



HARSH-ENVIRONMENT

ARINC 801 Connectors and Termini

FOR HIGH-SPEED MIL-AERO FIBER-OPTIC DATA NETWORKING

OCTOBER 2014





SERIES 180-159

Ultra-Low dB Loss ARINC 801 Fiber Optics

**with removable alignment sleeve for easy
cleaning, maintenance and inspection**

The ARINC 801 (Series 180-159) fiber optic connection system is designed for use in RF-over-fiber applications, in-flight entertainment, avionics, and other high-speed data networking applications. The Glenair ARINC 801 system utilizes MIL-DTL-38999 Series III type connectors and is built in accordance with high-performance mil-aero mechanical and environmental standards.

Key features of the system include genderless contacts, a removable alignment sleeve retainer with guidepins to ensure low insertion loss and return loss values. Singlemode (UPC and APC) as well as multimode (PC) termini with familiar LC type termination and assembly for complete flexibility in cable choice and optical performance. The keyed #16 AWG genderless termini are equipped with ceramic ferrules and stainless steel springs. A complete range of insert arrangements is available in accordance with ARINC 801.



- **Genderless terminus design eliminates pin and socket complexity**
- **Rear-release size #16 termini**
- **Singlemode (1310 and 1550 nm) as well as multimode (850 and 1300 nm)**
- **Mechanical and environmental performance IAW MIL-DTL-38999 Series III**

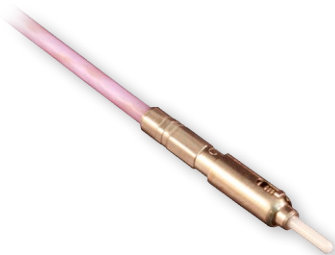
ARINC 801 Type 1

Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

180-159

PRODUCT SELECTION GUIDE AND PERFORMANCE SPECIFICATIONS



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Series 180-159 ARINC 801 Performance Specifications	
Test Description	Performance Requirements/Specifications
Insertion Loss	Multimode (PC): 0.30 dB typical at 850/1300nm
	Singlemode (UPC): 0.30 dB typical at 1310/1550nm
Return Loss	Multimode (PC): Better than 20 dB
	Singlemode (UPC): Better than 40 dB
Operating Temperature	-55°C to +165°C (cable/epoxy dependent)
Storage Temperature	-40°C to +85°C (cable/epoxy dependent)
Mating Durability	500 cycles, per TIA/EIA-455-21
Vibration	23.1g RMS, 8 hrs/axis, per TIA/EIA-455-11, Test Condition VI-G
Mechanical Shock (half-sine pulse)	300g Peak for 3ms, 3 shocks/axis in each direction, per TIA/EIA-455-14, Test Condition D
Thermal Cycling	-55°C to +125°C, 50 cycles, per TIA/EIA-455-3, Test Condition C-4 (cable/epoxy dependent)
Temperature Life	+125°C for 1000 hrs, per TIA/EIA-455-4 (cable/epoxy dependent)
Humidity, Steady State	+40°C for 240 hrs, 90% RH, per TIA/EIA-455-5, Method A, Test Condition B
Humidity, Temperature Cycling	-25°C to +65°C, 10 cycles for 24 hrs, 90% RH, per TIA/EIA-455-5, Method B7a (cable/epoxy dependent)



For more information
contact Glenair at
818-247-6000 or
visit our website at
www.glenair.com
U.S. CAGE code 06324

ARINC 801 Type 1

Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

180-159



How To Order					
Sample Part Number	180-159	NF	06	-17-8	N
Fiber Optic connector	ARINC 801 connectors, MIL-DTL-38999 Series III Type				
Material/Finish Code	See Table I				
Connector Style	06 = Plug G6 = Plug with EMI/RFI Ground Spring 08 = Jam Nut Receptacle 05 = In-Line Receptacle H7 = Wall Mount Receptacle with Round Holes S7 = Wall Mount Receptacle with Slotted Holes T7 = Wall Mount Receptacle with Threaded Holes				
Shell Size - Insert Arrangement	See Figure I				
Alternate Key Position	per MIL-DTL-38999 Series III. A, B, C, D, E, N = Normal, omit for universal key				

Table I: Material and Finish		
Code	Material	Finish Description
ME	Aluminum Alloy	Electroless Nickel
MT		Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZR		Zinc Nickel, Black
XM	Composite	Electroless Nickel
XMT		Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
ZL	Stainless Steel	Electro-Deposited Nickel
Z1		Passivate

Figure 1: ARINC 801 Insert Arrangements

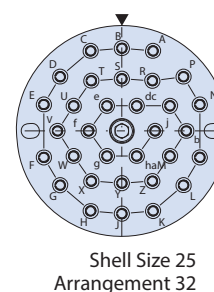
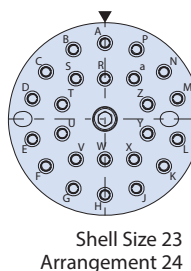
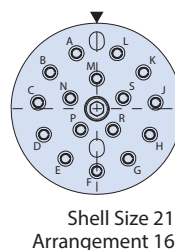
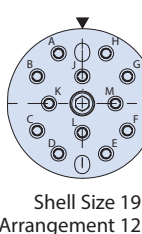
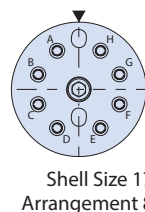
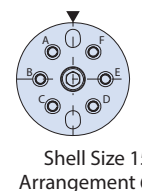
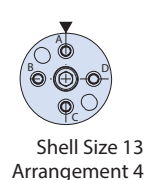
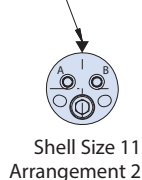
MATERIAL/FINISH

Shells, Barrel, Coupling Nut:
See Table I
Inserts: Al alloy / Chem Film or
Al Alloy / Anodize - Mfr's option
Guide Pins: Stainless Steel / Passivate
Seals: Fluorosilicone
EMI/RFI/Ground Spring: Copper
Alloy / Nickel

NOTES

Alignment Sleeve Retainer (ASR) is supplied with plug connector only, and may be ordered separately (see 180-159ASR)

CONNECTOR MASTER KEY



ARINC 801 Type 1

Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

180-159 Plug



PLUG (06)

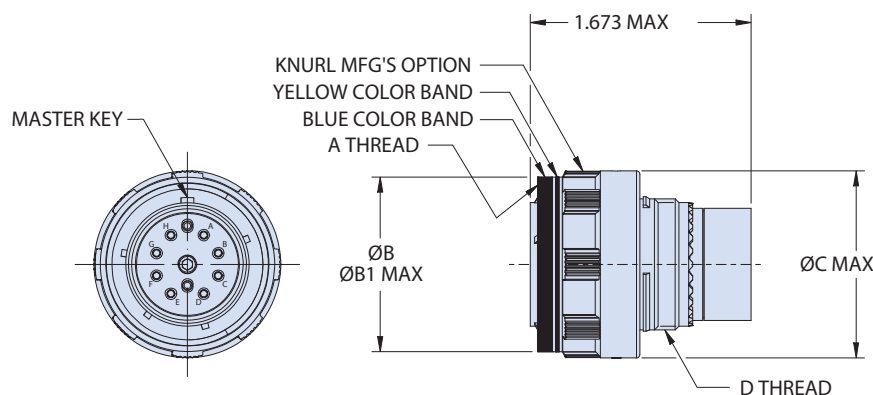


Table II: Plug

Shell Code	Shell Size	A Thread	Ø B		Ø B1 Max*		Ø C Max		D Thread
			In.	mm.	In.	mm.	In.	mm.	
B	11	.7500-1P-.3L-TS-2B	0.839 0.831	21.3 21.1	0.929	23.6	0.984	25.0	M15 X 1.0-6g 0.100R
C	13	.8750-1P-.3L-TS-2B	1.008 1.000	25.6 25.4	1.110	28.2	1.157	29.4	M18 X 1.0-6g 0.100R
D	15	1.0000-1P-.3L-TS-2B	1.138 1.130	28.9 28.7	1.232	31.3	1.280	32.5	M22 X 1.0-6g 0.100R
E	17	1.1875-1P-.3L-TS-2B	1.276 1.268	32.4 32.2	1.358	34.5	1.406	35.7	M25 X 1.0-6g 0.100R
F	19	1.2500-1P-.3L-TS-2B	1.382 1.374	35.1 34.9	1.469	37.3	1.516	38.5	M28 X 1.0-6g 0.100R
G	21	1.3750-1P-.3L-TS-2B	1.508 1.500	38.3 38.1	1.594	40.5	1.642	41.7	M31 X 1.0-6g 0.100R
H	23	1.5000-1P-.3L-TS-2B	1.626 1.618	41.3 41.1	1.720	43.7	1.768	44.9	M34 X 1.0-6g 0.100R
J	25	1.6250-1P-.3L-TS-2B	1.752 1.744	44.5 44.3	1.843	46.8	1.890	48.0	M37 X 1.0-6g 0.100R

* Ø B1 dimensions apply to composite connectors only

NOTES

Insert arrangement IAW ARINC 801

Yellow color band indicates fiber optic connector type, Blue band indicates rear-release retention system. Location of blue and yellow bands manufacturer's option.

Ø B and Ø B1 Max Dimension applies before paint stripe.

Alignment Sleeve Retainer (ASR) is supplied with plug connector only.

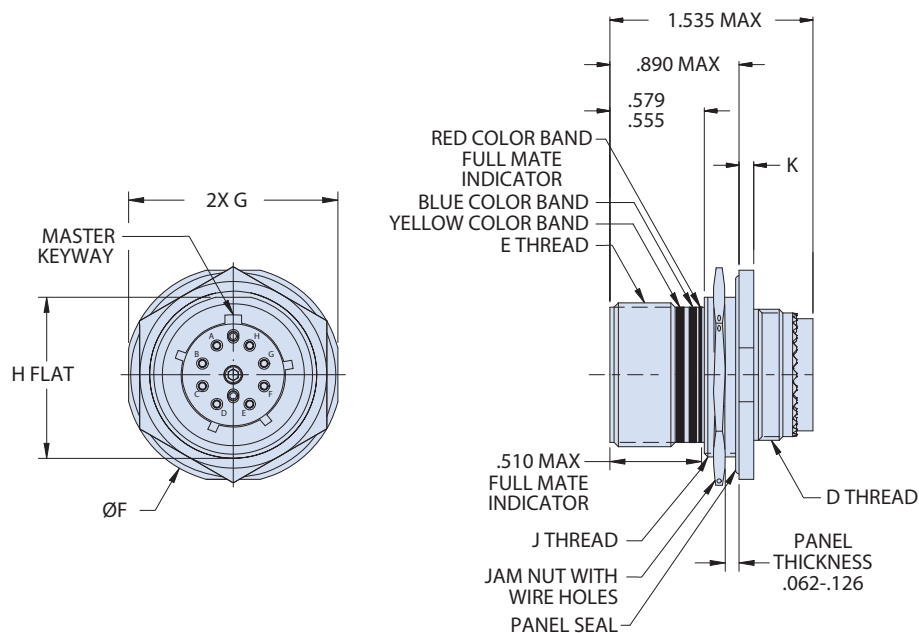
ARINC 801 Type 1

Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

180-159 Receptacles

JAM NUT MOUNT RECEPTACLE (08)



Jam Nut Panel Cut-Out					
Shell Code	Shell Size	Ø FF		GG Flat	
		In.	mm.	In.	mm.
B	11	0.835	21.2	0.771	19.6
		0.825	21.0	0.761	19.3
C	13	1.020	25.9	0.955	24.3
		1.010	25.7	0.945	24.0
D	15	1.145	29.1	1.085	27.6
		1.135	28.8	1.075	27.3
E	17	1.270	32.3	1.210	30.7
		1.260	32.0	1.200	30.5
F	19	1.395	35.4	1.335	33.9
		1.385	35.2	1.325	33.7
G	21	1.520	38.6	1.460	37.1
		1.510	38.4	1.450	36.8
H	23	1.645	41.8	1.585	40.3
		1.635	41.5	1.575	40.0
J	25	1.770	45.0	1.710	43.4
		1.760	44.7	1.700	43.2

Table II: Plug												
Shell Code	Shell Size	E Thread	Ø F		G		H		J Thread	D Thread	K	
			In.	mm.	In.	mm.	In.	mm.			In.	mm.
B	11	.7500-.1P-.3L-TS-2A	1.386 1.362	35.2 34.6	1.268 1.236	32.2 31.4	.755 .745	19.2 18.9	M20 X 1.0-6g 0.100R	M15 X 1.0-6g 0.100R	.121 .083	3.1 2.1
C	13	.8750-.1P-.3L-TS-2A	1.512 1.488	38.4 37.8	1.390 1.358	35.3 34.5	.942 .932	23.9 23.7	M25 X 1.0-6g 0.100R	M18 X 1.0-6g 0.100R		
D	15	1.0000-.1P-.3L-TS-2A	1.638 1.614	41.6 41.0	1.516 1.484	38.5 37.7	1.066 1.056	27.1 26.8	M28 X 1.0-6g 0.100R	M22 X 1.0-6g 0.100R		
E	17	1.1875-.1P-.3L-TS-2A	1.764 1.740	44.8 44.2	1.642 1.610	41.7 40.9	1.191 1.181	30.3 30.0	M32 X 1.0-6g 0.100R*	M25 X 1.0-6g 0.100R		
F	19	1.2500-.1P-.3L-TS-2A	1.949 1.925	49.5 48.9	1.827 1.795	46.4 45.6	1.316 1.306	33.4 33.2	M35 X 1.0-6g 0.100R	M28 X 1.0-6g 0.100R	.154 .114	3.9 2.9
G	21	1.3750-.1P-.3L-TS-2A	2.075 2.051	52.7 52.1	1.953 1.921	49.6 48.8	1.441 1.431	36.6 36.3	M38 X 1.0-6g 0.100R	M31 X 1.0-6g 0.100R		
H	23	1.5000-.1P-.3L-TS-2A	2.201 2.177	55.9 55.3	2.079 2.047	52.8 52.0	1.566 1.556	39.8 39.5	M41 X 1.0-6g 0.100R	M34 X 1.0-6g 0.100R		
J	25	1.6250-.1P-.3L-TS-2A	2.323 2.299	59.0 58.4	2.205 2.173	56.0 55.2	1.691 1.681	43.0 42.7	M44 X 1.0-6g 0.100R	M37 X 1.0-6g 0.100R		
* Modified major diameter 1.252 - 1.257												

* Modified major diameter 1.252 - 1.257

NOTES

Jam nut for composite receptacle connector is Al Alloy and plated same as connector shell.
Insert arrangement IAW ARINC 801
Yellow color band indicates fiber optic connector type, Blue band indicates rear-release retention system. Location of blue and yellow bands manufacturer's option.

ARINC 801 Type 1

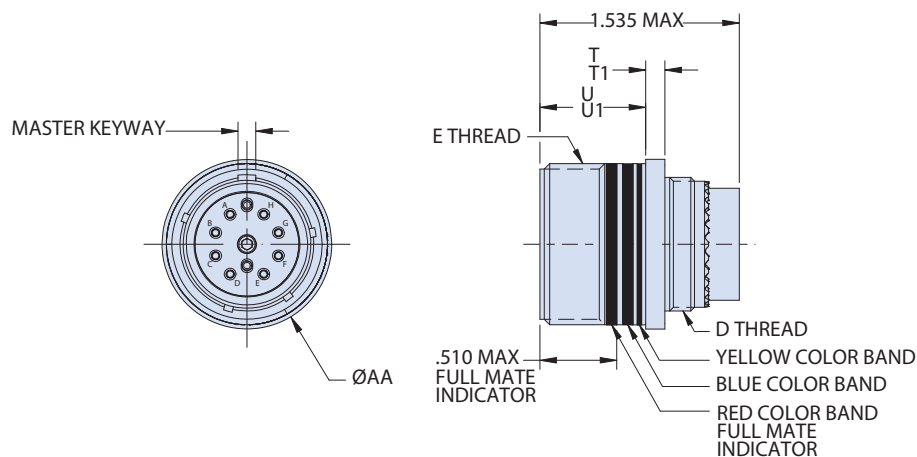
Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

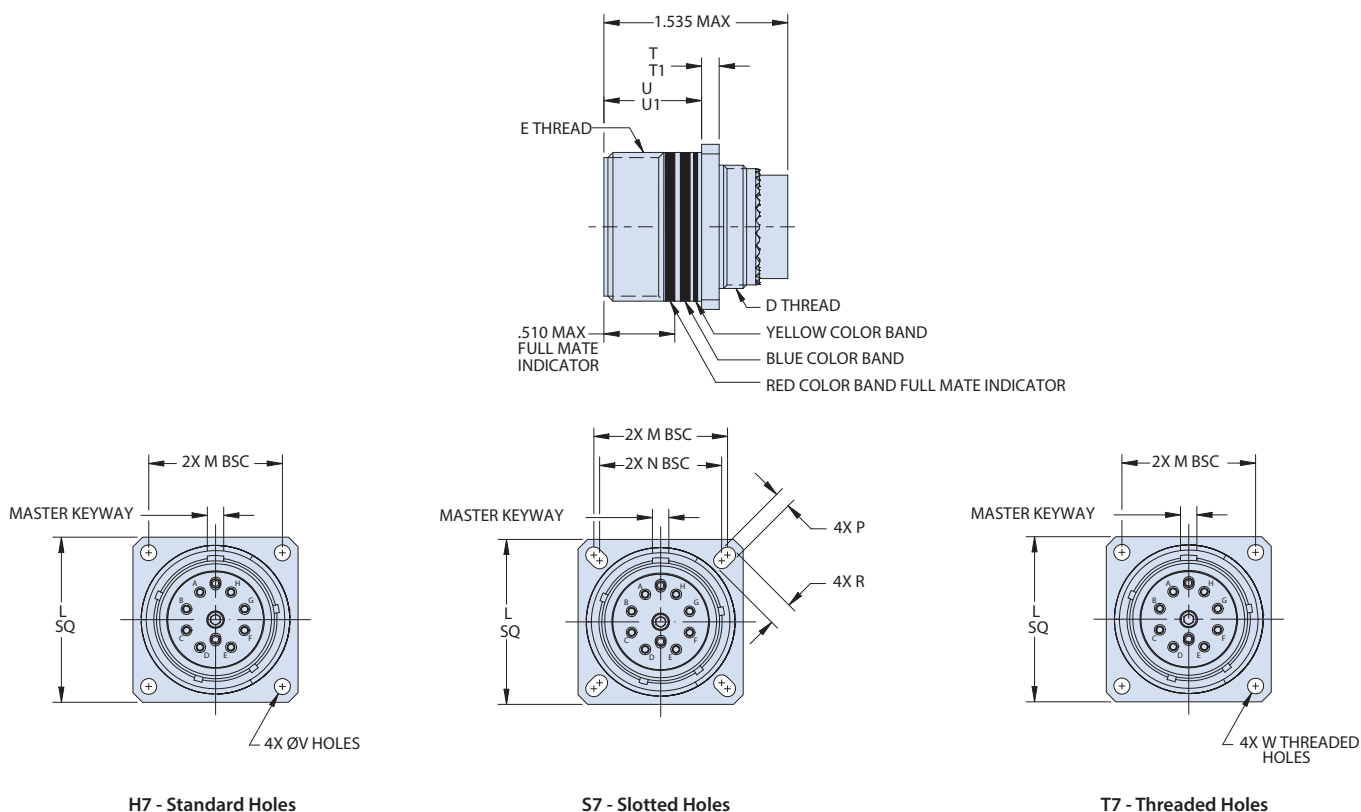
180-159 Receptacles



IN-LINE RECEPTACLE (05)



WALL MOUNT RECEPTACLES (H7, S7, AND T7)



NOTES

Insert arrangement IAW ARINC 801
 Yellow color band indicates fiber optic connector type, Blue band indicates rear-release retention system.
 Location of blue and yellow bands manufacturer's option.

ARINC 801 Type 1

Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

180-159 Receptacles



Table IV: Wall Mount and In-Line Receptacle Dimensions

Shell Code	Shell Size	A Thread	L Sq		M Bsc		T		U		D Thread	Ø V Holes		Ø AA	
			In.	mm.	In.	mm.	In.	mm.	In.	mm.		In.	mm.	In.	mm.
B	11	.7500-.1P-.3L-TS-2A	1.043 1.019	26.5 25.9	.812	20.6	.098 .083	2.5 2.1	.820 .771	20.8 19.6	M15 X 1.0-6g 0.100R	.136 .120	3.5 3.0	.840	21.3
C	13	.8750-.1P-.3L-TS-2A	1.138 1.114	28.9 28.3	.906	23.0					M18 X 1.0-6g 0.100R			.963	24.5
D	15	1.0000-.1P-.3L-TS-2A	1.232 1.208	31.3 30.7	.969	24.6					M22 X 1.0-6g 0.100R			1.090	27.7
E	17	1.1875-.1P-.3L-TS-2A	1.323 1.299	33.6 33.0	1.062	27.0					M25 X 1.0-6g 0.100R			1.275	32.4
F	19	1.2500-.1P-.3L-TS-2A	1.449 1.425	36.8 36.2	1.156	29.4					M28 X 1.0-6g 0.100R			1.337	34.0
G	21	1.3750-.1P-.3L-TS-2A	1.575 1.551	40.0 39.4	1.250	31.8					M31 X 1.0-6g 0.100R			1.463	37.2
H	23	1.5000-.1P-.3L-TS-2A	1.701 1.677	43.2 42.6	1.375	34.9	.126 .083	3.2 2.1	.790 .741	20.1 18.8	M34 X 1.0-6g 0.100R	.162 .146	4.1 3.7	1.587	40.3
J	25	1.6250-.1P-.3L-TS-2A	1.823 1.799	46.3 45.7	1.500	38.1					M37 X 1.0-6g 0.100R			1.713	43.5

Dimensions for Composite Receptacles

Shell Code	Shell Size	T1		U1	
		In.	mm.	In.	mm.
B	11	.144 .083	3.7 2.1	.823 .768	20.9 19.5
C	13				
D	15				
E	17				
F	19				
G	21				
H	23	.171	4.3	.791	20.1
J	25	.083	2.1	.736	18.7

Dimensions for Slotted Hole Receptacles

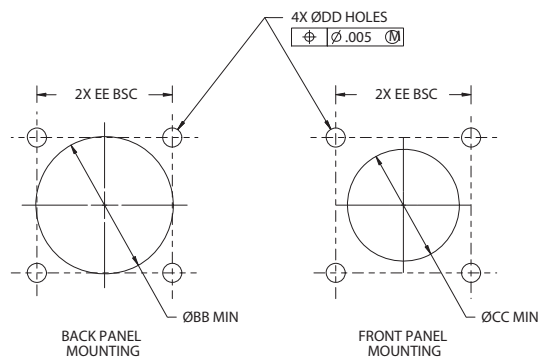
Shell Code	Shell Size	N Bsc (front panel mount)		P		R	
		In.	mm.	In.	mm.	In.	mm.
B	11	0.719	18.3	0.136 0.120	3.5 3.0	.202	5.1
C	13	0.812	20.6			.186	4.7
D	15	0.906	23.0			.181	4.6
E	17	0.969	24.6			.165	4.2
F	19	1.062	27.0			.202	5.1
G	21	1.156	29.4			.186	4.7
H	23	1.250	31.8	0.162 0.146	4.1 3.7	.250	6.4
J	25	1.375	34.9			.234	5.9

Dimension for Threaded Hole Receptacles

Shell Code	Shell Size	W
B	11	.112-40 UNC-2B
C	13	
D	15	
E	17	
F	19	
G	21	
H	23	.138-32 UNC-2B
J	25	

Table V: Wall-Mount Receptacle Cutout

Shell Code	Shell Size	Ø BB Min		Ø CC Min		Ø DD Holes		EE Bsc	
		In.	mm.	In.	mm.	In.	mm.	In.	mm.
B	11	.796	20.2	.625	15.9	.133 .123	3.4 3.1	.812	20.6
C	13	.922	23.4	.750	19.1			.906	23.0
D	15	1.047	26.6	.906	23.0			.969	24.6
E	17	1.219	31.0	1.016	25.8			1.062	27.0
F	19	1.297	32.9	1.141	29.0			1.156	29.4
G	21	1.422	36.1	1.266	32.2			1.250	31.8
H	23	1.547	39.3	1.375	34.9	.159 .149	4.0 3.8	1.375	34.9
J	25	1.672	42.5	1.484	37.7	.155 .145	3.9 3.7	1.500	38.1



ARINC 801 Type 1

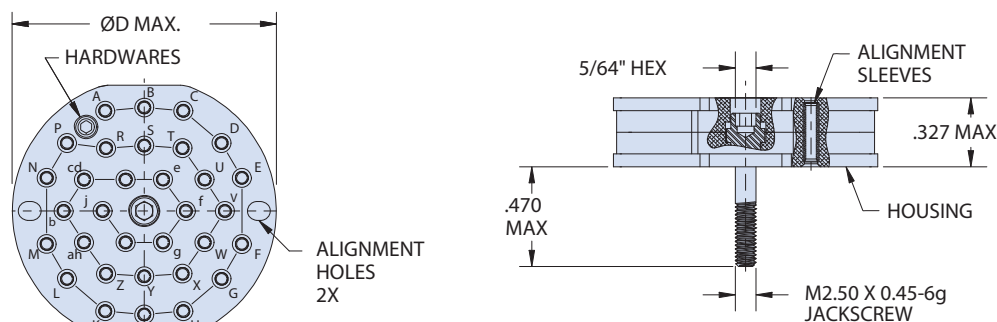
Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

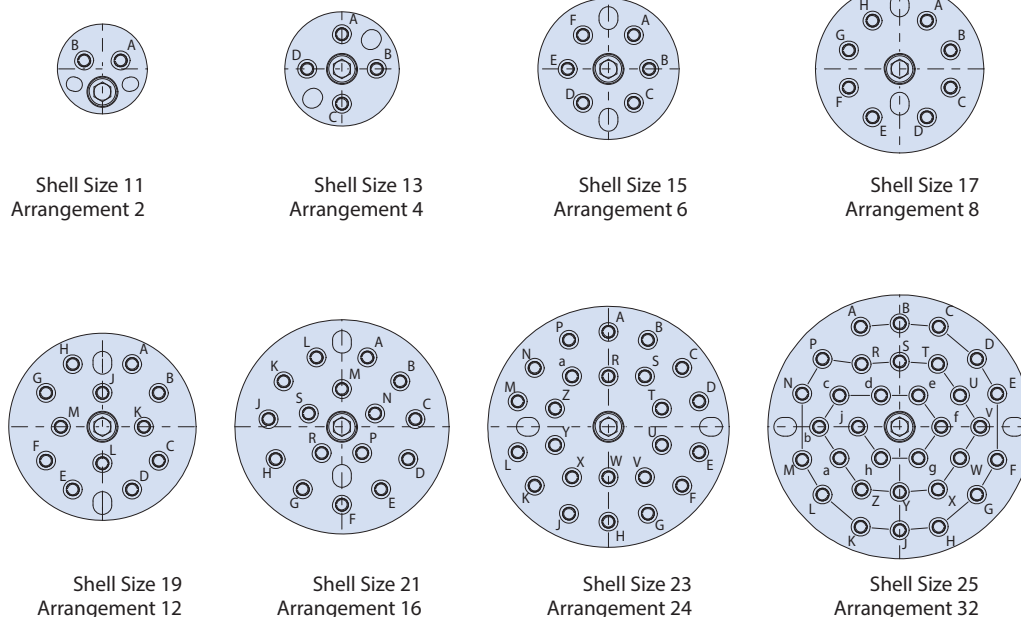
180-159 Alignment Sleeve Retainer



How To Order		
Sample Part Number	180-159ASR	-25-32
Fiber Optic connector	Alignment Sleeve Retainer for 180-159 plug connector	
Shell Size - Insert Arrangement	See Figure I	



**Figure 1: Insert Arrangements
ASR Face Shown**



NOTES

Housing: Al alloy/chem film or Al alloy/anodize - mfr's option
 Misc hardware: stainless steel/passivate
 Alignment sleeve: zirconia ceramic
 Alignment sleeve retainer is designed to meet or exceed all mechanical and performance requirements of ARINC 801 specification.
 Ceramic alignment sleeve replacements may be purchased separately (P/N 181-056-S)

ARINC 801 Type 1 Fiber Optic Connectors and Termini

MIL-DTL-38999 SERIES III TYPE

181-076 Genderless Termini



GENDERLESS FIBER OPTIC TERMINI FOR ARINC 801 CONNECTORS, KEYED, REAR RELEASE



How To Order				
Sample Part Number	181-076	-	P	-126
Fiber Optic termini	Genderless terminus for ARINC 801 connector			
Cable Jacket Diameter	See Table I			
Cable Structure	P = Pull-Proof (loose structure cable) N = Non-Pull-Proof (tight structure cable or 900 micron buffer)			
Assembly Dash Number	See Table II			

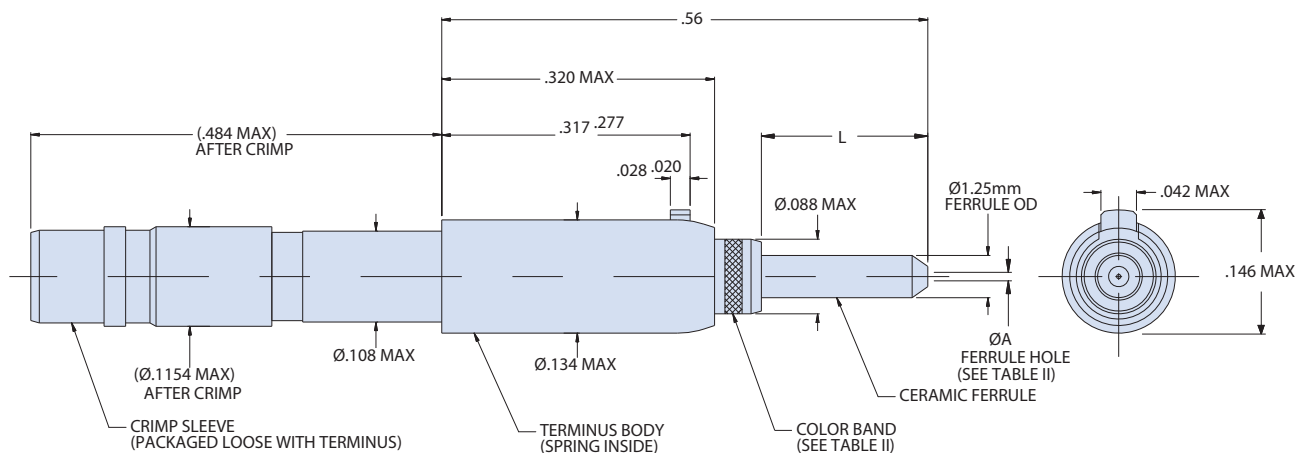


Table I: Cable Jacket Diameter	
Dash No.	Cable Jacket Diameter
A	900 micron buffer only
-	2.0/1.7mm

Table II: Ceramic Ferrule						
Dash No.	Ø A (microns)	Typ Fiber Type	Typ Fiber Size (microns) Core/Cladding	Ferrule Polish Type	L Inches	Color Band
-1255	125.5	Singlemode	9/125	PC	.196/.192	Blue
-1255A	125.5	Singlemode	9/125	APC	.200/.196	Green
-126S	126.0	Singlemode	9/125	PC	.196/.192	Blue
-126SA	126.0	Singlemode	9/125	APC	.200/.196	Green
-126	126.0	Multimode	50/125, 62.5/125	PC	.196/.192	None

NOTES

Material and Finish

- Ferrule: Zirconia Ceramic
- Terminus Bodies: Brass Alloy/Nickel
- Crimp Sleeve: Brass Alloy/Nickel
- Spring: Stainless Steel/Passivate

Crimp sleeve is packaged loose with terminus assembly. Spares may be ordered separately, consult factory.

Termini for 900 micron buffer are not provided with crimp sleeves