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## NFI UK Harsh Environment Fibre Optic Connectors

NFI UK harsh environment connectors were initially designed for offshore and petrochemical site use. They are manufactured from 316 stainless steel and are of very rugged construction. They can be used for multi or single mode fibre and are supplied factory pre-terminated.

Typical uses are:-

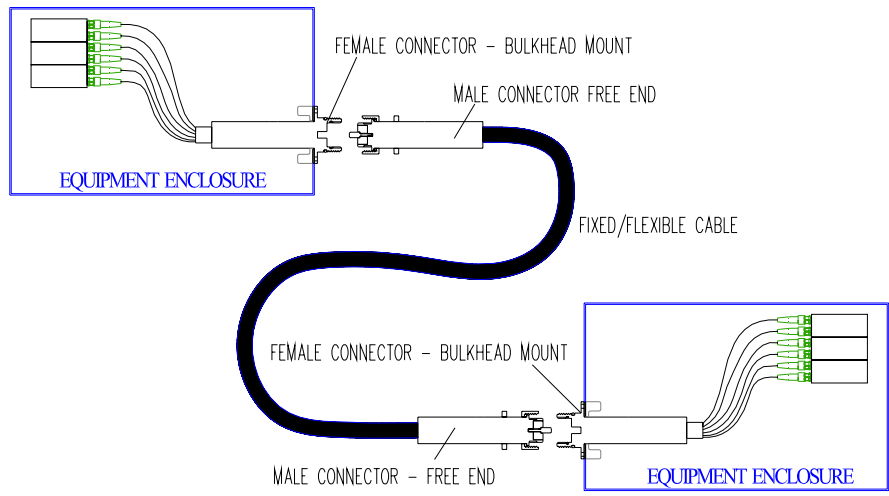
- Ship to Shore communications as used on LNG terminals and tankers
- Interconnection between offshore platforms/jack-ups
- FPSO Turrets
- Chemical sites exposed to aggressive/corrosive chemicals
- Nuclear sites
- Field deployable application

Connectors are available as either 6 or 12 fibre configuration. The female version can be supplied as either flange mount or free end connector. Male connectors are normally supplied as free end only.

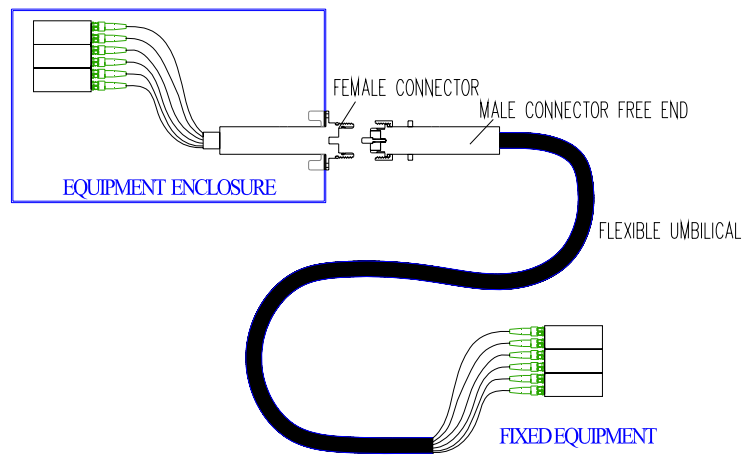
Connectors are terminated to any length required up to a normal maximum of 1000m. Extra length can be supplied on request.

Harsh environment range - Options						
Number of channels	Fibre Type		Mounting Type		Terminated on to cable	
	Single mode	Multi mode	Free end	Bulkhead mount	Pigtail	Ruggedised cable
6 way male	✓	✓	✓	-	✓	✓
6 way female	✓	✓	✓	✓	✓	✓
12 way male	✓	✓	✓	-	✓	✓
12 way female	✓	✓	✓	✓	✓	✓

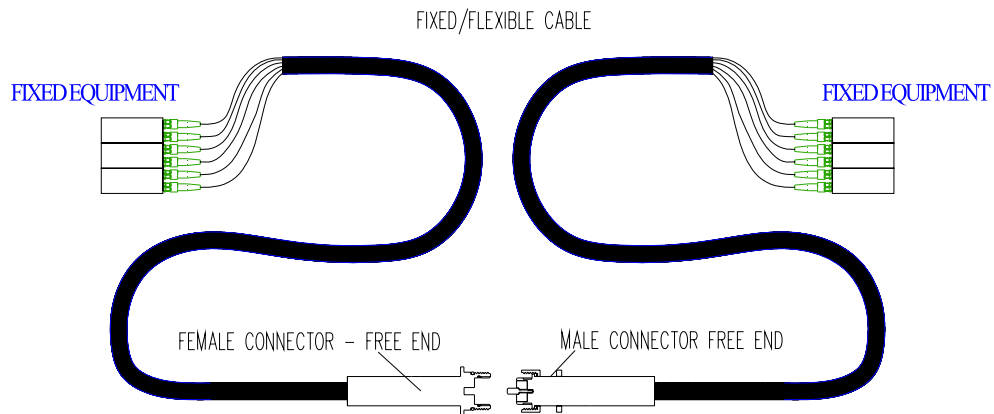
Possible Configuration: 1 Temporary umbilical or removable link – ie jack up to platform connecting bridge.



Configuration: 2 Removable connection at one end eg LNG Ship to Shore or Turret



Configuration: 3 Two free ends connected at any location ie field deployable



## Male Fibre Optic Connector

The connector utilises a flexible armoured fire resistant cable, terminated in the NFI UK harsh environment 6 or 12 way Fibre Optic Connector. The remote end can also be connected with an identical connector or single ST or FC connectors.

The connector is fitted with a rugged cable retention fixing which is manufactured specifically to fit on to both the central strength member and armour of the cable. The unit is resin filled after assembly to provide additional impact resistance to the fibres. Each connector is supplied with a rubber impact cap, which also protects against shock damage.

All flexible umbilical cables and connectors undergo a drop test as well as the normal insertion loss tests prior to despatch.



*Image shows free end male 6 way connector*

## Specification

<b>Material: Body</b>	316 Stainless Steel
<b>Material: Sleeves</b>	Phosphor Bronze
<b>Material: Protection Cap</b>	Naval Bronze with Hard Rubber impact cap
<b>Optical coupling method</b>	Full ceramic ferrule FC single mode type
<b>Signal arrangement</b>	Ferrule no: 1 – 6           As Required Ferrule no: 1 - 12        As Required
<b>Protection</b>	Mounted within IP56 enclosure with hydraulic “0” ring seal on cap
<b>Connection loss</b>	<1dB insertion loss
<b>Tensile strength</b>	>1000N
<b>Certification</b>	Vibration                   EN61300 - 2.1    Test House Mating Durability        EN61300 - 2.2    TUV Cable Retention           EN61300 - 2.4    Certifying EN61300 - 3.1    authority DNV

## Female Fibre Optic Connector

These connectors are 6 or 12 way and are panel mounted with a solid 316 stainless supporting securing ring to the rear, mounted inside the enclosure. The flange includes an internal and external rubber gasket for complete water tight sealing. The connector is normally terminated in ruggedized tails with ST or FC connectors as required. Tails can be to any required length.

The connector body is resin filled after assembly to provide additional impact/vibration resistance to the fibres. Each connector is supplied with a 316 Stainless Steel sealing cap.

All flexible umbilical cables and connectors undergo an impact as well as the normal insertion loss tests prior to despatch.



*Image shows bulkhead mount female 6 way connector*

## Specification

<b>Material: Body</b>	316 Stainless Steel
<b>Material: Sleeves</b>	Phosphor Bronze
<b>Material: Protection Cap</b>	316 Stainless Steel
<b>Optical coupling method</b>	Full ceramic ferrule FC single mode type
<b>Signal arrangement</b>	Ferrule no: 1-6                      As Required
	Ferrule no: 1-12                     As Required
<b>Protection</b>	Mounted within IP56 enclosure with hydraulic "O" ring seal on cap
<b>Connection loss</b>	<1dB insertion loss
<b>Tensile strength</b>	>1000N
<b>Certification</b>	Vibration                              EN61300 - 2.1      Test House
	Mating Durability                  EN61300 - 2.2      TUV
	Cable Retention                     EN61300 - 2.4      Certifying
	EN61300 - 3.1                        authority DNV

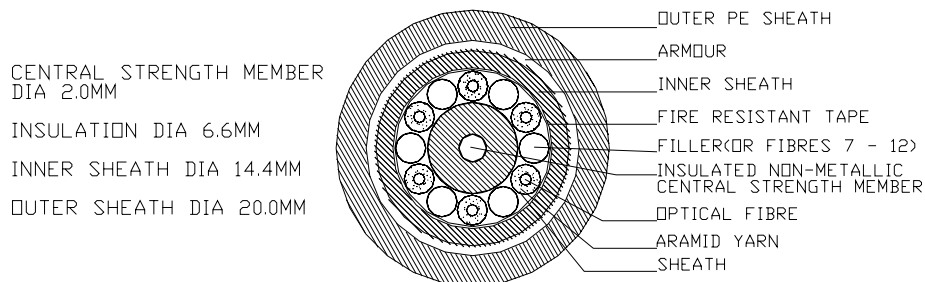
## Fibre Optic Cable - Optical Characteristics

### MULTIMODE

<b>Attenuation</b>	less than 2.8 dB / km at 850 nm
<b>Bandwidth</b>	greater than 200 MHz.km at 850 nm
<b>Minimum bend radius</b>	150 mm
<b>Tension strength</b>	400 kg
<b>Overall diameter</b>	20 mm
<b>Transmission band</b>	200 MHz.km
<b>Weight</b>	450 kg/km
<b>Core Diameter</b>	50/125µm
<b>Marking</b>	NFI FIRE RESISTANT 6 FIBRE 50/125 MICRON CABLE DO NOT CUT + length marking
<b>Certification</b>	Tested to IEC 331 modified for optic cable. ABS Certificate no P1363100

### SINGLEMODE

<b>Attenuation</b>	≤0.36 dB / km at 1310nm ≤0.23 dB / km at 1550nm
<b>Optical characteristics</b>	Standard SM fibre - See fibre data sheet
<b>Minimum bend radius</b>	150 mm
<b>Tension strength</b>	400 kg
<b>Overall diameter</b>	20 mm
<b>Weight</b>	450 kg/km
<b>Core Diameter</b>	9/125µm
<b>Marking</b>	NFI FIRE RESISTANT 6/12 FIBRE 9/125 MICRON CABLE DO NOT CUT + length marking
<b>Certification</b>	Tested to IEC 331 modified for optic cable. ABS Certificate no P1363100



*Illustration shows a 6 fibre cable with 6no fillers. 12 fibre version is of identical construction but fillers are replaced with fibres.*