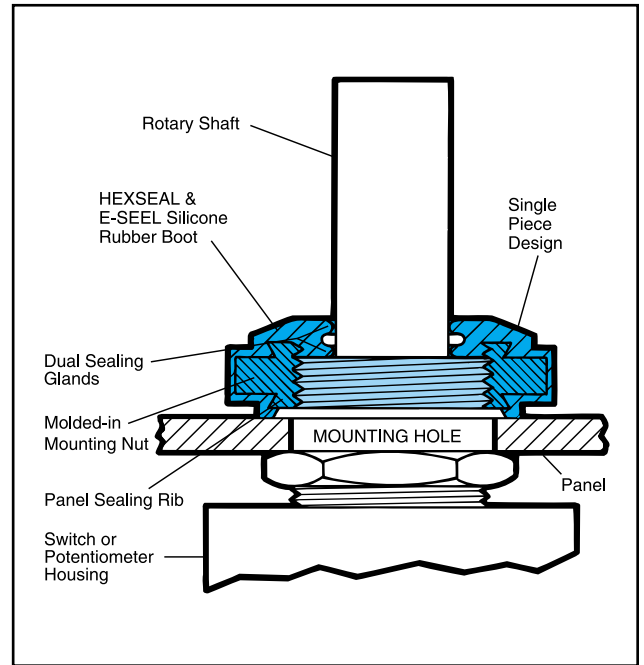


# Rotary Shaft Seals For Switches & Potentiometers

HEXSEAL® and E-SEEL® rotary shaft seals are molded from a high tear-strength silicone rubber bonded to a built-in mounting nut. Each seal surrounds the rotary shaft and forms a watertight and dust-tight seal against the shaft and front panel surface.

## SPECIFICATIONS

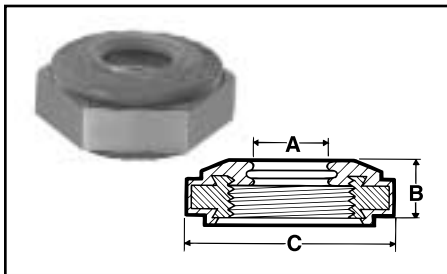
**Material:** HEXSEALS: Silicone rubber conforms to ZZ-R-765 Class III, GR 60 (unless otherwise specified)  
 E-SEELS: Silicone rubber polymer type ASTM D 1418  
**Mounting Nut:** HEXSEALS: Brass, nickel-plated  
 E-SEELS: Brass, black oxide  
**Temperature Range:** HEXSEALS: -94°F to +400°F  
 E-SEELS: -80°F to +400°F  
**Pressure Range:** Exceeds 15 psi internal and 1500 psi external  
**Operational Life:** 50,000 actuations, minimum  
**Shelf Life:** In 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 under MIL-B-5423 (see QPL listing on page 5)  
**Agency Recognition:** E-SEELS and HEXSEALS are UL-listed to UL Std. 50 types 1-13, and meet CSA standards  
**Installation:** Please see installation instructions on page 14.



## HOW TO ORDER

Specify APM boot part number and, if necessary, the appropriate bushing adaptor part number (please see page 14).

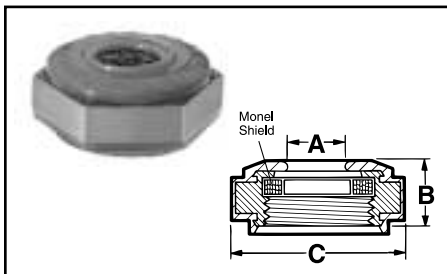
FIGURE 21 Rotary Shaft Seals



Thread Size	A Shaft Size		B Height		C Flat		Military Part Number	APM Boot Part Number	Color*	HEXSEAL	E-SEEL
	inch	mm	inch	mm	inch	mm					
1/4-28NF2B	.125	3.18	.219	5.56	.375	9.53	—	N9042 x 1/8	Gray	•	
1/4-32NEF-2B	.125	3.18	.219	5.56	.375	9.53	M5423/09-03	N9040 x 1/8	Gray	•	
3/8-32NEF-2B	.125	3.18	.219	5.56	.500	12.70	M5423/09-01	N9030 x 1/8	Gray	•	
3/8-32NEF-2B	.188	4.78	.219	5.56	.500	12.70	—	N9030 x 3/16	Gray	•	
3/8-32NEF-2B	.250	6.35	.219	5.56	.500	12.70	M5423/09-02	N9030 x 1/4	Gray	•	
3/8-32NEF-2B	.250	6.35	.359	9.12	.500	12.70	—	N9033 x 1/4	Gray	•	
15/32-32NS-2B	.250	6.35	.219	5.56	.625	15.88	M5423/09-04	N9060 x 1/4	Gray	•	
1/2-32NS-2B	.250	6.35	.219	5.56	.625	15.88	M5423/09-06	N9063 x 1/4	Gray	•	
5/8-24NEF-2B	.375	9.53	.219	5.56	.750	19.05	M5423/09-05	N9065 x 3/8	Gray	•	
5/8-24NEF-2B	.500	12.70	.219	5.56	.750	19.05	—	N9065 x 1/2	Gray	•	
3/8-32NEF-2B	.250	6.35	.219	5.56	.500	12.70	—	C1332/40	Black		•

\*Other colors available. Please consult factory.

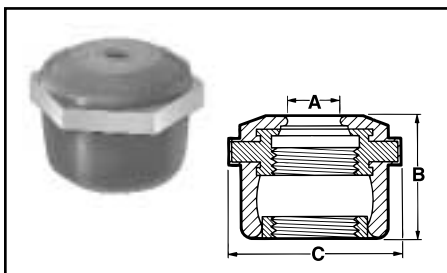
FIGURE 22 RFI/EMI Shielded Rotary Shaft Seals



Thread Size	A Shaft Size		B Height		C Flat		Military Part Number	APM Boot Part Number	Color*	HEXSEAL	E-SEEL
	inch	mm	inch	mm	inch	mm					
1/4-32NF2B	.125	3.18	.219	5.56	.375	9.53	M5423/09-09	N9040 x 1/8 RFI	Gray	•	
3/8-32NEF-2B	.125	3.18	.219	5.56	.500	12.70	M5423/09-07	N9030 x 1/8 RFI	Gray	•	
3/8-32NEF-2B	.250	6.35	.219	5.56	.500	12.70	M5423/09-08	N9030 x 1/4 RFI	Gray	•	
3/8-32NEF-2B	.250	6.35	.359	9.12	.500	12.70	M5423/09-14	N9033 x 1/4 RFI	Gray	•	
15/32-32NS-2B	.250	6.35	.219	5.56	.625	15.88	M5423/09-10	N9060 x 1/4 RFI	Gray	•	
5/8-24NEF-2B	.375	9.53	.219	5.56	.750	19.05	M5423/09-11†	N9065 x 3/8 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 1/8 RFI	Gray	•	
3/8-32NEF-2B	.125	3.18	.531	13.49	.625	15.88	—	NLK9030 x 1/8 RFI	Gray	•	
3/8-32NEF-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. All Standard RFI/EMI boots feature knitted Monel wire shields.

FIGURE 23 Locking Rotary Shaft Seals



Thread Size	A Shaft Size		B Height		C Flat		Lock Nut O.D.		Military Part Number	APM Boot Part Number	Color*	HEXSEAL	E-SEEL
	inch	mm	inch	mm	inch	mm	inch	mm					
1/4-32NS-2B	.125	3.18	.500	12.70	.500	12.70	.344	8.74	—	NLK9040 x 1/8	Gray	•	
3/8-32NS-2B	.125	3.18	.531	13.49	.625	15.88	.469	11.91	—	NLK9030 x 1/8	Gray	•	
3/8-32NS-2B	.250	6.35	.531	13.49	.625	15.88	.469	11.91	—	NLK9030 x 1/4	Gray	•	

\*Other colors available. Please consult factory.

DIMENSIONS FOR REFERENCE ONLY.

# Toggle Switch Boots

HEXSEAL® and E-SEEL® toggle switch boots are molded from a high tear-strength silicone rubber bonded to a built-in mounting nut. Each encloses the base of the protruding switch bushing and forms a watertight and dust-tight seal against the front panel surface.

## SPECIFICATIONS

**Material:** HEXSEALS: Silicone rubber conforms to ZZ-R-765 Class III, GR 50 (unless otherwise specified)  
E-SEELS — Silicone rubber polymer type ASTM D 1418

**Mounting Nut:** HEXSEALS: Brass, nickel-plated  
E-SEELS: Brass, black-oxide

**Temperature Range:** HEXSEALS: -94°F to +400°F  
E-SEELS: -80°F to +400°F

**Pressure Range:** Exceeds 15 psi internal and 1500 psi external.  
(N5032B: 10 psi)

**Operational Life:** 50,000 actuations (minimum).

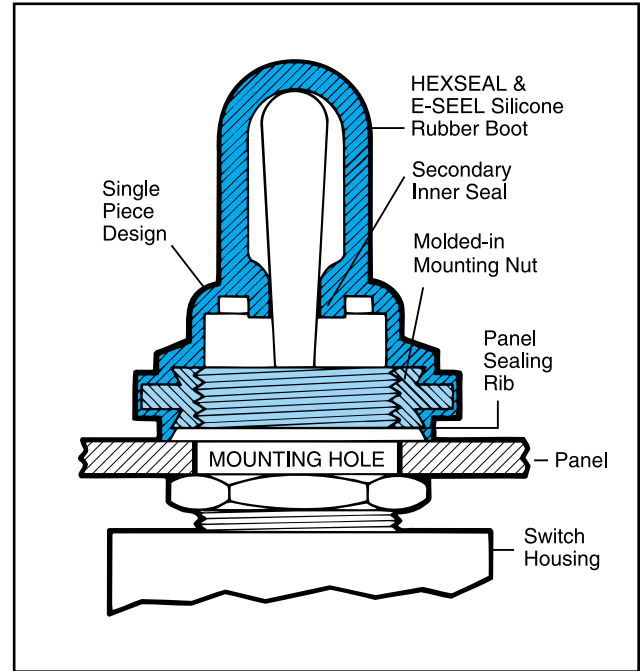
**Shelf Life:** Excess of 25 years.

**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. (See QPL listing on page 5.)

**Agency Recognition:** E-SEELS and HEXSEALS are UL-listed to UL Std. 50 types 1-13, and meet CSA standards.

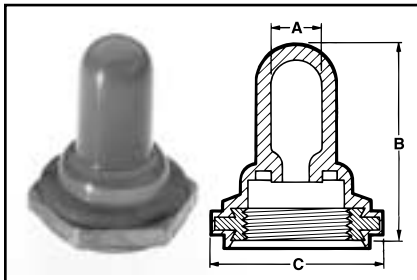
**Installation:** Please see installation instructions on page 14.



## HOW TO ORDER

Specify APM boot part number and, if necessary, the appropriate bushing adaptor part number (please see page 14).

FIGURE 1 Full-Toggle Switch Boots (with integral secondary seal)

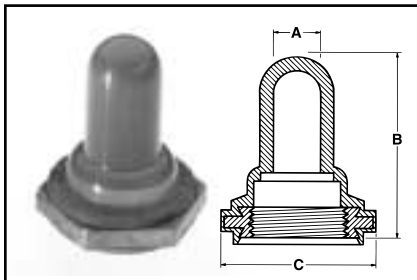


Thread Size	Max. Toggle Height Above Bushing (in.)	A Throat or I.D.		B Height		C Flat		Military Part Number	APM Boot Part Number	Color*	HEXSEAL	E-SEEL
		in.	mm	in.	mm	in.	mm					
1/4-40NS-2B	.31	.104	2.64	.422	10.72	.375	9.58	M5423/04-01	N-5030	Gray	•	
1/4-40NS-2B	.37	.062	1.53	.500	12.70	.375	9.52	M5423/05-01	N-5030L†	Gray	•	
1/4-40NS-2B	.28	.062	1.58	.390	9.91	.375	9.52	M5423/05-02	N-5030R	Gray	•	
1/4-40NS-2B	.50	.062	1.58	.594	15.08	.375	9.52	—	N-5030S	Gray	•	
15/32-32NS-2B	.66	.219	5.55	.844	21.44	.625	15.88	M5423/01-01	N-1030	Gray	•	
1/2-32NS-2B	.66	.219	5.55	.844	21.44	.625	15.88	—	N-1030 1/2-32	Gray	•	
15/32-32NS-2B	.71	.219	5.55	.937	23.81	.625	15.88	—	C1131/27	Black		•

\*Other colors available. Please consult factory. †Material conforms to ZZ-R-765 Class III, Gr. 25

Figure 1

FIGURE 2 Full-Toggle Switch Boots (with constant I.D.)

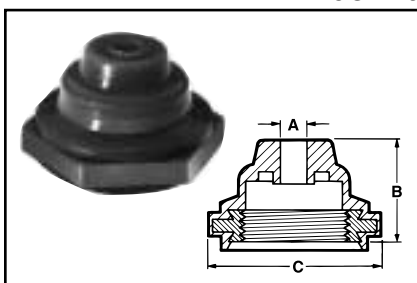


Thread Size	Max. Toggle Height Above Bushing (in.)	A Throat or I.D.		B Height		C Flat		Military Part Number	APM Boot Part Number	Color*	HEXSEAL	E-SEEL
		in.	mm	in.	mm	in.	mm					
M6 (metric)	.37	.116	2.95	.562	14.30	.352	9.00	—	1131/25	Black	•	
15/32-32NS-2B	.437	.210	5.35	.625	15.88	.625	15.88	—	1131/33	Gray	•	
M12 (metric)	.812	.234	5.95	.859	21.83	.625	15.88	—	1131/40	Black	•	
15/32-32NS-2B	.66	.219	5.55	.844	21.44	.625	15.88	M5423/01-02	IN-1030	Gray	•	
15/32-32NS-2B	.66	.256	6.50	.844	21.44	.625	15.88	—	1131/31	Gray	•	
15/32-32NS-2B	.90	.219	5.55	1.093	27.77	.625	15.88	—	1131/26	Gray	•	
15/32-32NS-2B	1.08	.390	9.92	1.328	33.37	.625	15.88	—	N-1002	Gray	•	
1/2-32NS-2B	.66	.219	5.55	.844	21.44	.625	15.88	—	IN-1030 1/2-32	Gray	•	
1/2-32NS-2B	.66	.256	6.50	.844	21.44	.625	15.88	—	1131/32	Black	•	
5/8-32UNS-2B	.78	.187	4.76	.844	21.44	.750	19.05	—	1131/23	Gray	•	
15/32-32NS-2B	.71	.219	5.55	.937	23.80	.625	15.88	—	C1131/28	Black		•

\*Other colors available. Please consult factory.

Figure 2

FIGURE 3



Half-Toggle Switch Boots (toggle actuator protrudes)

Thread Size	Toggle Diameter Accommodated (in.)	A Throat or I.D.		B Height		C Flat		Military Part Number	APM Boot Part Number	Color*	HEXSEAL	E-SEEL
		in.	mm	in.	mm	in.	mm					
1/4-40NS-2B	.062-.188	.047	1.19	.250	6.35	.375	9.53	M5423/11-01	N-5032B††	Gray	•	
15/32-32NS-2B	.155-.240	.078	1.98	.437	11.10	.625	15.88	M5423/02-01	N-1030B	Gray	•	
1/2-32NS-2B	.155-.240	.078	1.98	.437	11.10	.625	15.88	—	N-1030B 1/2-32	Gray	•	
15/32-32NS-2B	.155-.240	.078	1.98	.437	11.10	.625	15.88	—	C1132/20	Black		•

\*Other colors available. Please consult factory. ††Material conforms to ZZ-R-765, Class II, GR. 40.

Figure 3