



SLOVENSKI STANDARD

SIST EN 74-1:2022

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Nadomešča:
SIST EN 74-1:2006

**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 étaielements et échafaudages - Partie
1 : Raccords de tubes - Exigences et modes opératoires d'essai

SIST EN 74-1:2022

Ta slovenski standard je istoveten z: **EN 74-1:2022**

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91.220	Gradbena oprema	Construction equipment

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EUROPEAN STANDARD
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EN 74-1

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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 étaielements 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 European Standard was approved by CEN on 14 February 2022.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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EN 74-1:2022 (E)**European foreword**

This document (EN 74-1:2022) has been prepared by Technical Committee CEN/TC 53 “Temporary works equipment”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by September 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes 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 requirements for the bending moment of sleeve couplers are changed;
- 4) in addition, editorial changes are made.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This is the first 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.

This document defines a set of steel and aluminium reference tubes for the required tests.

This document is not intended to prevent the development of other types of couplers. For example, couplers can be manufactured in aluminium alloys 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 document, it is recommended that the principles of this document are considered in their design and assessment.

The couplers in this document 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.

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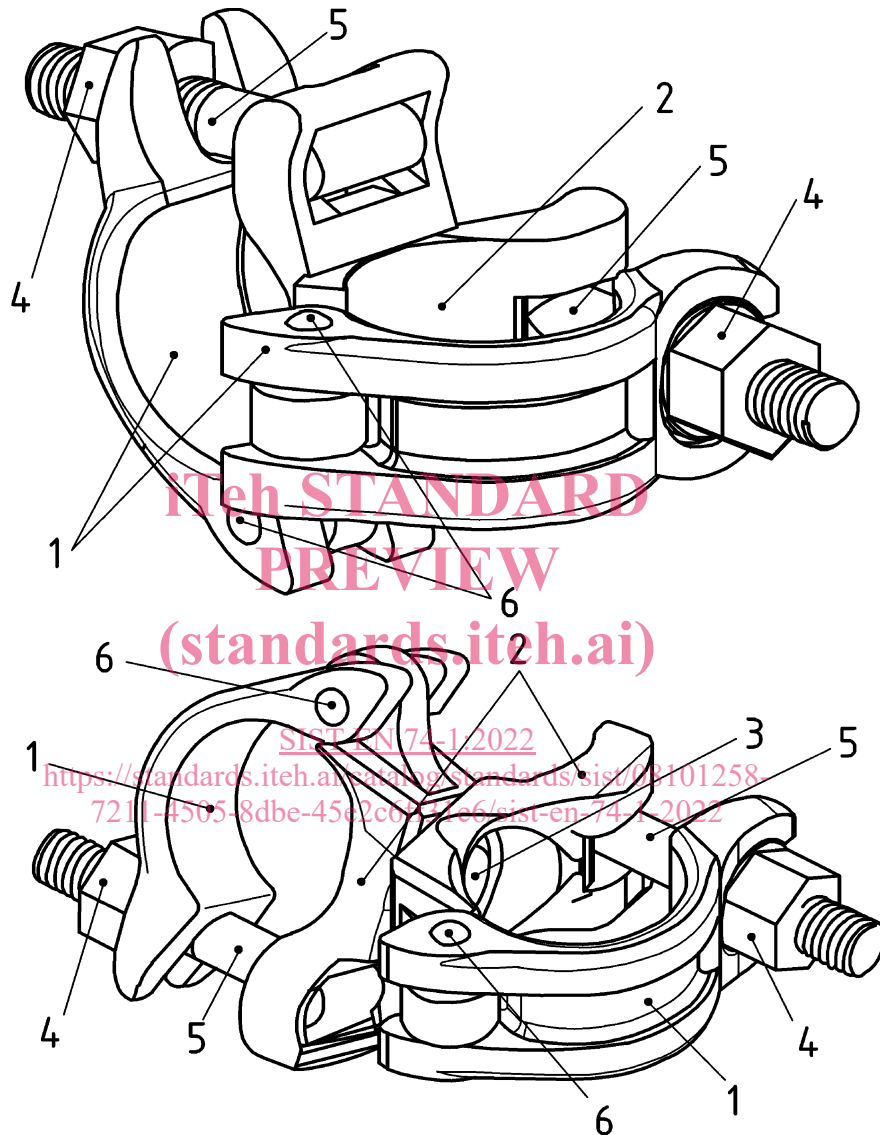
3.1 Terms and definitions

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

EN 74-1:2022 (E)**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;
$c_{\phi,MB}$	cruciform bending stiffness in kNm/rad;
M_T	rotational moment in kNm;
$c_{\phi,MT}$	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;
$c_{\phi,MB,c}$	specified value for cruciform bending stiffness in kNm/rad;
$M_{T,c}$	specified value for rotational moment in kNm;
$c_{\phi,MT,c}$	specified value for rotational stiffness in kNm/rad;
v	displacement of the transverse tube under load relative to a tube or solid bar in rotational tests in mm;
Δ_i	displacement of a coupler under load relative to a tube or solid bar in mm;
Δ_{10}	indentation in mm;
P	test load in kN;
P_{ind}	test load for indentation in kN;

φ	angle of rotation of a coupler in degrees;
$P_{f,ult}$	ultimate failure force in kN;
$P_{p,ult}$	ultimate pull apart force in kN;
M_{ult}	ultimate cruciform bending moment in kNm;
R_{eH}	yield strength in N/mm ² ;
$R_{p,0.2}$	proof stress at elongation of 0,2 % in N/mm ² ;
R_m	tensile strength in N/mm ² ;
(i)	number of test sample.

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 $c_{\phi,MT}$ *	-	■
	Cruciform bending stiffness $c_{\phi,MB}$ *	-	■
■ Resistance or stiffness specified			
* Only for screw couplers			

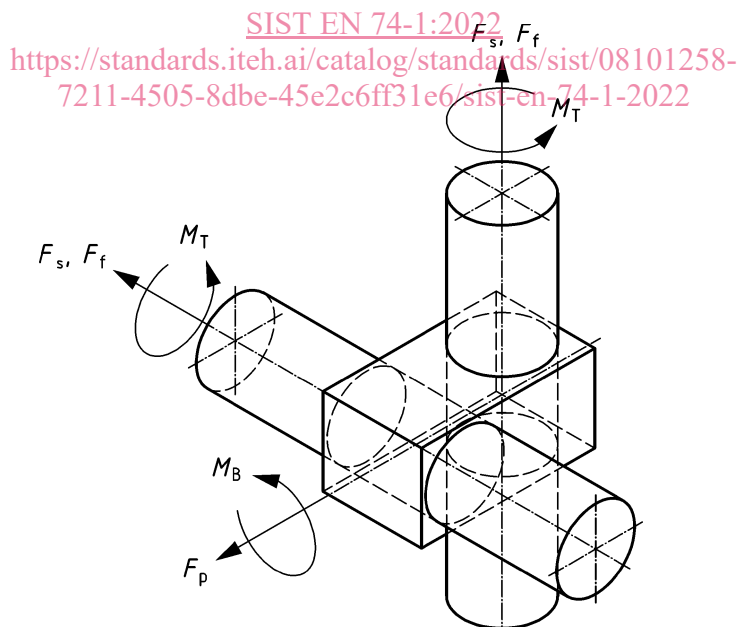
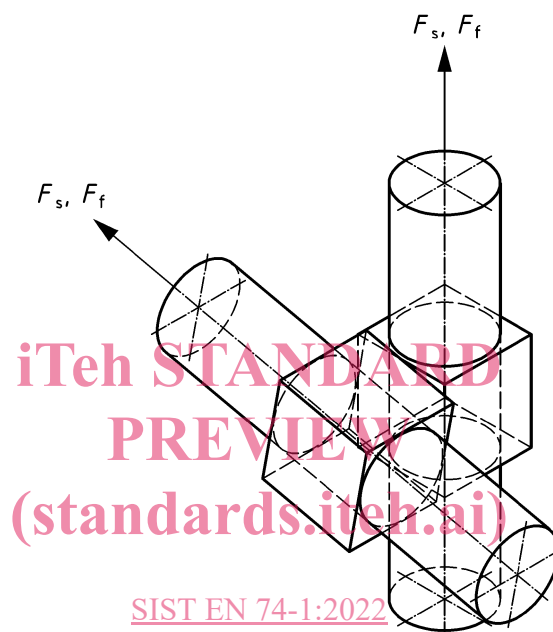


Figure 2 — Forces and moments for a right angle coupler

Table 4 — Structural parameters for swivel couplers (SW)

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



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 Figure 3 — Forces for a swivel coupler

Table 5 — Structural parameters for parallel couplers (PA)

Structural parameter	Class	
	A	B
Slipping force F_s (Figure 4)	■	■
Failure force F_f (Figure 4)	■	■
■ Resistance specified		