

INTERNATIONAL STANDARD

IEC
1754-7

First edition
1996-12

Fibre optic connector interfaces –
Part 7:
Type MPO connector family

*Interfaces de connecteurs
pour fibres optiques –*

Partie 7:
Famille de connecteurs de type MPO



Reference number
IEC 1754-7: 1996 (E)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC CONNECTOR INTERFACES –
Part 7: Type MPO connector family**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 1754-7 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/836/FDIS	86B/926/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

FIBRE OPTIC CONNECTOR INTERFACES – Part 7: Type MPO connector family

1 Scope

This part of IEC 1754 defines the standard interface dimensions for type MPO family of connectors.

2 Description

The parent connector for type MPO connector family is a multiway plug connector characterized by a rectangular ferrule normally 6,4 mm × 2,5 mm which utilizes two pins of 0,7 mm diameter as its alignment. It is applicable to a joint of multiple fibres up to 12 fibres by arraying them between two pin-positioning holes in the ferrule. The connector includes a push-pull coupling mechanism and a ferrule spring loaded in the direction of the optical axis. The connector has a single male key which may be used to orient and limit the relative position between the connector and the component to which it is mated.

Connector interfaces are configured using a female plug without pins, a male plug with pins fixed and an adaptor as shown in figure 1. The female plug is intermateable with the male plug.

Connector interfaces with different numbers of optical datum targets will intermate and will correctly align the lower defined numbers of optical datum targets.

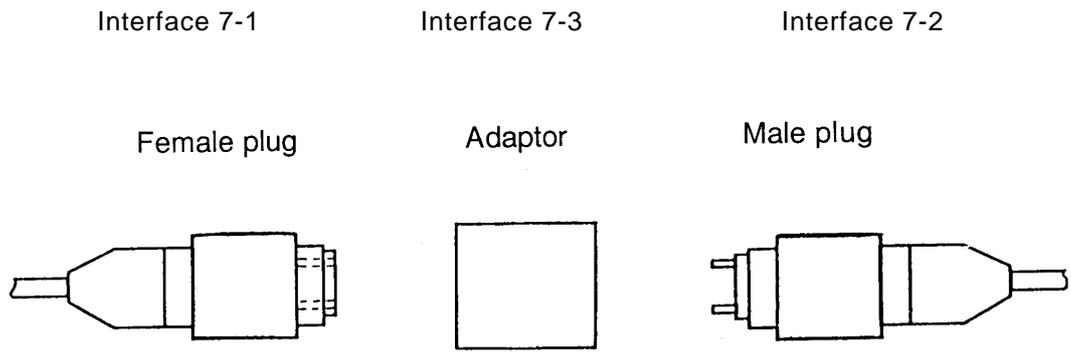
3 Interfaces

This standard contains the following standard interfaces.

Interface 7-1: MPO female plug connector angled interface – Push/pull

Interface 7-2: MPO male plug connector angled interface – Push/pull

Interface 7-3: MPO adaptor interface – Push/pull



IEC 1 099/96

Figure 1 – MPO connector configurations

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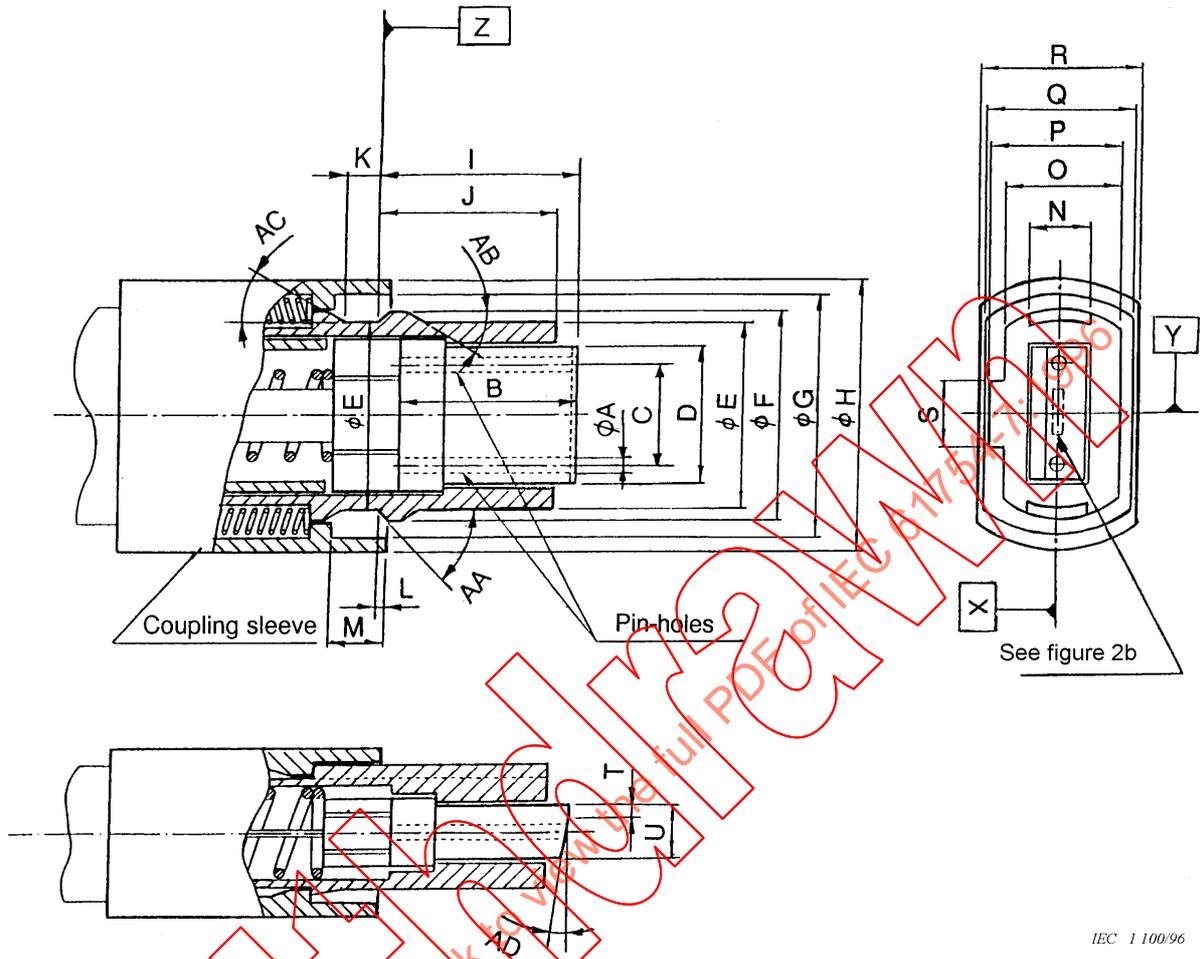


Figure 2a – MPO female plug connector angled interface

Table 1a – Dimensions of the MPO female plug connector angled interface

Reference	Dimensions		Notes
	Minimum	Maximum	
A	0,699 mm	0,701 mm	1
B	7,9 mm	8,1 mm	
C	4,597 mm	4,603 mm	2
D	6,3 mm	6,5 mm	
E	8,34 mm	8,54 mm	
F	9,49 mm	9,59 mm	
G	10,85 mm	11,05 mm	
H	12,19 mm	12,59 mm	
I	8,8 mm	9,2 mm	3
J	7,9 mm	8,1 mm	
K	1,4 mm	–	
L	0,2 mm	0,8 mm	4 and 5
M	2,4 mm	2,6 mm	
N	2,8 mm	3,0 mm	
O	4,89 mm	4,99 mm	
P	5,59 mm	5,69 mm	
Q	5,7 mm	–	
R	–	7,7 mm	
S	2,9 mm	3,1 mm	
T	–	0,8 mm	
U	2,4 mm	2,5 mm	
AA	42°	45°	
AB	–	45°	
AC	–	45°	
AD	7,5°	8,5°	

NOTES

- Each pin-hole shall accept a gauge pin as shown in figure **2c** to a depth of 5,5 mm with a maximum force of 1,7 N. In addition, two pin-holes of a plug shall accept a gauge as shown in figure **2d** to a depth of 5,5 mm with a maximum force of 3,4 N.
- Dimension **C** is defined as the distance between two pin-hole centres.
- Dimension **I** is given for a fibre endface centre of a plug end when not mated. It is noticed that a ferrule is movable by a certain axial compression force, and therefore the dimension **I** is variable. Ferrule compression force shall be 7,8 N to 11,8 N when a position of the fibre endface from the datum **Z** is in the range of 8,2 mm to 8,4 mm.
- Coupling sleeve shall be movable by a certain axial compression force. Dimension **L** is given for a coupling sleeve end when not mated. Coupling sleeve compression force shall be 2,9 N to 6,9 N when a position of the coupling sleeve endface from datum **Z** is in the range of 0 to 0,1 mm.
- An adaptor coupling part shall be unlocked by a left-direction movement of a coupling sleeve, when it is separate from an adaptor. When the coupling sleeve is moved for unlocking, a position of the coupling sleeve endface shall be larger than 2,0 mm in the left direction from the datum **Z**.

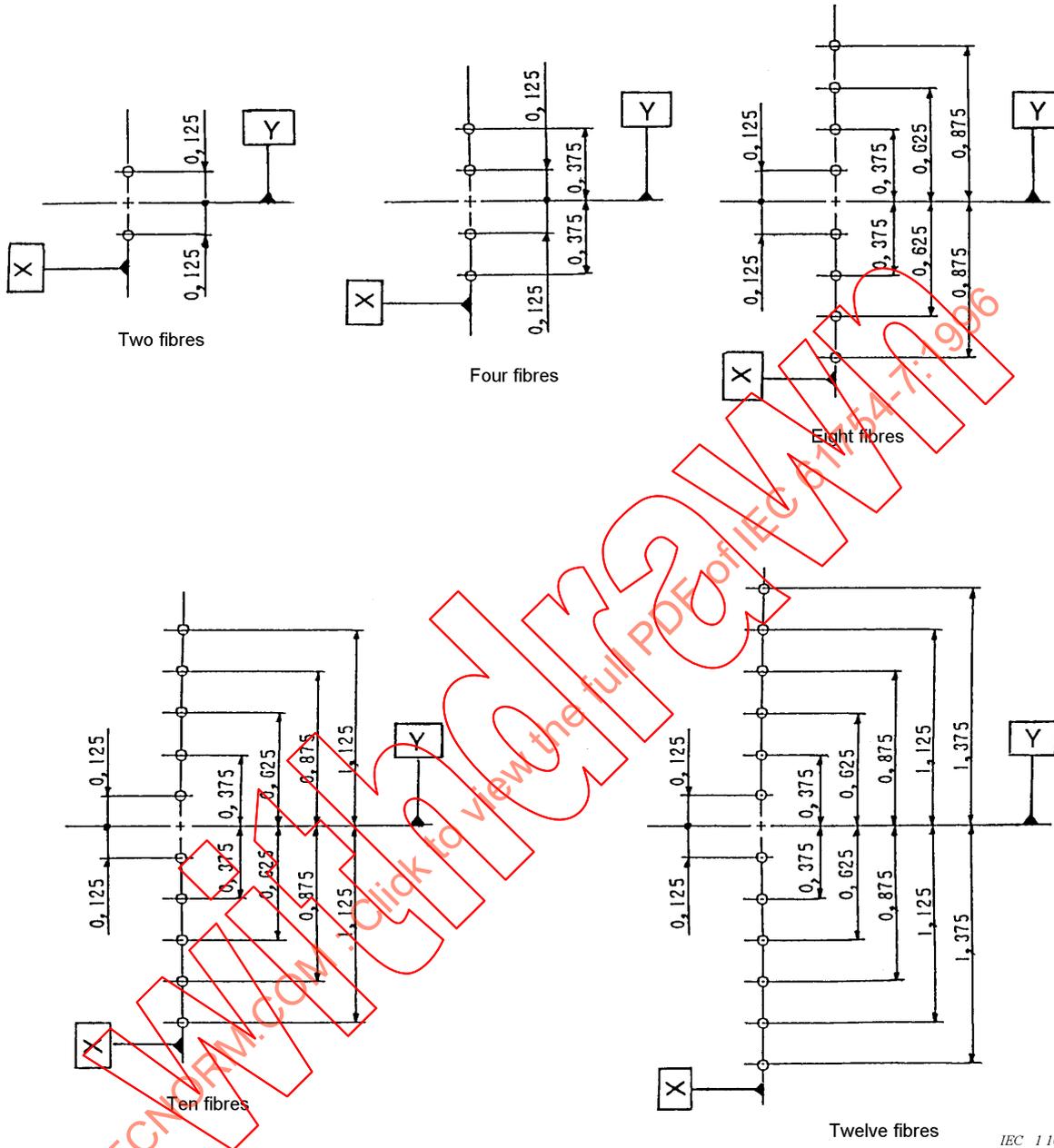


Figure 2b – Optical datum target location diagrams

NOTE – The optical datum target location diagram is shown in the figure. Here, datum X is defined as the line passing through two pin-hole centres, and datum Y is defined as the line perpendicular to datum X and passing through the midpoint of two pin-hole centres.

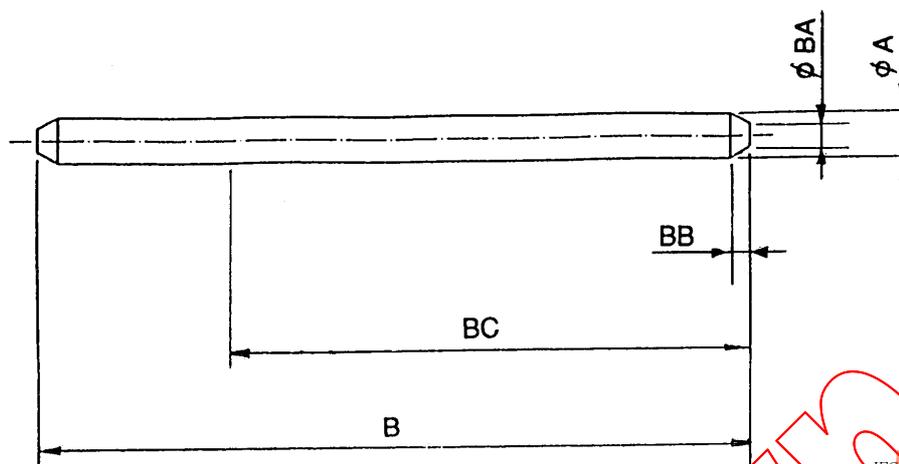


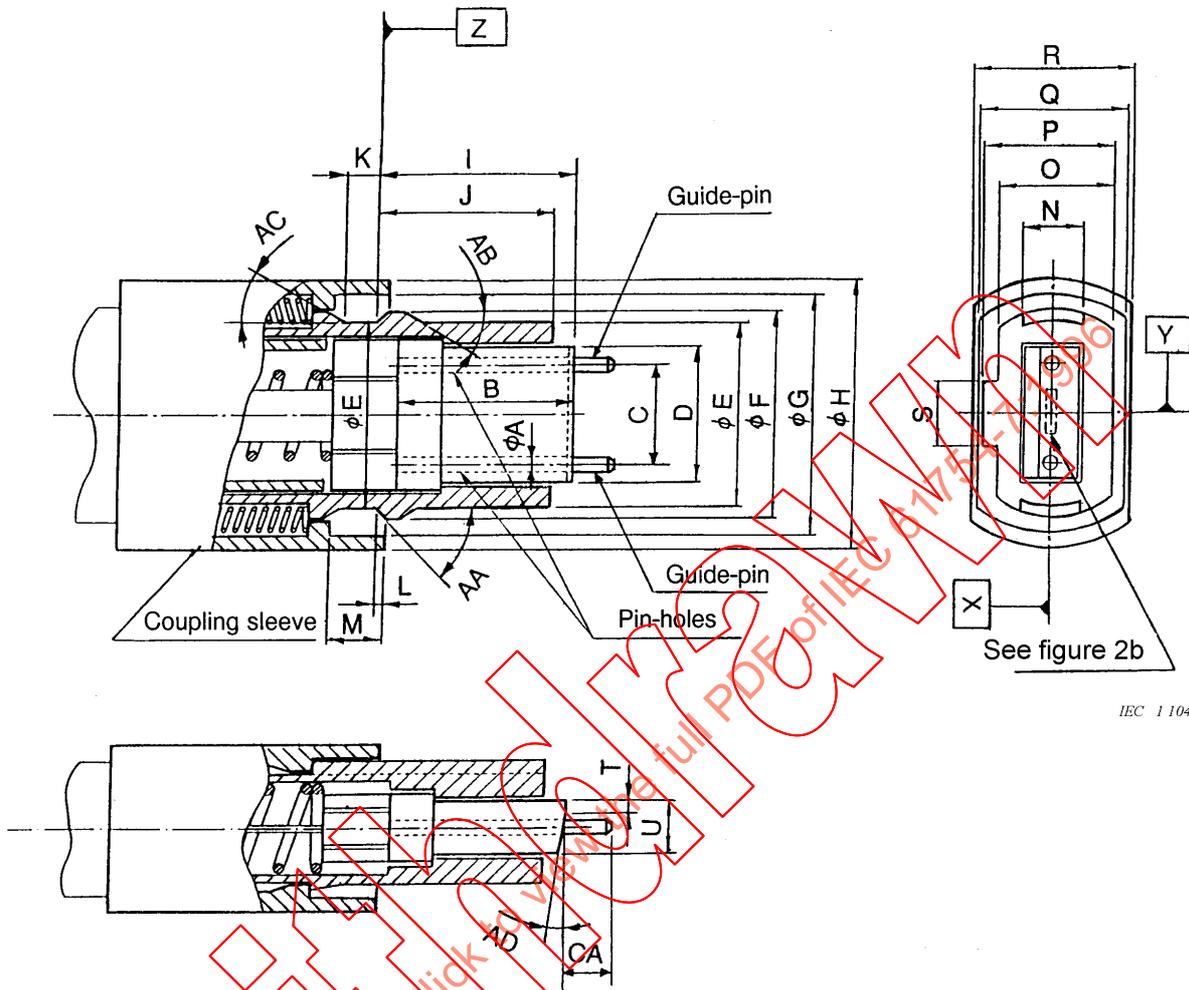
Figure 2c – Gauge pin

Table 1b – Dimensions of the gauge pin

Reference	Dimensions mm		Notes
	Minimum	Maximum	
A	0,6985	0,6990	1
B	10,8	11,2	2
BA	0,2	0,4	
BB	0,2	0,5	
BC	6,0	–	

NOTES

- Surface roughness $R_z = 0,1 \mu\text{m}$ for the length of dimension BC.
- Typical dimensions.



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Figure 3a - MPO male plug connector angled interface

Table 2a – Dimensions of the MPO male plug connector angled interface

Reference	Dimensions		Notes
	Minimum	Maximum	
A	0,699 mm	0,701 mm	1
B	7,9 mm	8,1 mm	
C	4,597 mm	4,603 mm	2
D	6,3 mm	6,5 mm	
E	8,34 mm	8,54 mm	
F	9,49 mm	9,59 mm	
G	10,85 mm	11,05 mm	
H	12,19 mm	12,59 mm	
I	8,8 mm	9,2 mm	3
J	7,9 mm	8,1 mm	
K	1,4 mm	-	
L	0,2 mm	0,8 mm	4 and 5
M	2,4 mm	2,6 mm	
N	2,8 mm	3,0 mm	
O	4,89 mm	4,99 mm	
P	5,59 mm	5,69 mm	
Q	5,7 mm	-	
R	-	7,7 mm	
S	2,9 mm	3,1 mm	
T	-	0,8 mm	
U	2,4 mm	2,5 mm	
AA	42°	45°	
AB	-	45°	
AC	-	45°	
AD	7,5°	8,5°	
CA	1,6 mm	3,3 mm	

NOTES

1 Dimension **A** is the inner diameter of each pin-hole before two guide-pins are fixed in the plug. Each pin-hole shall accept a gauge pin as shown in figure **2c** to a depth of 5,5 mm with a maximum force of 1,7 N. In addition, two pin-holes of a plug shall accept a gauge as shown in figure **2d** to a depth of 5,5 mm with a maximum force of 3,4 N. After the guide-pins as shown in figure **3 b** are fixed in the plug, each guide pin shall be retained with a minimum force of 3,4 N.

2 Dimension **C** is defined as the distance between two pin-hole centres before two guide-pins are fixed in the plug.

3 Dimension **I** is given for a fibre endface centre of a plug end when not mated. It is noticed that a ferrule is movable by a certain axial compression force, and therefore the dimension **I** is variable. Ferrule compression force shall be 7,8 N to 11,8 N when a position of the fibre endface from the datum **Z** is in the range of 8,2 mm to 8,4 mm.

4 Coupling sleeve shall be movable by a certain axial compression force. Dimension **L** is given for a coupling sleeve end when not mated. Coupling sleeve compression force shall be 2,9 N to 6,9 N when a position of the coupling sleeve endface from datum **Z** is in the range of 0 to 0,1 mm.

5 An adaptor coupling part shall be unlocked by a left-direction movement of a coupling sleeve, when it is separate from an adaptor. When the coupling sleeve is moved for unlocking, a position of the coupling sleeve endface shall be larger than 2,0 mm in the left direction from the datum **Z**.

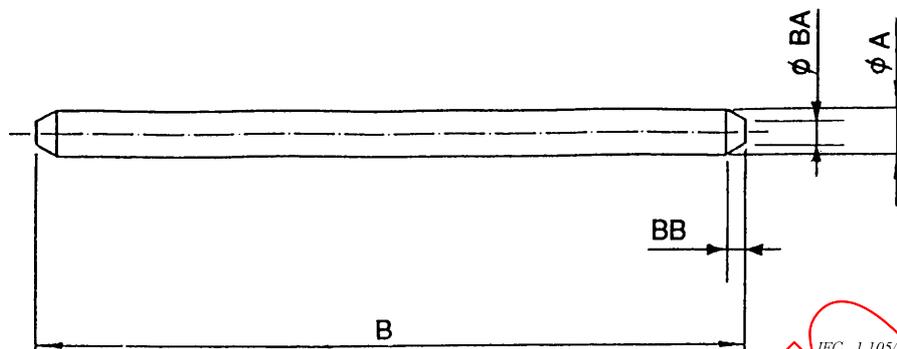
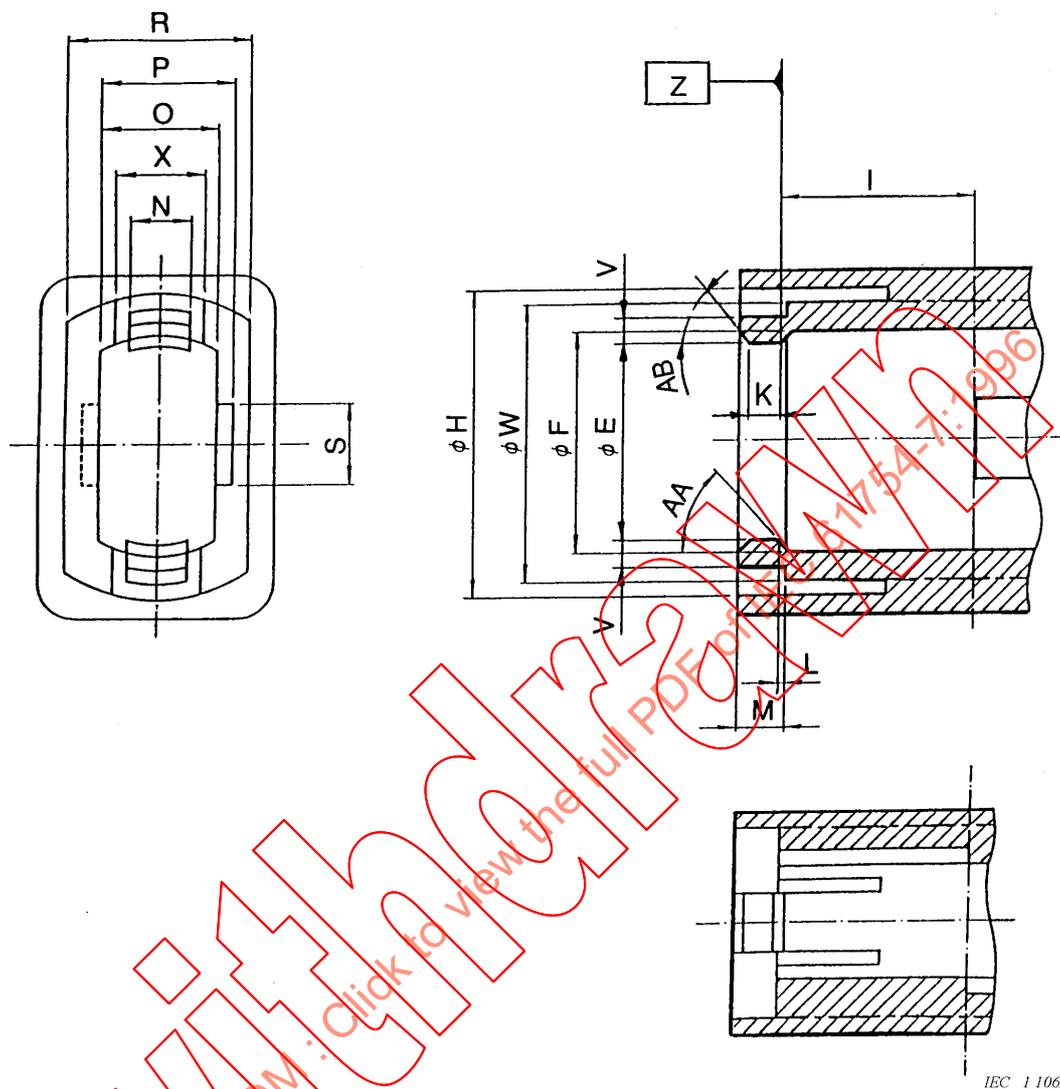


Figure 3b – Guide pin

Table 2b – Dimensions of the guide pin

Reference	Dimensions mm		Notes
	Minimum	Maximum	
A	0,697	0,699	See note
B	10,8	11,2	
BA	0,2	0,4	
BB	0,2	0,5	
NOTE – Typical dimensions.			



IEC 1106/96

Figure 4 – MPO adaptor interface

NOTE – The adaptor may be of a structure as shown by an alternate long and short dash line in the figure.

Table 3 – Dimensions of the MPO adaptor interface

Reference	Dimensions		Notes
	Minimum	Maximum	
E	8,54 mm	8,74 mm	
F	9,6 mm	9,7 mm	
H	12,6 mm	–	
I	8,2 mm	8,4 mm	
K	–	1,39 mm	
L	0	0,1 mm	
M	1,6 mm	2,0 mm	
N	2,4 mm	2,6 mm	
O	5,0 mm	5,1 mm	
P	5,7 mm	5,9 mm	
R	7,8 mm	–	
S	3,4 mm	3,6 mm	
V	0,95 mm	1,15 mm	
W	11,8 mm	12,2 mm	
X	3,4 mm	–	
AA	45°	48°	
AB	45°	50°	

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Would you please take a minute to answer the survey on the other side and mail or fax to:

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International Electrotechnical Commission

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or

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.....

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 - a librarian
 - a researcher
 - an engineer
 - a safety expert
 - involved in testing
 - with a government agency
 - in industry
 - other.....

3. This standard was purchased from?
.....

4. This standard will be used (check as many as apply):
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 - in a standards library
 - to develop a new product
 - to write specifications
 - to use in a tender
 - for educational purposes
 - for a lawsuit
 - for quality assessment
 - for certification
 - for general information
 - for design purposes
 - for testing
 - other.....

5. This standard will be used in conjunction with (check as many as apply):
- IEC
 - ISO
 - corporate
 - other (published by.....)
 - other (published by.....)
 - other (published by.....)

6. This standard meets my needs (check one)
- not at all
 - almost
 - fairly well
 - exactly

7. Please rate the standard in the following areas as (1) bad, (2) below average, (3) average, (4) above average, (5) exceptional, (0) not applicable:

- clearly written
- logically arranged
- information given by tables
- illustrations
- technical information

8. I would like to know how I can legally reproduce this standard for:

- internal use
- sales information
- product demonstration
- other.....

9. In what medium of standard does your organization maintain most of its standards (check one):
- paper
 - microfilm/microfiche
 - mag tapes
 - CD-ROM
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 - on line

9A. If your organization currently maintains part or all of its standards collection in electronic media please indicate the format(s):

- raster image
- full text

10. In what medium does your organization intend to maintain its standards collection in the future (check all that apply):
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 - microfilm/microfiche
 - mag tape
 - CD-ROM
 - floppy disk
 - on line

10A. For electronic media which format will be chosen (check one)

- raster image
- full text

11. My organization is in the following sector (e.g. engineering, manufacturing)
.....

12. Does your organization have a standards library:

- yes
- no

13. If you said yes to 12 then how many volumes:
.....

14. Which standards organizations published the standards in your library (e.g. ISO, DIN, ANSI, BSI, etc.):
.....

15. My organization supports the standards-making process (check as many as apply):
- buying standards
 - using standards
 - membership in standards organization
 - serving on standards development committee
 - other.....

16. My organization uses (check one)

- French text only
- English text only
- Both English/French text

17. Other comments:
.....
.....
.....
.....
.....

18. Please give us information about you and your company

name:

job title:.....

company:

address:.....

.....

.....

No. employees at your location:.....

turnover/sales:.....



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Les réponses que nous procurera cette enquête nous aideront tout à la fois à améliorer nos normes et les informations qui les concernent afin de toujours mieux répondre à votre attente.

Nous aimerions que vous nous consacriez une petite minute pour remplir le questionnaire joint que nous vous invitons à retourner au:

Centre du Service Clientèle (CSC)

Commission Electrotechnique Internationale

3, rue de Varembe

Case postale 131

1211 Genève 20

Suisse

Télécopie: IEC/CSC +41 22 919 03 00

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Commission Electrotechnique Internationale

3, rue de Varembe

Case postale 131

1211 GENÈVE 20

Suisse

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.....

2. Pourquoi possédez-vous cette norme?
(plusieurs réponses possibles). Je suis:

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- l'utilisateur
- bibliothécaire
- chercheur
- ingénieur
- expert en sécurité
- chargé d'effectuer des essais
- fonctionnaire d'Etat
- dans l'industrie
- autres

3. Où avez-vous acheté cette norme?
.....

4. Comment cette norme sera-t-elle utilisée?
(plusieurs réponses possibles)

- comme référence
- dans une bibliothèque de normes
- pour développer un produit nouveau
- pour rédiger des spécifications
- pour utilisation dans une soumission
- à des fins éducatives
- pour un procès
- pour une évaluation de la qualité
- pour la certification
- à titre d'information générale
- pour une étude de conception
- pour effectuer des essais
- autres

5. Cette norme est-elle appelée à être utilisée conjointement avec d'autres normes?
Lesquelles? (plusieurs réponses possibles):

- CEI
- ISO
- internes à votre société
- autre (publiée par)
- autre (publiée par)
- autre (publiée par)

6. Cette norme répond-elle à vos besoins?

- pas du tout
- à peu près
- assez bien
- parfaitement

7. Nous vous demandons maintenant de donner une note à chacun des critères ci-dessous (1, mauvais; 2, en-dessous de la moyenne; 3, moyen; 4, au-dessus de la moyenne; 5, exceptionnel; 0, sans objet)

- clarté de la rédaction
- logique de la disposition
- tableaux informatifs
- illustrations
- informations techniques

8. J'aimerais savoir comment je peux reproduire légalement cette norme pour:

- usage interne
- des renseignements commerciaux
- des démonstrations de produit
- autres

9. Quel support votre société utilise-t-elle pour garder la plupart de ses normes?

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- microfilm/microfiche
- bandes magnétiques
- CD-ROM
- disquettes
- abonnement à un serveur électronique

9A. Si votre société conserve en totalité ou en partie sa collection de normes sous forme électronique, indiquer le ou les formats:

- format tramé (ou image balayée ligne par ligne)
- texte intégral

10. Sur quels supports votre société prévoit-elle de conserver sa collection de normes à l'avenir (plusieurs réponses possibles):

- papier
- microfilm/microfiche
- bandes magnétiques
- CD-ROM
- disquettes
- abonnement à un serveur électronique

10A. Quel format serait retenu pour un moyen électronique? (une seule réponse)

- format tramé
- texte intégral

11. A quel secteur d'activité appartient votre société? (par ex. ingénierie, fabrication)
.....

12. Votre société possède-t-elle une bibliothèque de normes?

- Oui
- Non

13. En combien de volumes dans le cas affirmatif?
.....

14. Quelles organisations de normalisation ont publiées les normes de cette bibliothèque (ISO, DIN, ANSI, BSI, etc.):
.....

15. Ma société apporte sa contribution à l'élaboration des normes par les moyens suivants (plusieurs réponses possible):

- en achetant des normes
- en utilisant des normes
- en qualité de membre d'organisations de normalisation
- en qualité de membre de comités de normalisation
- autres

16. Ma société utilise (une seule réponse)

- des normes en français seulement
- des normes en anglais seulement
- des normes bilingues anglais/français

17. Autres observations
.....
.....
.....
.....
.....
.....

18. Pourriez-vous nous donner quelques informations sur vous-mêmes et votre société?

nom

fonction

nom de la société

adresse

.....

.....

nombre d'employés

chiffre d'affaires: