



# ITT

Interconnect Solutions  
Cannon, VEAM, BIW

Delivering over **3 million**

CIR Series interconnects deployed  
for military applications in over

**25 years** of service



*Engineered for life*

## Introducing the most versatile multipin connector in the world...

The *VEAM CIR Series* is the most versatile electrical, optical and pneumatic multipin connector available today. Designed originally for the hostile environment of Transit applications, CIR has earned acceptance in Military, Commercial, Medical, Geophysical, Entertainment, Nuclear, Aerospace. Ground support and comparable areas requiring nearly non-destructible cable or wire terminations.

The electrical design parameters of CIR were based on MIL-DTL-5015. However, its unique positive lock, quick disconnect coupling surpasses the environmental requirements of this military specification. To enhance service life, CIR connectors feature stainless steel anti-wear rings at the critical point of the receptacle coupling ramps. The CIR design has been adopted by NATO as the "standard connector for Ground Fighting Vehicles" and is used extensively in U.S. and European military programs: Based on standard VG 95234.



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CIR

\*Trademark-DuPont



Dimensions shown in inches (mm)  
Specifications and dimensions subject to change

1. Quick coupling and uncoupling 120° coupling nut rotation.
2. High shock **50 g's** and vibration resistance **20 g's** - Lockwires not required.
3. No coupling threads to gall or bind due to wear or contamination
4. Audible, Visual, and Tactile indication of full coupling.
5. **Waterproof to 10 meters** (33 ft.)  
12 Hours (14.7 PSI)
6. **2,000 couplings max.**
7. Elastomer temperature ranges:
  - 55° C. to + 125° C. Neoprene
  - 55° C. to + 200° C. Silicone
  - 25° C. to + 200° C. Viton\*
  - 40° C. to + 125° C. FR (flame retardant)

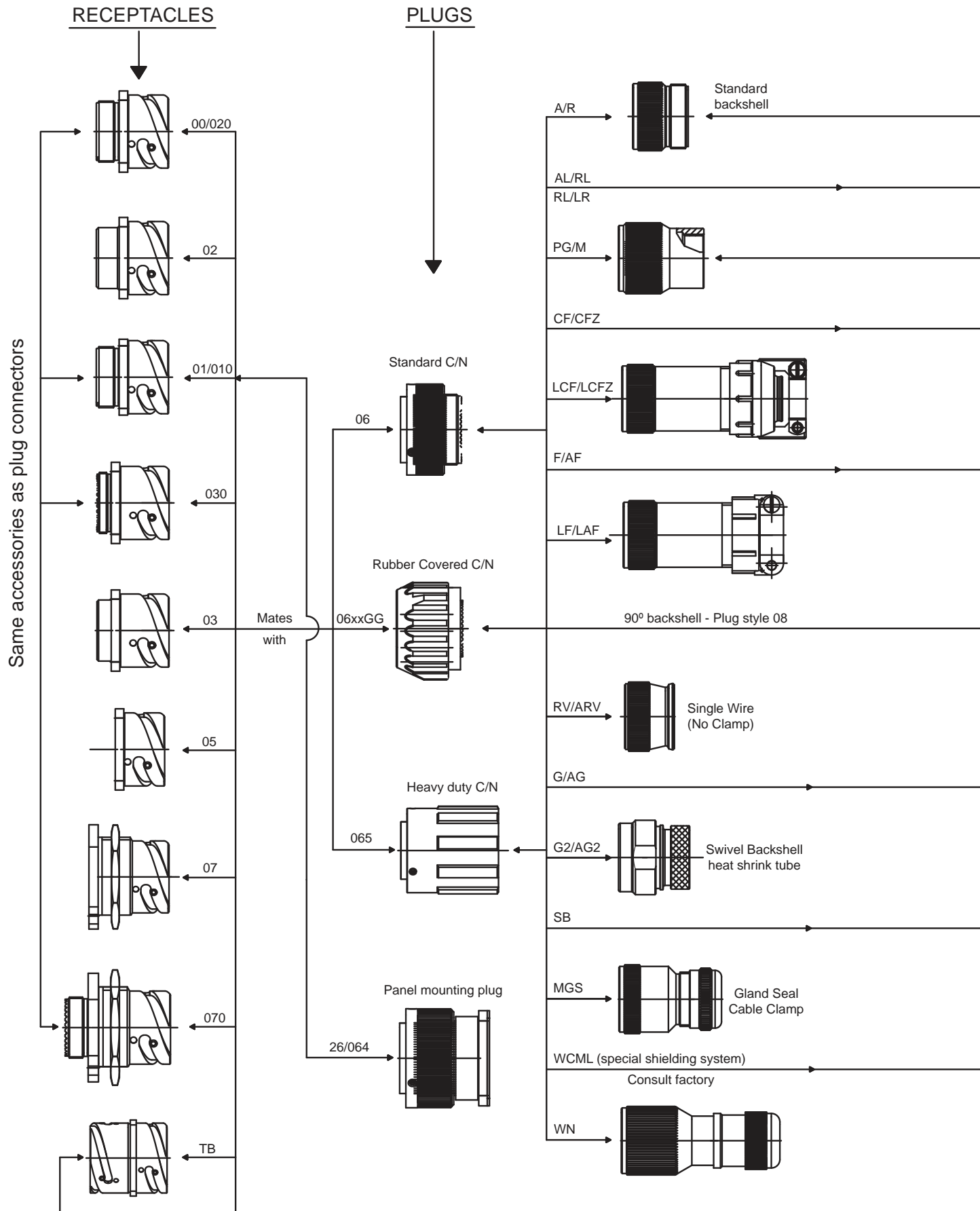
### General Specifications

<b>Shell</b>	<b>Material:</b> Aluminum alloy. Options include stainless steel, bronze and plastic composite.
	<b>Finish:</b> Hard Black Anodize (T89), Non-cadmium (Green-T100), (Black-T108) Electroless Nickel (T29), Cadmium-olive drab (T3).
	<b>For other</b> materials and finishes, consult our Customer Service Department.
<b>Insert</b>	<b>Material:</b> Polychloroprene (Neoprene). Options include silicone, fluorocarbon (Viton*) and FR (Flame Retardant) rubber.
<b>Contacts</b>	<b>Material:</b> Copper alloy or thermocouple alloys.
	<b>Finish:</b> Silver (T9), gold (standard - T12, heavy -T112) and Rhodium plating.
<b>VEAM CIR Series Connectors</b> are produced in accordance with NATO Standard VG95234, which is based on MIL-DTL-5015 for physical size, layout and environmental requirements.	
* <i>Trademark-Dupont</i>	

Note: CIR connectors are available with cadmium free and lead free materials.



# VEAM CIR Connectors Part Number Generation



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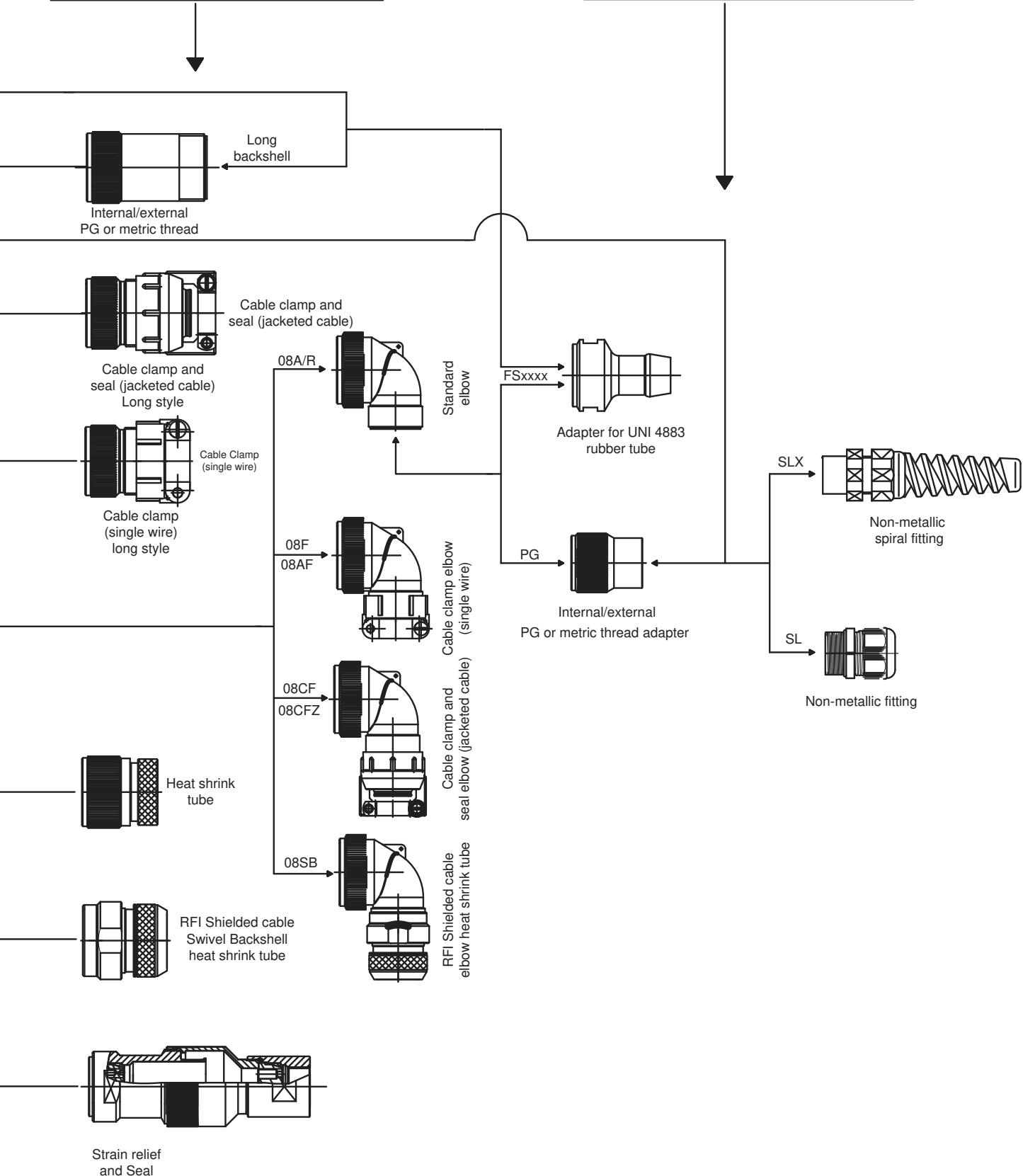
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Dimensions shown in inches (mm)  
Specifications and dimensions subject to change

BACKSHELL AND ACCESSORIES

ADAPTERS AND CABLE CLAMPS



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CIR

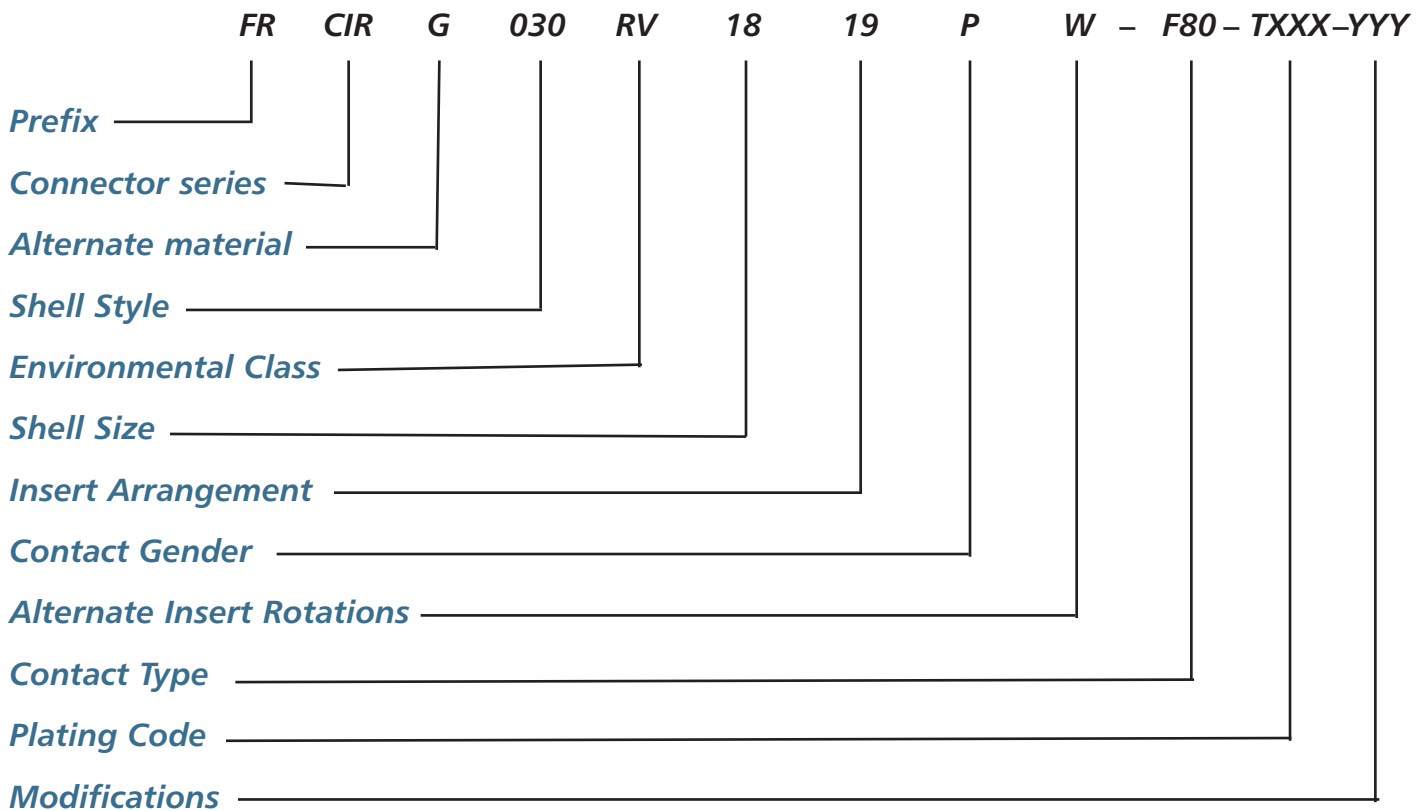
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# VEAM CIR Connectors

## Standard Part Number Generation - Line Configurator



### PREFIX

FR.....Flame retardant materials

### CONNECTOR SERIES

CIR...Bayonet coupling

### ALTERNATE MATERIAL

G.....Plug with RFI grounding

V.....Fluoroelastomers

P.....Plastic connector shells

SP.... Plastic receptacle shell without ramp rings

### SHELL STYLE

01/010.....In-line receptacle-Round flange with flats

020/00.....Front panel mount receptacle, rear thread

02.....Front panel mount receptacle, no rear thread

03.....Rear panel mount receptacle, no rear thread

030.....Rear panel mount receptacle, rear thread

038.....Rear/Front mount receptacle with 90° backshells

05.....Dummy receptacle

07.....Single hole mount jamnut receptacle, no rear thread

070.....Single hole mount jamnut receptacle, rear thread

078.....Single hole mount jamnut receptacle with 90° backshells

TB.....Thru-bulkhead receptacle

06.....Straight plug connector

065.....Straight plug connector with heavy duty coupling nut

26/064PP....Panel plug

08.....90 degree plug connector

### ENVIRONMENTAL CLASS

Different classes are based on the type of backshell, sealing capability and accessories. Refer to pages 49 to 57.

### SHELL SIZE

10SL, 14S, 16S, 16, 18, 20, 22, 24, 28, 32, 36, 40

### INSERT ARRANGEMENT

Defined by the quantity and size of the contacts. Refer to VEAM CIR Series catalog for available options.

### CONTACT GENDER

P..... Male contacts

S..... Female contacts

PS.....Thru-bulkhead contacts (female-male)

PP - Thru-bulkhead contacts (male-male)

### ALTERNATE INSERT POSITION

W, X, Y, Z, Q - Refer to VEAM CIR Series catalog for available options.

### CONTACT TYPE

F80.....Crimp for AWG wire (used in F80 insert)

CR.....Crimp for metric wire (used in metric insert)

CR1.....Crimp for AWG wire (used in metric insert)

PC.....Pneumatic contacts

VO.....Contacts not supplied

NO SUFFIX.....Solder (standard class)

### PLATING CODE OF SHELLS

T29.....Electroless Nickel

T39.....Black epoxyurethanic varnish

T89.....Black hard anodize

T100.....Zinc/cobalt Ecogreen

T108.....Zinc/cobalt Ecoblack

Other plating available. Please consult the factory.

### MODIFICATIONS

VO.....Supplied less contacts

Consult factory



**Contact Disengaging Force Meets or Exceeds MIL-C-3909**

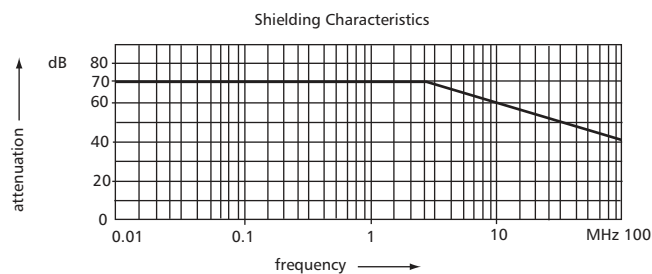
Contact Size F80	Ounces	Newtons
18-20	.7	.19
16-16S	2.0	.56
12	3.0	.83
8	5.0	1.39
4	10.0	2.78
0	15.0	4.17
4/0*	15.0	4.17

Backshell / Clamp Torque Forces

Recommended Torque Forces Connector Backshells/Clamps			
Size	In. lb Min/Max	Size	In. lb Min/Max
10SL	26/31	22	87/104
14S	44/49	24	96/130
16	57/66	28	121/165
16S	57/66	32	130/182
18	61/69	36	165/235
20	69/87	40	182/347

Contact Rating

Contact Size F80	Maximum Current	Rated And Test Current *	Potential Drop Millivolts Maximum *
20	7.5 A	7.5 A	83 mV
18	10 A	7.5 A	83 mV
16-16S	22 A	13 A	74 mV
12	41 A	23 A	63 mV
8	73 A	46 A	65 mV
4	135 A	80 A	58 mV
0	245 A	150 A	53 mV
4/0	350 A	225 A	53 mV



CIR Coupling - Uncoupling Torque Values per VG95234

Shell Size	Coupling Maximum		Uncoupling Minimum	
	KgCm	In. lb	KgCm	In. lb
10SL	13.8	12.0	1.15	1.0
14S	23.0	20.0	3.5	3.0
16S	27.6	23.9	4.6	4.0
16	27.6	23.9	4.6	4.0
18	32.2	27.9	5.75	4.9
20	36.8	31.9	6.9	5.9
22	41.4	35.9	8.0	6.9
24	50.6	43.9	8.0	6.9
28	60.0	52.0	9.2	8.0
32	75.0	65.0	10.3	8.9
36	85.0	73.7	10.3	8.9
40	85.0	73.7	15.0	13.0

Connector and Contact Ratings

Insert Arrangement Service Rating

Service Rating	Operating Voltage DC (at sea level)	Operating Voltage AC (at sea level)
I	250 V	200 V
A	700 V	500 V
D	1250 V	900 V
E	1750 V	1250 V
B	2450 V	1750 V
C	4200 V	3000 V

Dielectric Strength (Standard at Sea Level Conditions)

Service Rating	Minimum Flashover AC RMS	Test Voltage AC RMS (Hi Pot)
I	1400 V	1000 V
A	2800 V	2000 V
D	3600 V	2800 V
E	4500 V	3500 V
B	5700 V	4500 V
C	8500 V	7000 V

Contact Size		Min. disengaging force
CR	CR1e F80	N (Newton)
10	20	0,3
15-15S	16-16S	1
25	12	1,5
60-100	8	3
160	4	4
500	0	8,5

Separating force per contact

The corresponding separating force has to be measured according to VG95319, part 2, test no. 5.7. using the required test gage.

Dimensions shown in inches (mm)  
Specifications and dimensions subject to change



# VEAM CIR Connectors

## Inserts by Contact Quantity

Contact Quantity	Insert Arrangement	Standard Contact / Current Rating / Wire Size / MM <sup>2</sup>									Service Rating
		20 7.5 A 20 AWG 0.52	18 7.5 A 18 AWG 0.82	16 13 A 16 AWG 1.3	12 23 A 12-14 AWG 3.3-2.1	8 46 A 8 AWG 8.6	4 80 A 4 AWG 21	0 150 A 0 AWG 56	4/0 225 A 4/0 AWG 107		
1	16-2				1						E
1	16-12						1				A
1	18-6						1				D
1	18-16 *				1						C
1	18-61 *						1 coax				D
1	20-2							1			D
1	22-7							1			E
1	24A-1							1			B
1	32A-1								1		B
1	36A-1 *								1		C
2	10SL-4			2							A
2	14S-9			2							A
2	16S-4			2							D
2	16-11				2						A
2	16-13 (TC)				2						A
2	18-3				2						D
2	18-14			1			1				A
2	20-23					2					A
2	22-1					2					D
2	22-8				2						E
2	22-11			2							B
2	24A-2 *				2						HV (4200 VDC)
2	24-9						2				A
2	32A-2 *			1					1		D
2	32-5							2			D
2	32D-2 *				1				1		A
2	36A-2							2			A
2	40A-2 *					1			1		D
3	10SL-3			3							A
3	10SL-55 (TC)			3							I
3	14S-1			3							A
3	14S-7			3							A
3	14S-12 (14S-1x100°)			3							A
3	16S-5			3							A
3	16-7			2		1					A
3	16-10				3						A
3	18-5			1	2						D
3	18-22			3							D
3	20-3				3						D
3	20-19					3					A
3	22-2					3					D
3	22-6			1		2					D
3	22-9				3						E
3	22-21			2				1			A
3	28-3					3					E
3	28-6						3				D
3	28P-3 *					3					C
3	32A-3						3				B

\* Note: For insert arrangements in blue, consult our Customer Service Department.



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# VEAM CIR Connectors Inserts by Contact Quantity

Contact Quantity	Insert Arrangement	Standard Contact / Current Ratings / Wire Size								Service Rating
		20 7.5 A 20 AWG	18 7.5 A 18 AWG	16 13 A 16 AWG	12 23 A 12 AWG	8 46 A 8 AWG	4 80 A 4 AWG	0 150 A 0 AWG	4/0 225 A 4/0 AWG	
4	14S-2			4						I
4	14S-10			4						I
4	16-9			2	2					A
4	18-4			4						D
4	18-10				4					A
4	18-13				3	1				A
4	20-4				4					D
4	20-24			2		2				A
4	22-4				2	2				A
4	22-22					4				A
4	24-22					4				D
4	32-17						4			D
4	36-5							4		A
4	40D-4					4				C
5	14S-5			5						I
5	16S-8			5						A
5	18-11				5					A
5	18-20			5						A
5	18-30 (18-20x110°)			5						A
5	18-31 (18-20x260°)			5						A
5	22-12			3		2				D
5	22-34			2	3					D
5	24-12				3		2			A
5	28-5			2	1		2			D
5	28A-5GM					5				A
5	32-1				3			2		A=E; B,C,D,E=D
5	32-2			2			3			E
5	32A-5GM						5			A
5	32B-5(GM)						5			A
5	40A-3 *				2			3		E
5	40A-5GM							5		A
5	40B-5 *				1		1	3		A
6	14S-6			6						I
6	18-06 *			2	4					A
6	18-12			6						A
6	20-8			4		2				I
6	20-17			1	5					A
6	20-22			3		3				A
6	22-5			4	2					D
6	22-15			1	5					D=E; A,B,C,E,F=A
6	24-06			2		4				D
6	24A-6				4	2				D
6	28-22			3			3			D
6	28A-6			1		4	1			A
6	36-3				3			3		D
6	36-6						4	2		A
6	32A-6				4		2			E
6	36A-51			1			2	3		D
6	36A-61*				4		2			E

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# VEAM CIR Connectors

## Inserts by Contact Quantity

Contact Quantity	Insert Arrangement	Standard Contact / Current Rating / Wire Size								Service Rating
		20 7.5 A 20-22 AWG	18 7.5 A 18-20 AWG	16 13 A 16-18 AWG	12 23 A 12-14 AWG	8 46 A 8 AWG	4 80 A 4-6 AWG	0 150 A 0 AWG	4/0 225 A 4/0 AWG	
6	36B-6			2	1	3				B
6	36B-61				4		2			E
6	40A-4				2			4		A
7	14SA-7 *			7						I
7	16S-1			7						A
7	18-9			5	2					I
7	18-17 (18-9x100°)			5	2					I
7	20-15				7					A
7	20A-7		7							D
7	22-28				7					A
7	24-2(GM)				7					D
7	24-10					7				A
7	24-27			7						E
7	24A-7				7					D
7	28-10				3	2	2			G=D; BAL.=A
7	28A-7			4			3			A
7	28B-7*					7				A
7	32A-7				4		3			D
7	36-77						7			D
7	40A-7 *				2			5		A
8	18-8			7	1					A
8	20-7			8						A,B,H,G=D C,D,E,F=A
8	20A-8			6		2				I
8	22-18			8						A,B,F,G,H=D C,D,E=A
8	22-23				8					H=D; BAL.=A
8	24-6 (HM)				8					A,G,H=D; BAL.=A
8	24A-8 *			8						HV (15KV)
8	32-15				6			2		D
8	32A-8					8				A
8	40A-8			4				4		E
8	40A-10			4			4			D
9	20-16			7	2					A
9	20-18			6	3					A
9	20-21			8	1					A
9	20A-9				9					J=D; BAL.=A
9	22-17			8	1					A=D; BAL.=A
9	22-27 (CR)			8		1				J=D; BAL.=A
9	22A-9			9						1,2,3=D; BAL=A
9	24-11(EM)				6	3				A
9	28-1				6	3				A,J,E=D;BAL.=A
9	28A-9			5			4			A
10	16A-10		10							A
10	18-1			10						B,C,F,G=A; BAL.=I
10	18-19			10						A
10	18-24 (18-1x250°)			10						B,C,F,G=A; BAL.=I
10	22A-10			10						A
10	22B-10*			8		2				A

\* Note: For insert arrangements in blue, consult our Customer Service Department.



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Contact Quantity	Insert Arrangement	Standard Contact / Current Rating / Wire Size / MM <sup>2</sup>								Service Rating
		20 7.5 A 20 AWG 0.52	18 7.5 A 18 AWG 0.82	16 13 A 16 AWG 1.3	12 23 A 12 AWG 3.3-2.1	8 46 A 8 AWG 8.6	4 80 A 4 AWG 21	0 150 A 0 AWG 56	4/0 225 A 4/0 AWG 107	
10	24-21			9		1				D
10	28-19			6	4					H,M=B; A,B=D; BAL.=A
10	28A-10 *				10					D
10	32A-10 *					8	2			A
10	36A-10 *					8	2			A
10	36B-10 *					8	2			A
11	20-33			11						A
11	20A-11 *	5		5		1				A
11	24-20			9	2					D
11	24A-11			9		2				A
12	24-19			12						A
12	28-9			6	6					D
12	28-18			12						M=C; G,H,J,K,L=D A,B=A; BAL.=I
12	28-51				12					D
12	36A-12					10	2			A
12	36B-12			3	3	3	3			D
13	20-11			13						I
13	20-25 (20-11x100°)			13						I
13	20-30 (20-11x250°)			13						I
13	24-013 *			7	6					A
13	32A-13				13					D
14	20-27			14						A
14	22-19			14						A
14	28-2			12	2					D
14	28-20			4	10					A
14	28A-14				14					D
14	32-9			12			2			D
14	32A-14 *			14						HV (6000 VAC)
14	36-78			2		12				D
14	36B-78			2		12				D
14	36D-78			4		10				D
14	40A-14 *				6		8			A
15	28-17			15						R=B; M,N,P=D; BAL.=A
16	22A-16 *			16						I
16	24-5			16						A
16	24-7			14	2					A
16	24A-16 *			15		1				E
16	28A-16 *			12		4				A
16	32-68			12			4			A
17	20-29			17						A
17	28-59			10	7					A
19	20A-48			19						I
19	22-14			19						A
19	24-67				19					A
19	32-76				19					A
19	40-19				17		2			A
19	40A-19					17	2			A
19	40B-19					19				A
20	28-16			20						A
20	40A-20				18	2				D
21	40A-21				20		1			21=D; BAL.=A
22	28-11			18	4					A

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Contact Quantity	Insert Arrangement	Standard Contact / Current Rating / Wire Size								Service Rating
		20 7.5 A 20 AWG	18 7.5 A 18 AWG	16 13 A 16 AWG	12 23 A 12 AWG	8 46 A 8 AWG	4 80 A 4 AWG	0 150 A 0 AWG	4/0 225 A 4/0 AWG	
22	32A-22			20				2		A
22	32B-22 *			20			2			A
22	36A-22				22					D
23	32-6			16	2	3	2			A
23	32-13			18	5					D
23	32-16			16	2	3	2			A
24	24-28			24						I
24	40A-24				16	8				D
25	24A-25			25						I
25	32A-25				25					A
25	40A-25				24		1			A
26	28-12			26						A
26	28-13			26						A
27	32A-27			17	10					A
27	40A-27				25		2			A
28	24A-28			28						I
28	28A-63(CR)			19	9					e=A; BAL.= I
28	32A-28				28					A
29	20A-29 *		25		4					I
29	28A-29 *			27		2				A
29	40-10			16		9	4			A
29	40A-29 *			5	18	6				A
30	32-8			24	6					A
30	32A-30			20	10					A
30	40A-30				29		1			A
31	28A-31 *	25				6				I
31	32-31			31						A
31	32A-31 *			13	18					A
31	36-9			14	14	2	1			A
31	36-18 (36-9x100°)			14	14	2	1			A
31	40A-31				31					D
34	40A-34 *				33	1				I
35	28-15			35						A
35	28A-35			35						A
35	28B-35			35						A
35	32-7			28	7					A,B,h,j=I; BAL.=A
35	36-15			35						M=D; BAL.=A
35	40A-35				35					D
37	22A-37		37							A
37	28-21			37						A
37	40B-37				37					A
37	40D-37 *				37					A
38	40A-38				38					A
39	36-54			31		8				A
40	32A-40			40						A
42	32-59			40		2				A
44	36-74 *			43		1				A
47	36-7			40	7					A

\* Note: For insert arrangements in blue, consult our Customer Service Department.



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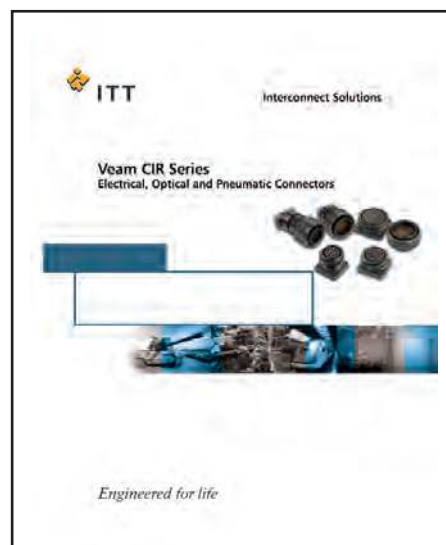
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Contact Quantity	Insert Arrangement	Standard Contact / Current Rating / Wire Size								Service Rating
		20 7.5 A 20 AWG	18 7.5 A 18 AWG	16 13 A 16 AWG	12 23 A 12 AWG	8 46 A 8 AWG	4 80 A 4 AWG	0 150 A 0 AWG	4/0 225 A 4/0 AWG	
47	36-8			46	1					A
47	36-16 (36-7x100°)			40	7					A
47	36-17 (36-7x110°)			40	7					A
47	40-9			24	22	1				A
47	40A-47			24	22	1				A
48	32A-48			48						I
48	36-10			48						A
48	36-11 (36-10x100°)			48						A
48	36-12 (36-10x110°)			48						A
48	36A-48			48						I
54	32-22			54						A
55	24A-55	55								I
55	32A-55			55						A
55	40-55 *			35	19	1				I
56	36-66			52	4					A
58	40-58 *			38	19	1				I
60	40A-60			60						A
61	32A-69 (CR)	41		20						A
61	40-63 *			61						A
62	40A-62			60		2				A
72	28-72	72								I
72	36A-72		52	16	4					I
85	40-56			85						A
85	40A-56			85						A
100	40A-100		100							A
101	32-101	101								I
130	40A-130		114	12	4					I
150	40A-150 *		150							I
159	40T-159 *	159								I

\* Note: For insert arrangements in blue, consult our Customer Service Department.

For product details please see the VEAM CIR Series full line catalog.



Dimensions shown in inches (mm)  
Specifications and dimensions subject to change

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