

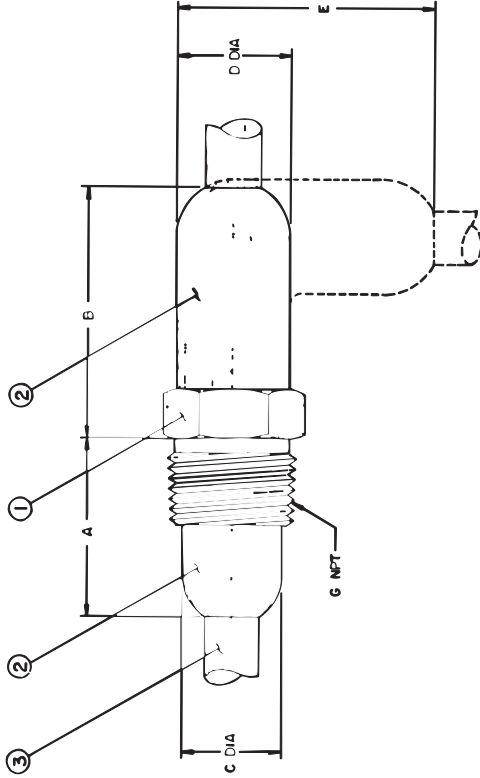
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1

NPT PENETRATOR



FINISH NO	-1	-2	-3
PENT SIZE	BA 5757 1" NPT	BA 5756 3/4" NPT	BA 5755 1/2" NPT
A	1.95	1.70	1.50
B	1.60	1.60	1.60
C DIA	1.08	.87	.62
D DIA	1.37	.53	.82
E	2.8	2.5	2.0
F HEX	1.37	1.06	.87
G NPT	1-11/2	3/4-14	1/2-14

ITEM	NOMENCLATURE OR DESCRIPTION
1	NPT PENETRATOR
2	NEOPRENE MOLDING (POLYURETHANE OPTIONAL)
3	CABLE

NOTES:

- 1 MATERIAL: 316 STAINLESS STEEL PER QQ-S-753.
- 2 MATERIAL: NEOPRENE MOLDING B/A - X5727.
- 3 TIN PLATED CONTACT LEADS PER MIL-T-10727, TYPE I, AND FUSED.
- 4 METRIC SEAL MUST WITHSTAND 10,000 PSI TEST HYDROSTATIC PRESSURE.
- 5 TEST VOLTAGE 800 VAC FOR 3 SECONDS MIN WITHOUT BREAKDOWN.
- 6 ELECTRICAL RESISTANCE 500 MEG OHMS AT 500 VDC.
- 7 MAXIMUM CONTACT CONFIGURATION: 8 P.W.
- 8 POLYURETHANE (BLACK, MIL - M-2404).

These Penetrators are our "Standards". We have designed and sold many unique penetrators for special applications. If your needs do not fall within these standards, our Sales and Engineering Departments can assist you by recommending an existing design or developing a new one.

SEACON

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REVISION NO. 1710

DWG. NO.

BY

REV.

3	AR	—	CABLE	—
2	AR	—	NEOPRENE MOLDING (POLYURETHANE OPTIONAL)	2 OR 3
1	AR	—	SEE DASH NO.	1
ITEM	QTY	PCB	PART OR IDENTIFIED NO	DESCRIPTION
PARTS LIST				
CONTRACT NO.				
SEACON				
BRANTNER & ASSOCIATES, INC. MAIN PLANT 2804 HAWCOCK ST. SAN DIEGO, CALIF. 92110				
NPT PENETRATOR				
DATE 5-17-68				
DRAWN BY 5-17-68				
CHECKED BY 5-17-68				
APPROVED BY 5-17-68				
SCALE NONE				
SIZE FROM NO. 6187-0				
REV. 1				

4

3

2

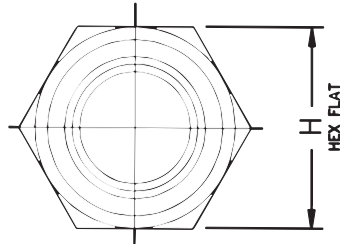
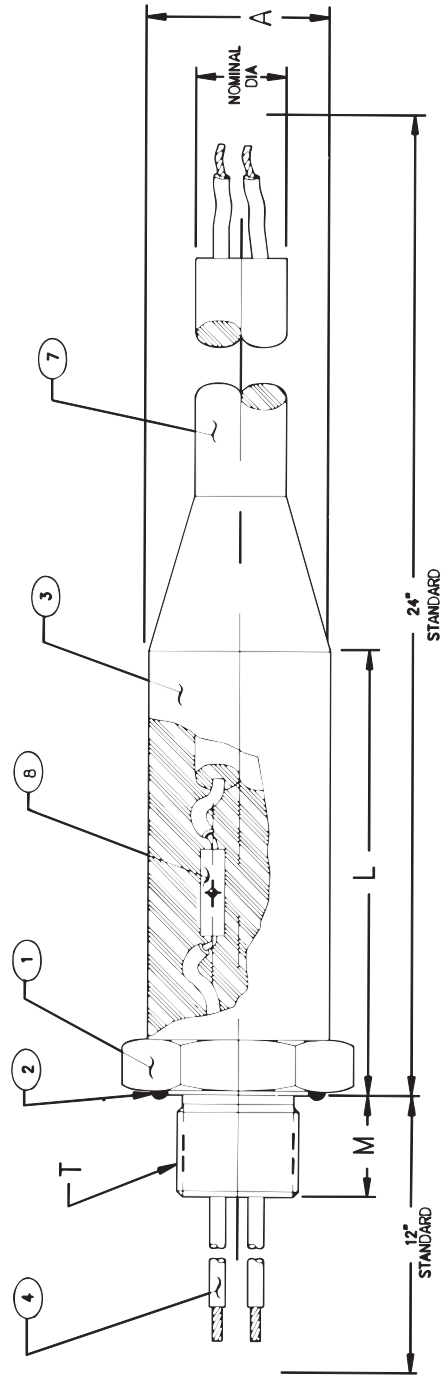
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NOTES:

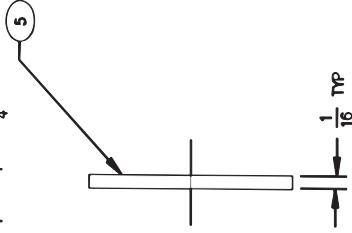
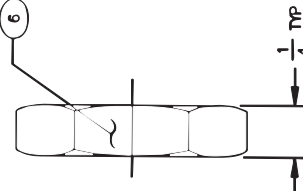
1. MATERIAL: 316 SST PER QQ-S-763.
2. MATERIAL: 303 SST PER QQ-S-763.
3. MATERIAL: BUNA-N-70 DURO.
4. MATERIAL: NEOPRENE MOLDING B/A X-5727.
5. STAINLESS STEEL PARTS TO BE PASSIVATED AS PER QQ-P-35.
6. TYPE 1, UPON COMPLETION OF MACHINING.
7. MATERIAL: WHITE EPOXY PER B/A 6373.
8. PRESSURE RATING (SEALED CABLE END) 20,000 PSI.

PSS-PENETRATOR

REVISIONS			
ZONE	REV	REF E.C.O. NO.	DESCRIPTION
C	5311		ADDED ITEM #8, 9 & REDRAW
D	6053		ADD NOTES 7,8,9
E	6175		ADD PART NO. TO CHART



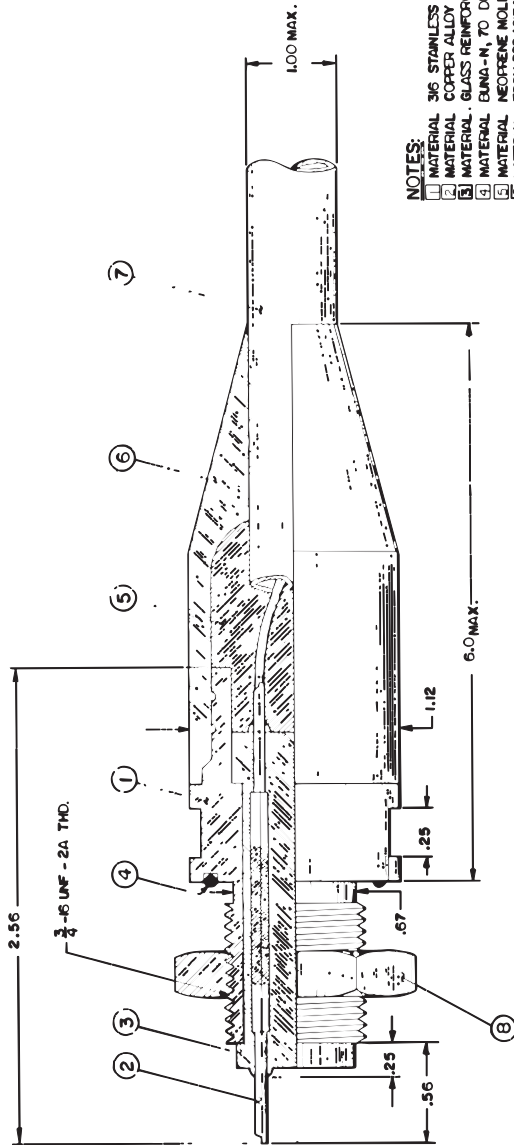
E0 P/N	PSS	A	L	M	H	T	O-RING	CABLE	NOMINAL DIA
41-02	PSSK-2-	.75	1.75	.50	.75	7/16 -20 UNF-2A	2-014	18/2 SO	.39
41-03	PSSL-3-	.87	2.18	.50	1.12	5/8 -18 UNF-2A	2-019	18/3 SO	.40
41-04	PSSM-4-	.87	2.18	.50	1.12	5/8 -18 UNF-2A	2-019	18/4 SO	.43
41-06	PSSO-6-	1.12	2.37	.50	1.25	7/8 -14 UNF-2A	2-021	18/6 SO	.52
41-08	PSSP-8-	1.12	2.37	.50	1.25	7/8 -14 UNF-2A	2-021	18/8 SO	.60
41-12	PSSO-12-	1.25	3.12	.87	1.50	1-14 UNF-2A	2-122	18/12 SO	.66



PARTS LIST			
ITEM	QTY	DESCRIP	REMARKS
9	AR	—	EPOXY (NOT SHOWN)
8	AR	—	BUTT SPICE
7	AR	—	#18 AWG. SO TYPE CABLE
6	AR	15789	HEX NUT (OPTIONAL)
5	AR	15789	WASHER (OPTIONAL)
4	AR	—	#18 AWG. PIGTAIL HOOK-UP WIRE TYPE "E" WHITE
3	AR	—	NEOPRENE MOLDED
2	AR	—	O-RING
1	AR	15789	PSS-PENETRATOR

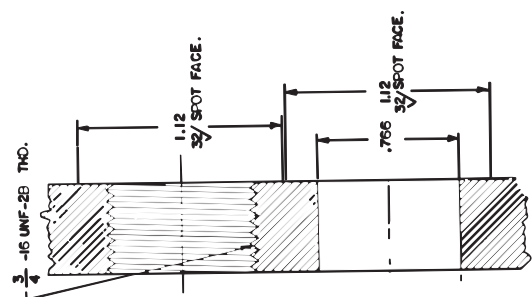
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES 1/16 .004 .005 1/8 .008 .010 1/4 .015 .020 3/8 .024 .030 1/2 .048 .060 3/4 .072 .090 1 .144 .120 2 .288 .240 4 .576 .480 6 .864 .720 8 1.152 1.000 12 1.728 1.440 16 2.880 2.400 20 4.500 3.600 24 7.200 5.760 30 10.800 8.640 36 14.400 11.520 48 19.200 15.360 60 28.800 23.040 72 36.000 28.800 96 48.000 38.400 120 64.000 51.200 144 86.400 69.120 180 115.200 92.160 240 153.600 122.880 300 192.000 153.600 360 230.400 184.320 480 288.000 230.400 600 360.000 288.000 720 432.000 345.600 960 576.000 460.800 1200 720.000 576.000 1440 864.000 691.200 1800 1080.000 864.000 2400 1440.000 1152.000 3000 1800.000 1440.000 3600 2160.000 1728.000 4800 2880.000 2304.000 6000 3600.000 2880.000 7200 4320.000 3456.000 9600 5760.000 4608.000 12000 7200.000 5760.000 14400 8640.000 6912.000 18000 10800.000 8640.000 24000 14400.000 11520.000 30000 18000.000 14400.000 36000 21600.000 17280.000 48000 28800.000 23040.000 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MSG-FT + ASSY.



SECTION A-A

MOUNTING INSTRUCTIONS.



ITEM	NOMENCLATURE OR DESCRIPTION
1	MSG-FT SHELL 316 SST
2	#16 AWG, 18 AWG, 20 AWG CONTACT
3	MOLDED EPOXY
4	O-RING 2-019
5	EPOXY (EPON 828/CIBA 840)
6	NEOPRENE MOLDED (POLYURETHANE OPTIONAL)
7	CABLE
8	3/4-16 UNF-2B NUT (OPTIONAL)

- NOTES:
- 1 MATERIAL: 316 STAINLESS STEEL PER QQ-S-763.
 - 2 MATERIAL: COPPER ALLOY & GOLD PLATED PER MIL-G-45204.
 - 3 MATERIAL: GLASS REINFORCED EPOXY B/A XS-2748.
 - 4 MATERIAL: BUNA-N, 70 DURO.
 - 5 MATERIAL: NEOPRENE MOLDING BA-5727.
 - 6 MATERIAL: EPON 828/CIBA 840.
 - 7 MATERIAL: 304 STAINLESS STEEL PER QQ-S-763.
 - 8 MATERIAL: POLYURETHANE, BLACK MIL-M-24041.
 - 9 CONTACT CONFIGURATION: 113 #16 AWG.

1	15753	3/4-16 UNF-2B NUT (OPTIONAL)	7
2	AR	CABLE	3
3	AR	NEOPRENE MOLDED (POLYURETHANE OPTIONAL)	3
4	AR	EPOXY	3
5	1	O-RING	4
6	AR	MOLD EPOXY	3
7	AR	#16/18/20 AWG CONTACT	3
8	15753	MSG-FT	1

PARTS LIST

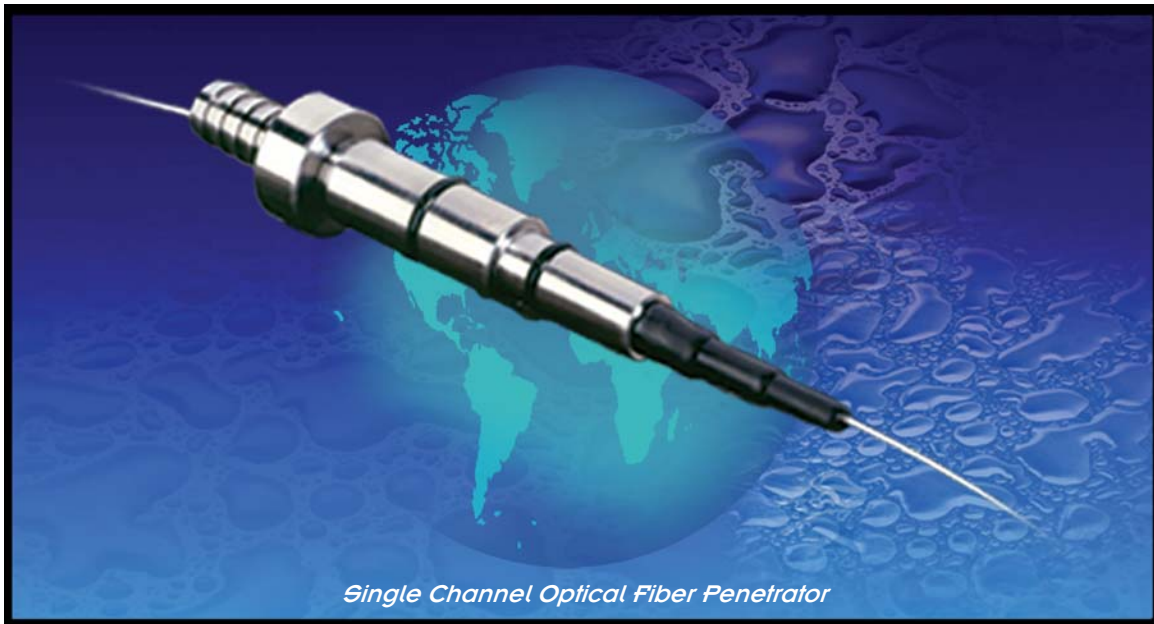
BRANTNER & ASSOCIATES, INC.

MSG-FT & ASSY.

SIZE	FRSH NO.	DWG. NO.	SHEET
C	15789	175-0	C



Optical Fiber Penetrators



Description

SEA CON Advanced Products single optical penetrator utilizes a modular concept which can be configured for specific customer requirements. Fully field installable and serviceable, this new design is rated internally and externally to 10,000 psi and exhibits excellent optical loss characteristics of better than 0.1dB with a back reflection of less than -55dB.

Key Features

- | | |
|---|--|
| <ul style="list-style-type: none"> • Single or multi-way fiber-optic penetrators or “optical feed-throughs” • Qualified up to full operational differential pressure rating of 690 bar (10,000 psi) which is equivalent to 7,000m (23,000 feet) • Qualified with SMF-28 fiber but suitable for other single-mode or multi-mode fibers • Boot seal, bend relief on entry and exit • Suitable for use as a pressure barrier between a 1-atmosphere housing and external pressure environment | <ul style="list-style-type: none"> • Provides a low-loss optical feed-through rated internally and externally for up to 10,000psi • Optical insertion loss of better than 0.1dB • Optical back-reflection of better than -55dB • Modular optical inserts • Field installable and serviceable • Operating temperature range rated from -60°C to +85°C (-76°F to +185°F) |
|---|--|

Design Ratings

- | | |
|---|--|
| <ul style="list-style-type: none"> • Qualified to full operational differential pressure rating of 690 bar (10,000 psi) which is equivalent to 7,000m (23,000 feet) • Suitable for use as a pressure barrier between a 1-atmosphere housing and external pressure environment | <ul style="list-style-type: none"> • Optical insertion loss of better than 0.1dB • Optical back-reflection of better than -55dB • Operating temperature range rated to that of the optical fiber, in this case SMF-28 rated from -60°C to +85°C (-76°F to +185°F) |
|---|--|

Qualification Testing

Example of qualification testing for 7793-102, as recorded in SEA CON® Qualification Test Report SC-ENG-1026.

- 24 hour 15psi Helium leak testing, in air
- 24 hour 15psi Helium leak testing in water
- Helium leak rate qualified as less than: 1×10^{-8} mbarl/sec
- Differential pressure testing and cycling to 690 bar (10,000 psi) to verify internal and external pressure integrity and optical performance
- Pressure and temperature cycling
 - 30 pressure cycles, 0 to 180 bar (0 to 2,610 psi)
 - 20 temperature cycles, -25°C to +40°C (-13°F to 104°F)
 - All combinations of pressures and temperatures
 - Helium leak test before and after tests
- Environmental stress screening (vibration):
 - 20 – 80 Hz @ 3dB per octave rise
 - 80 – 350 Hz @ 0.04 g² / Hz
 - 350 – 2000 Hz @ 3 dB per octave roll off
 - Double sweep for 10 minutes
 - Excitation direction vertical
- Optical Performance:
 - Average attenuation, over 1310nm and 1550nm, in both directions: -0.06 dB
 - Average back reflection, over 1310nm and 1550nm, in both directions: -58.6 dB

Track Record and Reliability Data

- Over 300 fiber-optic penetrators have been supplied to customers.
- These now have accumulated operating hours of greater than 4 million hours.
- These have a Mean Time Between Failure of better than 900,000 hours.