

# EMI/RFI Shielded Environmental Sealing Boots for Toggle, Pushbutton and Rotary-Actuated Switches



## DESCRIPTION:

APM HEXSEAL's proprietary shielded toggle, pushbutton and rotary-actuated switch boots:

- protect the switch mechanism from damage and/or performance degradation due to environmental contaminants such as oil, grease, water, cleaning solvents, dust and dirt.
- seal the panel cutout in which the switch is mounted ... thus protecting behind-panel components from damage due to leakage.
- provide up to 120dB of shielding effectiveness to contain spurious EMI/RFI that might be transmitted through the switch or panel cutout.

Each is fabricated from a rugged, high-tear resistant silicone rubber with an integral EMI/RFI shielding screen.

## FEATURES AND BENEFITS:

- **UL & CSA-recognized** ... facilitates easier "listing" of the equipment in which they are used.
- **MIL-qualified** ... many standard models are QPL-approved under MIL-B-5423.
- **Up to 120dB of shielding effectiveness** ... to protect against spurious EMI/RFI.
- **Rugged silicone rubber material** ... resists tearing and most environmental contaminants. Won't discolor, crack or dry out.
- **Patented perimeter sealing rib** ... seals the panel cutout in which the switch is mounted.
- **Vibration-resistant mounting** ... resists switch loosening due to vibration/shock.
- **Wide operating temperature range** ... assures long-term performance in the toughest thermal environments.
- **Wide range of available colors** ... units can be molded in an array of colors to meet your needs.

## TYPICAL APPLICATIONS:

- Avionics • Communications • Computer • Medical • Other EMI/RFI-sensitive applications

### SPECIFICATIONS

**Material:** HEXSEALS: Silicone rubber conforms to ZZ-R-765 Class III, GR 50 (unless otherwise specified) with integral MONEL shielding screen. MONEL meets requirements of QQN-281 Class A.

**Mounting Nut:** HEXSEALS: Brass, nickel-plated

**Temperature Range:** HEXSEALS: -94°F to +400°F

**Pressure Range:** Exceeds 15 psi internal and 1500 psi external.

**Operational Life:** 15,000 actuations (minimum).

**Shelf Life:** Excess of 25 years.

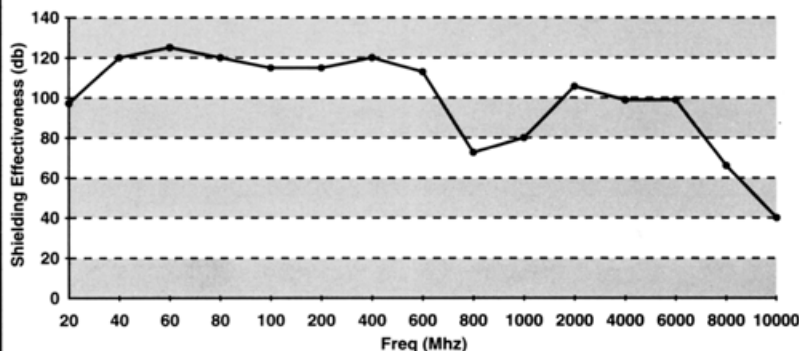
**Resistant to:** Salt spray, sunlight, ozone, weather, fungus, and most acids and lubricating oils

**Military Approvals:** Most HEXSEALS are QPL-approved to MIL-B-5423. (Ask for QPL listings, or see page 5 in Catalog HEX.)

**Agency Recognition:** HEXSEALS are UL-listed to UL Std. 50 types 1-13, and meet CSA standards, C22.2 No. 94.

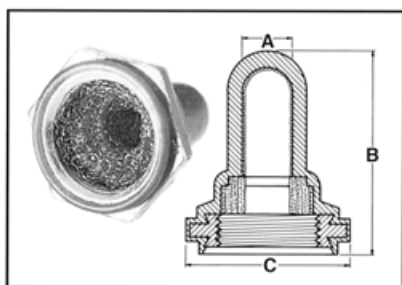
### SHIELDING EFFECTIVENESS

(of MONEL shielding material)



Source: Intertek Testing Services

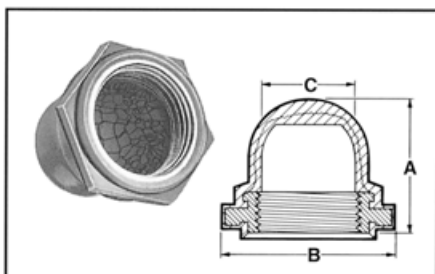
## EMI/RFI Shielded Toggle Boots



| Thread Size | Max. Toggle Height Above Bushing (in.) | A Throat or I.D. |      | B Height |       | C Flat |       | Military Part Number | APM Boot Part Number | Color* | HEXSEAL | E-SEAL |
|-------------|--|------------------|------|----------|-------|--------|-------|----------------------|----------------------|--------|---------|--------|
|             |  | in.              | mm   | in.      | mm    | in.    | mm    |                      |                      |        |         |        |
| 1/4-40NS-2B | .36                                    | .062             | 1.58 | .500     | 12.70 | .375   | 9.52  | —                    | N-5030L RFI          | Gray   | •       | •      |
| 1/8-32NS-2B | .66                                    | .219             | 5.55 | .844     | 21.44 | .625   | 15.88 | M5423/01-02          | IN-1030 RFI          | Gray   | •       | •      |
| 1/2-32NS-2B | .66                                    | .219             | 5.55 | .844     | 21.44 | .625   | 15.88 | —                    | IN-1030 RFI 1/2-32   | Gray   | •       | •      |
| 1/4-40NS-2B | .28                                    | .062             | 1.58 | .390     | 9.90  | .375   | 9.52  | —                    | N-5030R RFI          | Gray   | •       | •      |
| 1/4-40NS-2B | .50                                    | .062             | 1.58 | .594     | 15.08 | .375   | 9.52  | —                    | N-5030S RFI          | Gray   | •       | •      |

\*Other colors available. Please consult factory.

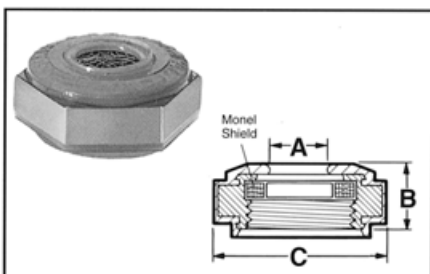
## EMI/RFI Shielded Pushbutton Switch Boots



| Thread Size  | Plunger Height |       | A    |       | B Flat |       | C I.D. |       | Military Part Number | APM Boot Part Number | Color* | HEXSEAL | E-SEAL |
|--------------|----------------|-------|------|-------|--------|-------|--------|-------|----------------------|----------------------|--------|---------|--------|
|              | inch           | mm    | inch | mm    | inch   | mm    | inch   | mm    |                      |                      |        |         |        |
| 1/8-32NS-2B  | .281           | 7.14  | .547 | 13.89 | .625   | 15.88 | .422   | 10.72 | M5423/07-06          | N3030RFI             | Gray   | •       | •      |
| 1/8-32NS-2B  | .438           | 11.11 | .719 | 18.26 | .625   | 15.88 | .422   | 10.72 | M5423/07-07          | NC3030RFI            | Gray   | •       | •      |
| 1/8-32NS-2B  | .281           | 7.14  | .547 | 13.89 | .625   | 15.88 | .422   | 10.72 | M5423/07-08          | NH3030RFI            | Gray   | •       | •      |
| 1/2-32NS-2B  | .188           | 4.76  | .547 | 13.89 | .625   | 15.88 | .422   | 10.72 | M5423/07-10          | NH3030SRFI           | Gray   | •       | •      |
| 1/8-24NEF-2B | .281           | 7.14  | .609 | 15.48 | .750   | 19.05 | .516   | 13.10 | M5423/07-09          | N3040RFI             | Gray   | •       | •      |
| 1/8-32NS-2B  | .469           | 11.91 | .734 | 18.65 | .625   | 15.88 | .422   | 10.72 | —                    | NC3030HRFI           | Gray   | •       | •      |

\*Other colors available. Please consult factory.

## EMI/RFI Shielded Rotary Shaft Seals



| Thread Size  | A Shaft Size |      | B Height |       | C Flat |       | Military Part Number | APM Boot Part Number | Color* | HEXSEAL | E-SEAL |
|--------------|--------------|------|----------|-------|--------|-------|----------------------|----------------------|--------|---------|--------|
|              | inch         | mm   | inch     | mm    | inch   | mm    |                      |                      |        |         |        |
| 1/4-32NF2B   | .125         | 3.18 | .219     | 5.56  | .375   | 9.53  | M5423/09-09          | N9040 x 1/4 RFI      | Gray   | •       | •      |
| 1/2-32NEF-2B | .125         | 3.18 | .219     | 5.56  | .500   | 12.70 | M5423/09-07          | N9030 x 1/4 RFI      | Gray   | •       | •      |
| 1/4-32NEF-2B | .250         | 6.35 | .219     | 5.56  | .500   | 12.70 | M5423/09-08          | N9030 x 1/4 RFI      | Gray   | •       | •      |
| 1/4-32NEF-2B | .250         | 6.35 | .359     | 9.12  | .500   | 12.70 | M5423/09-14          | N9033 x 1/4 RFI      | Gray   | •       | •      |
| 1/2-32NS-2B  | .250         | 6.35 | .219     | 5.56  | .625   | 15.88 | M5423/09-10          | N9060 x 1/4 RFI      | Gray   | •       | •      |
| 1/2-24NEF-2B | .375         | 9.53 | .219     | 5.56  | .750   | 19.05 | M5423/09-11†         | N9065 x 1/4 RFI      | Gray   | •       | •      |
| 1/2-32NS-2B  | .250         | 6.35 | .219     | 5.56  | .625   | 15.88 | M5423/09-12          | N9063 x 1/4 RFI      | Gray   | •       | •      |
| 1/4-28NF-2B  | .125         | 3.18 | .219     | 5.56  | .375   | 9.53  | —                    | N9042 x 1/4 RFI      | Gray   | •       | •      |
| 1/4-32NEF-2B | .125         | 3.18 | .531     | 13.49 | .625   | 15.88 | —                    | NLK9030 x 1/4 RFI    | Gray   | •       | •      |
| 1/4-32NEF-2B | .250         | 6.35 | .531     | 13.49 | .625   | 15.88 | —                    | NLK9030 x 1/4 RFI    | Gray   | •       | •      |

\*Other colors available. Please consult factory. †Inactive for new designs.

## HOW TO ORDER

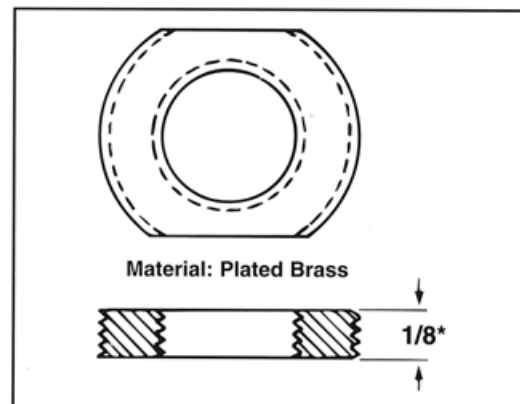
Specify APM boot part number and, if necessary, the appropriate bushing adaptor part number.

## Optional Threaded Bushing Adaptors

| Inside (Bushing) Thread Size (Class 2B) | Outside (Boot) Thread Size (Class 2A) | APM Part Number |
|---|---------------------------------------|-----------------|
| 3/8-32                                  | 15/32-32                              | 2500/1/5*       |
| 15/32-32                                | 11/16-32                              | 2500/1/7        |
| 1/2-32                                  | 11/16-32                              | 2500/1/10       |
| 15/32-32                                | 13/16-32                              | 2500/1/8        |
| 1/2-24                                  | 13/16-32                              | 2500/1/9        |
| 5/8-24                                  | 13/16-32                              | 2500/1/11       |
| 5/8-24                                  | 7/8-32                                | 2500/1/12       |
| 3/4-32                                  | 7/8-32                                | 2500/1/13*      |
| 3/4-20                                  | 7/8-32                                | 2500/1/14*      |

\*5/32" thick.

Additional sizes, including metric, available. Please consult factory.



# APM HEXSEAL® Sealing Specialists

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