SLOVENSKI STANDARD
oSIST prEN 74-1:2020

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Spojke, vezne centične spojke in podnožne plošče za delovne in nosilne odre - 1. del: Cevne spojke - Zahteve in preskusni postopki

Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 1: Couplers for tubes - Requirements and test procedures

Kupplungen, Zentrierbolzen und Fußplatten für Arbeitsgerüste und Traggerüste - Teil 1: Rohrkupplungen - Anforderungen und Prüfverfahren

Raccords, goujons d'assemblage et semelles pour étaiements et échafaudages - Partie 1 : Raccords de tubes - Exigences et modes opératoires d'essai

Ta slovenski standard je istoveten z: **prEN 74-1**

ICS:

91.220	Gradbena oprema	Construction equipment

oSIST prEN 74-1:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
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ICS 91.220

Will supersede EN 74-1:2005

English Version

Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 1: Couplers for tubes - Requirements and test procedures

Raccords, goujons d'assemblage et semelles pour étaiements et échafaudages - Partie 1 : Raccords de tubes - Exigences et modes opératoires d'essai

Kupplungen, Zentrierbolzen und Fußplatten für Arbeitsgerüste und Traggerüste - Teil 1: Rohrkupplungen - Anforderungen und Prüfverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 53.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. prEN 74-1:2020 E

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European foreword

This document (prEN 74-1:2020) has been prepared by Technical Committee CEN/TC 53 “Temporary works equipment”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 74-1:2005.

Compared to EN 74-1:2005 the following changes have been made:

1) reference tubes with the specified yield strengths are not procurable therefore these requirements are changed;

2) new test conditions are specified;

3) the requirement for the bending moment of sleeve couplers are changed;

4) in addition, editorial changes are made.

The couplers specified in this European standard are intended for use in scaffolds erected in accordance with EN 12811-1 and falsework erected in accordance with EN 12812.

Introduction

This is the second of three parts of a standard for couplers.

This first part, EN 74-1, covers common types of friction couplers.

The second part, EN 74-2, deals with other less common types of couplers.

The third part, EN 74-3, deals with plain base plates and loose spigot pins.

EN 74-1 defines a set of steel and aluminium reference tubes for the required tests.

EN 74-1 is not intended to prevent the development of other types of couplers. For example couplers may be manufactured in aluminium or other materials or be designed for use with steel or aluminium tubes other than the normally used 48,3 mm nominal outside diameter. Whilst such couplers cannot comply with this European standard, it is recommended that the principles of this European standard are considered in their design and assessment.

The couplers in this European Standard are intended for use in scaffolds and falsework for connecting 48,3 mm outside diameter steel and aluminium tubes which fulfil in other respects (e.g. material grade, thickness and tolerances) the requirements given in EN 12811-1, EN 12811-2 and EN 12810-1.

1 Scope

This document specifies, for right angle couplers, swivel couplers, sleeve couplers and parallel couplers working by friction:

— materials;

— design requirements;

— strength classes with different structural parameters including values for resistance and stiffness;

— test procedures;

— assessment;

and gives

— recommendations for ongoing production control.

For testing, screw couplers are tightened to a torque of 50 Nm and wedge couplers are tightened with a 500 g hammer until the jarring blow.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12811-1:2003, *Temporary works equipment — Part 1: Scaffolds — Performance requirements and general design*

EN 12811-2:2004, *Temporary works equipment — Part 2: Information on materials*

EN 12811-3:2002, *Temporary works equipment — Part 3: Load testing*

EN 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1)*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs (ISO 898-1)*

EN ISO 898-2, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 2: Nuts with specified property classes — Coarse thread and fine pitch thread (ISO 898-2)*

EN 12812, *Falsework — Performance requirements and general design*

3 Terms, definitions and symbols

For the purposes of this document, the following terms and definitions apply / the terms and definitions given in EN 12811-1:2003 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

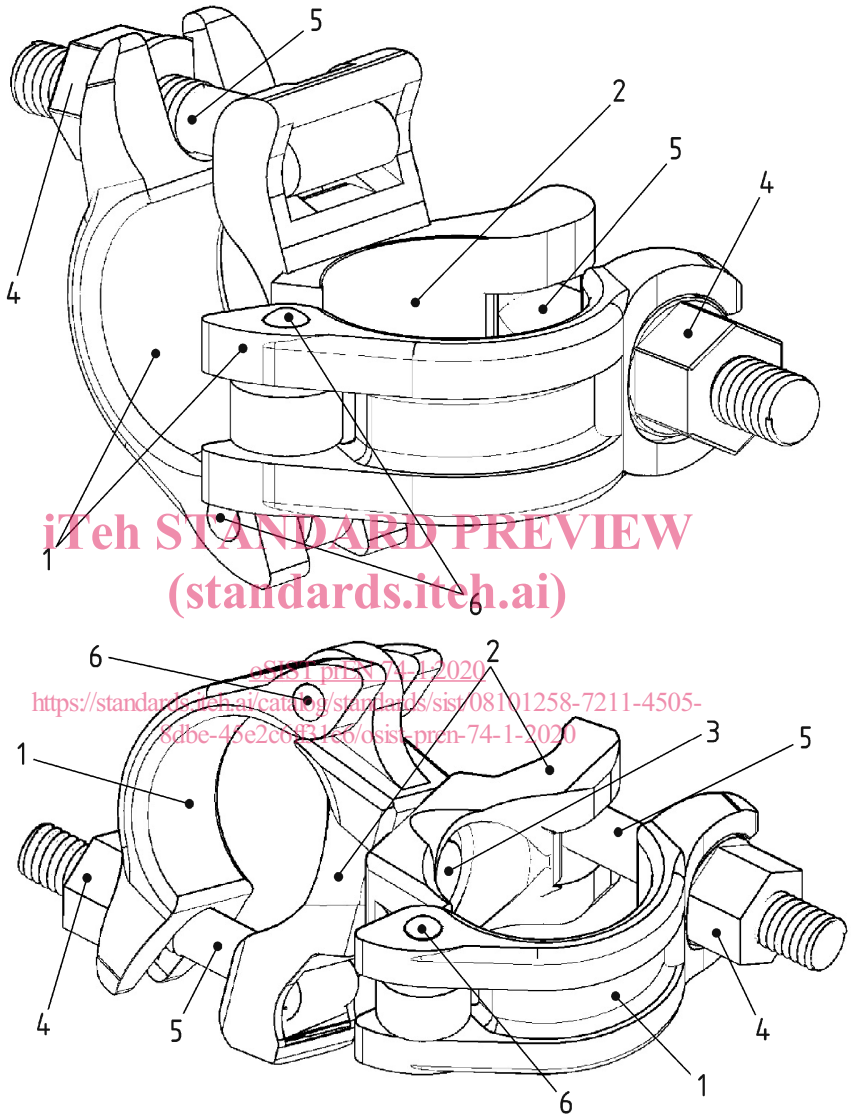
— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1 Terms and definitions

3.1.1
coupler
device used for connecting two tubes

EXAMPLE



Key

1 closing flap
2 base
3 centre rivet (for swivel couplers)
4 nut with integrated washer
5 T–Bolt
6 rivet

Figure 1 — Designation of components of right angle and swivel coupler

3.1.2
wedge coupler
coupler in which the clamping force is obtained by tightening a closing flap around the tube by means of hammering home a wedge

3.1.3
screw coupler
coupler in which the clamping force is obtained by tightening a closing flap around the tube by means of a nut and a bolt

3.1.4
supplementary coupler
right angle coupler positioned touching an identical coupler in order to increase the slip resistance

3.1.5
assessment
checking process to establish compliance with the requirements specified in this document

3.2 Symbols and abbreviations

For the purpose of this document, the following symbols apply:

F_s	slipping force in kN;
F_f	failure force in kN;
F_p	pull apart force in kN;
M_B	bending or cruciform bending moment in kNm;
$c_{\varphi(i),MB}$	cruciform bending stiffness in kNm/rad;
M_T	rotational moment in kNm;
$c_{\varphi,MT}$	rotational stiffness in kNm/rad;
$F_{s,c}$	specified value for slipping force in kN;
$F_{f,c}$	specified value for failure force in kN;
$F_{p,c}$	specified value for pull apart force in kN;
$M_{B,c}$	specified value for bending moment in kNm;
$c_{\varphi(i),MB,c}$	specified value for cruciform bending stiffness in kNm/rad;
$M_{T,c}$	specified value for rotational moment in kNm;
$c_{\varphi,MT,c}$	specified value for rotational stiffness in kNm/rad;
v	displacement in millimetres of the transverse tube under load relative to a tube or solid bar in rotational tests;
Δ_i	displacement in millimetres of a coupler under load relative to a tube or solid bar;

Δ_{10} indentation in millimetres;

P test load in kN;

P_{ind} test load for indentation in kN;

φ specified angle of rotation of a coupler in degrees;

$P_{f,ult}$ load bearing capacity of a coupler at failure;

$P_{p,ult}$ load bearing capacity of a coupler for pull apart;

M_{ult} capacity of a coupler of cruciform ultimate bending moment;

R_{eH} yield strength;

$R_{p,0.2}$ proof stress at elongation of 0,2 %;

R_m tensile strength.

4 Types and classes of couplers

4.1 Types of couplers

The types of couplers are listed in Table 1.

Table 1 — Types of couplers

Type of coupler	Identification	Arrangement of tubes
Right angle coupler	RA	Crossing at a right angle
Swivel coupler	SW	Crossing at any angle
Parallel coupler	PA	Parallel
Sleeve coupler	SF	End to end coaxially

4.2 Classes of couplers

4.2.1 General

The classes for each type of coupler are given in Table 2.

Table 2 — Classes of couplers

Type of coupler	Class			
	A	B	AA	BB
Right angle coupler	■	■	■	■
Swivel coupler	■	■	–	–
Parallel coupler	■	■	–	–
Sleeve coupler friction type	■	■	–	–
■ Specified class				

Classes A and B differ in transmissible internal forces and moments and in values of load bearing capacity and stiffness. Couplers of classes AA and BB, used as single couplers have the same characteristics as couplers of classes A and B respectively, but they may also be used to increase slipping capacity if two identical couplers AA+AA or BB+BB are positioned touching each other.

4.2.2 Transmissible internal forces, moments and related stiffnesses

In general a connection between two tubes is able to transmit three forces and three moments at right angles to each other with related stiffness.

Tables 3 to 6 show which structural parameters apply. See Table 8 for values for testing purposes.

Longitudinal stiffness may be derived from load — displacement curves for slipping forces.

Table 3 — Structural parameters for right angle couplers (RA)

Structural parameters		Class	
		A and AA	B and BB
Force or moment (Figure 2)	Slipping force F_S	■	■
	Rotational moment M_T*	–	■
	Pull apart force F_p	■	■
	Failure force F_f	■	■
	Cruciform bending moment M_B*	–	■
Connection stiffness	Rotational stiffness $c_{\varphi,MT}$*	–	■
	Cruciform bending stiffness $c_{\varphi,MB}$*	–	■
■ Resistance or stiffness specified			
* Only for screw couplers			

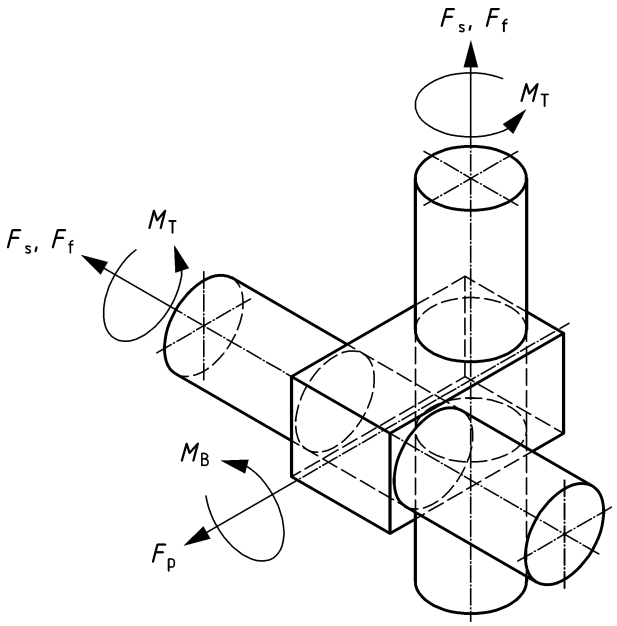


Figure 2 — Forces and moments for a right angle coupler

Table 4 — Structural parameters for swivel couplers (SW)

	Structural parameter	Class	
		A	B
1	Slipping force F_S (Figure 3)	■	■
2	Failure force F_f (Figure 3)	■	■
■ Resistance specified			

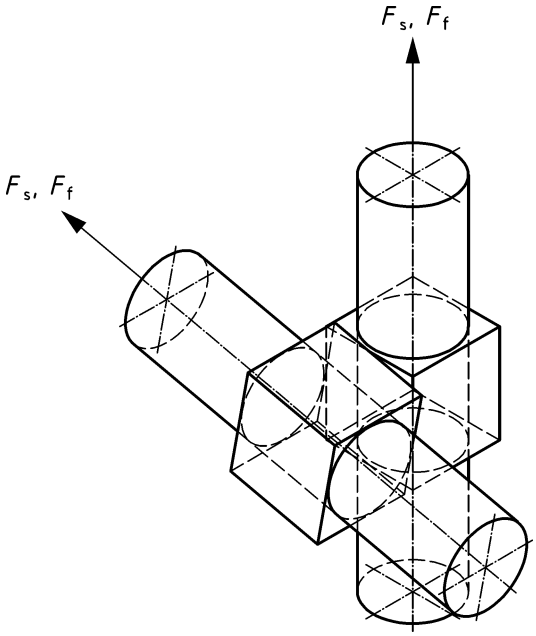


Figure 3 — Forces for a swivel coupler