

## **Mil-Spec Connectors & Accessories**



## DEUTSCH ECD

### **Defense / Aerospace Operations . . .**

*is the world's premier manufacturer of electrical interconnection devices for use in defense, aerospace, and commercial applications. Whether you need an interconnection device for a commercial or military aircraft, missile, tank, truck transmission or a host of other applications, Deutsch has the solution you're looking for.*

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# MIL-C-38999 Series I

## Cylindrical, High Density Bayonet Coupling Connector Qualified to MIL-C-38999 Series I

The Deutsch Series I version is a long shell, scoop-proof, bayonet coupling connector available in both environment resisting resilient and hermetic types. These Series I connectors are intermateable and interchangeable with all other MIL-C-38999 Series I connectors.

### Dielectric withstanding voltage:

(Meets MIL-C-38999, paragraph 3.14)  
At sea level: 1800 volts AC (RMS)  
At 100,000 ft.: 200 volts AC (RMS)

### Insulation resistance:

(Meets MIL-C-38999, paragraph 3.13)  
5000 megohms min. at 25°

### Thermal shock:

(Meets MIL-C-38999, paragraph 3.8)  
After cycling the connector between -65° C and +175° C, it will meet all applicable electrical and mechanical requirements.

### Current rating:

(Meets MIL-C-39029, paragraph 1.3.1)  
Contact Size      Max. Amps  
22D                      5  
20                        7.5  
16                        13  
12                        23

### Temperature:

(Meets MIL-C-38999, paragraph 3.11)  
Operative at temperatures from -65° C to +175° C.

### Durability:

(Meets MIL-C-38999, paragraph 3.11)  
No electrical or mechanical defects after 500 cycles of engagement and disengagement.

### Physical shock:

(Meets MIL-C-38999, paragraph 3.27)  
No loosening of parts, cracking or other deleterious results hindering further part operation after 300 G's in each of 3 mutually perpendicular planes.

### Contact millivolt drop:

22D — 73 millivolts at 5.0 amps  
20 — 55 millivolts at 7.5 amps  
16 — 49 millivolts at 135.0 amps  
12 — 42 millivolts at 23.0 amps

### Corrosion:

(Meets MIL-C-38999, paragraph 3.16)  
Meets appropriate electrical and mechanical requirements and shows no exposure of base metal after 500 hours of salt spray.

### Vibration:

(Meets MIL-C-38999, paragraph 3.26)

### Contact resistance at 25° C:

(Meets MIL-C-39029, paragraph 3.5.4)  
Contact &      Test Current      Millivolt  
Wire Size      (Amps)      Drop (\*)  
22D                      5                      73  
20                        7.5                    55  
16                        13                    49  
12                        23                    42

### Usable wire size:

(Meets MIL-C-39029, paragraph 3.4.3.1)  
Contact Size      Accepts (AWG)  
22D                      22-28  
20                        20-24  
16                        16-20  
12                        12&14

### Materials:

Shell — aluminum alloy.  
Pin contacts — copper alloy.  
Inserts — plastic; silicone.

### Finish:

Shell — O.D. cad over nickel.  
Contacts — gold over nickel.

### Grommet sealing range:

(Meets MIL-C-39029, paragraph 3.4.3.1)  
Contact      Max. Wire      Min. Wire  
Size      O.D.      O.D.  
22D                      .054                    .030  
20                        .083                    .040  
16                        .109                    .065  
12                        .142                    .097

### Fluid compatibility:

(Meets MIL-C-38999, paragraph 3.33)  
Designed to function in all fluids encountered in any modern military or aerospace environment.

### EMI shielding:

(Meets MIL-C-38999, paragraph 3.31)  
Effective over a range of 100 MHz to 10 GHz with a minimum 50 dB effectiveness at 10 GHz.

| Frequency<br>MHz | Leakage attenuation<br>minimum (dB) |
|------------------|-------------------------------------|
| 100              | 90                                  |
| 200              | 88                                  |
| 300              | 87                                  |
| 400              | 85                                  |
| 800              | 85                                  |
| 1,000            | 85                                  |
| 1,500            | 69                                  |
| 2,000            | 65                                  |
| 3,000            | 61                                  |
| 4,000            | 58                                  |
| 6,000            | 55                                  |
| 10,000           | 50                                  |

### Fluid immersion:

Fluid resistant to many fuels, coolants and solvents per MIL-C-38999.

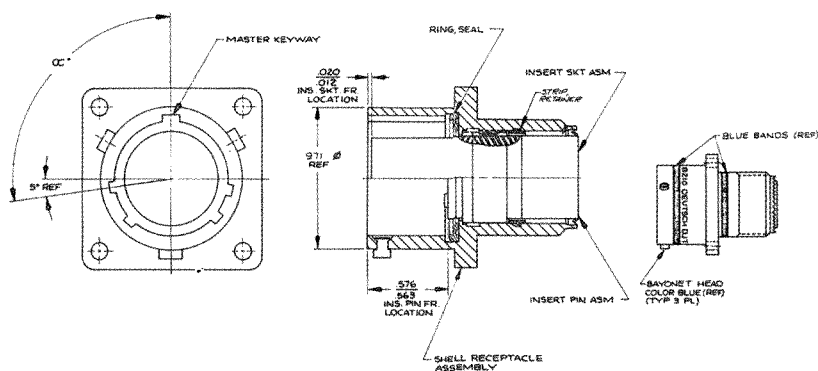
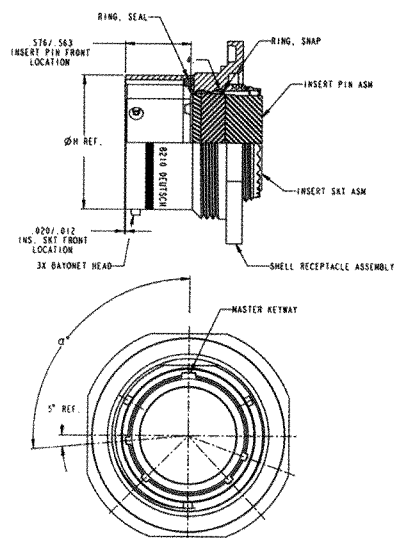


# MIL-C-38999 Series I

| SHELL SIZE | H DIA. REF. |
|------------|-------------|
| 09         | .568        |
| 11         | .696        |
| 13         | .846        |
| 15         | .971        |
| 17         | 1.096       |
| 19         | 1.203       |
| 21         | 1.328       |
| 23         | 1.453       |
| 25         | 1.578       |

| SHELL SIZE | KEY POSITION $\alpha$ |     |     |      |      |
|------------|-----------------------|-----|-----|------|------|
|            | N                     | A   | B   | C    | D    |
| 09         | 95°                   | 77° | --- | ---  | 113° |
| 11         | 95°                   | 81° | 67° | 123° | 109° |
| 13         | 95°                   | 75° | 63° | 127° | 115° |
| 15         | 95°                   | 74° | 61° | 129° | 116° |
| 17         | 95°                   | 77° | 65° | 125° | 113° |
| 19         | 95°                   | 77° | 65° | 125° | 113° |
| 21         | 95°                   | 77° | 65° | 125° | 113° |
| 23         | 95°                   | 80° | 69° | 121° | 110° |
| 25         | 95°                   | 80° | 69° | 121° | 110° |

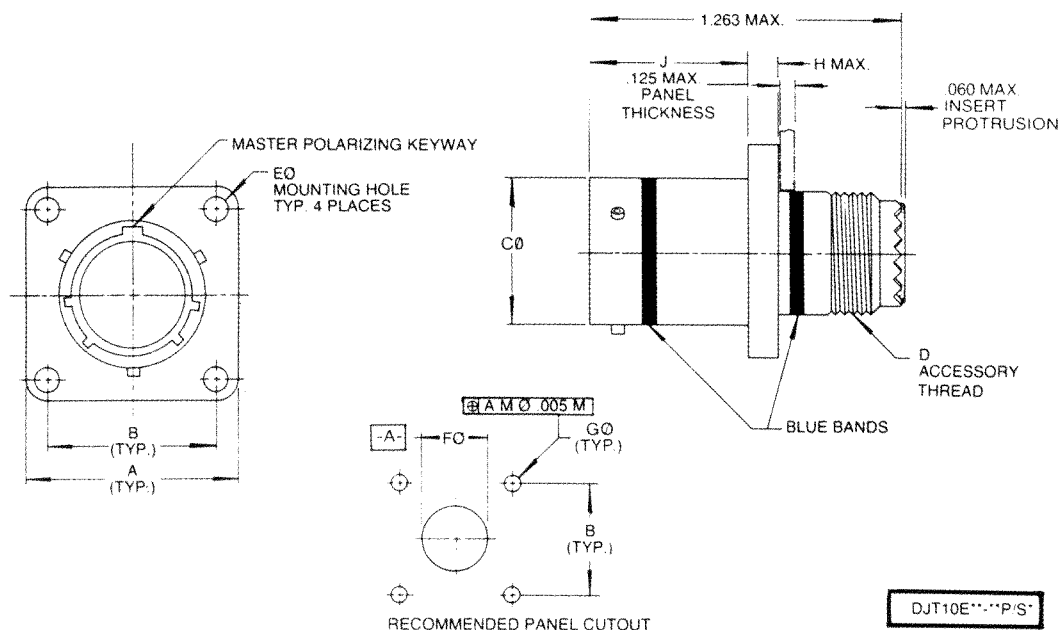
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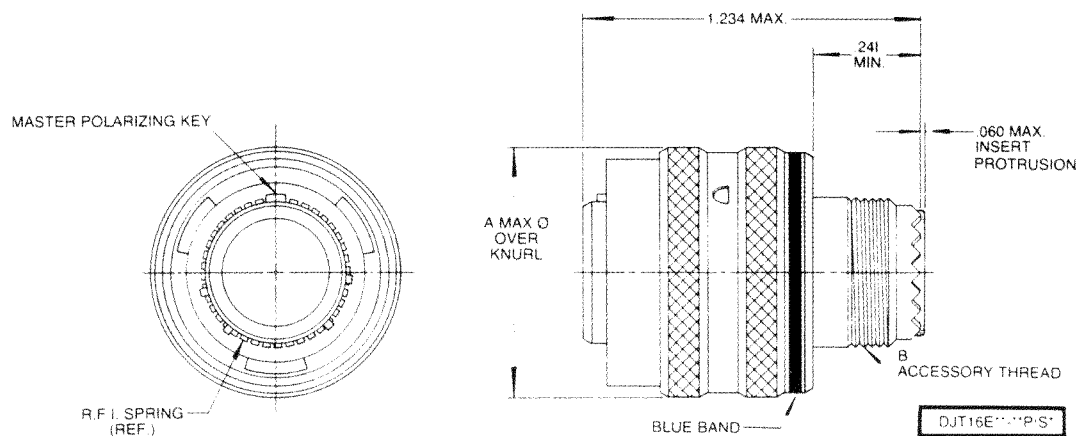
|     |   |   |    |    |   |   |      |                                                                                                                                                 |
|-----|---|---|----|----|---|---|------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| DJT | 1 | E | XX | XX | P | N | ---- | MODIFICATIONS                                                                                                                                   |
|     |   |   |    |    |   |   |      | KEYING POSITIONS<br>N, A, B, C, D (POSITION N = NORMAL)                                                                                         |
|     |   |   |    |    |   |   |      | CONTACT<br>P = PIN<br>S = SOCKET                                                                                                                |
|     |   |   |    |    |   |   |      | CONTACT ARRANGEMENT                                                                                                                             |
|     |   |   |    |    |   |   |      | SHELL SIZE<br>9, 11, 13, 15, 17, 19, 21, 23 AND 25                                                                                              |
|     |   |   |    |    |   |   |      | FINISH<br>E = OLIVE DRAB CADMIUM (STANDARD)<br>F = NICKEL (RESERVED)                                                                            |
|     |   |   |    |    |   |   |      | SHELL STYLE<br>0 = RECEPTACLE SQUARE FLANGE<br>4 = RECEPTACLE JAM NUT<br>5 = PLUG STRAIGHT (REVERSE CAVITY IDENTIFICATION)<br>6 = PLUG STRAIGHT |
|     |   |   |    |    |   |   |      | COUPLING SYSTEM<br>BAYONET                                                                                                                      |
|     |   |   |    |    |   |   |      | BASIC IDENTIFIER<br>DEUTSCH MIL-C-38999 SERIES I (SCOOP PROOF)                                                                                  |



## Receptacle Outline Dimensions



## Plug Outline Dimensions



| SHELL SIZE | A<br>± .020 | B<br>± .005 | C0<br>± .003 | D THREAD<br>UNEF-2A | E0<br>+ .010<br>- .005 | F0<br>MIN. | G0<br>± .005 | H<br>MAX. | J<br>+ .000<br>- .005 | A0<br>MAX | B THREAD<br>UNEF-2A |
|------------|-------------|-------------|--------------|---------------------|------------------------|------------|--------------|-----------|-----------------------|-----------|---------------------|
| 9          | .938        | .719        | .570         | .4375-28            | .128                   | .516       | .128         | .100      | .632                  | .859      | .4375-28            |
| 11         | 1.031       | .812        | .698         | .5625-24            | .128                   | .664       | .128         | .100      | .632                  | .984      | .5625-24            |
| 13         | 1.125       | .906        | .848         | .6875-24            | .128                   | .750       | .128         | .100      | .632                  | 1.156     | .6875-24            |
| 15         | 1.219       | .969        | .973         | .8125-20            | .128                   | .906       | .128         | .100      | .632                  | 1.281     | .8125-20            |
| 17         | 1.312       | 1.062       | 1.098        | .9375-20            | .128                   | 1.016      | .128         | .100      | .632                  | 1.406     | .9375-20            |
| 19         | 1.438       | 1.156       | 1.205        | 1.0625-18           | .128                   | 1.141      | .128         | .100      | .632                  | 1.516     | 1.0625-18           |
| 21         | 1.562       | 1.250       | 1.330        | 1.1875-18           | .128                   | 1.266      | .128         | .130      | .602                  | 1.641     | 1.1875-18           |
| 23         | 1.688       | 1.375       | 1.455        | 1.3125-18           | .147                   | 1.377      | .154         | .130      | .602                  | 1.766     | 1.3125-18           |
| 25         | 1.812       | 1.500       | 1.580        | 1.4375-18           | .147                   | 1.484      | .154         | .130      | .602                  | 1.891     | 1.4375-18           |



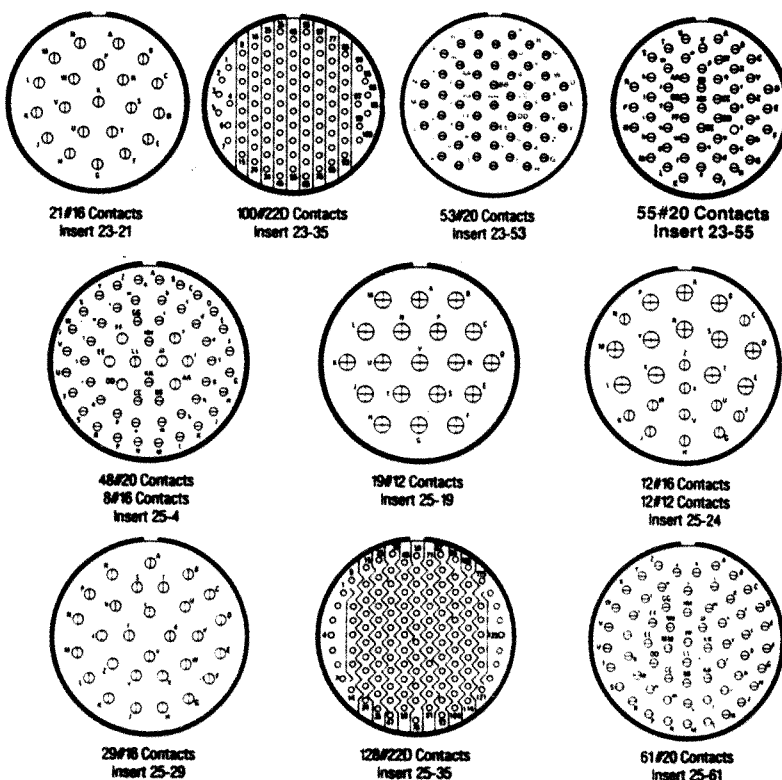
# DJT Series Insert Arrangements

## Contact Arrangements



## Deutsch Shell Sizes

| DJT   | Service Rating | Total Contacts | Contact Size |    |    |    |
|-------|----------------|----------------|--------------|----|----|----|
|       |                |                | 22D          | 20 | 16 | 12 |
| 9-35  | M              | 6              | 6            |    |    |    |
| 9-98  | I              | 3              |              | 3  |    |    |
| 11-5  | I              | 5              |              | 5  |    |    |
| 11-35 | M              | 13             | 13           |    |    |    |
| 11-99 | I              | 7              |              | 7  |    |    |
| 13-4  | I              | 4              |              |    | 4  |    |
| 13-35 | M              | 22             | 22           |    |    |    |
| 13-98 | I              | 10             |              | 10 |    |    |
| 15-5  | II             | 5              |              |    | 5  |    |
| 15-18 | I              | 18             |              | 18 |    |    |
| 15-35 | M              | 37             | 37           |    |    |    |
| 15-97 | I              | 12             |              | 8  | 4  |    |
| 17-6  | I              | 6              |              |    |    | 6  |
| 17-8  | II             | 8              |              |    | 8  |    |
| 17-26 | I              | 26             |              | 26 |    |    |
| 17-35 | M              | 55             | 55           |    |    |    |
| 19-11 | II             | 11             |              |    | 11 |    |
| 19-32 | I              | 32             |              | 32 |    |    |
| 19-35 | M              | 66             | 66           |    |    |    |
| 21-11 | I              | 11             |              |    |    | 11 |
| 21-16 | II             | 16             |              |    | 16 |    |
| 21-41 | I              | 41             |              | 41 |    |    |
| 21-35 | M              | 79             | 79           |    |    |    |
| 23-21 | II             | 21             |              |    | 21 |    |
| 23-53 | I              | 53             |              | 53 |    |    |
| 23-55 | I              | 55             |              | 55 |    |    |
| 25-4  | I              | 56             |              | 48 | 8  |    |
| 25-19 | I              | 19             |              |    |    | 19 |
| 25-24 | I              | 24             |              |    | 12 | 12 |
| 25-29 | I              | 29             |              |    | 29 |    |
| 25-35 | M              | 128            | 128          |    |    |    |
| 25-61 | I              | 61             |              | 61 |    |    |



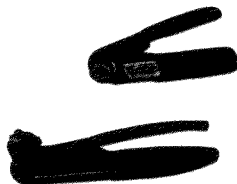
## Part Number Cross Reference



### Assembly Tools

Wire/contact assembly tools are standard military type insertion/removal tools found in most assembly areas.

|        |                                                                                      |          |
|--------|--------------------------------------------------------------------------------------|----------|
| Yellow |   | Size 22D |
| Red    |   | Size 20  |
| Blue   |   | Size 16  |
| Yellow |  | Size 12  |



| Contact Size | Insertion/removal tool    | Crimp tool  | Crimp tool positioner      | Sealing plug (Military P/N) |
|--------------|---------------------------|-------------|----------------------------|-----------------------------|
| 22D          | M81969 14-01<br>MS3160-23 | M22520/7-01 | M22520/7-07<br>M22520-7/05 | MS27488-22                  |
| 20           | M81969 14-02              | M22520/1-01 | M22520/1-04                | MS27488-20                  |
| 16           | M81969 14-03              | M22520/1-01 | M22520/1-04                | MS27488-15                  |
| 12           | M81969 14-04              | M22520/1-01 | M22520/1-04                | MS27488-12                  |

