

# Table of Contents

This interactive document enables easy access to the information you want. Click on a section in the list below to iump to that page.

Connectors					3
Adapters					5
Bulkhead Feedthrough					7
Fiber Optic Cable, Patc	h Cord, a	and Pi	gtail Asse	emblies	10
Dust Caps					12
Fiber Optic Extreme					14





Adapters

Bulkhead Feedthrough

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

**Dust Caps** 

Fiber Optic Extreme

## Connectors

The FC connectors use a threaded position keyed coupling connection while the ST connectors feature a bayonet twist-lock (j-slot) connection. These connections, combined with the precision-machined zirconia ferrule/alignment sleeve, ensure perfectly reproducible termini alignment every time. When used with an FC adapter, ST adapter, or Permanent Bulkhead Feedthrough (PBF) respectively, the result is a hermetically sealed connection protected from wet environments and particulates that can irreversibly degrade optical fiber.

The DRY™ HP Series is intended for use in harsh environments where the assemblies are likely to be submerged in water or subjected to rain, ice, high humidity, or temperatures from -55°C to 85°C (-67°F to 185°F). All FC and ST connectors have passed stringent immersion and heat/humidity tests with minimal light loss.

These connections, combined with the precision-machined zirconia ferrule/alignment sleeve, ensure perfectly reproducible termini alignment every time.

#### **Features and Benefits**

#### Compatibility

- Universal threaded position keyed coupling works with single- and multi-mode fibers (FC)
- Universal bayonet twist-lock connection (ST)
- Connector kit is supplied without fiber. Assembly and termination, including polishing and crimping to cable jacket, to be performed by customer.

#### **Environmentally Sealed**

- · No signal degradation
- Effective sealing action eliminates damage from moisture or particulate

#### **Temperature- and Humidity-Resistant**

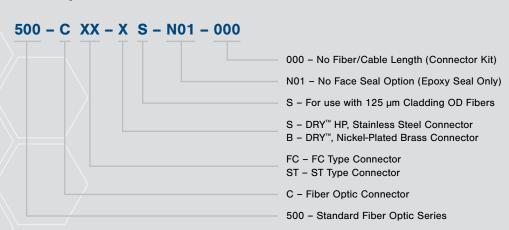
- Clarity of signal
- Tested from -55°C to 85°C (-67°F to 185°F) and subjected to stringent heat/humidity with 0.5 dB maximum insertion loss

## Waterproof

• No water penetration to affect signal

- Ferrules are precision-machined zirconia
- · Boot fits 3mm OD optical cable
- · Made from high-quality, corrosion-resistant materials
- FC DRY<sup>™</sup> is nickel-plated brass; FC-DRY<sup>™</sup> HP is 316 (ruggedized) series stainless steel
- Typical light loss is less than 0.5 dB

## **Fiber Optic Connector Kit Part Number**



#### **Connectors**

Adapters

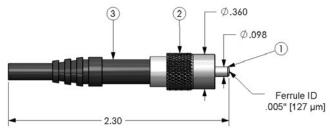
**Bulkhead Feedthrough** 

Fiber Optic Cable, Patch Cord and Pigtail **Assemblies** 

**Dust Caps** 

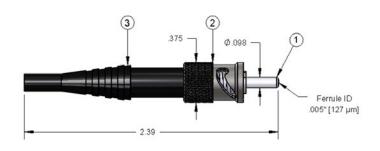
Fiber Optic Extreme

#### FC DRY™ and FC DRY™ HP Series Connector



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## ST DRY™ and ST DRY™ HP Series Connector



ITEM NO.	DESCRIPTION
1	Ferrule
2	FC Connector Body
3	Strain Relief Boot

ITEM NO.	DESCRIPTION
1	Ferrule
2	ST Connector Body
3	Strain Relief Boot

CONNECTOR KIT PART NUMBER	DESCRIPTION
500-CFC-SS-N01-000	FC DRY™ HP Connector with stainless steel body
500-CFC-BS-N01-000	FC DRY™ Connector with nickel plated brass body
500-CST-SS-N01-000	ST DRY™ HP Connector with stainless steel body
500-CST-BS-N01-000	ST DRY™ Connector with nickel plated brass body



#### **Adapters**

Bulkhead Feedthrough

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

**Dust Caps** 

Fiber Optic Extreme

## Adapters

The FC adapters utilize a threaded coupling while the ST adapters feature a j-slot coupling; both adapter mate types are durable, watertight, and environmentally sealed. The keyed index and j-slot connections incorporated in the FC and ST Series respectively provide reproducible termini alignment every time.

The DRY™ Series is fabricated from nickel-plated brass and the DRY™ HP Series is fabricated from 316 series stainless steel. The ferrules and alignment sleeves are made of precision-machined zirconia. FC and ST adapters are available with or without face seals. FC adapters with face seals can be used as feedthroughs for bulkheads from .100 in. to .125 in. (2.54 mm to 3.17 mm) thick. ST adapters can be used as feedthroughs for bulkheads from .100 in. to .225 in. (2.54 mm to 5.71 mm) thick. When adapters are used as a feedthrough, one side must remain connected to maintain seal integrity.

The FC and ST adapters are durable, watertight, and environmentally sealed.

#### **Features and Benefits**

## Compatibility

- Universal threaded coupling (FC)
- Universal bayonet twist-lock (j-slot) connection (ST)
- Available with or without a face seal
- · Works with single mode and multi-mode fibers

## **Environmentally Sealed (when mated with GT connector)**

- No signal degradation
- Effective sealing action when mated with GT connector; eliminates damage from moisture or particulate
- Tested up to 500 mate/de-mate cycles

# Temperature- and Humidity-Resistant (when mated with GT connector)

- · Clarity of signal when mated with GT connector
- Tested from -55°C to 85°C (-67°F to 185°F) and subjected to stringent heat/humidity with 0.5 dB maximum insertion loss when connected

#### Waterproof

 No water penetration to affect signal when mated with GT connector

- Ferrule alignment sleeves are precision-machined zirconia
- Made from high-quality, corrosion-resistant materials
- DRY<sup>™</sup> Series is nickel-plated brass; DRY<sup>™</sup> HP Series is 316 (ruggedized) series stainless steel

## **Fiber Optic Adapter Part Number**



000 - No Fiber/Cable Length

01 - Pressure Rating 1000 psi (when mated with GT connector)

N - No Face Seal

B - With Face Seal

S - No Fiber

S - DRY™ HP, Stainless Steel Adapter

B - DRY<sup>™</sup>, Nickel Plated Brass Adapter

FC - FC Type Adapter

ST - ST Type Adapter

A - Fiber Optic Adapter

500 - Standard Fiber Optic Series

#### Connectors

#### **Adapters**

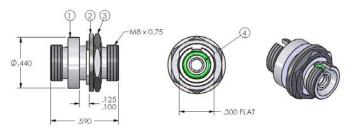
**Bulkhead Feedthrough** 

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

**Dust Caps** 

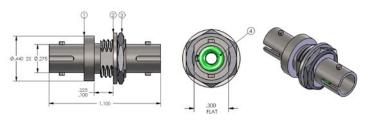
Fiber Optic Extreme

## FC DRY™ and FC DRY™ HP Series Adapter



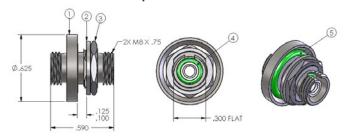
ITEM NO.	DESCRIPTION
1	FC Adapter Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring

#### ST DRY™ and ST DRY™ HP Series Connector



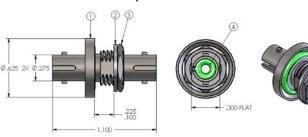
ITEM NO.	DESCRIPTION
1	ST Adapter Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring

#### FC DRY™ HP Series Adapter with Face Seal



ITEM NO.	DESCRIPTION
1	FC Adapter Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring

#### ST DRY™ HP Series Adapter with Face Seal



ITEM NO.	DESCRIPTION
1	ST Adapter Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring
5	O-Ring

CONNECTOR KIT PART NUMBER	DESCRIPTION
500-AFC-SS-N01-000	FC DRY™ HP Adapter with stainless steel body
500-AFC-BS-N01-000	FC DRY™ Adapter with nickel plated brass body
500-AST-SS-N01-000	ST DRY™ HP Adapter with stainless steel body
500-AST-BS-N01-000	ST DRY™ Adapter with nickel plated brass body
500-AFC-SS-B01-000	FC DRY™ HP Adapter with stainless steel body and face seal
500-AFC-BS-B01-000	FC DRY™ Adapter with nickel plated brass body and face seal
500-AST-SS-B01-000	ST DRY™ HP Adapter with stainless steel body and face seal
500-AST-BS-B01-000	ST DRY™ Adapter with nickel plated brass body and face seal



Adapters

## **Bulkhead Feedthrough**

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

**Dust Caps** 

Fiber Optic Extreme

## Bulkhead Feedthrough

Greene Tweed offers a series of FC-DRY™ HP PBF (permanent bulkhead feedthroughs) and ST-DRY™ HP PBF in standard, short, and right-angle configurations to provide optimum feedthrough choices for a variety of applications.

The FC-DRY™ HP hermetic, self-sealed PBF uses a threaded coupling while the ST-DRY™ HP hermetic, self-sealed PBF connectors feature a bayonet twist-lock (j-slot) for durable connections and exceptional performance. The design is based on the hermetic joining of an internal light conduit to zirconia ferrules, ensuring precision alignment to cable connectors. Light loss and back reflection are below 0.5 dB per connector.

All FC-DRY™ HP PBFs and ST-DRY™ HP PBFs are made from 316 series stainless steel with precision-machined zirconia ferrules. Once installed, the PBFs are hermetically sealed with or without connections. Connection and disconnection can be made without degradation of seal integrity.

The design is based on the hermetic joining of an internal light conduit to zirconia ferrules, ensuring precision alignment to cable connectors.

#### **Features and Benefits**

#### Compatibility

- Universal threaded coupling (FC)
- Universal bayonet twist-lock (j-slot) connection (ST)
- · Works with single mode and multi-mode fibers

## **Environmentally Sealed**

- 100% leak tested
- No signal degradation
- Hermeticity seal meets or exceeds 1E-7 cc/sec helium leak rate at 1 atm differential pressure.
- Permanent feedthrough is hermetically sealed with or without connectors
- Effective sealing action eliminates damage from moisture or particulate
- Tested up to 500 mate/de-mate cycles

#### **Temperature- and Humidity-Resistant**

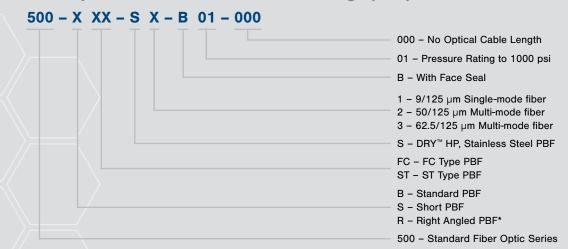
- Clarity of signal
- Tested from -55°C to 85°C (-67°F to 185°F) and subjected to stringent heat/humidity with 0.5 dB maximum insertion loss

### Waterproof

· No water penetration to affect signal

- Ferrules and alignment sleeves are precision-machined zirconia
- 316 stainless steel construction (ruggedized)
- Typical light loss is less than 1.0 dB (0.5 dB/connection)

## Fiber Optic Permanent Bulkhead Feedthrough (PBF) Part Number



<sup>\*</sup>For right-angled PBF (500-RXX) parts, use the optical cable length designator to specify pigtail length.

#### Connectors

#### **Adapters**

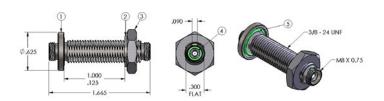
## **Bulkhead Feedthrough**

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

**Dust Caps** 

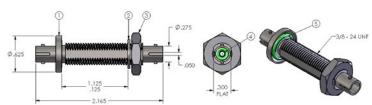
Fiber Optic Extreme

FC DRY™ HP Series Permanent Bulkhead Feedthrough



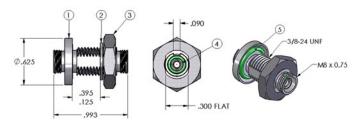
ITEM NO.	DESCRIPTION
1	FC DRY™ HP PBF Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring
5	O-Ring (Face Seal)

## ST DRY™ HP Series Permanent Bulkhead Feedthrough



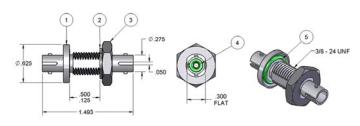
ITEM NO.	DESCRIPTION
1	ST DRY™ HP PBF Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring
5	O-Ring (Face Seal)

## Short FC DRY™ HP Series Permanent Bulkhead Feedthrough



ITEM NO.	DESCRIPTION
1	FC Adapter Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring
5	O-Ring (Face Seal)

## Short ST DRY™ HP Series Permanent Bulkhead Feedthrough



ITEM NO.	DESCRIPTION
1	ST SPBF Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring
5	O-Ring (Face Seal)

## Right Angled FC DRY™ HP Series Permanent Bulkhead Feedthrough



ITEM NO.	DESCRIPTION
1	FC RPBF Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring (Face Seal)
5	Right Angled Boot
6	3MM OD Optical Cable

#### Connectors

Adapters

## **Bulkhead Feedthrough**

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

**Dust Caps** 

Fiber Optic Extreme

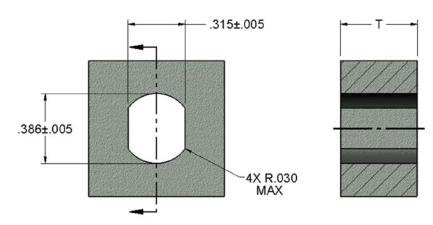
## Right Angled ST DRY™ HP Series Permanent Bulkhead Feedthrough



ITEM NO.	DESCRIPTION
1	FC Adapter Body
2	Shake Proof Washer
3	Hex Nut
4	O-Ring (Face Seal)
5	Right Angled Boot
6	3MM OD Optical Cable

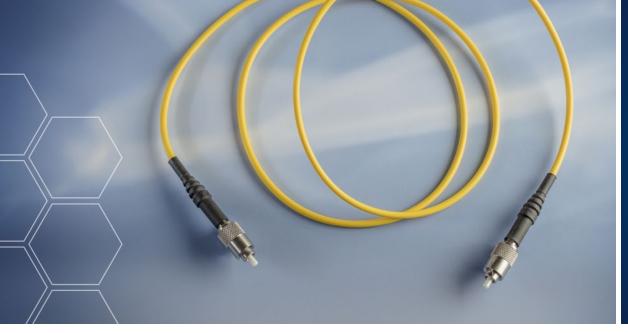
PBF PART NUMBER DESCRIPTION	FIBER MODE (X)			
1 DI TATT NOMBER	TANT NOMBER	9/125	50/125	62.5/125
500-BFC-SX-B01-000	FC DRY™ HP PBF with stainless steel body and face seal			
500-BST-SX-B01-000	ST DRY™ HP PBF with stainless steel body and face seal			
500-SFC-SX-B01-000	FC DRY™ HP short PBF with stainless steel body and face seal	1	2	3
500-SST-SX-B01-000	ST DRY™ HP short PBF with stainless steel body and face seal	'	_	
500-RFC-SX-B01-XXX	FC DRY™ HP right angle PBF with stainless steel body and face seal w/3 mm OD Pigtail Optical Cable			
500-RST-SX-B01-XXX	ST DRY™ HP right angle PBF with stainless steel body and face seal w/ 3mm OD Pigtail Optical Cable			

## **Adapter and PBF Mounting Details**



ADAPTER/PBF	"T" (IN)
FC Adapter	.100/.125
ST Adapter	.100/.225
FC PBF	.125/1.000
ST PBF	.125/1.125
ST PBF	.125/.395
ST PBF	.125/.500
ST PBF	.125/.555
ST PBF	.125/.590

Recommended mounting detail for adapters and permanent bulkhead feedthroughs



Adapters

Bulkhead Feedthrough

Fiber Optic Cable,
Patch Cord and Pigtail
Assemblies

**Dust Caps** 

Fiber Optic Extreme

## Fiber Optic Cable, Patch Cord, and Pigtail Assemblies

Greene Tweed's single-fiber FC-DRY™ and FC-DRY-HP and ST-DRY™ and ST-DRY™-HP optical cables, patch cords, and pigtails are designed for interconnect applications. A 900 µm buffered fiber is surrounded by aramid yarn strength members and a 3 mm OD, flame-retardant PVC jacket. Dielectric strength members offer mechanical durability and the flame-resistant jacket meet requirements of the National Electrical Code® (NEC®) Article 770. FC and ST termination types are available in both single mode and multi-mode fiber.

Greene Tweed's single-fiber FC-Fiber Protec™ and ST-Fiber Protec™ patch cords, and pigtails are designed for interconnect applications. A 900 µm buffered fiber is surrounded by an armored stainless steel jacket to withstand crush and pressure situations while maintaining flexibility and durability in harsh environments or limited space.

Dielectric strength members offer mechanical durability and the flame-resistant jacket meet requirements of the National Electrical Code® (NEC®) Article 770.

#### **Features and Benefits**

#### Compatibility

- Available with Greene Tweed FC and ST terminations
- · Available in single mode and multi-mode

#### **Environmentally Sealed**

- · No signal degradation
- Effective sealing action eliminates damage from moisture or particulate

## **Temperature- and Humidity-Resistant**

- · Clarity of signal
- Tested from -55°C to 85°C (-67°F to 185°F) and subjected to stringent heat/humidity with 0.5 dB maximum insertion loss

#### **Optical Cable PVC**

- Good mechanical and environmental characteristics
- The mechanical and physical characteristics of the PVC uter jacket meet the requirement of relevant standards
- Aramid yarn material ensures good tensile strength
- 900 µm tight buffer helps to protect the fiber

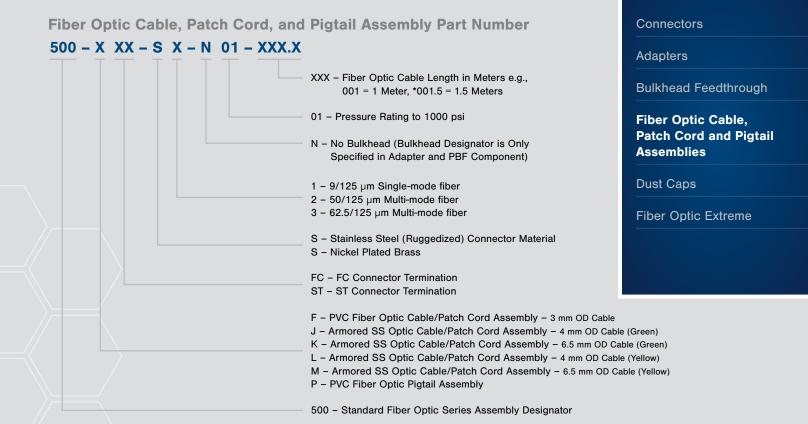
#### **Optical Cable Armored SS**

- · Good mechanical and environmental characteristics
- The mechanical and physical characteristics of the stainless-steel jacket provides durability and strength in harsh environments
- 900 µm tight buffer helps to protect the fiber

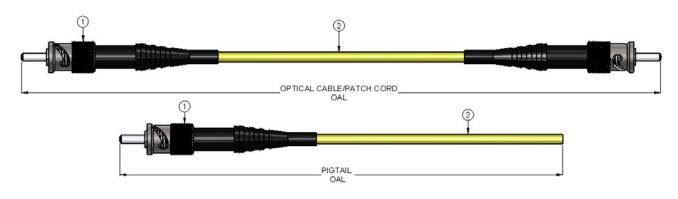
#### Waterproof

No water penetration to affect signal

- Ferrules are precision-machined zirconia
- Made from high-quality, corrosion-resistant materials
- FC-DRY<sup>™</sup> is nickel-plated brass; FC-DRY<sup>™</sup> HP is 316 series stainless steel (ruggedized)
- Typical light loss is less than 0.5 dB per connector



\*additional digit is only required for fractional lengths



Item No.	Description	
1	AT or FC connector assembly	
2	optical cable (single mode or multi-mode)	

PRE PART NUMBER	PBF PART NUMBER DESCRIPTION		IBER MODE	(X)
I DI I AITI NOMBEN			50/125	62.5/125
500-FFC-SX-N01-XXX	FC DRY™ HP Optical Cable/Patch Cord Assembly – 3 mm OD Cable			
500-FST-SX-N01-XXX	ST DRY™ HP Optical Cable/Patch Cord Assembly – 3 mm OD Cable		2	
500-JFC-SX-N01-XXX	FC Armored SS Optic Cable Assembly - 4 mm OD Cable (Green)			
500-JST-SX-N01-XXX	ST Armored SS Optic Cable Assembly - 4 mm OD Cable (Green)			
500-KFC-SX-N01-XXX	FC Armored SS Optic Cable Assembly – 6.5 mm OD Cable (Green)			
500-KST-SX-N01-XXX	ST Armored SS Optic Cable Assembly – 6.5 mm OD Cable (Green)			3
500-LFC-SX-N01-XXX	FC Armored SS Optic Cable Assembly - 4 mm OD Cable (Yellow)	•		3
500-LST-SX-N01-XXX	ST Armored SS Optic Cable Assembly - 4 mm OD Cable (Yellow)			
500-MFC-SX-N01-XXX	FC Armored SS Optic Cable Assembly – 6.5 mm OD Cable (Yellow)			
500-MST-SX-N01-XXX	ST Armored SS Optic Cable Assembly - 6.5 mm OD Cable (Yellow)			
500-PFC-SX-N01-XXX	FC Optical Pigtail Assembly – 3 mm OD Cable			
500-PST-SX-N01-XXX	ST Optical Pigtail Assembly - 3 mm OD Cable			



Adapters

Bulkhead Feedthrough

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

**Dust Caps** 

Fiber Optic Extreme

## **Dust Caps**

The FC dust caps utilize a threaded coupling while the ST dust caps feature a j-slot coupling. Both adapter mate types are durable, watertight, and environmentally sealed to guarantee complete protection from wet environments and particulates. The keyed index and j-slot connections incorporated in the FC and ST Series respectively ensures accurate alignment between termini.

#### **Features and Benefits**

## Compatibility

- Universal threaded coupling (FC)
- Universal bayonet twist-lock (j-slot) connection (ST)

# Environmentally Sealed (when mated with GT adapter or PBF)

 Effective sealing action when mated with GT adapter eliminates damage from moisture or particulates

#### **Temperature- and Humidity-Resistant**

 Tested from -55°C to 85°C (-67°F to 185°F) and subjected to stringent heat/humidity with 0.5 dB maximum insertion loss when connected

#### Waterproof

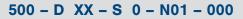
No water penetration

#### **Specifications**

- · Made from high-quality, corrosion-resistant materials
- DRY™ HP Series is 316 (ruggedized) series stainless steel

Both adapter mate types are durable, watertight, and environmentally sealed to guarantee complete protection from wet environments and particulates.

## **Fiber Optic Adapter Part Number**



000 - No Optical Fiber/Cable Length

N01 - No Face Seal Option

0 - No Optical Fiber

S - DRY<sup>™</sup> HP, Stainless Steel

FC - FC Type Adapter

ST - ST Type Adapter

D - Fiber Optic Dust Cap

500 - Standard Fiber Optic Series

Connectors

Adapters

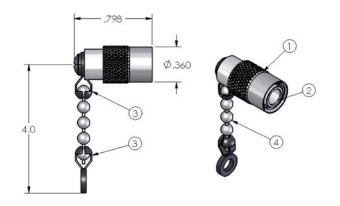
**Bulkhead Feedthrough** 

Fiber Optic Cable, Patch Cord and Pigtail Assemblies

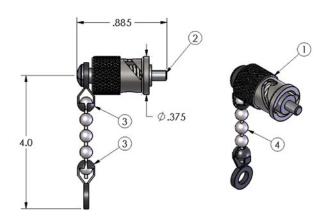
**Dust Caps** 

Fiber Optic Extreme

## FC DRY™ HP Series Dust Cap



## ST DRY™ HP Series Dust Cap



ITEM NO.	DESCRIPTION
1	FC Dust Cap Body
2	FC Plug
3	Coupling
4	Chain

ITEM NO.	DESCRIPTION
1	ST Dust Cap Body
2	ST Ferrule Stem
3	Coupling
4	Chain

DUST CAP PART NUMBER	DESCRIPTION
500-DFC-S0-N01-000	FC DRY™ HP Dust Cap (plug) with stainless steel body
500-DST-S0-N01-000	ST DRY™ HP Dust Cap (plug) with stainless steel body



Adapters

Bulkhead Feedthrough

Fiber Optic Cable, Patch Cord and Pigtail **Assemblies** 

**Dust Caps** 

**Fiber Optic Extreme** 

## Fiber Optics for Data Transmission in Extreme **Application Conditions**

Developed for use in downhole oil drilling operations, Fiber Optic Extreme® - an optical connection system that ensures data transmission when exposed to extreme pressures and extreme temperatures - is capable of withstanding operating pressures of 25,000 psi and temperatures up to 347°F (175°C).

#### **Fiber Optic Extreme Standard Parts**

PART NUMBER	CHANNELS
Rated Pressure: 20000 psi Rated Temperature:	-40°C to 150°C
510-000-3920-00	1
510-000-3920-04	1
510-000-3920-13	4
510-000-3920-14	4
510-000-3920-15	3
510-000-3920-16	4
510-000-3920-17	4
510-000-3920-18	8
510-000-3920-19	16
510-000-3920-20	1
510-000-3920-21	2

PART NUMBER	CHANNELS
Rated Pressure: 10000 psi Rated Temperature: -40°C to 150°C	
510-000-3920-09	3
Rated Pressure: 10000 psi   Rated Temperature: -40°C to 70°C	
510-000-3920	8
510-000-3920-01	12
510-000-3920-02	24
510-000-3920-03	24
510-000-3920-05	1
510-000-3920-06	2
510-000-3920-07	4
510-000-3920-08	24
510-000-3920-10	2
510-000-3920-11	4
510-000-3920-12	3

## Custom

Greene Tweed has been a pioneer in the design of fiber optic connectors for use in harsh environments. In addition to the standard designs in this catalog, we offer custom, non-standard fiber mode, connector, adapter, PBF, and cable assembly configurations designed for your specific application. Please consult with Greene Tweed engineering on your application for further details.

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