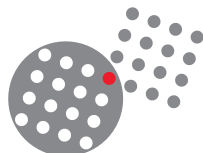


*New generation
of circular connectors
for heavy-duty applications*



VGE1 / FER1 Connectors

Following MIL-DTL-5015 & VG 95234
and validated according to NFF 61030



SOURIAU
Connection Technology

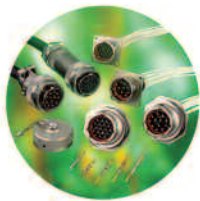
VGE1/FER1 Series



SOURIAU

Connectors and interconnect systems for harsh environments

The company designs, manufactures and markets high performance interconnect solutions for severe environments from industrial broadline and universal ranges to complex system with integrated functions: filtering, high speed data transmission, hermetic seal, separation mechanism, remote handling, underwater mating, ...



Industrial



Aeronautical



Equipment & system

The dedicated end markets for SOURIAU's products are aeronautical, defense-space and industrial.



Railway
Geophysics
Manufacturing environment
Instrumentation
Automation & process



Civil & military aircraft
Helicopter
Weapon delivery system
Avionics



Military marine
Communications
Satellites
Launcher & missile

SOURIAU was established in 1917 and has been created by successive acquisitions of the industrial, aeronautical, defense and space activities of SOURIAU, JUPITER and BURNDY.

The Group's products are engineered and manufactured in the USA and Dominican Republic, Europe and Morocco, Japan and India, and sold by a worldwide sales and marketing organization, and in addition to SOURIAU's offices, a large network of licensed distributors and agents.

SOURIAU complies with most of national and international Quality Assurance Standards, production unit with ISO 14001.

**Quality Certificate
Management System**

ISO 9001

**Environment Certificate
Management System**

ISO 14001

**Quality Certificate
Management System**

Aeronautic Industry : EN 9100

VGE1/FER1 Series



New generation of circular connector for heavy-duty and railway applications...

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VGE1/FER1 Series



Technical features & benefits

• Ruggedized full metal reverse bayonet connector

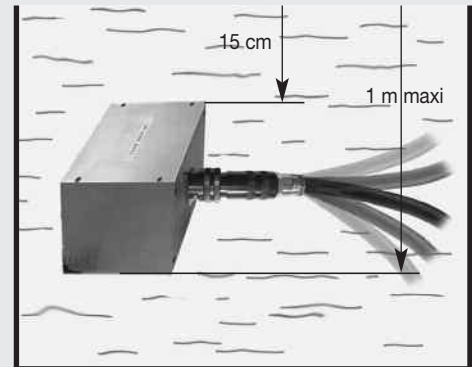
- Enabling 500 mating-unmating without wear out thanks to a stainless steel wear pin located at the critical point of mating.
- Secure locking device: audible “click” when mating; visible yellow dot to indicate end of mating.



• Dynamic* IP67

- Protected against the effects of temporary immersion between 15 cm and 1 m (duration of the test: 30 min).

* The connector remains sealed while the cable is moving. For rates IP68 and IP69K: consult us.



• Up to 500 hours salt spray resistance

- can be used in very severe environment thanks to Zn-Co plating.

• High performance signal transmission

- TRIM TRIO contact.
- 360° shell Shielding permit to decrease all signal perturbations.

• In accordance with railway standards

- As per the French railway standard NFF 61 030 and the fire & smoke standards NFF 16 101, NFF 16 102.



VGE1/FER1 Series*



VGE1 Series

Completely intermountable with VG 95234 : the MS 5015 reverse bayonet connectors

Description

This connector series is an enhanced version of the VG 95234 connector standard but remains completely intermountable with VG 95234 : the MS 5015 reverse bayonet connectors.

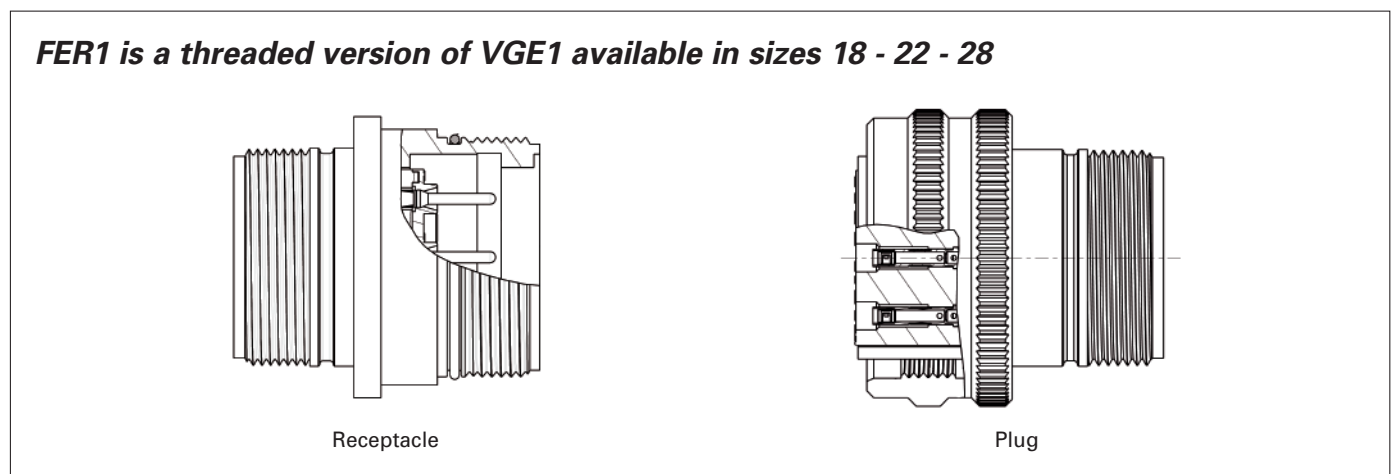
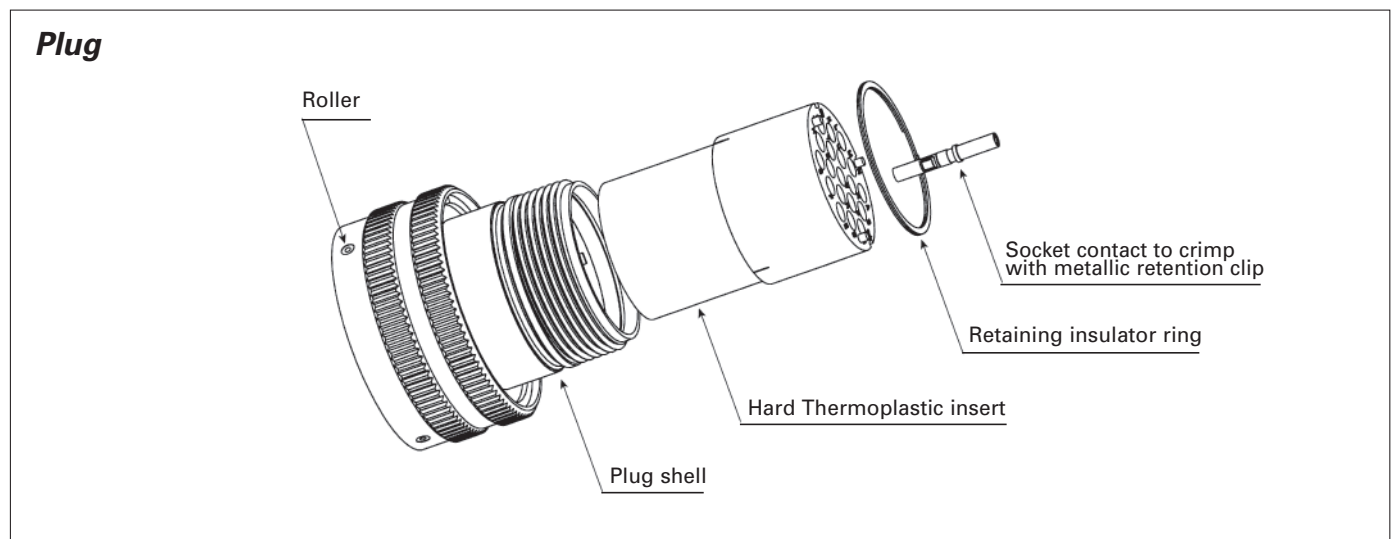
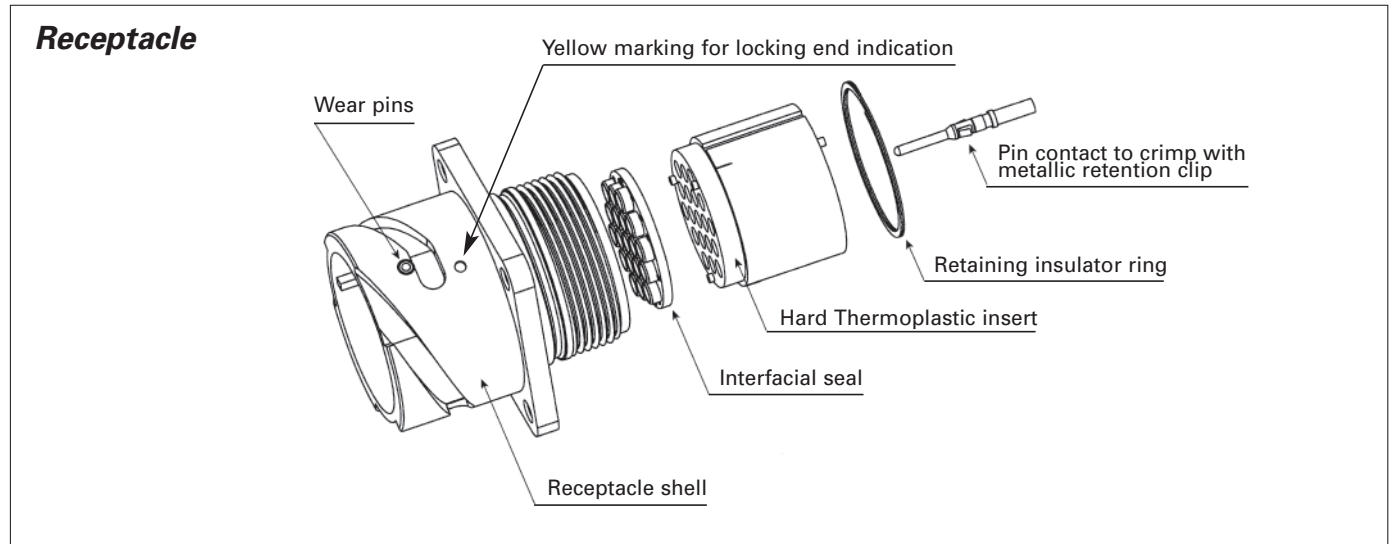
- This connector series is also in conformity with the French railways standard NFF 61030.
- The insulator is in hard thermoplastic, classified UL94VO. It is also classified I2F3 following NFF 16101-16102 standards.
- An interfacial seal is present on the male inserts to extend the creepage distance and to have a better sealing when the connector is mated.
- The insulator is retained into the plug or receptacle shell by a metallic retaining ring which can be removed with a small screwdriver. Once removed, user can define insulator orientation.
- Contacts gauge 8, 12 or 16 are machined crimp contacts, removable thanks to a clip on the contact.
- No tools are needed to insert contacts into the insulator. An extraction tool is available to extract the contacts. The tool is engaged by the front face of the connector and the contacts are rear released.
- Contacts are crimped thanks to very common toolings.
- The connector is rated IP67 when mated and used with backnut and grommet (please refer to page 16 to check the wires diameters), or suitable accessories (ex: sealed backshell). It is unsealed when used with cable clamp without grommet.
For rates IP68 and IP69K (in dynamic): consult us.
- Backshells can be derivated from VG 95234 standards or SOURIAU VGE1 backshells adapted to the railways market needs.
- This connector can be supplied fully assembled or in component form (please consult us).

* FER1 is a threaded version of VGE1 available in sizes 18-22-28

VGE1/ FER1 Series



Description



VGE 1/FER1 Series



Technical Features

Mechanical

- Mechanical endurance : 500 mating and unmating
 - Minimum retention force of the contact in the insulator :
 - 70 N for contacts # 16 (1.6 mm)
 - 90 N for contacts # 12 (2.4 mm)
 - 110 N for contacts # 8 (3.6 mm)
- Minimum values with a maximum displacement of the contact of 0.3 mm (following NFF 61030)
- Retention of the insulator in the shell : (following MIL-C-26482G Series 2 class L standard)
 - Bayonet coupling mechanism - Coupling torque : following VG 95234
 - Vibrations : following NFF 61030
 - Sinus vibrations : 10 - 100 Hz
 - Acceleration : 2 g
 - Shocks : Acceleration = 30 g
Duration = 18 ms following NFF 61030
 - Impact strength (free fall of the plug). The connector plug is subjected to a free fall test. The height of drop is 0.75 m. No mechanical damage.

Electrical

- Contact resistance :
 - 2.5 m Ω maxi for contact # 16
 - 1.3 m Ω maxi for contact # 12
 - 0.9 m Ω maxi for contact # 8 following NFF 61030
- Maximum current per contact :
 - 15 Amps for contact # 16
 - 20 Amps for contact # 12
 - 30 Amps for contact # 8
- Withstanding voltage :
 - 2550 Vrms for layouts # 16
 - 3250 Vrms for layouts # 12 and 8
- Insulation resistance :
 - \geq 5000 M Ω under 500 Vcc
 - \geq 4000 M Ω under 220 Vcc
- Electrical continuity of the shells : 20 m Ω maximum
- In mated conditions (interfacial seal is in compression) minimum creepage distance = minimum insulation distance in the air :
 - 9 mm minimum for layouts with contacts # 16
 - 12 mm minimum for layouts with contacts # 12 or # 8

Environmental

- Climatic category : -40°C +100°C
Dry heat test : +100°C during 96 h

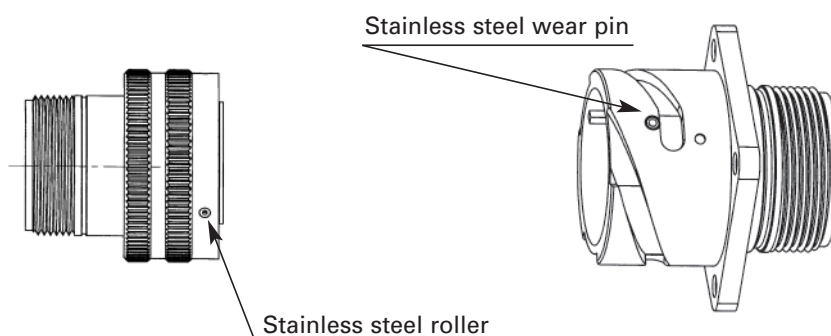
- Corrosion spray resistance : up to 500 hours salt spray
- Damp heat : 21 days, 40°C, 95% relative humidity
- Water protection : the connector is rated IP67 when mated and used with backnut and grommet (please refer to page 16 to check the wires diameters), or suitable accessories (ex: sealed backshell). (Immersion under 1m maxi of water during 30 min). It is unsealed when used with cable clamp without grommet.
- Material rated I2F3 following NFF 16101-16102 and UL 94 VO
- Fluid resistance : gas oil, mineral oil, acid bath, basic bath, following NFF 61030

Material

- Shell in aluminium alloy with black zinc cobalt plating
- Insulator : hard thermoplastic with glass fiber
- O'ring and interfacial seal in silicone
- Retaining insulator ring in carbon steel

This full product range is qualified by ALSTOM, RATP and SNCF.

Robustness and high reliability of the locking mechanism



VGE1/FER1 Series



Connector Ordering Information

(without contacts and accessories)

Shells, backshells, contacts and accessories have to be ordered separately

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 EMI Lamella						
Shell size	: 18 - 20 - 22 - 24 - 28 - 32 - 36 - 40						
Layouts							
Contact type	: P - Pin S - Socket						
Insert Orientation	: N ; W ; X ; Y ; Z or 0 0 = for insulator not installed in the shell						
Modification Code	: <i>Please consult us</i>						

Series	FER1	B	22	— 14	P	N	--
Shell type							
B	Rear mounting receptacle						
D	Plug						
C	Rear mounting receptacle for PC tails contact # 16						
Shell size	: 18 - 22 - 28 Other sizes : consult us						
Layouts							
Contact type	: P - Pin S - Socket						
Insert Orientation	: N ; W ; X ; Y ; Z or 0 0 = for insulator not installed in the shell						
Modification Code	: <i>Please consult us</i>						

For information : connector marking

Example 1 : VGE1B22-14PN Example 2 : FER1D28-21SN

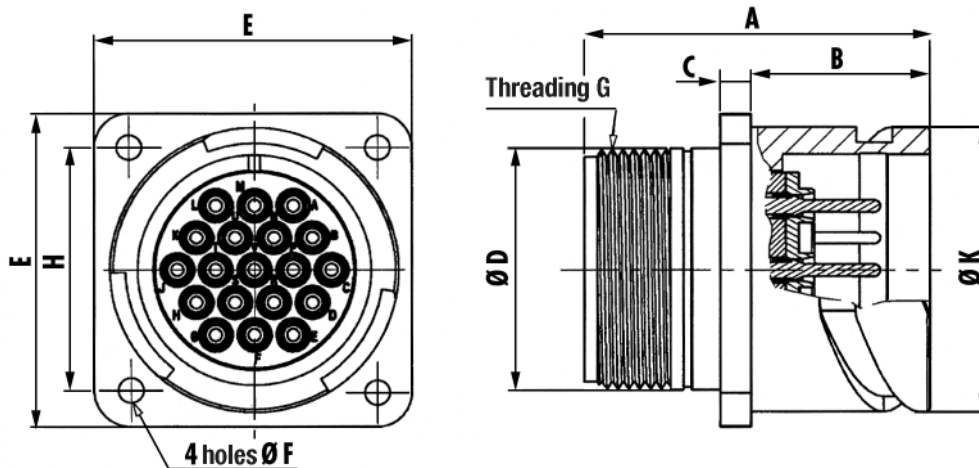
Nota : Please consult us if you want to order the connector in component form (shell and insert).

VGE1/FER1 Series



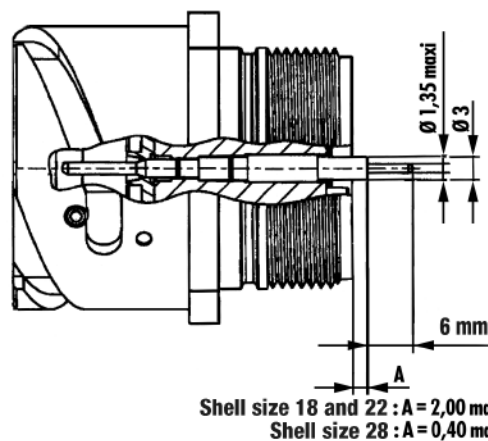
Connector Dimensions

Receptacle



Shell size	A Max	B 0/+0.4	C ±0.2	ØD Max	E ±0.3	ØF 0/+0.15	Threading G Class 2A	H ±0.1	ØK -0.15/0
18	45.50	23.05	4.00	25.50	35.00	3.25	1" x 20 UNEF	27.00	30.80
20	45.50	23.05	4.00	28.70	38.00	3.25	1 1/8" x 18 UNEF	29.40	34.20
22	45.50	23.05	4.00	31.90	41.00	3.25	1 1/4" x 18 UNEF	31.80	37.40
24	45.50	23.05	4.00	35.20	44.50	3.75	1 3/8" x 18 UNEF	34.90	40.90
28	48.00	24.05	4.00	41.50	50.80	3.75	1 5/8" x 18 UNE	39.70	46.70
32	48.00	24.05	4.00	47.90	57.00	4.35	1 7/8" x 16 UN	44.50	53.40
36	48.00	24.05	4.00	52.50	63.50	4.35	2 1/16" x 16 UNS	49.20	59.60
40	48.00	24.05	4.00	59.00	70.00	4.35	2 5/16" x 16 UN	55.50	65.50

Receptacle with PC tails contact # 16 for shell size 18, 22 and 28

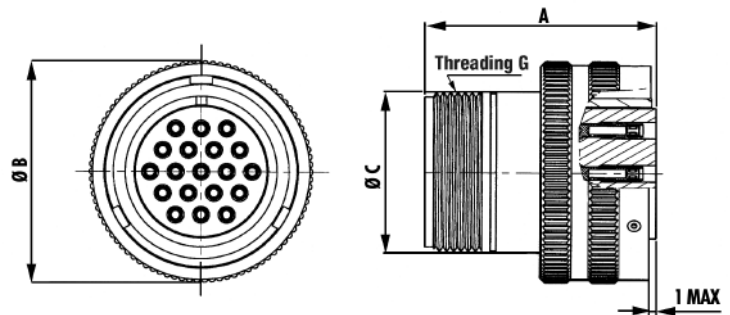


VGE1/ FER1 Series



Plug

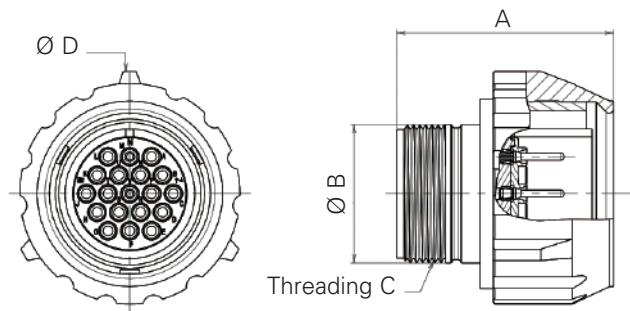
Shell size	A Max	B Max	C Max	Threading G Class 2A
18	45.60	37.30	25.50	1" x 20 UNEF
20	45.60	41.50	28.70	1 1/8" x 18 UNEF
22	45.60	44.00	31.90	1 1/4" x 18 UNEF
24	45.60	48.50	35.20	1 3/8" x 18 UNEF
28	48.10	55.30	41.50	1 5/8" x 18 UNEF
32	48.10	62.00	47.90	1 7/8" x 16 UN
36	48.10	66.80	52.50	2 1/6" x 16 UNS
40	48.10	74.50	59.00	2 5/16" x 16 UN



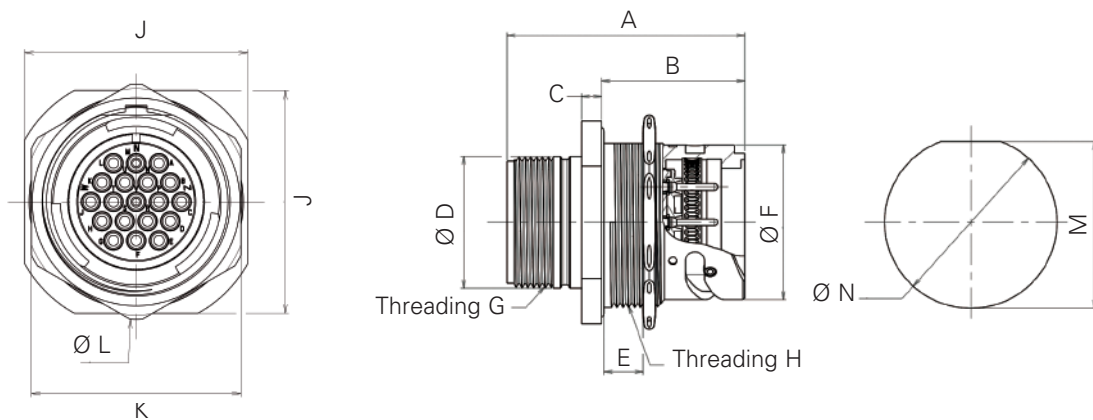
Plug with overmolded ring (sizes 18 and 22)

Shell size	A Max	B Max	Threading C Class 2A	D Max
18	49.70	25.50	1"-20 UNEF	49.00
22	49.70	31.90	1 1/4"-18 UNEF	56.00

réf.: VGE1 D 18-19**02 - VGE1 D22-14**02
Other sizes : consult us.



Jam Nut Receptacle (sizes 18 and 22).



Shell size	A Max	B	C	Ø D Max	E Max	Ø F	Threading G Class 2A	Threading H Class 2A	J	K	Ø L	M	Ø N
18	57.70	34.50	4.80	25.50	10.00	30.80	1"-20 UNEF	1 3/8"-18 UNEF	42.00	39.90	44.50	33.90	35.20
22	57.70	34.50	4.80	31.90	10.00	37.40	1 1/4"-18 UNEF	1 5/8"-18 UNEF	49.00	46.00	51.30	40.25	41.55

Other sizes : consult us.

Backshells for Jam Nut receptacles with grommet are specific. Please consult us.

VGE1/ FER1 Series



Layouts (marking on front face of female insulator)

18-19	20-15	22-14	24-10	28-21
10 contacts # 16	7 contacts # 12	19 contacts # 16	7 contacts # 8	37 contacts # 16
32 A13	36 A22	40 A35	40 A60	
13 contacts # 12	22 contacts # 12	35 contacts # 12	60 contacts # 16	

Note : We will develop other layouts following market demand.

Alternative insert orientation positions

Key

Angular Position N

Z

Y

W

X

Layouts	Angular displacement of insert				
	N	W	X	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
32-A13	0	65	130	230	295
36-A22	0	80	110	250	280
40-A35	0	70	130	230	290
40-A60	0	80	110	250	280

VGE1/FER1 Series



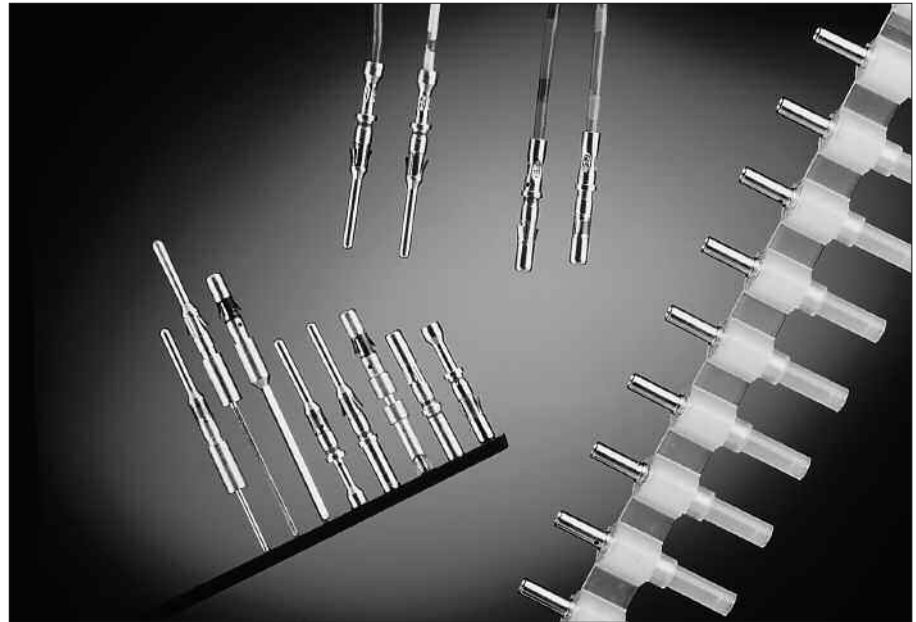
Contacts

Contacts come from our well known TRIM-TRIO® Series.

They are precision solid machined crimp snap-in pins and sockets for heavy duty top performance requirements.

Springs on both contacts are made of spring-tempered, heat treated, beryllium copper.

The socket inner spring supplies high contact pressure to ensure low-resistance contact between pin and socket. The socket contact features closed entry to prevent probe damage. Crimp barrels have insulation grips for vibration support and are provided with a cable stop and inspection hole.



Construction

- **Contact body :**
High conductive copper alloy
- **Outer spring :**
Tempered, heat treated, beryllium copper
- **Inner spring socket :**
Tempered, heat treated, plated beryllium copper

Plating table

Au = Gold plated : minimum of 0.4 μm of Gold all over, over nickel coating

Ag = Silver plated 5 μm of silver all over

Performance characteristics

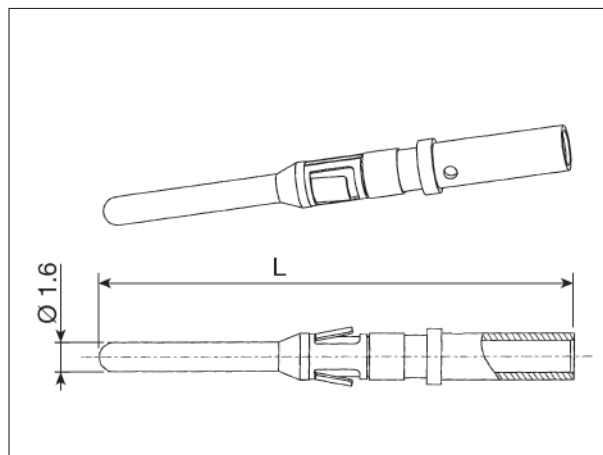
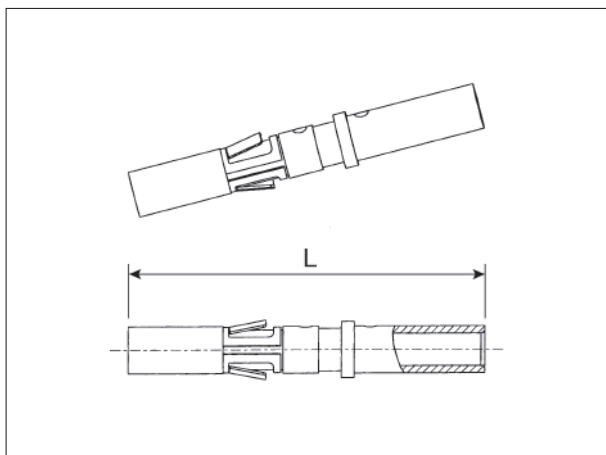
	Contacts # 16	Contacts # 12	Contacts # 8
Maximum current rating	15 Amps	20 Amps	30 Amps
Contact resistance	$\leq 2.5 \text{ m}\Omega$	$\leq 1.3 \text{ m}\Omega$	$\leq 0.9 \text{ m}\Omega$

VGE1/FER1 Series

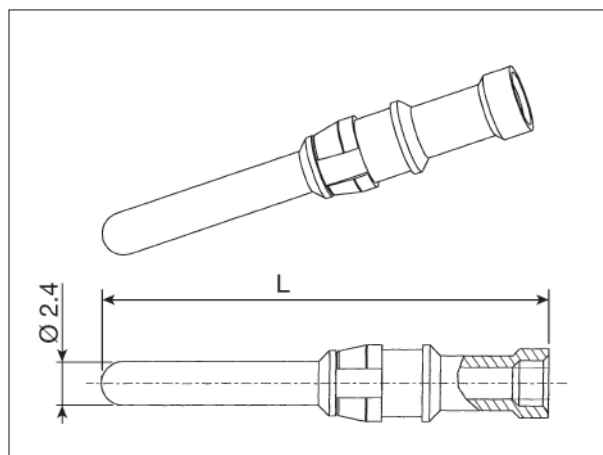
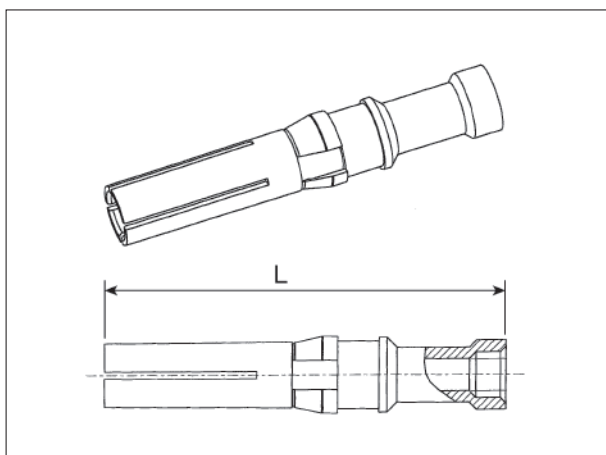


Contact Dimensions

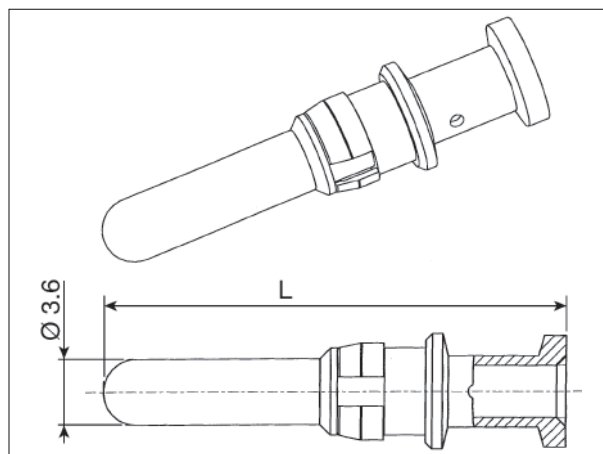
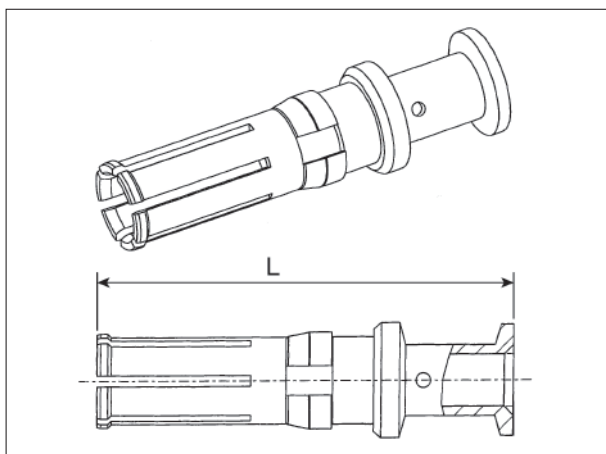
Contacts # 16 (1.6 mm)



Contacts # 12 (2.4 mm)



Contacts # 8 (3.6 mm)



Length L = see table page 15.

VGE1/FER1 Series



Contact Part Numbers

Contact size	Contact type	Contact diameter	Contact Part number	Cable			Protection	Contact dimensions (mm)
				Section of the conductor		Wire insulator diameter (maxi)*		
		mm		mm ²	AWG	mm	L	
#16	Male	1.6	RM16M23K	0.52 – 1.50	20-16	3	Au	26.2
#16	Female	1.6	RC16M23K	0.52 – 1.50	20-16	3	Au	18.2
#16	Male	1.6	RM14M30K	1,50 – 2,50	16-14	3	Au	26.2
#16	Female	1.6	RC14M30K	1,50 – 2,50	16-14	3	Au	18.2
#12	Male	2.4	8291 1437 NA	0.50	20	4.9	Ag	26.8
#12	Female	2.4	8291 1436 A	0.50	20	4,9	Ag	24.3
#12	Male	2.4	8291 1435 NA	0.75 – 1.00	18	4,9	Ag	26.8
#12	Female	2.4	8291 1434 A	0.75 – 1.00	18	4,9	Ag	24.3
#12	Male	2.4	8291 1463 NA	1.50	16	4,9	Ag	24.8
#12	Female	2.4	8291 1462 A	1.50	16	4,9	Ag	22.3
#12	Male	2.4	8291 1465 NA	2.50	14	4,9	Ag	24.8
#12	Female	2.4	8291 1464 A	2.50	14	4,9	Ag	22.3
#12	Male	2.4	8291 1437 NK	0.50	20	4,9	Au	26.8
#12	Female	2.4	8291 1436 K	0.50	20	4,9	Au	24.3
#12	Male	2.4	8291 1435 NK	0.75 – 1.00	18	4,9	Au	26.8
#12	Female	2.4	8291 1434 K	0.75 – 1.00	18	4,9	Au	24.3
#12	Male	2.4	8291 1463 NK	1.50	16	4,9	Au	24.8
#12	Female	2.4	8291 1462 K	1.50	16	4,9	Au	22.3
#12	Male	2.4	8291 1465 NK	2.50	14	4,9	Au	24.8
#12	Female	2.4	8291 1464 K	2.50	14	4,9	Au	22.3
#8	Male	3.6	8291 3601 A	1.50	16	6.5	Ag	25.5
#8	Female	3.6	8291 3600 A	1.50	16	6.5	Ag	25,5
#8	Male	3.6	8291 3603 A	2.50	14	6.5	Ag	25.5
#8	Female	3.6	8291 3602 A	2.50	14	6.5	Ag	25,5
#8	Male	3.6	8291 3605 A	4.00	12	6.5	Ag	25.5
#8	Female	3.6	8291 3604 A	4.00	12	6.5	Ag	25,5
#8	Male	3.6	8291 3607 A	6.00	10	6.5	Ag	25.5
#8	Female	3.6	8291 3606 A	6.00	10	6.5	Ag	25,5

Note : Dimensions are not contractual and may be subject to modifications.

NB : RM/RC contacts size 16 included in the Trim-Trio catalog are compatible with VGE1 connector.
Trim-Trio® catalog can be down loaded on our web site : www.souriau.com

* Allowable by the insert

■ Please consult us

VGE1/FER1 Series



Accessories

Backshell ordering information

Series	VGE1 VGE1	J C	S S	18 22	— 00 — 14	00 00	M
Backnut		R					
Cable clamp		C					
Backshell for PMA tube		S					
Cable clamp with sealing gland		J					
Cable clamp with sealing gland (trumpet)		K					
Cable clamp with sealing gland for shielding		T					
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 : M for male or L for female (if grommet needed)							

P/N example : Short backshell with male grommet for shell size 40 connector

VGE1 J S 40 A 35 00 M

VGE1 J S 40 A 60 00 M

P/N example : Long backshell without grommet for shell size 40 connector

VGE1 J S 40-00 10

VGE1 J S 40-00 10

Protective caps



Plug cap: F

ex : VGE1F xx (xx = shell size)

Receptacle cap: E

ex : VGE1E xx (xx = shell size)

Adaptor ordering information

Series	VGE1	P	S	18	— 00	00
P - Adaptor with PG outlet						
S - Adaptor for straight backshell						
Shell size : 18 - 20 - 22 - 24 - 28 - 32 - 36 - 40						
Adaptor type : 10 - long 00 - short						

VGE1/FER1 Series



Accessories

Grommet

Grommet are delivered with a conical ring

Layout	Grommet type	Part number	Wire insulator diameter (mm) to achieve IP67 rate	
			Mini	Maxi *
18-19	male	VGE1M18-1900	1,2	2,95
18-19	female	VGE1L18-1900	1,2	2,95
20-15	male	VGE1M20-1500	1,5	3,6
20-15	female	VGE1L20-1500	1,5	3,6
22-14	male	VGE1M22-1400	1,2	2,95
22-14	female	VGE1L22-1400	1,2	2,95
24-10	male	VGE1M24-1000	4,2	6,2
24-10	female	VGE1L24-1000	4,2	6,2
28-21	male	VGE1M28-2100	1,2	2,95
28-21	female	VGE1L28-2100	1,2	2,95
32A13	male	VGE1M32A1300	1,8	3,6
32A13	female	VGE1L32A1300	1,8	3,6
36A22	male	VGE1M36A2200	2,4	3,6
36A22	female	VGE1L36A2200	2,4	3,6
40A35	male	VGE1M40A3500	2,4	3,6
40A35	female	VGE1L40A3500	2,4	3,6
40A60	male	VGE1M40A6000	2	2,95
40A60	female	VGE1L40A6000	2	2,95

* Please consult us if your wire has an insulation diameter over these values, we will propose you another grommet.



Grommet filler plug

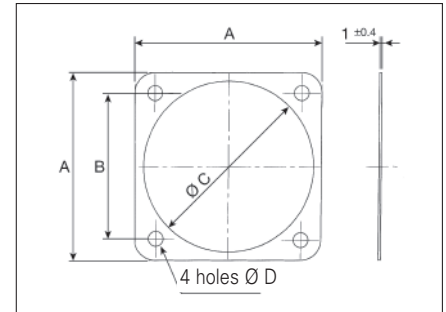
Contact size	Part number	Color	Photo
# 16	8500-479	blue	
# 12			
# 08	SB0834		

VGE1/FER1 Series



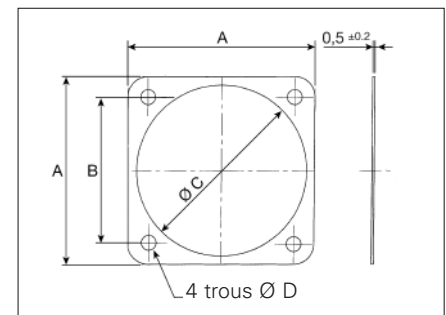
Panel gasket (not conductive)

Shell size	Part number	Dimensions			
		A	B	Ø C	Ø D
18	VGE1G18	35	27	30.8	4.2
20	VGE1G20	38	29.4	34.2	4.2
22	VGE1G22	41	31.8	37.4	4.2
24	VGE1G24	44.5	34.9	40.9	4.2
28	VGE1G28	50.8	39.7	46.7	5.1
32	VGE1G32	57	44.5	53.4	5.1
36	VGE1G36	63.5	49.2	59.6	5.1
40	VGE1G40	69.9	55.5	65.5	5.1



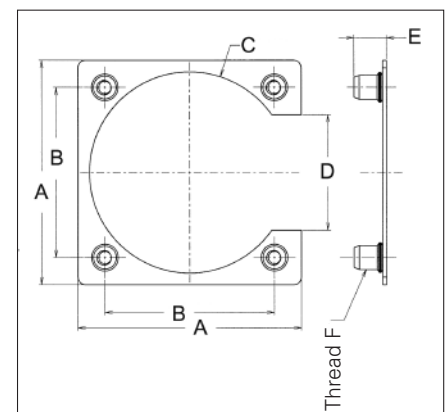
Conductive panel gasket

shell size	Part number	Dimensions			
		A	B	Ø C	Ø D
18	VGE1G18A	35	27	30.8	4.2
20	VGE1G20A	38	29.4	34.2	4.2
22	VGE1G22A	41	31.8	37.4	4.2
24	VGE1G24A	44.5	34.9	40.9	4.2
28	VGE1G28A	50.8	39.7	46.7	5.1
32	VGE1G32A	57	44.5	53.4	5.1
36	VGE1G36A	63.5	49.2	59.6	5.1
40	VGE1G40A	69.9	55.5	65.5	5.1



Fixing plate

shell size	Part number	Dimensions					
		A	B	Ø C	D	E	Thread F
18	VGE1CP18A	34.2	27	30.3	19.7	7.7	M3
20	VGE1CP20A	38.1	28.4	33.3	22		
22	VGE1CP22A	40.5	31.8	36.5	23		
24	VGE1CP24A	44	34.9	38.1	25.8		
28	VGE1CP28A	50.8	39.7	46.4	28.6		
32	VGE1CP32A	58.7	44.5	52.6	30.2	8.5	M4
36	VGE1CP36A	63.5	49.2	58.8	34.9		
40	VGE1CP40A	74.2	55.5	68.1	38.1		



VGE1/ FER1 Series



Synoptic of straight backshells



For ****, please see next page

Description	Backnut	Cable clamp	Backshell for PMA tube	Cable clamp with sealing gland	Cable clamp with sealing gland (trumpet shape to avoid cable wound)	Cable clamp with sealing gland for shielding
Ref	VGE1 RS****00	VGE1 CS****00	VGE1 SS****10	VGE1 JS****10	VGE1 KS****10	VGE1 TS****10

Synoptic of adaptors

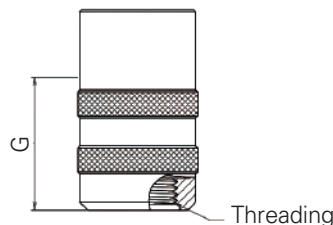
Description	Long adaptor with PG outlet
Ref	VGE1 PS**0010

Description	Long adaptor with cable gland
Ref	VGE1 VS****11

	Shell 18	Shell 20	Shell 22	Shell 24	Shell 28	Shell 32	Shell 36	Shell 40
Capacity V standard	--	3.5/15	--	--	--	--	--	--
Capacity V specif. 01;11	6/12.5	07/14.5	10/18	10/18	14/24	14/25	14/25	14/25
W standard	--	21.5	--	--	--	--	--	--
W specif. 01;11	21.5	23.5	28	28	35	35	38	39

Modification code for PS Backshell (Metric thread)

	Shell 18	Shell 20	Shell 22	Shell 24	Shell 28	Shell 32	Shell 36	Shell 40
Threadind standard	PG13.5	PG16	PG21	PG21	PG29	PG29	PG36	PG42
Threadind specif. 02	M25	--	M32	--	--	--	--	--
Threadind specif. 04	M16	--	--	--	--	--	--	--
Threadind specif. 05	M20	--	--	--	--	--	--	--



Example: size 22 backshell with M32 thread: VGE1 PS 221402L.

VGE1/FER1 Series



Dimensions

	Shell 18		Shell 20		Shell 22		Shell 24		Shell 28		Shell 32		Shell 36		Shell 40	
	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet
	**** = 18-19	**** = 18-00	**** = 20-15	**** = 20-00	**** = 22-14	**** = 22-00	**** = 24-10	**** = 24-00	**** = 28-21	**** = 28-00	**** = 32A13	**** = 32A00	**** = 36A22	**** = 36A00	**** = 40A35 40A60	**** = 40A00
A	22.5		22.5		22.5		22.5		24		24		24		24	
B	45.6		45.6		45.6		45.6		48.1		48.1		48.1		48.1	
C	17.2		17.2		17.2		17.2		16		16		16		16	
D	43.2		43.2		43.2		43.2		46							
E	25.4		22.2		22.2		22.2		22.2							
F	48.2		48.2		48.2		48.2		57		57		57		57	
G	33.2		33.2		33.2		33.2		32		32		32		32	
H	35.5		35.5		38.5		38.5		38.5		38.5		52		46	
K	PMA17		PMA17		PMA23		PMA23		PMA29		PMA29		PMA36		PMA48	
M	23		23		27		27		31.5		31.5		37.5		45	
N	7 min/12 max		9 min/14 max		10 min/18 max		10 min/18 max		14 min/24 max		14 min/24 max		22 min/30 max		25 min/35 max	
P	30		31.5		38.5		38.5		45		45		51.5		57	
S	33.5		33.5		43		43		52		52					
T	8 min/12,5 max		10 min/14,5 max		13,5 min/18 max		13,5 min/18 max		17 min/24 max		17 min/24 max					
U	4 min/15,5 max		7 min/15,5 max		9 min/15,5 max		8,5 min/19,5 max		9,5 min/19,5 max							
	PG13,5		PG16		PG 21		PG21		PG29		PG29		PG36		PG42	

Note : Dimensions are not contractual and may be subject to modifications.

⇒ All backshells are compatible with a grommet and a conical ring.

⇒ All backshells are IP67 except cable clamp without grommet which is unsealed.

⇒ For cable or PMA tube diameter not included in the above chart please consult us.

Example of rear dimensions calculation of a shell size 18 connector with a sealing gland cable clamp backshell without grommet and with a long adaptor

Backshell P/N : VGE1 JS 18 00 10

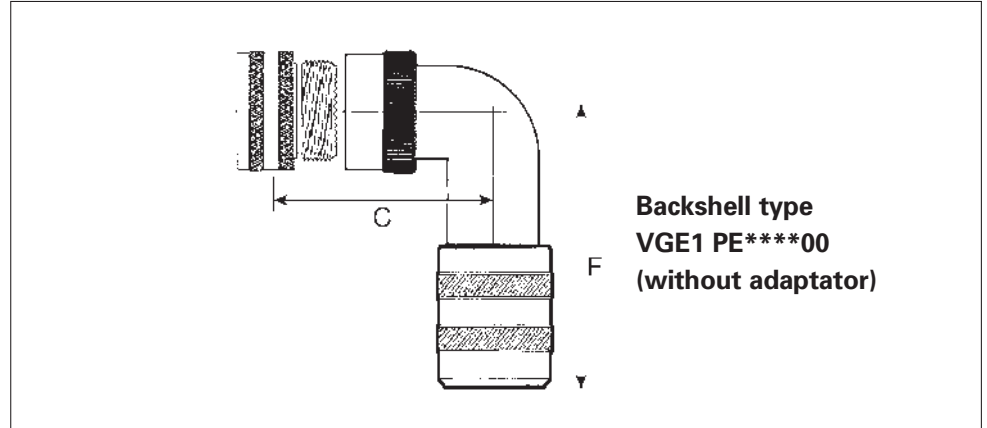
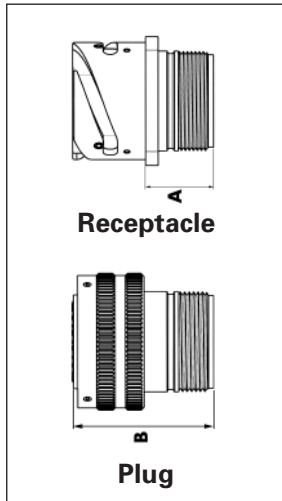
Rear dimensions receptacle + backshell :

$$A + F + M = 94,1 \text{ mm}$$

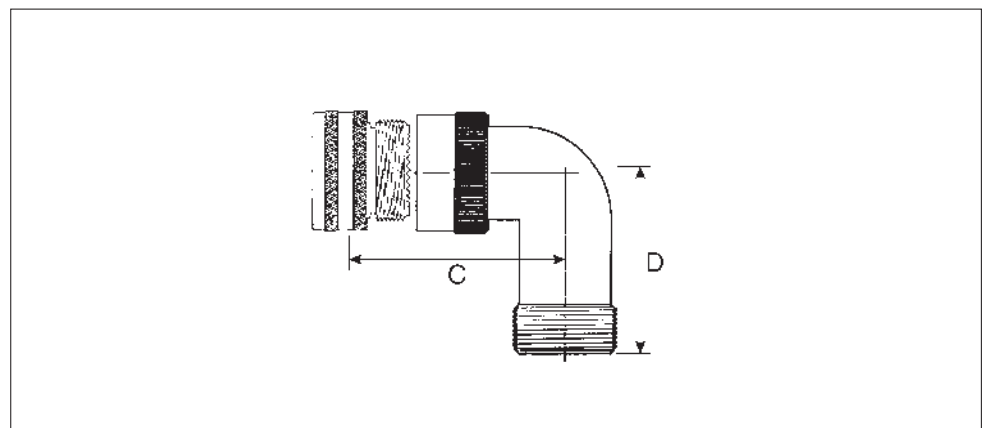
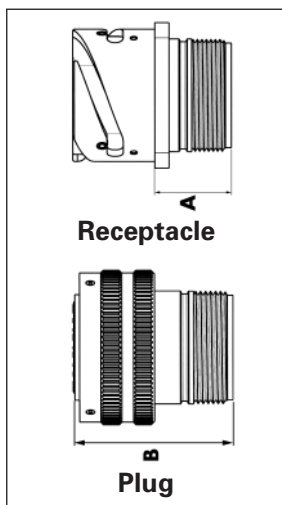
VGE1/ FER1 Series



Synoptic of elbow backshells



	+	+	+	+
Description	Backshell for PMA tube	Cable clamp with sealing gland	Cable clamp with sealing gland (trumpet shape to avoid cable wound)	Cable clamp with sealing gland for shielding
Part number	VGE1 SE****00	VGE1 JE****00	VGE1 KE****00	VGE1 TE****00



	+
Description	Cable clamp
Part number	VGE1 CE****00

VGE 1/FER1 Series



Dimensions

	Shell 18		Shell 20		Shell 22		Shell 24		Shell 28		Shell 32		Shell 36		Shell 40	
	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet	with grommet	without grommet
	**** = 18-19	**** = 18-00	**** = 20-15	**** = 20-00	**** = 22-14	**** = 22-00	**** = 24-10	**** = 24-00	**** = 28-21	**** = 28-00	**** = 32A13	**** = 32A00	**** = 36A22	**** = 36A00	**** = 40A35 40A60	**** = 40A40
A	22,5		22,5		22,5		22,5		24		24		24		24	
B	45,6		45,6		45,6		45,6		48,1		48,1		48,1		48,1	
C	45		43,5		43,5		46		41		52		63,5		55,5	
D	30,8		32		32		37		34		47		48		52,3	
E	25,4		22,2		22,2		22,2		22,2							
F	41,8		43		43		48		45		58		59		63,3	
H	35,5		35,5		38,5		38,5		38,5		38,5		52		46	
K	PMA17		PMA17		PMA23		PMA23		PMA29		PMA29		PMA36		PMA48	
M	23		23		27		27		31,5		31,5		37,5		45	
N	7 min/12 max		9 min/14 max		10 min/18 max		10 min/18 max		14 min/24 max		14 min/24 max		22 min/30 max		25 min/35 max	
P	30		31,5		38,5		38,5		45		45		51,5		57	
S	33,5		33,5		43		43		52		52					
T	8 min/12,5 max		10 min/14,5 max		13,5 min/18 max		13,5 min/18 max		17 min/24 max		17 min/24 max					
U	4 min/15,5 max		7 min/15,5 max		9 min/15,5 max		8,5 min/19,5 max		9,5 min/19,5 max							
	PG13,5		PG16		PG 21		PG21		PG29		PG29		PG36		PG42	

Note : Dimensions are not contractual and may be subject to modifications.

⇒ All backshells are compatible with a grommet and a conical ring.

⇒ All backshells are IP67 except cable clamp without grommet which is unsealed.

⇒ For cable or PMA tube diameter not included in the above chart please consult us.

VGE1/FER1 Series



Tooling Data

Contact size	Contact type	Contact Ø mm	Contact Part number	Section of the conductor		Crimp tool	Locator	Extraction tool
				mm ²	AWG			
#16	Male	1.6	RM16M23K	0.52 - 1.50	20-16	MH860 (M22520/7-01)	MH86164G	RX 16 D11 D1
#16	Female	1.6	RC16M23K	0.52 - 1.50	20-16	MH860 (M22520/7-01)	MH86164G	RX 16 D11 D1
#16	Male	1.6	RM14M30K	2.50	14	AF8 (M22520/1-01)	TP1142 (selector on 8)	RX 16 D11 D1
#16	Female	1.6	RC14M30K	2.50	14	AF8 (M22520/1-01)	TP1142 (selector on 8)	RX 16 D11 D1
#12	Male	2.4	8291 1437 NA	0.50	20	M317	M22520/1-05	5106.021.09.24
#12	Female	2.4	8291 1436 A	0.50	20	M317	M22520/1-05	5106.021.09.24
#12	Male	2.4	8291 1435 NA	0.75 - 1.00	18	M317	M22520/1-05	5106.021.09.24
#12	Female	2.4	8291 1434 A	0.75 - 1.00	18	M317	M22520/1-05	5106.021.09.24
#12	Male	2.4	8291 1463 NA	1.50	16	M317	VGE10077A	5106.021.09.24
#12	Female	2.4	8291 1462 A	1.50	16	M317	VGE10077A	5106.021.09.24
#12	Male	2.4	8291 1465 NA	2.50	14	M317	VGE10077A	5106.021.09.24
#12	Female	2.4	8291 1464 A	2.50	14	M317	VGE10077A	5106.021.09.24
#12	Male	2.4	8291 1437 NK	0.50	20	M317	VGE10077A	5106.021.09.24
#12	Female	2.4	8291 1436 K	0.50	20	M317	VGE10077A	5106.021.09.24
#12	Male	2.4	8291 1435 NK	0.75 - 100	18	M317	VGE10077A	5106.021.09.24
#12	Female	2.4	8291 1434 K	0.75 - 100	18	M317	VGE10077A	5106.021.09.24
#12	Male	2.4	8291 1463 NK	1.50	16	M317	VGE10077A	5106.021.09.24
#12	Female	2.4	8291 1462 K	1.50	16	M317	VGE10077A	5106.021.09.24
#12	Male	2.4	8291 1465 NK	2.50	14	M317	VGE10077A	5106.021.09.24
#12	Female	2.4	8291 1464 K	2.50	14	M317	VGE10077A	5106.021.09.24
#8	Male	3.6	8291 3601 A	1.50	16	M317	VGE10078A	5106.021.09.36
#8	Female	3.6	8291 3600 A	1.50	16	M317	VGE10078A	5106.021.09.36
#8	Male	3.6	8291 3603 A	2.50	14	M317	VGE10078A	5106.021.09.36
#8	Female	3.6	8291 3602 A	2.50	14	M317	VGE10078A	5106.021.09.36
#8	Male	3.6	8291 3605 A	4.00	12	M317	VGE10078A	5106.021.09.36
#8	Female	3.6	8291 3604 A	4.00	12	M317	VGE10078A	5106.021.09.36
#8	Male	3.6	8291 3607 A	6.00	10	M317	VGE10078A	5106.021.09.36
#8	Female	3.6	8291 3606 A	6.00	10	M317	VGE10078A	5106.021.09.36

Note : Crimping tools : Daniels Manufacturing Corporation

VGE1/FER1 Series



Tooling Data

- For contact # 16



Crimping tool MH860 and locator MH 86164G



Extraction tool RX 16 D11 D1

- For contact # 12



Crimping tool M317 and locator VGE1 0077A



**Extraction tool for contact # 12: 51 06 021 0924
Extraction tool tip: 51 06 021 3424**

- For contact # 8



Crimping tool M317 and locator VGE1 0078A

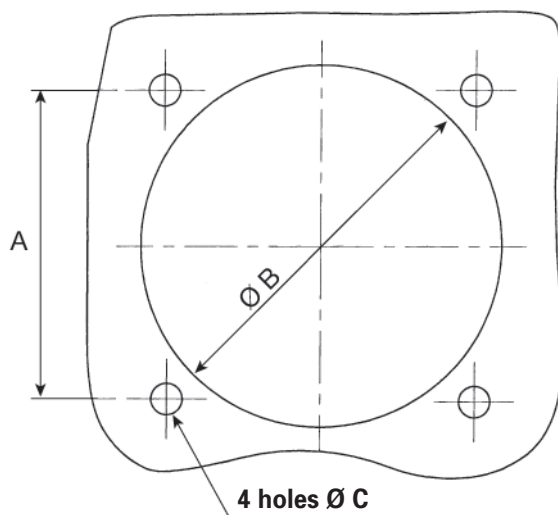


**Extraction tool for contact # 8: 51 06 021 0936
Extraction tool tip: 51 06 021 3436**

VGE1/FER1 Series



Panel Cutout



Shell size	A ± 0.15	B 0/+0.3	C ± 0.10	Maximum thickness of the panel for rear mounting
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

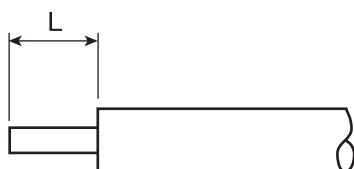
Note : The above panel cut-out enables front mounting of all receptacles.

VGE1/FER1 Series



Wiring Instructions

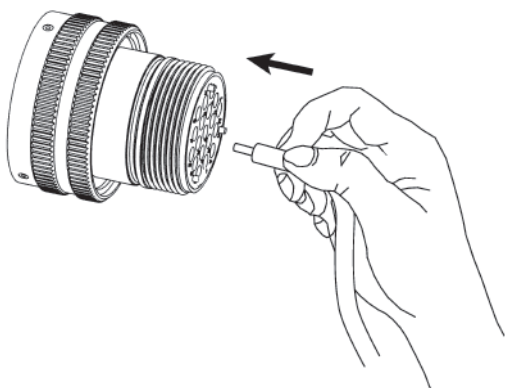
1 - Cable preparation



Length of wire stripping

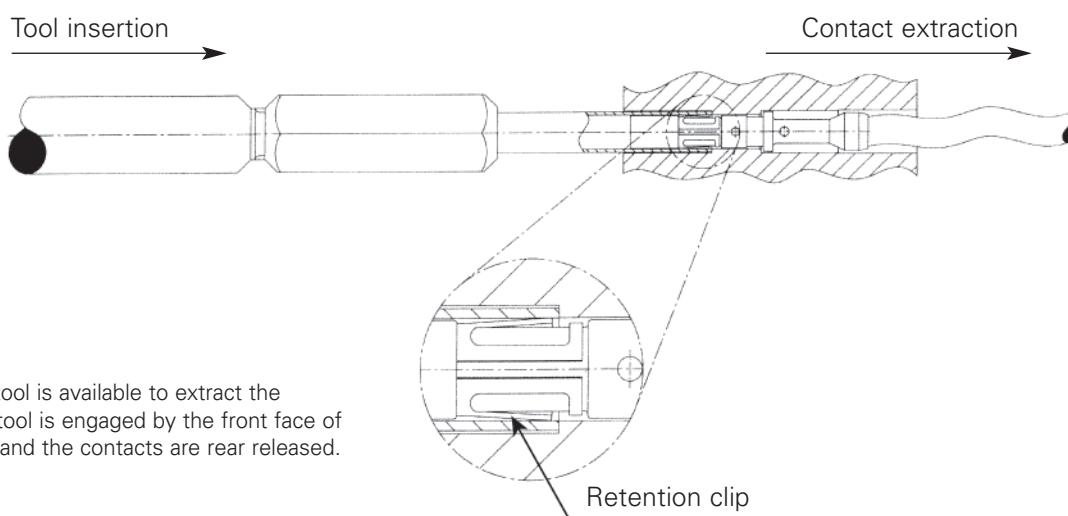
- Contact # 16 L = 7 mm
- Contact # 12 L = 9 mm
- Contact # 8 L = 9 mm

2 - Contact insertion



Take the crimped wire, insert the contact into the cavity and then push it until the mechanical stop. Pull slightly on the wire to be sure that the contact is in the right position.

3 - Contact extraction



An extraction tool is available to extract the contacts. The tool is engaged by the front face of the connector and the contacts are rear released.

Note : Full wiring instruction form available upon request.

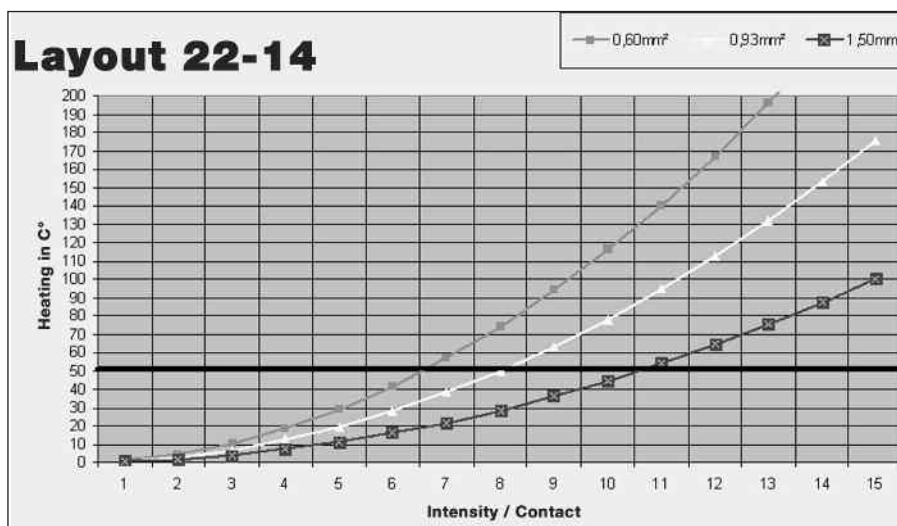
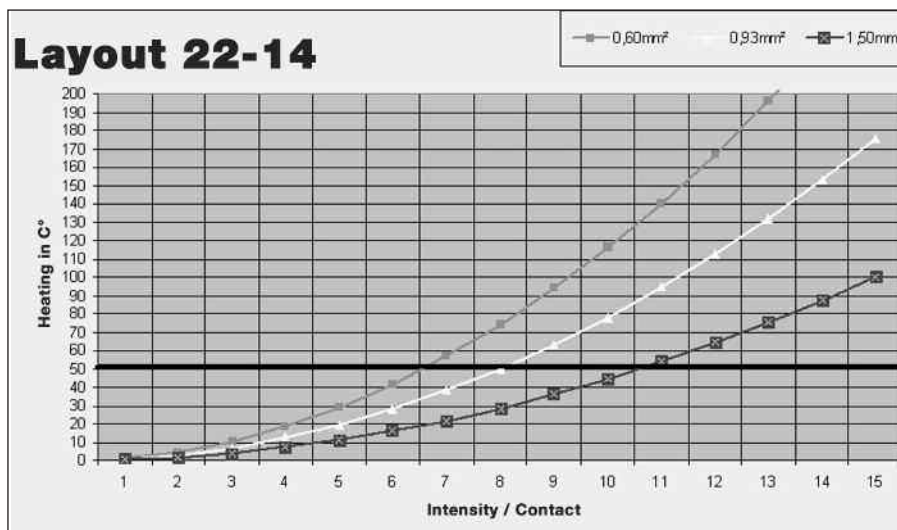
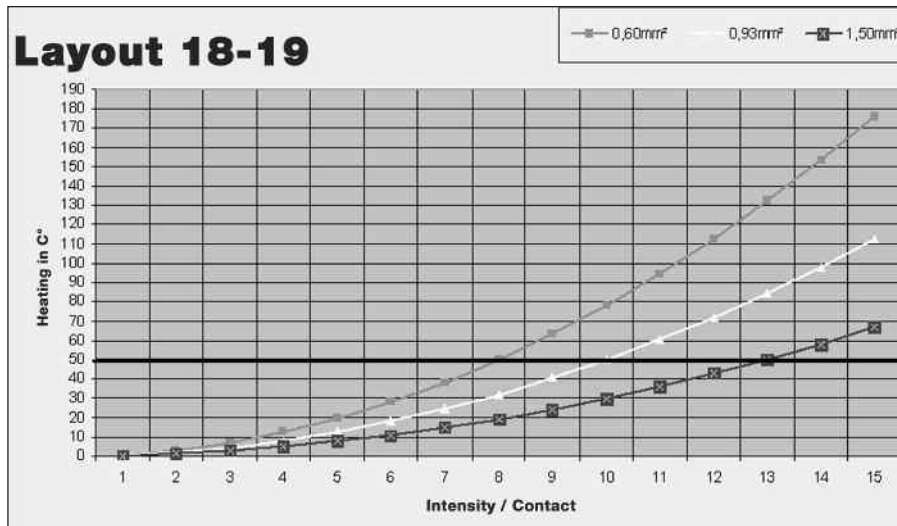
4 - Crimping

The choice of the crimping tools we recommend on page 20, has been done to respect the NFF 61030 specifications : simultaneous cruciform stamping with 4 stamps comprising 2 impressions.

VGE1/FER1 Series



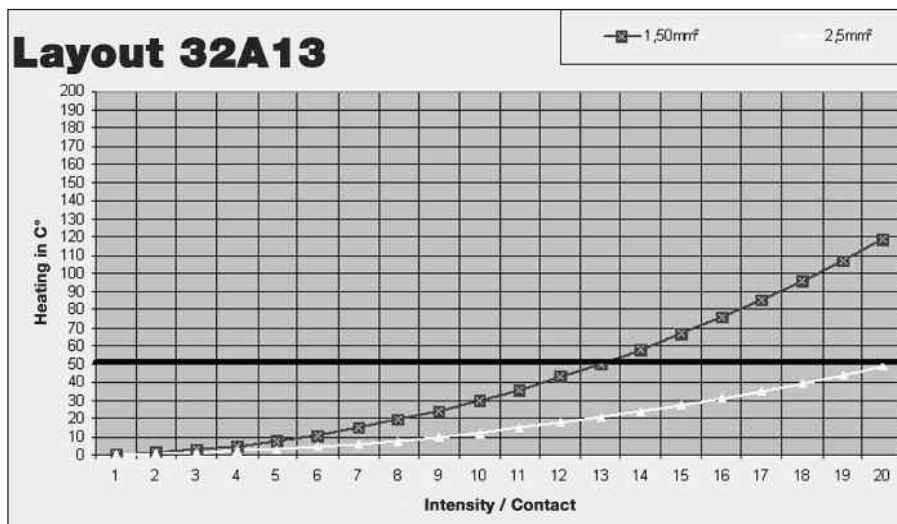
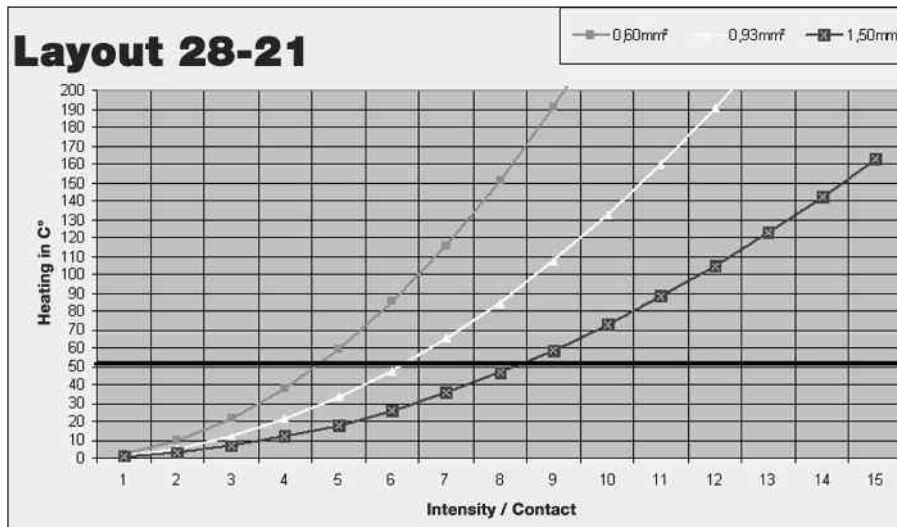
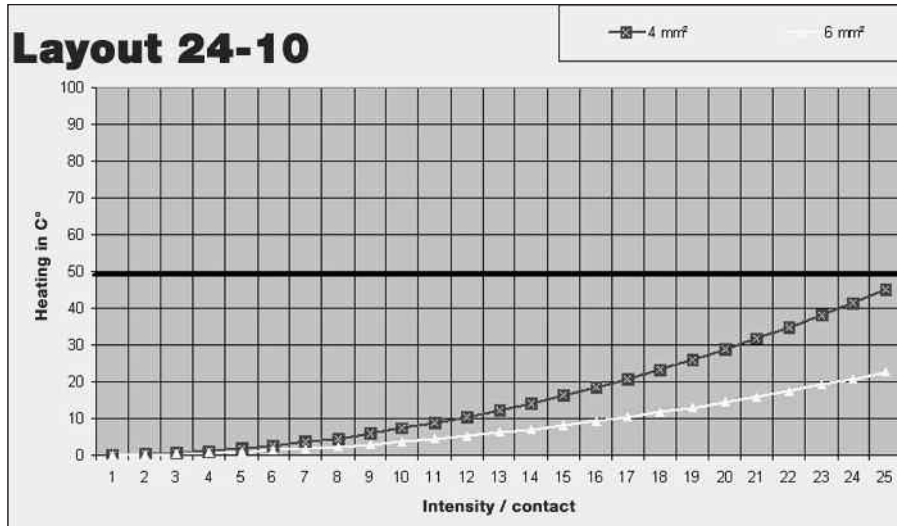
Appendix 1 : Heating curves of VGE1 connector function of intensity and conductor section



VGE1/FER1 Series



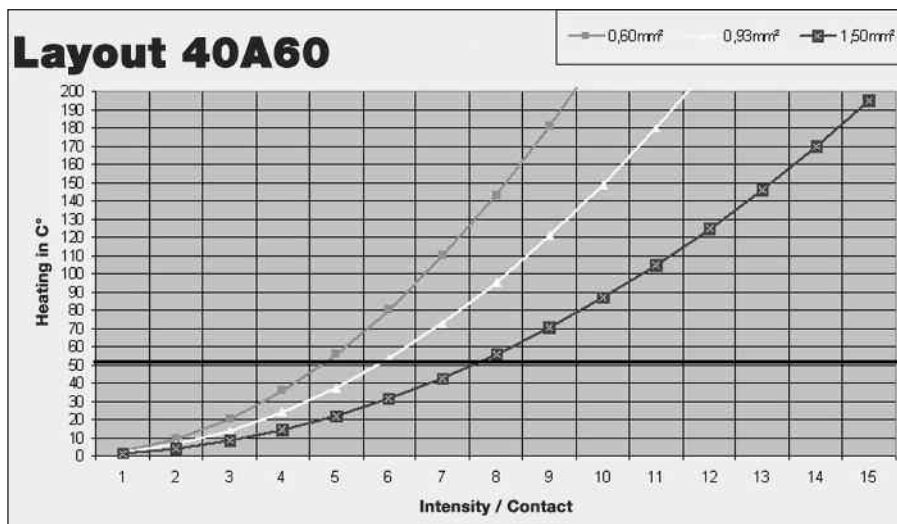
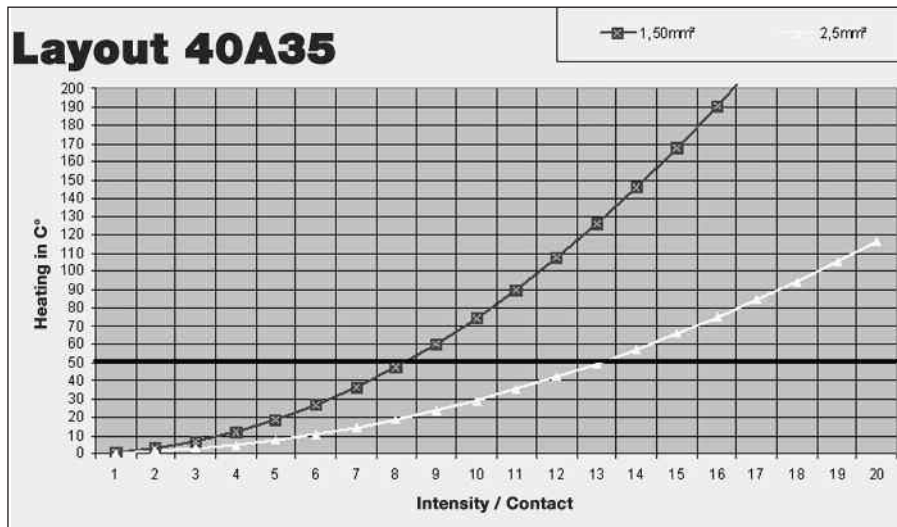
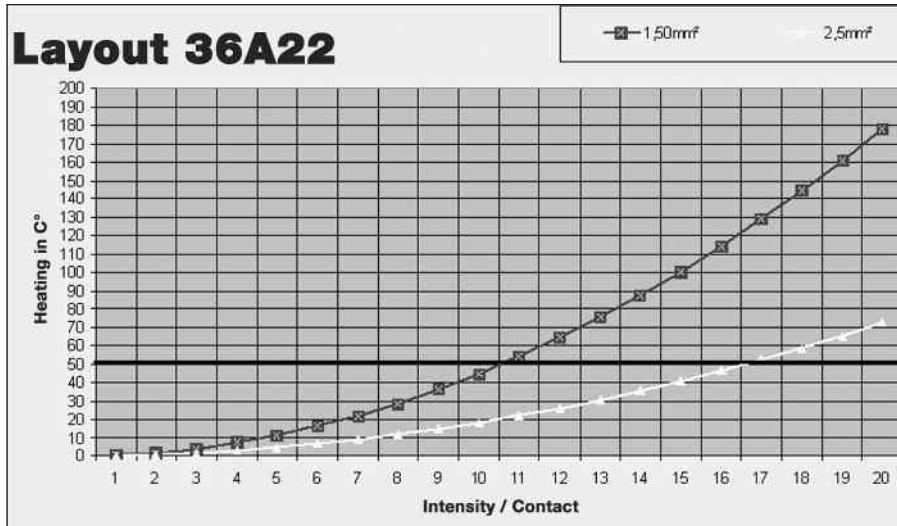
Appendix 1 : Heating curves of VGE1 connector function of intensity and conductor section



VGE1/FER1 Series



Appendix 1 : Heating curves of VGE1 connector function of intensity and conductor section

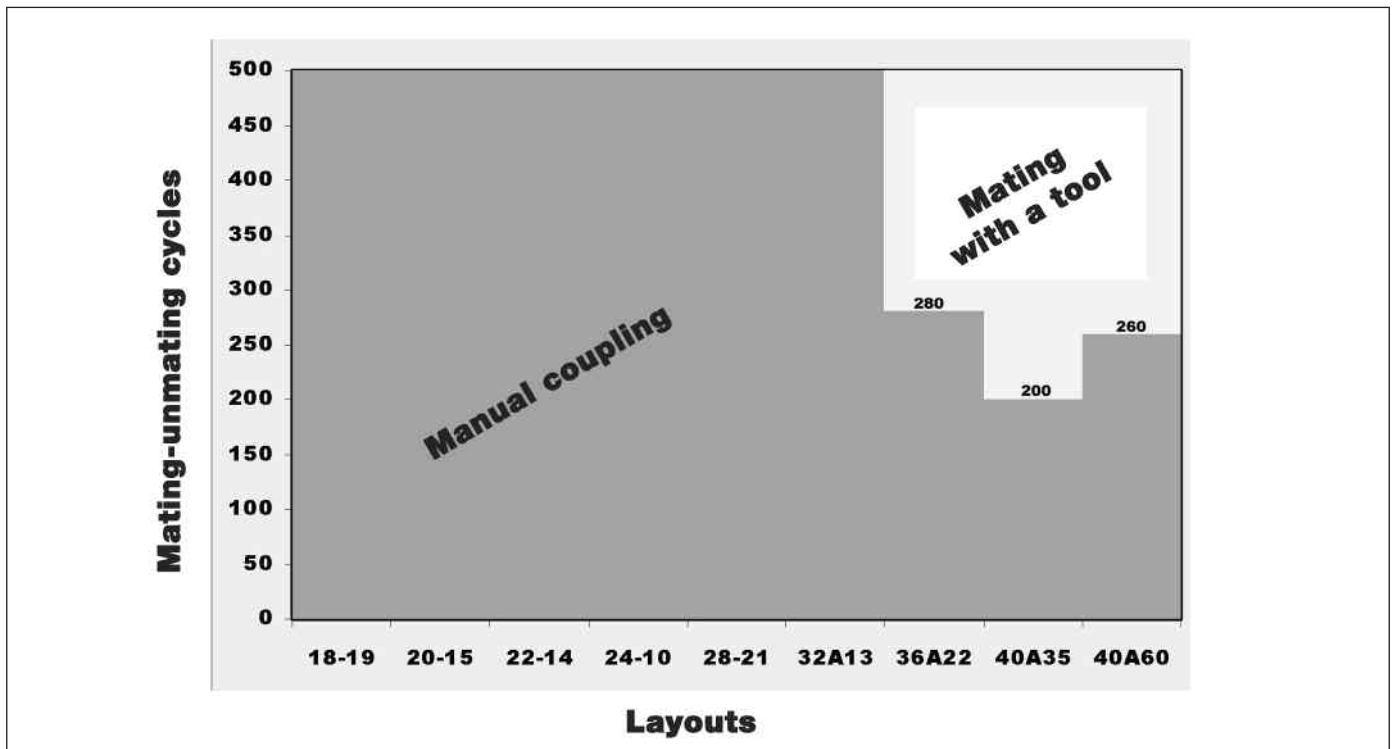


VGE1/FER1 Series



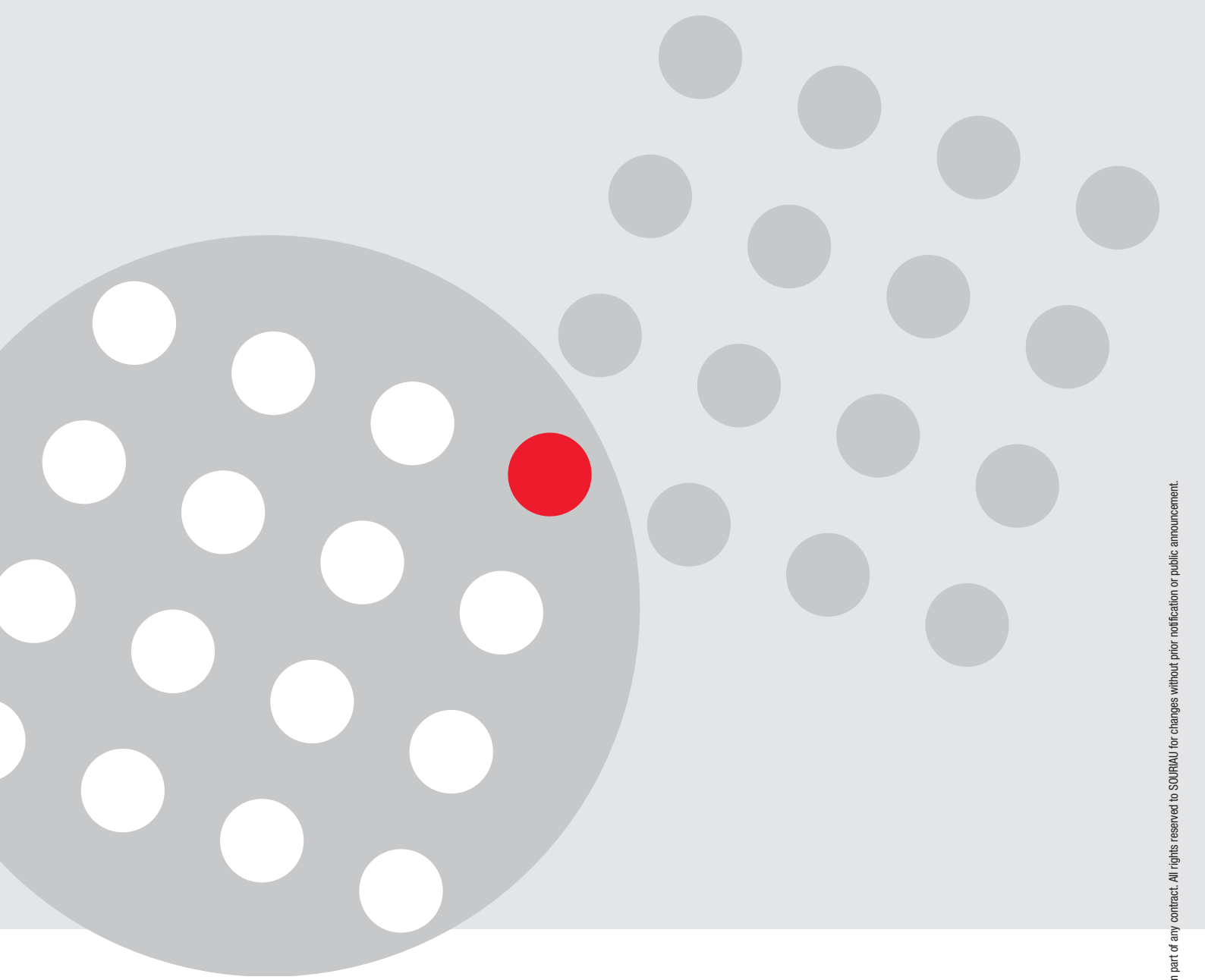
Appendix 2 : Coupling/Uncoupling of VGE1 connectors

Coupling and uncoupling of the connector with a tool is recommended (but not mandatory) for coupling torque ≥ 8 mN. The below chart defines the number of coupling/uncoupling cycles to reach this torque. In any case VGE1 connectors keep all their performances until 500 cycles.

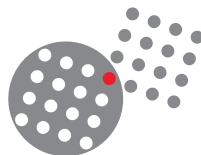


Other product lines for the railway market

	Rolling Stock Equipments			Signaling	Passenger information systems
	Intercoach	Undercoach	On board equipments		
838	x	x			
8038 F.O.	x	x			
Power	x	x			
Metro	x	x			
8525 MIL-C 26482 S2		x	x		
VGE1 (5015 derivated)		x	x		
8ST/8D (MIL-DTL-38999)		x	x		
FY Series			x	x	
Trim Trio circulars			x		
Trim Trio rectangulars		x	x	x	x
Trim Trio specials filtered / shielded			x	x	
Trim Trio MSG			x	x	
Junction				x	
Sub D			x	x	x



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