

JIS

JAPANESE INDUSTRIAL STANDARD

F05 Type Connectors for Optical Fiber Cords

JIS C 5974—1990

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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F 05 Type Connectors for Optical Fiber Cords

C 5974-1990

1. Scope

This Japanese Industrial Standard specifies, based on JIS C 5962, F 05 type connectors for optical fiber cords (hereafter referred to as "optical connectors") applicable to plastic cladding multimode optical fibers, multicomponent glass multimode optical fibers and all plastic multimode optical fibers which are mainly used in optical transmission lines within a device, between devices and between floors.

Remarks 1. F 05 type connectors are employing push-on engagement system of either lever-locking mechanism or friction-locking mechanism and also the following systems.

- (1) Optical engagement system: butt joint system
- (2) Mechanical engagement system: plug - adapter - plug system
- (3) Optical fiber array system: ferrule array (outside diameter ϕ 2.5 mm)

There are two kinds of mechanism for plugs i.e. lever locking and friction locking, and adapters are so constructed that they can be mated with plugs of the two kinds.

2. The units and numerical values given in { } in this Standard are based on the traditional unit system and are currently the criteria in force.

Informative Reference: There are the registrations of design given below related to these optical connectors, note should be taken on that matter.

Registration of design No. 695010 Shape of optical connector
Date of registration August 28 '86

Registration of design No. 695014 Shape of optical connector
Date of registration August 28 '86

The description of these optical connectors in this Standard does not mean expiration of ownership of industry property (i.e. this Standard is prepared under approval of the owners of the above registrations of design).

2. Definitions

For the main terms used in this Standard the definitions of JIS C 5962 apply, and the rest of the terms shall be as follows:

Applicable Standards: See page 26.

- (1) lever-locking mechanism Such a mechanism that the adapter and the plug are engaged and locked by insertion of the plug into the adapter, and they are separated by withdrawal of the plug while releasing the lock by pushing the lock lever attached to the plug.
- (2) friction-locking mechanism Such a mechanism that the adapter and the plug are engaged and locked by insertion of the plug into the adapter and withdrawal of plug at the prescribed force or more releases the locking and separates them.

3. Structure of Type Designation

The structure of type designation shall be as specified in 3.1 of JIS C 5962.

4. Classification and Grading

4.1 Classification Optical connectors are classified as given in Table 1 (expressed by type designation).

Table 1. Classification of Optical Connector

Type designation	Shape of optical connector	Shape of ferrule array	Grade	Type designation of applicable optical fiber cord (see JIS C 6820)	Shape and dimension
CNF 05 PAL	Adapter	F—F	L	—	Attached Fig. 1
CNF 05 PAN			N		
CNF 05 SPM 310 L 41 ⁽¹⁾	Plug	M	L	OFC 2.2-Y-RSI-200/300	Attached Fig. 2
CNF 05 SPM 310 L 42 ⁽²⁾			L		Attached Fig. 3
CNF 05 SPM 1.0 N 43 ⁽³⁾			N	OFC 2.2-PSI-980/1000	Attached Fig. 4
CNF 05 SPM 1.0 Q 44 ⁽⁴⁾			Q		Attached Fig. 5

Notes ⁽¹⁾ Optical connectors with lever-locking mechanism applicable to plastic cladding multimode optical fibers (see Attached Fig. 2).

⁽²⁾ Optical connectors with friction-locking mechanism applicable to plastic cladding multimode optical fibers (see Attached Fig. 3).

⁽³⁾ Optical connectors with lever-locking mechanism applicable to all plastic multimode optical fibers (see Attached Fig. 4).

⁽⁴⁾ Optical connectors with friction-locking mechanism applicable to all plastic multimode optical fibers (see Attached Fig. 5).

4.2 Grading Optical connectors are graded as follows:

- (1) Adapter Adapters are graded as given in Table 2.

Table 2. Grading of Adapters

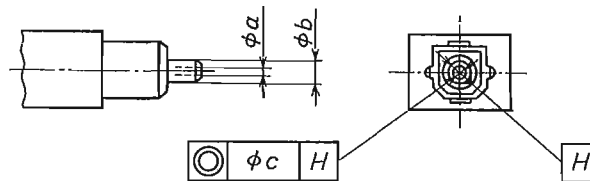
Grade	Insertion loss dB ⁽⁵⁾	
	OFC 2.2-Y-RSI-200/300	OFC 2.2-PSI-980/1000
L	2.0 max.	—
N	—	2.0 max.

Note ⁽⁵⁾ The value when connected with the master optical connector is shown.

(2) Plug Plugs are graded as given in Table 3.

Table 3. Grading of Plugs

Grade	Insertion loss dB ⁽⁵⁾		Dimensions of ferrule mm		
	OFC 2.2-Y-RSI-200/300	OFC 2.2-PSI-980/1000	Tolerances on dimension a	Dimension b	Dimension c
L	2.0 max.	—	± 0.01	$2.5_{-0.01}^0$	0.02 max.
N	—	2.0 max.	± 0.01	$2.5_{-0.01}^0$	0.02 max.
Q	—	3.0 max.	$+0.05$ -0.01	$2.5_{-0.08}^0$	0.1 max.



5. Construction

The construction, shapes and dimensions of the engaging parts of optical connectors shall be as shown in Fig. 1, Fig. 2 and Fig. 3. The dimensions of individual connector shall be as given in Attached Figures 1 to 5 specified in Table 1. If dimensions of the same part are specified in Fig. 1, Fig. 2 or Fig. 3 and Attached Figures 1 to 5, Attached Figures 1 to 5 precede.

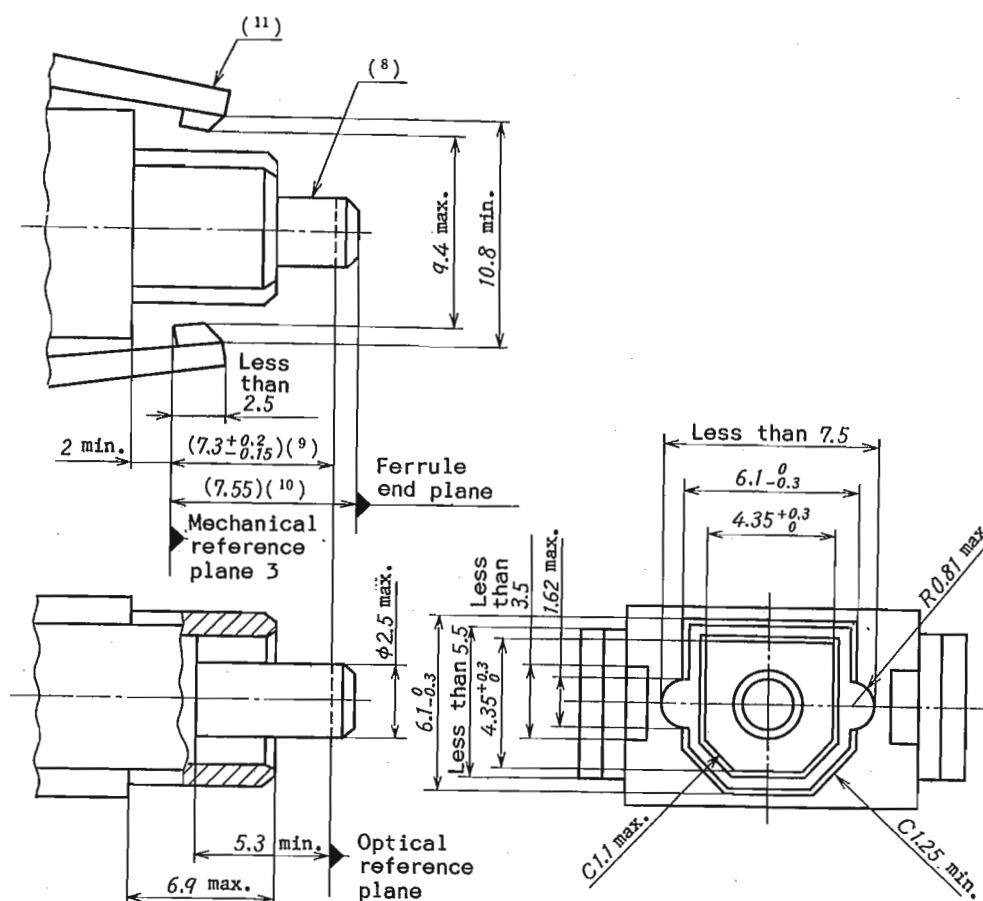
The dimensions of metal parts are those after surface treatment.

The construction and shape of the part for which no dimension is specified are exemplified as an informative reference.

The tolerances on the part for which dimensional tolerances are not specified shall be as specified in 4.1 of JIS C 5962.

Fig. 2. Engaging Part of Optical Connector (Plug)
with Lever-locking Mechanism

Unit: mm



Notes (8) The ferrule shall be so constructed that it can move to the left in this figure against the elastic force.

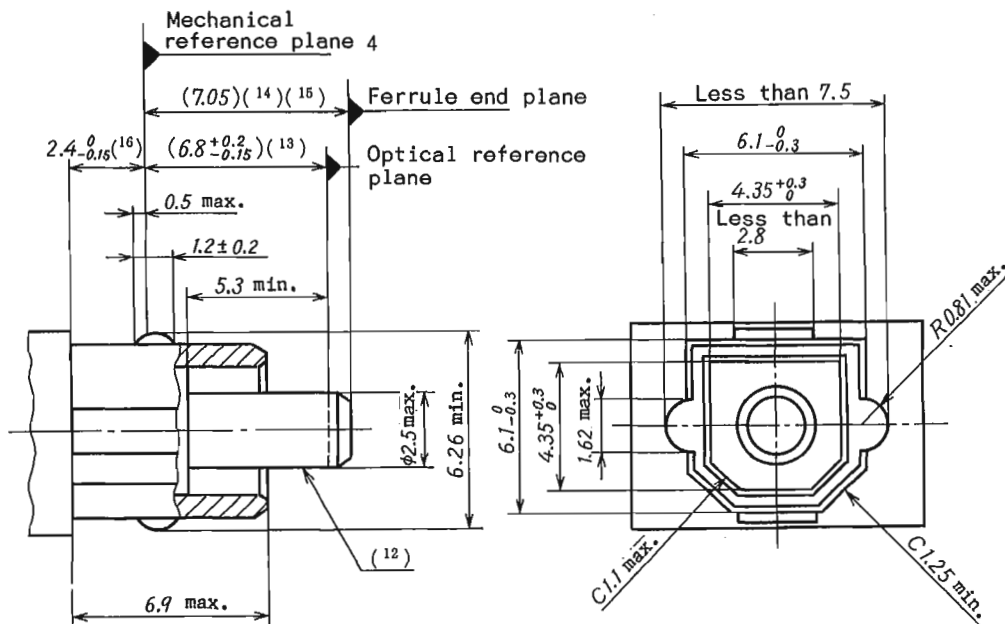
(9) This dimension is the designed distance from the mechanical reference plane to the ferrule end plane, under optically connected state engaged with the mate optical connector, and is not the subject of measurement.

(10) This dimension is the minimum necessary dimension after grinding of ferrule end plane, and is not the subject of measurement.

(11) This means lever.

Fig. 3. Engaging Part of Optical Connector (Plug) with Friction-locking Mechanism

Unit: mm



Notes ⁽¹²⁾ Referring to the ferrule there are two kinds of construction one allows its movement to the left in this figure against the elastic force and the other does not.

⁽¹³⁾ This dimension is the designed distance from the mechanical reference plane to the ferrule end plane, under optically connected state engaged with the mate optical connector, and is not the subject of measurement.

⁽¹⁴⁾ This dimension is the minimum necessary dimension after grinding of ferrule end plane, and is not the subject of measurement.

⁽¹⁵⁾ This dimension is for the plug which allows movement of the ferrule, for the plug which does not allow the movement the dimension shall be $(6.65)^{(14)}$.

⁽¹⁶⁾ This dimension is for the plug which allows movement of the ferrule, for the plug which does not allow the movement, the dimension shall be 2.4 or more.

6. Performances

The performances shall be as given in Table 4.

Table 4. Performances

Number	Item	Test method (JIS C 5961)	Conditions to be employed	Performances
1	Fitting	4.3	-	To be engaged without mechanical abnormalities.
2	Insertion loss	5.1	Kind of optical fiber cord used: as given in Table 1. Kind of optical source: plastic cladding multimode optical fiber: J all plastic multimode optical fiber: K Measuring method: method 1 or method 3 (for plug) method 4 (for adapter)	As specified in Table 2 and Table 3.
3	Resistance to vibration	6.1	Initial measurement item: insertion loss Test method: endurance test by sweeping Severity: frequency range 10 to 55 Hz amplitude (zero to peak) 0.75 mm number of sweeping cycles 24 Test conditions: 24 cycles on each of three axes including axis of fitting (72 cycles in total) Final measurement items: insertion loss and mechanical damage	Insertion loss (initially measured value): as specified in Table 2 and Table 3. Insertion loss (finally measured value): as specified in Table 5. Mechanical damage: no detrimental damage such as deformation, crack or loosening.