	24.45	28.36
8	23.66	27.42
9	21.73	25.62
10	21.51	26.03
$F_{s,5\%}$	20.9	25.0



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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	$F_{f,5\%}/\gamma R2=57.6\text{kN}$	$F_{f,5\%}/\gamma R2 \geq 30.0\text{kN}$	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

Specimen No.	F_f (kN)
11	74.71
12	77.54
13	78.62
14	75.31
15	79.85
$F_{f,5\%}/\gamma R2$	57.6



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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	$F_{p,5\%}/\gamma R2=48.9\text{kN}$	$F_{p,5\%}/\gamma R2 \geq 30.0\text{kN}$	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

Specimen No.	F_P (kN)
16	66.85
17	71.96
18	64.27
19	69.83
20	67.24
$F_{p,5\%}/\gamma R2$	48.9



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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	$M_B/1.65=0.48\text{kNm}$, $C_1=28.9\text{kNm/rad}$	$M_B/1.65=0.48\text{kNm}$, $C_1\geq 15.0\text{kNm/rad}$	Pass
	$M_B=0.8\text{kNm}$, $C_2=7.5\text{kNm/rad}$	$M_B=0.8\text{kNm}$, $C_2\geq 6.0\text{kNm/rad}$	
	$M_{ult,5\%}=1.6\text{kNm}$	$M_{ult,5\%}\geq 1.6\text{kNm}$	

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.



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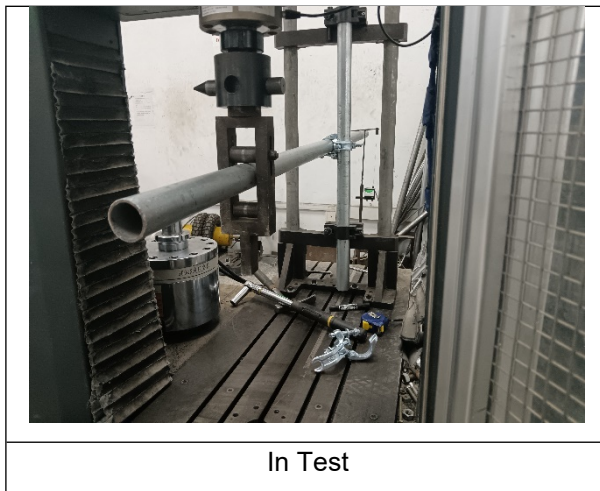
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Annex D Details of Test Results

Sample No.	C ₁ (kNm/rad, M _B /1.65=±0.48kNm)	C ₂ ⁺ (kNm/rad, M _B =0.8kNm)	C ₂ ⁻ (kNm/rad, M _B =-0.8kNm)	M _{ult} (kNm)
26	29.35	8.07	-	1.61
27	30.96	7.59	-	1.63
28	29.75	8.45	-	1.60
29	31.43	8.08	-	1.64
30	24.62	8.26	-	1.62
31	30.72	-	6.45	1.59
32	30.52	-	6.61	1.64
33	25.12	-	6.73	1.60
34	27.19	-	7.74	1.61
35	31.56	-	7.41	1.63
-	C ₁ =28.9	C ₂ =7.5		M _{ult,5%} =1.6

Test Photo(s):



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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	$M_T = \pm 0.13 \text{ kNm}$, $C_\varphi = 61.5 \text{ kNm/rad}$	$M_T = \pm 0.13 \text{ kNm}$, $C_\varphi \geq 7.5 \text{ kNm/rad}$	Pass
	$1^\circ \leq \theta \leq 2^\circ$, $M_{T,5\%} = 0.51 \text{ kNm}$	$1^\circ \leq \theta \leq 2^\circ$, $M_{T,5\%} \geq 0.13 \text{ kNm}$	

Note:

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



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Annex E Details of Test Results

Sample No.	C_{ϕ} (kNm/rad, $M_T=\pm 0.13$ kNm)	M_T (kNm, $1^\circ \leq \theta \leq 2^\circ$)
21	61.29	0.576
22	61.73	0.647
23	59.38	0.545
24	63.09	0.597
25	62.17	0.618
-	$C_{\phi}=61.5$	$M_{T,5\%}=0.51$

This test report adds test item, supersedes the test report No. SHIN2503000511CM01_EN dated Apr 01st, 2025, original report will be invalid from today.

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