



**RELIABLE**

- Self-locking threaded coupling
- 100% scoop proof
- Contact retention system provides excellent contact retention under severe vibration

**EMI PROTECTED**

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

**VERSATILE**

- Variety of shell materials and finishes
- Wide range of backshells and accessories

MIL-DTL-38999 Series III Connectors



**DEUTSCH DTS Series Aluminum Connectors**  
**DEUTSCH DTS-K, DTS-L and DTS-S Series**  
**Stainless Steel Connectors**  
**DEUTSCH ACT Series Composite Connectors**

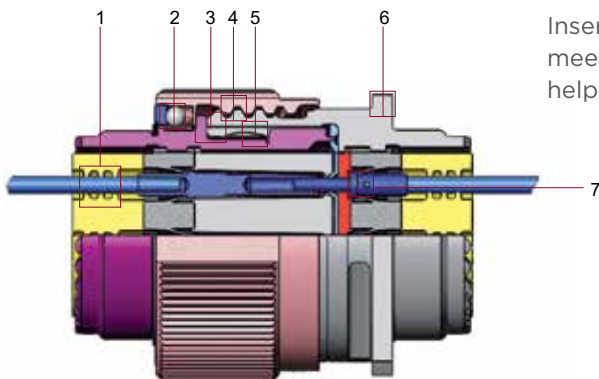
DEUTSCH MIL-DTL-38999 Series subminiature circular connectors offer a scoop-proof design for easy, reliable mating and a threaded coupling for excellent vibration resistance. They are available in three families distinguished by shell materials.

**DTS Series:** Lightweight aluminum shells for environmentally sealed versions and stainless steel for hermetic versions.

**DTS-K and DTS-S Series:** Stainless steel shells meeting the requirements of Classes K and S, suitable for firewall and high-temperature applications such as engines.

**ACT Series:** Composite shells, offering the lightest weight and highest resistance to corrosion.

Inserts are available in nine shell sizes, with contact arrangements meeting MIL-DTL-1560, along with additional arrangements, to help maximize flexibility in circuit configurations.



**Designed to Perform**

- 1** High-quality silicone seals to help maximize tear resistance and sealing memory
- 2** Self-locking threaded coupling
- 3** 100% metal-to-metal bottoming for excellent EMI grounding protection
- 4** Triple-start threads
- 5** Grounding fingers providing excellent EMI protection
- 6** Elongated mounting holes for flexible mounting with standard MIL-DTL-38999 box or wall mount receptacles
- 7** Contact retention system provides excellent contact retention under severe vibration



## MIL-DTL-38999 Series III Connectors

### DEUTSCH DTS and ACT Series Connectors

## Specifications

### MATERIALS

- **Shell:** Aluminum, composite, stainless steel, marine bronze
- **Plating:** Olive drab cadmium, passivated, electroless or electrodeposited nickel, nickel PTFE, black zinc nickel
- **Insert:** Thermoplastic and fluorinated silicone elastomer
- **EMI Spring Fingers:** Nickel or cadmium-plated beryllium copper
- **O-Ring:** Fluorinated silicone elastomer

### ENVIRONMENTAL

- **Temperature Range:**  
-65°C to +200°C
- **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:** 48 hours (Nickel finishes)  
500 hours (Cadmium, black zinc nickel, nickel PTFE, and passivated finishes)  
2000 hours (Composite classes M and J)
- **Thermal Cycling:** -65° to 150/175/200°C (max. temperature is class dependent)

### MECHANICAL

- **Sine Vibration:** Up to 60 g for 36 hr.
- **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:** 500 mating cycles (1500 cycles for composite connectors)
- **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.)

### ELECTRICAL

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



## MIL-DTL-38999 Series III Connectors

### DEUTSCH DTS and ACT Series Connectors

#### Voltage Rating

Service Rating	Suggested Operating Voltage		Test Voltage at Altitude (VAC <sub>rms</sub> )			
	VAC <sub>rms</sub>	VDC	Sea Level	50,000 Ft.	70,000 Ft.	100,000 Ft.
M	400	550	1300	550	350	200
N	300	450	1000	400	260	200
I	600	850	1800	600	400	200
II	750	1050	2300	800	500	200

#### Hermetic Connectors

- **Hermetic Seal:** Sintered glass
- **Leakage:** ≤16 cm<sup>3</sup>/hr. (0.97 in<sup>3</sup>/hr.) on mated pairs connected under 2.1 bar (4.38 psi)
- **Thermal Shock:** 10 cycles, 4°C max. to 90°C min.

#### Current Rating

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

\*When commercial power contact replaces twin-ax contact

#### 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	.6250	M17 x 1.0
11	M15 x 1.0	.7500	M20 x 1.0
13	M18 x 1.0	.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



MIL-DTL-38999 Series III Connectors  
DEUTSCH DTS and ACT Series Connectors

Part Numbering MIL-DTL-38999  
and DEUTSCH Commerical Versions

		Commercial Composite	ACT	26	M	D	35	P	N	-6149
		Commercial Al/SS	DTS	26	F	15	- 35	P	N	-6149
		Military	D38999	/26	F	D	35	P	N	-L/C
Commercial Composite	Commercial Alum./Stainless	Military	Description							
<b>RANGE</b>										
ACT	DTS	D38999								
<b>STYLE</b>										
20	20	/20	Square Flange Receptacle							
24	24	/24	Jam Nut Receptacle							
26	26	/26	Straight Plug							
-	13	-	Box Mount Receptacle							
-	20	/21	Hermetic Square Flange Receptacle							
-	24	/23	Hermetic Jam Nut Receptacle							
-	21	/25	Hermetic Solder Flange							
-	23	/27	Hermetic Weld Flange							
<b>CLASS</b>										
<b>ALUMINUM SHELL</b>										
-	F	F	Electroless Nickel Plated (48-hr. Salt Spray)							
-	G	G	Space-Grade Electroless Nickel (48-hr. Salt Spray)							
-	T	T	Nickel PTFE (500-hr. Salt Spray)							
-	W	W	Olive Drab Cadmium (500-hr. Salt Spray)							
-	Z	Z	Black Zinc Nickel (500-hr. Salt Spray)							
<b>COMPOSITE SHELL</b>										
M	-	M	Electroless Nickel Plated (2000-hr. Salt Spray)							
J	-	J	Olive Drab Cadmium (2000-hr. Salt Spray)							
<b>STAINLESS STEEL SHELL</b>										
-	K	K	Passivated S.S., Firewall (500-hr. Salt Spray)							
-	S	S	Electrodeposited Nickel S.S., Firewall (500-hr. Salt Spray)							
-	L	L	Electrodeposited Nickel (48-hr. Salt Spray)							
<b>HERMETIC</b>										
-	Y	Y	Stainless Steel, Passivated							
-	N	N	Stainless Steel, Electrodeposited Nickel Plated							
-	H	H	Space Grade							
<b>SHELL SIZES</b>										
9 (A), 11 (B), 13 (C), 15 (D), 17 (E), 19 (F), 21 (G), 23 (H), 25 (J)			Numbers = DTS Commercial; (Letters) = Military/ACT Commercial							
<b>INSERT ARRANGEMENTS</b>										
			See Insert Arrangement Tables, pages 10-17 and 35-36							
<b>CONTACTS</b>										
P	Pin,	H	1500-Cycle Pin							
S	Socket,	J	1500-Cycle Socket							
A	Less Pin (with intent to use nonstandard contacts)									
B	Less Socket (with intent to use nonstandard contacts)									
<b>CONTACTS FOR HERMETIC CONNECTORS</b>										
P	Pin, Solder Cup,	S	Socket, Solder Cup							
C	PC Tail Pin,	D	PC Tail Socket							
X	Eyelet Pin,	Z	Eyelet Socket							
<b>KEYING</b>										
N, A, B, C, D, E, U			N = Normal, U = Universal							
<b>MODIFICATION CODE</b>										
6149	6149	L/C	Less Contacts							

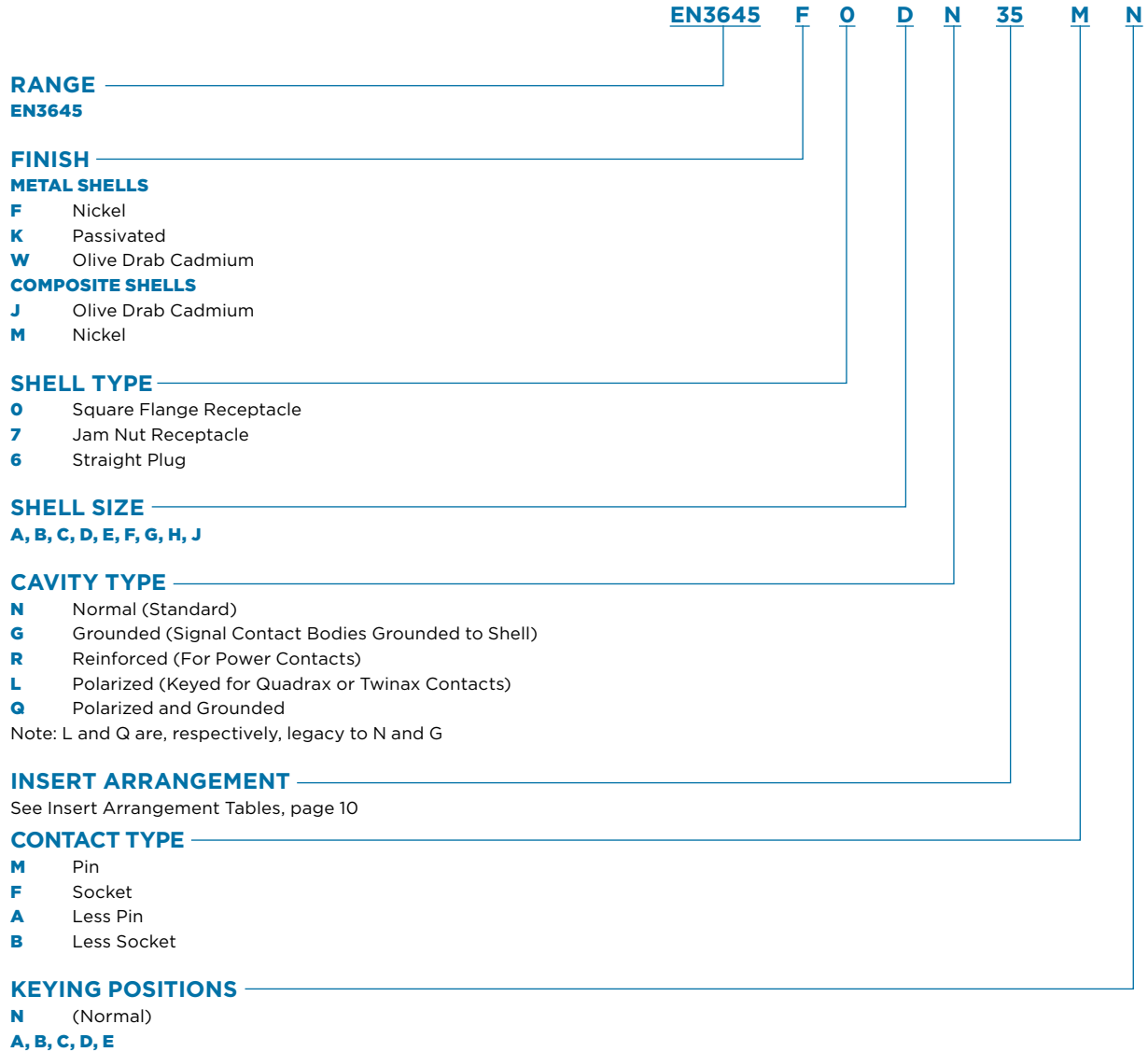


## MIL-DTL-38999 Series III Connectors

### DEUTSCH DTS and ACT Series Connectors

#### Part Numbering

#### EN3645 and DEUTSCH Commercial Versions





MIL-DTL-38999 Series III Connectors

DEUTSCH DTS and ACT Series Connectors

Insert		Contact Size/Quantity											Includes K Class	Uses 38999/62-8* Boots	Inactive: Superseded by
DTS Commercial	Military (Commercial ACT)	8 Twinax	8 Coax	8 Power	12 Twinax	12 Coax	10	12	16	20	22D	23			
09-07	A7 (A07)										7				
09-23	A23											9			
09-35	A35										6		✓		
09-98	A98									3			✓		
11-02	B2 (B02)							2							
11-04	B4 (B04)								4						
11-05	B5 (B05)								5						
11-23	B23											19			
11-35	B35										13		✓		
11-98	B98									6			✓		
11-99	B99									7			✓		
13-04	C4 (C04)							4							
13-08	C8 (C08)								8				✓		
13-23	C23											32			
13-35	C35										22		✓		
13-98	C98								10				✓		
15-05	D5 (D05)							5					✓		
15-15	D15							1	14						
15-18	D18									18			✓		
15-19	D19									19			✓		
15-23	D23											55			
15-26	D26							2		24					
15-35	D35										37		✓		
15-97	D97							4	8				✓		
17-02	E2 (E02)	1									38				17-03
17-03	E3 (E03)	1									38			✓	
17-06	E6 (E06)							6					✓		
17-08	E8 (E08)								8				✓		
17-11	E11				2	1				8					
17-19	E19								4	11	4				
17-20	E20								4		16				
17-22	E22	2						2							
17-23	E23											73			
17-24	E24			2							22				
17-26	E26									26			✓		
17-35	E35										55		✓		
17-99	E99							2	21				✓		
19-11	F11							11					✓		
19-18	F18	4									14				19-19
19-19	F19	4									14			✓	
19-23	E23											88			
19-28	F28							2	26						

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



MIL-DTL-38999 Series III Connectors

DEUTSCH DTS and ACT Series Connectors

Insert		Contact Size/Quantity											Includes K Class	Uses 38999/62-8* Boots	Inactive: Superseded by
DTS Commercial	Military (Commercial ACT)	8 Twinx	8 Coax	8 Power	12 Twinx	12 Coax	10	12	16	20	22D	23			
19-32	F32									32			✓		
19-35	F35										66		✓		
21-11	G11							11							
21-16	G16								16						
21-20	G20	2								18					
21-23	G23											121			
21-35	G35										79		✓		
21-39	G39								2	37			✓		
21-41	G41									41			✓		
21-48	G48			4											
21-75	G75	4													21-76
21-76	G76	4												✓	
23-06	H6 (H06)	6													
23-21	H21								21						
23-23	H23												151		
23-35	H35										100				
23-53	H53									53			✓		
23-54	H54							4	9		40				
23-55	H55									55					
23-63	H63							4	4		49				
25-04	J4 (J04)								8	48			✓		
25-07	J7 (J07)	2									97				25-09
25-08	J8 (J08)	8													25-10
25-09	J9 (J09)	2									97			✓	
25-10	J10	8												✓	
25-11	J11						9			2					
25-17	J17	6									36				
25-19	J19								19						
25-20	J20	3				4			13	10					25-21
25-21	J21	3				4			13	10				✓	
25-23	J23												187		
25-24	J24								12	12					
25-29	J29									29					
25-35	J35										128		✓		
25-37	J37									37					
25-43	J43								20	23					
25-46	J46		2						4	40					25-47
25-47	J47		2						4	40				✓	
25-61	J61									61			✓		
25-90	J90	2							4	40					25-91
25-91	J91	2							4	40				✓	

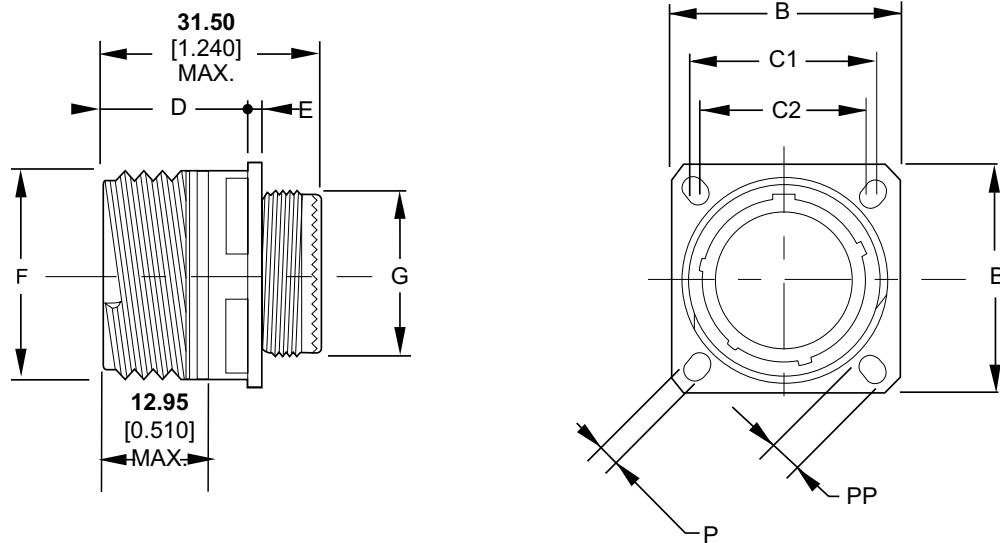
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MIL-DTL-38999 Series III Connectors

DEUTSCH DTS and ACT Series Connectors

Square Flange Receptacle  
Type 20



Shell Size	B	C1	C2	D Max.	E Max.	F	G	P	PP	Mass (g) by Shell Type		
										Al	SS	Composite
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	10	27	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	16	36	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	19	45	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	25	56	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	32	74	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	39	78	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	45	95	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	54	108	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	59	120	43

Millimeters Inches

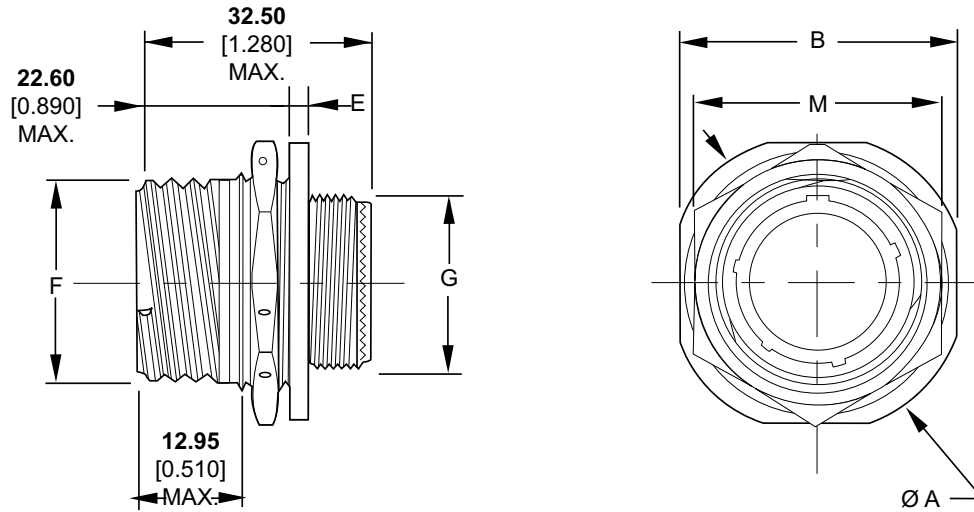




MIL-DTL-38999 Series III Connectors

DEUTSCH DTS and ACT Series Connectors

Jam Nut Receptacle  
Type 24



Shell Size	A	B	E	F	G	M Max.	Mass (g) by Shell Type		
							Al	SS	Composite
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	15	40	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	21	50	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	27	60	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	32	72	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	40	92	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	49	96	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	54	114	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	65	130	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	73	143	55

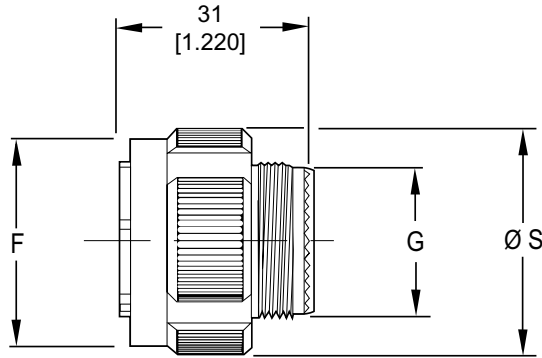
Millimeters Inches



## MIL-DTL-38999 Series III Connectors

### DEUTSCH DTS and ACT Series Connectors

#### Plug Type 26



Shell Size	F Max.	G	S Max.	Mass (g) by Shell Type		
				Al	SS	Composite
09	18.40 0.724	11.90 0.469	21.80 0.858	15	36	9
11	21.10 0.831	14.90 0.587	25.00 0.984	20	50	13
13	25.40 1.000	17.90 0.705	29.40 1.157	27	64	18
15	28.70 1.130	21.90 0.862	32.50 1.280	34	80	23
17	32.20 1.268	24.90 0.980	35.70 1.406	37	88	25
19	34.90 1.374	27.90 1.098	38.50 1.516	48	102	32
21	38.10 1.500	30.90 1.217	41.70 1.642	55	117	35
23	41.10 1.618	33.90 1.335	44.90 1.768	67	131	41
25	44.30 1.744	36.90 1.453	48.00 1.890	71	145	48

Millimeters Inches

#### Coupling Torque: Plug to Receptacle

Shell Size	Engagement and Disengagement (Max.)		Minimum Disengagement	
	Nm	Lb.-in.	Nm	Lb.-in.
09	0.9	8		
11	1.4	12	0.2	2
13	1.8	16		
15	2.3	20		
17	2.7	24	0.3	3
19	3.2	28		
21	3.6	32		
23	4.1	36	0.6	5
25	4.6	40		

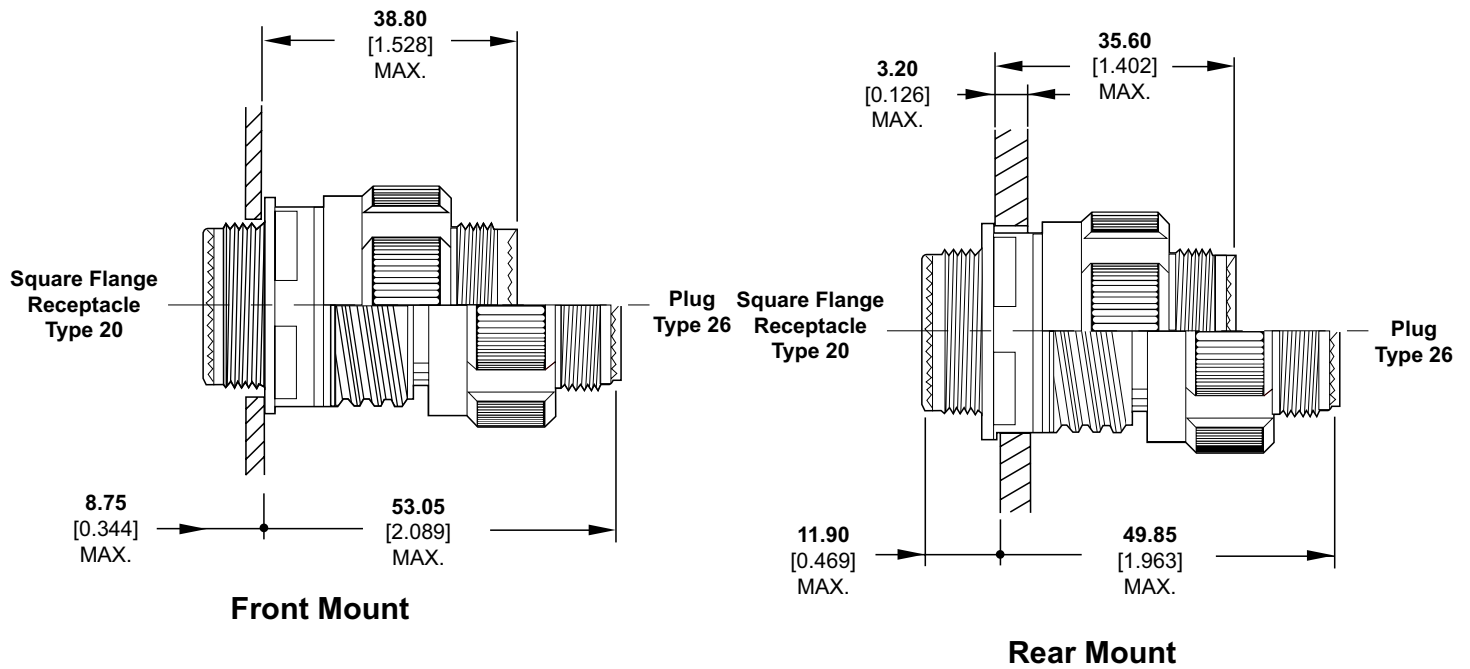


MIL-DTL-38999 Series III Connectors

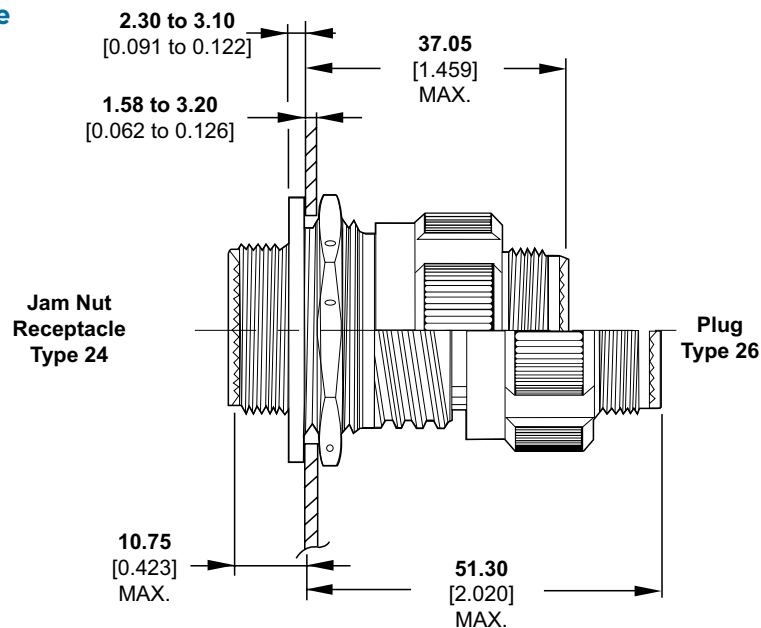
DEUTSCH DTS and ACT Series Connectors

Mated/Unmated Dimensions

Square Flange Receptacle to Plug



Jam Nut Receptacle to Plug

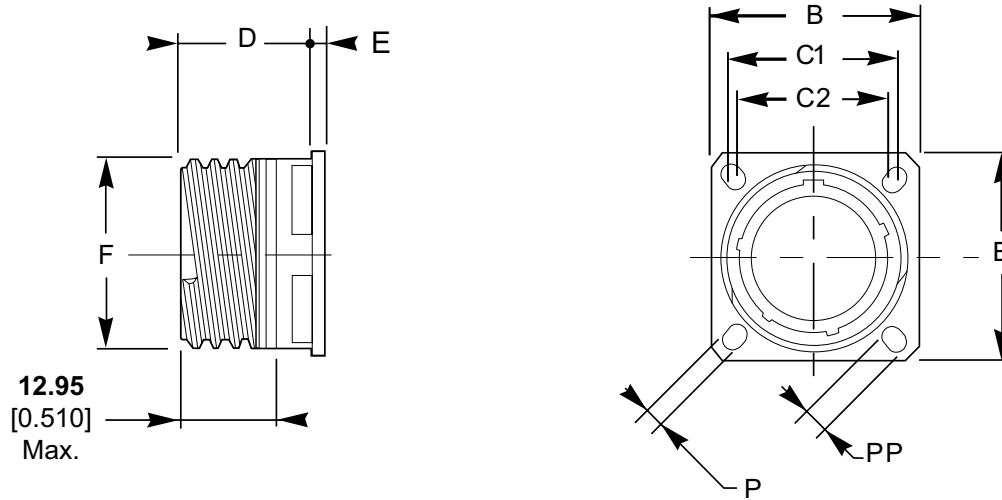




MIL-DTL-38999 Series III Connectors

DEUTSCH DTS and ACT Series Connectors

Dummy Receptacle  
Type PR



Shell Size	B	C1	C2	D Max.	E Max.	F	G	P	PP	Mass (g) by Shell Type		
										Al	SS	Composite
09	23.80 0.937	18.26 0.719	15.09 0.594	20.90 0.823	2.50 0.098	15.73 0.619	3.25 0.128	5.49 0.216	5.49 0.216	7	10	8
11	26.20 1.031	20.62 0.812	18.26 0.719	20.90 0.823	2.50 0.098	18.91 0.744	3.25 0.128	4.93 0.194	4.93 0.194	11	16	11
13	28.60 1.126	23.01 0.906	20.62 0.812	20.90 0.823	2.50 0.098	22.08 0.869	3.25 0.128	4.93 0.194	4.93 0.194	15	22	14
15	31.00 1.220	24.61 0.969	23.01 0.906	20.90 0.823	2.50 0.098	25.26 0.994	3.25 0.128	4.93 0.194	4.93 0.194	18	31	18
17	33.30 1.311	26.97 1.062	24.61 0.969	20.90 0.823	2.50 0.098	29.96 1.180	3.25 0.128	4.93 0.194	4.93 0.194	22	46	23
19	36.50 1.437	29.36 1.156	26.97 1.062	20.90 0.823	2.50 0.098	31.54 1.242	3.25 0.128	4.93 0.194	4.93 0.194	26	51	26
21	39.70 1.563	31.75 1.250	29.36 1.156	20.10 0.791	3.20 0.126	34.72 1.367	3.25 0.128	4.93 0.194	4.93 0.194	30	65	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	3.91 0.154	6.15 0.242	6.15 0.242	33	78	36
25	46.00 1.811	38.10 1.500	34.93 1.375	20.10 0.791	3.20 0.126	41.07 1.617	36.90 1.453	3.91 0.154	6.15 0.242	36	97	43

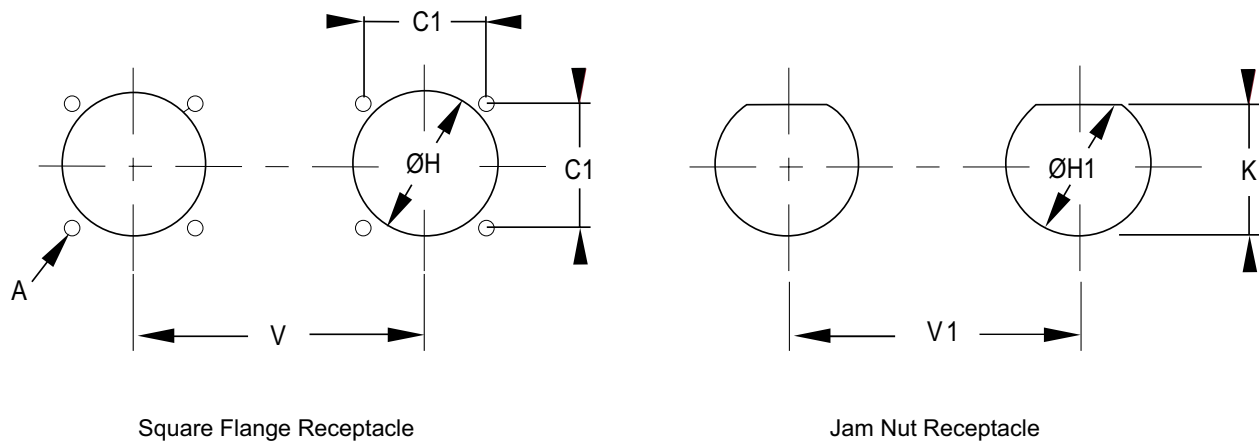
Millimeters Inches



MIL-DTL-38999 Series III Connectors

DEUTSCH DTS and ACT Series Connectors

Recommended Panel Cutouts



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

Millimeters Inches



## MIL-DTL-38999 Series III Connectors

### DEUTSCH DTS and ACT Series Connectors

#### Keying Options

(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

