



SLOVENSKI STANDARD

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Nadomešča:
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Spojke, vezne centične spojke in podnožne plošče za delovne in nosilne odre - 2. del: Specialne spojke - Zahteve in preskusni postopki

Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 2: Special couplers - Requirements and test procedures

Kupplungen, Zentrierbolzen und Fußplatten für Arbeitsgerüste und Traggerüste - Teil 2: Spezialkupplungen - Anforderungen und Prüfverfahren

Raccords, goujons d'assemblage et semelles pour étaielements et échafaudages - Partie 2 : Raccords spéciaux - Exigences et modes opératoires d'essai

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EUROPEAN STANDARD

EN 74-2

NORME EUROPÉENNE

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Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 2: Special couplers - Requirements and test procedures

Raccords, goujons d'assemblage et semelles pour étaielements et échafaudages - Partie 2 : Raccords spéciaux - Exigences et modes opératoires d'essai

Kupplungen, Zentrierbolzen und Fußplatten für Arbeitsgerüste und Traggerüste - Teil 2: Spezialkupplungen - 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 74-2:2022 (E)**European foreword**

This document (EN 74-2:2022) 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of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by September 2022.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 74-2:2008.

Compared to EN 74-2:2008, the following changes have been made:

- 1) alignment with the new EN 74-1;
- 2) requirement for welded half coupler HW class B changed;
- 3) 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.

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Introduction

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

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

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

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

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 with outside diameters different from those specified in this document. 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 specified in this document are intended for use in temporary works, for example, scaffolds erected in accordance with EN 12811-1 and falsework erected in accordance with EN 12812.

NOTE In the text of this document, the term “loose spigot” is used instead of the “spigot pin” in the title.

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EN 74-2:2022 (E)**1 Scope**

This document specifies:

- materials;
- design requirements;
- specified values for resistances and stiffnesses which a coupler has to achieve under test;
- test procedures and assessment;

for the following special couplers:

- screw or wedge half couplers, sleeve couplers with shear studs, right angle reduction couplers and swivel reduction couplers.

It gives recommendations for ongoing production control.

These couplers are for use principally in temporary works. Each coupler is able to be fixed to at least one side to one 48,3 mm diameter steel or aluminium tube. For the other side of reduction couplers, this document specifies requirements for the diameter and wall thickness of tubes.

Other special half couplers such as half couplers attached by riveting, used mainly for prefabricated members of scaffolds, are outside the scope of this document.

NOTE Information on design using special couplers is given in Annex B.

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 74-1:2022, *Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 1: Couplers for tubes - Requirements and test procedures*

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 17293, *Temporary works equipment - Execution - Requirements for manufacturing*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel - Part 1: Bolts, screws and studs with specified property classes - Coarse thread and fine pitch thread (ISO 898-1)*

3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in EN 12811-1:2003 and EN 74-1:2022 and the following apply.

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

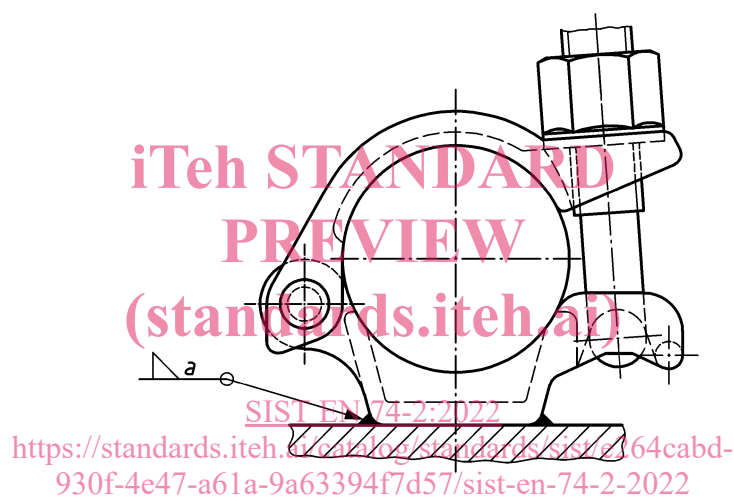
3.1 Terms and definitions

3.1.1

half coupler (HW)

coupler which connects a tube of 48,3 mm diameter to another member by means of welding (HW)

Note 1 to entry: See Figure 1.



Key

a ∇ profile of welding

Figure 1 — Half coupler connected by welding (HW)

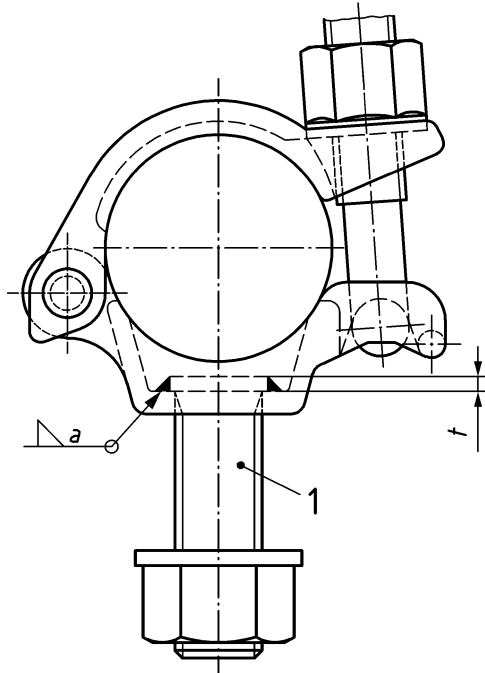
3.1.2

half coupler (HT)

coupler which connects a tube of 48,3 mm diameter to another member by means a welded-in threaded element (HT)

Note 1 to entry: See Figure 2.

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**Key**

- a Δ profile of welding
 t thickness of the head of welded-in threaded element
 1 welded-in threaded element (bolt, screw, stud, threaded rod)

Figure 2 — Half coupler for connection with a welded in threaded element (HT)

3.1.3**sleeve coupler with shear studs (SS)**

coupler for connecting 48,3 mm tubes end to end by means of a pair of shear studs on each side engaging with two predetermined holes in each tube

Note 1 to entry: See Figure 3. Where required, a manufacturer may specify the use of a loose spigot (not shown on Figure 3).

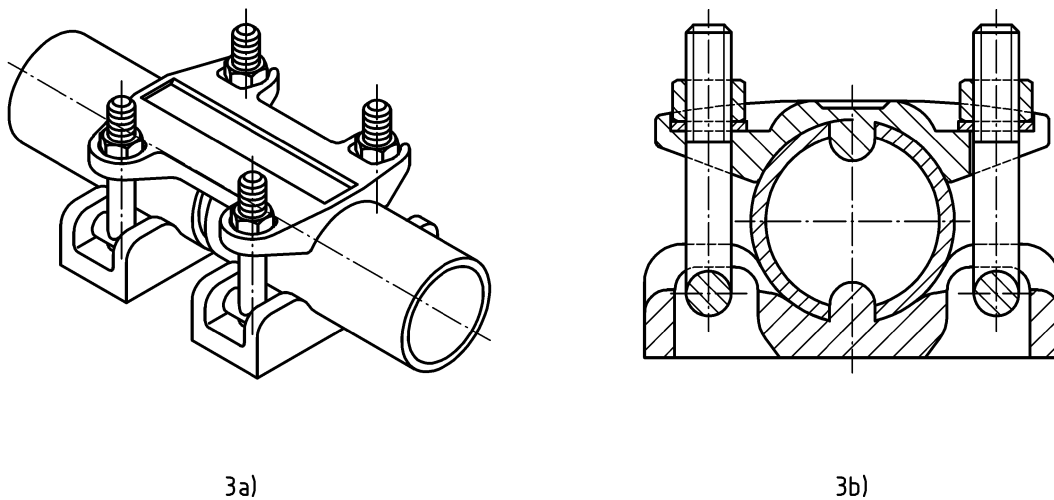


Figure 3 — Sleeve coupler with shear studs (SS)

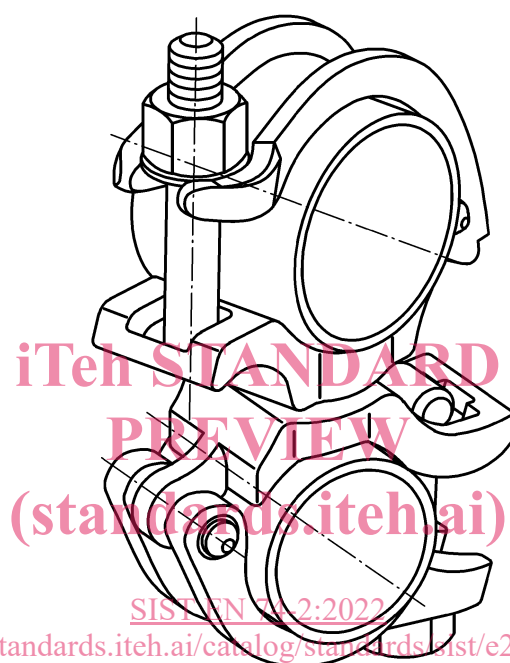
3.1.4**reduction coupler (RR)**

right angle coupler (RR) for connecting two tubes with different diameters of which one tube has a diameter of 48,3 mm

3.1.5**reduction coupler (RS)**

swivel coupler for connecting two tubes with different diameters of which one tube has a diameter of 48,3 mm

Note 1 to entry: See Figure 4.



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Figure 4 — Reduction coupler as swivel coupler (RS)

3.2 Symbols and abbreviations

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

c_k	characteristic stiffness of a longitudinal spring;
F_s	slipping force in kN;
F_f	failure force in kN;
F_p	pull apart force in kN;
F_q	shear force in kN;
$M_{B,x}$	cruciform bending moment in kNm;
$M_{B,y}$	bending moment in kNm;
$c_{\varphi i,MB,x}$	cruciform bending stiffness in kNm/rad;
$c_{\varphi i,MB,y}$	bending stiffness in kNm/rad;

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$F_{s,c}$	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 bending 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;
$P_{f,ult}$	ultimate failure force in kN;
$P_{p,ult}$	ultimate pull apart force in kN;
$P_{q,ult}$	ultimate shear force in kN;
$M_{ult,x}$	ultimate cruciform bending moment in kNm;
$M_{ult,y}$	ultimate bending moment in kNm;
φ	angle of rotation of a coupler in degrees;
(i)	number of test sample.

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4 Types and classes of special couplers

4.1 Types of couplers

The types of special couplers are listed in Table 1.

Table 1 — Types of couplers

Type of coupler		Identification	Arrangement of tubes
Half coupler ^a		HW	Connection of a tube to a member with a coupler directly welded to the member
		HT	Connection of a tube to a member with a coupler which incorporates a welded in threaded element
Sleeve coupler with shear studs		SS	Tubes connected end to end coaxially using holes in the tubes and studs
Reduction coupler	Right angle	RR	Tube of 48,3 mm diameter connected to a tube of another diameter at a right angle
	Swivel	RS	Tube of 48,3 mm diameter connected to a tube of another diameter at any angle
^a All connections other than those specified for HW and HT e.g. riveted connections are not covered by this document.			

4.2 Classes of Couplers

4.2.1 General

The classification is given in Table 2.

Table 2 — Classes of couplers

Type of coupler	Class		Unclassified
	A	B	
Half coupler	■	■	–
Sleeve coupler with shear studs	–	–	■
Reduction coupler	–	–	■

Classes A and B differ in transmissible internal forces and moments and in values of load bearing capacity and stiffness.

4.2.2 Transmissible internal forces, moments and related stiffnesses

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

The connection of a tube to another member by a threaded element fixed half coupler (HT) or by weldable half coupler (HW) is designed to transmit three forces. Additionally, a Class B half coupler connected by a welded-in threaded element (HT) is designed to transmit one bending moment and a Class B screw weldable half coupler (HW) is designed to transmit two bending moments as listed in Table 3.

A sleeve coupler with shear studs (SS) is designed to transmit one force and one bending moment as listed in Table 4.

A right angle reduction coupler (RR) is designed to transmit three forces at right angle in three directions as listed in Table 5. <https://standards.iteh.ai/catalog/standards/sist/e264cabd-930f-4e47-a61a-9a63394f7d57/sist-en-74-2-2022>

A swivel reduction coupler (RS) is designed to transmit two forces as listed in Table 6.

NOTE The influence of the moments resulting from eccentricities of the connection is considered in the test.

Table 3 to 6 show the structural parameters which are specified.