

INCH-POUND

MIL-PRF-81757/2C

1 March 1999

SUPERSEDING

MIL-B-81757/2B

31 July 1981

PERFORMANCE SPECIFICATION SHEET

BATTERY, STORAGE, AIRCRAFT, NICKEL-CADMIUM,
VENTED FILLER CAP

This specification 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 and MIL-PRF-81757.

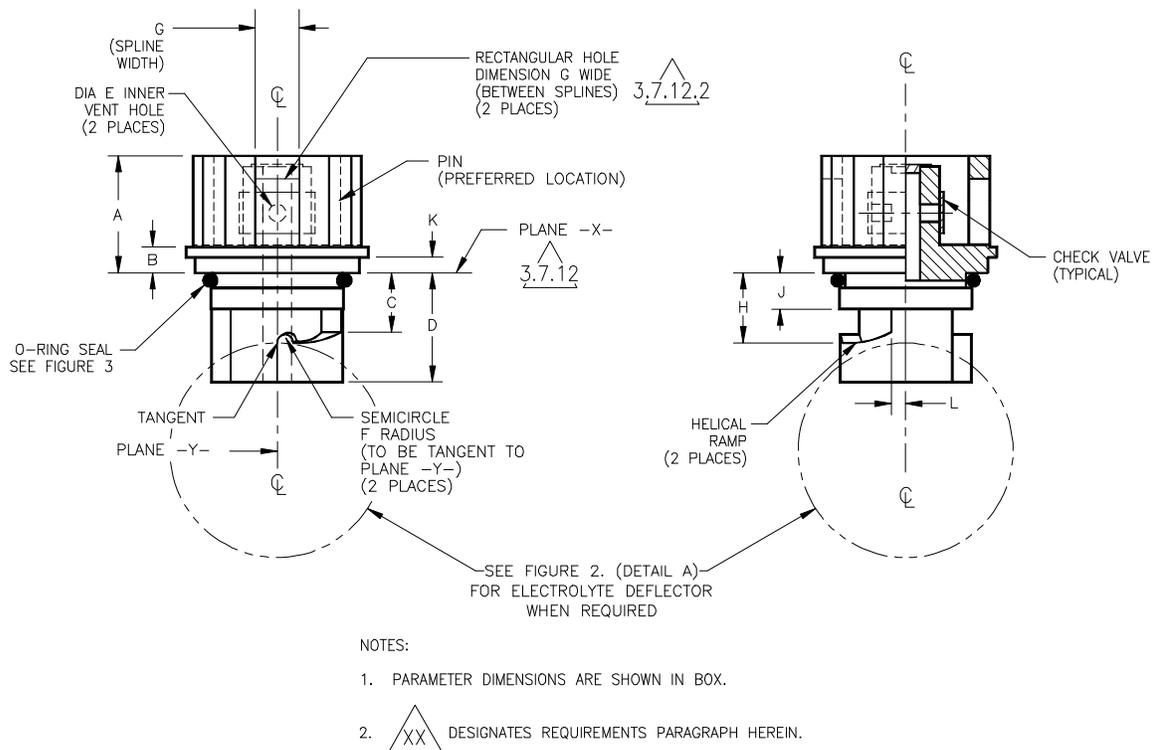
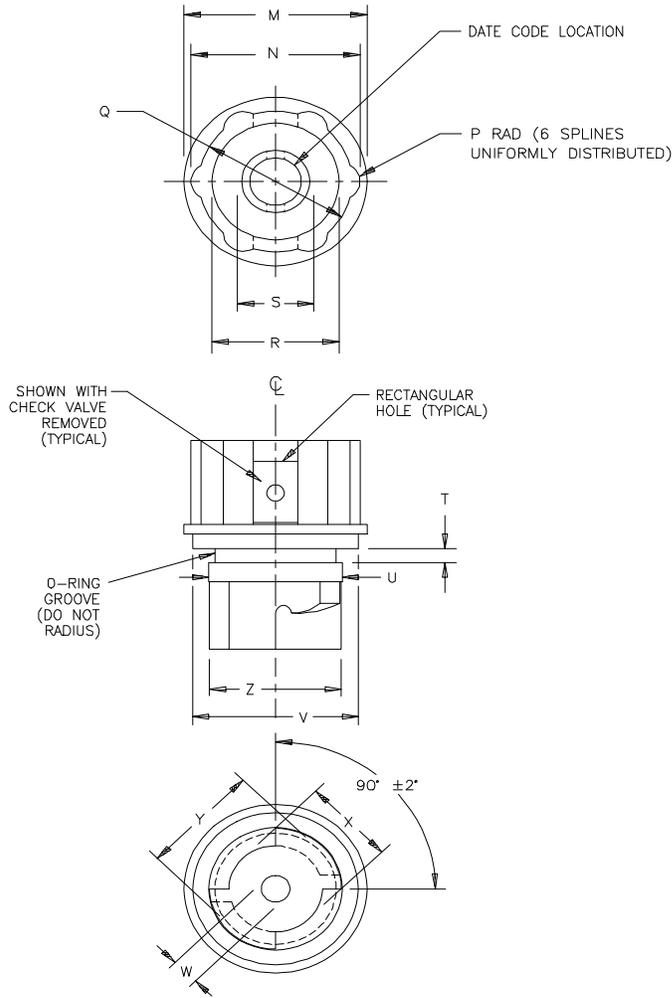


FIGURE 1. Dimensions and configuration for PIN M81757/2-X.

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| BODY SIZE | LIMITS | PARAMETER DIMENSIONS IN INCHES | | | | | | | | | | | |
|-----------|--------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | | A | B | C | D | E | F | G | H | J | K | L | M |
| LARGE | MAX. | .562 | .127 | .282 | .535 | .090 | .040 | .200 | .334 | .192 | .085 | .070 | .885 |
| | MIN. | .532 | .107 | .276 | .505 | .060 | .030 | .180 | .324 | .166 | .065 | .060 | .855 |
| SMALL | MAX. | .428 | .100 | .221 | .395 | .090 | .037 | .175 | .253 | .145 | — | .060 | .690 |
| | MIN. | .408 | .080 | .215 | .365 | .062 | .027 | .155 | .247 | .135 | — | .050 | .670 |

| BODY SIZE | LIMITS | PARAMETER DIMENSIONS IN INCHES | | | | | | | | | | | |
|-----------|--------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| LARGE | MAX. | .817 | .108 | .735 | .610 | .353 | .100 | .637 | .795 | — | .470 | .610 | .637 |
| | MIN. | .787 | .078 | .705 | .580 | — | .090 | .607 | .765 | .140 | .450 | .580 | .597 |
| SMALL | MAX. | .617 | .077 | .576 | .474 | .343 | .090 | .505 | — | — | .367 | .430 | .505 |
| | MIN. | .597 | .047 | .556 | .454 | — | .080 | .485 | — | .140 | .353 | .410 | .480 |

FIGURE 1. Dimensions and configuration for PIN M81757/2-X - Continued.

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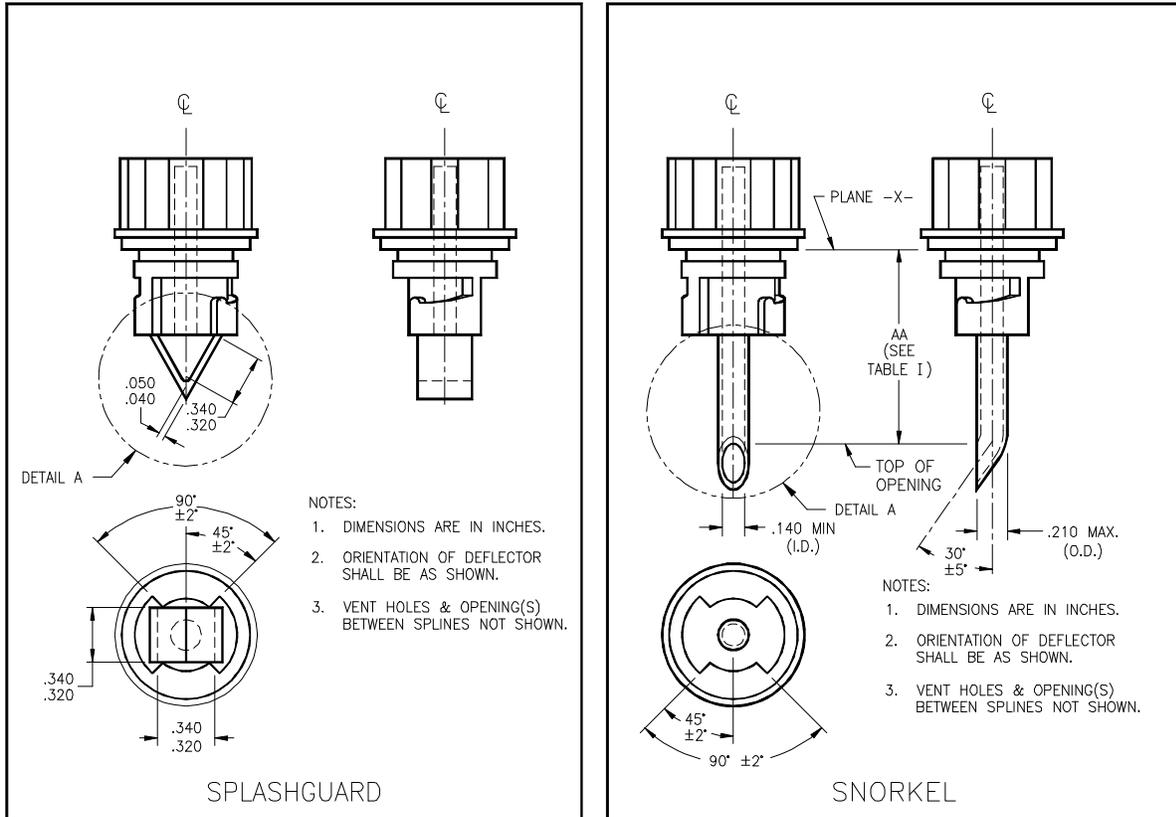
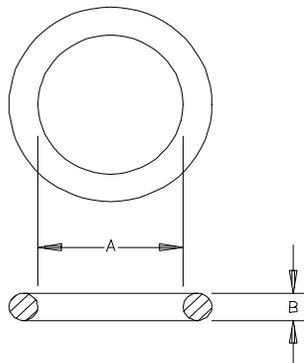


FIGURE 2. Electrolyte deflectors.



| USER IDENTIFIER (SEE TABLE I) | DIMENSIONS IN INCHES | |
|----------------------------------|----------------------|------------|
| | A ±.005 | B ±.003 |
| ∇ | .424 | .103 |
| ‡ | .592 | .115 |

FIGURE 3. O-ring seal dimensions.

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REQUIREMENTS:

1. Part or identifying number. Table I contained herein is a list of the part or identifying numbers (PINs) for the vented filler caps to be purchased under this specification sheet. The table also identifies the body size, style of electrolyte deflector, color, and other construction characteristics for each PIN. Each vented filler cap supplied shall display the PIN specified in the contract, and the item shall comply with the unique requirements specified.
2. Dimensions. The dimensions of the vented filler caps shall be as specified on figure 1. The dimensions for any attached electrolyte deflector shall be as shown on figure 2 and in table I. The dimensions of the specified O-ring shall be as indicated on figure 3.
3. MIL-PRF-81757 variance. The vented filler cap shall comply with MIL-PRF-81757 except as follows.

3.1 Add the following paragraphs:

"3.7.12.1 Vents. The body of each vented filler cap shall have a vertical axis channel with two side holes to allow venting of gasses. Gasses generated within the cell shall flow upward through the channel and vent through the two side holes. Venting shall be controlled by a pressure-actuated check valve. The valve shall actuate (open) at a pressure differential not greater than 10.0 pounds per square inch (psi) and permit a continuous flow of air. The valve shall close within the 10.0 to 2.0 psi range."

"3.7.12.2 Drains. The outer perimeter of the upper body shall contain not less than two holes to drain liquids. The holes shall be centered between two splines, and their sidewalls shall not penetrate the curvature of the splines. The drain holes shall conform to that shown on figure 1 of the specification sheet."

"3.7.12.3 Check valve. The check valve shall prevent gas flow when tested in accordance with 4.5.5.4."

"3.7.12.4 Seal. Each vented filler cap assembly shall contain an O-ring that conforms to table I of the specification sheet. The O-ring seal shall not leak when tested in accordance with 4.5.5.5."

"3.7.12.5 Electrolyte deflector. When an electrolyte deflector is required, the design shall be as specified in table I and shown on figure 2, both of the specification sheet."

3.2 Modify the following paragraphs:

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3.10.6 Visual and mechanical. Add after the first sentence: "The vented filler cap shall also be in accordance with all the requirements of 3.7.12."

4.2.2 Inspection of cells, components, and materials. In the third sentence, change "Three" to "Twenty".

4.3.1 Inspection of product. In the first sentence, change "groups B and C" to "group C" (two places). In the second sentence, change "groups A, B, and C inspection" to "groups A and C inspection".

4.3.3 Sample size and selection for groups A, B, and C inspection. Delete the title and text and substitute: "Sample size and selection for groups A and C inspection. Each unit shall undergo group A inspection. The sample size for group C inspection is shown in table V."

4.3.5 Group B inspection. Delete the paragraph.

4.5.3 Electrolyte soak of components and elastomeric materials. Delete the entire text and substitute: "Force an aqueous solution of potassium hydroxide of 1.30 ± 0.04 specific gravity through the internal parts of the vented filler cap, including the check valve mechanism. Within 0.50 ± 0.25 hours after this, immerse the entire vented filler cap in an aqueous solution of potassium hydroxide of 1.30 ± 0.04 specific gravity in a temperature chamber at $65.5^\circ \pm 1.1^\circ\text{C}$ ($150^\circ \pm 2^\circ\text{F}$) for 168 ± 2 hours. Rinse with water and wipe dry. Examine the vented filler cap for the requirements of 3.10.3. Subject the vented filler cap to 4.5.6, 4.5.5.1, 4.5.5.4, and 4.5.5.5. Examine the vented filler cap for the requirements of 3.7.12, 3.8.6, 3.10.5, and 3.10.6."

3.3 Add the following paragraphs:

"4.5.5.4 Check valve seal. Slowly raise the differential pressure to 12.0 psi to the check valve over a period of not less than 1 minute. Examine the seal for bubbles or leaks. Examine the vented filler cap for the requirements of 3.7.12.3."

"4.5.5.5 O-ring seal. Remove the check valve from a vented filler cap. Attach the vented filler cap to a cell. Apply a 15 psig internal cell pressure differential to the top of the vented filler cap and immerse the cell in water. Examine the seal for bubbles or leaks. Examine the vented filler cap for the requirements of 3.7.12.4."

3.4 Modify the following paragraphs and tables:

4.5.6 Visual and mechanical examination. Add a new second sentence: "Examine each vented filler cap to determine whether any flash and sprue molding remnants exist, all components are correctly positioned, and the color conforms to tables I and II of the specification sheet."

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4.5.8 Dimensions and weight. Delete the title and text and substitute: "Dimensions. Examine the vented filler cap to verify whether the dimensions conform to requirement 2 of the specification sheet."

6.8 Responsibility for inspection and sample selection. In the third sentence, change "groups B and" to "group." Delete the fourth sentence.

6.13.11 Inspection lot. Delete the text and substitute: "An inspection lot of vented filler caps will contain the same PIN, are produced at the same manufacturing facility, and are submitted for conformance inspection under the same contract."

6.15 PIN supersession data. Add a new second sentence: "PIN M81757/2-2 supersedes all MS3510 vented filler caps, including PIN MS3510B."

TABLE IV. Qualification inspection of components and materials. Delete the title and contents and substitute table III contained herein.

TABLE V. Sample sizes for groups B and C testing. Delete the title and contents and substitute table IV contained herein.

TABLE VI. Group A inspection. Delete the contents and substitute table V contained herein.

TABLE VII. Group B inspection. Delete.

TABLE VIII. Group C inspection. Delete the contents and substitute table VI contained herein.

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

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TABLE I. Part or identifying numbers and construction characteristics.

| PART OR IDENTIFYING NUMBER (PIN) | LIMITS | AA DIMENSION (IN INCHES) | BODY SIZE (SEE FIGURE 1) | ELECTROLYTE DEFLECTOR (SEE FIGURE 2) | COLOR (SEE TABLE II) | O-RING (SEE FIGURE 3) |
|----------------------------------|--------|--------------------------|--------------------------|--------------------------------------|----------------------|-----------------------|
| M81757/2-1 | MAX. | --- | LARGE | NONE | NATURAL | ‡ |
| | MIN. | --- | | | | |
| M81757/2-2 | MAX. | --- | LARGE | SPLASHGUARD | BLUE | ‡ |
| | MIN. | --- | | | | |
| M81757/2-3 | MAX. | --- | SMALL | NONE | NATURAL | ▽ |
| | MIN. | --- | | | | |
| M81757/2-4 | MAX. | 1.230 | LARGE | SNORKEL <u>1/</u> | GREY | ‡ |
| | MIN. | 1.180 | | | | |
| M81757/2-5 | MAX. | .925 | LARGE | SNORKEL <u>1/</u> | BLACK | ‡ |
| | MIN. | .875 | | | | |
| M81757/2-6 | MAX. | 1.090 | SMALL | SNORKEL <u>1/</u> | BLACK | ▽ |
| | MIN. | 1.040 | | | | |
| M81757/2-7 | MAX. | 1.800 | LARGE | SNORKEL <u>1/</u> | WHITE | ‡ |
| | MIN. | 1.750 | | | | |
| M81757/2-8 | MAX. | 1.600 | LARGE | SNORKEL <u>1/</u> | GREEN | ‡ |
| | MIN. | 1.500 | | | | |

1/ Use snorkel-type electrolyte deflectors for aerobic applications.

TABLE II. Color requirements.

| FED-STD-595 COLOR NUMBER FOR SPECIFIED COLOR | | | | |
|--|------------------------------|----------------------|-------------------------------------|-------|
| NATURAL NYLON | BLUE | BLACK | GREEN | GREY |
| NONE | 15180, 15182, OR 25183 | 17038 OR 27040 | 14090, 14109, 14110, OR 14115 | 16251 |

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TABLE III. Qualification inspection of vented filler caps.

| Test number | Examinations and tests | Requirement paragraph | Test paragraph |
|-------------|--|---|---|
| 1 | Visual and mechanical | 3.10.6 | 4.5.6 |
| 2 | Dimensions | Paragraph 2 contained herein | 4.5.8 |
| 3 | Room temperature | 3.10.5, 3.10.6 | 4.5.5.1, 4.5.6 |
| 4 | Check valve seal | 3.7.12.3 | 4.5.5.4 |
| 5 | O-ring seal | 3.7.12.4 | 4.5.5.5 |
| 6 | Potassium hydroxide soak of components and elastomeric materials | 3.4, 3.6, 3.7.12, 3.8.6, 3.10.3, 3.10.5, 3.10.6, and table II | 4.5.3, 4.5.5.1, 4.5.5.4, 4.5.5.5, 4.5.6 |
| 7 | Low temperature | 3.10.5, 3.10.6 | 4.5.5.2, 4.5.6 |
| 8 | High temperature | 3.10.5, 3.10.6 | 4.5.5.3, 4.5.6 |

TABLE IV. Sample sizes for group C testing.

| Inspection lot size | Quantity of vented filler caps to be provided for testing |
|-----------------------|---|
| 1 through 1000 | 3 |
| 1001 through 3000 | 6 |
| 3001 through 10,000 | 9 |
| 10,001 through 30,000 | 12 |
| 30,001 through 90,000 | 16 |

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TABLE V. Group A inspection.

| Test number | Examinations and tests | Requirement paragraph | Test paragraph |
|-------------|------------------------|-----------------------|----------------|
| 1 | Visual and mechanical | 3.10.6 | 4.5.6 |

TABLE VI. Group C inspection.

| Test number | Examinations and tests | Requirement paragraph | Test paragraph |
|-------------|--|---|---|
| 1 | Visual and mechanical | 3.10.6 | 4.5.6 |
| 2 | Dimensions | Requirement 2 | 4.5.8 |
| 3 | Room temperature | 3.10.5, 3.10.6 | 4.5.5.1, 4.5.6 |
| 4 | Check valve seal | 3.7.12.3 | 4.5.5.4 |
| 5 | O-ring seal | 3.7.12.4 | 4.5.5.5 |
| 6 | Potassium hydroxide soak of components and elastomeric materials | 3.4, 3.6, 3.7.12, 3.8.6, 3.10.3, 3.10.5, 3.10.6, and table II | 4.5.3, 4.5.5.1, 4.5.5.4, 4.5.5.5, 4.5.6 |
| 7 | Low temperature | 3.10.5, 3.10.6 | 4.5.5.2, 4.5.6 |
| 8 | High temperature | 3.10.5, 3.10.6 | 4.5.5.3, 4.5.6 |

CONCLUDING MATERIAL

Custodians:

Army – CR
 Navy - AS
 Air Force - 11

Preparing activity:

Navy - AS

Review activities:

Army – AV
 Air Force - 80, 99

Agent:

Navy - NW
 (Project 6140-0885)