

MIL-DTL-38999 Connectors

MIL-DTL-38999 filter connectors are designed to meet or exceed all applicable requirements of Series I, II, III and IV. Filter connectors are intermateable and interchangeable with standard non-filtered connectors.

Smiths Interconnect designs and manufactures a full spectrum of sophisticated filter connector products. Our specialty is in the design of interconnect solutions addressing EMI/RFI filtering, and transient protection to meet demanding HIRF and Lightning requirements.

In addition to MIL-Spec interface type products, many of our designs are unique, built to conform to customer specifications requiring a high level of integration, special packaging, and critical electrical performance. Innovation is our distinction and our products address a wide variety of applications. Our achievements lead the industry in the design and manufacture of special filter connector products.

Our Design Strategy

Smiths Interconnect's design strategy for filter connectors is based on extensive experience with filter capacitor arrays and diodes. Our engineers understand the extreme environmental conditions that can cause a filter or diode to fail or, worse yet, cause a system dysfunction. This design strategy is built on the foundation of system reliability and the efficient use of available space. The capacitor array is protected from thermally induced mechanical stresses by a barrier located between the capacitor array surface and the epoxy filled region. This barrier isolates the epoxy and the ceramic array and prevents damage to the array from the expansion influence of the epoxy.

Modularization

Smiths Interconnect uses a disciplined design approach that employs methods of grouping multiple components into subassemblies wherever feasible. Such subassemblies may include a filter module, diode module, circuit assembly module and a transition interface assembly. Modularization results in cleaner, more standardized designs that provide flexibility in maintaining and upgrading the connector. An important advantage of modularization is that individual modules may be removed or replaced in the field without disturbing other subassemblies and components.

Integration

There is considerable unused space available in a standard non-filtered connector. Smiths Interconnect takes advantage of this space by removing components from elsewhere in the system and integrating them within the connector, freeing up valuable board space. Isolating components electrically eliminates external wire connections and decreases crosstalk. The connector shell protects critical components from environmental or mechanical damage.



Material and Finishes

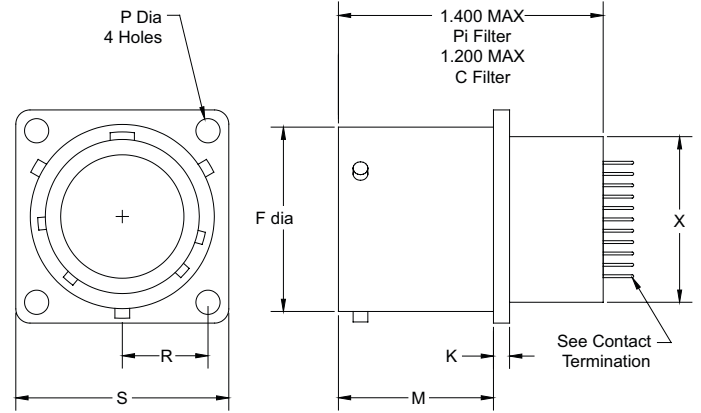
| | |
|----------------|--------------------------------|
| Shell | Aluminum alloy/Steel/Composite |
| Insulator | High grade plastic/epoxy |
| Contacts | Copper alloy, gold plate |
| Grommet & Seal | Silicon base elastomer |
| Jam Nut | Aluminum alloy |
| Ground Plane | Brass, silver plate |
| Capacitor | Barium Titanate |
| Inductor | Ferrite bead |

Smiths Interconnect provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Smiths Interconnect's connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.

MIL-DTL-38999 Series I

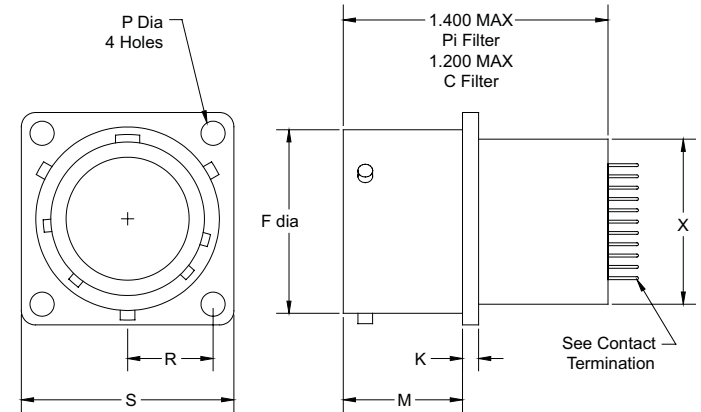
MS27505 Square Flange Receptacle Rear Mount

| Shell Size | F ±.001 -.005 | K ±.015 -.000 | M ±.000 -.005 | P Dia ±.010 -.005 | R BSC | S ±.020 | X Max. Dia |
|------------|---------------------|---------------------|---------------------|-------------------------|----------|------------|------------------|
| 9 | 0.572 | 0.085 | 0.820 | 0.128 | 0.3595 | 0.938 | 0.500 |
| 11 | 0.700 | | | | 0.4060 | 1.031 | 0.620 |
| 13 | 0.850 | | | | 0.4530 | 1.125 | 0.740 |
| 15 | 0.975 | | | | 0.4845 | 1.219 | 0.890 |
| 17 | 1.100 | | | | 0.5310 | 1.312 | 1.000 |
| 19 | 1.207 | 0.115 | 0.790 | 0.147 | 0.5780 | 1.438 | 1.120 |
| 21 | 1.332 | | | | 0.6250 | 1.562 | 1.250 |
| 23 | 1.457 | | | | 0.6875 | 1.688 | 1.390 |
| 25 | 1.582 | | | | 0.7500 | 1.812 | 1.500 |



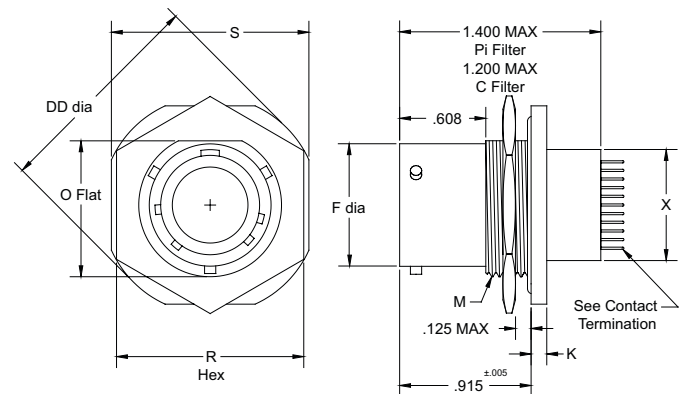
MS27466 Square Flange Receptacle Front Mount

| Shell Size | F ±.001 -.005 | K ±.015 -.000 | M ±.000 -.005 | P Dia ±.010 -.005 | R BSC | S ±.020 | X Max. Dia |
|------------|---------------------|---------------------|---------------------|-------------------------|----------|------------|------------------|
| 9 | 0.572 | 0.085 | 0.632 | 0.128 | 0.3595 | 0.938 | 0.500 |
| 11 | 0.700 | | | | 0.4060 | 1.031 | 0.620 |
| 13 | 0.850 | | | | 0.4530 | 1.125 | 0.740 |
| 15 | 0.975 | | | | 0.4845 | 1.219 | 0.890 |
| 17 | 1.100 | | | | 0.5310 | 1.312 | 1.000 |
| 19 | 1.207 | 0.115 | 0.602 | 0.147 | 0.5780 | 1.438 | 1.120 |
| 21 | 1.332 | | | | 0.6250 | 1.562 | 1.250 |
| 23 | 1.457 | | | | 0.6875 | 1.688 | 1.390 |
| 25 | 1.582 | | | | 0.7500 | 1.812 | 1.500 |



MS27468 Jam Nut Receptacle

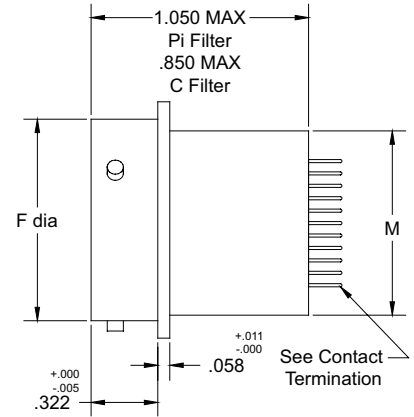
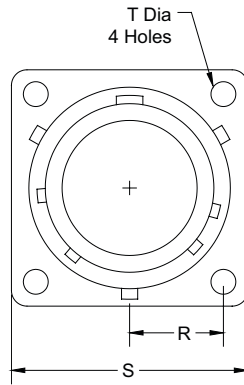
| Shell Size | F ±.001 -.005 | K ±.015 -.000 | M Thread | O Flat ±.000 -.010 | R Hex ±.017 -.016 | S ±.016 | X Max. Dia | DD ±.016 |
|------------|---------------------|---------------------|-------------|--------------------------|-------------------------|------------|------------------|-------------|
| 9 | 0.572 | 0.085 | 0.6875-24 | 0.655 | 0.875 | 1.062 | 0.500 | 1.188 |
| 11 | 0.700 | | 0.8125-20 | 0.755 | 1.000 | 1.250 | 0.620 | 1.375 |
| 13 | 0.850 | | 1.000-20 | 0.942 | 1.188 | 1.375 | 0.740 | 1.500 |
| 15 | 0.975 | | 1.125-18 | 1.066 | 1.312 | 1.500 | 0.890 | 1.625 |
| 17 | 1.100 | | 1.250-18 | 1.191 | 1.438 | 1.625 | 1.000 | 1.750 |
| 19 | 1.207 | 0.115 | 1.375-18 | 1.316 | 1.562 | 1.812 | 1.120 | 1.938 |
| 21 | 1.332 | | 1.500-18 | 1.441 | 1.688 | 1.938 | 1.250 | 2.062 |
| 23 | 1.457 | | 1.625-18 | 1.566 | 1.812 | 2.062 | 1.390 | 2.188 |
| 25 | 1.582 | | 1.750-18 | 1.691 | 2.000 | 2.188 | 1.500 | 2.312 |



MIL-DTL-38999 Series II

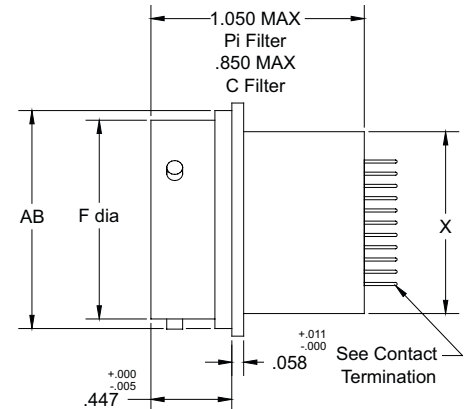
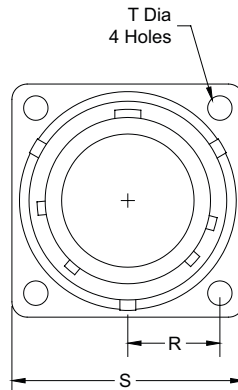
MS27508 Square Flange Receptacle Rear Mount

| Shell Size | F ±.001 -.005 | T ±.010 -.005 | R BSC | S ±.020 | X Max. Dia |
|------------|---------------------|---------------------|----------|------------|------------------|
| 8 | 0.473 | 0.120 | 0.2970 | 0.828 | 0.50 |
| 10 | 0.590 | | 0.3595 | 0.954 | 0.62 |
| 12 | 0.750 | | 0.4060 | 1.047 | 0.74 |
| 14 | 0.875 | | 0.4530 | 1.141 | 0.89 |
| 16 | 1.000 | | 0.4845 | 1.234 | 1.00 |
| 18 | 1.125 | | 0.5310 | 1.328 | 1.12 |
| 20 | 1.250 | | 0.5780 | 1.453 | 1.25 |
| 22 | 1.375 | | 0.6250 | 1.578 | 1.39 |
| 24 | 1.500 | 0.147 | 0.6875 | 1.703 | 1.50 |



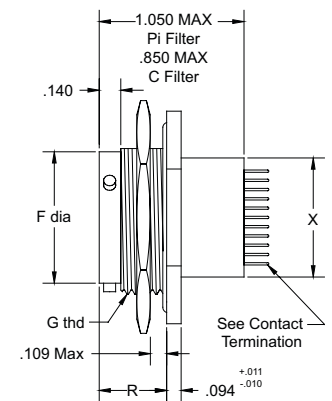
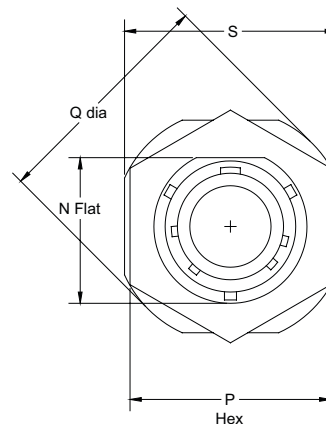
MS27499 Square Flange Receptacle Front Mount

| Shell Size | F ±.001 -.005 | T ±.010 -.005 | R BSC | S Max | X Max | AB Max |
|------------|---------------------|---------------------|----------|----------|----------|-----------|
| 8 | 0.473 | 0.120 | 0.297 | 0.828 | 0.500 | 0.547 |
| 10 | 0.590 | | 0.360 | 0.954 | 0.620 | 0.672 |
| 12 | 0.750 | | 0.406 | 1.047 | 0.740 | 0.844 |
| 14 | 0.875 | | 0.453 | 1.141 | 0.890 | 0.969 |
| 16 | 1.000 | | 0.485 | 1.234 | 1.000 | 1.094 |
| 18 | 1.125 | | 0.531 | 1.328 | 1.120 | 1.219 |
| 20 | 1.250 | | 0.578 | 1.453 | 1.250 | 1.344 |
| 22 | 1.375 | | 0.625 | 1.578 | 1.390 | 1.469 |
| 24 | 1.500 | 0.147 | 0.688 | 1.703 | 1.500 | 1.594 |



MS27474 Jam Nut Receptacle

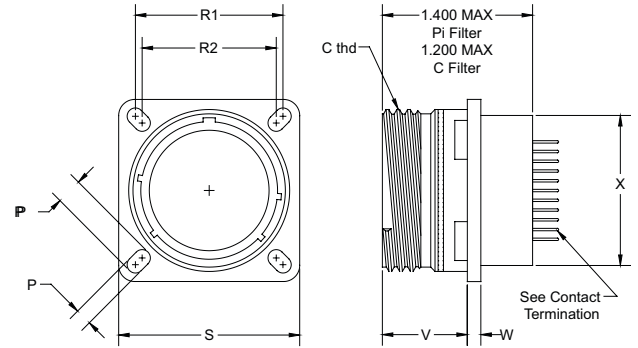
| Shell Size | F ±.001 -.005 | N +.001 -.006 | G Thread | P Hex +.017 -.016 | Q +.016 | S +.016 | X Max. Dia | R ±.005 |
|------------|---------------------|---------------------|-------------|-------------------------|------------|------------|------------------|------------|
| 8 | 0.473 | 0.817 | 0.875-20 | 1.062 | 1.375 | 1.250 | 0.500 | 0.438 |
| 10 | 0.590 | 0.941 | 1.000-20 | 1.188 | 1.500 | 1.375 | 0.620 | |
| 12 | 0.750 | 1.065 | 1.125-18 | 1.312 | 1.625 | 1.500 | 0.740 | |
| 14 | 0.875 | 1.190 | 1.250-18 | 1.438 | 1.750 | 1.625 | 0.890 | |
| 16 | 1.000 | 1.320 | 1.375-18 | 1.562 | 1.938 | 1.781 | 1.000 | |
| 18 | 1.125 | 1.440 | 1.500-18 | 1.688 | 2.016 | 1.890 | 1.120 | |
| 20 | 1.250 | 1.565 | 1.625-18 | 1.812 | 2.141 | 2.016 | 1.250 | 0.464 |
| 22 | 1.375 | 1.690 | 1.750-18 | 2.000 | 2.265 | 2.140 | 1.390 | |
| 24 | 1.500 | 1.815 | 1.875-16 | 2.125 | 2.390 | 2.265 | 1.500 | |



MIL-DTL-38999 Series III & IV

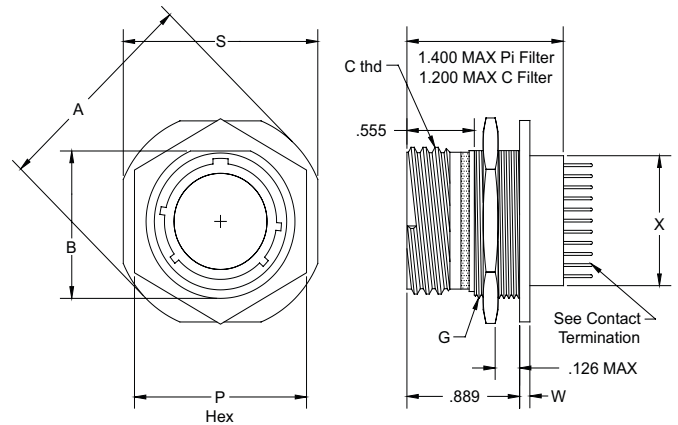
D38999/20 Box Mount Receptacle

| Shell Size | C Thread .1 Pitch .3 Lead | P ±.008 | R1 BSC | R2 BSC | V Max | W Max | X Max | PP Max ±.008 | S +.012 | |
|------------|---------------------------------|------------|-----------|-----------|----------|----------|----------|--------------------|------------|-------|
| 9 | 0.625 | 0.128 | 0.719 | 0.564 | 0.820 | 0.098 | 0.500 | 0.194 | 0.937 | |
| 11 | 0.750 | | 0.812 | 0.719 | | | 0.620 | | 1.031 | |
| 13 | 0.875 | | 0.906 | 0.812 | | | 0.740 | | 1.126 | |
| 15 | 1.000 | | 0.969 | 0.906 | | | 0.890 | | 1.220 | |
| 17 | 1.188 | | 1.062 | 0.969 | | | 1.000 | | 1.311 | |
| 19 | 1.250 | 0.154 | 1.156 | 1.062 | 0.790 | 0.126 | 1.120 | 0.242 | 1.437 | |
| 21 | 1.375 | | 1.250 | 1.156 | | | 1.250 | | 1.563 | |
| 23 | 1.500 | | 1.375 | 1.250 | | | 1.390 | | 1.689 | |
| 25 | 1.625 | | 1.500 | 1.375 | | | 1.500 | | 1.390 | 1.689 |
| | | | | | | | | | 1.500 | 1.811 |



D38999/24 Jam Nut Receptacle

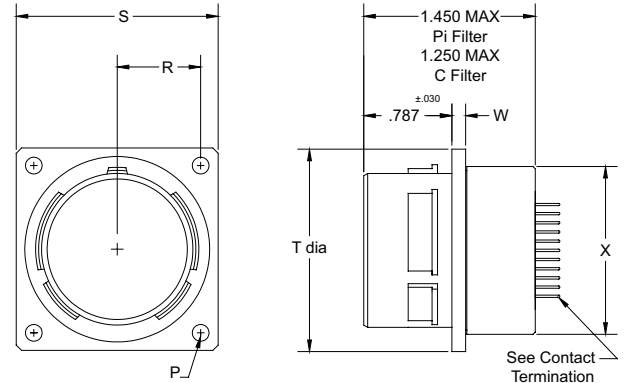
| Shell Size | A ±.012 | B +.004 -.006 | C Thread .1 Pitch .3 Lead | G Thread 6g .10R | P Hex | S ±.015 | W +.028 -.004 | X Max |
|------------|------------|---------------------|---------------------------------|------------------------|---------------|------------|---------------------|----------|
| 9 | 1.189 | 0.651 | 0.625 | M17X1 | 0.945 0.912 | 1.063 | 0.087 | 0.500 |
| 11 | 1.374 | 0.751 | 0.750 | M20x1 | 1.062 0.983 | 1.252 | | 0.620 |
| 13 | 1.500 | 0.938 | 0.875 | M25x1 | 1.260 1.234 | 1.374 | | 0.740 |
| 15 | 1.625 | 1.062 | 1.000 | M28x1 | 1.456 1.424 | 1.500 | | 0.890 |
| 17 | 1.812 | 1.187 | 1.1875 | M32x1 | 1.614 1.581 | 1.626 | 0.118 | 1.000 |
| 19 | 1.938 | 1.312 | 1.250 | M35x1 | 1.811 1.781 | 1.811 | | 1.120 |
| 21 | 2.062 | 1.437 | 1.375 | M38x1 | 1.968 1.938 | 1.937 | | 1.250 |
| 23 | 2.188 | 1.562 | 1.500 | M41x1 | | 2.063 | | 1.390 |
| 25 | 2.312 | 1.687 | 1.625 | M44x1 | | 2.189 | | 1.500 |



MIL-DTL-38999 Series III & IV

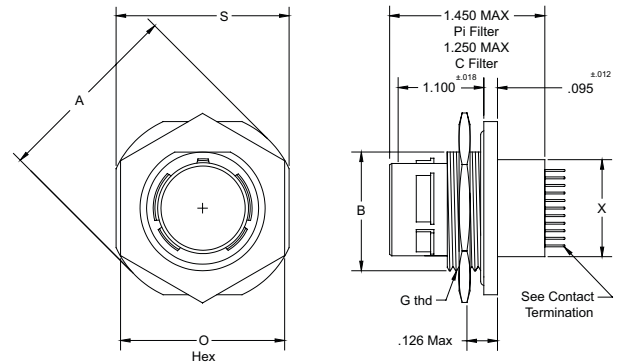
D38999/24 Box Mount Receptacle

| Shell Size | T ±.008 | W ±.010 | P ±.008 | R BSC | S ±.021 | X Max |
|------------|------------|------------|------------|----------|------------|-------|
| 11 | 0.786 | 0.093 | 0.139 | 0.406 | 1.029 | 0.620 |
| 13 | 0.912 | | | 0.453 | 1.124 | 0.740 |
| 15 | 1.036 | | | 0.485 | 1.218 | 0.890 |
| 17 | 1.162 | | | 0.531 | 1.312 | 1.000 |
| 19 | 1.286 | | | 0.578 | 1.439 | 1.120 |
| 21 | 1.412 | 0.124 | 0.150 | 0.625 | 1.561 | 1.250 |
| 23 | 1.536 | | | 0.688 | 1.706 | 1.390 |
| 25 | 1.662 | | | 0.750 | 1.813 | 1.500 |

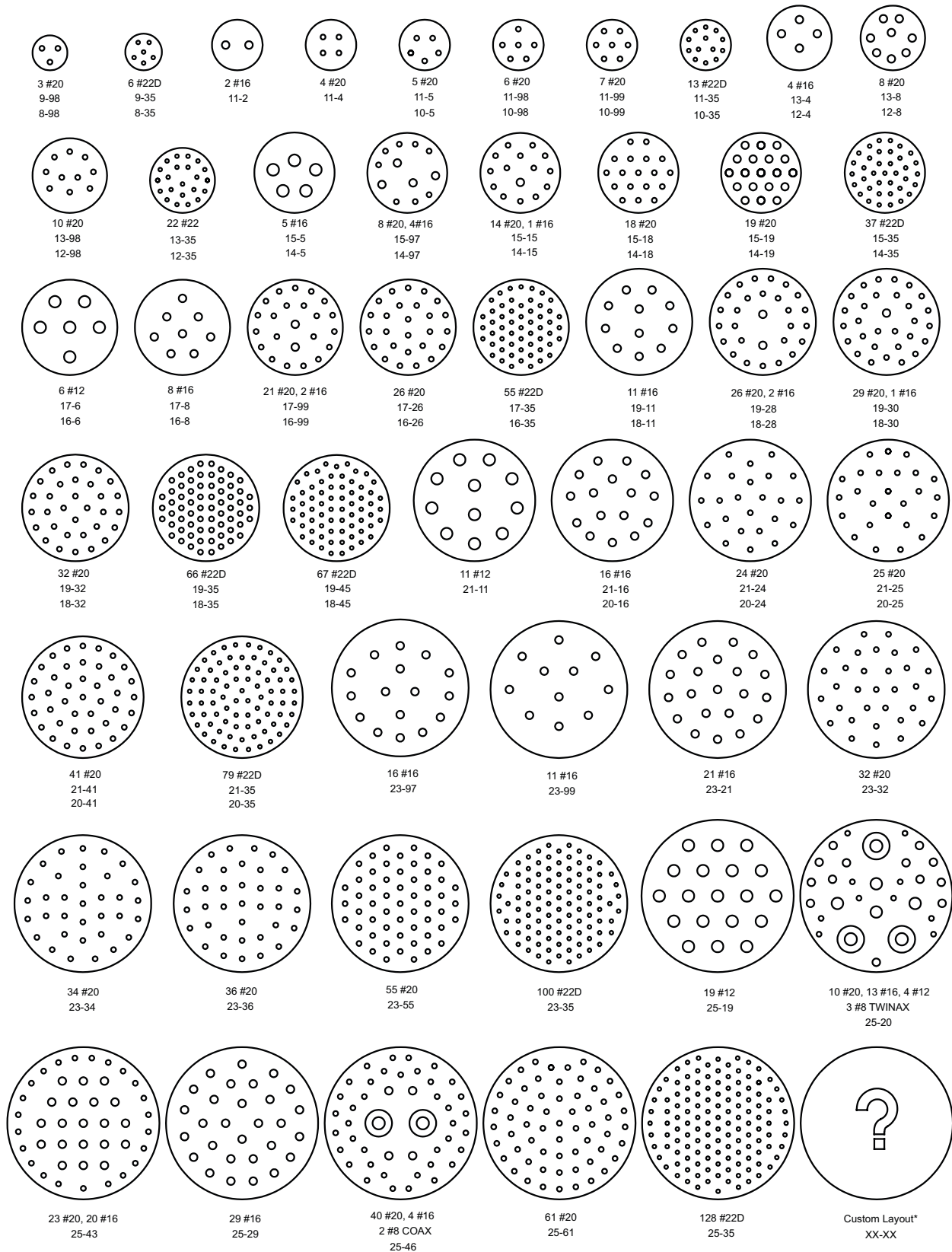


D38999/44 Jam Nut Receptacle

| Shell Size | B Flat ±.004 | G THD 6g 0.1R | A Dia. ±.020 | O Hex ±.013 | S ±.020 | X Max |
|------------|-----------------|------------------|-----------------|----------------|------------|-------|
| 11 | 0.938 | M25x1 | 1.500 | 1.250 | 1.374 | 0.620 |
| 13 | 1.062 | M28x1 | 1.622 | 1.405 | 1.500 | 0.740 |
| 15 | 1.1875 | M31x1 | 1.749 | 1.600 | 1.622 | 0.890 |
| 17 | 1.3180 | M34x1 | 1.937 | | 1.780 | 1.000 |
| 19 | 1.4375 | M38x1 | 2.015 | 1.796 | 1.890 | 1.120 |
| 21 | 1.5620 | M41x1 | 2.138 | 1.954 | 2.016 | 1.250 |
| 23 | 1.6875 | M44x1 | 2.268 | | 2.138 | 1.390 |
| 25 | 1.8120 | M47x1 | 2.390 | | 2.264 | 1.500 |



MIL-DTL-38999 Layouts



*Odd Numbered Shell Sizes Series I, III & IV, Even Numbered Shell Sizes Series II

MIL-DTL-38999 Connectors

How to Order



| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|----|----|--|
| | 3 | 8 | 9 | 9 | 9 | | | | | | | | | |
| 1 | 2 | | | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |

| | |
|------------------------|--|
| 1 Filter Type | P, L, C |
| 2 Prefix | |
| 3 Series | A I B II C III D IV |
| 4 Shell Style | J Jam Nut (Rear Mount) B Box Mount (Series II) W Wall Mount (Front or Rear Mount) |
| 5 Mounting | F Front Mount R Rear Mount |
| 6 Material/Plating | C Aluminum Alloy/Cadmium Over Nickel N Aluminum Alloy/Electroless Nickel S Stainless Steel/Electrolyte CC Composite/Cadmium Over Nickel CN Composite/Electroless Nickel SP Stainless Steel/Passivated <small>Consult factory for alternate plating options</small> |
| 7 Shell Size | 9 Thru 25 Series I, III, and IV 8 Thru 24 Series II |
| 8 Insert Arrangements | |
| 9 Contact Type | P Pin S Socket |
| 10 Contact Termination | S Solder Cup P PC Tail C Crimp |
| 7 Polarization | N, A, B, C, D, E |