DEUTSCH ACT MIL-DTL-38999 Series III Composite Connectors

The Next Generation of Durable, Lightweight, Corrosion-Resistant Composite Connectors

DEUTSCH ACT MIL-DTL-38999 Series III Composite Connectors

Lightweight, Corrosion-Resistant, High-Performance Composite Connectors

LIGHTWEIGHT COMPOSITE

- Up to 40% lighter than aluminum
- Up to 70% lighter than stainless steel
- Corrosion resistant – withstands 2000 hours of salt spray

HIGH PERFORMANCE

- -65°C to +200°C temperature range
- 1500 mating cycles
- Over 50 contact arrangements available

RELIABLE

- Self-locking threaded coupling
- Robust ACME threads help decrease chance of damage
- 100% scoop proof
- Contact retention system provides excellent contact retention under severe vibration

EMI PROTECTED

- Grounding fingers for excellent EMI protection
- Connector is grounded when the shells meet, even before the contacts are engaged
- Trapezoidal thread for excellent shell-to-shell continuity

The DEUTSCH ACT MIL-DTL-38999 Series III high-performance composite connectors from TE Connectivity (TE) offer high-density contact arrangements in a miniature composite circular connector.

Weight-Saving Reliability

Composite connectors are significantly lighter than their metal counterparts, while presenting a robust interconnection platform. Their reliability includes exceptional corrosion resistance, as evidenced by their ability to withstand 2000 hours of salt spray.

A Legacy of Rugged Reliability

Originally designed as military and aerospace components, ACT Series connectors are now being used in many applications requiring extremely reliable interconnections. These connectors are quick mating, environmentally sealed, triple-lead threaded, have a self-locking coupling, and are EMI/RFI shielded.

Maximum Flexibility for Exceptional Performance

ACT Series connectors are available in 3 shell styles, 2 plating options, 6 shell clockings, over 50 different insert arrangements supporting size 23, 22, 20, 16, 12, 10, and 8 contacts for power and signal, as well as coax and twinax contacts.

High-reliability ACT Series connectors feature a scoop-proof design for easy, secure mating, and a threaded coupling for excellent vibration resistance. These lightweight, rugged, environmentally sealed connectors survive the harsh environments of commercial and military aerospace, ground defense, and marine applications.

TE Components . . . TE Technology . . . TE Know-how . . .

AMP | AGASTAT | CII | HARTMAN | KILOVAC | MICRODOT | NANONICS | POLAMCO | Raychem | Rochester | DEUTSCH SEACON Phoenix | LL ROWE | Phoenix Optix | AFP | SEACON

Get your product to market faster with a smarter, better solution.

Specifications

MATERIALS

- **Shell:** Composite
- **Plating:**
  Olive drab cadmium
  Electroless nickel
- **Contacts:** Gold-plated copper alloy
- **Insert:** Thermoplastic and fluorinated silicone elastomer
- **EMI Spring Fingers:** Beryllium copper
- **O-Ring:** Fluorinated silicone elastomer

ELECTRICAL

- **Shell-to-Shell Conductivity:**
  1.0 mV (nickel finish)
  2.5 mV (cadmium finish)
- **Shielding Effectiveness:** >90 dB at 100 MHz, >65 dB through 10 GHz

MECHANICAL/ENVIRONMENTAL

- **Sine Vibration:** Up to 60 g for 12 hours each in x, y, and z axes
- **Random Vibration:** Up to 41.7 g for 16 hr. at 175° C
  Up to 50 g for 16 hr. at ambient temperature
- **Shock:** 300 g, 3 ms in the 3 axes
- **Durability:** 1500 mating cycles
- **Contact Retention:**
  Size 23: 44 N (10 lb.)
  Size 22D: 44 N (10 lb.)
  Size 20: 67 N (15 lb.)
  Size 16: 111 N (25 lb.)
  Size 12: 111 N (25 lb.)
  Size 10: 111 N (25 lb.)
  Size 8: 111 N (25 lb.)
- **Temperature Range:**
  -65°C to +200°C (Nickel plated)
  -65°C to +175°C (Cadmium plated)
- **Fluid Resistance:**
  Fluid immersion per EIA 364.10, including resistance to
  MIL-PRF-5606: Hydraulic fluid
  MIL-DTL-83133: JP-8 aviation fuel
  MIL-PRF-7808: Lubricating oil
  MIL-PRF-23699: Lubricating oil
  MIL-A-8243: Deicing/defrosting fluid
  MIL-C-25769: Aircraft cleaning compound
  MIL-PRF-87937: Aircraft cleaning compound
  MIL-G-3056: Gasoline
- **Salt Spray:** 2000 hours

Contact Size	Test Current (A)	Voltage Drop (mV)
23	3	73
22D	5	73
20	7.5	55
16	13	50
12	23	42
10	33	34
8	46	26

Service Rating	Suggested Operating Voltage	Test Voltage at Altitude		
	Sea Level	50,000 Ft.	70,000 Ft.	100,000 Ft.
M	1300	550	350	200
I	1800	600	400	200
II	2300	800	500	200

Thread Sizes

Shell Size	Accessory Thread (6g 0.100R)	Mating Thread (0.1P-0.3L)	Jam Nut Thread (6g 0.100R)
9	M12 x 1.0	0.6250	M17 x 1.0
11	M15 x 1.0	0.7500	M20 x 1.0
13	M18 x 1.0	0.8750	M25 x 1.0
15	M22 x 1.0	1.0000	M28 x 1.0
17	M25 x 1.0	1.1875	M32 x 1.0
19	M28 x 1.0	1.2500	M35 x 1.0
21	M31 x 1.0	1.3750	M38 x 1.0
23	M34 x 1.0	1.5000	M41 x 1.0
25	M37 x 1.0	1.6250	M44 x 1.0

Insert Arrangements

	Contact Size/Quantity											
Insert	8 Twinax	8 Coax	8 Power	12 Twinax	12 Coax	10	12	16	20	22D	23	Inactive: Superseded by
A07										7		
A23											9	
A35										6		
A98									3			
B02								2				
B04									4			
B05									5			
B23											19	
B35										13		
B98									6			
B99									7			
C04								4				
C08									8			
C23											32	
C35										22		
C98									10			
D05								5				
D15								1	14			
D18									18			
D19									19			
D23											55	
D26								2		24		
D35										37		
D97								4	8			
E02	1									38		17-03
E03	1									38		
E06							6					
E08								8				
E11				2	1				8			
E19								4	11	4		
E20							4			16		
E22	2						2					
E23											73	
E24			2							22		
E26									26			
E35										55		
E99								2	21			
F11								11				
F18	4									14		19-19
F19	4									14		
E23											88	
F28								2	26			

Blue shaded entries are not Mil Spec. Green shading indicates high-density inserts.

Insert Arrangements

Insert	Contact Size/Quantity											
	8 Twinax	8 Coax	8 Power	12 Twinax	12 Coax	10	12	16	20	22D	23	Inactive: Superseded by
F32									32			
F35										66		
G11							11					
G16								16				
G20	2								18			
G23											121	
G35										79		
G39								2	37			
G41									41			
G48			4									
G75	4											21-76
G76	4											
H06	6											
H21								21				
H23											151	
H35										100		
H53									53			
H54							4	9		40		
H55									55			
H63							4	4		49		
J04								8	48			
J07	2									97		25-09
J08	8											25-10
J09	2									97		
J10	8											
J11						9			2			
J17	6									36		
J19							19					
J20	3				4			13	10			25-21
J21	3				4			13	10			
J23											187	
J24							12	12				
J29								29				
J35										128		
J37								37				
J43								20	23			
J46		2						4	40			25-47
J47		2						4	40			
J61									61			
J90	2							4	40			25-91
J91	2							4	40			

Blue shaded entries are not Mil Spec. Green shading indicates high-density inserts.

Typical Part Numbering System

Military:	D38999	/	26	M	D	35	P	N	-L/C
Commercial:	ACT		26	M	D	35	P	N	-6149

RANGE
ACT
D38999

STYLE
20 Square Flange Receptacle
24 Jam Nut Receptacle
26 Straight Plug

CLASS
COMPOSITE SHELL
M Electroless Nickel Plated (2000 hour salt spray)
J Olive Drab Cadmium (2000 hour salt spray)

SHELL SIZES
A (9), B (11), C (13), D (15), E (17), F (19), G (21), H (23), J (25)

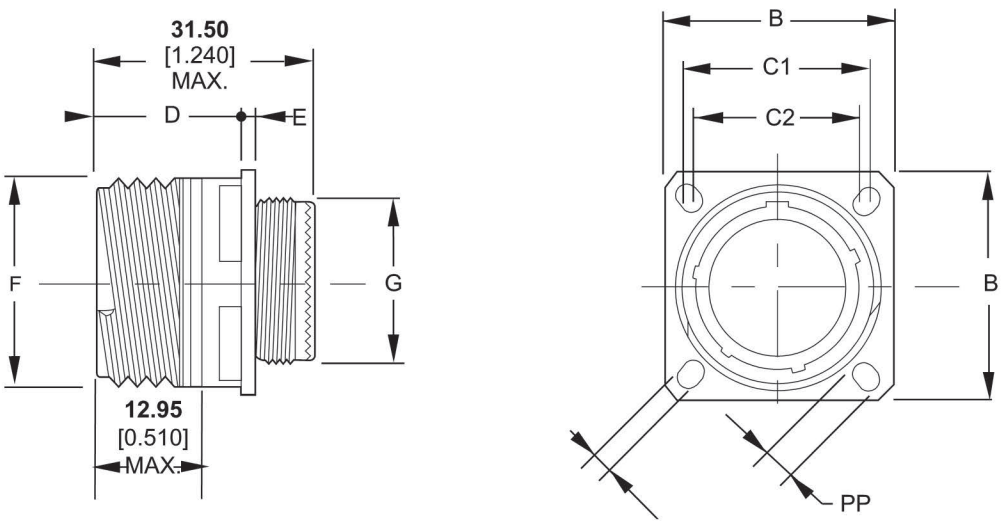
INSERT ARRANGEMENTS
See Insert Arrangements Table

CONTACTS
P Pin
S Socket
H 1500 Cycle Pin
J 1500 Cycle Socket
A Less Pin (with intent to use nonstandard contacts)
B Less Socket (with intent to use nonstandard contacts)

KEYING
N, A, B, C, D, E
N Normal

MODIFICATION CODE
6149
L/C Less Contacts

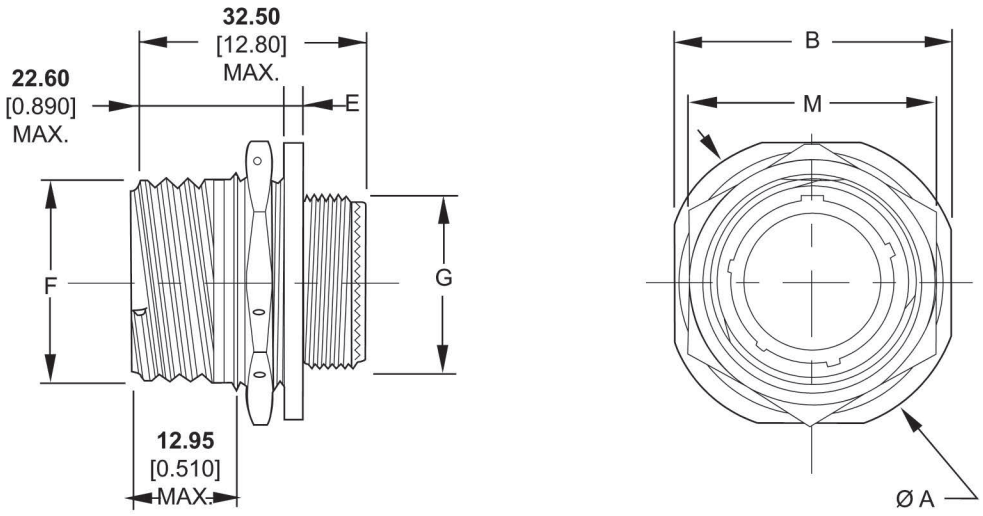
Square Flange Backshell
Type 20



Shell Size	B	C1	C2	D Max.	E Max.	F	G	P	PP	Mass (g)
09	**23.80** 0.937	**18.26** 0.719	**15.09** 0.594	**20.90** 0.823	**2.50** 0.098	**15.75** 0.620	**11.90** 0.469	**3.25** 0.128	**5.49** 0.216	**9**
11	**26.20** 1.031	**20.62** 0.812	**18.26** 0.719	**20.90** 0.823	**2.50** 0.098	**18.90** 0.744	**14.90** 0.587	**3.25** 0.128	**4.93** 0.194	**11**
13	**28.60** 1.126	**23.01** 0.906	**20.62** 0.812	**20.90** 0.823	**2.50** 0.098	**22.10** 0.870	**17.90** 0.705	**3.25** 0.128	**4.93** 0.194	**14**
15	**31.00** 1.220	**24.61** 0.969	**23.01** 0.906	**20.90** 0.823	**2.50** 0.098	**25.25** 0.994	**21.90** 0.862	**3.25** 0.128	**4.93** 0.194	**18**
17	**33.30** 1.311	**26.97** 1.062	**24.61** 0.969	**20.90** 0.823	**2.50** 0.098	**29.95** 1.179	**24.90** 0.980	**3.25** 0.128	**4.93** 0.194	**23**
19	**36.50** 1.437	**29.36** 1.156	**26.97** 1.062	**20.90** 0.823	**2.50** 0.098	**31.55** 1.242	**27.90** 1.098	**3.25** 0.128	**4.93** 0.194	**26**
21	**39.70** 1.563	**31.75** 1.250	**29.36** 1.156	**20.10** 0.791	**3.20** 0.126	**34.70** 1.366	**30.90** 1.217	**3.25** 0.128	**4.93** 0.194	**31**
23	**42.90** 1.689	**34.93** 1.375	**31.75** 1.250	**20.10** 0.791	**3.20** 0.126	**37.90** 1.492	**33.90** 1.335	**3.91** 0.154	**6.15** 0.242	**36**
25	**46.00** 1.811	**38.10** 1.500	**34.93** 1.375	**20.10** 0.791	**3.20** 0.126	**41.10** 1.618	**36.90** 1.453	**3.91** 0.154	**6.15** 0.242	**43**

Millimeters Inches

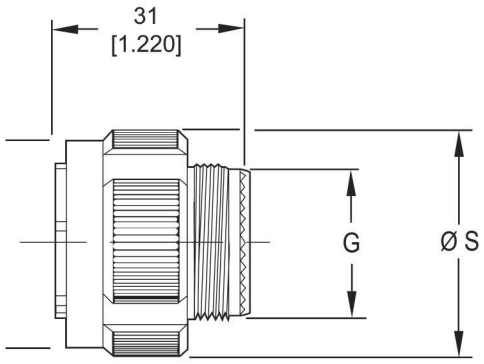
Jam Nut Receptacle
Type 24



Shell Size	A	B	E Max.	F	G	M Max.	Mass (g)
09	**30.20** 1.189	**27.00** 1.063	**2.20** 0.087	**15.75** 0.620	**11.90** 0.469	**24.00** 0.945	11
11	**34.90** 1.374	**31.80** 1.252	**2.20** 0.087	**18.90** 0.744	**14.90** 0.587	**27.00** 1.063	14
13	**38.10** 1.500	**34.90** 1.374	**2.20** 0.087	**22.10** 0.870	**17.90** 0.705	**32.00** 1.260	18
15	**41.30** 1.626	**38.10** 1.500	**2.20** 0.087	**25.25** 0.994	**21.90** 0.862	**36.00** 1.417	23
17	**44.50** 1.752	**41.30** 1.626	**2.20** 0.087	**29.95** 1.179	**24.90** 0.980	**37.00** 1.457	29
19	**49.20** 1.937	**46.00** 1.811	**3.00** 0.118	**31.55** 1.242	**27.90** 1.098	**41.00** 1.614	35
21	**52.40** 2.063	**49.20** 1.937	**3.00** 0.118	**34.70** 1.366	**30.90** 1.217	**46.00** 1.811	38
23	**55.60** 2.189	**52.40** 2.063	**3.00** 0.118	**37.90** 1.492	**33.90** 1.335	**50.00** 1.969	46
25	**58.70** 2.311	**55.60** 2.189	**3.00** 0.118	**41.10** 1.618	**36.90** 1.453	**51.23** 2.017	55

Millimeters Inches

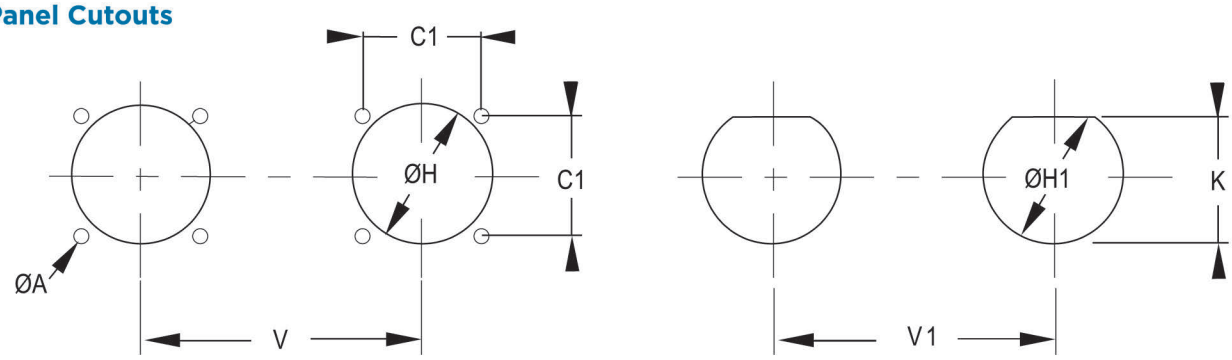
Plug
Type 26



Shell Size	F Max.	G	S Max.	Mass (g)
09	**18.40** 0.724	**11.90** 0.469	**21.80** 0.858	**9**
11	**21.10** 0.831	**14.90** 0.587	**25.00** 0.984	**13**
13	**25.40** 1.000	**17.90** 0.705	**29.40** 1.157	**18**
15	**28.70** 1.130	**21.90** 0.862	**32.50** 1.280	**23**
17	**32.20** 1.268	**24.90** 0.980	**35.70** 1.406	**25**
19	**34.90** 1.374	**27.90** 1.098	**38.50** 1.516	**32**
21	**38.10** 1.500	**30.90** 1.217	**41.70** 1.642	**35**
23	**41.10** 1.618	**33.90** 1.335	**44.90** 1.768	**41**
25	**44.30** 1.744	**36.90** 1.453	**48.00** 1.890	**48**

Millimeters Inches

Recommended
Panel Cutouts

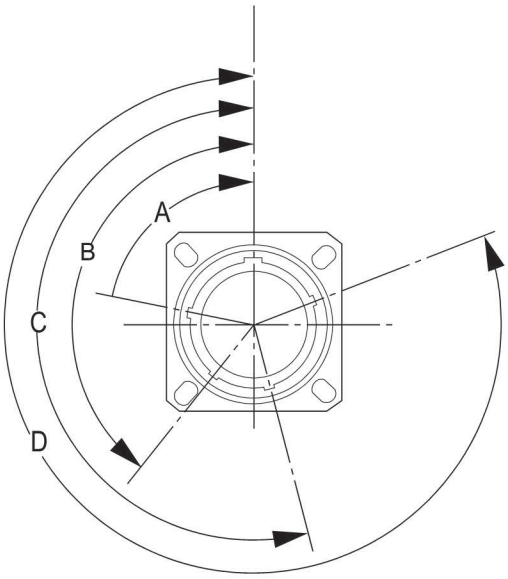


Shell Size	A	C1	H Min.		H1 Max.	K Max.	V Min.	V1 Min.
			Front	Rear				
9	**3.25** 0.128	**18.26** 0.719	**13.11** 0.516	**16.66** 0.656	**17.78** 0.700	**16.70** 0.657	**25.58** 1.007	**20.20** 1.189
11		**20.62** 0.812	**15.08** 0.594	**22.22** 0.875	**20.88** 0.822	**19.53** 0.769	**27.00** 1.063	**32.60** 1.283
13		**23.01** 0.906	**19.05** 0.750	**23.42** 0.922	**25.58** 1.007	**24.26** 0.995	**30.20** 1.189	**36.00** 1.417
15		**24.61** 0.969	**23.01** 0.906	**26.59** 1.047	**28.80** 1.134	**27.53** 1.084	**33.30** 1.331	**39.60** 1.559
17		**26.97** 1.062	**25.81** 1.106	**30.96** 1.219	**31.98** 1.259	**30.68** 1.208	**36.50** 1.437	**43.30** 1.705
19		**29.36** 1.156	**28.98** 1.141	**32.94** 1.297	**35.15** 1.384	**33.86** 1.333	**39.30** 1.547	**47.00** 1.850
21		**31.75** 1.250	**32.16** 1.266	**36.12** 1.422	**38.28** 1.507	**37.06** 1.459	**42.50** 1.673	**50.60** 1.992
23	**3.91** 0.154	**34.93** 1.375	**34.93** 1.375	**39.29** 1.547	**41.50** 1.634	**40.01** 1.575	**45.70** 1.799	**54.20** 2.134
25		**38.10** 1.500	**37.69** 1.484	**42.47** 1.672	**44.68** 1.759	**43.41** 1.709	**48.80** 1.921	**59.70** 2.350

Millimeters Inches

Keying

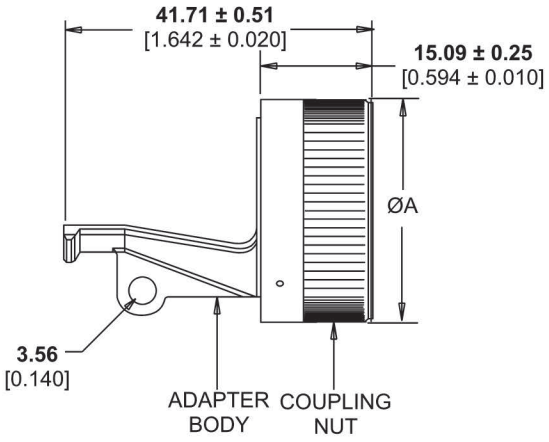
(Viewed from Mating Face of the Receptacle Connector)

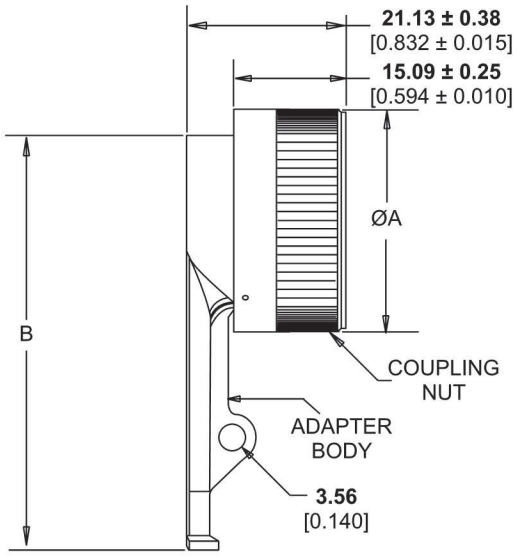


Shell Size	Key Position	Polarization (Degrees)			
		A	B	C	D
09	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	91	131	197	240
11, 13, 15	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
	D	119	146	176	298
	E	51	141	184	242
17, 19, 21, 23, 25	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

ACT00 Strain-Relief Backshells

ACT00 strain-relief backshells offer a composite body to provide a simple, lightweight strain relief for cable uses in light-duty applications. Cable can be secured to the body adapter with a tie wrap. The body adapters are available with various conductive platings to allow grounding, while a secondary grommet provides wire sealing. The adapters are available with inserts to match the insert arrangement of the connector on which it is used.





Recommended Torque
Shell Sizes A through E: 20 – 30 in.-lbs.
Shell Sizes A through E: 35 – 45 in.-lbs.

Typical Part Numbering System

ACT00 A B - D-EL 00 N

SERIES
ACT00

FINISH
A Unplated Composite, Black
M Nickel-Plated Body Adapter
R Tin-Plated Body Adapter
W Olive Drab Cadmium-Plated Body Adapter

CONFIGURATION
B Default

SHELL SIZE
A, B, C, D, E, F, G, H, J

TYPE
EL Environmental, Straight, Light Duty
EN Environmental, 90 Degree, Light Duty

CABLE INSERT ARRANGEMENT
00 No Insert

INSERT TYPE
N No Insert

Shell Size	ØA ±0.15 (0.006)	B ±0.80 (0.031)	Strength Bending Moment, Min. (kg, lb.)
9 (A)	**0.650** 0.026	**1.948** 0.077	**11** 25
11 (B)	**0.775** 0.031	**2.010** 0.079	**11** 25
13 (C)	**0.905** 0.036	**2.075** 0.082	**11** 25
15 (D)	**1.030** 0.041	**2.135** 0.084	**22** 50
17 (E)	**1.160** 0.046	**2.198** 0.087	**22** 50
19 (F)	**1.270** 0.050	**2.258** 0.089	**22** 50
21 (G)	**1.400** 0.055	**2.320** 0.091	**34** 75
23 (H)	**1.525** 0.060	**2.383** 0.094	**34** 75
25 (J)	**1.655** 0.065	**2.445** 0.096	**45** 100

LET'S CONNECT

We make it easy to connect with our experts and are ready to provide all the support you need. Just call your local support number or visit www.te.com/industrial to chat with a Product Information Specialist.

Technical Support

te.com/support-center

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North America (Toll)	+1 717 986 7777	Japan	+81 044 844 8180
EMEA/South Africa	+800 0440 5100	Australia	+61 2 9554 2695
EMEA (Toll)	+31 73 624 6999	New Zealand	+64 (0) 9 634 4580
India (Toll-Free)	+800 440 5100		

te.com/act

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>>TE Connectivity(泰科)