

## **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.*

#### **Deutsch ECD Defense Aerospace Operations**

5733 W. Whittier Ave., Hemet CA (USA) 92545  
Phone 909/765-2200 • FAX 909/922-1544

# MIL-C-38999 Series I

## DEUTSCH DJT SERIES CONNECTORS

### 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 & Wire Size | Test Current (Amps) | Millivolt 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 Size | Max. Wire O.D. | Min. Wire 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 MHz | Leakage attenuation 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                               |

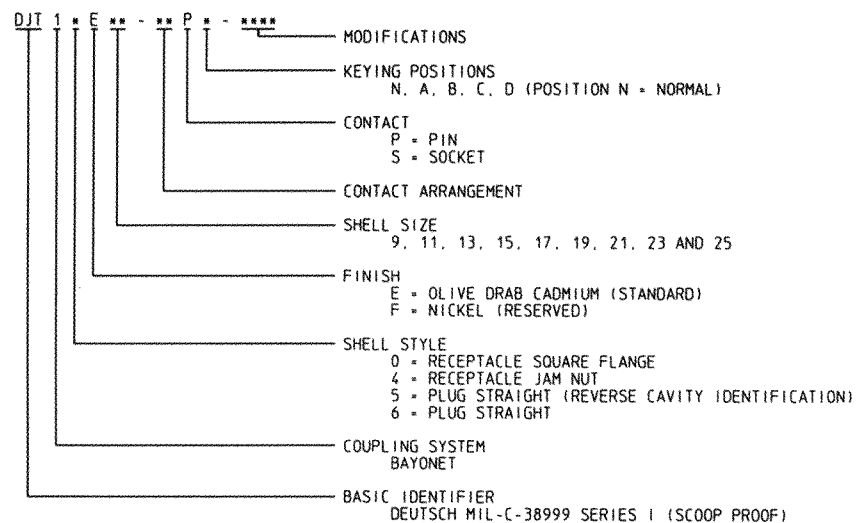
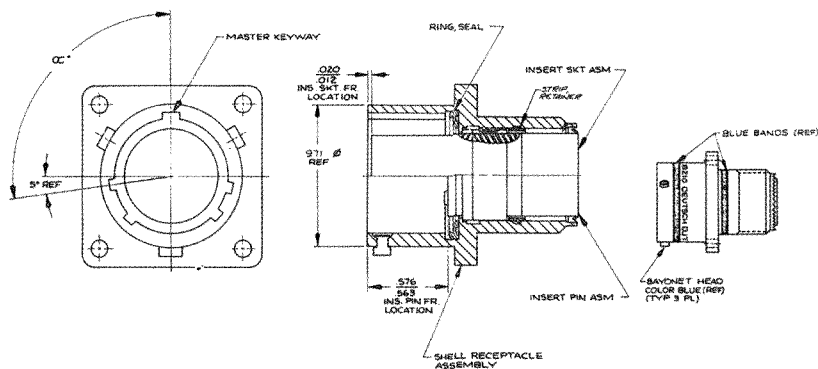
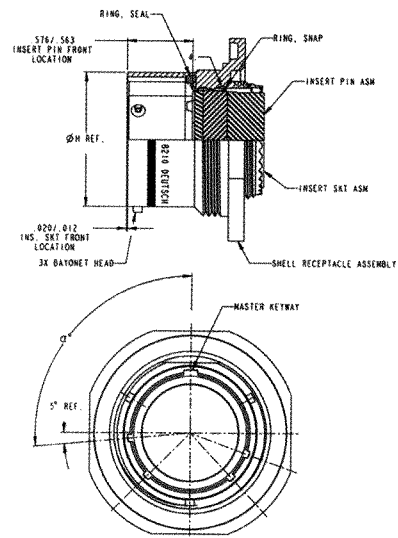
#### Fluid immersion:

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

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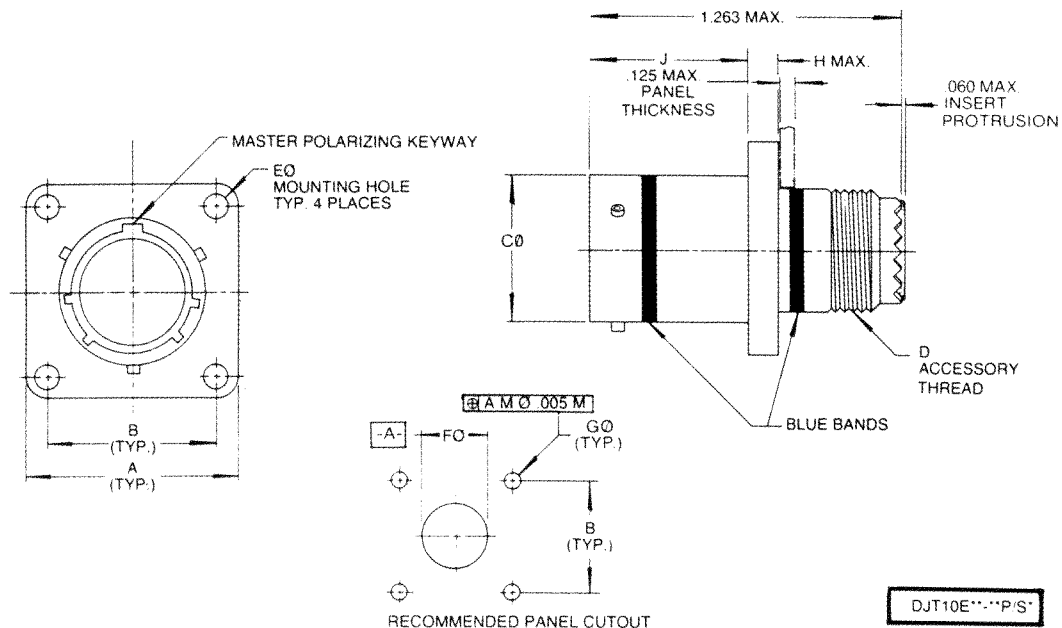
| SHELL SIZE | H DIA. REF. | SHELL SIZE | KEY POSITION $\alpha$ |     |     |      |      |
|------------|-------------|------------|-----------------------|-----|-----|------|------|
|            |             |            | N                     | A   | B   | C    | D    |
| 09         | .568        | 09         | 95°                   | 77° | --- | ---  | 113° |
| 11         | .696        | 11         | 95°                   | 81° | 67° | 123° | 109° |
| 13         | .846        | 13         | 95°                   | 75° | 63° | 127° | 115° |
| 15         | .971        | 15         | 95°                   | 74° | 61° | 129° | 116° |
| 17         | 1.096       | 17         | 95°                   | 77° | 65° | 125° | 113° |
| 19         | 1.203       | 19         | 95°                   | 77° | 65° | 125° | 113° |
| 21         | 1.328       | 21         | 95°                   | 77° | 65° | 125° | 113° |
| 23         | 1.453       | 23         | 95°                   | 80° | 69° | 121° | 110° |
| 25         | 1.578       | 25         | 95°                   | 80° | 69° | 121° | 110° |



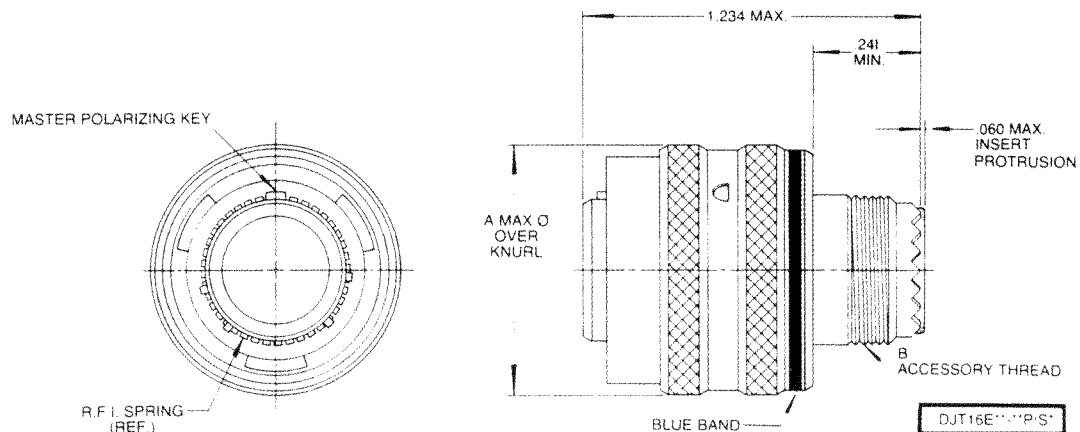
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**Receptacle Outline Dimensions**



**Plug Outline Dimensions**



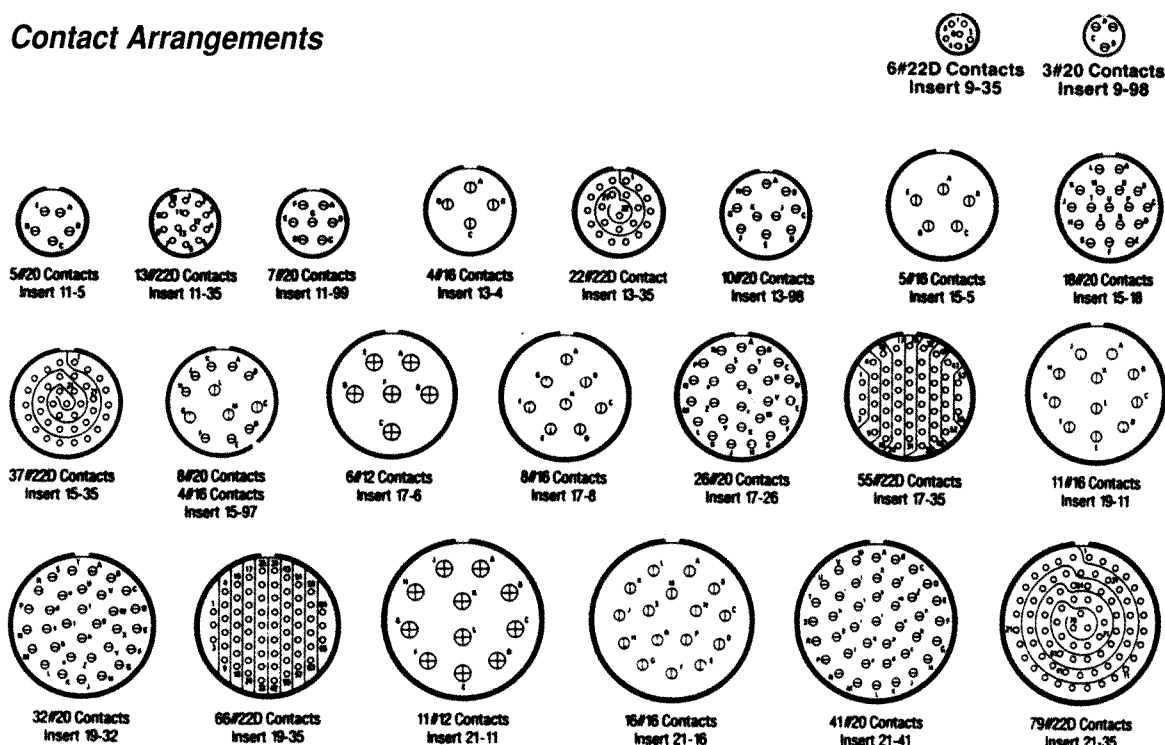
| SHELL SIZE | A<br>± .020 | B<br>± .005 | C0<br>± .003 | D THREAD<br>UNEF-2A | E0<br>+ .010<br>- .005 | F0<br>MIN. | G0<br>± .005 | H<br>MAX. | J<br>+ .000<br>- .005 | A0<br>MAX | B THREAD<br>UNEF-2A |
|------------|-------------|-------------|--------------|---------------------|------------------------|------------|--------------|-----------|-----------------------|-----------|---------------------|
| 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           |

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# DJT Series Insert Arrangements

## Contact Arrangements



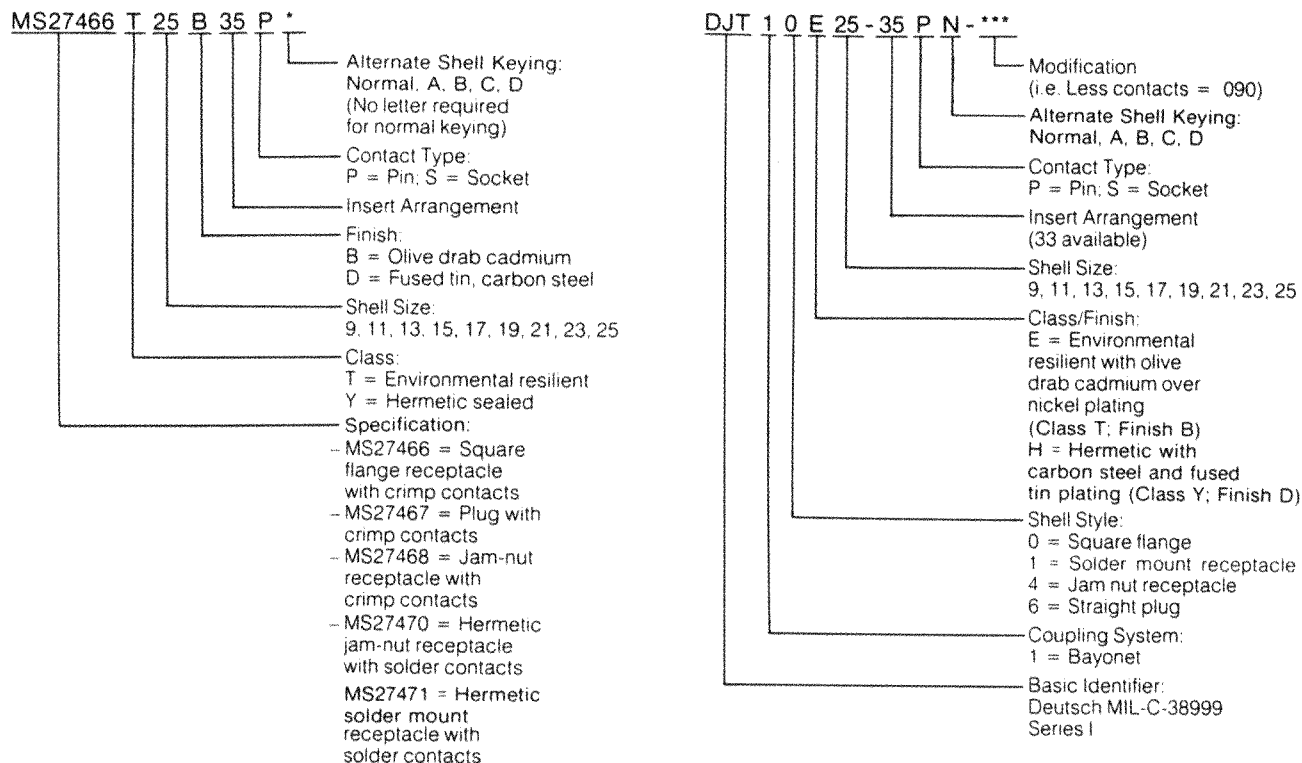
## Deutsch Shell Sizes

| 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 |    |    |

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## Part Number Cross Reference

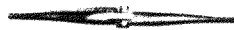


### Assembly Tools

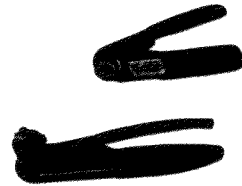
Wire/contact assembly tools are standard military type insertion/removal tools found in most assembly areas.

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                  |

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