



## Rugged Fiber Optic solutions for Railways

The first Railway qualified fiber optic interconnect solutions

**Field proven solution** ■ Standard railway connector shells  
Elio contact used over 10 years

**Ruggedized and reliable** ■ Tested according to railway standards  
following EN50467

**Easy to install and for maintenance** ■ No specific tool needed

**High speed data transmission** ■ High data rate and long distance

## Technical Features

### Mechanical

- Locking system: Reverse bayonet coupling for VGE1  
Screw coupling for 838
- Durability: 100 mating cycles
- Vibration resistance: According to EN 61373 Cat 1b
- Shock: According to EN 61373 Cat 1b
- Coding: by ring orientation for 838

### Environmental

- Temperature range: -40°C to +100°C for connectors
- Dry heat test: 100°C for 96 hours
- Salt spray resistance: 500 hours
- Sealing: IP66 and IP67 (with appropriate backshell)
- Resistance to fluids: Gasoil, mineral oil, acid bath, basic bath, following NFF 61030, oxalic acid
- Damp heat: 21 days, +40°C, 90% relative humidity (NFC 20703)

### Optical

- Multimode contact - Insertion Loss (IL): 0.1dB typical  
< 0.3dB over 95% of the samples as per EN2591-601,  
< 0.7dB maximum on 100% of the samples after tests
- Multimode contact - Return Loss (RL):  
> 21dB before and after tests as per EN2591-605
- Singlemode contact - Insertion Loss (IL): 0.3dB typical  
< 0.5dB over 95% of the samples as per EN2591-601,  
< 0.9dB maximum on 100% of the samples after tests
- Singlemode contact - Return Loss (RL):  
> 55dB typical and > 50dB minimum

### Material

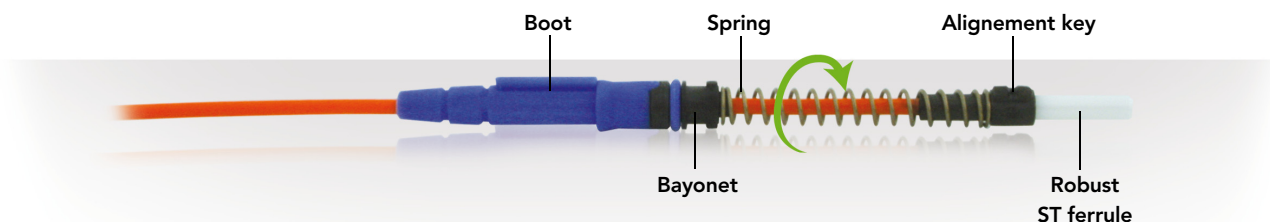
- Shell: Aluminium alloy
- Shell plating: 500 hours salt spray resistant
- Insulator : hard thermoplastic.  
HL3/R22 and HL3/R23 according to EN45545  
I3F1 according to NFF16-101 - 16-102

## ELIO® Optical Contact Technology

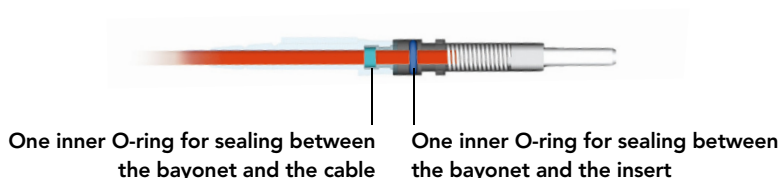
- Standardized EN4531, ARINC801, ABS1379
- Robust spring-loaded butt-joint optical contact using ST style ferrule (diameter 2.5mm)
- Contact size equivalent to a #16 contact
- Compatibility with loose and tight structure cables
- Anti-rotation of the contact for better vibration withstanding and optical performance

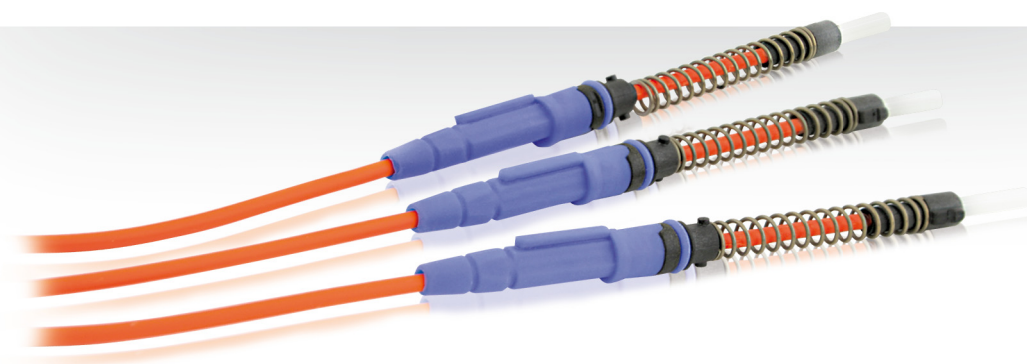
- Boot-grommet for rear sealing and protection of the cable against excessive bending
- High level optical performance even after aging
- Bayonet locking system: no tool needed for mounting/dismounting
- Compatible with singlemode, multimode and POF cable  
E.g. Radox®, Flamex® cable.

### Easy contact insertion with 1/4 turn



### ELIO® contact cut view

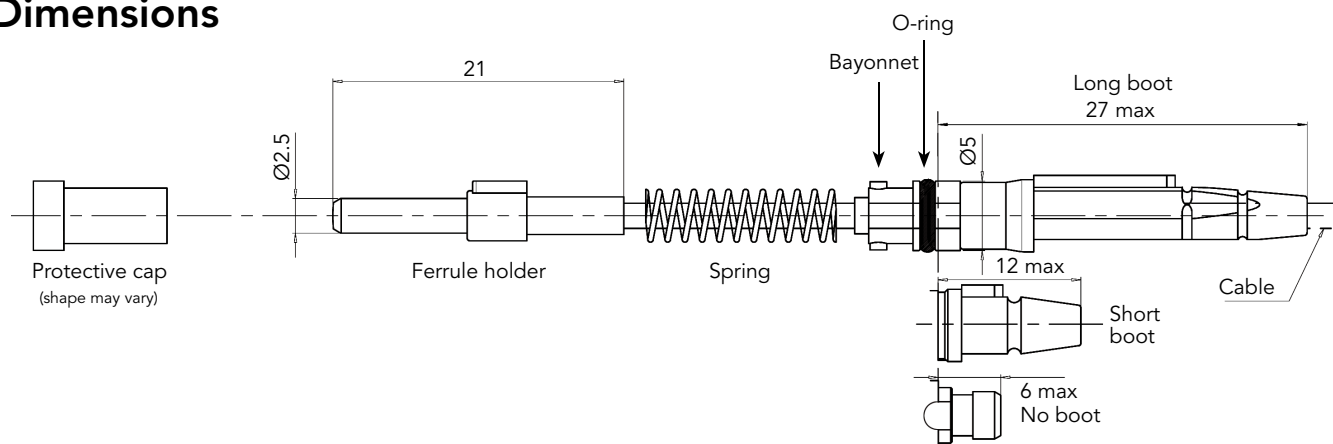




## Contacts ELIO® ordering information

	ELIO	09N	E	L	A
<b>Cable external diameter:</b>					
09N: from 0.8mm to 1.0mm					
18N: from 1.5mm to 1.9mm					
18N: from 1.7mm to 2.1mm					
<b>Fiber type:</b>					
E: 9/125 µm UPC (Singlemode)					
G: 50 or 62,5/125 µm (Multimode)					
D: 100/140 µm					
For POF cable please consult us					
<b>Boot type:</b>					
L: Long boot					
S: Short boot					
N: No boot (non waterproof version only)					
<b>Contact version index</b>					

## Dimensions



## Filler plug for empty cavities

Male filler plug - ELIO® AFPP

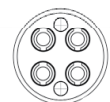
Female filler plug - ELIO® AFPS



Note : all dimensions are in mm

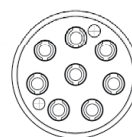


Layout 18-04

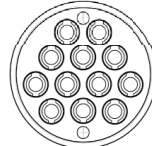


○ Guiding pins

Layout 22-08



Layout 24-12



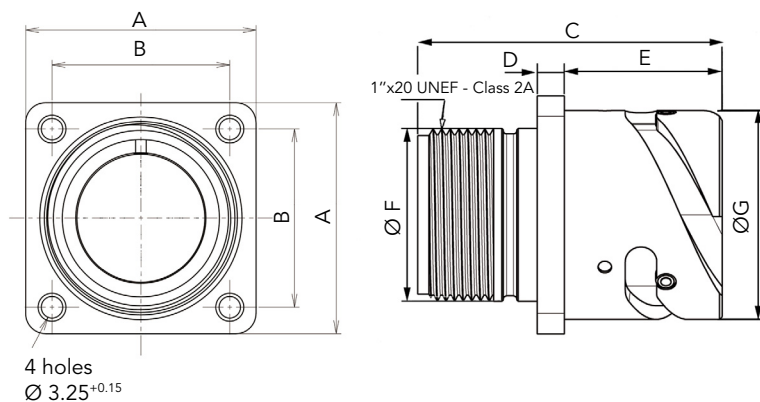
## Receptacle & Plug

Shell size	Part number*	
	Receptacle - Male insert	Plug - Female insert
18	VGE1B18E04GN	VGE1D18E04JN
22	VGE1B22E08GN	VGE1D22E08JN
24	VGE1B24E12GN	VGE1D24E12JN

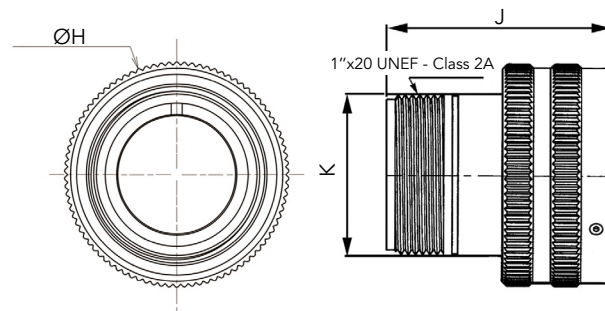
\* Connector delivered without contact

## Dimensions

### Receptacle



### Plug



Shell size	A	B	C max	D	E	ØF max	ØG max	ØH max	J max	K max
18	35.00	27.00	45.50	4.00	23.05	25.50	30.80	37.30	45.60	25.50
22	41.00	31.80	45.50	4.00	23.05	31.90	37.40	44.00	45.60	31.90
24	44.50	34.90	45.50	4.00	23.05	35.20	40.90	48.50	45.60	35.20

Note : all dimensions are in mm



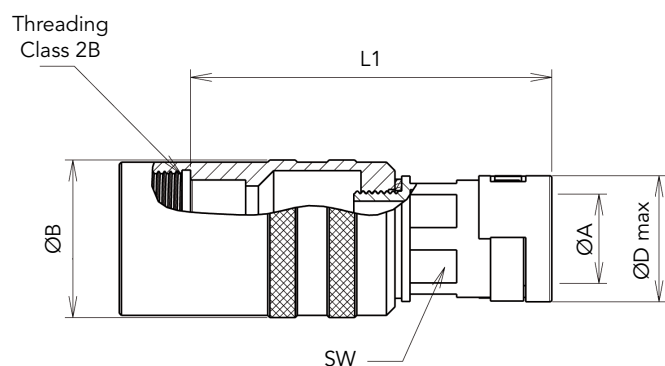
## Backshells

Shell size	Part number*	
	SS straight long version with conduit adaptor	JS straight long version with cable gland
18	VGE1SS180010	VGE1JS180010
22	VGE1SS220010	VGE1JS220010
24	VGE1SS240010	VGE1JS240010

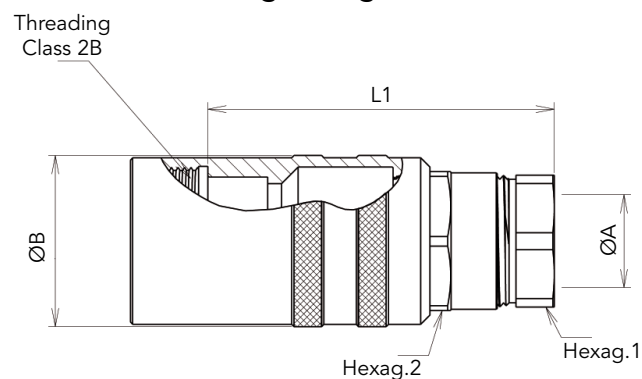
\* for other backshells & adaptors, please consult us

## Dimensions

### SS straight long version



### JS straight long version



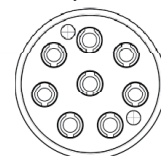
Backshell type	Shell size	ØA	ØB	ØD	SW	L1	Hexag. 1	Hexag.2
SS straight long version	18	PMA NW17	30.0	30.0	26.0	84.1	-	-
	22	PMA NW23	37.0	37.0	32.0	87.1	-	-
	24	PMA NW23	40.0	37.0	32.0	87.1	-	-
JS straight long version	18	7/12	30.0	-	-	71.6	20	22
	22	10/18	37.0	-	-	79.6	28	30
	24	10/18	40.0	-	-	79.6	28	30

Note : all dimensions are in mm





Layout E8



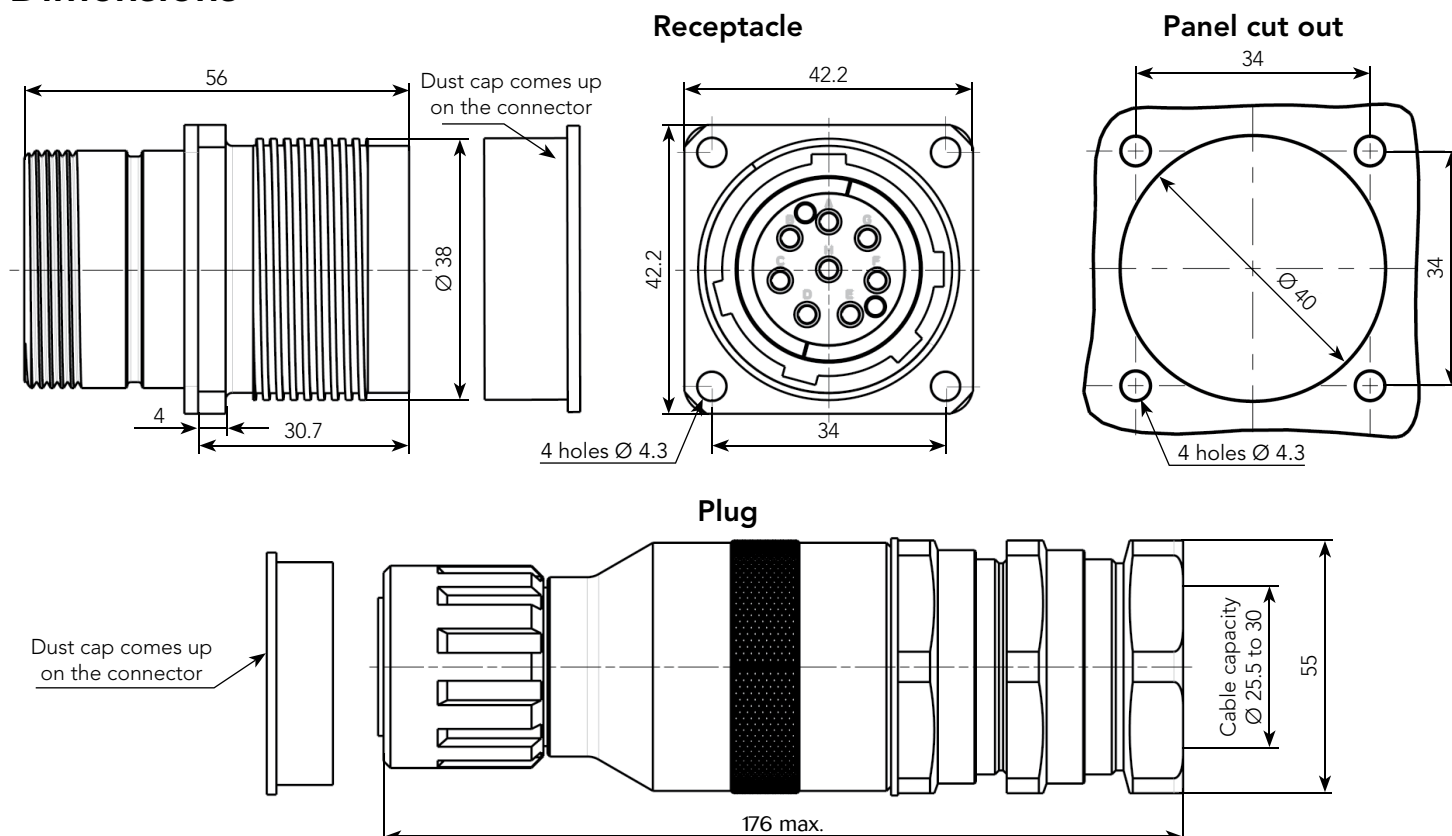
## Receptacle & Plug

Shell size	Part number*	
	Receptacle	Plug with backshell <sup>(1)</sup>
E	8380E1E8E7LM0A	8380F0E8E2LT74BA

\* Connector delivered without contact

(1): This backshell is defined for an intercoach application and cable Ø 25.5 to 30 mm for other backshells, please consult us.

## Dimensions



Note : all dimensions are in mm

## Accessories and Tooling

### Field proven cleaning and inspection tools

SOURIAU and JDSU teamed up to develop a contact end face inspection tool suitable for use with ELIO®/EN4531/ARINC801 technology.

Inspect before you connect.

Proactive inspection and cleaning can prevent poor signal performance and permanent damage to the contact end face.



Termini inspection

Standard cleaning pen for 2.5mm ceramic termini:

- Simple pushing motion to engage tool
- Audible CLICK to alert operator when tool is fully engage
- Dry & large cleaning strand eliminates the need for solvents to be effective
- Contaminates such as alcohol, water, skin oil, vegetable and hand lotion residue as well as graphite and t-shirt lint are lifted from the connector end face.

SOURIAU recommends IBC™ Brand Cleaner M250 from USConec for cleaning the ELIO® termini.



ELIO® Cleaning pen

## Harnessing and Services

While deploying a fiber optic based solution, most of the concerns are focused on the harshest environments.

Inter-vehicle jumpers, highly exposed to dynamic mechanical and environmental constraints, are a perfect example where know-how and experience is key to provide a cost-efficient and sustainable solution.



The dedicated R&D optical team supports your specific needs from pre-project to full industrial release with adapted solutions: Technical and economical analysis with the customer, design and development of optical solution, deployment support (work instruction, field training, of the installation procedure) and robust after sales support.

There is a strong relationship between the optical connector, fiber termination and harness assembly; thanks to its in house fiber optics assembly line, SOURIAU supports you from the design stage to supplying a wide range of fiber optic assemblies.



# SOURIAU

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