SLOVENSKI STANDARD
SIST EN 3682-001:2009

01-julij-2009

Aeronavtika - Konektorji, vtiļ in vtiļ nica, elektriļ ni, pravokotni, zamenljivi tip, s stojalom in ploģļ o, s stalno delovno temperaturo do 150 ÁC - 001. del: Tehniļ na specifikacija

Aerospace series - Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 °C continuous - Part 001: Technical specification

Luft- und Raumfahrt - Elektrischer Rechtecksteckverbinder, freie und feste Bauform, auswechselbare Isolierkörper, Gestell-Einschubsteckverbinder, Betriebstemperatur 150 °C konstant - Teil 001: Technische Lieferbedingungen

Séries aérospatiale - Connecteurs électriques rectangulaires rackables, fiches et embases, à inserts interchangeables, temperature d'utilisation 150 °C continu - Partie 001 : Spécification technique

Ta slovenski standard je istoveten z: **EN 3682-001:2006**

ICS:

49.060	Letalska in vesoljska elektriļ na oprema in sistemi	Aerospace electric equipment and systems

SIST EN 3682-001:2009 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 3682-001

July 2006

ICS 49.060

English Version

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This European Standard was approved by CEN on 9 March 2006.

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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.

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Ref. No. EN 3682-001:2006: E

Contents

Page

Foreword 3
Introduction 4
1 Scope 4
2 Normative references 4
3 Terminology 5
4 Description 5
5 Design 6
6 Definition drawings and masses 7
7 Tests 42
8 Quality assurance 60
9 Designation and marking 64
10 Delivery conditions 64
11 Packaging 65
12 Storage 65

Foreword

This European Standard (EN 3682-001:2006) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 January 2007, and conflicting national standards shall be withdrawn at the latest by January 2007.

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Introduction

This family of connectors is derived from MIL-C-83527 with which it is intermateable and interchangeable. It offers a comprehensive range of contact arrangements. The plug is fitted with a grounding spring system which is replaceable in the field. It is particularly for use **on rack application** in zones of severe environmental conditions on board aircraft, applying EN 2282.

1 Scope

This standard specifies the general characteristics, the conditions for qualification, acceptance and quality assurance, as well as the test programs and groups for connectors intended for use in a temperature range from – 65 °C to 150 °C continuous.

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.

DOD-STD-1842, *Insert arrangement for DOD-C-83527 rack-to -panel connectors* [1)]

DOD-STD-1788, *Avionics Interface Design* [1)]

EN 2242, *Aerospace series — Control of tools used for crimping of electrical cables with conductors defined by EN 2083 and EN 2346*

EN 2266-002, *Aerospace series - Cables, electrical, for general purpose - Operating temperatures between — 55 °C and 200 °C — Part 002: General* [2)]

EN 2282, *Aerospace series — Characteristics of aircraft electrical supplies* [2)]

EN 2591 (series), *Aerospace series — Elements of electrical and optical connection — Test methods — General*

EN 3155-001 , *Aerospace series — Electrical contacts used in elements of connection — Part 001: Technical specification*

EN 3197, *Aerospace series — Installation of aircraft electrical and optical interconnection systems*

EN 3682-002, *Aerospace series — Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 °C continuous — Part 002: Specification of performance and contact arrangements*

EN 3682-003, *Aerospace series — Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 °C continuous — Part 003: Insert — Product standard*

EN 3682-004, *Aerospace series — Connectors, plug and receptacle, electrical, rectangular, interchangeable insert type, rack to panel, operating temperature 150 °C continuous — Part 004: Size 2 receptacle — Product standard*

1) Published by: Department of Defense (DOD), the Pentagon, Washington, D.C. 20301 USA.

2) Published as AECMA Prestandard at the date of publication of this standard.

EN 4529-002, *Aerospace series — Elements of electrical and optical connection — Sealing plugs — Part 002: Index of product standards*

MIL-C-22520 (series), *Crimping tools, terminal, hand and power actuated wire termination and tool kits* [3)]

MIL-C-83527 (series), *Connectors, plug and receptacle, electrical, rectangular multiple insert type, rack to panel, environment resisting, 150 °C total continuous operating temperature* [3)]

MIL-I-81969 (series), *Installing and removal tools, connector electrical contact, general specification for* [3)]

MS27488, *Plug, end seal, electrical connector* [3)]

TR 4257, *Aerospace series — Elements of electrical and optical connection — Relationship between the numbering systems for parts of EN 2591* [4)]

3 Terminology

LRU: Line Replaceable Unit

For other definitions see EN 2591.

4 Description

The pair of connectors has the following characteristics:

— a metal to metal bottoming (see Figure 1);

— the interface between the plug and the receptacle connectors provides a seal between contacts when mated;

— when mated together, the connector pair and cable passage grommets are leaktight;

— inserts are provided with an O-ring seal which provides sealing between the housing and the insert;

— low insertion force contacts;

— size 22 male contacts are mechanically protected by their installation in the insert;

— shielding continuity is provided between mated connectors housings;

— field replaceable inserts;

— EMI grounding springs are removable and field replaceable.

The connectors use sizes 22, 20, 16 and 12 crimp contacts; sizes 5, 12 and 16 coaxial contacts and size 8 triaxial contacts.

Polarization posts and keys are provided to ensure correct connection, and these may be turned around, as required, by the user, giving 99 different connection combinations.

3) Published by: Department of Defense (DOD), the Pentagon, Washington, D.C. 20301 USA.

4) Published as AECMA Technical Report at the date of the publication of this standard.

4.1 Receptacle

The receptacle has three polarization keys. Depending upon its housing size, the receptacle will have 2, 4, or 6 inserts.

Size 22 contacts in the receptacle are always female contacts. All larger contact sizes are male contacts.

4.2 Plug

The plug has three polarization posts. Depending upon its housing size, the plug will have 2, 4 or 6 inserts.

Size 22 contacts in the plug are always male contacts. All larger contact sizes are female contacts.

The plug is fitted with field replaceable grounding spring systems.

4.3 Materials and surface treatment

When dissimilar metals are in close contact, adequate protection against corrosion shall be used for the electromotive force of the cell not to exceed 0,25 V.

4.3.1 Housings

Connector housing material shall be protected against corrosion by a protective coating, enabling the specified test criteria to be met.

4.3.2 Contacts

Removable contacts, see EN 3682-002.

4.3.3 Non-metallic materials

The materials used for inserts, seals and grommets shall have a hardness and the mechanical and electrical characteristics consistent with the required use.

5 Design

5.1 Housings

Connector housing shall be a monobloc unit. The plug shall be fitted with a resilient peripheral seal to provide environmental peripheral sealing and stabilizing between mating housings.

Electrical contact between the housings shall occur before electrical contact engagement.

5.2 Inserts

Insert shall be interchangeable and made of a rigid dielectric material or metallic material when specified. Cross-sections and angle radii shall be sufficient to ensure that no cracking, chipping or breakage can occur in normal use.

The insert shall be rear removable from the housing and shall be mechanically retained in the housing. The removal of an insert from the shell shall be done by using no other tool than a screwdriver. To install the insert in the shell, it will be necessary to lubricate the O-ring with a lubricant such as specified by MIL-L-15179A and NATO G 309.

The mating face of the insert shall ensure that a good sealing is provided when connectors are mated together. The interfacial seal shall be bonded on the insert for size 22 female contacts and on the insert for male contacts of other sizes.

The grommet shall permit sealing for all cable diameters indicated in EN 3682-002 and shall not be removable.

For sizes 5 and 8 contacts, the insert contact cavity and the grommet shall accept the sealing boots described in EN 4529-002.

The mechanical contact retention system shall be integrated in the hard insert.

Connectors shall be designed to allow the installation and removal of individual contacts without having to remove the insert from the housing. Inserts shall be for rear release rear removable contacts. Insertion, extraction tools are those specified in EN 3155 standard series.

6 Definition drawings and masses

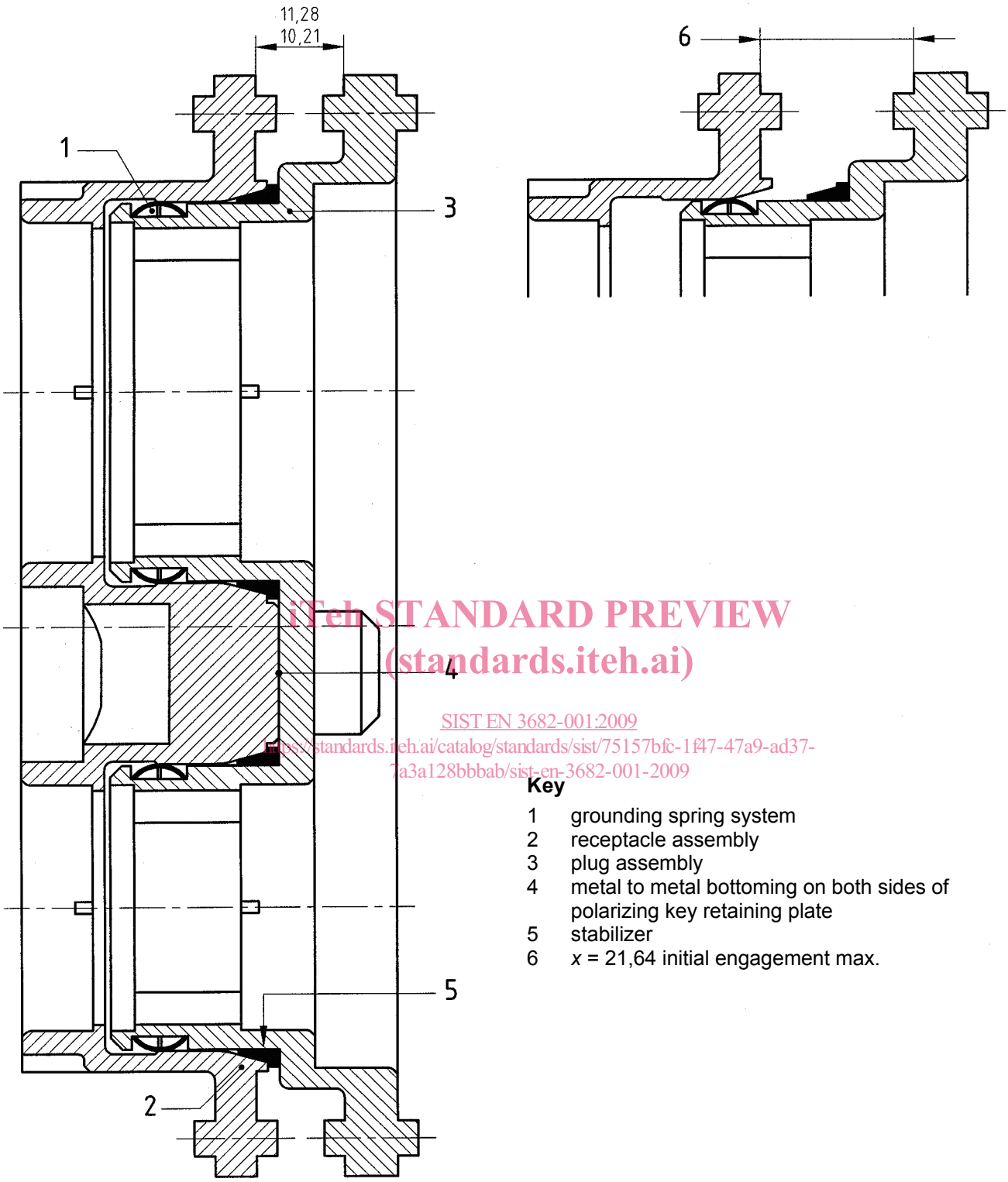
General dimensions and masses of plug, receptacle and inserts are given in the product standards.

6.1 Connector mating dimensions

Connectors mated conditions are shown in Figure 1.

Contact position is defined in Figure 2.

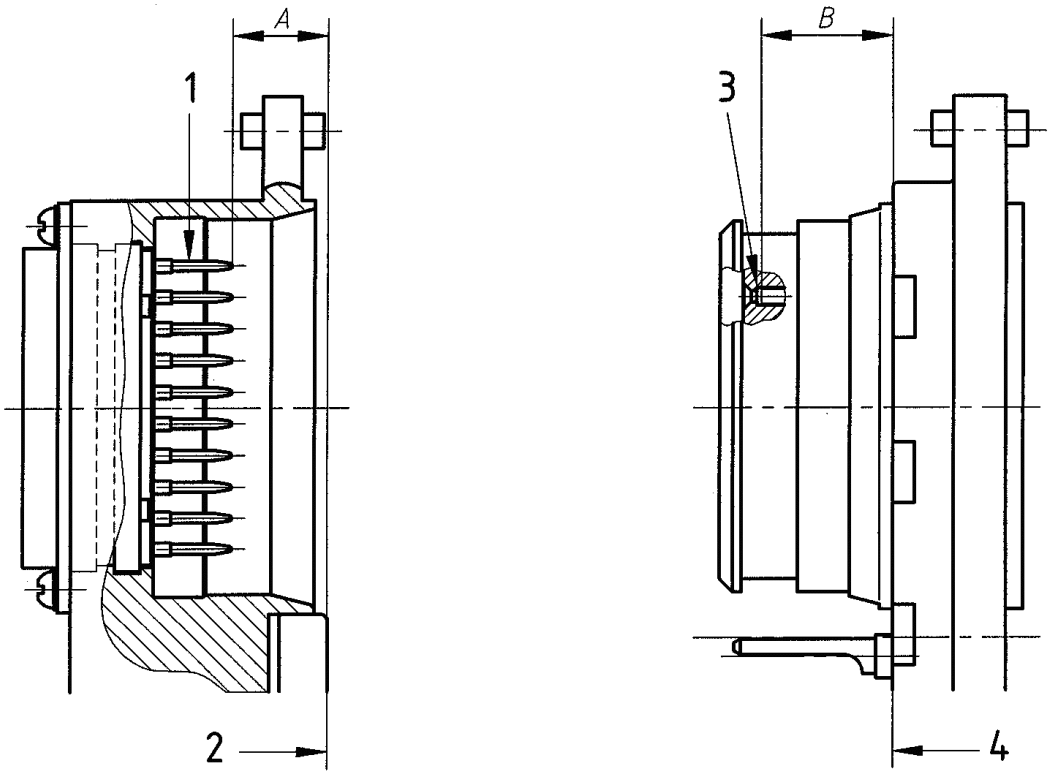
Dimensions are in millimetres.



Key

1 grounding spring system
2 receptacle assembly
3 plug assembly
4 metal to metal bottoming on both sides of polarizing key retaining plate
5 stabilizer
6 *x* = 21,64 initial engagement max.

Figure 1 — Connector mated conditions



Key

1 size 22 socket contact - Other size pin contact
2 mechanical bottom of receptacle
3 size 22 pin contact - Other size socket contact
4 mechanical bottom of plug

Figure 2

Table 1 — Contact position

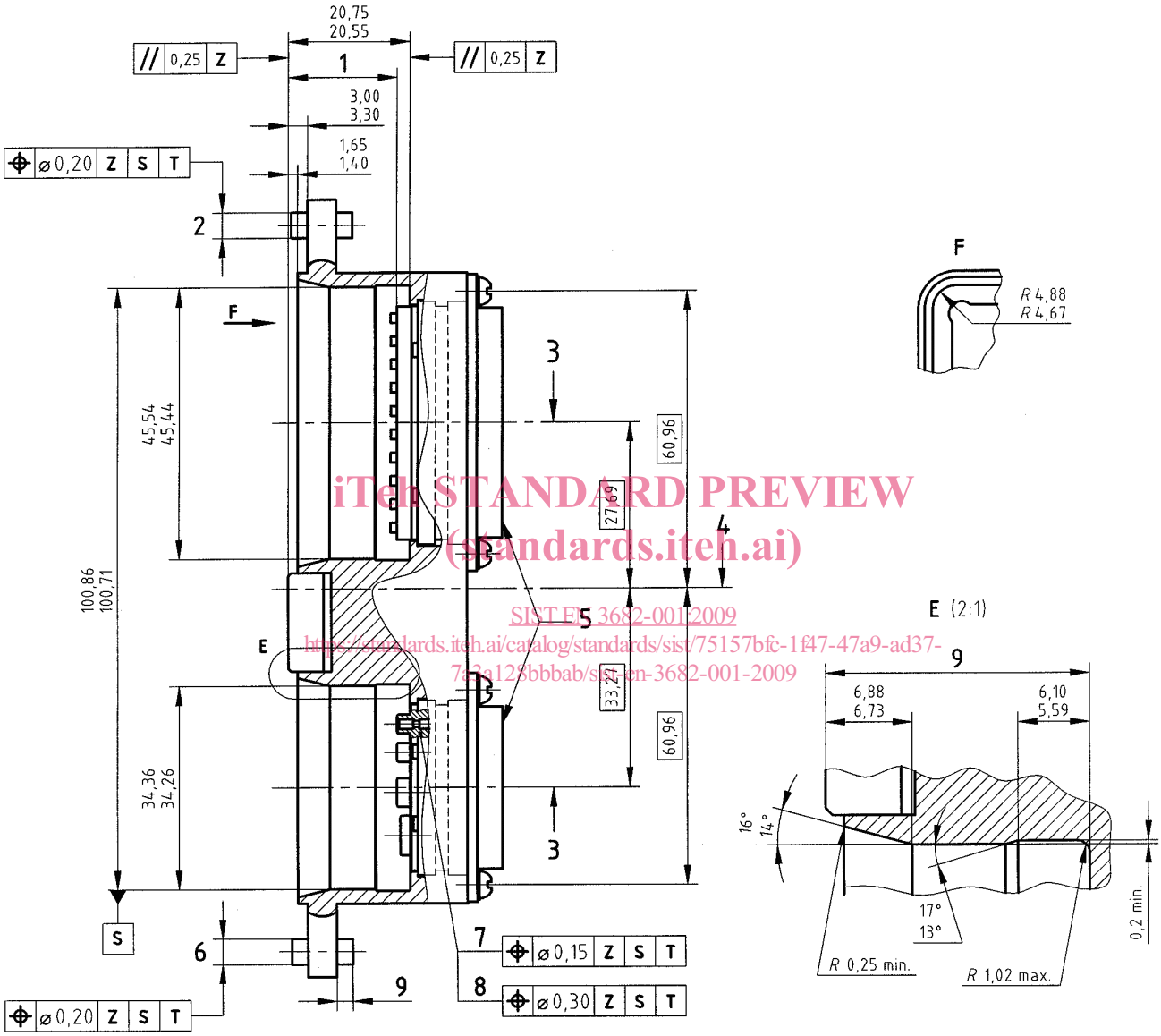
Contact size	Male		Female	
	A	*B*	*A*	*B*
22		17,20/16,33	11,18/10,56	
20	12,19/11,12			18,82/17,55
16[a]	10,34/9,07			18,31/17,04
12	10,34/9,17			18,14/17,02
Triax size 8 [b]	11,07/10,21			18,44/17,58
Coax size 16 [c]	10,34/9,07			18,31/17,04
Coax size 12	12,19/10,97			18,11/16,92
Coax size 5	11,18/10,26			18,44/17,58
Coax size 1	10,79/9,83			20,34/19,53

[a] For arrangements 1-126 and 2-62T2, *A* = 7,83/7,07 and *B* = 15,76/15,04
[b] For arrangements 2-62T2, *A* = 8,78/8,04 and *B* = 15,92/15,13
[c] For arrangements 1-126 and 2-62T2, *A* = 7,98/7,07 and *B* = 15,76/15,05

6.2 Receptacle mating dimensions

Mating dimensions for sizes 2, 3 and 4 receptacle housings are specified on Figures 3, 4, 5 and 6 and Tables 2, 3 and 4.

Dimensions are in millimetres.



Key

1 18,57 / 18,37 for size 22 socket inserts
21,03 / 20,83 for other size pin inserts - To face of rigid insert

2 boss (twice) ϕ 3,99 / ϕ 3,91

3 centre line insert

4 centre line S

5 insert assembly

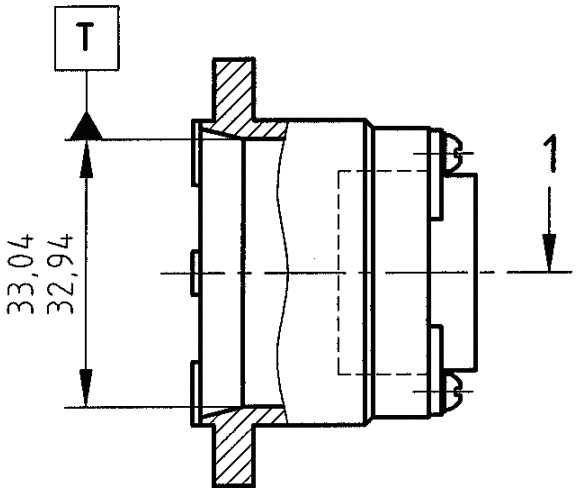
6 boss (twice) ϕ 4,78 / ϕ 4,70

7 type all size 2 contact cavities (see table page 11)

8 type all other size contact cavities

9 2,54 (4 times)

Figure 3



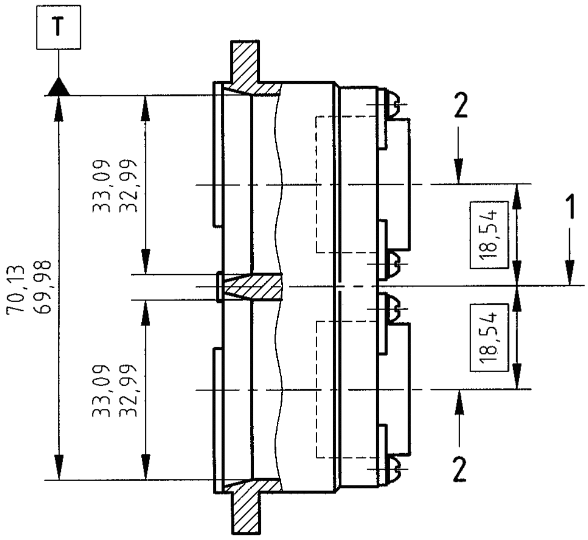
Key

1 centre line T

Figure 4

Table 2

DATUM T	DATUM S					
	100,71	100,76	100,79	100,81	100,84	100,86
32,94	0,30	0,30	0,28	0,25	0,23	0,20
32,97	0,28	0,28	0,25	0,23	0,23	0,20
32,99	0,25	0,25	0,23	0,23	0,20	0,18
33,02	0,23	0,23	0,23	0,20	0,18	0,18
33,04	0,20	0,20	0,20	0,18	0,18	0,15



Key

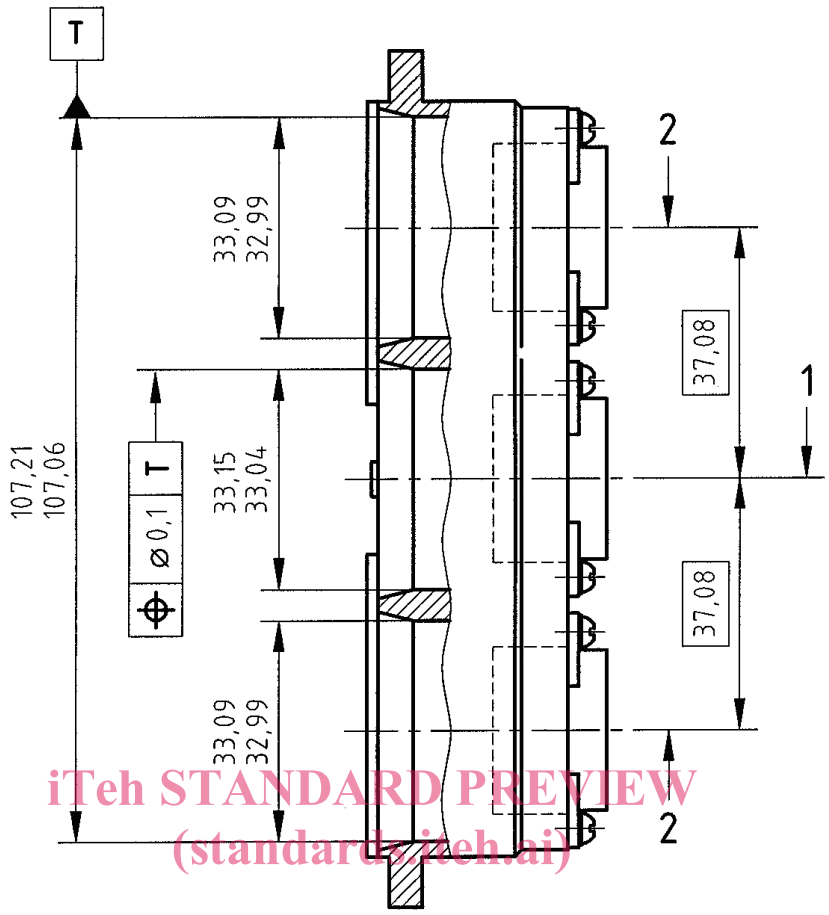
1 centre line T

2 centre line insert

Figure 5

Table 3

DATUM T	**DATUM S**					
	100,71	**100,76**	**100,79**	**100,81**	**100,84**	**100,86**
69,98	0,30	0,30	0,28	0,25	0,23	0,20
70,03	0,30	0,30	0,28	0,25	0,23	0,20
70,05	0,28	0,28	0,25	0,23	0,23	0,20
70,08	0,25	0,25	0,23	0,23	0,20	0,18
70,10	0,23	0,23	0,23	0,20	0,18	0,18
70,13	0,20	0,20	0,20	0,18	0,18	0,15



Key

1 centre line T

2 centre line insert

Figure 6

Table 4

DATUM T	DATUM S					
	100,71	100,76	100,79	100,81	100,84	100,86
107,06	0,30	0,30	0,28	0,25	0,23	0,20
107,11	0,30	0,30	0,28	0,25	0,23	0,20
107,14	0,28	0,28	0,25	0,23	0,23	0,20
107,16	0,25	0,25	0,23	0,23	0,20	0,18
107,19	0,23	0,23	0,23	0,20	0,18	0,18
107,21	0,20	0,20	0,20	0,18	0,18	0,15