Standard

High Speed

Environment & Safety

VGE1/FER1 Series

Railway Connectors

SOURIAU

Connection Technology

VGE1/FER1 Series

Contents

VGE1/FER1

VGE1/FER1 Series

Overview

SOURIAU's railway connector range overview

For outdoor equipments

VGE1 / FER1

Up to 60 contacts
Signal and Quadrax layouts
Tested following NFF61030

838

Up to 61 contacts
Signal, power and Quadrax layouts
Compliant to NFF61030

For indoor equipments

SMS Flame retardant

Up to 36 contacts #16
Up to 220V according to EN50124-1 / OV2PD2
Tested following NFF61030

UT0

Up to 48 contacts #16
Up to 120V according to EN50124-1 / OV3PD2

UTS

Up to 23 contacts #16
Up to 120V according to EN50124-1 / OV3PD3

SOURIAU on the Railway Market

SOURIAU is a recognised worldwide market leader in the design and manufacture of connectors and interconnect systems for severe environments. SOURIAU has developed a dedicated range of ruggedised and reliable connectors for the railway market, fully compliant with railway standards, RoHS, as well as fire and smoke requirements.

For more than 50 years, SOURIAU has become a trusted name by major railway equipment manufacturers, their subcontractors, also signalling and infrastructure companies.
SOURIAU connectors are designed to integrate new functions such as Ethernet network, weight reduction, mixed signal-power in compliance with environmental protection. This offer is the best compromise between technology, safety, reliability and cost.

SOURIAU has been awarded IRIS certification since 2009.

IRIS Certification

✓ Standard contacts for 7 railway ranges
+
✓ Same crimping tools
+
✓ Simplified process
=
Best compromise between technology and cost

✓ Fiber optic
✓
✓ Quadrax technology
=
High speed solutions for real-time information

✓ Lightweight composite material
+
✓ Fiber optic technology
+
✓ High density layouts
=
Weight reduction of equipment

General technical

Mechanical

• Design:
Derivate from MIL-DTL-5015 & VG 95234

• Durability:
500 mating/unmating cycles
An audible " click " and a yellow point indicating end of coupling (VGE1 series only)

• Vibration resistance:
Following NFF 61030, sinusoidal vibration from 10 to 100Hz, acceleration: 2g

• Shock:
Acceleration: 30g Duration: 18 ms Following NFF 61030

• Drop:
Free fall of plug at a height of 0.75m: no mechanical damage Following NFF 61030

Environmental

• ROHS compliant

• Operating temperature:
From -40°C to +100°C

• Dry heat test:
100 ° for 96 hours

• Salt spray resistance:
500 hours

• Damp heat:
21 days, 40°C, 95% relative humidity

• Sealing level:
IP67, 1m deep for 30 minutes max, coupled with appropriate backshell and grommet or accessories

• Dynamic sealing:
IP67 guaranteed when cable is moving

• Fire and smoke:
Insert material: I2F3 following NFF 16101-16102
and UL 94 VO
Seal and grommet material: I3F1 following NFF 16101-16102

• Resistance to fluids:
Gas oil, mineral oil, acid bath, basic bath, following NFF 61030, oxalic acid

characteristics

Material

• Shell:
Aluminum alloy
Conductive plating - 500 hours salt spray resistant

• Insert:
Hard thermoplastic, I2F3 following to NFF 16101-16102 and UL94V0

• Interfacial seal and grommet:
Silicone, I3F1 following NFF 16101-16102

• Contacts:
Machined crimp contacts
PCB contacts

Electrical

• Contacts resistance, following NFF 61030:
Contact #16: 2.5 mΩ max, Contact #12: 1.3 mΩ max
Contact #8: 0.9 mΩ max
Quadrax Contacts #20: ≤ 6 mΩ, ≤ 2 mΩ (cell)

• Contact rating:
Contact #16: 15A, Contact #12: 20A, Contact #8: 30A

• Dielectric resistance:
Contact #16: 2550 Veff, Contact #12: 3250 Veff
Contact #8: 3250 Veff
Quadrax between contacts #20: ≥ 1000V
Quadrax between cell / contacts #20 : ≥ 500V

• Insulation resistance:
≥ 5 000 MΩ (under 500 Vcc)
≥ 4 000 MΩ (under 220 Vcc)
Quadrax: ≥ 3000 MΩ (contacts #20)

• Creepage and clearance:
9 mm mini for layouts using #16 contacts
12 mm mini for layouts using #12 and #8 contacts

• Operating voltage:
220 V following NFF 61030 for layouts #16
500 Vcc following NFF 61030 for layouts #12 and #8

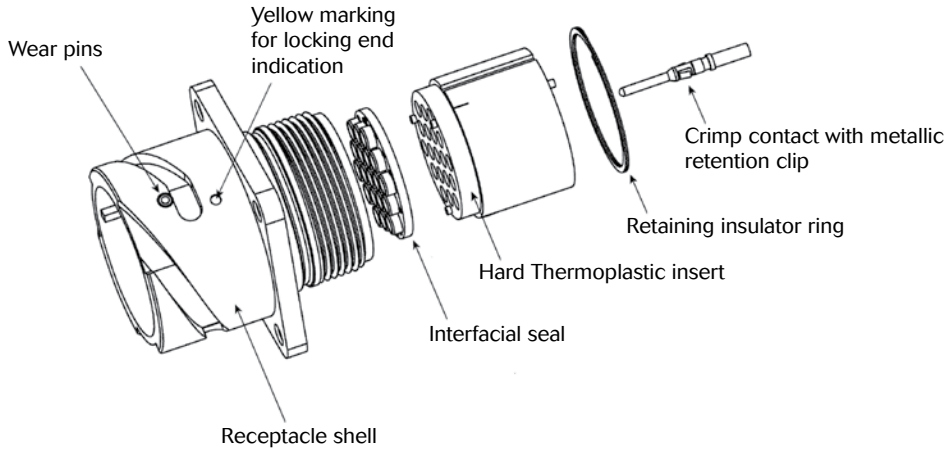
• Shell continuity:
20 mΩ max

• High Speed data Transmission performances:
Standard contact: cat. 5 - 100 Mbps
Quadrax contact: cat. 6 - 1 Gbps

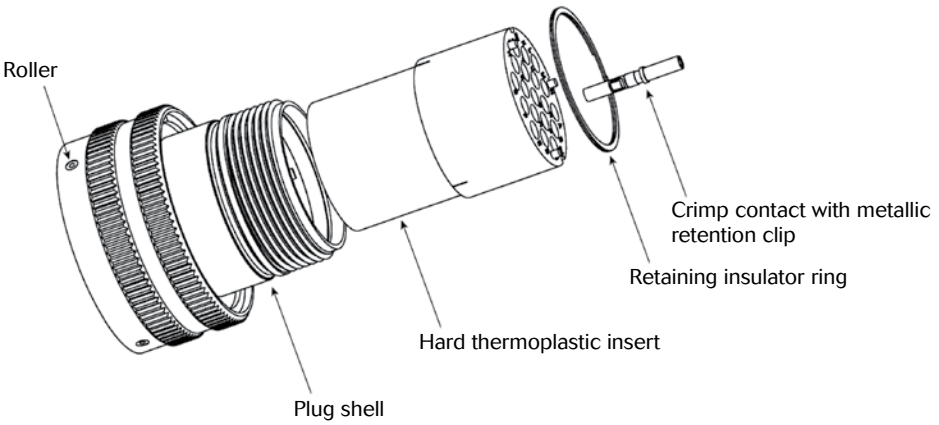
Description

VGE1

Receptacle



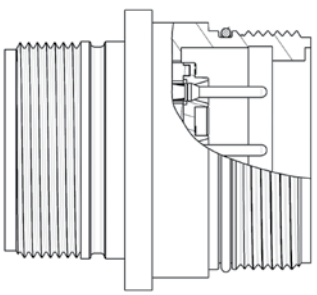
Plug

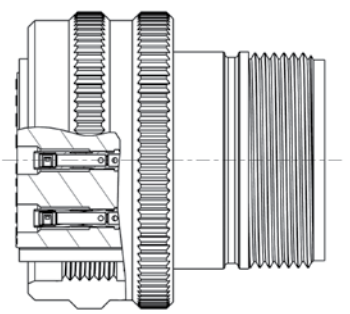


FER1

FER1 is a threaded version of VGE1 available in sizes 18, 22 & 28.

Receptacle





Plug

Layouts overview

Size 18

18-19

✓ ✓
▲ ▲

10 Contacts
Ø1.6 mm (#16)

Quadrax 18A1

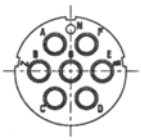
✓ ✓
▲ ▲

4 Contacts
Ø1 mm (#20)

For 18-19 Max. operating voltage: 220 V following NFF61030

Size 20

20-15



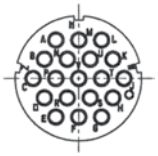
✓

7 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 500 Vcc following NFF61030

Size 22

22-14



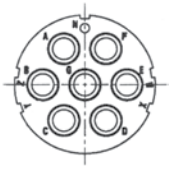
✓ ✓
▲ ▲

19 Contacts
Ø1.6 mm (#16)

Max. operating voltage: 220 V following NFF61030

Size 24

24-10



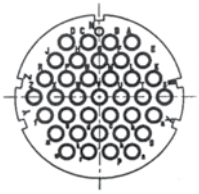
✓

7 Contacts
Ø3.6 mm (#8)

Max. operating voltage: 500 Vcc following NFF61030

Size 28

28-21



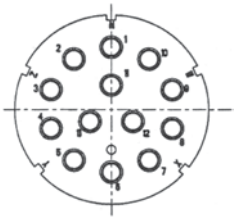
✓ ✓
▲ ▲

37 Contacts
Ø1.6 mm (#16)

Max. operating voltage: 220 V following NFF61030

Size 32

32A13



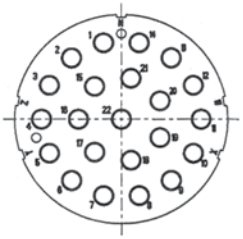
✓

13 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 220 V following NFF61030

Size 36

36A22



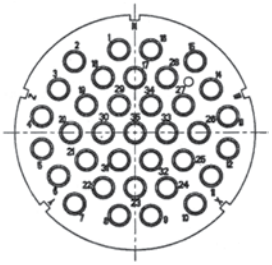
✓

22 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 500 Vcc following NFF61030

Size 40

40A35

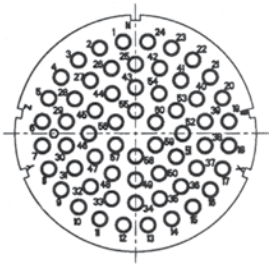


✓

35 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 500 Vcc following NFF61030

40A60



✓

60 Contacts
Ø1.6 mm (#16)

Max. operating voltage: 220 V following NFF61030

Layouts

✓ = VGE1 standard version

✓ = FER1 standard version

Heating curves

Test conditions:

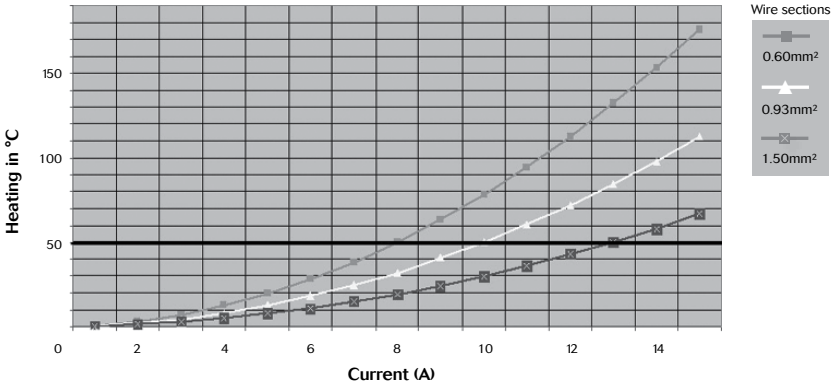
- Current per contact
- All contacts loaded
- Max heating in C° allowed following NFF 61030: 50°C

Size 18

18-19

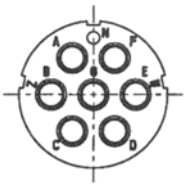
10 Contacts
Ø1.6 mm (#16)

18-19 only Max. operating voltage: 220 V following NFF61030



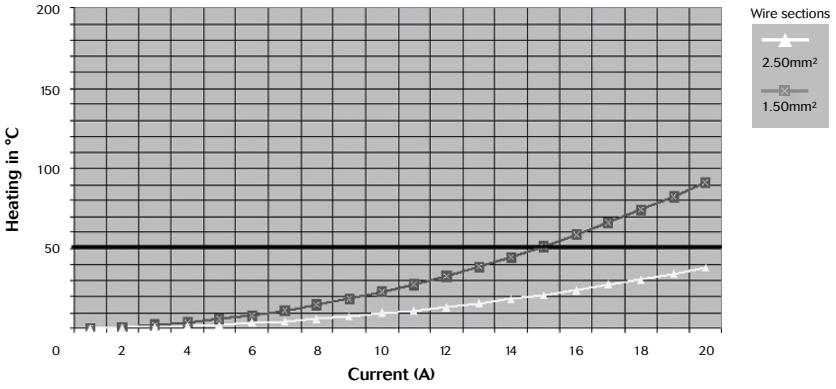
Size 20

20-15



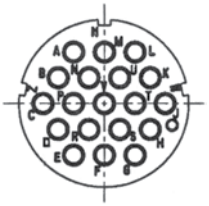
7 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 500 Vcc following NFF61030



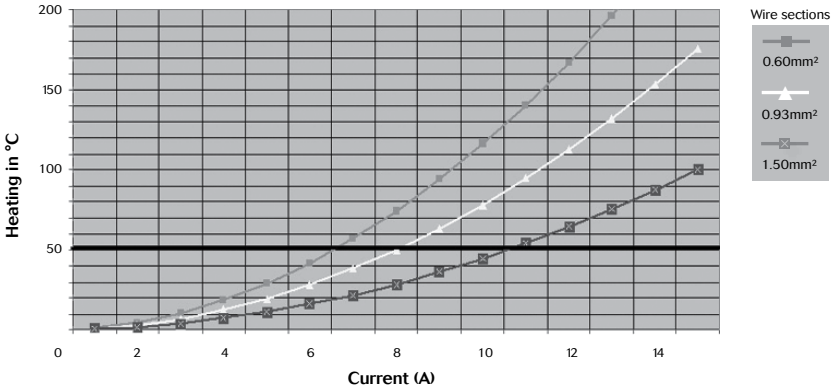
Size 22

22-14



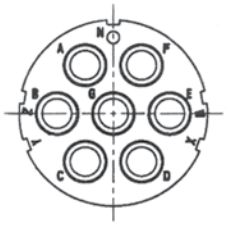
19 Contacts
Ø1.6 mm (#16)

Max. operating voltage: 220 V following NFF61030



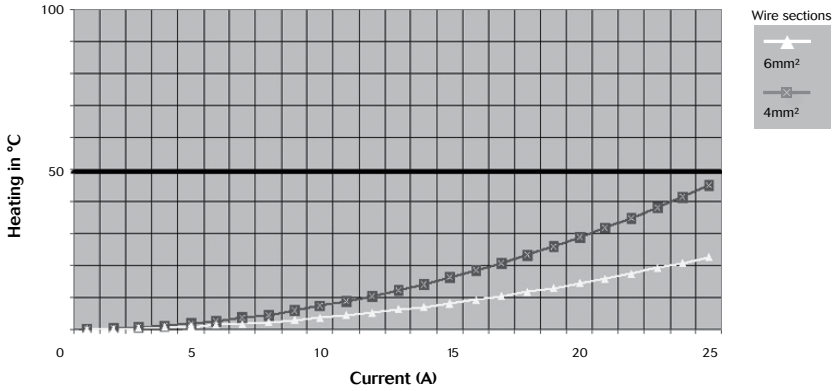
Size 24

24-10



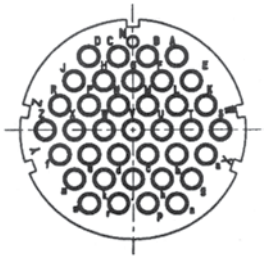
7 Contacts
Ø3.6 mm (#8)

Max. operating voltage: 500 Vcc
following NFF61030



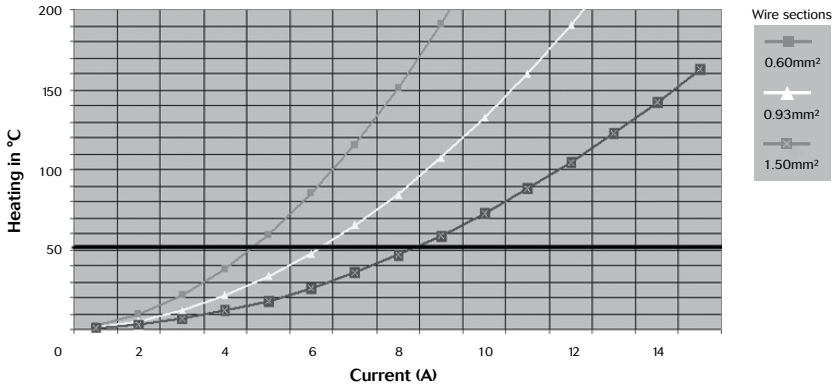
Size 28

28-21



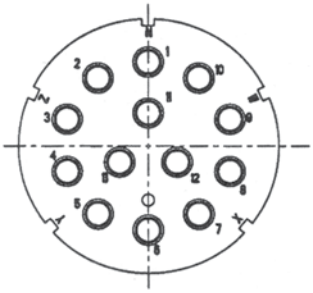
37 Contacts
Ø1.6 mm (#16)

Max. operating voltage: 220 V
following NFF61030



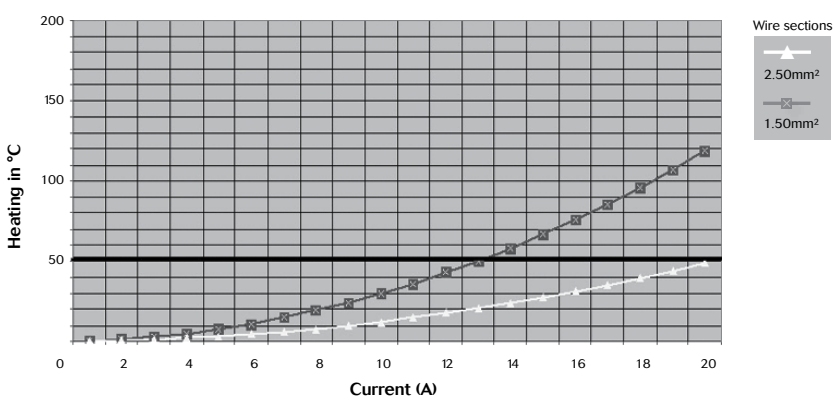
Size 32

32A13



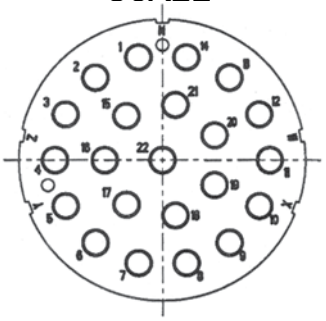
13 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 220 V
following NFF61030



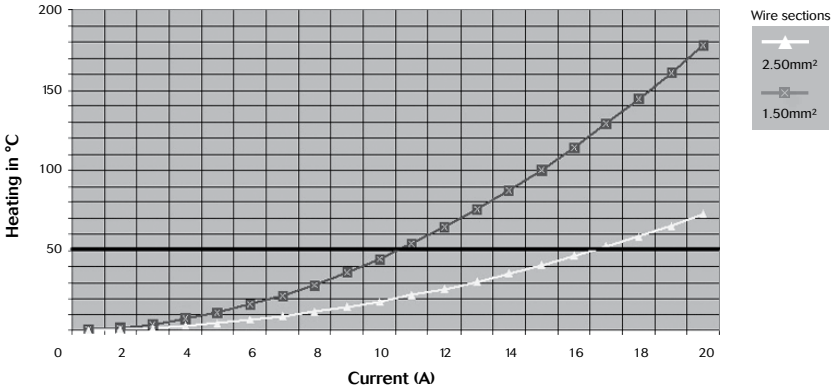
Size 36

36A22



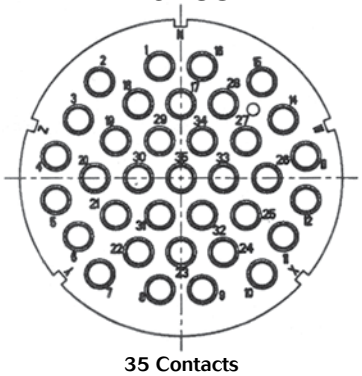
22 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 500 Vcc
following NFF61030



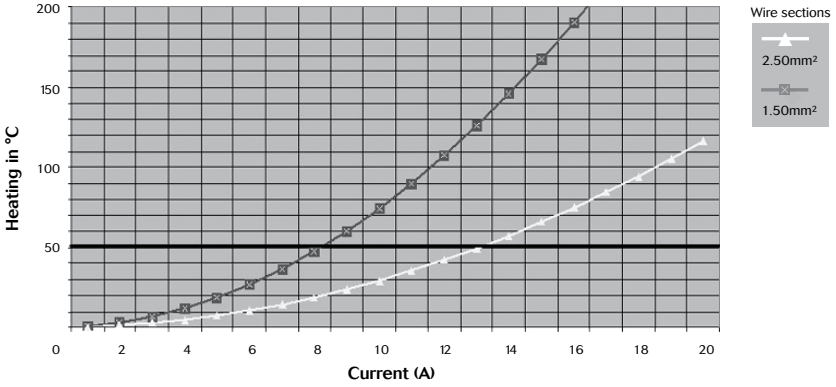
Size 40

40A35

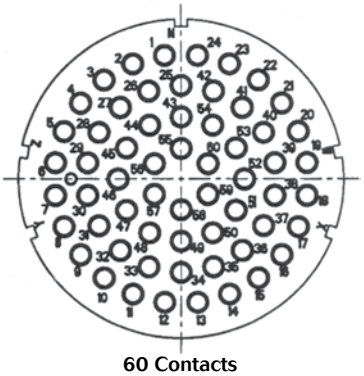


35 Contacts
Ø2.4 mm (#12)

Max. operating voltage: 500 Vcc
following NFF61030

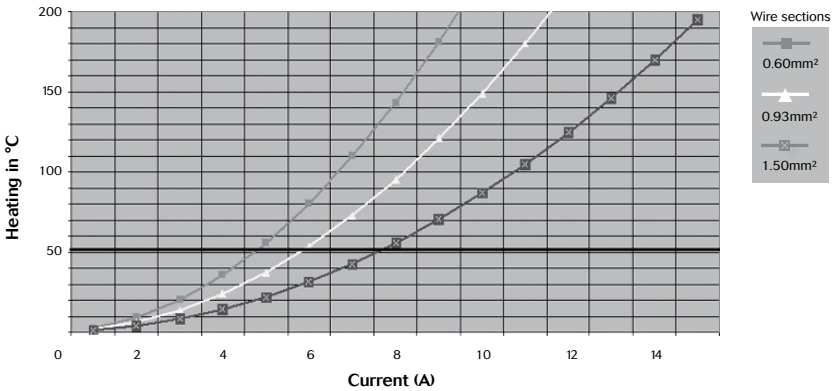


40A60



60 Contacts
Ø1.6 mm (#16)

Max. operating voltage: 220 V
following NFF61030



Data transmission performances

High speed data transmissions with layouts 18-19 and 18A1

Tests following IEC 11-801

For cabling specifications please contact us.

18-19

Cat. 5 level obtained with 4 contacts #16

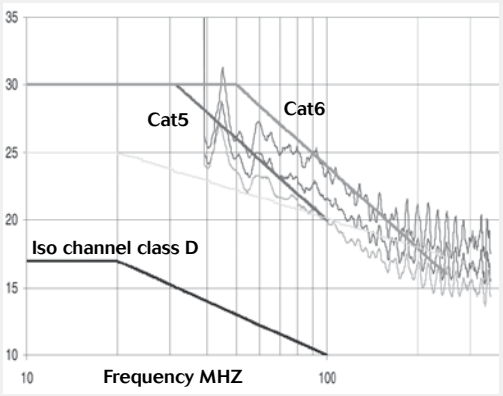
Exemple of performances with a 18-19 connector and a 2 pairs cable, for cabling specification, consult us:

Standard version with 4 contacts #16: Cat. 5 - 100 Mbps

18-19

4 Contacts
Ø3.6 mm (#16)

Return Loss



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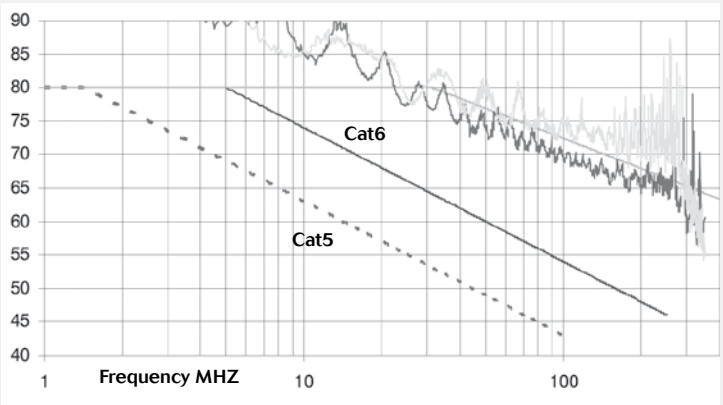


Quadrax-18A1

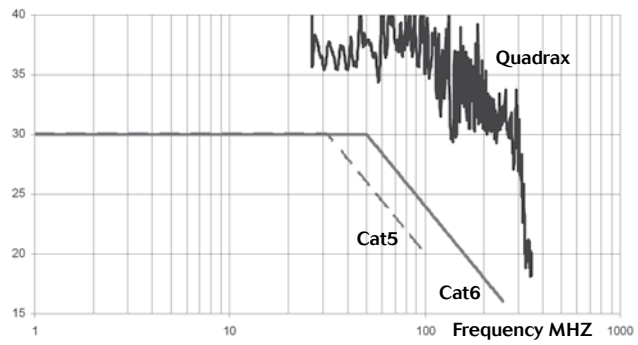
Cat. 6 level obtained with 1 contact Quadrax

Exemple of performances with a 18A1 connector and a quarte cable:

Quadrax version: Cat. 6 - 1 Gbps

18A1

Return Loss



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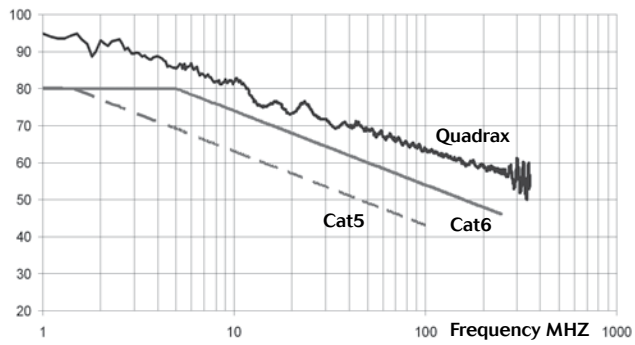


Ordering information

Receptacle, plug, backshells, contacts and accessories have to be ordered separately.

VGE1 (page 20-29)

Basic Series	VGE1	B	22	14	P	N	--

Shell type:
- **B:** Rear mounting receptacle
- **D:** Plug
- **C:** Rear mounting receptacle for PC tails contact #16
- **H:** Jam Nut Receptacle with shielding ring - only available for sizes 18 and 22

Shell size:
18; 20; 22; 24; 28; 32; 36; 40

Layouts: see page 11

Contact type:
- **P:** Pin
- **S:** Socket

Insert Orientation: see page 76
N; W; X; Y; Z or **0**
(0 = insert not installed in the shell)

Specification Code:
- **04**: Receptacle delivered with non conductive panel gasket
- **05**: Receptacle delivered with conductive panel gasket
- **11**: Receptacle and plug delivered with plastic cap

Connector marking example: VGE1B2214PN

FER1 (page 30-31)

Basic Series	FER1	B	22	14	P	N	--

Shell type:
- **B:** Rear mounting receptacle
- **D:** Plug

Shell size:
18; 22; 28 (Other sizes: please consult us)

Layouts: see page 11

Contact type:
- **P:** Pin
- **S:** Socket

Insert Orientation: see page 76
N; W; X; Y; Z or **0**
(0 = insert not installed in the shell)

Specification Code:
- **04**: Receptacle delivered with non conductive panel gasket
- **05**: Receptacle delivered with conductive panel gasket
- **11**: Receptacle and plug delivered with plastic cap

Connector marking example: FER1D2821SN

Backshell (page 38-56)

Basic Series	VGE1 VGE1	J C	S S	18 22	00 14	00 00	- M
Backnut		R					
Strain relief		C					
Conduit adaptor		S					
Cable clamp with sealing gland		J					
Cable clamp with sealing gland (trumpet shape)		K					
Shielded backshell with sealing gland		T					
Sealing gland		V					
Adaptor with thread outlet (without accessory)		P					
S: Straight backshell **E:** Elbow backshell							
Shell size: **18; 20; 22; 24; 28; 32; 36; 40**							
Layout (if grommet needed) **or 00** (without grommet)							
Adaptor type: **10**: long **00**: Short, or other specification code							
Grommet type (if grommet needed)**:** **M**: Male **L**: Female							

Backshell marking example: VGE1JS40A3500M

VGE1/FER1

VGE1/FER1 Series

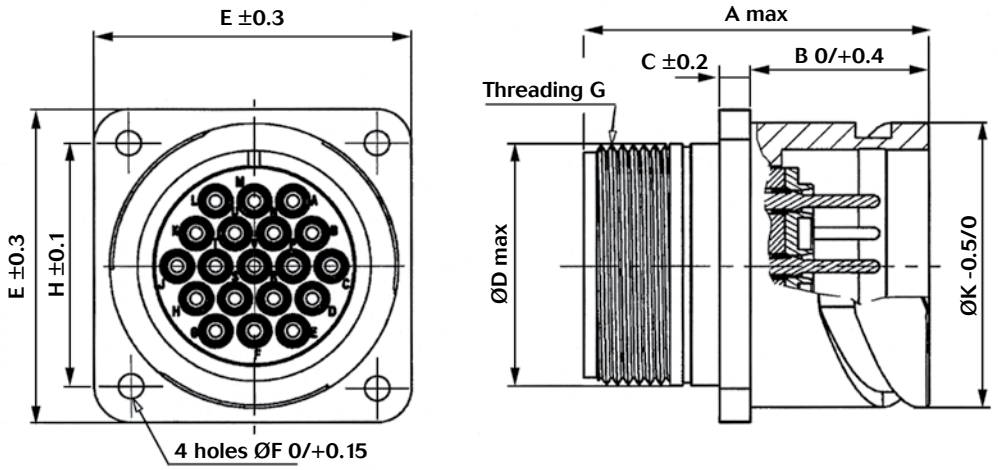
Mechanics

VGE1 receptacle - Part numbers

Shell size	Layout	Number of contact	Contact size	Contact type	Orientation (1)	Part numbers (2)
18	18-19	10	#16	Male	O, N, X, y	**VGE1 B 1819 PN**
				Female		**VGE1 B 1819 SN**
	18A1	1	Quadrax	Male	N	**VGE1 B 18A1 PN**
				Female		**VGE1 B 18A1 SN**
20	20-15	7	#12	Male	O, N, W, Z	**VGE1 B 2015 PN**
				Female		**VGE1 B 2015 SN**
22	22-14	19	#16	Male	O, N, W, Z	**VGE1 B 2214 PN**
				Female		**VGE1 B 2214 SN**
24	24-10	7	#8	Male	O, N, W, X, y, Z	**VGE1 B 2410 PN**
				Female		**VGE1 B 2410 SN**
28	28-21	37	#16	Male	O, N, W, X, y, Z	**VGE1 B 2821 PN**
				Female		**VGE1 B 2821 SN**
32	32A13	13	#12	Male	O, N, W, X, y, Z	**VGE1 B 32A13 PN**
				Female		**VGE1 B 32A13 SN**
36	36A22	22		Male	O, N, W, X, y, Z	**VGE1 B 36A22 PN**
				Female		**VGE1 B 36A22 SN**
40	40A35	35		Male	O, N, W, X, y, Z	**VGE1 B 40A35 PN**
				Female		**VGE1 B 40A35 SN**
	40A60	60	#16	Male	O, N, W, X, y, Z	**VGE1 B 40A60 PN**
				Female		**VGE1 B 40A60 SN**

1: for orientation see p. 76
2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation

VGE1 receptacle - Dimensions



Part numbers (2)	A	B	C	ØD	E	ØF	Threading G Class 2A	H	ØK	Weight (3)
VGE1 B 1819 PN	45.5	23.05	4	25.5	35	3.25	1"x20 UNEF	27	30.8	52 g
VGE1 B 1819 SN										47 g
VGE1 B 18A1 PN										47 g
VGE1 B 18A1 SN										40 g
VGE1 B 2015 PN	45.5	23.05	4	28.7	38	3.25	1 1/8"x18 UNEF	29.4	34.2	52 g
VGE1 B 2015 SN										60 g
VGE1 B 2214 PN	45.5	23.05	4	31.9	41	3.25	1 1/4"x18 UNEF	31.8	37.4	57 g
VGE1 B 2214 SN										66 g
VGE1 B 2410 PN	45.5	23.05	4	35.2	44.5	3.75	1 3/8"x18 UNEF	34.9	40.9	65 g
VGE1 B 2410 SN										77 g
VGE1 B 2821 PN	48	24.05	4	41.5	50.8	3.75	1 5/8"x18 UNE	39.7	46.7	92 g
VGE1 B 2821 SN										105 g
VGE1 B 32A13 PN	48	24.05	4	47.9	57	4.35	1 7/8"x16 UN	44.5	53.4	122 g
VGE1 B 32A13 SN										151 g
VGE1 B 36A22 PN	48	24.05	4	52.5	63.5	4.35	2 1/16"x16 UNS	49.2	59.6	149 g
VGE1 B 36A22 SN										184 g
VGE1 B 40A35 PN	48	24.05	4	59	70	4.35	2 5/16"x16 UN	55.5	65.5	170 g
VGE1 B 40A35 SN										208 g
VGE1 B 40A60 PN										230 g
VGE1 B 40A60 SN										208 g

2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation
3: weight for indication - receptacle + insert without contact

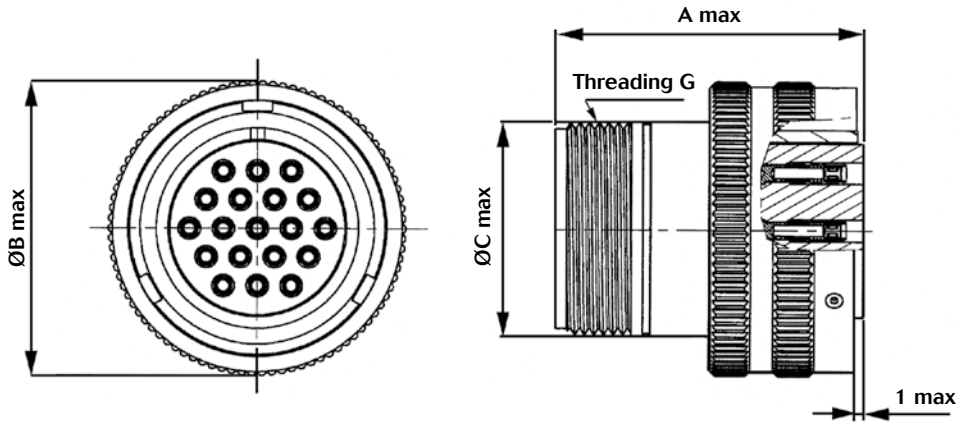
Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1 plug - Part numbers

Shell size	Layout	Number of contact	Contact size	Contact type	Orientation (1)	Part numbers (2)
18	18-19	10	#16	Male	O, N, X, y	VGE1 D 1819 PN
				Female		VGE1 D 1819 SN
	18A1	1	Quadrax	Male	N	VGE1 D 18A1 PN
				Female		VGE1 D 18A1 SN
20	20-15	7	#12	Male	O, N, W, Z	VGE1 D 2015 PN
				Female		VGE1 D 2015 SN
22	22-14	19	#16	Male	O, N, W, Z	VGE1 D 2214 PN
				Female		VGE1 D 2214 SN
24	24-10	7	#8	Male	O, N, W, X, y, Z	VGE1 D 2410 PN
				Female		VGE1 D 2410 SN
28	28-21	37	#16	Male	O, N, W, X, y, Z	VGE1 D 2821 PN
				Female		VGE1 D 2821 SN
32	32A13	13	#12	Male	O, N, W, X, y, Z	VGE1 D 32A13 PN
				Female		VGE1 D 32A13 SN
36	36A22	22		Male	O, N, W, X, y, Z	VGE1 D 36A22 PN
				Female		VGE1 D 36A22 SN
40	40A35	35		Male	O, N, W, X, y, Z	VGE1 D 40A35 PN
				Female		VGE1 D 40A35 SN
	40A60	60	#16	Male	O, N, W, X, y, Z	VGE1 D 40A60 PN
				Female		VGE1 D 40A60 SN

1: for orientation see p. 76
2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation

VGE1 plug - Dimensions



Part numbers [2]	A	ØB	ØC	Threading G Class 2A	Weight [3]
VGE1 D 1819 PN	45.6	37.3	25.5	1"x20 UNEF	59 g
VGE1 D 1819 SN					53 g
VGE1 D 18A1 PN					39 g
VGE1 D 18A1 SN					46 g
VGE1 D 2015 PN	45.6	41.5	28.7	1 1/8"x18 UNEF	54 g
VGE1 D 2015 SN					61 g
VGE1 D 2214 PN	45.6	44	31.9	1 1/4"x18 UNEF	58 g
VGE1 D 2214 SN					67 g
VGE1 D 2410 PN	45.6	48.5	35.2	1 3/8"x18 UNEF	68 g
VGE1 D 2410 SN					79 g
VGE1 D 2821 PN	48.1	55.3	41.5	1 5/8"x18 UNEF	81 g
VGE1 D 2821 SN					95 g
VGE1 D 32A13 PN	48.1	62	47.9	1 7/8"x16 UN	125 g
VGE1 D 32A13 SN					154 g
VGE1 D 36A22 PN	48.1	66.8	52.5	2 1/6"x16 UNS	135 g
VGE1 D 36A22 SN					169 g
VGE1 D 40A35 PN	48.1	74.5	59	2 5/16"x16 UN	163 g
VGE1 D 40A35 SN					201 g
VGE1 D 40A60 PN					226 g
VGE1 D 40A60 SN					201 g

2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation
3: weight for indication - receptacle + insert without contact

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1 specific receptacle - Part numbers

Receptacle with PC tails contact

Shell size	Layout	Contact type	Orientation (1)	Part numbers (2)			
					PCB plating		
					Gold Ø 1.2	Gold Ø 1	Tin* Ø 1
18	18-19	Male	O, N, X, y	VGE1C 1819 PN...	-	01	14
22	22-14	Male	O, N, W, Z	VGE1C 2214 PN...	-	01	14
28	28-21	Male	O, N, W, X, y, Z	VGE1C 2821 PN...	-	01	14

Examples: VGE1C2214PN - with PCB Gold plated Ø 1.2 mm
VGE1C2214PN14 - with PCB Tin plated Ø 1 mm
* Tin plating only on the tail of the contact

Jam nut receptacle with shielding ring

Shell size	Layout	Contact type	Orientation (1)	Part numbers (2)
18	18-19	Male	O, N, X, y	VGE1 H 1819 PN
		Female		VGE1 H 1819 SN
22	22-14	Male	O, N, W, Z	VGE1 H 2214 PN
		Female		VGE1 H 2214 SN

Receptacle with threaded holes

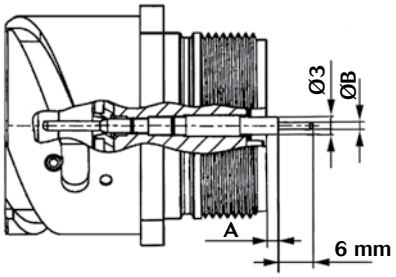
Shell size	Layout	Number of contact	Contact type	Threading	Orientation (1)	Part numbers (2)
28	28-21	37	Male Female	M5x0.8	O, N, W, X, y, Z	VGE1 B 2821 PN03 VGE1 B 2821 SN03
			Male Female	M4x0.7		VGE1 B 2821 PN06 VGE1 B 2821 SN06

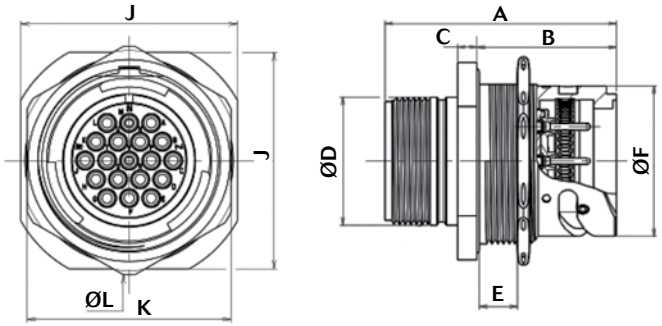
1: for orientation see p. 76
2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation

VGE1 specific receptacle - Dimensions

Receptacle with PC tails contact

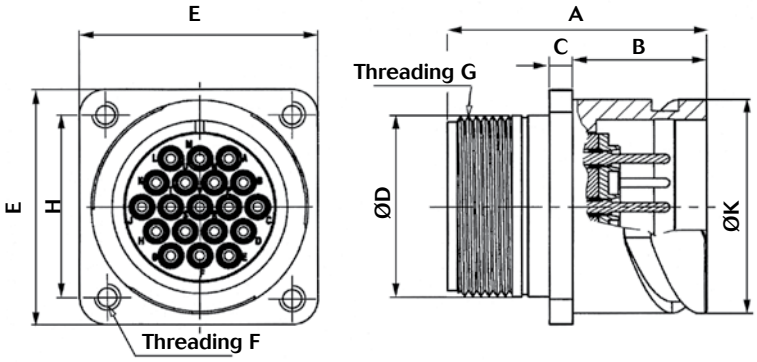
Part numbers (2)	Shell size	A max	ØB max		
VGE1 C 1819 PN...	18	2.00	Gold std. (-) Ø 1.2	Gold spe. (01) Ø 1	Tin (14) Ø 1
VGE1 C 2214 PN...	22				
VGE1 C 2821 PN...	28	0.40			





Jam nut receptacle with shielding ring

Part numbers (2)	Shell size	A max	B	C	ØD max	E max	ØF	J	K	ØL	Weight (3)
VGE1 H 1819 PN	18	57.70	34.50	4.80	25.50	10.00	30.80	42.00	39.90	44.50	70 g
VGE1 H 2214 PN	22	57.70	34.50	4.80	31.90	10.00	37.40	49.00	46.00	51.30	105 g



Receptacle with threaded holes

Part numbers (2)	A max	B	C	ØD	E	Threading F	Threading G	H	ØK	Weight (3)
VGE1 B 2821 PN03	48	24.05	4	41.5	50.8	M5 x0.8	1"x20 UNEF	39.7	46.7	92 g
VGE1 B 2821 SN03						M4 x0.7	1 1/4"x18 UNEF			105 g
VGE1 B 2821 PN09						M5 x0.8	1"x20 UNEF			92 g
VGE1 B 2821 SN09						M4 x0.7	1 1/4"x18 UNEF			105 g

2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation
3: weight for indication - receptacle + insert without contact

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1 specific receptacle - Part numbers

Receptacle with serrations

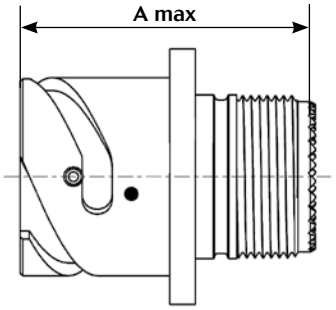
Shell size	Layout	Number of contact	Contact type	Orientation [1]	Part numbers [2]
18	18-19	10	Male	O, N, X, y	VGE1 B 1819 PN09
			Female		VGE1 B 1819 SN09
20	20-15	7	Male	O, N, W, Z	VGE1 B 2015 PN09
			Female		VGE1 B 2015 SN09
22	22-14	19	Male	O, N, W, Z	VGE1 B 2214 PN09
			Female		VGE1 B 2214 SN09
24	24-10	7	Male	O, N, W, X, y, Z	VGE1 B 2410 PN09
			Female		VGE1 B 2410 SN09
28	28-21	37	Male	O, N, W, X, y, Z	VGE1 B 2821 PN09
			Female		VGE1 B 2821 SN09
32	32A13	13	Male	O, N, W, X, y, Z	VGE1 B 32A13 PN09
			Female		VGE1 B 32A13 SN09
36	36A22	22	Male	O, N, W, X, y, Z	VGE1 B 36A22 PN09
			Female		VGE1 B 36A22 SN09
40	40A35	35	Male	O, N, W, X, y, Z	VGE1 B 40A35 PN09
			Female		VGE1 B 40A35 SN09
	40A60	60	Male	O, N, W, X, y, Z	VGE1 B 40A60 PN09
			Female		VGE1 B 40A60 SN09

1: for orientation see p. 76
2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation

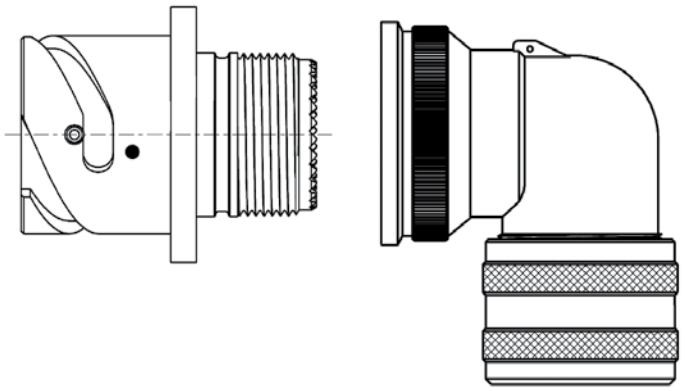
VGE1 specific receptacle - Dimensions

Receptacle with serrations

Part numbers (2)	Shell size	A max	Nb. of teeth
VGE1 B 1819 PN09	18	45.05	28
VGE1 B 2015 PN09	20		
VGE1 B 2214 PN09	22		
VGE1 B 2410 PN09	24		32
VGE1 B 2821 PN09	28	47.35	36
VGE1 B 32A13 PN09	32		48
VGE1 B 36A22 PN09	36		
VGE1 B 40A35 PN09	40		70
VGE1 B 40A60 PN09			



Serrations on body connector allow the use of a shorter backshell, for use in short area .
Backshell are specific please consult us for part numbering details.



2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1 specific plug - Part numbers

Plug with serrations

Shell size	Layout	Contact type	Orientation [1]	Part numbers [2]
18	18-19	Male	O, N, X, y	VGE1 D 1819 PN09
		Female		VGE1 D 1819 SN09
20	20-15	Male	O, N, W, Z	VGE1 D 2015 PN09
		Female		VGE1 D 2015 SN09
22	22-14	Male	O, N, W, Z	VGE1 D 2214 PN09
		Female		VGE1 D 2214 SN09
24	24-10	Male	O, N, W, X, y, Z	VGE1 D 2410 PN09
		Female		VGE1 D 2410 SN09
28	28-21	Male	O, N, W, X, y, Z	VGE1 D 2821 PN09
		Female		VGE1 D 2821 SN09
32	32A13	Male	O, N, W, X, y, Z	VGE1 D 32A13 PN09
		Female		VGE1 D 32A13 SN09
36	36A22	Male	O, N, W, X, y, Z	VGE1 D 36A22 PN09
		Female		VGE1 D 36A22 SN09
40	40A35	Male	O, N, W, X, y, Z	VGE1 D 40A35 PN09
		Female		VGE1 D 40A35 SN09
	40A60	Male	O, N, W, X, y, Z	VGE1 D 40A60 PN09
		Female		VGE1 D 40A60 SN09

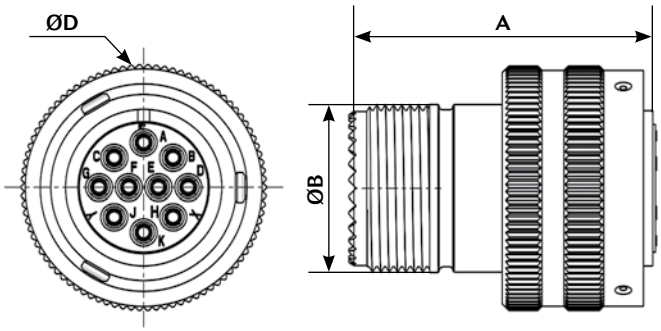
Plug with overmoulded coupling ring

Shell size	Layout	Contact type	Orientation [1]	Part numbers [2]
18	18-19	Male	O, N, X, y	VGE1 D 1819 PN02
		Female		VGE1 D 1819 SN02
22	22-14	Male	O, N, W, Z	VGE1 D 2214 PN02
		Female		VGE1 D 2214 SN02

1: for orientation see p. 76
2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation

VGE1 specific plug - Dimensions

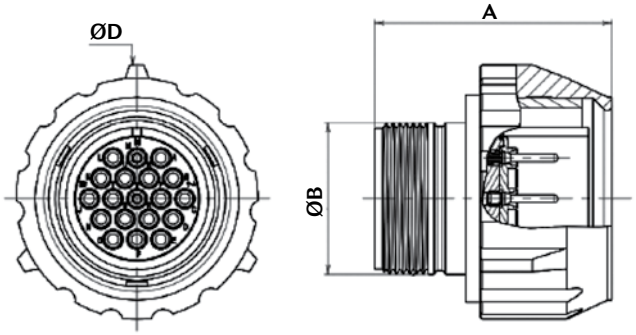
Plug with serrations



Part numbers (2)	Shell size	A	ØB	ØD max	Nb. of teeth
VGE1 D 1819 PN02	18	45	25.5	37.3	28
VGE1 D 2015PN02	20		28.7	41.5	
VGE1 D 2214 PN02	22		31.9	44	
VGE1 D 2410 PN02	24		35.2	48.5	32
VGE1 D 2821 PN02	28		41.5	55.3	36
VGE1 D 32A13 PN02	32	47.7	47.9	62	48
VGE1 D 36A22 PN02	36		52.5	66.8	
VGE1 D 40A35 PN02	40		59	74.5	70

Serrations on body connector allow the use of a shorter backshell, for use in short area .

Plug with overmoulded coupling ring



Part numbers (2)	Shell size	A	ØB	ØD max	Weight (3)
VGE1 D 1819 PN02	18	49.7	25.5	49	61 g
VGE1 D 2214 PN02	22	49.7	31.9	56	86 g

2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation
3: weight for indication - receptacle + insert without contacts

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

FER1 receptacle & plug - Part numbers

Receptacle

Shell size	Layout	Number of contact	Contact size	Contact type	Orientation (1)	Part numbers (2)
18	18-19	10	#16	Male	O, N, X, y	**FER1 B 1819 PN**
				Female		**FER1 B 1819 SN**
18	18A1	1	Quadrax	Male	N	**FER1 B 18A1 PN**
				Female		**FER1 B 18A1 SN**
22	22-14	19	#16	Male	O, N, W, Z	**FER1 B 2214 PN**
				Female		**FER1 B 2214 SN**
28	28-21	37	#16	Male	O, N, W, X, y, Z	**FER1 B 2821 PN**
				Female		**FER1 B 2821 SN**

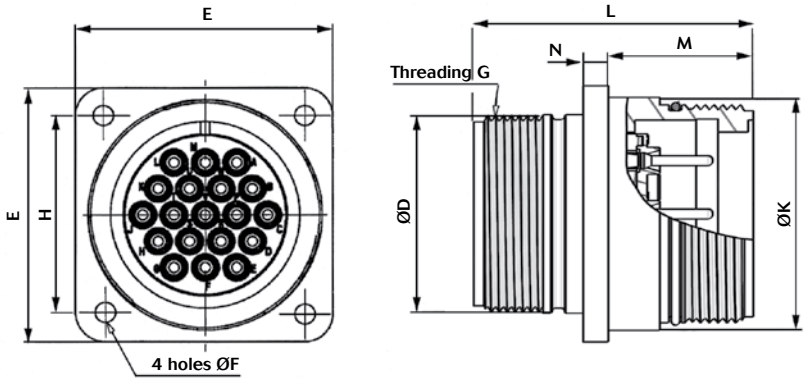
Plug

Shell size	Layout	Number of contact	Contact size	Contact type	Orientation (1)	Part numbers (2)
18	18-19	10	#16	Male	O, N, X, y	**FER1 D 1819 PN**
				Female		**FER1 D 1819 SN**
18	18A1	1	Quadrax	Male	N	**FER1 D 18A1 PN**
				Female		**FER1 D 18A1 SN**
22	22-14	19	#16	Male	O, N, W, Z	**FER1 D 2214 PN**
				Female		**FER1 D 2214 SN**
28	28-21	37	#16	Male	O, N, W, X, y, Z	**FER1 D 2821 PN**
				Female		**FER1 D 2821 SN**

1: for orientation see p. 76
2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation

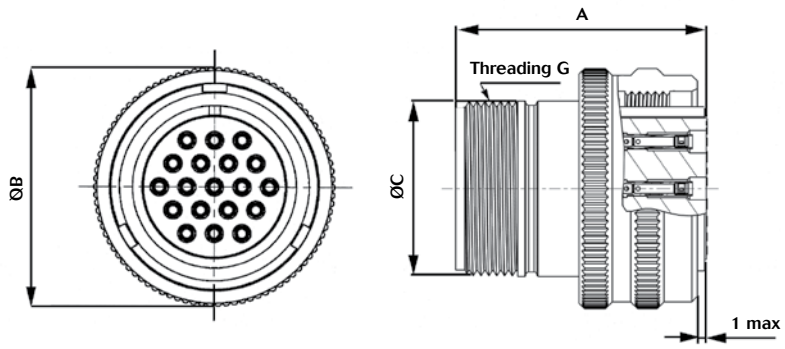
FER1 receptacle & plug - Dimensions

Receptacle



Part numbers (2)	L max	M	N	ØD	E	ØF	H	ØK	Weight (3)
FER1 B 1819 PN	45.5	23.25	4	25.5	35	3.25	27	30.8	37 g
FER1 B 1819 SN									42 g
FER1 B 18A1 PN									32 g
FER1 B 18A1 SN									37 g
FER1 B 2214 PN	45.5	23.25	4	31.9	41	3.25	31.8	37.4	51 g
FER1 B 2214 SN									60 g
FER1 B 2821 PN	48	24.25	4	41.5	50.8	3.75	39.7	46.7	81 g
FER1 B 2821 SN									94 g

Plug



Part numbers (2)	A max	ØB max	ØC max	Threading G Class 2A	Weight (3)
FER1 D 1819 PN	45.6	37.3	25.5	1"x20 UNEF	54 g
FER1 D 1819 SN					58 g
FER1 D 18A1 PN					44 g
FER1 D 18A1 SN					51 g
FER1 D 2214 PN	45.6	44	31.9	1 1/4"x18 UNEF	87 g
FER1 D 2214 SN					96 g
FER1 D 2821 PN	48.1	55.3	41.5	1 5/8"x18 UNEF	81 g
FER1 D 2821 SN					94 g

2: example of Part numbers with orientation "N". "N" can be replaced by other orientation - see column orientation
3: weight for indication - receptacle + insert without contact

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

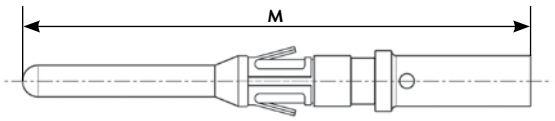
VGE1/FER1

VGE1/FER1 Series

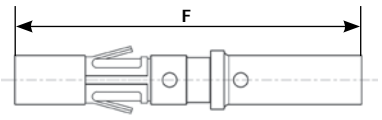
Contacts

Machined crimp contact

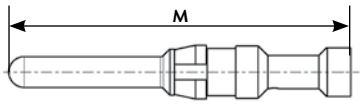
Part numbers & dimensions



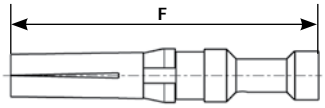
Male contact
#16



Female contact
#16



Male contact
#8 and #12



Female contact
#8 and #12

Contact size		Wire size		Plating	Part numbers		Insulator Ø	Contact length	
#	mm	AWG	mm²		Male	Female		Male (M)	Female (F)
#16	1.6	22-20	0.32-0.52	Gold	**RM20M12K**	**RC20M12K**	1.2-2.2	26.2	18.2
#16	1.6	20-16	0.5-1.5	Gold	**RM16M23K**	**RC16M23K**	1.2-3	26.2	18.2
#16	1.6	16-14	1.5-2.5	Gold	**RM14M30K**	**RC16M30K**			
#16	1.6	16-14	1.5-2.5	Gold	**RM14M50K**	**RC14M50K**			
#12	2.4	20	0.5	Silver	**82911459NA**	**82911458NA**	4.9 max	24.75	22.25
				Gold	**82911459NK**	**82911458NK**			
#12	2.4	18	0.75-1.0	Silver	**82911461NA**	**82911460NA**			
				Gold	**82911461NK**	**82911460NK**			
#12	2.4	16	1.5	Silver	**82911463NA**	**82911462NA**			
				Gold	**82911463NK**	**82911462NK**			
#12	2.4	14	2.5	Silver	**82911465NA**	**82911464NA**			
				Gold	**82911465NK**	**82911464NK**			
#8	3.6	16	1.5	Silver	**8291 3601A**	**8291 3600A**	6.5 max	25.5	25.5
#8	3.6	14	2.5		**8291 3603A**	**8291 3602A**			
#8	3.6	12	4		**8291 3605A**	**8291 3604A**			
#8	3.6	10	6		**8291 3607A**	**8291 3606A**			

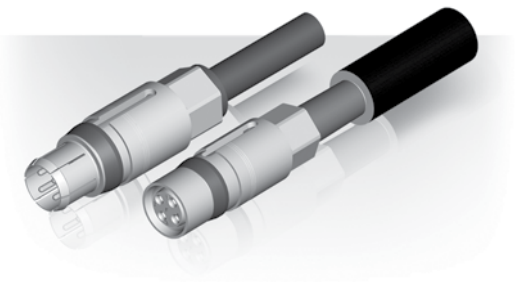
For other contact type consult us

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

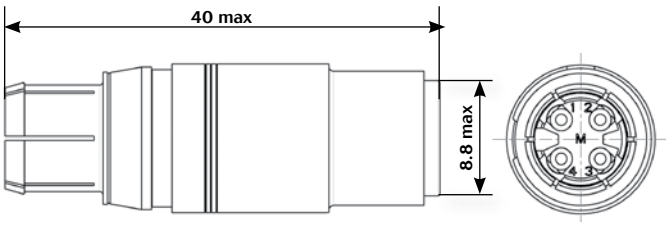
Quadrax contact

Part numbers

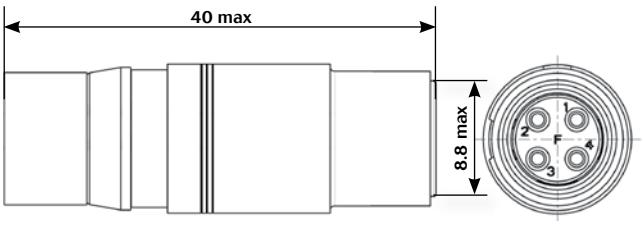
Line wire size		Cell plating	Part numbers		Max line wire insulator Ø
AWG	mm²		Male	Female	
24-18	0.21-0.93	Silver	**VGE12035A**	**VGE12034A**	1.2-2.11 mm



Dimensions



Male weight: 16gr*



Female weight: 17gr*

*: weight for indication - receptacle + insert without contact

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1/FER1

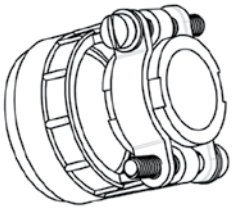
VGE1/FER1 Series

Backshells

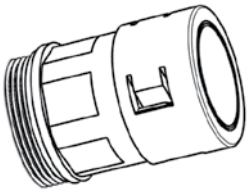
Backshells overview

Accessories have to be used with an adaptor

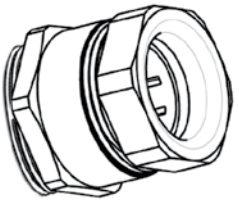
6 accessories available



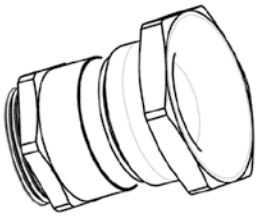
Strain relief
Straight version: **CS**...
Elbow 90° version: **CE**...
See page 40



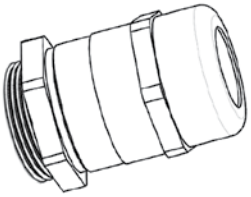
Conduit adaptor
Straight version: **SS**...
Elbow 90° version: **SE**...
See page 42



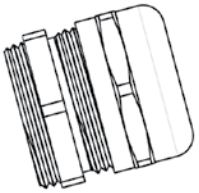
Cable clamp with sealing gland
Straight version: **JS**...
Elbow 90° version: **JE**...
See page 44



Cable clamp with sealing gland (trumpet shape)
Straight version: **KS**...
Elbow 90° version: **KE**...
See page 46



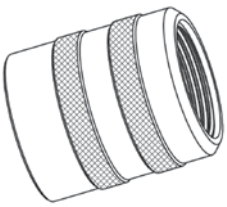
Shielded backshell with sealing gland
Straight version: **TS**...
Elbow 90° version: **TE**...
See page 48



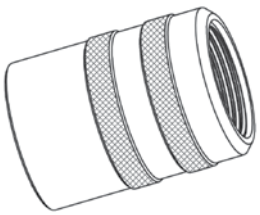
Sealing gland
Straight version: **VS**...
Elbow 90° version: **VE**...
See page 50

3 adaptors available

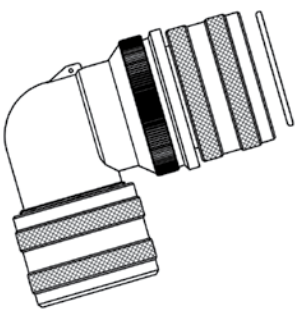
Adaptor are included in the backshell Part numbers or can be order separately.



Straight short version:
PS...

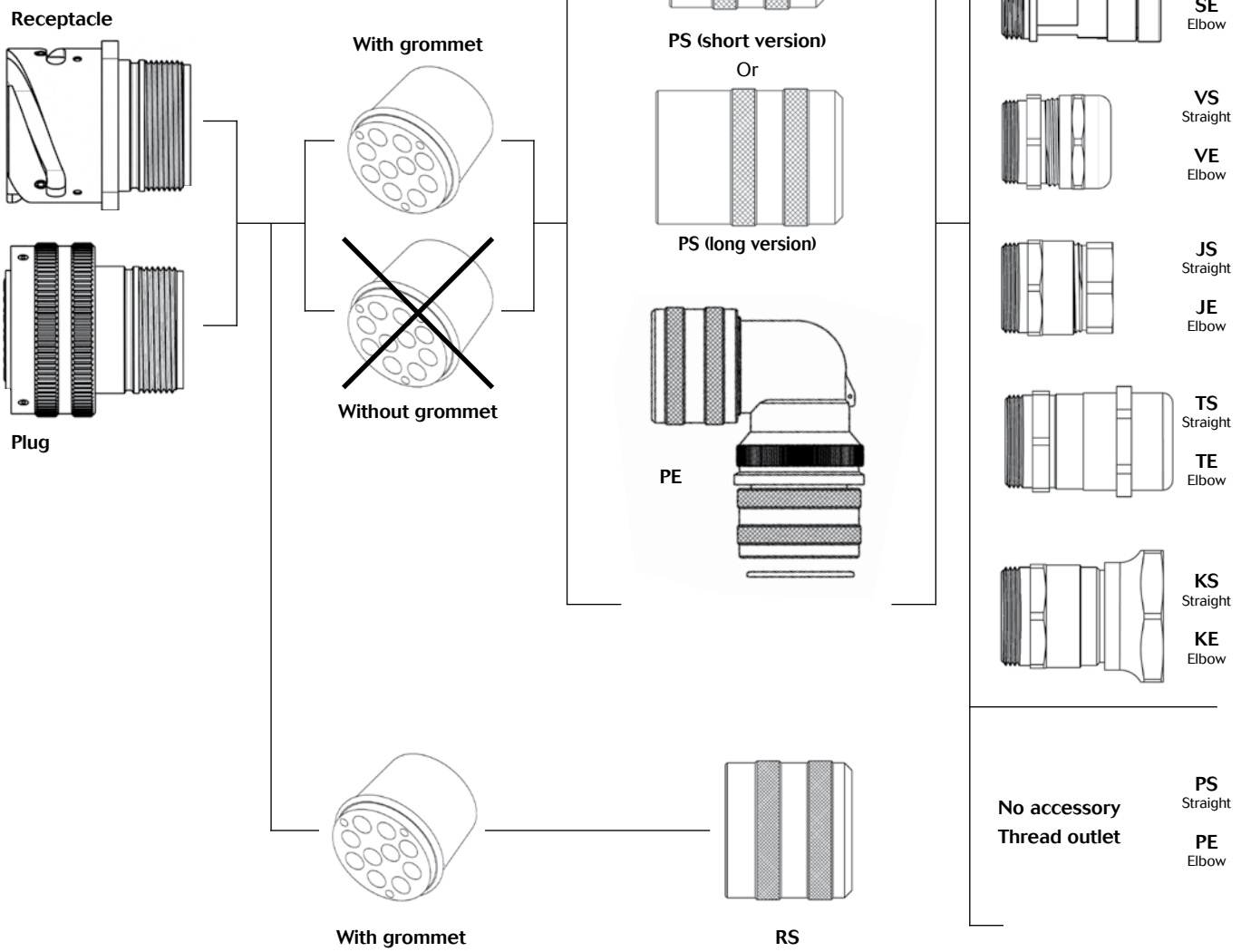


Straight long version:
PS...

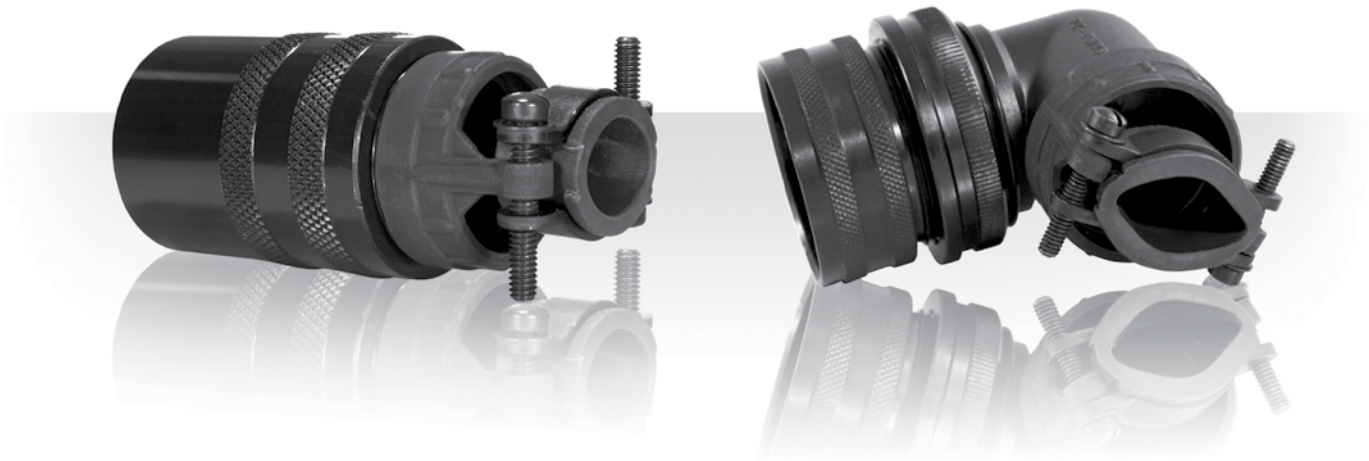


Elbow 90° version:
PE...

Overview - Mating possibilities



VGE1CS & VGE1CE - Part numbers

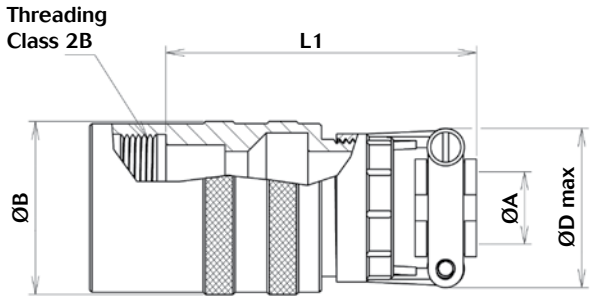


Layout	CS straight version		CE elbow 90° version	
	Without grommet	With grommet*	Without grommet	With grommet*
18-19	VGE1CS180000	VGE1CS181900M	VGE1CE180000	VGE1CE181900M
		VGE1CS181900L		VGE1CE181900L
18A1	VGE1CS180000	-	VGE1CE180000	-
20-15	VGE1CS200000	VGE1CS201500M	VGE1CE200000	VGE1CE201500M
		VGE1CS201500L		VGE1CE201500L
22-14	VGE1CS220000	VGE1CS221400M	VGE1CE220000	VGE1CE221400M
		VGE1CS221400L		VGE1CE221400L
24-10	VGE1CS240000	VGE1CS241000M	VGE1CE240000	VGE1CE241000M
		VGE1CS241000L		VGE1CE241000L
28-21	VGE1CS280000	VGE1CS282100M	VGE1CE280000	VGE1CE282100M
		VGE1CS282100L		VGE1CE282100L

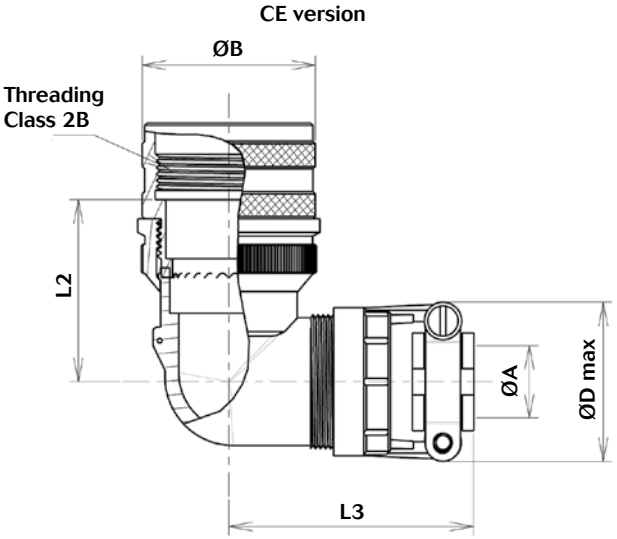
* Termination M = Male grommet / Termination L = Female grommet.

VGE1CS & VGE1CE - Dimensions

CS version



CE version



Layout	ØA	ØB	ØD	L1	L2	L3
18-19	12.7	30	29	72	44	59.2
18A1						
20-15	15.87	33	34.8	72	43.5	60.4
22-14	15.87	38	34.8	69.4	43	578
24-10	19.05	38	39.5	69.4	45.5	62.8
28-21	20.32	46	41.8	69.4	41	57

For other outlet type consult us

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

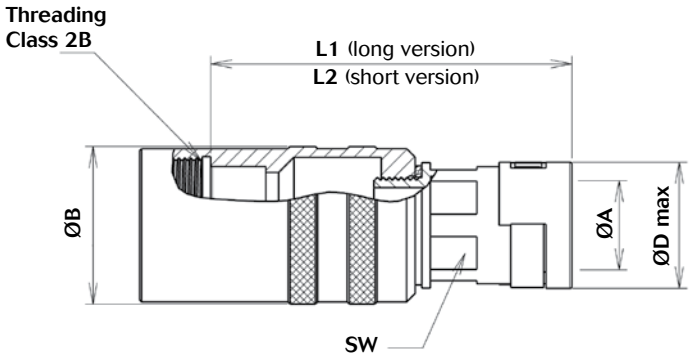
VGE1SS & VGE1SE - Part numbers

Layout	SS straight short version		SS straight long version		SE elbow 90° version	
	Without grommet	With grommet*	Without grommet	With grommet*	Without grommet	With grommet*
18-19	VGE1SS180000	VGE1SS181900M	VGE1SS180010	VGE1SS181910M	VGE1SE180000	VGE1SE181900M
		VGE1SS181900L		VGE1SS181910L		VGE1SE181900L
18A1	VGE1SS180000	-	VGE1SS180010	-	VGE1SE180000	-
20-15	VGE1SS200000	VGE1SS201500M	VGE1SS200010	VGE1SS201510M	VGE1SE200000	VGE1SE201500M
		VGE1SS201500L		VGE1SS201510L		VGE1SE201500L
22-14	VGE1SS220000	VGE1SS221400M	VGE1SS220010	VGE1SS221410M	VGE1SE220000	VGE1SE221400M
		VGE1SS221400L		VGE1SS221410L		VGE1SE221400L
24-10	VGE1SS240000	VGE1SS241000M	VGE1SS240010	VGE1SS241010M	VGE1SE240000	VGE1SE241000M
		VGE1SS241000L		VGE1SS241010L		VGE1SE241000L
28-21	VGE1SS280000	VGE1SS282100M	VGE1SS280010	VGE1SS282110M	VGE1SE280000	VGE1SE282100M
		VGE1SS282100L		VGE1SS282110L		VGE1SE282100L
32A13	VGE1SS320000	VGE1SS32A1300M	VGE1SS320010	VGE1SS32A1310M	VGE1SE320000	VGE1SE32A1300M
		VGE1SS32A1300L		VGE1SS32A1310L		VGE1SE32A1300L
36A22	VGE1SS360000	VGE1SS36A2200M	VGE1SS360010	VGE1SS36A2210M	VGE1SE360000	VGE1SE36A2200M
		VGE1SS36A2200L		VGE1SS36A2210L		VGE1SE36A2200L
40A35	VGE1SS400000	VGE1SS40A3500M	VGE1SS400010	VGE1SS40A3510M	VGE1SE400000	VGE1SE40A3500M
		VGE1SS40A3500L		VGE1SS40A3510L		VGE1SE40A3500L
40A60	VGE1SS400000	VGE1SS40A6000M	VGE1SS400010	VGE1SS40A6010M	VGE1SE400000	VGE1SE40A6000M
		VGE1SS40A6000L		VGE1SS40A6010L		VGE1SE40A6000L

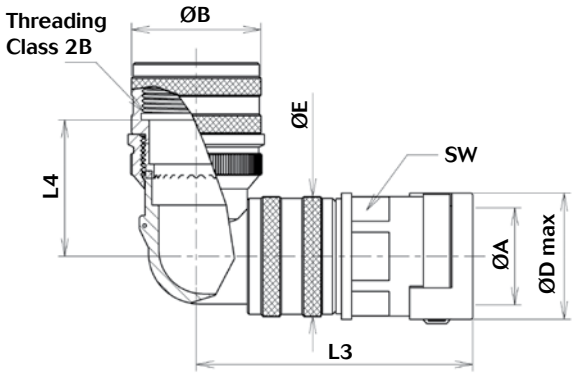
* Termination M = Male grommet / Termination L = Female grommet.

VGE1SS & VGE1SE - Dimensions

SS version



SE version



Layout	ØA (conduit type)	ØB	ØD	ØE	SW	L1	L2	L3	L4
18-19	NW17	30	30	30	26	84.1	69.1	78.5	44
18A1									
20-15	NW17	33	30	34	26	84.1	69.1	80	43.5
22-14	NW23	37	37	35	32	87.1	72.1	83	43
24-10	NW23	40	37	40	32	87.1	72.1	88	45.5
28-21	NW29	46	44	44.5	38	95.9	10.9	85.5	41
32A13	NW29	52	44	52	38	85.9	70.9	98.5	52
36A22	NW36	57	53	57	50	99.4	84.4	115	65
40A35	NW48	63	65	63	65	93.4	78.4	115	56
40A60									

For other outlet type consult us

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

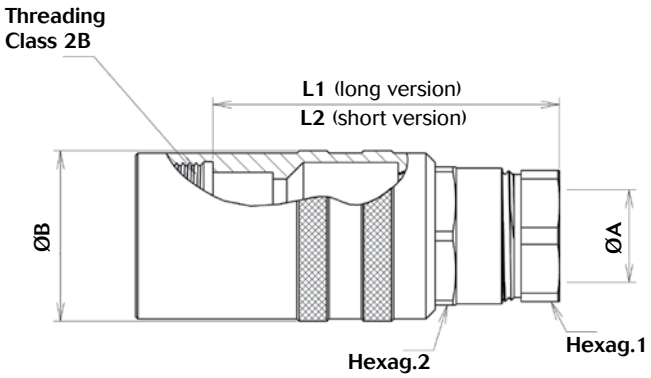
VGE1JS & VGE1JE - Part numbers

Layout	JS straight short version		JS straight long version		JE elbow 90° version	
	Without grommet	With grommet*	Without grommet	With grommet*	Without grommet	With grommet*
18-19	VGE1JS180000	VGE1JS181900M	VGE1JS180010	VGE1JS181910M	VGE1JE180000	VGE1JE181900M
		VGE1JS181900L		VGE1JS181910L		VGE1JE181900L
18A1	VGE1JS180000	-	VGE1JS180010	-	VGE1JE180000	-
20-15	VGE1JS200000	VGE1JS201500M	VGE1JS200010	VGE1JS201510M	VGE1JE200000	VGE1JE201500M
		VGE1JS201500L		VGE1JS201510L		VGE1JE201500L
22-14	VGE1JS220000	VGE1JS221400M	VGE1JS220010	VGE1JS221410M	VGE1JE220000	VGE1JE221400M
		VGE1JS221400L		VGE1JS221410L		VGE1JE221400L
24-10	VGE1JS240000	VGE1JS241000M	VGE1JS240010	VGE1JS241010M	VGE1JE240000	VGE1JE241000M
		VGE1JS241000L		VGE1JS241010L		VGE1JE241000L
28-21	VGE1JS280000	VGE1JS282100M	VGE1JS280010	VGE1JS282110M	VGE1JE280000	VGE1JE282100M
		VGE1JS282100L		VGE1JS282110L		VGE1JE282100L
32A13	VGE1JS320000	VGE1JS32A1300M	VGE1JS320010	VGE1JS32A1310M	VGE1JE320000	VGE1JE32A1300M
		VGE1JS32A1300L		VGE1JS32A1310L		VGE1JE32A1300L
36A22	VGE1JS360000	VGE1JS36A2200M	VGE1JS360010	VGE1JS36A2210M	VGE1JE360000	VGE1JE36A2200M
		VGE1JS36A2200L		VGE1JS36A2210L		VGE1JE36A2200L
40A35	VGE1JS400000	VGE1JS40A3500M	VGE1JS400010	VGE1JS40A3510M	VGE1JE400000	VGE1JE40A3500M
		VGE1JS40A3500L		VGE1JS40A3510L		VGE1JE40A3500L
40A60	VGE1JS400000	VGE1JS40A6000M	VGE1JS400010	VGE1JS40A6010M	VGE1JE400000	VGE1JE40A6000M
		VGE1JS40A6000L		VGE1JS40A6010L		VGE1JE40A6000L

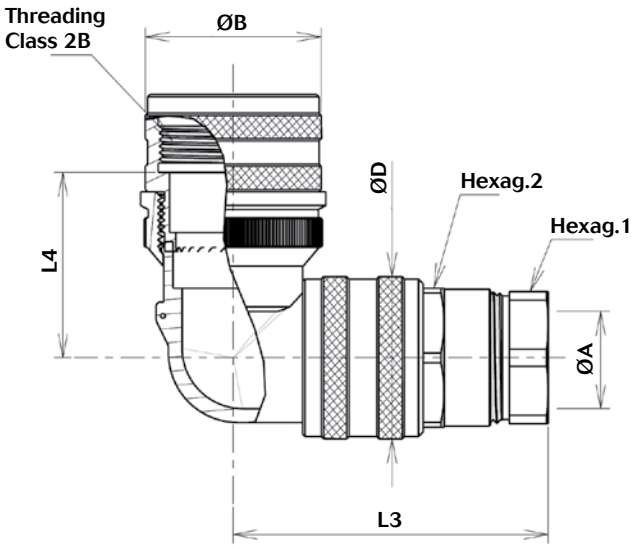
* Termination M = Male grommet / Termination L = Female grommet.

VGE1JS & VGE1JE - Dimensions

JS version



JE version



Layout	ØA	ØB	ØD	Hexag.1	Hexag.2	L1	L2	L3	L4
18-19	7/12	30	30	20	22	71.6	56.6	65.2	44
18A1									
20-15	9/14	33	34	22	24	71.6	56.6	66.4	43.5
22-14	10/18	37	35	28	30	79.6	64.6	74.4	43
24-10	10/18	40	40	28	30	79.6	64.6	79.4	45.5
28-21	14/24	46	44.5	38	40	88.9	63.9	76.9	41
32A13	14/24	52	52	38	40	78.9	63.9	89.9	52
36A22	22/30	57	57	48	50	84.9	69.9	96.9	63.3
40A35	25/35	63	63	55	58	92.4	77.4	106.7	55.3
40A60									

For other outlet type consult us

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

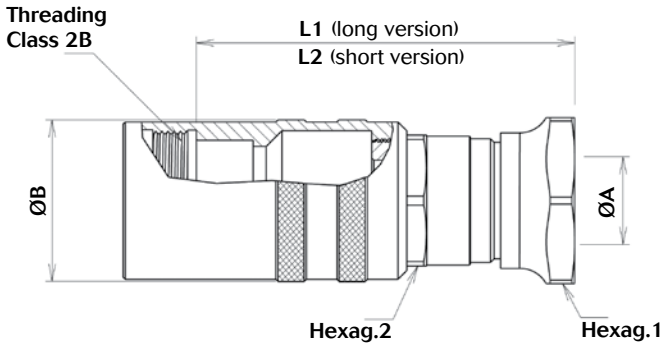
VGE1KS & VGE1KE - Part numbers

Layout	KS straight short version		KS straight long version		KE elbow 90° version	
	Without grommet	With grommet*	Without grommet	With grommet*	Without grommet	With grommet*
18-19	VGE1KS180000	VGE1KS181900M	VGE1KS180010	VGE1KS181910M	VGE1KE180000	VGE1KE181900M
		VGE1KS181900L		VGE1KS181910L		VGE1KE181900L
18A1	VGE1KS180000	-	VGE1KS180010	-	VGE1KE180000	-
20-15	VGE1KS200000	VGE1KS201500M	VGE1KS200010	VGE1KS201510M	VGE1KE200000	VGE1KE201500M
		VGE1KS201500L		VGE1KS201510L		VGE1KE201500L
22-14	VGE1KS220000	VGE1KS221400M	VGE1KS220010	VGE1KS221410M	VGE1KE220000	VGE1KE221400M
		VGE1KS221400L		VGE1KS221410L		VGE1KE221400L
24-10	VGE1KS240000	VGE1KS241000M	VGE1KS240010	VGE1KS241010M	VGE1KE240000	VGE1KE241000M
		VGE1KS241000L		VGE1KS241010L		VGE1KE241000L
28-21	VGE1KS280000	VGE1KS282100M	VGE1KS280010	VGE1KS282110M	VGE1KE280000	VGE1KE282100M
		VGE1KS282100L		VGE1KS282110L		VGE1KE282100L
32A13	VGE1KS320000	VGE1KS32A1300M	VGE1KS320010	VGE1KS32A1310M	VGE1KE320000	VGE1KE32A1300M
		VGE1KS32A1300L		VGE1KS32A1310L		VGE1KE32A1300L
36A22	VGE1KS360000	VGE1KS36A2200M	VGE1KS360010	VGE1KS36A2210M	VGE1KE360000	VGE1KE36A2200M
		VGE1KS36A2200L		VGE1KS36A2210L		VGE1KE36A2200L
40A35	VGE1KS400000	VGE1KS40A3500M	VGE1KS400010	VGE1KS40A3510M	VGE1KE400000	VGE1KE40A3500M
		VGE1KS40A3500L		VGE1KS40A3510L		VGE1KE40A3500L
40A60	VGE1KS400000	VGE1KS40A6000M	VGE1KS400010	VGE1KS40A6010M	VGE1KE400000	VGE1KE40A6000M
		VGE1KS40A6000L		VGE1KS40A6010L		VGE1KE40A6000L

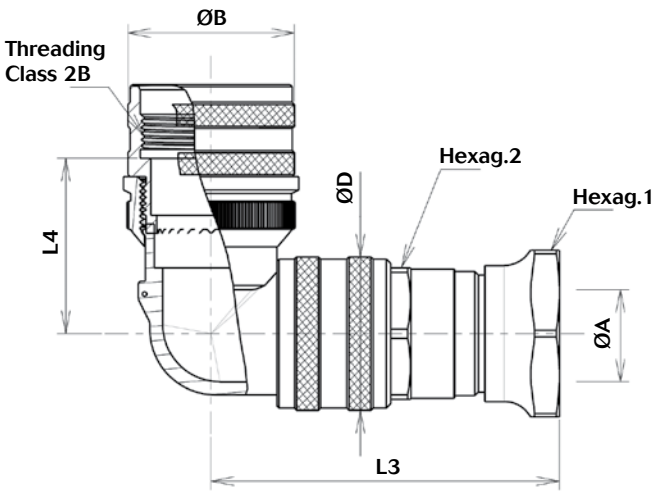
* Termination M = Male grommet / Termination L = Female grommet.

VGE1KS & VGE1KE - Dimensions

KS version



KE version



layout	ØA	ØB	ØD	Hexag.1	Hexag.2	L1	L2	L3	L4
18-19	7/12	30	30	28	22	78.6	63.6	72.2	44
18A1									
20-15	9/14	33	34	30	24	80.1	65.1	74.9	43.5
22-14	10/18	37	35	38	30	87.1	72.1	81.9	43
24-10	10/18	40	40	38	30	87.1	72.1	86.9	45.5
28-21	14/24	46	44.5	50	40	102.4	77.4	90.4	41
32A13	14/24	52	52	50	40	92.4	77.4	103.4	52
36A22	22/30	57	57	54	50	98.9	83.9	110.9	63.3
40A35	25/35	63	63	60	58	104.4	89.4	118.7	55.3
40A60									

For other outlet type consult us

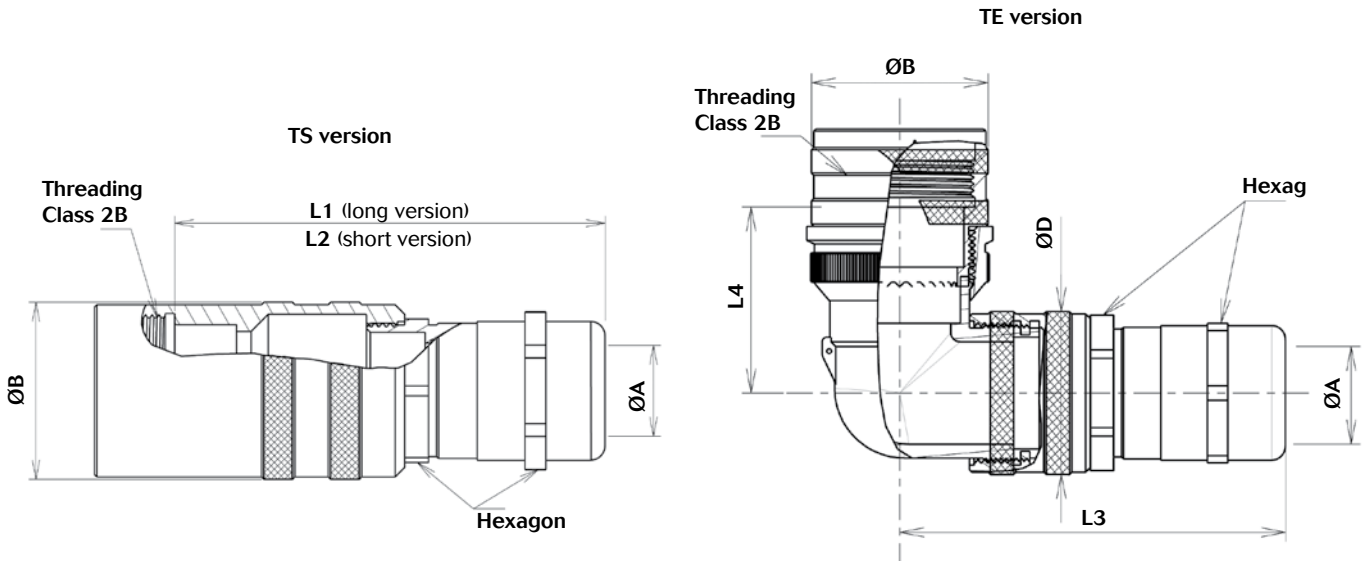
Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1TS & VGE1TE - Part numbers

Layout	TS straight short version		TS straight long version		TE elbow 90° version	
	Without grommet	With grommet*	Without grommet	With grommet*	Without grommet	With grommet*
18-19	VGE1TS180000	VGE1TS181900M	VGE1TS180010	VGE1TS181910M	VGE1TE180000	VGE1TE181900M
		VGE1TS181900L		VGE1TS181910L		VGE1TE181900L
18A1	VGE1TS180000	-	VGE1TS180010	-	VGE1TE180000	-
20-15	VGE1TS200000	VGE1TS201500M	VGE1TS200010	VGE1TS201510M	VGE1TE200000	VGE1TE201500M
		VGE1TS201500L		VGE1TS201510L		VGE1TE201500L
22-14	VGE1TS220000	VGE1TS221400M	VGE1TS220010	VGE1TS221410M	VGE1TE220000	VGE1TE221400M
		VGE1TS221400L		VGE1TS221410L		VGE1TE221400L
24-10	VGE1TS240000	VGE1TS241000M	VGE1TS240010	VGE1TS241010M	VGE1TE240000	VGE1TE241000M
		VGE1TS241000L		VGE1TS241010L		VGE1TE241000L
28-21	VGE1TS280000	VGE1TS282100M	VGE1TS280010	VGE1TS282110M	VGE1TE280000	VGE1TE282100M
		VGE1TS282100L		VGE1TS282110L		VGE1TE282100L
32A13	VGE1TS320000	VGE1TS32A1300M	VGE1TS320010	VGE1TS32A1310M	VGE1TE320000	VGE1TE32A1300M
		VGE1TS32A1300L		VGE1TS32A1310L		VGE1TE32A1300L

* Termination M = Male grommet / Termination L = Female grommet.

VGE1TS & VGE1TE - Dimensions



layout	ØA	ØB	ØD	Hexagon	L1	L2	L3	L4
18-19	8/12.5	30	30	22	82.1	67.1	75.7	44
18A1								
20-15	10/14.5	33	34	24	82.1	67.1	76.9	43.5
22-14	13.5/18	37	35	30	91.6	76.6	86.4	43
24-10	13.5/18	40	40	30	91.6	76.6	91.4	45.5
28-21	17/24	46	44.5	40	109.4	84.4	97.4	41
32A13	17/24	52	52	40	99.4	84.4	110.4	52

For other outlet type consult us

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

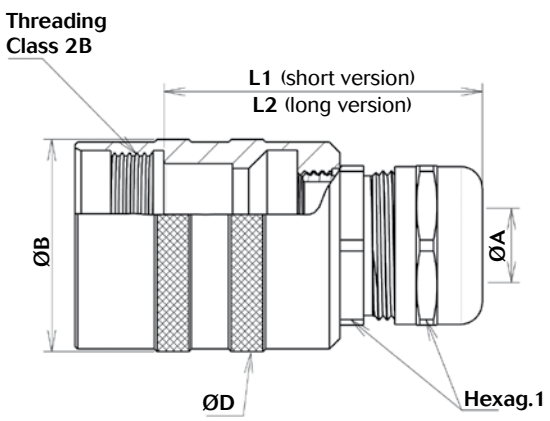
VGE1VS & VGE1VE - Part numbers

Layout	VS straight short version		VS straight long version		VE elbow 90° version	
	Without grommet	With grommet*	Without grommet	With grommet*	Without grommet	With grommet*
18-19	VGE1VS180001	VGE1VS181901M	VGE1VS180011	VGE1VS181911M	VGE1VE180001	VGE1VE181901M
		VGE1VS181901L		VGE1VS181911L		VGE1VE181901L
18A1	VGE1VS180001	-	VGE1VS180011	-	VGE1VE180001	-
20-15	VGE1VS200001	VGE1VS201501M	VGE1VS200011	VGE1VS201511M	VGE1VE200001	VGE1VE201501M
		VGE1VS201501L		VGE1VS201511L		VGE1VE201501L
22-14	VGE1VS220001	VGE1VS221401M	VGE1VS220011	VGE1VS221411M	VGE1VE220001	VGE1VE221401M
		VGE1VS221401L		VGE1VS221411L		VGE1VE221401L
24-10	VGE1VS240001	VGE1VS241001M	VGE1VS240011	VGE1VS241011M	VGE1VE240001	VGE1VE241001M
		VGE1VS241001L		VGE1VS241011L		VGE1VE241001L
28-21	VGE1VS280001	VGE1VS282101M	VGE1VS280011	VGE1VS28211M	VGE1VE280001	VGE1VE282101M
		VGE1VS282101L		VGE1VS28211L		VGE1VE282101L
32A13	VGE1VS320001	VGE1VS32A1301M	VGE1VS320011	VGE1VS32A1311M	VGE1VE320001	VGE1VE32A1301M
		VGE1VS32A1301L		VGE1VS32A1311L		VGE1VE32A1301L

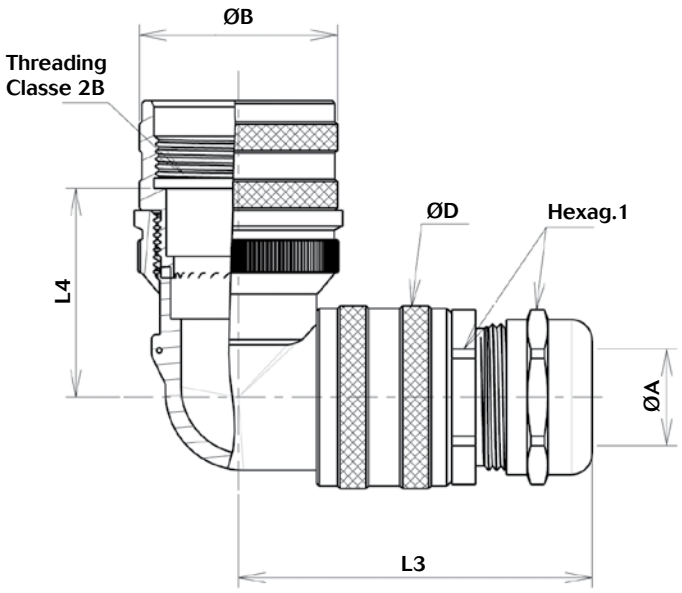
* Termination M = Male grommet / Termination L = Female grommet.

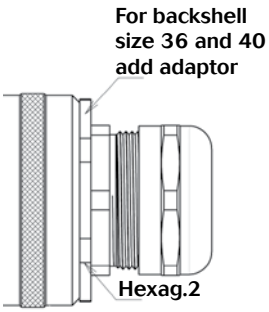
VGE1VS & VGE1VE - Dimensions

VS version



VE version





Layout	ØA	ØB	ØD	L1	L2	L3	L4	Hexag.1	Hexag.2
18-19	6/12.5	30	30	55.6	70.6	64	44	22	without
18A1									
20-15	7/14.5	33	34	57.6	72.6	67.5	43.5	24	without
22-14	10/18	37	35	62.1	77.1	72	43	30	without
24-10	10/18	40	40	62.1	77.1	77	45.5	30	without
28-21	14/24	46	44.5	67.9	92.9	81	41	40	without
32A13	14/24	52	52	67.9	82.9	94	52	40	without

For other outlet type consult us

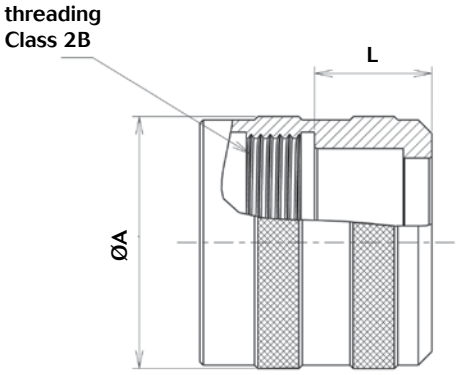
Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1RS - Part numbers

Layout	RS backshell with grommet	Contact type
18-19	VGE1RS181900M	Male
	VGE1RS181900L	Female
20-15	VGE1RS201500M	Male
	VGE1RS201500L	Female
22-14	VGE1RS221400M	Male
	VGE1RS221400L	Female
24-10	VGE1RS241000M	Male
	VGE1RS241000L	Female
28-21	VGE1RS282100M	Male
	VGE1RS282100L	Female
32A13	VGE1RS32A1300M	Male
	VGE1RS32A1300L	Female
36A22	VGE1RS36A2200M	Male
	VGE1RS36A2200L	Female
40A35	VGE1RS40A3500M	Male
	VGE1RS40A3500L	Female
40A60	VGE1RS40A6000M	Male
	VGE1RS40A6000L	Female

VGE1RS - Dimensions

Layout	ØA	L
18-19	30	17.2
20-15	33	
22-14	37	
24-10	42	
28-21	46	16
32A13	52	
36A22	52	
40A35	57	
40A60		



Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1PS & VGE1PE - Part numbers

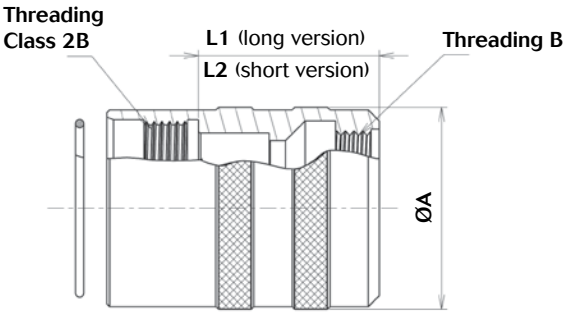
Layout	PS straight short version		PS straight long version		PE elbow 90° version	
	Without grommet	With grommet*	Without grommet	With grommet*	Without grommet	With grommet*
18-19	VGE1PS180000	VGE1PS181900M	VGE1PS180010	VGE1PS181910M	VGE1PE180000	VGE1PE181900M
		VGE1PS181900L		VGE1PS181910L		VGE1PE181900L
18A1	VGE1PS180000	-	VGE1PS180010	-	VGE1PE180000	-
20-15	VGE1PS200000	VGE1PS201500M	VGE1PS200010	VGE1PS201510M	VGE1PE200000	VGE1PE201500M
		VGE1PS201500L		VGE1PS201510L		VGE1PE201500L
22-14	VGE1PS220000	VGE1PS221400M	VGE1PS220010	VGE1PS221410M	VGE1PE220000	VGE1PE221400M
		VGE1PS221400L		VGE1PS221410L		VGE1PE221400L
24-10	VGE1PS240000	VGE1PS241000M	VGE1PS240010	VGE1PS241010M	VGE1PE240000	VGE1PE241000M
		VGE1PS241000L		VGE1PS241010L		VGE1PE241000L
28-21	VGE1PS280000	VGE1PS282100M	VGE1PS280010	VGE1PS282110M	VGE1PE280000	VGE1PE282100M
		VGE1PS282100L		VGE1PS282110L		VGE1PE282100L
32A13	VGE1PS320000	VGE1PS32A1300M	VGE1PS320010	VGE1PS32A1310M	VGE1PE320000	VGE1PE32A1300M
		VGE1PS32A1300L		VGE1PS32A1310L		VGE1PE32A1300L
36A22	VGE1PS360000	VGE1PS36A2200M	VGE1PS360010	VGE1PS36A2210M	VGE1PE360000	VGE1PE36A2200M
		VGE1PS36A2200L		VGE1PS36A2210L		VGE1PE36A2200L
40A35	VGE1PS400000	VGE1PS40A3500M	VGE1PS400010	VGE1PS40A3510M	VGE1PE400000	VGE1PE40A3500M
		VGE1PS40A3500L		VGE1PS40A3510L		VGE1PE40A3500L
40A60	VGE1PS400000	VGE1PS40A6000M	VGE1PS400010	VGE1PS40A6010M	VGE1PE400000	VGE1PE40A6000M
		VGE1PS40A6000L		VGE1PS40A6010L		VGE1PE40A6000L

* Termination M = Male grommet / Termination L = Female grommet.

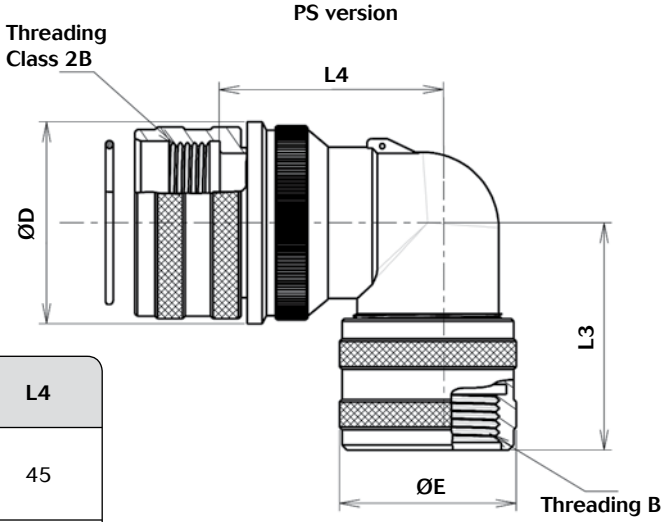
VGE1PS & VGE1PE - Dimensions

Layout	ØA	Threading B	L1	L2
18-19	30	PG13.5	48.6	34
18A1				
20-15	33	PG16	48.6	34
22-14	37	PG21	48.6	34
24-10	40	PG21	48.6	34
28-21	46	PG29	58	33
32A13	52	PG29	48	33
36A22	57	PG36	48	33
40A35	63	PG42	48	33
40A60				

PE version



PS version



Layout	Threading B	ØD max	ØE	L3 max	L4
18-19	PG13.5	34.2	30	31	45
18A1					
20-15	PG16	37.4	34	32	44.5
22-14	PG21	40.5	35	32	45
24-10	PG21	44	40	37	47
28-21	PG29	50.1	44.5	34	41.9
32A13	PG29	56.4	52	47	52.5
36A22	PG36	62.8	57	48	65
40A35	PG42	69.2	63	52.5	56
40A60					

For other outlet type consult us

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

PS specific versions with metric threads

Version	Number	Adaptator	Out threading	Shell size							
				18	20	22	24	28	32	36	40
Specific	01	Short	Female					M32			
	02			M25	M20*	M32	M32*	M40*	M32*	M40*	M40*
	04			M16	M25*	M25	M25*	M32*	M40*	M40*	M50*
	05			M20		M20*		M25*			M32*
	07					M25					
Specific	11	Long	Female					M32			

Examples:
VGE1PS181905 = Straight backshell size 18 with female M20 thread delivered with female grommet
VGE1PS280011 = Straight backshell size 28 with female M32 thread delivered with female grommet

PE specific versions with metric threads

Version	Number	Out threading	18	20	22	24	28	32	36	40
Specific	01	Female			M25		M32			
Specific	03	Female	M20*	M20	M32	M32	M40*	M32*	M40*	M40*
Specific	04		M25*	M25*	M25*	M25*	M32*	M40*	M50*	M50*
Specific	05		M16*		M20*					M32*
Specific	06						M25*			

Examples:
VGE1PE181905 = Elbow backshell size 18 with female M16 thread delivered with female grommet
VGE1PE280001 = Elbow backshell size 28 with female M32 thread delivered with female grommet

* Please consult us.

Note: Packaging = individual plastic bag + individual label + consumables.

VGE1/FER1

VGE1/FER1 Series

Accessories

Grommet

Part numbers

Layout	Type of grommet	Part numbers	Ø Wire insulator	
			Min	Max
18-19	Male	VGE1M181900	1.2	2.95
	Female	VGE1L181900		
20-15	Male	VGE1M201500	1.5	3.6
	Female	VGE1L201500		
22-14	Male	VGE1M221400	1.2	2.95
	Female	VGE1L221400		
24-10	Male	VGE1M241000	4.2	6.2
	Female	VGE1L241000		
28-21	Male	VGE1M282100	1.2	2.95
	Female	VGE1L282100		
32A13	Male	VGE1M32A1300	1.8	3.6
	Female	VGE1L32A1300		
36A22	Male	VGE1M36A2200	2.4	3.6
	Female	VGE1L36A2200		
40A35	Male	VGE1M40A3500	2.4	3.6
	Female	VGE1L40A3500		
40A60	Male	VGE1M40A6000	2	2.95
	Female	VGE1L40A6000		

Grommet has to be used with a backshell

Grommet filler plug

Contact size	Part numbers	Color
#16	8500-479	Blue
#12		
#8	SB0834	Red

To use in empty grommet cavities

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

Metallic Caps - IP67

Part numbers

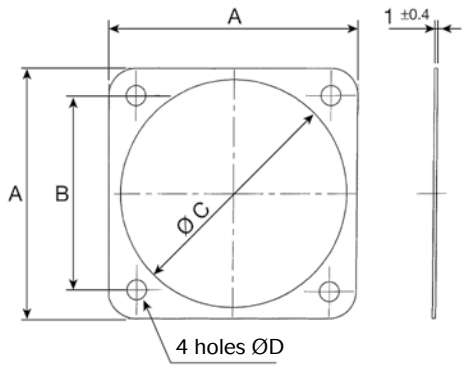
Shell size	Cap for receptacle	Cap for plug
18	VGE1E18	VGE1F18
20	VGE1E20	VGE1F20
22	VGE1E22	VGE1F22
24	VGE1E24	VGE1F24
28	VGE1E28	VGE1F28
32	VGE1E32	VGE1F32
36	VGE1E36	VGE1F36
40	VGE1E40	VGE1F41

Panel gasket for VGE1 and FER1

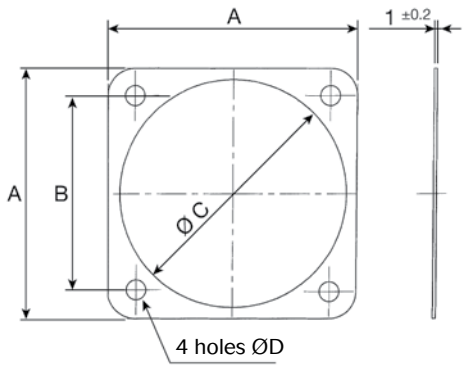
Part numbers & dimensions

Shell size	Part numbers		Dimensions			
	Non conductive	Conductive	A	B	Ø C	Ø D
18	**VGE1G18**	**VGE1G18A**	35	27	30.8	4.3
20	**VGE1G20**	**VGE1G20A**	38	29.4	34.2	
22	**VGE1G22**	**VGE1G22A**	41	31.8	37.4	
24	**VGE1G24**	**VGE1G24A**	44.5	34.9	40.9	
28	**VGE1G28**	**VGE1G28A**	50.8	39.7	46.7	5.2
32	**VGE1G32**	**VGE1G32A**	57	44.5	53.4	
36	**VGE1G36**	**VGE1G36A**	63.5	49.2	59.6	
40	**VGE1G40**	**VGE1G40A**	69.9	55.5	65.5	

Panel gasket (not conductive)



Panel gasket (conductive)



How to order a receptacle including a panel gasket ?

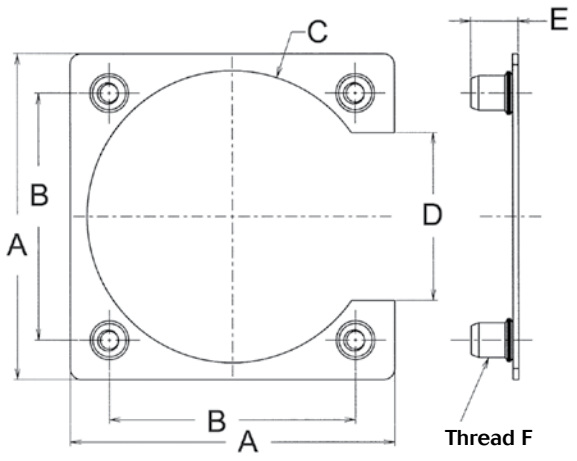
VGE1B.....04: Receptacle with non conductive gasket
VGE1B.....05: Receptacle with conductive gasket
FER1B.....04: Receptacle with non conductive gasket
FER1B.....05: Receptacle with conductive gasket
Example: VGE1B2214SN05 = Female receptacle layout 22-14 delivered with a conductive gasket

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

Fixing plate for VGE1 and FER1

Part numbers & dimensions

Shell size	Part numbers	Dimensions					
		A	B	Ø C	D	E	Thread F
18	**VGE1CP18**	34.2	27	30.3	19.7	7.7	M3
20	**VGE1CP20**	38.1	28.4	33.3	22		
22	**VGE1CP22**	40.5	31.8	36.5	23		
24	**VGE1CP24**	44	34.9	38.1	25.8		
28	**VGE1CP28**	50.8	39.7	46.4	28.6		
32	**VGE1CP32**	58.7	44.5	52.6	30.2	8.5	M4
36	**VGE1CP36**	63.5	49.2	58.8	34.9		
40	**VGE1CP40**	74.2	55.5	68.1	38.1		



Fixing plates can be used with VGE1 and FER1 recepacles

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

VGE1/FER1

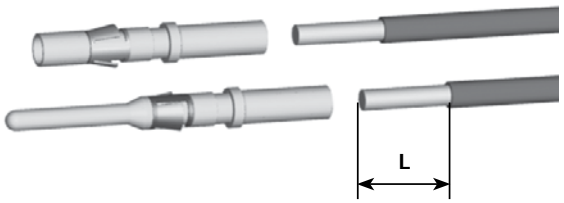
VGE1/FER1 Series

Technical information

Contact crimping instruction

Wire stripping

Contact type & size	Part numbers		Stripping length (L)
	male	femelle	
Contact #16	RM28M1*	RC28M1*	4.8
	RM24M9*	RC24M9*	
	RM20M12*	RC20M12*	
	RM16M23*	RC16M23*	7.1
	RM14M50*	RC14M50*	
	RM14M30*	RC16M30*	
Contact #12	8291 1459N*	8291 1458*	7 to 8
	8291 1461N*	8291 1460*	
	8291 1463N*	8291 1462*	
	8291 1465N*	8291 1464*	
Contact #8	8291 3601*	8291 3600*	6.5 to 7.5
	8291 3603*	8291 3602*	
	8291 3605*	8291 3604*	
	8291 3607*	8291 3606*	



Tooling

Contact size		Wire size		Part numbers		Tool	Locator	Tool selector
#	mm	AWG	mm²					
#16	1.6	30-28	0.05-0.08	RM28M1*	RC28M1*	MH860 (M22520/7-01)	MH86164G	4/6
		26-24	0.13-0.2	RM24M9*	RC24M9*	MH860 (M22520/7-01)	MH86164G	5/6
		22-20	0.32-0.52	RM20M12*	RC20M12*	MH860 (M22520/7-01)	MH86164G	5/7
		20-16	0.5-1.5	RM16M23*	RC16M23*	MH860 (M22520/7-01)	MH86164G	6/9
		16-14	1.5-2.5	RM14M30*	RC16M30*	AF8 (M22520/1-01)	TP1142	8
		16-14	1.5-2.5	RM14M50*	RC14M50*			
#12	2.4	20	0.5	8291 1459N*	8291 1458*	M317	M22520/1-05	
		18	0.75-1.0	8291 1461N*	8291 1460*	M317	M22520/1-05	
		16	1.5	8291 1463N*	8291 1462*	M317	VGE10077A	
		14	2.5	8291 1465N*	8291 1464*	M317	VGE10077A	
#8	3.6	16	1.5	8291 3601*	8291 3600*	M317	VGE10077A	
		14	2.5	8291 3603*	8291 3602*	M317	VGE10077A	
		12	4	8291 3605*	8291 3604*	M317	VGE10077A	
		10	6	8291 3607*	8291 3606*	M317	VGE10077A	

* Plating code see page 34

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

Contact crimp tooling

Tooling

M22520 1-02

M22520/1-01 or AF8

y116

M22520/5-01

M22520/7-01 or MH860

MH86164G

M317

Contact removal

Tooling

Contact size	Extractor
#16	RX2025GE1
#12	5106.021.09.24
#8	5106.021.09.36
Quadrax	VGE1-0324A

5106.021.09.36

5106.021.09.24

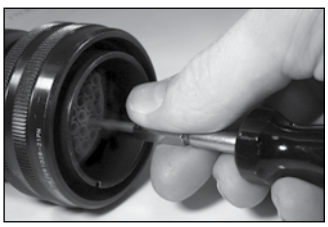
RX2025GE1

VGE1-0324A

Special case with the tool RX2025GE1:

A - When setting up in the cell, keep firmly the tool by the hexagonal metallic part and insert tool in cavity.

B - Push the tool by the handle to extract the contact.



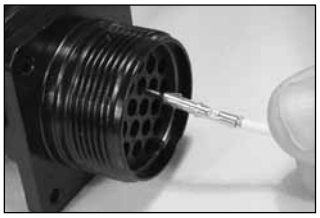
Extraction:

Place the tool into the cavity from front face of the connector, push on the handle, then remove the contact..

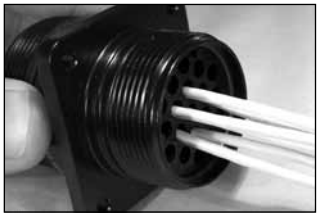
Contact mounting

Without grommet

A - Place manually the contacts in the cavity, push until the mecanical stop is reached. Operation control: manually pull with a little effort and the contact should not withdraw.

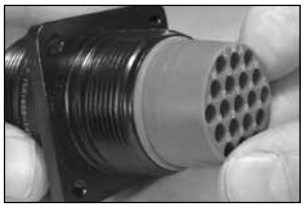


B - Not mandatory to wire all cavities.



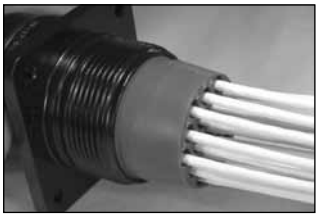
With grommet

A - For grommet mounting, insert the three insulator pins with grommet's hole.

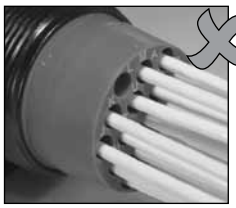


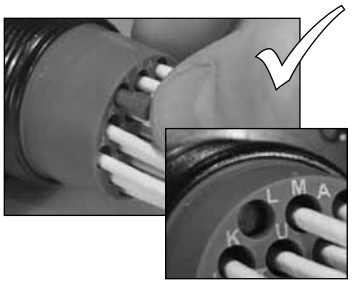
B - Place manually the contacts in the cavity, push until the mecanical stop is reached. Operation control: manually pull with a little effort and the contact should not withdraw.

C - Mandatory to wire all cavities.

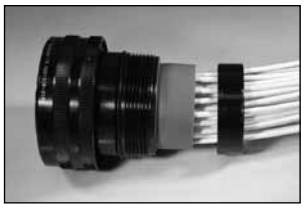


D - If a cavity is empty, it is mandatory to use a grommet filler plug.





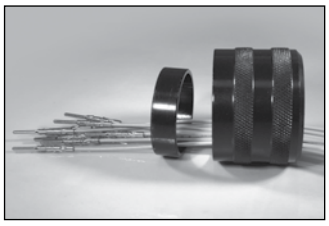
E - Put the compression ring over the grommet.



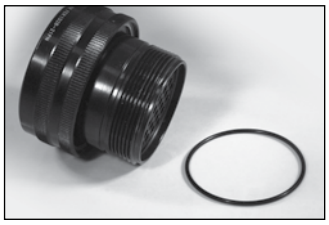
Cabling with backshell

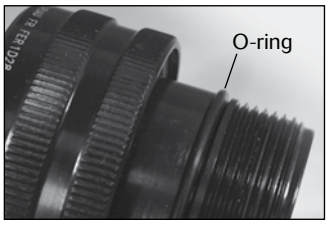
With grommet

A - Pass wires through the backshells/accessories.

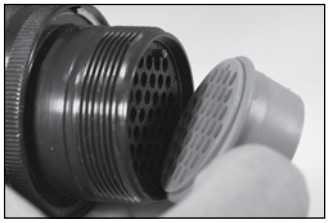


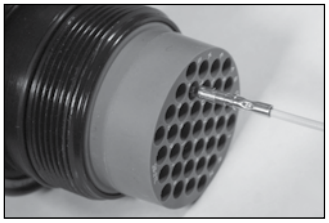
B - On sealed version, mount the O-ring on the groove's plug.

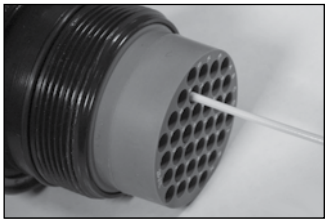




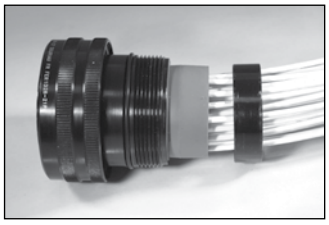
C - Contact mounting: place grommet in the rear connector face, push each contact in insulator's hole.

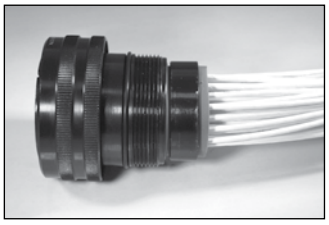




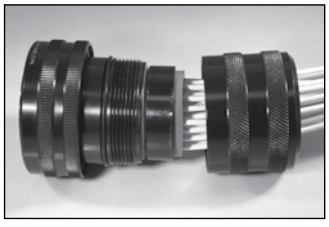


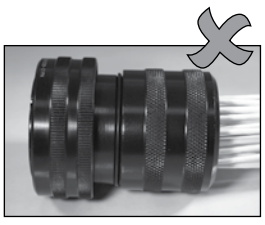
D - Place the conical ring on the grommet.

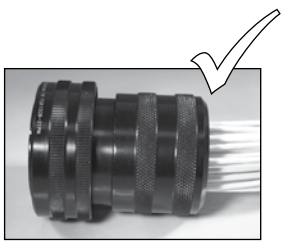




E - Screw the adaptor until you feel the back stop.







Backshell mounting sequence and coupling torque

	Shell		Recormanded torque
Adaptor/connector	All		10 Nm
Reductor/adaptor	40		10 Nm
Backshell/adaptor or Backshell/reductor	PS	T 40	10 Nm
	SS (PMA)	T 22	5 Nm
	VS	All	10 Nm

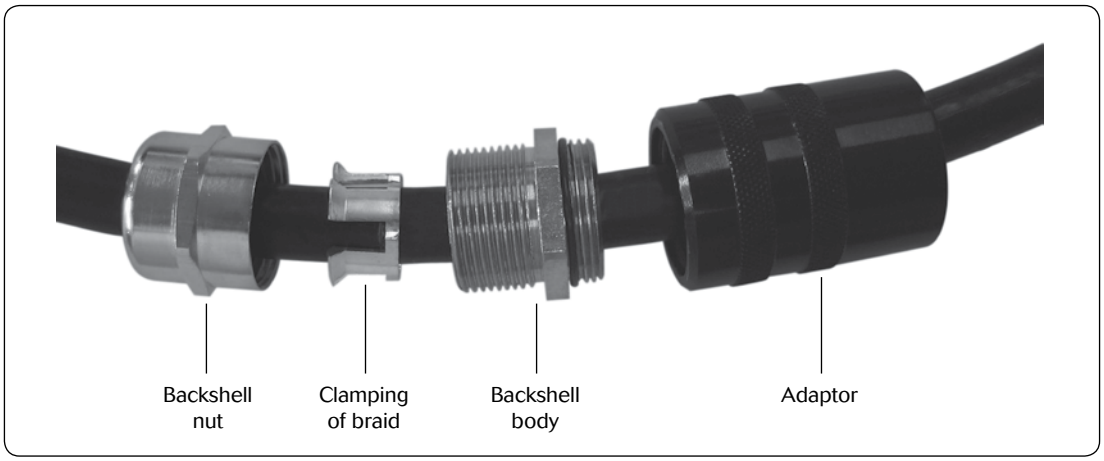
Modular gasket for backshells JS,JE, KS and KE

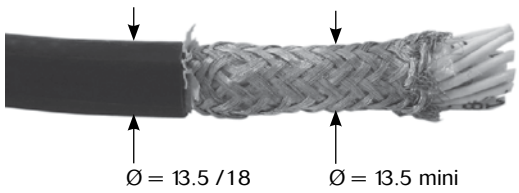
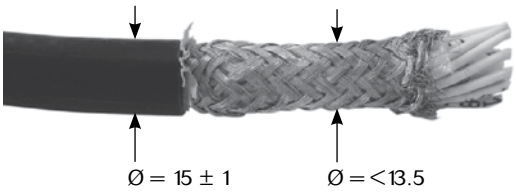
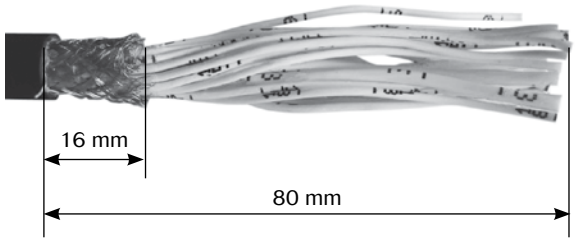
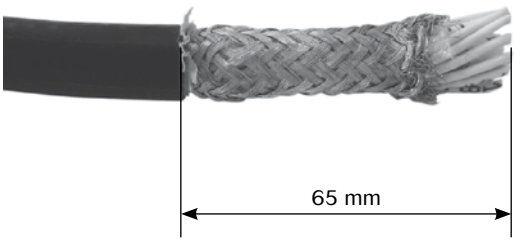
For cable gland backshell, the gasket is delivered clogged.

Remove inner part of the gasket to adjust the internal diameter to fit the diameter of the cable.

How to harness a shielded cable

Method A: braid fixed with TS type backshell



Case n°1: cable Ø = 13.5 to 18 mm brand Ø > 13.5 mm	Case n°2: cable Ø = 15±1 mm brand Ø ⩽ 13.5 mm
	
A - Strip cable, adjust braid length.	A - Turn the shielding on the sheath.
	 
B - Strip wires, crimp and mount contacts.	B - Strip wires, crimp and mount contacts.

Case n°1: cable Ø = 13.5 to 18 mm brand Ø > 13.5 mm

C - Thread accessories:
• Adaptor / plug body or receptacle: tightening torque = 10 Nm

• Backshell body / adaptor: tightening torque = 10 Nm

D - slip the clamping of braid inside the backshell' body

E - Thread the backshell nut /backshell body
• Tightening torque = 7 Nm

Warning: during the clamping of part, always support the cable to avoid rotation.

Case n°2: cable Ø = 15±1 mm brand Ø ⩽ 13.5 mm

C - Thread accessories:
• Adaptor / plug body or receptacle: tightening torque = 10 Nm

• Backshell body / adaptor: tightening torque = 10 Nm

D - slip the clamping of braid inside the backshell' body

• Cut excess of braid

E - Thread the backshell nut /backshell body
• Tightening torque = 7 Nm

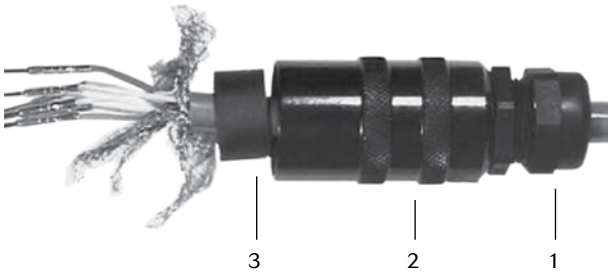
Warning: during the clamping of part, always support the cable to avoid rotation.

How to harness a shielded cable

Method B: braid fixed on the conic ring

A - Before each operation

Pass on the cable or bundle of conductor in the following order : the sealing gland backshell (1), the adaptor (2) and the conical ring (3).



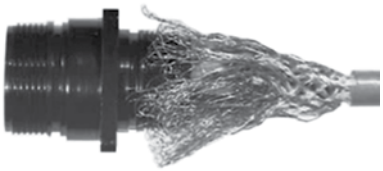
B - Pass the contacts through the grommet (4)

C - Slide the grommet onto the cable and insert the contacts into the connector

D - Place the grommet on the insulator of the connector

E - Fold the individual braid or braids on the grommet

F - Put the external braid on the grommet

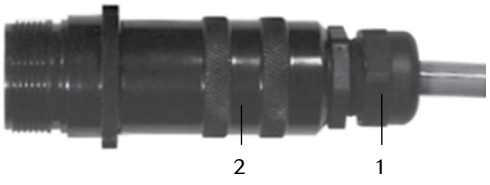


G - Fix the braids with the conical ring

H - Adjust the length of the braids

I - Secure the braids with the conical ring

J - Screw the adaptor (2) and secure the cable by tightening the sealing gland backshell (1)



Quadrax crimping instruction

Tooling

M22520 1-02

Y116

M22520/5-01

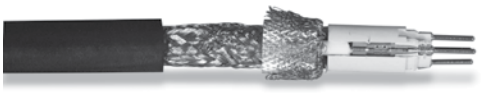
M22520/1-01 or AF8

Cabling process

A -Cable, cable insulator, ferrule position may vary depending on cable dimensional.
For more detail, and strip length, please consult us.

Line contacts crimping.

Contact mounting on insulator.



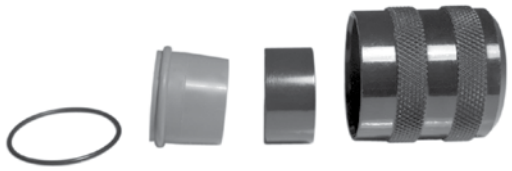
B -Place braid around ferrule.

Mount insulator in external contact cell, crimp the contact.
Cut excess of braid.

Done !

Backshells exploded views

Backnut (type RS)



Adaptator

Cable clamp (type CS)

Conduit backshell (type SS)

Cable clamp with sealing gland (type JS)

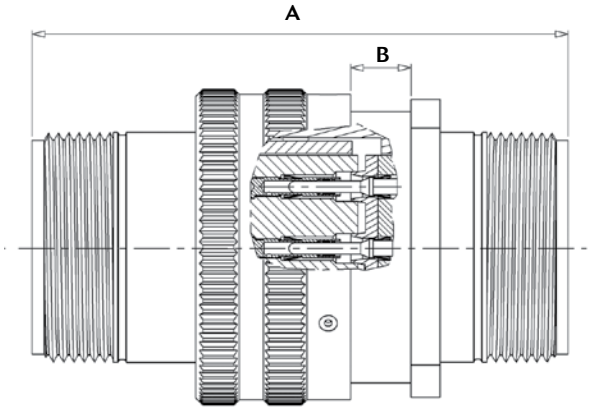
Cable clamp with sealing gland and trumpet shape (type KS)

Cable clamp with sealing gland for shielding (type TS)

Grommet in option

Connector mated length

VGE1 plug & receptacle



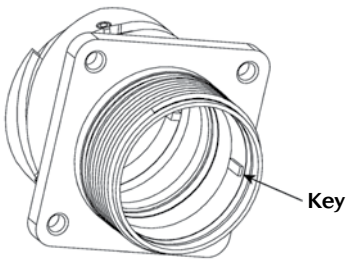
Shell size	A max	B max
18	75.50	7.80
20		
22		
24		
28	80.50	8.80
32		
36		
40		

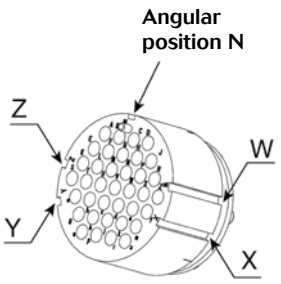
Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

Insert orientations

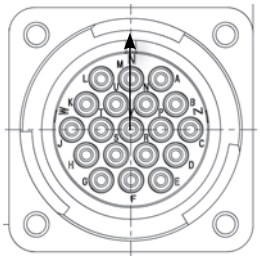
Alternative insert orientation positions

Layouts	N	W	1X	y	Z
18-19	0°	-	120°	240°	-
20-15	0°	80°	-	-	280°
22-14	0°	80°	-	-	280°
24-10	0°	80°	110°	250°	280°
28-21	0°	80°	110°	250°	280°
32A13	0°	65°	130°	230°	295°
36A22	0°	80°	110°	250°	280°
40A35	0°	70°	130°	230°	290°
40A60	0°	80°	110°	250°	280°

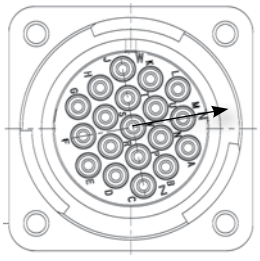




22-14 position N



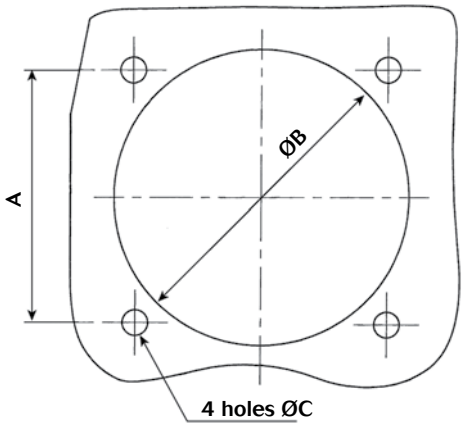
22-14 position W



0°: insert not mounted in the shell

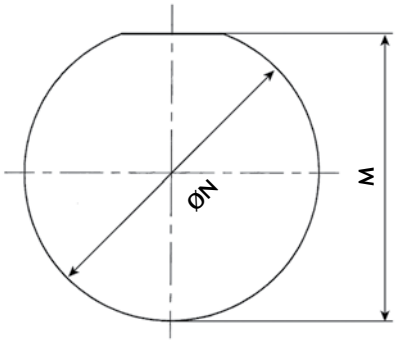
Panel cut out

Square flange receptacle



Shell size	A$^{\pm 0.15}$	ØB$^{\pm 0.3}$	ØC$^{\pm 0.10}$	D
18	27	31.2	3.4	3
20	29.4	34.6	3.4	3
22	31.8	37.8	3.4	3
24	34.9	41.3	3.9	3
28	39.7	47.1	3.9	3
32	44.5	53.8	4.5	3
36	49.2	60	4.5	3
40	55.5	66.4	4.5	3

Jam nut receptacle



Shell size	M	ØN
18	33.90	35.20
22	40.25	41.55

Note: max dimensions in mm
Dimensions are not contractual and may be subject to modifications

Purchase order memo

Receptacle

Part numbers	Page	Quantity	Note

Plug

Part numbers	Page	Quantity	Note

Purchase order memo

Contact

Part numbers	Page	Quantity	Note

Backshell

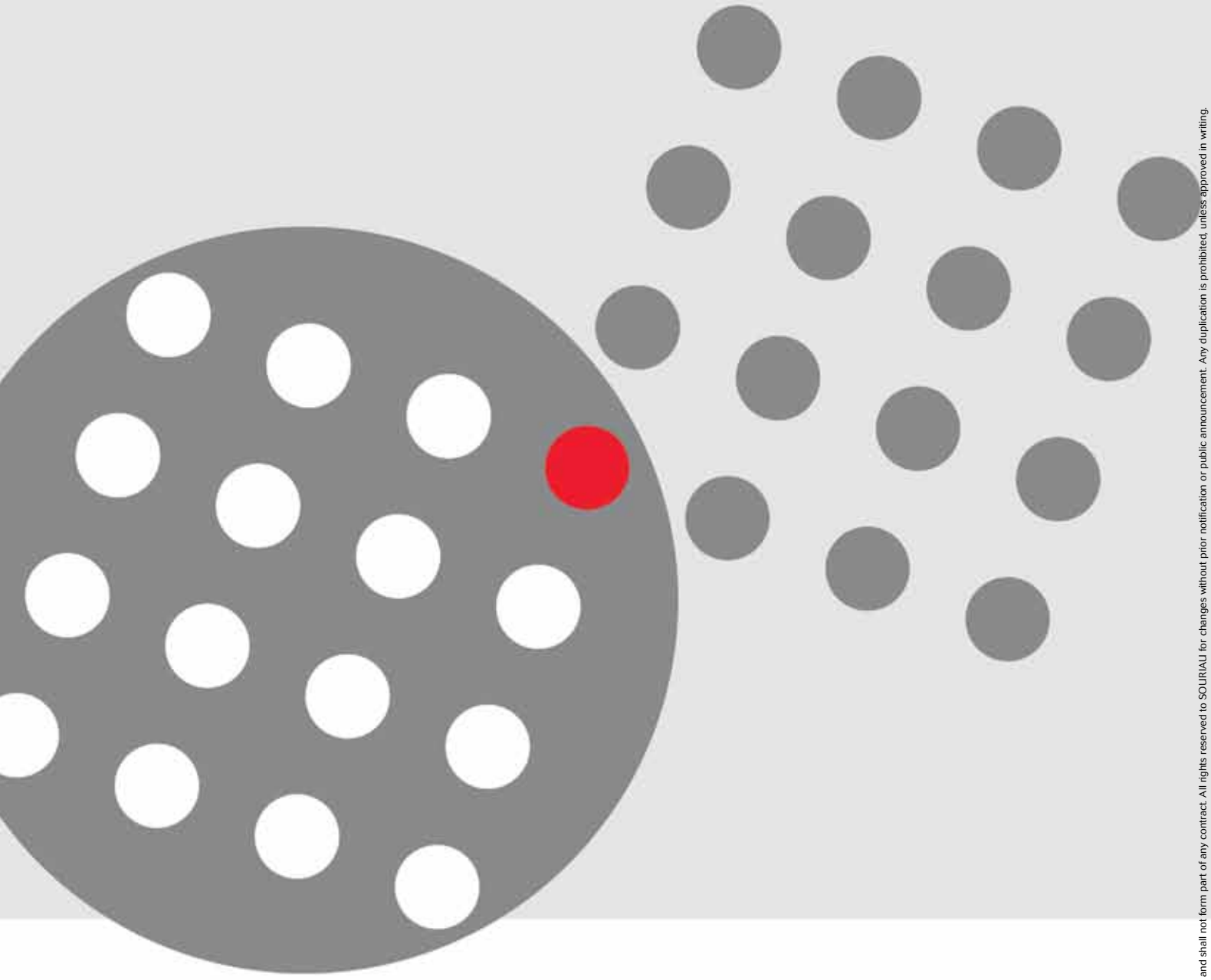
Part numbers	Page	Quantity	Note

Accessory

Part numbers	Page	Quantity	Note

Notes

Notes



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