

Förderverein für Elektrotechnische Normung (FEN) e. V.
Cenelec Electronic Components Committee

CECC

Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION INTERMEDIAIRE:

JEUX DE CONNECTEURS POUR FIBRES ET CABLES OPTIQUES

Type LSF

Harmonized System of Quality Assessment for
Electronic Components

SECTIONAL SPECIFICATION:

CONNECTOR SETS FOR OPTICAL FIBRES AND CABLES

Type LSF

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

RAHMENSPEZIFIKATION:

STECKVERBINDERSÄTZE FÜR LICHTWELLENLEITER UND LICHTWELLENLEITERKABEL

Bauart LSF



1

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1993

Documents



Document Sharing Hub

Information about the System may be obtained from:



FEN e.V. Secretariat
and
CECC General Secretariat
Gartenstraße 179
D - 60596 Frankfurt
Telephone:
Int. + 49 69 639171
Telefax: Int. + 49 69 639427

or from the National Authorized Institutions
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- 3 CECC Specifications of the FEN and National Specifications for the System
- 4 CECC 00 200: Register of Firms, Products, and Services Approved under the CECC System
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AUSTRIA
Österreichischer Verband für Elektrotechnik (ÖVE)
Eschenbachgasse 9
A-1010 VIENNA

BELGIUM
Comité Electrotechnique Belge
Galerie Ravenstein 28 (Boîte 2)
B-1000 BRUSSELS

DENMARK
Dansk Elektroteknisk Komite
Dansk Standard
Electrotechnical Sector
Baunegårdsvej 73
DK-2900 HELLERUP

FINLAND
Finnish Electrotechnical Standards Association (SESKO)
P.O. Box 134
SF-00211 HELSINKI 21

FRANCE
Union technique de l'Electricité
Participation française au CECC
F-92052 PARIS La Défense Cedex 64

GERMANY
Deutsche Elektrotechnische Kommission im DIN und VDE (DKE)
Stresemannallee 15
D-60596 FRANKFURT

IRELAND
EOLAS - The Irish Science and Technology Agency
Glasnevin
IRL-DUBLIN 9

ITALY
Comitato Elettrotecnico Italiano (CEI)
Viale Monza, 259
I-20126 MILAN

NETHERLANDS
Nederlands Elektrotechnisch Comité (NEC)
Kalfjeslaan 2
P.O. Box 5059
NL-2600 GB DELFT

NORWAY
Norsk Elektroteknisk Komite (NEK)
P.O. Box 280
Skøyen
N-0212 OSLO 2

PORTUGAL
Instituto Português da Qualidade
Rua José Estevão, 83A
P-1199 LISBOA CODEX

SPAIN
New Spanish Member
to be determined.

SWEDEN
Svenska Elektriska Kommissionen (SEK)
Box 1284
S-16428 KISTA-STOCKHOLM

SWITZERLAND
Schweizerischer Elektrotechnischer Verein (SEV)
Postfach
CH-8034 ZÜRICH

UNITED KINGDOM
UK Electronic Components Policy Council
Electrical Department
British Standards Institution
2, Park Street
GB-LONDON W1A 2BS

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FOREWORD

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardisation (CENELEC) who wish to take part in a harmonized system for electronic components of assessed quality.

The object of the system is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of international recognized Mark, or certificate, of conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for FIBRE OPTIC CONNECTORS AND ACCESSORIES TYPE LSF. It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification, the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom, and copies of it can be obtained from the addresses shown on the blue fly sheet.

PREFACE

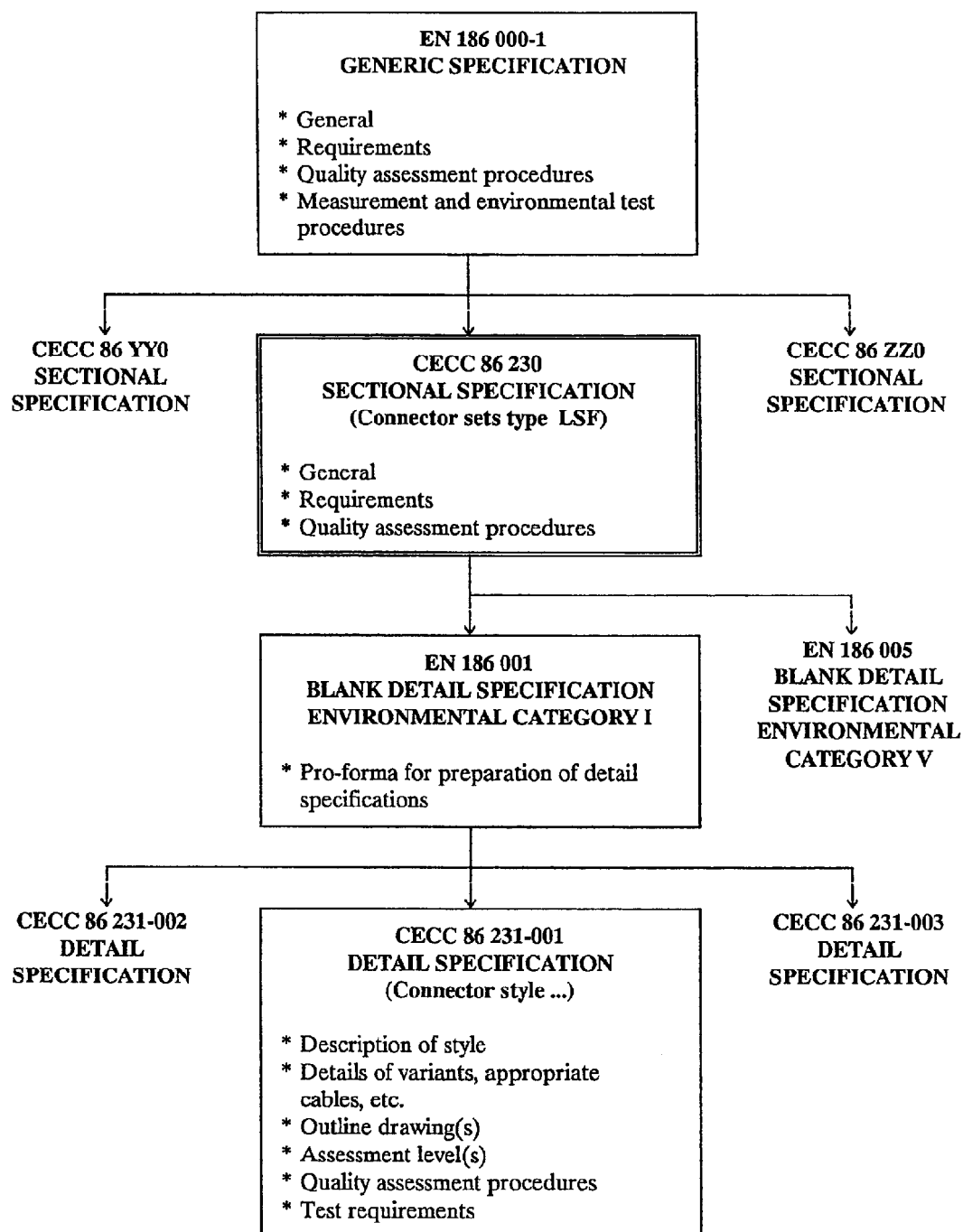
This specification was prepared by CECC WG 26 "Fibre Optic Connectors".

It is based, wherever possible, on the Publications of the International Electrotechnical Commission (IEC).

The text of this specification was circulated to the CECC for voting in the document(s) indicated (listed) below and approved for publication.

<u>Document</u>	<u>Date of Voting</u>	<u>Report on the Voting</u>
CECC(Secretariat)2738	August 1991	CECC(Secretariat)3013

Document numbering for fibre optic connector specifications follows 2.2(1) of CECC 00 700: Sect.IV, in order to permit the issue of more than nine sectional specifications (SSs). The approved numbering system applicable to fibre optic connector specifications is illustrated in the following diagram:



SECTION ONE - GENERAL

1. General

1.1 Scope

This SS covers type LSF fibre optic connector sets. Type LSF defines single way connectors with a push-pull coupling mechanism and a v-groove alignment device.

This specification contains the requirements for type LSF connector sets.

Detail specifications (DSs) shall be prepared using the following pro-forma general blank detail specifications (BDS) associated with the generic specification. For example:

- EN 186 005, environmental category V.

When completed, the DSs applicable to this SS shall be re-numbered in accordance with CECC 00 700 (Section IV) Issue 1, clause 4.2, as follows:

CECC 86 235-XXX
Type LSF
Environmental Category V

1.2 Related Documents

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of CECC, IEC and ISO maintain registers of currently valid International Standards.

References made to a specific clause or subclause of a standard includes all subclauses to the reference unless otherwise specified.

EN 186 000-1:	Generic specification (GS) for connector sets for optical fibres and cables.
IEC 825 :	Radiation safety of laser products, equipment classification, requirements and user's guide.
ISO 128:	Technical drawings - General principles of presentation.

1.3 Definitions

None

1.4 Safety

1.4.1 Optical fibre connectors, when used as part of an optical fibre system, may emit/produce potentially hazardous radiation. The manufacturers of connectors are not obliged to mark them as such, but sufficient information should be made available in the manufacturer's literature to enable the system designer to assess the degree of hazard. This information shall be given prominence in the DS.

- 1.4.2 The assembly instructions, included in the connector package, shall give a prominent warning to the assembler, of the necessary work practices.
- 1.4.3 The responsibility for the safe application of the connector lies with the system design engineer, who should refer to IEC 825. As there is no safety guide for light emitting diodes (LEDs), IEC 825 shall apply to systems using these also.
- 1.4.4 DSs should give the following information in a prominent position :

WARNING

"Care should be taken when handling small diameter optical fibre, to prevent it puncturing the skin, especially in the eye area.

Direct viewing of the end of an optical fibre or a terminated optical fibre, while it is propagating energy, is not recommended unless prior assurance has been obtained as to the safe energy of the output level".

1.5 Marking

See 2.6 of EN 186 000-1.

SECTION TWO - REQUIREMENTS

2. Requirements

The requirements specified in Section two and Section three of EN 186 000-1 apply.

The requirements for connector set components covered by this specification are as specified herein and in the relevant DS.

2.1 Classification

The connector sets covered by this specification are classified as :

Type :

- type LSF
- push-pull coupling mechanism
- alignment by V-grove
- configurations:
 - plug / alignment device / plug
 - plug / socket.

Arrangements:

- kit
- pigtail
- patch cord.

Environmental categories:

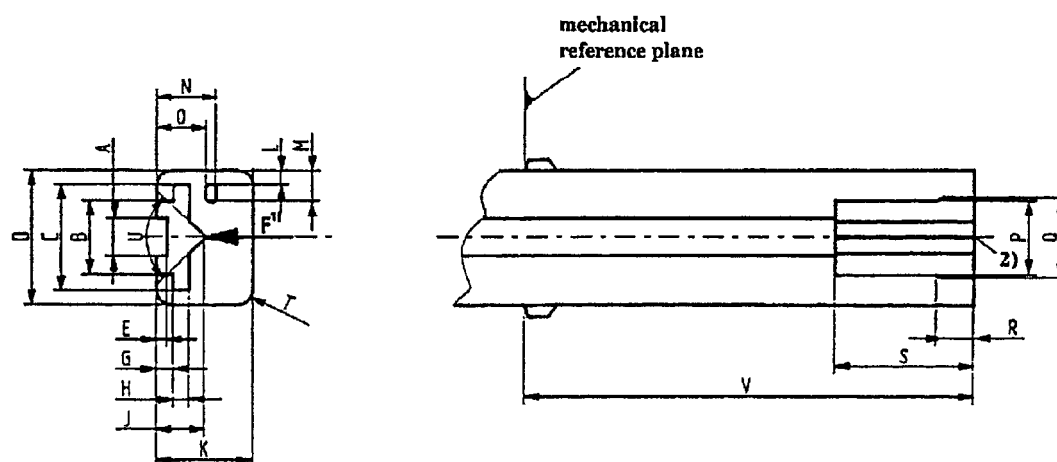
- category: V.

Assessment levels:

- level A
- level B
- level C.

The single limit (maximum or minimum) mating face dimensions for connector set configurations are given in Figures 1, 2, 3 and 4, which use first angle projection according to ISO 128.

The applicable configuration, arrangement, style, variants, climatic category and assessment levels shall be specified in the DS.

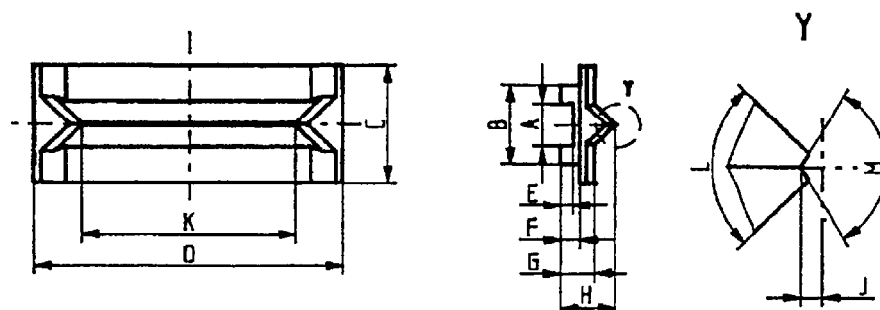


Ref.	Dimensions mm		Notes
	min.	max.	
A	1,75	-	radius angle
B	3,5	-	
C	5,15	-	
D	-	6,7	
E	0,5	-	
G	0,76	-	
H	0,82	-	
J	2,27	-	
K	-	4,64	
L	-	0,78	
M	1,6	-	
N	3	-	
O	-	2,47	
P	3,5	-	
Q	4	-	
R	2	-	
S	6,45	-	
T	0,65	-	
U	90	-	
V	-	21,5	

Note:

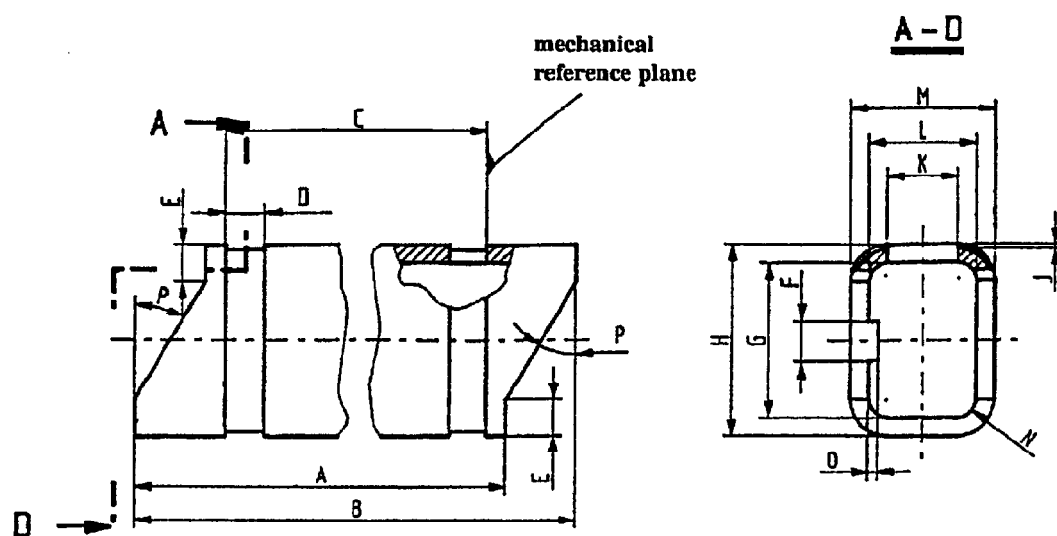
- 1) F is a force vector. The value of F is given in the relevant DS.
- 2) The fibre length has to be designed in such a way that the fibre endfaces contact first when coupling.

Figure 1 - Plug mating face single limit dimensions



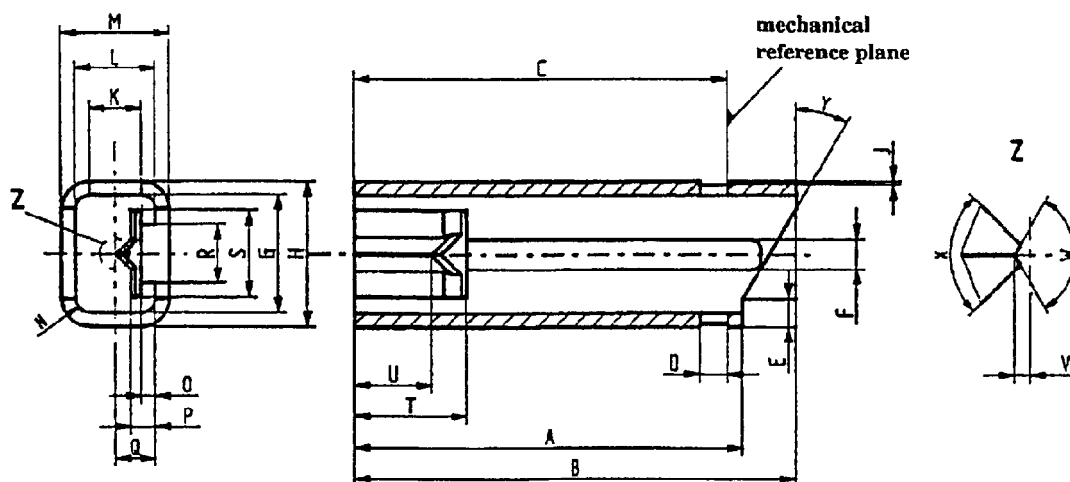
Ref.	Dimensions mm		Notes
	min.	max.	
A	1,75	-	
B	-	3,45	
C	-	5,05	
D	-	12,8	
E	0,5	-	
F	-	0,8	
G	-	1,55	
H	-	2,3	
J	-	0,1	
K	-	8,8	
L	-	90	angle
M	-	120	angle

Figure 2 - Alignment device mating face single limit dimensions



Ref.	Dimensions mm		Notes
	min.	max.	
A	-	47,8	
B	-	50,8	
C	43	-	
D	1,55	-	
E	1,55	-	
F	-	1,7	
G	6,75	-	
H	-	8,45	
J	0,15	-	
K	3	-	
L	4,65	-	
M	-	6,25	
N	-	0,65	radius
O	-	0,45	
P	-	30	angle

Figure 3 - Housing mating face single limit dimensions



Ref.	Dimensions mm		Notes
	min.	max.	
A	-	23,9	
B	-	25,4	
C	21,5	-	
D	1,55	-	
E	1,55	-	
F	-	1,7	
G	6,75	-	
H	-	8,45	
J	0,15	-	
K	3	-	
L	4,65	-	
M	-	6,25	
N	-	0,65	radius
O	-	0,8	
P	-	1,55	
Q	-	2,3	
R	-	3,45	
S	-	5,05	
T	-	6,4	
U	-	4,4	
V	-	0,1	
W	-	120	angle
X	-	90	angle
Y	-	30	angle

Figure 4 - Socket mating face single limit dimensions

2.2 Reference Components

Reference component(s), if required, shall be defined in the DS.

2.3 Gauges

Gauge(s), if required, shall be defined in the DS.

2.4 Mounting Requirements

Mounting and alignment requirements shall be specified in the DS.

SECTION THREE - QUALITY ASSESSMENT PROCEDURES

3. Quality Assessment Procedures

The quality assessment procedures of EN 186 000-1 Section three apply.

3.1 Qualification Approval

3.1.1 Qualification by Fixed Sample Procedure

When specified, the fixed sample procedure shall be in accordance with 3.3.1 of EN 186 000-1.

The relevant BDS contains the minimum mandatory test schedules and performance requirements for qualification by the fixed sample procedure. The complete set of mandatory test schedules and performance requirements shall be specified in the DS.

Qualification approval will be granted for the complete range of variants submitted as structurally similar upon successful completion of the tests.

(1) Sample size

The sample size for qualification by fixed sample procedure shall be as specified in the DS. The specimens shall be connector set variants for the smallest fibre core diameter specified in the DS.

In addition, the following specimens shall be provided:

- one specimen of each plug variant to be qualified by structural similarity to the one used for group "0",
- one specimen of each alignment device variant to be qualified by structural similarity to the one used for group "0",
- one specimen of each housing variant to be qualified by structural similarity to the one used for group "0",
- one specimen of each socket variant to be qualified by structural similarity to the one used for group "0".

Following completion of the group "0" tests, the specimens for the other groups shall be randomly selected from the group "0" specimens.

(2) Preparation of specimens

Test specimens for kit arrangements shall be terminated using the smallest fibre core diameter specified in the DS. The fibre/cable type and lengths to be used for all arrangements shall be as specified in the DS.

(3) Testing

The tests shall be conducted in the order given, using the method specified. The specimens shall satisfy the performance requirements of the DS.

The additional variant specimens selected shall be tested to all of the group "0" tests and shall meet the requirements of the DS.

3.1.2 Qualification by Lot-by-Lot and Periodic Procedure

When specified, the lot-by-lot and periodic qualification procedures shall be in accordance with 3.3.2 of EN 186 000-1 (see 3.2.1 and 3.2.2 for test schedules).

Qualification approval will be granted for the complete range of variants submitted as structurally similar upon successful completion of the tests.

3.2 Quality Conformance Inspection

3.2.1 Lot-by-Lot Inspection

The minimum mandatory inspection schedules for lot-by-lot inspection are specified in the relevant BDSs. The complete set of mandatory test schedules and performance requirements shall be specified in the DS.

3.2.2 Periodic Inspection

The minimum mandatory periodic test schedules are specified in the relevant BDS. The complete set of mandatory test schedules and performance requirements shall be specified in the DS.

Periodic inspection approval will be granted for the complete range of variants submitted as structurally similar upon successful completion of the tests.

(1) Sample size

The sample size for periodic inspection shall be as specified in the DS. The specimens shall be complete connector sets of a variant for the smallest fibre core diameter specified in the DS.

Following completion of the group "C0" or "D0" tests, the specimens for the other groups shall be randomly selected from the group "C0" or "D0" specimens.

The following specimens shall be provided:

- one specimen of each plug variant to be qualified by structural similarity to the one used for group "C0" or "D0",
- one specimen of each alignment device variant to be qualified by structural similarity to the one used for group "C0" or "D0",
- one specimen of each housing variant to be qualified by structural similarity to the one used for group "C0" or "D0",
- one specimen of each socket variant to be qualified by structural similarity to the one used for group "C0" or "D0".

(2) Preparation of Specimens

Test specimens for kit arrangements shall be terminated using the smallest fibre core diameter specified in the DS. The fibre/cable type and lengths to be used for all arrangements shall be as specified in the DS.

(3) Testing

The tests shall be conducted in the order given, using the method specified. The specimens shall satisfy the performance requirements of the DS.

The additional variant specimens selected (see 3.2.2.(1)) shall be tested to all of the group "C0" or "D0" tests and shall meet the requirements specified in the DS.

3.3 Delayed Deliveries

The delayed delivery inspection period for components covered by this specification is 12 months. The re-inspection plan shall be in accordance with 3.6 of EN 186 000-1.