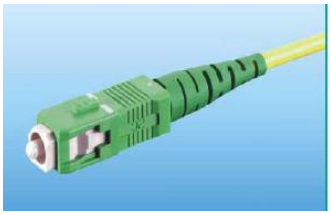
Introduction

As the industry's leading supplier of single-mode cable assemblies, Corning Fiber offers the most complete line of connectors and factory-terminated cables. From single-fiber jumpers to high fiber count assemblies, Optical Fiber products meet or exceed industry standards for reflectance and insertion loss. Corning Fiber state of the art manufacturing process ensures excellent connector performance. We thoroughly screen the fibers and ferrules at the beginning of the process, assemble them in a carefully monitored and controlled automated assembly and polishing process, and quality test our assemblies at the end of the process. This automated assembly and polishing process assures the same outstanding quality in every connector.

SC/APC Connector



APPLICATIONS		
CATV	Active device termination	Telecommunication Networks
Metro	Local Area Networks (LANs)	Data processing Networks
Test equipment	Premise installations	Wide Area Networks (WANs)

AVAILABILITY	
Simplex/ Duplex patch-cord available	Fan-Out available
Pigtail available	Various boot (cable) sizes available

FEATURES	
Low insertion loss and back reflection loss	Good exchangeability
Good Durability	High temperature stability
Standard: Telcordia GR-326-CORE	

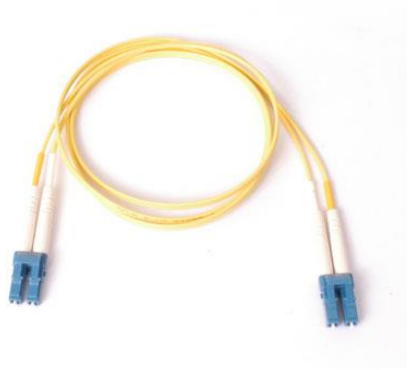
SPECIFICATIONS		
	Single Mode	Multimode
Insertion Loss	≤ 0.2dB	≤ 0.2dB
Return Loss	≥ 60dB (APC)	
Repeatability	≤0.1	
Transmission performance	1310 / 1550 / 1625 nm	850 / 1300 nm
Durability	≤0.2dB typical change, 1000 matings	
Interchangeability	≤0.2dB	
Tensile strength	› 10kg.	
Operating Temperature	-40 to + 85°C	-40 to + 85°C
Approvals and listing	OFNR or LSOH IEC 61304 Low Smoke, Flame Retardant IEC 60332-3 IEC 60752-2 Non-Corrosive	

ORDER INFORMATION		
Type	Single Mode	Multimode
Outer diameter	0.9, 2, 2.4, 3 mm	2, 3 mm
Boot Color	Green	White
Fiber Type	9/125µm	50/125µm 62.5/125µm
Cable number	Simplex, Duplex, Fan-out (4f, 8f)	
Application	APC	
Length	Customized	

Introduction

As the industry's leading supplier of single-mode cable assemblies, Corning Fiber offers the most complete line of connectors and factory-terminated cables. From single-fiber jumpers to high fiber count assemblies, Optical fiber products meet or exceed industry standards for reflectance and insertion loss. Corning Fiber state of the art manufacturing process ensures excellent connector performance. We thoroughly screen the fibers and ferrules at the beginning of the process, assemble them in a carefully monitored and controlled automated assembly and polishing process, and quality test our assemblies at the end of the process. This automated assembly and polishing process assures the same outstanding quality in every connector.

LC Connector



Applications		
Gigabit Ethernet	Active device termination	Telecommunication networks
Video	Multimedia	Industrial
Military	Premise installations	

AVAILABILITY	
Simplex/ Duplex patch-cord available Pigtail available	Various boot (cable) sizes available LC/APC patch-cord available

FEATURES	
Low insertion loss and back reflection loss	Good exchangeability
Good Durability	High temperature stability
Standard: Telcordia GR-326-CORE	

SPECIFICATIONS		
	Single Mode	Multimode
Insertion Loss	≤ 0.2dB	≤ 0.2dB
Return Loss	≥ 60dB (APC	
Repeatability	≤0.1	
Transmission performance	1310 / 1550 /1625 nm	850 / 1300 nm
Durability	≤0.2dB typical change, 1000 matings	
Interchangeability	≤0.2dB	
Tensile strength	› 10kg.	
Operating Temperature	-40 to + 85°C	-40 to + 85°C
Approvals and listing	OFNR or LSOH IEC 61304 Low Smoke, Flame Retardant IEC 60332-3 IEC 60752-2 Non-Corrosive	

ORDER INFORMATION		
Type	Single Mode	Multimode
Outer diameter	0.9, 2, 2.4, 3 mm	2, 3 mm
Boot Color	Black, Beige	White
Fiber Type	9/125µm	50/125µm 62.5/125µm
Cable number	Simplex, Duplex, Fan-out (4f, 8f)	
Application	APC	
Length	Customized	

Single Mode Fiber Patch Cord and Pigtail (SC/APC, LC/APC)

1. General :

1.1 This specification covers the requirements of the standard patch cord and pigtail to be supplied to TOT Public Company Limited (TOT). The patch cord shall be applied in passive optical network (PON) such as FTTx namely Fiber To The Home (FTTH), Fiber To The Curb (FTTC) etc., which used for optical fiber jumpering between FDF (Fiber Distribution Frame) on patching panel and equipment. The pigtail application shall be used to splice at non-connector end with incoming cable and the another end of pigtail coupling with connector shall be terminated to patching panel of FDF.

1.2 The patch cord and pigtail shall be designed under indoor environmental condition which used in TOT exchange or building. The primary design consideration of the cable shall protect the optical fiber from environmental and mechanical stresses. The patch cord and pigtail required as this specification shall be in accordance with Figure 1 to 10.

1.3 Abbreviation; SC/APC : Subscription channel Connector / Angle polished Physical Contact.

LC/APC : Lucent / Angle polished Physical Contact.

1.4 Full details of this following information shall be provided in technical bidding proposal by bidder, Failure in this section 1.4 the proposal shall be disqualified.

- Product specification issued by manufacturer including specification of fiber cord, pigtail, connector kit etc.
- The material used and grade (or composite material) in detail for all components of product proposed.
- Test method and test data of all requirements of sections 2, 3 and 4 according to this specification

2. Specific Requirements

The patch cord and pigtail shall composed of fiber cord (cable) and connector kit assemblies as shown in Figure 1 to Figure 11.

2.1 Fiber Cord requirements

2.1.1 Fiber Characteristics

All fiber characteristics of the fiber cord shall be, at least, in accordance with the ITU-T Recommendation G.652.D or G657A2, TOT specification no OES-004-030-XX (latest issue) Single Mode Optical Fiber Cable and shall be as follows.

Cladding Diameter 125μm ± 1μm

Core-Clad Concentricity Error: ≤ 0.5 μm

Cladding Non-Circularity: ≤ 1.0%

Mode Field Diameter @ 1310 nm: 9.2 μm ± 0.4μm

Cable Cut-Off Wavelength (λcc):≤1260 nm

Attenuation Coefficient:

≤ 0.35 dB/km @ 1310 nm

≤ 0.35 dB/km @ 1383 nm

≤ 0.24 dB/km @ 1490 nm

≤ 0.21 dB/km @ 1550 nm

≤ 0.23 dB/km @ 1625 nm

PMD coefficient : ≤ 0.2 ps / $\sqrt{km}$

Maximum Attenuation with –

Macrobending 2 turns 30 mm radius : ≤ 0.10 dB @ 1550

2.1.2 Fiber Cord Physicals

Structure & Materials :

Outer jacket and boot:	Polymer or polyethylene (PE) filled with FR (Flame Retardant, UL94-V0), LS(Low Smoke) and ZH(Zero Halogen or Halogen Free), Fiber cord jacket overall diameter of FC, SC and LC shall be 2.4mm, 2.0mm and 0.9mm respectively, Boot shall be designed to be applicable for cord strain relief.
Jacket Color :	Yellow
Boot Color :	see section 6 packing and ordering information
Strain relief :	Aramid yarns (fully completely cover around the tight buffer, no adhesion to jacket or buffer tube), as Fig.1
Tight buffer tube :	Jelly free, tight buffer tube Φ 900μm (0.9mm), non-bucking, made from TPE (Thermo plastic elastomer) or PBT (Polybutylen terephthalate) or PA (Polyamide) or equivalent, filled with FR (Flame Retardant, UL94-V0), in Yellow Color.

2.2 Connector Kit Assembly Requirements

Connector kit assembly shall be at least composed of followings:

SC/APC, LC/APC :	connector body (housing), connector Subassembly, strain relief crimp, ferrule and Dust cap (cover).

Note : In case of duplex connector (SC, LC), the Connector body (housing) shall be duplex clip Connector.

2.2.1 Materials

1) Metallic materials

All metallic parts of connector kit assembly shall be resistant to the corrosive influences they may encounter in normal use. No signs of corrosion shall be visible after 7 days exposure to non-acidic salt fog spray (5% NaCl, 35°C) according to IEC 61300-2-26. If stainless steel used, it shall be made of 300 series stainless steel or better corrosion resistance material. The metallic part of galvanized steel or other steel materials that have corrosion resistance property lower than 300 series stainless steel are not allowable.

2) Plastic materials

All plastic parts of connector kit assembly (except dust cap) shall be made of flame retardant material with flammability rating of V-0 according to UL 94 standard.

2.2.2 Specific materials

1) SC/APC, LC/APC

Connector body : PBT material with Flame Retardant UL94-VO or equivalent plastic material.

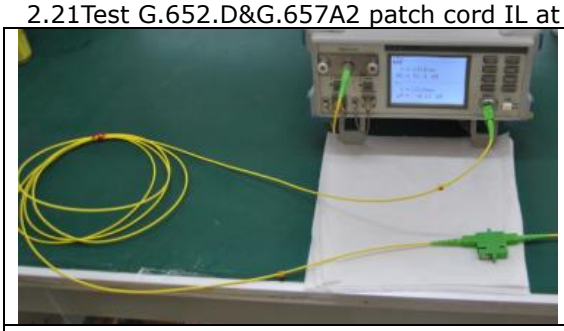
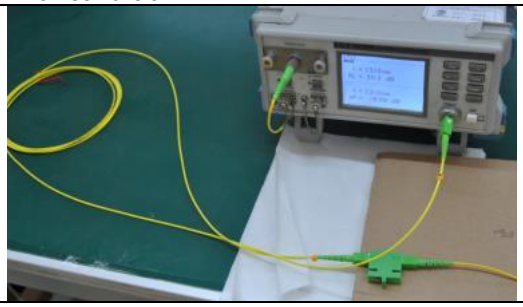
Ferrule : Zicronia Ceramic

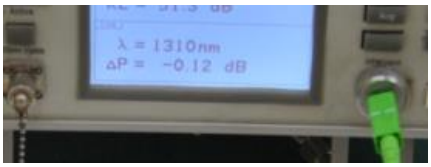
3. Performance Requirements

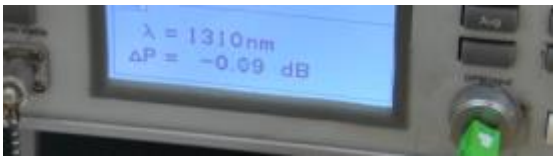
Test item	Conditions	Requirements	References
3.1 Insertion Loss (connector only)	• Source wavelength 1310 nm ± 10nm 1490 nm ± 10 nm 1550 nm ± 10 nm 1625 nm ± 10 nm	• IL ≤ 0.2 dB	IEC 61300-3-34 Method 2
3.2 Return Loss	• Source wavelength 1310 nm ± 10nm 1490 nm ± 10 nm 1550 nm ± 10nm 1625 nm ± 10 nm	• RL ≥ 60 dB	IEC 61300-3-6

2.2 Test G.652.D&G.657A2 IL change:

2.21Test G.652.D&G.657A2 patch cord IL at normal condition.

	
G.652.D IL=0.12 dB	G.657A2 IL=0.09 dB





4. Mechanical Requirements

The propose single mode fiber patch cord and pigtail in this specification shall be in accordance with section 3.1 to 3.6 which all tests in section 3.1 to 3.6 shall be run in sequence. Unless otherwise specified, the measurement of insertion loss (IL) and return loss (RL) shall be tested at 1310 nm ± 10 nm, 1490 nm ± 10 nm, 1550 nm ± 10 nm and 1625 nm ± 10 nm

Test Item	Conditions	Requirements	References
4.1 Appearance	◆ Exam the product with the naked eye	◆ No deformation, crack, scratch, flaw, stain, loosencess and burr.	-
4.2 Tensile Strength	◆ Patch cord maximum tensile strength: 70 N • Pigtail maximum tensile strength: 5 N • Rate : 0 N to full load in 15 sec • Point of application: 500 mm from plug • Duration: 1 minute	◆ ΔIL ≤ 0.2 dB ◆ ΔRL ≤ 2 dB • Appearance	IEC-61300-2-4
4.3 Endurance	• Mating and demating 500 times	◆ ΔIL ≤ 0.2 dB ◆ ΔRL ≤ 2 dB • Appearance	IEC-61300-2-2
4.4 Strength of Coupling Mechanism	◆ Patch cord maximum tensile strength: 40 N • Rate: 0 N to full load in 15 sec • Point of application: 500 mm from plug • Duration: 1 minute	◆ ΔIL ≤ 0.2 dB ◆ ΔRL ≤ 2 dB • Appearance	IEC-61300-2-6
4.5 Torsion	• Maximum load: 15 N for patch cord and 2 N for pigtail • Cable clamp distance: 200 mm from the tip • Torsion: +180°/-180° • Cycles: 25	◆ ΔIL ≤ 0.2 dB ◆ ΔRL ≤ 2 dB • Appearance	IEC-61300-2-5
4.6 Strippability	• Strip the outer jacket out of patch cord in one action (one time) ◆ Strip tight buffer tube out of fiber in one action (one time) ◆ Use commercially available tools	◆ Minimum length of the outer jacket shall be capable to be stripped to 1 meter • Minimum length of the tight buffer tube shall be capable to be stripped to 25 mm	-

5. MARKING

5.1 The patch cord shall be marked on the connector or the boot or the fiber cord (jacket) with manufacturer's name or trademark.

5.2 The patch cord jacket shall be provided length marking at intervals of approximately 1 meter along the whole patch cord length. The accuracy of the measurement of length marking shall be held within the limits of±1%

5.3 The patch cord jacket identification marking.

Each length marking interval, the identification marking shall be permanently identified as the followings:

- Manufacturer name or trade mark
- Date month and year (C.E) of fiber cord manufacture or finished product manufacture.
- Type of fiber and jacket, O.D. such as SMOF…PE-FR-LS-ZH, O.D, etc.

5.4 For traceability purpose, necessary information shall be placed on the patch cord for instance:- the trace label etc.

6. PACKING AND ORDERING INFORMATION

TOT Code	Product Type	Boot Color	Min. Length(M)	Packing
10059602	SC to SC Patch Cord (APC)	Green	3	1 pc/Bag, 100 bag/box
10059603	SC to SC Patch Cord (APC)	Green	5	1 pc/Bag, 60 bag/box
10059604	SC to SC Patch Cord (APC)	Green	10	1 pc/Bag, 40 bag/box
10059605	SC to SC Patch Cord (APC)	Green	15	1 pc/Bag, 30 bag/box
10059606	SC to SC Patch Cord (APC)	Green	20	1 pc/Bag, 20 bag/box
10059607	SC to SC Patch Cord (APC)	Green	30	1 pc/Bag, 15 bag/box
10059608	SC to SC Patch Cord (APC)	Green	40	1 pc/Bag, 10 bag/box
10059609	LC to LC Patch Cord (APC)	Black	3	1 pc/Bag, 100 bag/box
10059610	LC to LC Patch Cord (APC)	Black	5	1 pc/Bag, 60 bag/box
10059611	LC to LC Patch Cord (APC)	Black	10	1 pc/Bag, 40 bag/box
10059612	LC to LC Patch Cord (APC)	Black	15	1 pc/Bag, 30 bag/box
10059613	LC to LC Patch Cord (APC)	Black	20	1 pc/Bag, 20 bag/box
10059614	LC to LC Patch Cord (APC)	Black	30	1 pc/Bag, 15 bag/box
10059615	LC to LC Patch Cord (APC)	Black	40	1 pc/Bag, 10 bag/box
10059616	SC to LC Patch Cord (APC)	Green to Black	3	1 pc/Bag, 100 bag/box
10059617	SC to LC Patch Cord (APC)	Green to Black	5	1 pc/Bag, 60 bag/box
10059618	SC to LC Patch Cord (APC)	Green to Black	10	1 pc/Bag, 40 bag/box

10059619	SC to LC Patch Cord (APC)	Green to Black	15	1 pc/Bag, 30 bag/box
10059620	SC to LC Patch Cord (APC)	Green to Black	20	1 pc/Bag, 20 bag/box
10059621	SC to LC Patch Cord (APC)	Green to Black	30	1 pc/Bag, 15 bag/box
10059622	SC to LC Patch Cord (APC)	Green to Black	40	1 pc/Bag, 10 bag/box
10059623	SC to SC Patch Cord Duplex (APC)	Green	3	1 pc/Bag, 50 bag/box
10059624	SC to SC Patch Cord Duplex (APC)	Green	5	1 pc/Bag, 30 bag/box
10059625	SC to SC Patch Cord Duplex (APC)	Green	10	1 pc/Bag, 20 bag/box
10059626	SC to SC Patch Cord Duplex (APC)	Green	15	1 pc/Bag, 15 bag/box
10059627	SC to SC Patch Cord Duplex (APC)	Green	20	1 pc/Bag, 10 bag/box

TOT Code	Product Type	Boot Color	Min. Length(M)	Packing
10059628	SC to SC Patch Cord Duplex (APC)	Green	30	1 pc/Bag, 7 bag/box
10059629	SC to SC Patch Cord Duplex (APC)	Green	40	1 pc/Bag, 5 bag/box
10059630	LC to LC Patch Cord Duplex (APC)	Black	3	1 pc/Bag, 50 bag/box
10059631	LC to LC Patch Cord Duplex (APC)	Black	5	1 pc/Bag, 30 bag/box
10059632	LC to LC Patch Cord Duplex (APC)	Black	10	1 pc/Bag, 20 bag/box
10059633	LC to LC Patch Cord Duplex (APC)	Black	15	1 pc/Bag, 15 bag/box
10059634	LC to LC Patch Cord Duplex (APC)	Black	20	1 pc/Bag, 10 bag/box
10059635	LC to LC Patch Cord Duplex (APC)	Black	30	1 pc/Bag, 7 bag/box
10059636	LC to LC Patch Cord Duplex (APC)	Black	40	1 pc/Bag, 5 bag/box
10059637	SC to LC Patch Cord Duplex (APC)	Green to Black	3	1 pc/Bag, 50 bag/box
10059638	SC to LC Patch Cord Duplex (APC)	Green to Black	5	1 pc/Bag, 30 bag/box
10059639	SC to LC Patch Cord Duplex (APC)	Green to Black	10	1 pc/Bag, 20 bag/box
10059640	SC to LC Patch Cord Duplex (APC)	Green to Black	15	1 pc/Bag, 15 bag/box
10059641	SC to LC Patch Cord Duplex (APC)	Green to Black	20	1 pc/Bag, 10 bag/box

10059642	SC to LC Patch Cord Duplex (APC)	Green to Black	30	1 pc/Bag, 7 bag/box
10059643	SC to LC Patch Cord Duplex (APC)	Green to Black	40	1 pc/Bag, 5 bag/box
10059644	SC Pigtail (APC)	Green	1.5	1 pc/Bag, 100 bag/box
10059645	SC Pigtail (APC)	Green	3	1 pc/Bag, 50 bag/box
10059646	SC Pigtail (APC)	Green	5	1 pc/Bag, 30 bag/box
10059647	LC Pigtail (APC)	Black	1.5	1 pc/Bag, 100 bag/box
10059648	LC Pigtail (APC)	Black	3	1 pc/Bag, 50 bag/box
10059649	LC Pigtail (APC)	Black	5	1 pc/Bag, 30 bag/box

The other lengths shall be specified on order.

Note : The patch cord and pigtail should not be used for length longer than 40 meters and 5 meters respectively. The FDF tie with indoor optical fiber cable shall be applied for the patch cord length longer than 40 meters. Since the pigtail cord covered by tight buffer tube so that the whole length of pigtail shall be installed in the enclosure such as in fiber distribution box or in the same sub rack shelf of FDF etc.

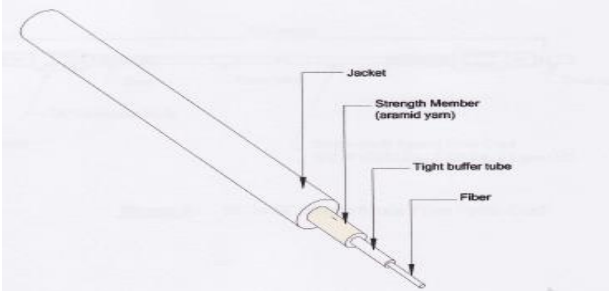


Fig. 1 Cable Structure of Single Mode Fiber Patch Cord

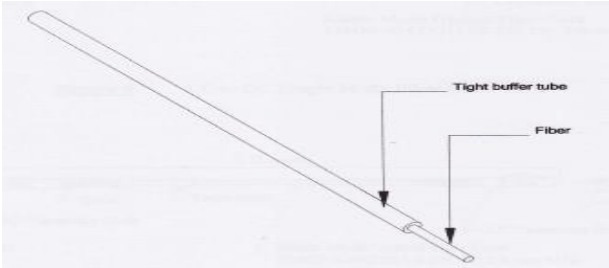


Fig. 2 Cable Structure of Single Mode Fiber Pigtail

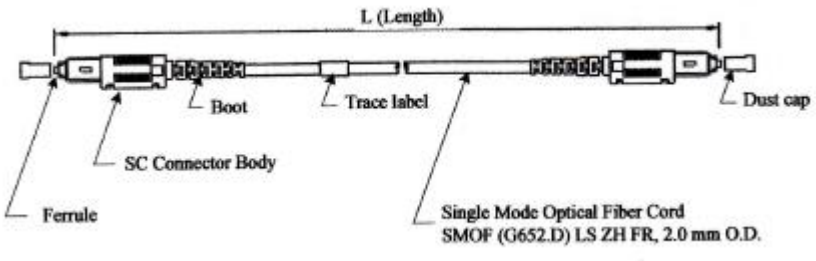


Fig. 3 SC to SC Single Mode Fiber Patch Cord

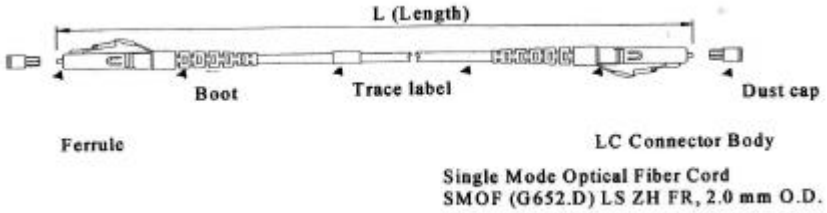


Fig. 4 LC to LC Single Mode Fiber Patch Cord

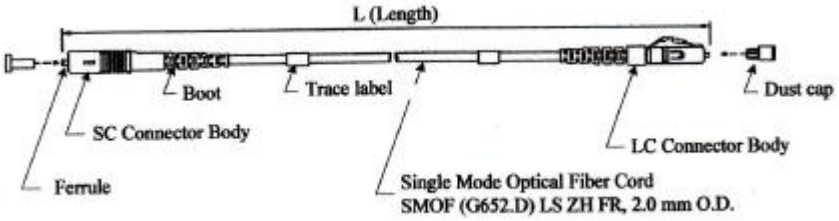


Fig. 5 SC to LC Single Mode Fiber Patch Cord

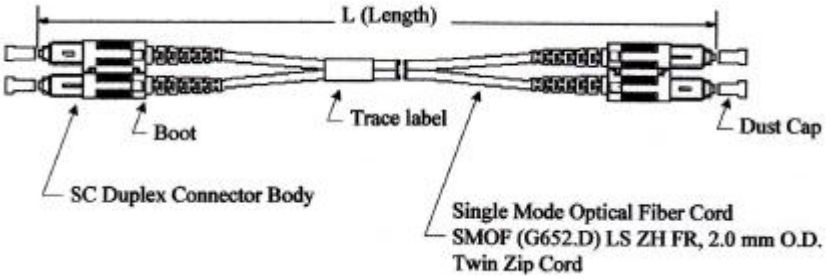


Fig. 6 SC to SC Single Mode Fiber Patch Cord Duplex

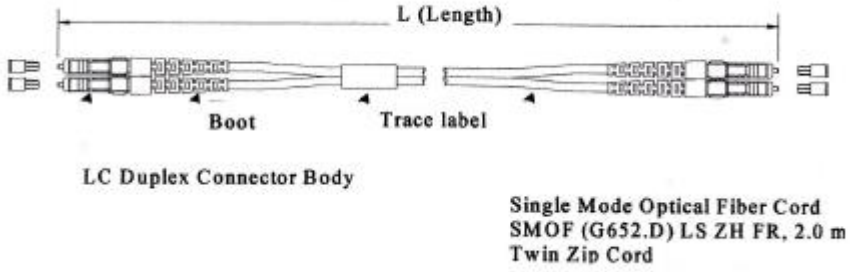


Fig. 7 LC to LC Single Mode Fiber Patch Cord Duplex

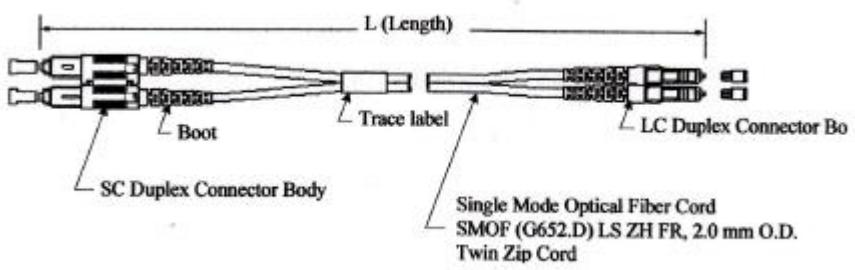


Fig. 8 SC to LC Single Mode Fiber Patch Cord Duplex

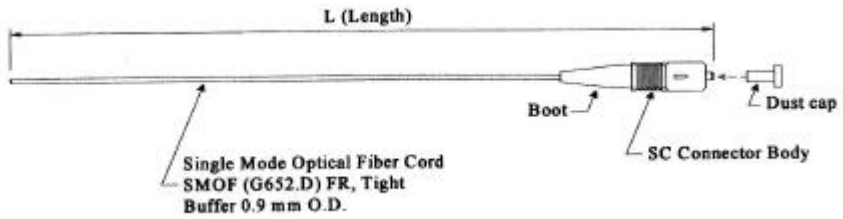


Fig. 9 SC Single Mode Fiber Pigtail

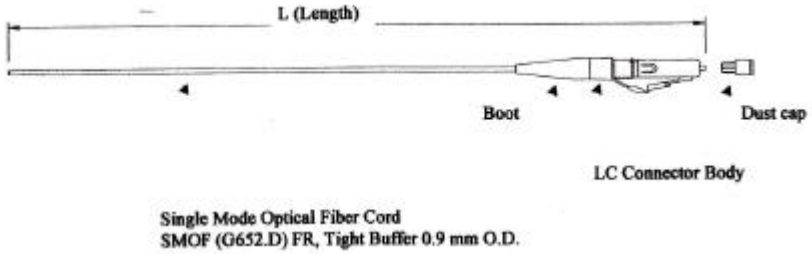
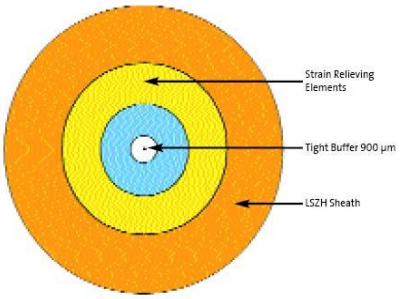


Fig. 10 LC Single Mode Fiber Pigtail



CABLE FOR ASSEMBLIES

Fig.11

Applications

Simplex bulk cabling for cable assembly manufacturing operations is designed with 900 µm tight buffers for direct assembly of single-fiber connectors.

Features

- Utilizes 900 µm Tight-buffered fibers with TB4 , TB3 coating, enabling easy stripping Flame-retardant jacket.
- Cables meet the application requirements of the National Electrical Code® (NEC®Article 770) and are listed Jelly free
- All-dielectric cable construction requires no grounding or bonding
- Jacket - OFNR (PVC Flame-retardant to IEC 60 332-3 , FRNC (Flame-retardant to IEC 60 332-3 and noncorrosive to IEC 60754-2) , LSZH (Low-smoke to IEC 61034 and zero-halogen
- Overall diameter 3.0 , 2.4 .2.0 mm
- Yellow jacket (single mode) , Orange (multimode)
- Strain relief - Aramid Yarns around tight buffer , no adhesion to jacket of buffer tube

Optical Fiber, continually pushing single-mode fiber to new performance levels., As the first manufacturer to upgrade standard single-mode fiber worldwide, we're providing our customers with greater value today and in the future., optical fiber is: Incompliance with or exceeding the industry's most stringent requirements, including: ITU-T G.652 (all tables) , IEC Specifications 60793-2-50 Type B1.3 , TIA/EIA 492-CAAB , Telcordia's GR-20