



**SLOVENSKI STANDARD**  
**SIST-TS CEN/TS 14421:2007**

**01-april-2007**

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**Gibkocevni nastavki in puša za gubanje in zvijanje**

Hose tail and ferrule for crimping and swaging

Schlauchstutzen und Presshülsen zum internen und externen Verpressen

Douilles et manchons pour sertissage et emboutissage

**Ta slovenski standard je istoveten z: CEN/TS 14421:2006**

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**ICS:**

23.040.70      Gumene cevi in armature      Hoses and hose assemblies

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ICS 23.040.70

English Version

## Hose tail and ferrule for crimping and swaging

Douilles et manchons pour sertissage et emboutissage

Schlauchstutzen und Presshülsen zum internen und externen Verpressen

This Technical Specification (CEN/TS) was approved by CEN on 24 September 2006 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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

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## Foreword

This document (CEN/TS 14421:2006) has been prepared by Technical Committee CEN/TC 218 "Rubber and plastics hoses and hose assemblies", the secretariat of which is held by BSI.

This Technical Specification is part of a suite of standards related to the fittings of rubber and plastic hoses and hose assemblies

EN 14420-1: Hose fittings with clamp units - Part 1: Requirements, survey, designation and testing

EN 14420-2: Hose fittings with clamp units - Part 2: Hose side parts of hose tail

EN 14420-3: Hose fittings with clamp units - Part 3: Clamp units, bolted or pinned

EN 14420-4: Hose fittings with clamp units - Part 4: Flange connections

EN 14420-5: Hose fittings with clamp units - Part 5: Threaded connections

EN 14420-6: Hose fittings with clamp units - Part 6: TW tank truck couplings

EN 14420-7: Hose fittings with clamp units - Part 7: Cam locking couplings

EN 14420-8: Hose fittings with clamp units - Part 8: Symmetrical half coupling (Guillemin system)

EN 14422: Clamp type coupling assemblies for LPG transfer hoses

EN 14423: Clamp type coupling assemblies for use with steam hoses rated for pressures up to 18 bar

EN 14424: Hose fittings with screwed ferrules

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

## 1 Scope

This Technical Specification applies to hose tails and ferrules for crimping and swaging and covers the following types of attachment between hose and couplings:

- internal swaging;
- external swaging;
- external crimping.

Maximum working pressure 10 bar, maximum working temperature 150 °C (depending on the respective material).

## 2 Normative references

The following referenced documents are indispensable for the application 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 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN 10204, *Metallic products — Types of inspection documents*

EN 10213-4, *Technical delivery conditions for steel castings for pressure purposes — Part 4: Austenitic and austenitic-ferritic steel grades*

EN 14420-1, *Hose fittings with clamp units — Part 1: Requirements, survey, designation and testing*

EN ISO 1307, *Rubber and plastics hoses for general-purpose industrial applications — Bore diameters and tolerances, and tolerances on length (ISO 1307:1992)*

EN ISO 8031, *Rubber and plastics hoses and hoses assemblies — Determination of electrical resistance (ISO 8031:1993)*

EN ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary (ISO 8330:1998)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules (ISO 15607:2003)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding (ISO 15609-1:2004)*

EN ISO 15614-1:2004, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2004)*

### 3 Terms and definitions

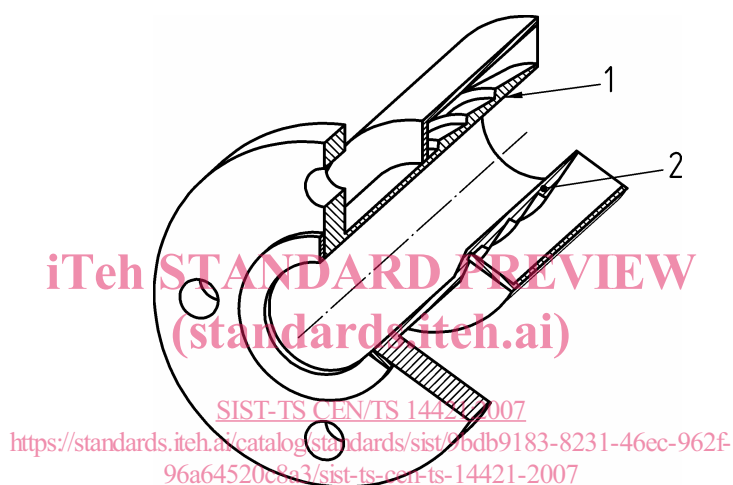
For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### internal swage

act of expanding the hose tail to compress the hose material against the ferrule, therefore providing near unrestricted full flow through the bore of the connection, which results in reduced turbulence of the fluid flowing through the hose.

Internal swaging is achieved by drawing a hardened tool (commonly known as a dolly) through the tail to expand it. The compressive force exerted on the hose by the coupling causes the hose material to flow into the serrated cavities of both tail and ferrule thus providing a secure mechanical bond



##### Key

- 1 shape of tail after swaging
- 2 shape of tail before swaging

Figure 1 — Internal swage

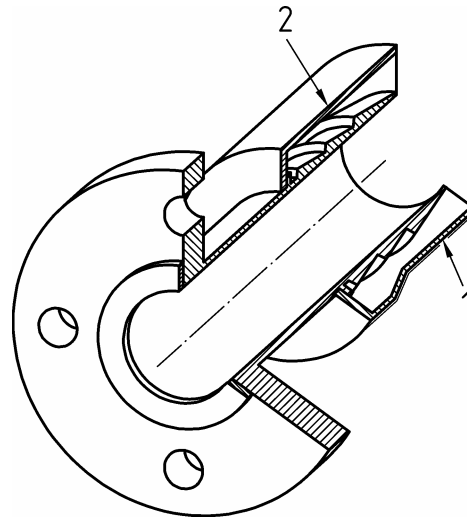
#### 3.2

##### external swage

act of compressing the hose ferrule onto the hose material in order to compress it against the hose tail.

External swaging is achieved by pushing the hose and coupling assembly through a die aperture of smaller diameter than the external diameter of the ferrule.

Similar in principle to internal swaging, the external diameter of the ferrule is permanently reduced such that the resulting compressive force exerted onto the hose causes it to flow into the serrated cavities of both tail and ferrule thus providing a secure mechanical bond



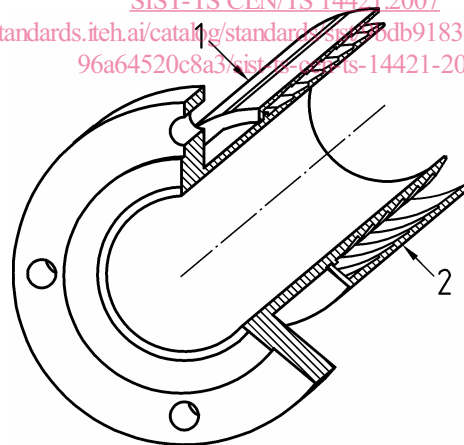
- Key**
- 1 shape of ferrule after swaging
  - 2 shape of ferrule before swaging

**Figure 2 — External swage**

**3.3 external crimping**

with external crimping the outside of the ferrule is reduced to compress the hose material against the tail by pressure being applied on the outside of the ferrule, thereby causing the hose material to flow into the serrated cavities between the tail and the ferrule effecting a secure mechanical bond

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- Key**
- 1 shape of ferrule after crimping
  - 2 shape of ferrule before crimping

**Figure 3 — External crimping**



## 4 Requirements

### 4.1 General

This Technical Specification is intended for couplings operating within the following operating conditions:

### 4.2 Fluid pressure

- Maximum working pressure 10 bar;
- test pressure 30 bar;
- minimum burst pressure 50 bar.

NOTE 1 MPa = 10 bar.

### 4.3 Temperature

Range of working temperature:

carbon steel (Cst) – 29 °C to 100 °C;

stainless steel (Stst) – 50 °C to 150 °C.

NOTE Hose couplings can operate outside of the above operating conditions but they are not covered by this Technical Specification.

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5 Dimensions and designation

5.1 Survey

5.1.1 Internal swage tail

Table 1 — Tail fittings dimensions — Internal swage

Dimensions in millimetres

Hose tail DN/nb	$d_1$	$d_2$	$d_3$	$d_4$	$d_5$	$l_1$	$l_2$	$l_3$	$l_4$
	$\begin{matrix} 0 \\ -0,5 \end{matrix}$	$\begin{matrix} +0,4 \\ 0 \end{matrix}$	$\pm 0,25$	nom	min.	min.	max.	Ref	$\pm 0,75$
50 (2")	51	43	56	63	53	100	45	145	5
65 (2½")	64	56	68	73	65	100	55	155	5
80 (3")	76	68	84	88,9	78	125	60	185	5
100 (4")	102	93	109	114,3	103	150	63	213	5
125 (5")	127	118	135	141,3	128	175	67	242	5
150 (6")	152	143	162	168,3	154	200	70	270	5
200 (8")	203	192	211	219,1	204	250	73	323	5

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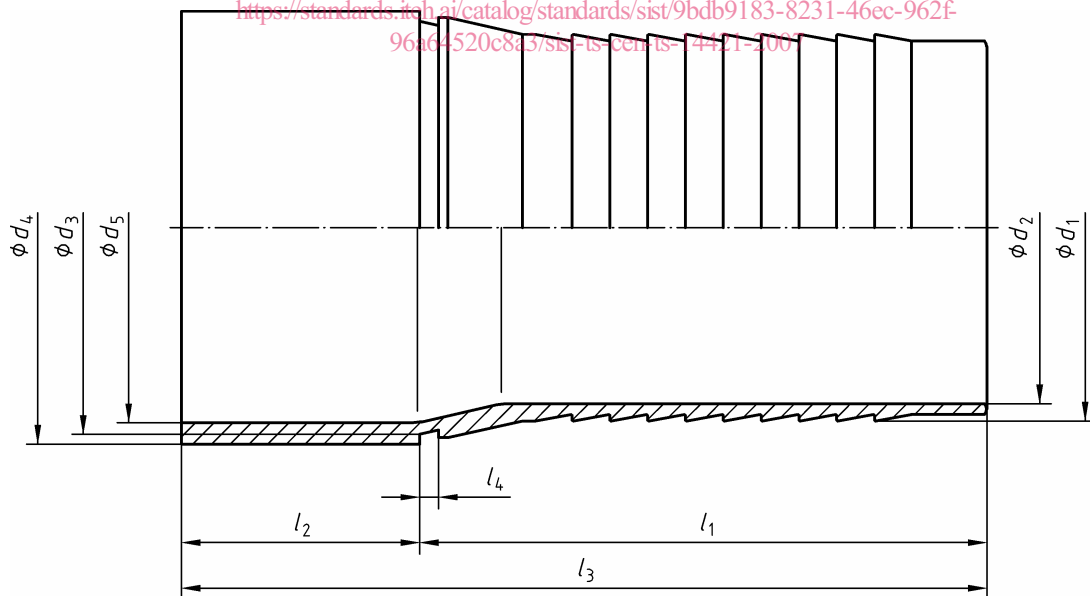


Figure 4 — Internal swage tail

NOTE For serration detail see Figure 8.

## 5.1.2 External swage tail

Table 2 — Tail fittings dimensions — External swage

Dimensions in millimetres

Hose tail DN/nb	$d_1$ 0 - 0,5	$d_2$ + 0,4 0	$d_3$ $\pm 0,25$	$d_4$ nom	$d_5$ min.	$l_1$ min.	$l_2$ max.	$l_3$ Ref	$l_4$ $\pm 0,75$
50 (2")	51	43	56	63	66	100	45	145	5
65 (2½")	64	56	68	73	78	100	55	155	5
80 (3")	76	68	84	88,9	94	125	60	185	5
100 (4")	102	93	109	114,3	119	150	63	213	5
125 (5")	127	118	135	141,3	145	175	67	242	5
150 (6")	152	143	162	168,3	172	200	70	270	5
200 (8")	203	192	211	219,1	226	250	73	323	5

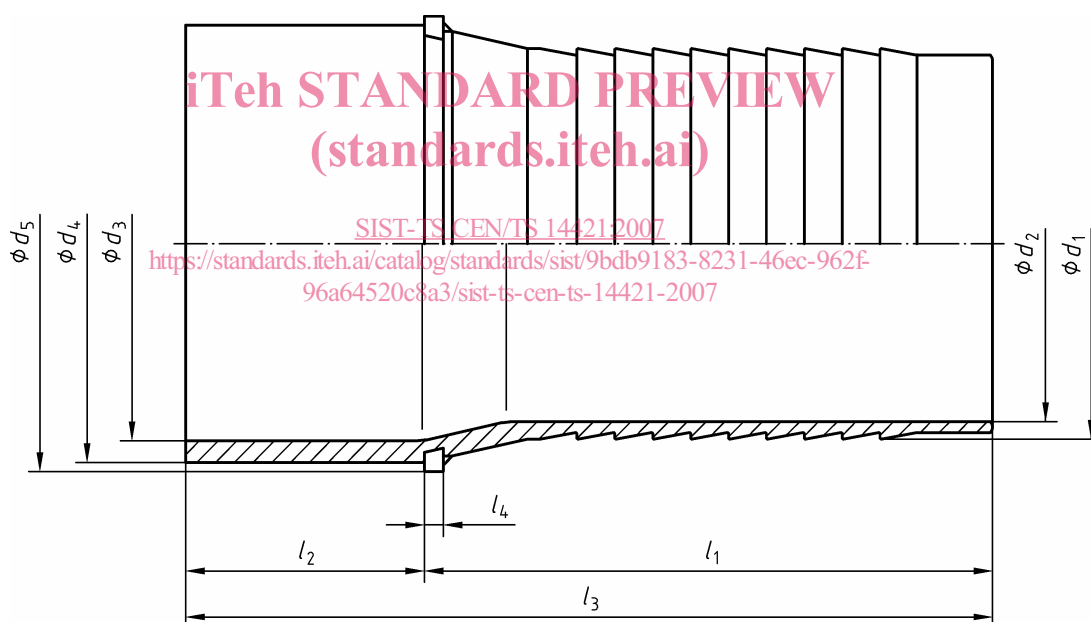


Figure 5 — External Swage Tail

NOTE For serration detail see Figure 8.

Retaining ring may be held in position by welding (as shown) or other suitable secure method.