

INCH-POUND

MS27488N  
 22 July 2008  
 SUPERSEDING  
 MS27488M  
 29 September 2000

## DETAIL SPECIFICATION SHEET

## PLUG, END SEAL, ELECTRICAL CONNECTOR

This specification sheet is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet.

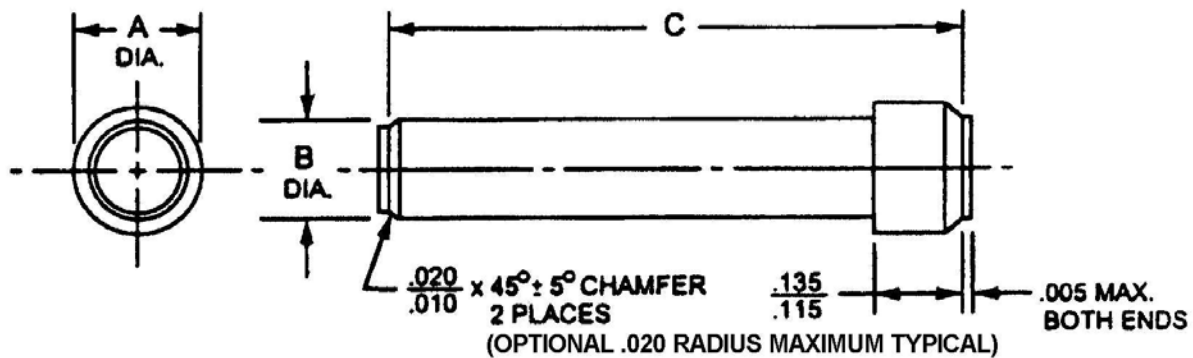
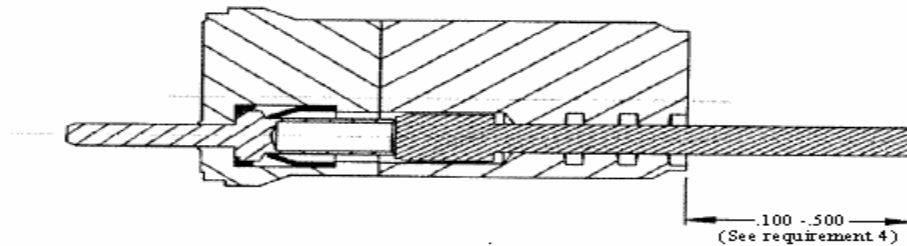


FIGURE 1. Sealing plug configuration.

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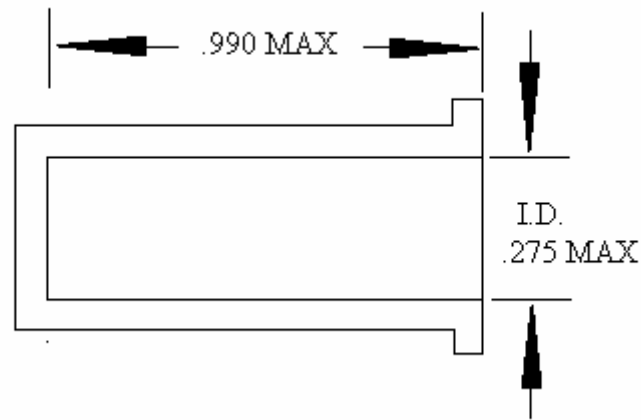
FIGURE 2. Sealing plug with unwired contact.TABLE I. Sealing plug dimensions and application information.

| Dash no. | Color code | A dia. <u>1/</u> | B dia. <u>1/</u> | C dim. <u>1/</u> | Connector contact size         |
|----------|------------|------------------|------------------|------------------|--------------------------------|
| -22-2    | Black      | 0.066<br>0.058   | 0.045<br>0.038   | 0.500<br>0.438   | 23-22 <u>2/</u>                |
| -20-2    | Red        | 0.090<br>0.080   | 0.058<br>0.048   | 0.805<br>0.755   | 20 <u>2/</u>                   |
| -16-2    | Green      | 0.130<br>0.120   | 0.079<br>0.069   | 0.872<br>0.822   | 16 <u>2/</u>                   |
| -12-2    | Orange     | 0.170<br>0.160   | 0.125<br>0.115   | 0.841<br>0.791   | 12 <u>2/</u>                   |
| -16-3    | Blue       | 0.130<br>0.120   | 0.079<br>0.069   | 1.472<br>1.422   | 16 (5015) <u>3/</u>            |
| -12-3    | Yellow     | 0.170<br>0.160   | 0.125<br>0.115   | 1.441<br>1.391   | 12 (5015) <u>3/</u>            |
| -8-3     | Red        | 0.315<br>0.305   | 0.175<br>0.165   | 1.189<br>1.139   | 8 (5015) <u>3/</u>             |
| -4-3     | Blue       | 0.414<br>0.404   | 0.283<br>0.273   | 1.189<br>1.139   | 4 (5015) <u>3/</u>             |
| -0-3     | Yellow     | 0.606<br>0.596   | 0.431<br>0.416   | 1.071<br>1.021   | 0 (5015) <u>3/</u> , <u>4/</u> |

## NOTES:

1/ Dimensions are in inches.2/ Sealing plug is for use in all connectors and components listed in table II, with the exception of MIL-DTL-5015 connectors.3/ Sealing plug is for use in MIL-DTL-5015 connectors. See figure 3.4/ See figure 3.

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FIGURE 3. Optional design for MS27488-0-3.TABLE II. Components that use MS27488 sealing plugs.

| Document                      | Component type           |
|-------------------------------|--------------------------|
| MIL-DTL-5015                  | Electrical connector     |
| MIL-PRF-22885/103             | Pushbutton switch        |
| MIL-PRF-22885/108             | Pushbutton switch        |
| MIL-S-24317/12                | Pushbutton switch        |
| MIL-DTL-26482, Series 1 and 2 | Electrical connector     |
| MIL-DTL-26500                 | Electrical connector     |
| MIL-DTL-26518                 | Electrical connector     |
| MIL-DTL-28804                 | Electrical connector     |
| MIL-C-29600                   | Electrical connector     |
| MIL-DTL-38999                 | Electrical connector     |
| MIL-C-81511, Series 3 and 4   | Electrical connector     |
| MIL-C-81582/2                 | Electrical connector     |
| SAE-AS81659                   | Electrical connector     |
| MIL-C-81703                   | Electrical connector     |
| SAE-AS81714                   | Terminal Junction System |
| SAE-AS81714/1                 | Terminal Junction System |
| SAE-AS81714/2                 | Terminal Junction System |
| SAE-AS81714/3                 | Terminal Junction System |
| SAE-AS81714/4                 | Terminal Junction System |
| SAE-AS81714/6                 | Terminal Junction System |
| SAE-AS81714/7                 | Terminal Junction System |
| SAE-AS81714/8                 | Terminal Junction System |

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TABLE II. Components that use MS27488 sealing plugs - Continued.

| Document                         | Component type           |
|----------------------------------|--------------------------|
| SAE-AS81714/9                    | Terminal Junction System |
| SAE-AS81714/17                   | Terminal Junction System |
| SAE-AS81714/25                   | Terminal Junction System |
| SAE-AS81714/26                   | Terminal Junction System |
| SAE-AS81714/27                   | Terminal Junction System |
| SAE-AS81714/28                   | Terminal Junction System |
| SAE-AS81714/30                   | Terminal Junction System |
| SAE-AS81714/31                   | Terminal Junction System |
| SAE-AS81714/60                   | Terminal Junction System |
| SAE-AS81714/61                   | Terminal Junction System |
| SAE-AS81714/63                   | Terminal Junction System |
| MIL-DTL-83527                    | Electrical connector     |
| MIL-DTL-83538                    | Electrical connector     |
| MIL-DTL-83723, Series II and III | Electrical connector     |
| MIL-C-83723/66                   | Electrical connector     |
| MIL-C-83723/67                   | Electrical connector     |
| MIL-C-83723/68                   | Electrical connector     |
| MIL-C-83723/69                   | Electrical connector     |
| MS21346                          | Toggle switch            |
| MS21347                          | Toggle switch            |
| MS27722                          | Toggle switch            |
| MS27723                          | Toggle switch            |
| MS27724                          | Toggle switch            |
| MS27781                          | Toggle switch            |
| MS27782                          | Toggle switch            |
| MS27783                          | Toggle switch            |
| MS27784                          | Toggle switch            |
| MS27785                          | Toggle switch            |
| MS27786                          | Toggle switch            |
| MS27787                          | Toggle switch            |
| MS27788                          | Toggle switch            |
| MS27789                          | Toggle switch            |

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TABLE III. Metric equivalents.

| Inch  | Millimeter | Inch  | Millimeter | Inch  | Millimeter | Inch  | Millimeter |
|-------|------------|-------|------------|-------|------------|-------|------------|
| 0.010 | 0.254      | 0.115 | 2.921      | 0.404 | 10.262     | 0.872 | 22.149     |
| 0.020 | 0.508      | 0.120 | 3.048      | 0.414 | 10.516     | 0.822 | 20.879     |
| 0.038 | 0.965      | 0.125 | 3.175      | 0.416 | 10.566     | 0.841 | 21.361     |
| 0.045 | 1.143      | 0.130 | 3.302      | 0.431 | 10.947     | 0.990 | 25.146     |
| 0.048 | 1.219      | 0.135 | 3.429      | 0.438 | 11.125     | 1.021 | 25.933     |
| 0.058 | 1.473      | 0.160 | 4.064      | 0.500 | 12.700     | 1.071 | 27.203     |
| 0.066 | 1.676      | 0.165 | 4.191      | 0.596 | 15.138     | 1.139 | 28.931     |
| 0.069 | 1.753      | 0.170 | 4.318      | 0.606 | 15.393     | 1.189 | 30.200     |
| 0.079 | 2.007      | 0.175 | 4.445      | 0.755 | 19.177     | 1.391 | 35.331     |
| 0.080 | 2.032      | 0.273 | 6.934      | 0.791 | 20.091     | 1.422 | 36.119     |
| 0.090 | 2.286      | 0.275 | 6.985      | 0.796 | 20.218     | 1.441 | 36.601     |
| 0.100 | 2.540      | 0.283 | 7.188      | 0.805 | 20.447     | 1.472 | 37.389     |

NOTE: Metric equivalents (to the nearest 0.001 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

**REQUIREMENTS:**

1. Material. Plastic rod, molded and extruded - temperature limit 200 °C minimum. The material used to fabricate sealing plugs shall be polytetrafluoroethylene (PTFE) in accordance with ASTM-D1710, or fluorinated ethylene propylene (FEP) in accordance with ASTM-D2116, or perfluoroalkoxy (PFA) in accordance with ASTM-D3307, or polyphenylsulfone (PPSU) in accordance with ASTM-D6394.
2. Color. Color of items shall be in accordance with EIA-359.
3. Resistivity. Material resistivity shall be not less than 100 megohms when tested in accordance with ASTM-D257.
4. Installation. When installing sealing plugs in connector, component or module grommets, the head of the sealing plug shall be inserted first. The sealing plug is designed for use with an unwired contact installed in connector applications. The sealing plug shall be pushed into the grommet until the head is positioned against the end of the unwired contact.
5. Workmanship. The item shall be free from flash and burrs. The length of diameter B shall be free of all molding marks, protrusions, and blemishes. Molding marks, protrusions, and blemishes from gate cutoffs are permissible but only on the plug ends or side of the head and shall not be greater than 0.005 inch in height.

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6. Part marking. Marking is not required. Items shall be identified at the bag or higher packaging level.
7. Connector, module, and switch manufacturers, their distributors, and agents supplying military connectors, modules, and switches as noted, shall only furnish end seal plugs with the connectors, modules, and switches in accordance with this specification sheet.

## NOTES:

1. Dimensioning and tolerancing per ASME Y14.5M.
2. Table IV lists the documents that use MS27488 sealing plugs along with their status and superseding document information.

TABLE IV. Document status and supersession information.

| Document                      | Status                  | Superseding Document |
|-------------------------------|-------------------------|----------------------|
| MIL-DTL-5015                  | Active                  | None                 |
| MIL-W-5088                    | Inactive for New Design | SAE-AS50881          |
| MIL-PRF-22885/103             | Active                  | None                 |
| MIL-PRF-22885/108             | Active                  | None                 |
| MIL-S-24317/12                | Inactive for New Design | None                 |
| MIL-DTL-26482, Series 1 and 2 | Active                  | None                 |
| MIL-DTL-26500                 | Inactive for New Design | None                 |
| MIL-DTL-26518                 | Inactive for New Design | None                 |
| MIL-DTL-28804                 | Active                  | None                 |
| MIL-C-29600                   | Active                  | None                 |
| MIL-DTL-38999                 | Active                  | None                 |
| MIL-C-81511, Series 3 and 4   | Inactive for New Design | None                 |
| MIL-C-81582/2                 | Active                  | None                 |
| MIL-C-81659                   | Canceled                | SAE-AS81659          |
| MIL-C-81703                   | Inactive for New Design | SAE-AS81703          |
| MIL-T-81714                   | Canceled                | SAE-AS81714          |
| MIL-T-81714/1                 | Canceled                | SAE-AS81714/1        |
| MIL-T-81714/2                 | Canceled                | SAE-AS81714/2        |
| MIL-T-81714/3                 | Canceled                | SAE-AS81714/3        |
| MIL-T-81714/4                 | Canceled                | SAE-AS81714/4        |

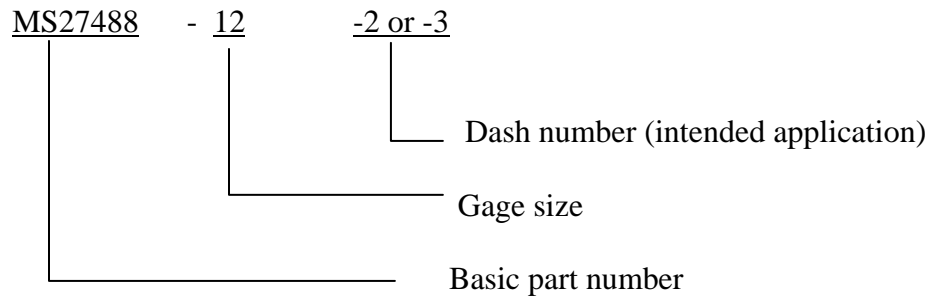
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TABLE IV. Document status and supersession information – Continued.

| Document                         | Status                  | Superseding Document |
|----------------------------------|-------------------------|----------------------|
| MIL-T-81714/6                    | Canceled                | SAE-AS81714/6        |
| MIL-T-81714/7                    | Canceled                | SAE-AS81714/7        |
| MIL-T-81714/8                    | Canceled                | SAE-AS81714/8        |
| MIL-T-81714/9                    | Canceled                | SAE-AS81714/9        |
| MIL-T-81714/17                   | Canceled                | SAE-AS81714/17       |
| MIL-T-81714/25                   | Canceled                | SAE-AS81714/25       |
| MIL-T-81714/26                   | Canceled                | SAE-AS81714/26       |
| MIL-T-81714/27                   | Canceled                | SAE-AS81714/27       |
| MIL-T-81714/28                   | Canceled                | SAE-AS81714/28       |
| MIL-T-81714/30                   | Canceled                | SAE-AS81714/30       |
| MIL-T-81714/31                   | Canceled                | SAE-AS81714/31       |
| MIL-T-81714/60                   | Canceled                | SAE-AS81714/60       |
| MIL-T-81714/61                   | Canceled                | SAE-AS81714/61       |
| MIL-T-81714/63                   | Canceled                | SAE-AS81714/63       |
| MIL-DTL-83527                    | Active                  | None                 |
| MIL-DTL-83538                    | Active                  | None                 |
| MIL-DTL-83723, Series II and III | Active                  | None                 |
| MIL-C-83723/66                   | Active                  | None                 |
| MIL-C-83723/67                   | Active                  | None                 |
| MIL-C-83723/68                   | Active                  | None                 |
| MIL-C-83723/69                   | Active                  | None                 |
| MS21346                          | Active                  | None                 |
| MS21347                          | Active                  | None                 |
| MS27722                          | Active                  | None                 |
| MS27723                          | Active                  | None                 |
| MS27724                          | Active                  | None                 |
| MS27781                          | Active                  | None                 |
| MS27782                          | Active                  | None                 |
| MS27783                          | Active                  | None                 |
| MS27784                          | Active                  | None                 |
| MS27785                          | Active                  | None                 |
| MS27786                          | Active                  | None                 |
| MS27787                          | Active                  | None                 |
| MS27788                          | Active                  | None                 |
| MS27789                          | Inactive for New Design | None                 |
| MIL-STD-1760                     | Active                  | None                 |

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## 3. Example of part or identifying number:



## 4. MS27488 part numbers supersede part numbers from MIL-C-81511/39, MIL-C-83723/28, MS27186, MS27187, and MS27488, revision M as follows:

- a. MS27488-22-2 supersedes MS27488-22-1, M81511/39-22 and MS27488-22.
- b. MS27488-20-2 supersedes MS27488-20-1, M81511/39-20, M83723/28-20, MS27186-1, MS27187-3, and MS27488-20.
- c. MS27488-16-2 supersedes M81511/39-16, M83723/28-16, MS27186-2, MS27187-1, and MS27488-16.
- d. MS27488-16-3 supersedes MS27488-16-1. (MS27488-16-3 is for use in MIL-DTL-5015 electrical connectors only. See information given in table I, MS27488-16-2 for all other applications.)
- e. MS27488-12-2 supersedes M81511/39-12, M83723/28-12, MS27186-3, MS27187-2, and MS27488-12.
- f. MS27488-12-3 supersedes MS27488-12-1. (MS27488-12-3 is for use with MIL-DTL-5015 electrical connectors only. See information given in table I, MS27488-12-2 for all other applications.)
- g. MS27488-8-3 supersedes MS27488-8-1, M83723/28-8, and MS27488-8.
- h. MS27488-4-3 supersedes MS27488-4-1, M83723/28-4, MS27187-4, and MS27488-4.
- i. MS27488-0-3 supersedes MS27488-0-1, M83723/28-0, and MS27488-0.

5. The MS27488 gage size given as part of the part number matches the connector contact size and grommet cavity size for which the corresponding end seal plug is used.

6. For design purposes, this specification sheet takes precedence over acquisition documents referenced herein.

7. Contact installing tools listed in table IV may be used for installing the seal plugs. The use of tools for seal plug sizes 12 and smaller will aid in the installation by supporting the plug during



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head first insertion. The tool rides against the shoulder on the back of the plug head during insertion rather than pushing on the tail end of the unsupported plug. The tools will not remove the seal plugs. Plugs must be removed by grasping the tail end of the plug that is left protruding outside the grommet. The tools are not recommended for seal plug sizes 8 and larger.

TABLE V. Installation tools.

| Seal plug    | Tool part number |
|--------------|------------------|
| MS27488-22-2 | M81969/14-01     |
| MS27488-20-2 | M81969/14-11     |
| MS27488-16-2 | M81969/14-03     |
| MS27488-12-2 | M81969/14-04     |
| MS27488-16-3 | M81969/14-03     |
| MS27488-12-3 | M81969/14-04     |

8. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

9. Connector, module, and switch manufacturers, their distributors, and agents are permitted to supply MS27488, revision M sealing plugs for 12 months after the date of this revision or exhaust their inventories, whichever comes first.

## CONCLUDING MATERIAL

## Custodians:

Army - CR  
Navy - AS  
Air Force - 85

## Preparing activity:

Navy - AS

(Project 5935-2006-035)

## Review activities:

Army - AR, MI  
Navy - EC  
Air Force - 19, 99

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