



SLOVENSKI STANDARD
SIST EN 74-1:2006

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SIST EN 74:2000

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

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

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

Ta slovenski standard je istoveten z: EN 74-1:2005

ICS:

91.220 Gradbena oprema Construction equipment

SIST EN 74-1:2006 **en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 74-1

October 2005

ICS 91.220

Supersedes EN 74:1988

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'assemblages et semelles pour étaielement et échaffaudages de service - Partie 1: Raccords pour tubes - Exigences de performance et méthodes d'essai

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

This European Standard was approved by CEN on 26 August 2005.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This European Standard (EN 74-1:2005) 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 April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

When published this European Standard supersedes the requirements for couplers specified in EN 74:1988. There are additional requirements for some couplers.

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.

This European Standard is not mandated at the time of publication.

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

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EN 74-1:2005 (E)**Introduction**

This is the first of three parts of a European Standard which supersedes EN 74:1988.

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. Until this part is available the respective clauses of EN 74:1988 remain valid.

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.

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1 Scope

This European Standard 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.

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2 Normative references (standards.iteh.ai)

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10002-1, *Metallic materials — Tensile testing — Part 1: Method of test at ambient temperature*

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 ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs (ISO 898-1:1999)*

EN 20898-2, *Mechanical properties of fasteners — Part 2: Nuts with specified proof load value -; Coarse thread (ISO 898-2:1992)*

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

3 Terms, definitions and symbols

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

EN 74-1:2005 (E)

3.1 Terms and definitions

3.1.1

coupler

device used for connecting two tubes

3.1.2

wedge coupler

coupler in which the clamping force is obtained by tightening a 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 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 European Standard

3.2 Symbols and abbreviations

For the purpose of this European Standard, the following symbols apply:

- F_s slipping force in kN; [SIST EN 74-1:2006](https://standards.iteh.ai/catalog/standards/sist/0d526473-fl1c-4a52-ad4b-96d5e07a9914/sist-en-74-1-2006)
- F_f failure force in kN; <https://standards.iteh.ai/catalog/standards/sist/0d526473-fl1c-4a52-ad4b-96d5e07a9914/sist-en-74-1-2006>
- 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;
- $P_{\text{f,ult}}$ load bearing capacity of a coupler at failure;
- $P_{\text{p,ult}}$ load bearing capacity of a coupler for pull apart;
- M_{ult} capacity of a coupler of cruciform bending ultimate moment;
- R_{eH} yield strength;
- $R_{\text{p},0.2}$ proof stress at elongation of 0.2 %;
- R_{m} tensile strength;

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4 Types and classes of couplers

4.1 Types of couplers

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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				

NOTE 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.

NOTE 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 1)	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			

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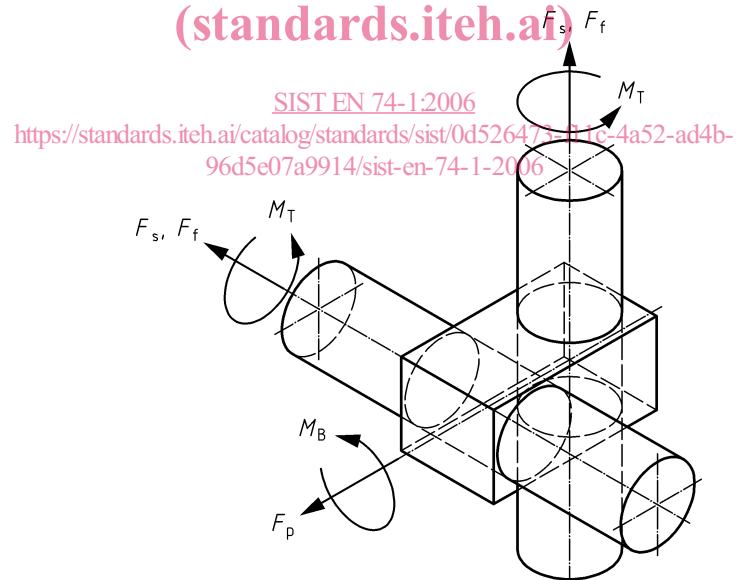


Figure 1 — Forces and moments for a right angle coupler

Table 4 — Structural parameters for swivel couplers (SW)

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

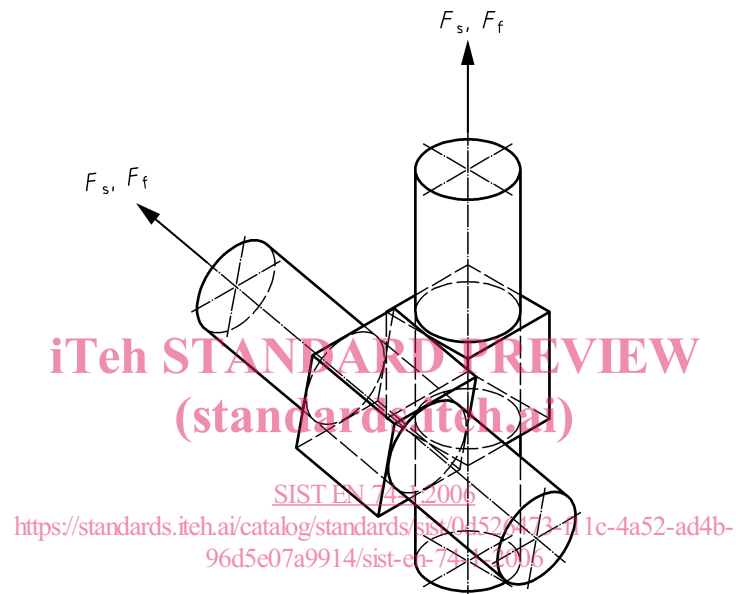


Figure 2 — Forces for a swivel coupler

Table 5 — Structural parameters for parallel couplers (PA)

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

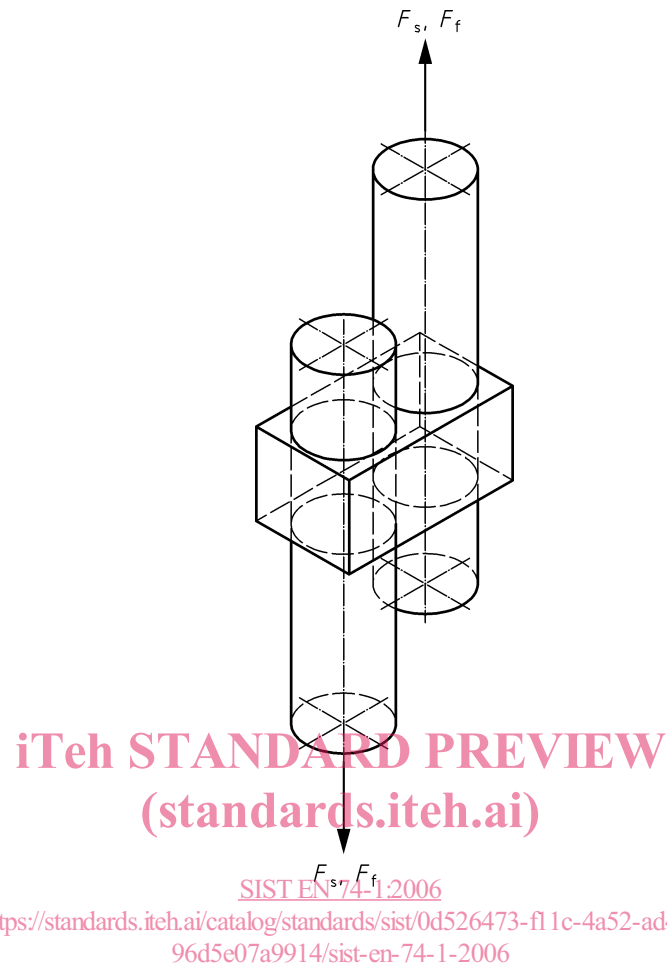


Figure 3 — Forces for a parallel coupler

Table 6 — Structural parameters for sleeve couplers (SF)

	Structural parameters	Class	
		A	B
1	Slipping force F_s (Figure 4)	■	■
2	Bending moment M_B (Figure 4)	---	■
■ Resistance specified			