

NOTE: DOD-STD-2003-3 has been redesignated as a standard practice. The cover page has been changed for Administrative reasons. There are no other changes to this Document.

INCH - POUND

DOD-STD-2003-3(SH)

24 June 1987

SUPERSEDING

NAVSEA S9300-AW-EDG-010/EPISM
(INCLUDING NAVSEA DWG. NO.
803-5001027) AND NAVSEC NO.
9000-S6202-73980

DEPARTMENT OF DEFENSE
STANDARD PRACTICE

ELECTRIC PLANT INSTALLATION
STANDARD METHODS FOR
SURFACE SHIPS AND SUBMARINES
(PENETRATIONS)

SECTION 3 OF 5 SECTIONS



AMSC N/A

AREA GDRQ

DISTRIBUTION STATEMENT B.

Distribution limited to U.S. Government agencies only for administrative and operational use. Other requests for this directive must be referred to NAVSEA (SEA 05Q).

DOD-STD-2003-3 (NAVY)
24 June 1987

SECTION 3

PENETRATIONS

DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND

Washington, DC 20362-5101

Electric Plant Installation Standard Methods for Surface Ships and Submarines

1. This Military Standard is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.
2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

DOD-STD-2003-3(NAVY)
24 June 1987

FOREWORD

1. The criteria contained herein for the installation of the electrical plant on ships of the United States Navy supersede the data contained in Sections 1 through 5 of NAVSHIPS Drawing 9000-S6202-73980, NAVSEA Drawing No. 803-5001027 and NAVSEA PUBLICATION S9300-AW-EDG-010/EPISM.
2. This standard disseminates up-to-date information detailing Requirements for Standard Installation Methods Employed for Submarine and Surface Ship Electrical Distribution Systems.
3. These criteria apply to work on a specific ship or ships only when invoked by the Ship Specifications or similar contractual documents.
4. Although these criteria are primarily for application to new construction, their use may be considered in the conversion or alteration of existing ships. In such cases the degree of applicability of these criteria will be specified by the activity preparing the instructions for the work.
5. Considering the magnitude of this standard, along with the changing requirements imposed on the Electric Plant, it is inevitable that changes will be required to up-date these criteria. Therefore, as comments arise they should be forwarded to Naval Sea Systems Command (NAVSEA) 5523 to keep this standard as current as possible through subsequent revisions. Revisions will be accomplished by the issuance of additional or revised figures to be inserted in the basic standard sections. Document Improvement Proposal Form DD 1426 attached. Superseded pages may be retained for reference if so desired.
6. This standard is available in a 8-1/2 X 11 hard copy, in microfilm aperture cards, or in microfiche. It is available in 8-1/2 X 11 hard copy from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120. Microfilm aperture card or microfiche are available from Commanding Officer, Portsmouth Naval Shipyard, Code 202.2, Portsmouth, NH 03801. All revisions on microfilm aperture cards, or on microfiche are automatically distributed to a previously approved distribution list. (Tel: (207) 439-1000, Ext. 1718, Autovon 684-1718). Activities having a requirement to be placed on the distribution or for additional copies should forward these requests to Commander, Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101. Aperture cards have been distributed to those activities presently on the distribution for NAVSEA Standard and Type Drawing microfilm aperture card sets. Microfiche has been distributed to all active ships.

DOD-STD-2003-3(NAVY)
24 June 1987

CONTENTS

		<u>Page</u>
Paragraph 1.	SCOPE	1
1.1	Purpose	1
1.1.1	Application	1
2.	REFERENCED DOCUMENTS	1
2.1	Government documents	1
2.1.1	Specifications and standard	1
2.1.2	Other Government documents	2
2.2	Order of precedence	2
3.	DEFINITIONS	2
3.1	Metal stuffing tube	2
3.1.1	Nylon stuffing tube	2
3.2	Kickpipe	2
3.3	Swage tube	2
3.4	Multiple cable penetrator (MCP)	2
3.5	Community stuffing tube for bulkheads	2
3.6	Collective protective system (CPS)	2
4.	GENERAL REQUIREMENTS	3
4.1	Cable penetrations	3
4.1.1	Installation welding requirements	3
4.1.2	Cable penetration of structure	3
4.1.3	Cable penetration of decks and bulkheads forming boundaries of spaces containing volatile combustible or explosive materials	3
4.1.4	Cable penetration of decks, structural bulkheads, airtight bulkheads and fumetight bulkheads	3
4.1.5	Multiple (two or more) penetrations of nonstructural steel bulkheads (other than wire or expanded metal), bents, web frames, transverse girders, and longitudinal girders	4
4.1.6	Plastic sealer	4
4.1.7	Cable penetrations spacing	4
4.1.8	Stuffing tube packing	4
4.1.9	Kickpipes	5
5.	DETAILED REQUIREMENTS	5
	See figures	
6.	NOTES	5
6.1	Intended use	5
6.2	Designation of Electric Plant Installation Standard Methods figures	5
6.3	Subject term (key word) listing	5

DOD-STD-2003-3(NAVY)

24 June 1987

CONTENTS - Continued

Group A - Stuffing Tubes (Submarines)

	<u>Page</u>
Figure 3A1 Passing cable through pressure proof bulkheads-submarines	
instructions for packing stuffing tubes	6
3A2 Steel stuffing tube cable assignment (submarines)	7
3A3 Steel stuffing tube assignment (submarines)	8
3A4 Steel stuffing tube cable assignment	9
3A5 Steel stuffing tube cable assignment (submarines)	10
3A6 Steel stuffing tube cable assignment (submarines)	11
3A7 Steel stuffing tube cable assignment (submarines)	12
3A8 Steel stuffing tube cable assignment	13
3A9 Steel stuffing tube cable assignment (submarines)	14
3A10 Stuffing tubes for passing cables through pressure proof	
bulkheads (submarines)	15
3A11 Stuffing tubes for passing cable through pressure proof	
bulkheads type 1 and 2 (submarines)	16
3A12 Stuffing tubes for passing cable through pressure proof	
bulkheads type 3 and 4 (submarines)	17
3A13 Passing cable through ballast tank partitions (submarines) ..	18
3A14 Passing cable through tanks (pipe extension) (submarines) ...	19
3A15 Cables through shielded bulkheads (submarines)	20
3A16 Cables through elliptical bulkheads (submarines)	21
3A17 Methods of changing sizes of installed bulkhead stuffing	
tubes types 1 to 4 and 46-1 (submarines)	22
3A18 Sealing plugs for blanking stuffing tubes (submarines)	23
3A19 Temporary plugging of stuffing tubes (submarines)	24
3A20 Bushing sleeves for stuffing tubes through shielded	
bulkheads	25
3A21 Size and details of adapters used for changing size of	
installed bulkhead stuffing tubes (submarines)	26
3A22 Adapter assemblies for stuffing tubes MIL-S-24235	27
3A23 Bushing sleeves for stuffing tubes through shielded	
bulkheads	28
3A24 Steel stuffing tube cable assignment (submarines)	29
3A25 Steel stuffing tube cable assignment (submarines)	30

Group B - Stuffing Tubes (Surface Ships)

3B1 Stuffing tube and kickpipes minimum spacing (surface ships) .	31
3B2 Stuffing tube and pipe minimum spacing (surface ships)	32
3B3 Swage tube minimum spacing (surface ships)	33
3B4 Aluminum and steel stuffing tubes cable assignment	34
3B5 Aluminum and steel stuffing tubes cable assignment	35
3B6 Aluminum and steel stuffing tubes cable assignment	36
3B7 Aluminum and steel stuffing tubes cable assignment	37
3B8 Aluminum and steel stuffing tubes cable assignment	38
3B9 Aluminum and steel stuffing tubes cable assignment	39

DOD-STD-2003-3(NAVY)

24 June 1987

CONTENTS - Continued

Group B - Stuffing Tubes (Surface Ships) (Continued)

	<u>Page</u>
Figure 3B10 Stuffing tubes for steel or aluminum bulkheads (surface ships)	40
3B11 Stuffing tubes for steel or aluminum bulkheads (surface ships)	41
3B12 Stuffing tubes through shielded bulkheads (surface ships) ...	42
3B13 Stuffing tubes for ballistic bulkheads (surface ships)	43
3B14 Stuffing tubes through acoustical spaces (surface ships)	44
3B15 Stuffing tubes through acoustical spaces (surface ships)	45
3B16 Stuffing tubes through false decks (surface ships)	46
3B17 Stuffing tubes through false decks (surface ships)	47
3B18 Stuffing tubes through air spaces (surface ships)	48
3B19 Stuffing tubes for sonar dome area (surface ships)	49
3B20 Topside stuffing tubes with riser box (surface ships)	50
3B21 Topside stuffing tubes with riser boxes for medium steel decks (surface ships)	51
3B22 Topside stuffing tubes with riser box on medium steel decks not adjacent to a bulkhead (surface ships)	52
3B23 Topside stuffing tubes with riser box (surface ships)	53
3B24 Stuffing tube for steel and aluminum bulkheads (surface ships)	54
3B25 Multiple cable penetrator nomenclature	55
3B26 Cable information and assignment for MCP insert blocks	56
3B27 Multiple cable penetrator installation notes (type RGS and RGA)	57
3B28 Multiple cable penetrator installation in steel or aluminum bulkheads using two frame penetrator (type RGS and RGA)	58
3B29 Multiple cable penetrator details (type RGS and RGA)	59
3B30 Multiple cable penetrator details (type RGS and RGA)	60
3B31 Multiple cable penetrator details (type RGS and RGA)	61
3B32 Multiple cable penetrator installation details (type RGS and RGA)	62
3B33 Multiple cable penetrator frame in decks (type RGS and RGA) .	63
3B34 Multiple cable penetrator (type RGS and RGA) shield	64
3B35 Multiple cable penetrator riser box	65
3B36 Community cable tube - watertight decks (poured seal)	66
3B37 Community cable tube - watertight bulkheads (trowled seal) ..	67
3B38 Community stuffing tube for minesweepers	68
3B39 Community stuffing tubes for minesweepers (details)	69
3B40 Deck outlets for portable cables (surface ships)	70
3B41 Multiple cable penetrator cable assignment (type RGS and RGA)	71
3B42 Multiple cable penetrator cable assignment (type RGS and RGA)	72
3B43 Adapting stuffing tubes for smaller size cables using slotted packing disks	73
3B44 Changing stuffing tube sizes to accommodate smaller cables ..	74
3B45 Changing stuffing tube sizes to accommodate larger cable	75

DOD-STD-2003-3(NAVY)

24 June 1987

CONTENTS - Continued

Group B - Stuffing Tubes (Surface Ships) (Continued)

	<u>Page</u>
Figure 3B46 Sealing unused stuffing tubes in medium steel bulkheads and decks	76
3B47 Sealing degaussing cable in bulkhead stuffing tubes	77
3B48 Stuffing tubes bevel reducing adapter assemblies (MIL-S-24235/18)	78
3B49 MIL-S-24235/18 Stuffing tube and kickpipes minimum spacing ..	79
3B50 Stuffing tubes cable assignment using reducer adapters	80
3B51 Stuffing tubes cable assignment using reducer adapters	81
3B52 Stuffing tubes cable assignment using reducer adapters	82
3B53 Stuffing tubes cable assignment using reducer adapters	83
3B54 Round multi-cable penetrators installation notes	84
3B55 Round multiple cable penetrators (dimensions)	85
3B56 Round multi-cable penetrators	86
3B57 Multiple cable penetrators installation in steel or aluminum decks adjacent to bulkheads	87
3B58 Round multiple cable penetrator shield	88
3B59 Round multiple cable penetrator installation in steel or aluminum bulkhead	89
3B60 Stuffing tubes reduced diameter for decks and bulkheads with pipe protection	90
3B61 Aluminum and steel stuffing tubes cable assignment (left blank)	91
3B62 Multi-cable penetrators installation notes (type TW)	92
3B63 Multi-cable penetrators ordering/selection criteria (type TW)	93
3B64 Multi-cable penetrator (type TW) frame details	94
3B65 Multi-cable penetrator (type TW) sleeve installation	95
3B66 Multi-cable penetrators (type TW) typical installation in steel bulkhead	96

Group C - Stuffing Tubes (General)

3C1 Nylon stuffing tube typical installation	97
3C2 Nylon stuffing tube assembly	98
3C3 Nylon stuffing tube data	99
3C4 Nylon stuffing tube cable assignment	100
3C5 Nylon stuffing tube cable assignment	101
3C6 Nylon stuffing tube cable assignment	102
3C7 Nylon stuffing tube cable assignment	103
3C8 Nylon stuffing tube cable assignment (obsolete or discontinued cable)	104
3C9 Nylon stuffing tube cable assignment (obsolete or discontinued cable)	105
3C10 Nylon stuffing tube cable assignment (obsolete or discontinued cable)	106
3C11 Nylon stuffing tube cable assignment (obsolete or discontinued cable)	107

DOD-STD-2003-3(NAVY)
24 June 1987

CONTENTS - Continued

Group C - Stuffing Tubes (General)

	<u>Page</u>
Figure 3C12 Nylon stuffing tube cable assignment (obsolete or discontinued cable)	108
3C13 Stuffing tubes through refrigerated spaces	109
3C14 Stuffing tubes through refrigerated spaces	110
3C15 Stuffing tubes through refrigerated spaces	111
3C16 Stuffing tubes through refrigerated spaces	112
3C17 Community stuffing tubes for bulkheads	113
3C18 Stuffing tube inserts	114
3C19 Stuffing tube adapter	115
3C20 Accessories for MI cable	116
3C21 Nylon stuffing tube cable assignment	117

Group D - Kickpipes

3D1 Kickpipes through steel or aluminum decks	118
3D2 Kickpipes through steel or aluminum decks	119
3D3 Kickpipes through steel or aluminum decks	120
3D4 Kickpipes through non-watertight decks	121
3D5 Kickpipes through ballistic plating	122
3D6 Kickpipes through ballistic plating	123
3D7 Kickpipes through wooden decks	124
3D8 Kickpipes with unions	125

Group E -

3E1 Cable connections through pressure hulls of submarines	126
3E2 Sealing plugs for hull inserts on submarines	127
3E3 Passing cable through pressure hull of submarines using cable shearing valve	128
3E4 Hull fitting installation for sonar sphere	129
3E5 Passing SS type cable through pressure hull of submarines ...	130
3E6 Mounting pressure proof electrodes on submarines	131
3E7 Temporary sealing and securing pressure proof molded plug assemblies	132

DOD-STD-2003-3(NAVY)

24 June 1987

1. SCOPE

1.1 Purpose. The purpose of DOD-STD-2003-3 is to disseminate up-to-date information for swage tubes, stuffing tubes and kickpipes on surface ship and submarine.

1.1.1 Application. These installation standards shall be used by all installing activities. These standards do not identify ship or type, but do establish minimum standards of acceptance for NAVSEA ships. It is the responsibility of the user activity to determine which standard satisfies their requirements. It does not authorize relaxation of any requirement specifically invoked by new construction, conversion, overhaul, or refurbishment contracts. In instances where deviated design requirements (for example, ship type, ship class, and so forth) conflict with the requirements of this standard, the requirements of this standard shall govern. Any deviation for electric plant installation identified in this standard shall be submitted to NAVSEA 5622 for resolution.

2. REFERENCED DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standard. Unless otherwise specified, the following specifications and standard of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this standard to the extent specified herein.

SPECIFICATIONS

FEDERAL

GGG-W-646 - Wrench, Open End, Ratchet (TAC Pattern), for Tube Fittings, Electric Cable Terminals and Stuffing Tube Gland Nuts.

MILITARY

MIL-I-3064 - Insulation, Electrical, Plastic-Sealer.
 MIL-R-15624 - Rubber Gasket Material, 50 Durometer Hardness (Maximum).
 MIL-P-16685 - Packing, Material and Packing Preformed (Stuffing-Tube for Electric Cables).
 MIL-S-19622 - Stuffing Tubes, Nylon; and Packing Assemblies; General Specification for.
 MIL-S-24235 - Stuffing Tubes, Metal, and Packing Assemblies for Electric Cables, General Specification for.
 MIL-S-24235/1 - Stuffing Tube, Bulkhead, Pressureproof.

STANDARD

MILITARY

MIL-STD-278 - Welding and Casting Standard.

DOD-STD-2003-3(NAVY)

24 June 1987

2.1.2 Other Government documents. The following other Government documents form a part of this standard to the extent specified herein.

DOCUMENTS

DDS 100-1 - Reinforcement of Openings in Structure of Surface Ships Other than in Protective Plating.

DDS 100-2 - Openings in Decks and Bulkheads for Stuffing Tubes and Pipe.

(Copies of specifications, standards, and documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Order of precedence. In the event of a conflict between the text of this standard and the references cited herein, the text of this standard shall take precedence.

3. DEFINITIONS

3.1 Metal stuffing tube. Metal stuffing tube is a system of passing single electrical cables through decks and bulkheads and entering enclosed equipment on Naval ships. These are manufactured in accordance with MIL-S-24235.

3.1.1 Nylon stuffing tube. Nylon stuffing tube is a system of passing single electrical cable through electrical equipment on Naval ships. These are manufactured in accordance with MIL-S-19622.

3.2 Kickpipe. Kickpipe is a pipe welded into the deck with a stuffing tube attached. Kickpipes provide protection of electrical cable at deck penetrations and are used to clear an obstruction or preserve alignment. Kickpipes may be aluminum, steel or brass to suit the installation or standard pipe sizes to suit the required stuffing tube.

3.3 Swage tube. Swage tube is a system of passing single cables through decks on Naval ships that combines the features of the stuffing tube and kickpipes.

3.4 Multiple cable penetrator (MCP). MCP is a system of passing multiple cables through water and non-watertight bulkheads and decks in order to provide watertight, airtight and firetight penetration of electrical cable.

3.5 Community stuffing tube for bulkheads. Community stuffing tube for bulkheads is a system of passing multiple cables through ballast tank bulkheads on submarines.

3.6 Collective protective system (CPS). CPS is a system designed to inhibit the entry of chemical, biological, and radiological contaminants into collective protection zones on board ship. A collective protection zone is a section of the ship which is defined by a physical boundary that inhibits the entry of CBR contaminants into the zone. A total protection zone is pressurized to 2 inches WG and its supply ventilation air is continuously filtered to remove chemical vapors and CBR particulate and aerosols.

DOD-STD-2003-3(NAVY)

24 June 1987

4. GENERAL REQUIREMENTS

4.1 Cable penetrations. Cable penetrations of pressure hulls, pressure proof bulkheads, shielded bulkheads, ballistic bulkheads, false decks, riser boxes, decks, bulkheads and beams and other integral parts of the hull shall be in accordance with figures 3A1 through 3E7 and the requirements of DDS 100-1 and DDS-100-2.

4.1.1 Installation welding requirements. Unless otherwise specified on the individual figure, the welding of stuffing tubes, kickpipes, swage tubes and multi-cable penetrators shall be in accordance with the requirements of MIL-STD-278.

4.1.2 Cable penetration of structure. Cable penetrations of decks, bulkheads, beams and other integral parts of the hull shall conform to DDS 100-1 and DDS 100-2. Stuffing tubes in accordance with MIL-S-24235/1 shall be installed for cable penetrations of pressureproof submarine bulkheads and sonar domes which are filled with water under normal operating conditions. One half of the tube may be used for each penetration.

Metal stuffing tubes or multiple cable penetrators shall be used for cable penetrations of the following:

- (a) CPS boundaries.
- (b) Watertight cable trunks.
- (c) Watertight bulkheads.
- (d) Bulkheads designed to withstand a waterhead.
- (e) The portion of bulkheads specified to be watertight to a certain height.
- (f) That portion of bulkheads below the height of the sill or the coaming of compartment accesses.
- (g) Bulkheads surrounding compartments subject to flooding by sprinkling:
 - (1) Garbage disposal rooms.
 - (2) Battery shops.
 - (3) Medical operating rooms.
 - (4) Medical wards.

4.1.3 Cable penetration of decks and bulkheads forming boundaries of spaces containing volatile combustible or explosive materials. Only metal stuffing tubes shall be installed in decks and bulkheads forming the boundaries of spaces containing volatile combustible or explosive materials.

4.1.4 Cable penetration of decks, structural bulkheads, airtight bulkheads and fumetight bulkheads. Unless otherwise specified, cable penetration of decks, structural bulkheads, airtight bulkheads and fumetight bulkheads shall employ one of the following:

DOD-STD-2003-3(NAVY)
24 June 1987

- (a) Airtight metal stuffing tubes or multiple cable penetrators.
- (b) Fumetight chaffing collars (for multiple cable penetrations) or nipples (for single cable penetrations) having a minimum collar length of 3 inches with a minimum annular area between the cable and the collar of 1 inch with the entire void area within the collar (this includes the area between the collar and the cable and the area between the cables) packed with plastic sealer.

4.1.5 Multiple (two or more) penetrations of nonstructural steel bulkheads (other than wire mesh or expanded metal), bents, web frames, transverse girders, and longitudinal girders. Unless otherwise specified, multiple cable penetrations of nonstructural steel bulkheads, bents, web frames, transverse girders and longitudinal girders shall employ one of the following:

- (a) Metal stuffing tubes, multiple cable penetrators, nipples (for single cable penetrations) having a minimum length of 2 inches with a minimum annular area between cable and the nipple of 1/4 inch packed with plastic sealer.
- (b) Banding collars (for multiple cable penetrations) having a minimum collar length of 3 inches with a minimum annular area between the cable and the collar of 1 inch with the entire void area within the collar (this includes the area between the collar and the cable and the area between the cables) packed with plastic sealer.

Cable penetrations of vertical nontight structures within a compartment need not be sealed at intervals closer than every 20 feet horizontally. However, all chaffing collars of the structures selected for sealing shall be sealed.

4.1.6 Plastic sealer. After the cables are properly secured, plastic sealer electrical insulation, MIL-I-3064, type HF, shall be used to seal the space around the cable as follows:

- (a) In cable clamps and bushings entering the top of an electrical enclosure.
- (b) In bushings or nipples used for passing cables through light-tight and fumetight bulkheads.

Plastic sealer shall also be used to seal around cables as they enter stuffing tubes, kickpipes and sewage tubes as shown on the individual figures.

4.1.7 Cable penetrations spacing. The size of stuffing tube groups shall be limited to permit tightening of gland nuts in the group using stuffing tube wrench set, GGG-W-646, type II, class I, style A, form B, table VI. Penetration spacing is specified in DDS 100-2.

4.1.8 Stuffing tube packing. Stuffing tube packing shall be in accordance with MIL-P-16685, either the preformed (coil) class 2 or bulk class 1. When bulk packing is used, the first and last turns shall be part "A" (hard) and the intermediate turns shall be part "B" (soft) of class 1. Reinforced neoprene packing, in accordance with MIL-R-15624, CL I may be used as an alternate, asbestos free, packing material (see figure 3B48).

DOD-STD-2003-3(NAVY)
24 June 1987

4.1.9 Kickpipes. Kickpipes, aluminum, brass or steel, shall be standard pipe sizes. Ends of pipe shall be chamfered and burrs existing on the inside wall shall be removed to prevent chafing of cable.

5. DETAILED REQUIREMENTS

See figures

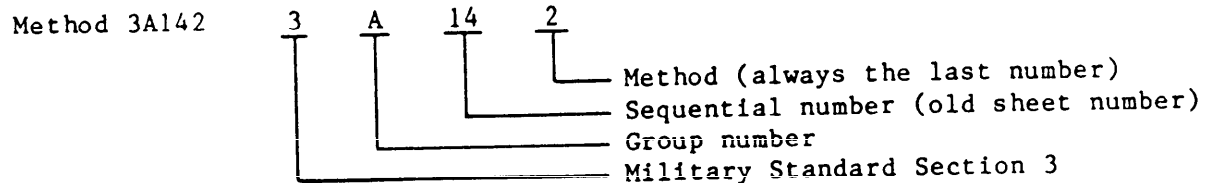
6. NOTES

6.1 Intended use. This section specifies the requirements for swage tubes, stuffing tubes and kickpipe methods to be employed both on surface ships and submarines. Standard methods identified for electric plant installation are intended for new construction only.

6.2 Designation of Electric Plant Installation Standard Methods figures. The Electric Plant Installation Standard Methods (DOD-STD-2003-3), contains drawings that depict Standard Methods that are applicable for general electric plant installation on both surface ships and submarines. Each drawing has been assigned a figure number. The methods shown on the figures are grouped together providing similar functions. These groups are:

- DOD-STD-2003-3 (Penetrations) Group
- A. Stuffing Tubes (Submarines)
 - B. Stuffing Tubes (Surface Ships)
 - C. Stuffing Tubes (General)
 - D. Kickpipes

The methods shown on the figures are identified by the following alphanumeric designation system:



Thus, method 3A142 identifies method 2, sequential number 14 in group A of DOD-STD-2003-3.

6.3 Subject term (key word) listing.

Stuffing tubes (submarines)
 Stuffing tubes (surface ships)
 Stuffing tubes (general)
 Kickpipes

Preparing activity:
 Navy - SH
 (Project GDRQ-N066-3)

DOD-STD-2003-3(NAVY)

24 JUNE 1987

NOTES

1. THE PACKING INSTRUCTIONS ARE APPLICABLE TO STUFFING TUBE ON DWG NAVSEC NO 8000-56202-73899 SUBMARINES
2. THIS FIGURE SUPERSEDES SHEET 3A1 OF DRAWING 801-5001027 AND SECTION 5, SHEET 72, OF DRAWING NAVSEC NO 9000-56202-73980

INSTRUCTIONS FOR PACKING STUFFING TUBES - SUBMARINES (SEE NOTE 1)

1 TYPE 1

- A. BOTH ENDS OF TUBE MAY BE PACKED WITH PRE-FABRICATED PACKING IN ACCORDANCE WITH MIL-P-16495
- B. BOTH GLAND NUTS SHALL BE TIGHTENED TO GIVE THE PREPARED PACKING AN INITIAL SET. THEN THE GLAND NUTS SHALL BE TIGHTENED TO LOCATE A GLAND RING (J4113) ADDED TO EACH END OF THE TUBE
- C. BOTH GLAND NUTS SHALL BE TIGHTENED WHERE THE WITH A MINIMUM OUTSIDE DIAMETER. WHERE THE GLAND NUT CANNOT BE SUFFICIENTLY TIGHTENED, ADDITIONAL SPLIT GLAND RINGS (J4113) MAY BE ADDED TO EACH END OF THE TUBE. THE GLAND NUTS IN THE FINAL TIGHTENED POSITION SHALL HAVE THE UNDERCUT AND 2 OR 3 THREADS EXPOSED

2 TYPE 2

- A. THE TUBES SHOULD BE INSTALLED IN THE BULKHEAD WITH THE AIR RELIEF SCREW ON THE TOP AND THE 90° 1/8" I.P.S. FITTING ON THE BOTTOM
- B. SAME AS 1(A) ABOVE
- C. SAME AS 1(B) ABOVE
- D. SAME AS 1(C) ABOVE
- E. WITH THE AIR RELIEF SCREW BACKED OFF AND USING A LEVER OPERATED, LUBRICATING GUN, SPEC MIL G-16566 WITH A FLEXIBLE HOSE, FILL THE CENTER PORTION OF THE STUFFING TUBE WITH SEALING COMPOUND. SEE NOTE 3 OF NOTES FOR MATERIAL WHEN SEALING COMPOUND EXUDES FROM THE AIR RELIEF SCREW. SECURE THE SCREW AND CONTINUE SEALING THE TUBE WITH SEALING COMPOUND. WITH AN ADDITIONAL EIGHT TO FIFTEEN STROKES, THE LUBRICATING GUN, THE ADDITIONAL STROKES ARE TO MAKE CERTAIN THAT THE CENTER PORTION OF THE TUBE IS COMPLETELY FILLED WITH THE SEALING COMPOUND. FREE OR EXCESSIVE LEAKAGE OF THE SEALING COMPOUND AROUND THE GLAND NUTS INDICATES THAT THE TUBE HAS BEEN IMPROPERLY PACKED. WHEN THIS OCCURS, THE TUBE END MUST BE REPAIRED

3 TYPE 3

- A. SAME AS 1(A) ABOVE
- B. SAME AS 1(B) ABOVE
- C. SAME AS 1(C) ABOVE

NOTES:

1. STUFFING TUBES DESIGNED FOR CABLES IN ACCORDANCE WITH MIL C-915, MIL C-24640 & MIL C-24643
2. TUBES MAY BE THROWN OUT OF LINE BY WELDING. THIS IS PERMISSIBLE UP TO 1/16"
3. SEALING COMPOUNDS AND ACTIVATORS ARE TO BE EQUAL TO ANY OF THE TYPES LISTED IN THE TABLE OF SEALING COMPOUNDS. THE INDIVIDUAL ACTIVATOR WITH SEALING COMPOUND IS TO BE USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
4. AFTER THE CABLES ARE PROPERLY SECURED, PLASTIC SEALER ELECTRICAL INSULATION NAVY DEPARTMENT SPECIFICATION MIL 1004 TYPE HF SHALL BE USED TO SEAL THE SPACE AROUND THE CABLE WITHIN THE GLAND NUT, AND ALSO WITHIN THE OPEN END OF STUFFING TUBES. AFTER THE TUBES ARE PACKED
5. STUFFING TUBES WITH INSUFFICIENT CLEARANCE FOR PASSING CABLES MAY BE REAMED IN PLACE, NOT EXCEEDING .001"
6. MANY THERMOSETTING PLASTIC INGREDIENTS HAVE POOR SHELF LIFE. IT IS RECOMMENDED THAT ACTIVATOR AND SEALING COMPOUND BE USED WITHIN 6 MONTHS IN STORAGE BE DISCARDED AND REPLACED
7. INSTRUCTIONS CONTAINED HEREIN ARE INTENDED FOR USE WITH PRESENTLY INSTALLED TUBES WHERE IT IS NECESSARY TO REPLACE EXISTING CABLES
- A. REPLACE EXISTING CABLES
- B. INSTALL UNDERSIZED CABLES

SEALING COMPOUNDS	
BRAND NAME	SEALING AGENT
XP-246 GROUP 3	AL-TOR ACTIVATOR
ACME BULLETIN 575	AL-77 HARDNER
MM B MLC 1130	MM B M
RESIN B EC-776	ACTIVATOR
PRIMER	PRODUCTS
PRO-RE-CC	PR-1201 A
PR-1201 B	ACTIVATOR
	RESEARCH CO.

SH 132317077

FIGURE 3A1. Passing cable through pressure proof bulkheads-submarines instructions for packing stuffing tubes.

- 4 TYPE 4
 - A. SAME AS 2(A) ABOVE
 - B. BOTH ENDS OF THE TUBE SHALL BE PACKED WITH A SINGLE RING, BUTT ENDED TIGHT OF (NAVY SYMBOL 1430) FLEXIBLE METALLIC PACKING FORCED TIGHTLY INTO PLACE, FOLLOWED BY ONE RING OF SEALING PACKING SPEC MIL-P-16495 PART B AND ONE TAPERED RING OF SEALING PACKING SPEC MIL-P-16495 PART C. THESE PACKING RINGS SHALL BE SET UP TIGHTLY USING THE SPACER SLEEVE WHICH PROVIDES THE CAVITY FOR THE SEALING COMPOUND. THE PURPOSE OF THE PACKING UP TO THIS POINT IS TO SEAL OFF THE SPACE AROUND THE CABLE WITHIN THE PIPE EXTENSION TO PREVENT ENTRY OF THE SEALING COMPOUND
 - C. SAME AS 1(A) ABOVE
 - D. SAME AS 1(B) ABOVE
 - E. SAME AS 1(C) ABOVE
 - F. SAME AS 2(B) ABOVE
- 5 GENERAL INSTRUCTIONS (ALL TYPES)
 - A. WITH GLAND NUTS RINGS AND PACKING SETS IN PLACE CARE MUST BE TAKEN TO PROPERLY GUIDE THE CABLE THROUGH THE TUBE TO PREVENT DAMAGE OR INJURY TO THE PACKING SETS
 - B. ONCE THE SETS ARE IN PLACE, INITIAL CLEARANCE BETWEEN THE PACKING SET AND THE ARMOR IS NOT SUFFICIENT TO ALLOW THE CABLE TO BE PULLED THROUGH THE STUFFING TUBE WITH THE PACKING SET AND GLAND NUT IN PLACE. THE PACKING SETS MAY BE STRETCHED AND THE GLAND NUT RING AND PACKING ALLOWED TO RIDE FREE ON THE CABLE UNTIL THE CABLE IS PULLED INTO POSITION. THE PACKING SET MAY BE STRETCHED BY THE USE OF A SMOOTH TAPERED ROD
 - C. WHEN THE WELDING ROOM IS AVAILABLE, INSTALLATION OF THE TUBE SHALL BE MADE IN THE WELDING ROOM. IT IS NECESSARY IT SHALL BE THE DIAMETER OF THE TUBE PLUS 1/8" THICKNESS 3/16"
 - D. WELDING SHALL BE IN ACCORDANCE WITH PUBLICATION NAVSEA 0900 LP 006-9010 AND NAVSEA 0900 LP 000 1000

DOD-STD-2003-3(NAVY)

24 JUNE 1987

NOTES

1. THIS FIGURE SUPERSEDES SHEET 3A2 OF DRAWING 803-5001077 AND SECTION 5, SHEET 7.3 THRU 7.9A AND SHEET 122 THRU 130 OF DRAWING NAVSEC NO 9000-58202-73980

MIL-S-24235/																											CABLE TYPES																											TUBE TYPES																										
TUBE SIZE & PACKING INFORMATION																																																																																
SYM	GLAND NO	LOCK RING NO	FLANG NO	BEVEL NO	GROM NO	PC NO	WSHR NO	WSHR NO	CVSF	DCOF	DIHOF	DLT	DIH	DIHWA	DP3	DRW	DRWA	DSGA	DSGU	DSS	DSWS	ECM	ECMA	ECMA	ECMA	ECMA	ECMA	ECMA	ECMA	ECMA																																																		
TUBE SIZE	GLAND NO	LOCK RING NO	FLANG NO	BEVEL NO	GROM NO	PC NO	WSHR NO	WSHR NO	CVSF	DCOF	DIHOF	DLT	DIH	DIHWA	DP3	DRW	DRWA	DSGA	DSGU	DSS	DSWS	ECM	ECMA	ECMA	ECMA	ECMA	ECMA	ECMA	ECMA	ECMA																																																		
2405.1	1	1-019	1-028	2-121	2-082	2-081	2-120	2-121	1-1/2 3/5	2-120	2-121	2-122	2-123	2-124	2-125	2-126	2-127	2-128	2-129	2-130	2-131	2-132	2-133	2-134	2-135	2-136	2-137	2-138	2-139	2-140																																																		
2405.2	2	2-019	2-028	2-221	2-282	2-281	2-220	2-221	2-2/2 3/5	2-220	2-221	2-222	2-223	2-224	2-225	2-226	2-227	2-228	2-229	2-230	2-231	2-232	2-233	2-234	2-235	2-236	2-237	2-238	2-239	2-240																																																		
2405.3	3	3-019	3-028	3-121	3-082	3-081	3-120	3-121	3-1/2 3/5	3-120	3-121	3-122	3-123	3-124	3-125	3-126	3-127	3-128	3-129	3-130	3-131	3-132	3-133	3-134	3-135	3-136	3-137	3-138	3-139	3-140																																																		
2405.4	4	4-019	4-028	4-121	4-082	4-081	4-120	4-121	4-1/2 3/5	4-120	4-121	4-122	4-123	4-124	4-125	4-126	4-127	4-128	4-129	4-130	4-131	4-132	4-133	4-134	4-135	4-136	4-137	4-138	4-139	4-140																																																		
2405.5	5	5-019	5-028	5-121	5-082	5-081	5-120	5-121	5-1/2 3/5	5-120	5-121	5-122	5-123	5-124	5-125	5-126	5-127	5-128	5-129	5-130	5-131	5-132	5-133	5-134	5-135	5-136	5-137	5-138	5-139	5-140																																																		
2405.6	6	6-019	6-028	6-121	6-082	6-081	6-120	6-121	6-1/2 3/5	6-120	6-121	6-122	6-123	6-124	6-125	6-126	6-127	6-128	6-129	6-130	6-131	6-132	6-133	6-134	6-135	6-136	6-137	6-138	6-139	6-140																																																		
2405.7	7	7-019	7-028	7-121	7-082	7-081	7-120	7-121	7-1/2 3/5	7-120	7-121	7-122	7-123	7-124	7-125	7-126	7-127	7-128	7-129	7-130	7-131	7-132	7-133	7-134	7-135	7-136	7-137	7-138	7-139	7-140																																																		
2405.8	8	8-019	8-028	8-121	8-082	8-081	8-120	8-121	8-1/2 3/5	8-120	8-121	8-122	8-123	8-124	8-125	8-126	8-127	8-128	8-129	8-130	8-131	8-132	8-133	8-134	8-135	8-136	8-137	8-138	8-139	8-140																																																		
2405.9	9	9-019	9-028	9-121	9-082	9-081	9-120	9-121	9-1/2 3/5	9-120	9-121	9-122	9-123	9-124	9-125	9-126	9-127	9-128	9-129	9-130	9-131	9-132	9-133	9-134	9-135	9-136	9-137	9-138	9-139	9-140																																																		
2406.1	1	1-020	1-029	2-131	2-072	2-071	2-130	2-131	2-1/2 3/5	2-130	2-131	2-132	2-133	2-134	2-135	2-136	2-137	2-138	2-139	2-140	2-141	2-142	2-143	2-144	2-145	2-146	2-147	2-148	2-149	2-150																																																		
2406.2	2	2-020	2-029	2-231	2-272	2-271	2-230	2-231	2-2/2 3/5	2-230	2-231	2-232	2-233	2-234	2-235	2-236	2-237	2-238	2-239	2-240	2-241	2-242	2-243	2-244	2-245	2-246	2-247	2-248	2-249	2-250																																																		
2406.3	3	3-020	3-029	3-131	3-072	3-071	3-130	3-131	3-1/2 3/5	3-130	3-131	3-132	3-133	3-134	3-135	3-136	3-137	3-138	3-139	3-140	3-141	3-142	3-143	3-144	3-145	3-146	3-147	3-148	3-149	3-150																																																		
2406.4	4	4-020	4-029	4-131	4-072	4-071	4-130	4-131	4-1/2 3/5	4-130	4-131	4-132	4-133	4-134	4-135	4-136	4-137	4-138	4-139	4-140	4-141	4-142	4-143	4-144	4-145	4-146	4-147	4-148	4-149	4-150																																																		
2407.1	1	1-021	1-030	2-141	2-073	2-074	2-140	2-141	2-1/2 3/5	2-140	2-141	2-142	2-143	2-144	2-145	2-146	2-147	2-148	2-149	2-150	2-151	2-152	2-153	2-154	2-155	2-156	2-157	2-158	2-159	2-160																																																		
2407.2	2	2-021	2-030	2-241	2-273	2-274	2-240	2-241	2-2/2 3/5	2-240	2-241	2-242	2-243	2-244	2-245	2-246	2-247	2-248	2-249	2-250	2-251	2-252	2-253	2-254	2-255	2-256	2-257	2-258	2-259	2-260																																																		
2407.3	3	3-021	3-030	3-141	3-073	3-074	3-140	3-141	3-1/2 3/5	3-140	3-141	3-142	3-143	3-144	3-145	3-146	3-147	3-148	3-149	3-150	3-151	3-152	3-153	3-154	3-155	3-156	3-157	3-158	3-159	3-160																																																		
2407.4	4	4-021	4-030	4-141	4-073	4-074	4-140	4-141	4-1/2 3/5	4-140	4-141	4-142	4-143	4-144	4-145	4-146	4-147	4-148	4-149	4-150	4-151	4-152	4-153	4-154	4-155	4-156	4-157	4-158	4-159	4-160																																																		
2407.5	5	5-021	5-030	5-141	5-073	5-074	5-140	5-141	5-1/2 3/5	5-140	5-141	5-142	5-143	5-144	5-145	5-146	5-147	5-148	5-149	5-150	5-151	5-152	5-153	5-154	5-155	5-156	5-157	5-158	5-159	5-160																																																		
2407.6	6	6-021	6-030	6-141	6-073	6-074	6-140	6-141	6-1/2 3/5	6-140	6-141	6-142	6-143	6-144	6-145	6-146	6-147	6-148	6-149	6-150	6-151	6-152	6-153	6-154	6-155	6-156	6-157	6-158	6-159	6-160																																																		
2407.7	7	7-021	7-030	7-141	7-073	7-074	7-140	7-141	7-1/2 3/5	7-140	7-141	7-142	7-143	7-144	7-145	7-146	7-147	7-148	7-149	7-150	7-151	7-152	7-153	7-154	7-155	7-156	7-157	7-158	7-159	7-160																																																		
2407.8	8	8-021	8-030	8-141	8-073	8-074	8-140	8-141	8-1/2 3/5	8-140	8-141	8-142	8-143	8-144	8-145	8-146	8-147	8-148	8-149	8-150	8-151	8-152	8-153	8-154	8-155	8-156	8-157	8-158	8-159	8-160																																																		
2407.9	9	9-021	9-030	9-141	9-073	9-074	9-140	9-141	9-1/2 3/5	9-140	9-141	9-142	9-143	9-144	9-145	9-146	9-147	9-148	9-149	9-150	9-151	9-152	9-153	9-154	9-155	9-156	9-157	9-158	9-159	9-160																																																		
2408.1	1	1-022	1-031	2-151	2-092	2-093	2-150	2-151	2-1/2 3/5	2-150	2-151	2-152	2-153	2-154	2-155	2-156	2-157	2-158	2-159	2-160	2-161	2-162	2-163	2-164	2-165	2-166	2-167	2-168	2-169	2-170																																																		
2408.2	2	2-022	2-031	2-251	2-292	2-293	2-250	2-251	2-2/2 3/5	2-250	2-251	2-252	2-253	2-254	2-255	2-256	2-257	2-258	2-259	2-260	2-261	2-262	2-263	2-264	2-265	2-266	2-267	2-268	2-269	2-270																																																		
2408.3	3	3-022	3-031	3-151	3-092	3-093	3-150	3-151	3-1/2 3/5	3-150	3-151	3-152	3-153	3-154	3-155	3-156	3-157	3-158	3-159	3-160	3-161	3-162	3-163	3-164	3-165	3-166	3-167	3-168	3-169	3-170																																																		
2408.4	4	4-022	4-031	4-151	4-092	4-093	4-150	4-151	4-1/2 3/5	4-150	4-151	4-152	4-153	4-154	4-155	4-156	4-157	4-158	4-159	4-160	4-161	4-162	4-163	4-164	4-165	4-166	4-167	4-168	4-169	4-170																																																		
2408.5	5	5-022	5-031	5-151	5-092	5-093	5-150	5-151	5-1/2 3/5	5-150	5-151	5-152	5-153	5-154	5-155	5-156	5-157	5-158	5-159	5-160	5-161	5-162	5-163	5-164	5-165	5-166	5-167	5-168	5-169	5-170																																																		
2408.6	6	6-022	6-031	6-151	6-092	6-093	6-150	6-151	6-1/2 3/5	6-150	6-151	6-152	6-153	6-154	6-155	6-156	6-157	6-158	6-159	6-160	6-161	6-162	6-163	6-164	6-165	6-166	6-167	6-168	6-169	6-170																																																		
2408.7	7	7-022	7-031	7-151	7-092	7-093	7-150	7-151	7-1/2 3/5	7-150	7-151	7-152	7-153	7-154	7-155	7-156	7-157	7-158	7-159	7-160	7-161	7-162	7-163	7-164	7-165	7-166	7-167	7-168	7-169	7-170																																																		
2408.8	8	8-022	8-031	8-151	8-092	8-093	8-150	8-151	8-1/2 3/5	8-150	8-151	8-152	8-153	8-154	8-155	8-156	8-157	8-158	8-159	8-160	8-161	8-162	8-163	8-164	8-165	8-166	8-167	8-168	8-169	8-170																																																		
2408.9	9	9-022	9-031	9-151	9-092	9-093	9-150	9-151	9-1/2 3/5	9-150	9-151	9-152	9-153	9-154	9-155	9-156	9-157	9-158	9-159	9-160	9-161	9-162	9-163	9-164	9-165	9-166	9-167	9-168	9-169	9-170																																																		
2409.1	1	1-023	1-032	2-161	2-094	2-095	2-160	2-161	2-1/2 3/5	2-160	2-161	2-162	2-163	2-164	2-165	2-166	2-167	2-168	2-169	2-170	2-171	2-172	2-173	2-174	2-175	2-176	2-177	2-178	2-179	2-180																																																		
2409.2	2	2-023	2-032	2-261	2-294	2-295	2-260	2-261	2-2/2 3/5	2-260	2-261	2-262	2-263	2-264	2-265	2-266	2-267	2-268	2-269	2-270	2-271	2-272	2-273	2-274	2-275	2-276	2-277	2-278	2-279	2-280																																																		
2409.3	3	3-023	3-032	3-161	3-094	3-095	3-160	3-161	3-1/2 3/5	3-160	3-161	3-162	3-163	3-164	3-165	3-166	3-16																																																															

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES

1. THIS FIGURE SUPERSEDES SHEET 3A3 OF DRAWING
803-5001027 AND SECTION 5, SHEET 73 THRU 79A
AND SHEET 122 THRU 130 OF DRAWING NAVSEC
NO 8000 56202-73880

MIL-S-24235										CABLE TYPES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
TUBE SIZE & PACKING INFORMATION										TUBE SIZE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
SYM NO	TUBE NO	LOCK RING	W/HR	BEVEL	GROM	PC NO	NO	PC NO	NO	FHOF	FNW	FNWA	FPS	FSGA	FSGU	FSS	MCSF	MDU	MDY	MHOF	MMOF	MNWF	MNWA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA	NO DIA

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES

1. THIS FIGURE SUPERSEDES SHEET 3A4 OF DRAWING
603-501027 AND SECTION 5, SHEET 73 THRU 79A AND
SHEET 122 THRU 130 OF DRAWING NAVSEC
NO 1000-58202-73680

[illegible]

FIGURE 3A4. Steel stuffing tube cable assignment.

SH 132317080

NOTE :
1. THIS SHEET SUPERSEDES SECTION 5, SHEET 73 THRU 79A
AND SHEET 122 THRU 130 OF DRAWING 11A15SEC
NO 9000-SE-202-73960

[illegible]

FIGURE 3A5. Steel stuffing tube cable assignment (submarines).

SH 132317081

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTE
THIS FIGURE SUPERSEDES SHEET 3A6 OF DRAWING
80000-5001027 AND SECTION 5, SHEET 73 THRU 79A AND
182-2 THRU 130 OF DRAWING, NAVSEC NO
90000-55202-73980

[illegible]

FIGURE 3A6. Steel stuffing tube cable assignment (submarines).

SH 132317082

NOTE:

THIS FIGURE SUPERSEDES SHEET 3A7 OF DRAWING
8003-5001027 SECTION 5, SHEET 73 T14RU 79A AND SHEET 122
T14RU 130 OF DRAWING NAVSEC NO 1000-56202-73980

[illegible]

FIGURE 3A7. Steel stuffing tube cable assignment (submarines).

SH 132317083

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTE:
THIS FIGURE SUPERSEDES SHEET 3A8 OF DRAWING
803-5001027 AND SECTION 5, SHEET 73 THRU 79A
AND SHEET 122 THRU 130 OF DRAWING, NAVSEC
NO. 9000-56202-73980

MIL-S-24235										CABLE TYPES										TUBE TYPES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
TUBE SIZE & PACKING INFORMATION										CABLE TYPES										TUBE TYPES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
SYM NO	TUBE NO	TUBE SIZE	ELAMP		LOCK		GLAND		BEVEL	GROM		ISWA	ISWU		ISWF	ISSOMA		ISSOMU		ISSOMUS		IS75MU		2A	2AU		2AUS		2CS		2SA		2SU		2SUS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
			PC NO	PC NO	PC NO	PC NO	PC NO	PC NO		PC NO	PC NO		PC NO	PC NO		PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO		PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO	PC NO

SH 132317084

FIGURE 3A8. Steel stuffing tube cable assignment.

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTE:

1. SEE FIGURE 3A24 AND 3A25 FOR CONTINUED CABLE INFO AND STUFFING TUBE ASSIGNMENT CHARTS.
2. THIS FIGURE SUPERSEDES SHEET 3A9 OF DRAWING 803-5001027.

MIL-S-24235										CABLE TYPES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
TUBE SIZE & PACKING INFORMATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SYM NO	TUBE SIZE	FLANGE NO	LOCK RING NO	FLANGE BEVEL NO	GROM NO	PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO		PC NO	

FIGURE 3A9. Steel stuffing tube cable assignment (submarines).

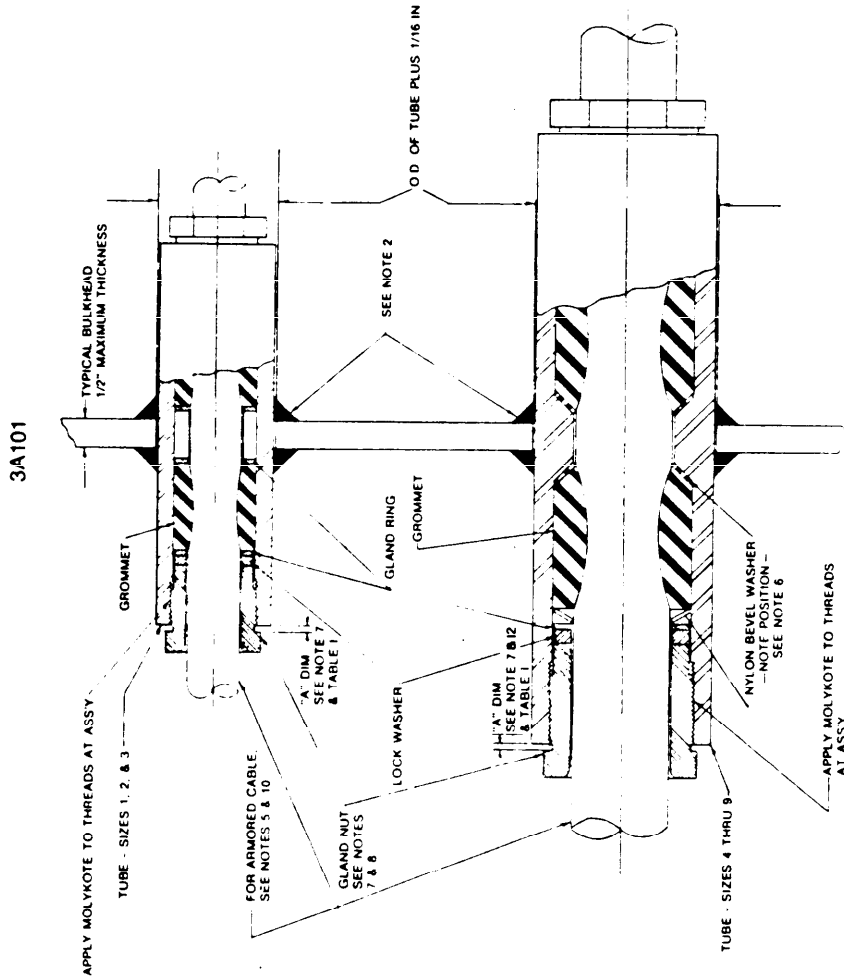
SH 132317085

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

- 1 STUFFING TUBES ARE DESIGNED FOR CABLES IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, LATEST REVISIONS MIL-C-915
- 2 ALL WELDING SHALL COMPLY WITH APPROVED METHODS NAVSHIPS 0900-LP-006-9010
- 3 TUBES MAY BE THROWN OUT OF LINE BY WELDING. THIS IS PERMISSIBLE UP TO 1/16 INCH
- 4 FOR NON-NUCLEAR BULKHEADS, GROMMETS MAY BE OF NEOPRENE (BLACK) FOR NUCLEAR BULKHEADS, GROMMETS SHALL BE OF SILICONE (RED OR WHITE)
- 5 TO PREVENT WATER SEEPAGE WITH ARMORED CABLE, USE A MIXTURE CONSISTING OF 3 TO 4 PARTS BY WEIGHT OF DC-11 (DOW CORNING OR EQUAL) & 1 PART BY WEIGHT OF CORNING GLASS FIBER CORNING FIBRE GLASS CORP. OR EQUAL. SEE NOTE 10
- 6 APPLYING THIS MIXTURE TO GROMMETS OR CABLE
- 7 CABLE SHALL BE TAKEN TO ASSEMBLE THE BEVEL WASHERS IN THE POSITION INDICATED HEREON
- 8 ALL GLAND NUTS SHALL BE TIGHTENED WITH A TORQUE WRENCH, USING THE FOLLOWING PROCEDURE: TIGHTEN GLAND NUTS TO AN "A" DIM OF APPROXIMATELY 1/8" (NO THREADS VISIBLE ON GLAND NUT) WHENEVER POSSIBLE WITHOUT EXCEEDING THE MAXIMUM TORQUE INDICATED IN TABLE 1 FOR A PARTICULAR TUBE SIZE. IF THE TORQUE RESTRICTION APPLIES ONLY TO TUBE SIZES 1 THROUGH 4, THE MAXIMUM TORQUE IS OBTAINED BEFORE THE 1/8" SPACING REQUIREMENT IS ACHIEVED. THE "A" DIM SHALL NOT EXCEED 1/4" IN THE EVENT MINIMUM TORQUE (AS INDICATED IN TABLE 1) IS NOT OBTAINED AT 1/8". CONTINUE TO TIGHTEN THE GLAND NUT UNTIL THIS TORQUE IS REACHED. IF METAL TO METAL CONTACT IS ACHIEVED WITHOUT OBTAINING MINIMUM TORQUE, THE GLAND NUT SHALL BE BACKED OUT AND THE GLAND NUT SHALL BE REINSTALLED IN THE STUFFING TUBE AND THE GLAND NUT RINGS INSURED NO MORE THAN TWO ADDITIONAL GLAND RINGS IN EACH END OF A TUBE TO RAISE THE TORQUE VALUE TO THE MINIMUM SPECIFIED IN TABLE 1
- 9 IT IS RECOMMENDED THAT SOCKETS (TYPE II, CLASS 1, STYLE A, FORM B, STANDARD WALL OCTAGON) AND WRENCH HEADS (TYPE I, CLASS 1, STYLE A, OPEN WATCHEE, CHROMIUM, MULTIPURPOSE), MANUFACTURED UNDER SPECIFICATION GGG-W-446 (AMENDMENT 1 OR LATER), BE USED WITH A SUITABLE TORQUE WRENCH (PREFERABLY A SENSORY SIGNALING TYPE) TO TIGHTEN GLAND NUTS. TORQUE VALUES LISTED IN TABLE WERE OBTAINED USING SOCKETS AND WRENCH HEADS LISTED ABOVE
- 10 EXISTING GLAND NUTS (MANUFACTURED UNDER BU-SHIP'S DWG 815-1197030, REV A) MAY BE USED PROVIDED CARE IS TAKEN TO INSURE A GOOD FIT BETWEEN THE GLAND NUT AND THE APPLICABLE SOCKET. THIS IS NECESSARY TO PREVENT THE GLAND NUT FROM CORNERS AND WEDGING OF THE SOCKET ON THE GLAND NUT, CAUSING ERRONEOUS TORQUE READINGS

- 10 METHODS FOR APPLYING GLASS FLOCK MIXTURE (A) COAT ENTIRE INNER SURFACE AND LEADING EDGE OF SPLIT GROMMET WITH MIXTURE JUST PRIOR TO ATTACHMENT TO CABLE. GROMMET SHOULD BE ATTACHED JUST OUTSIDE OF TUBE TO MINIMIZE LOSS OF MIXTURE (B) COAT THAT PORTION OF THE CABLE THAT WILL BE UNDER GROMMET (THIS SHALL BE DONE JUST PRIOR TO PULLING FINAL FEW INCHES OF CABLE INTO TUBE)
- 11 FOR BULKHEADS IN EXCESS OF 1/2 INCH BUT NOT GREATER THAN 1 INCH, TUBE BODY DIMENSIONS SHALL BE MODIFIED AS SHOWN
- 12 THE "A" DIMENSION FOR TUBE SIZES 5 THRU 9 SHOWN IN TABLE ONE ARE DESIRED DIMENSIONS. VARIATIONS FROM THIS DIMENSION CAN BE APPROVED LOCALLY AT THE DISCRETION OF THE NAVAL ELECTRICAL DESIGN REPRESENTATIVE. PROVIDE A MAXIMUM DIMENSION OF 5/16 INCH FOR TUBE SIZES 1 THRU 4. DIMENSIONS AND THE INSTALLED CABLE ARE FIRST IN COMPLIANCE WITH APPLICABLE SPECIFICATIONS
- 13 THIS FIGURE SUPERSEDES SHEET 3A10 OF DRAWING 803-5001027 AND SECTION 5 SHEET 118 OF DRAWING NAVSEC NO 8000-58202-73980



TUBE SIZE	CENTER SECTION DIMENSION	TUBE LENGTH - IN.
1	1.3/4	9-1/2
2	1.3/4	7-1/8
3	1.3/4	9-3/8
4	1.3/4	10-7/8
5	1.3/4	11-1/2
6	1.3/4	12-1/4
7	1.3/4	12-1/2
8	1.3/4	12-3/4
9	1.3/4	12-3/4

TUBE SIZE	TORQUE (FT.-LB.)	MAX "A" DIM (INCHES)
1	30	1/4
2	50	1/4
3	75	1/4
4	100	1/4
5	NO MAX	1/8
6	NO MAX	1/8
7	NO MAX	1/8
8	NO MAX	1/8
9	NO MAX	1/8

FIGURE 3A10. Stuffing tubes for passing cables through pressure proof bulkheads (submarines).

SH 132317086

2 THIS FIGURE SUPERSEDES SHEET 3A11 OF DRAWING 803-5001027
AND SECTION 5, SHEET 69 OF DRAWING NA1/SEC NO. 8000-S6202-73980



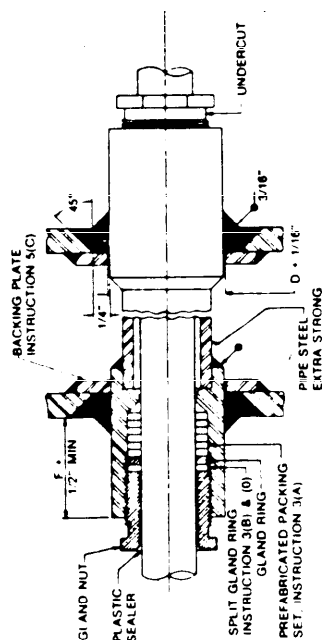
18

DOD-STD-2003-3(NAVY)
24 JUNE 1987

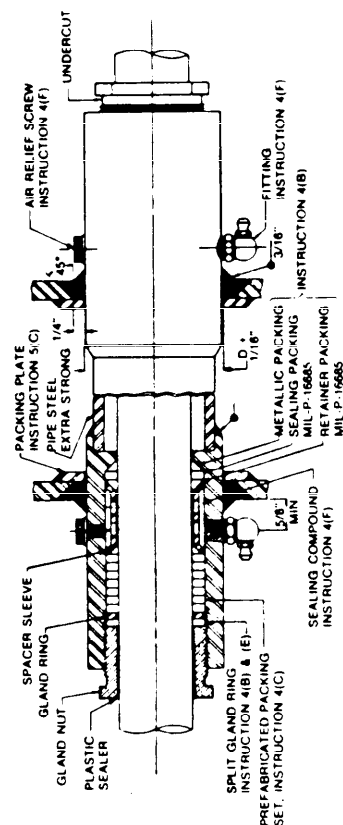
NOTES

1. SEE FIGURE 3A11 FOR INSTRUCTIONS.
2. THIS FIGURE SUPERSEDES SHEET 3A12 OF DRAWING 803-500 1027 AND SECTION 5, SHEET 70 OF DRAWING NAVSEC NO 9000-58202-73980

3A121
TYPE 3



3A122
TYPE 4



SH 132317088

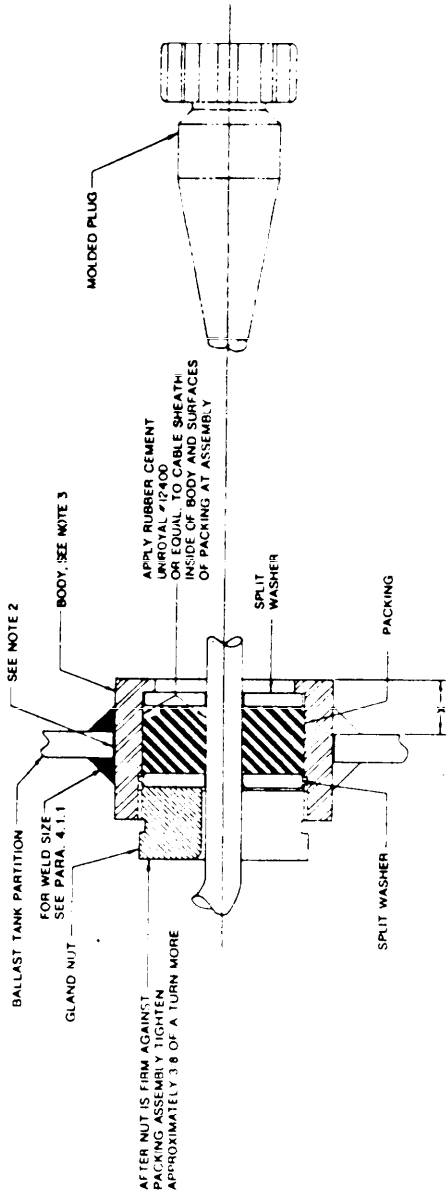
FIGURE 3A12. Stuffing tubes for passing cable through pressure proof bulkheads type 3&4 (submarines).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

- 1. TUBES MAY BE THROWN OUT OF LINE BY WELDING. THIS IS PERMISSIBLE UP TO 1/16".
- 2. HOLE DIA. SHALL BE OUTSIDE DIA. OF TUBE PLUS 1/16".
- 3. POSITION STUFFING TUBE SO THAT GLAND NUT IS ON THE MOST ACCESSIBLE SIDE OF BALLAST TANK PARTITION.
- 4. THIS FIGURE SUPERSEDES SHEET 3A13 OF DRAWING 803-5001027 AND SECTION 5, SHEET 133 OF DRAWING NAVSEC NO. 9000-SI-202-73980

3A131



APPLICATION TABLE			
STUFFING TUBE SYM. NO.	CABLE TYPE	MOLDED PLUG SPEC. MIL. C-24231	DIMENSION X
2425	TSS-4 DSS-3 DSS-4	713	9/16
2425 1	TSS-4 FSS-2	713 1	3/4
2425 2	FSS-4 MSS-6	713 1	3/4

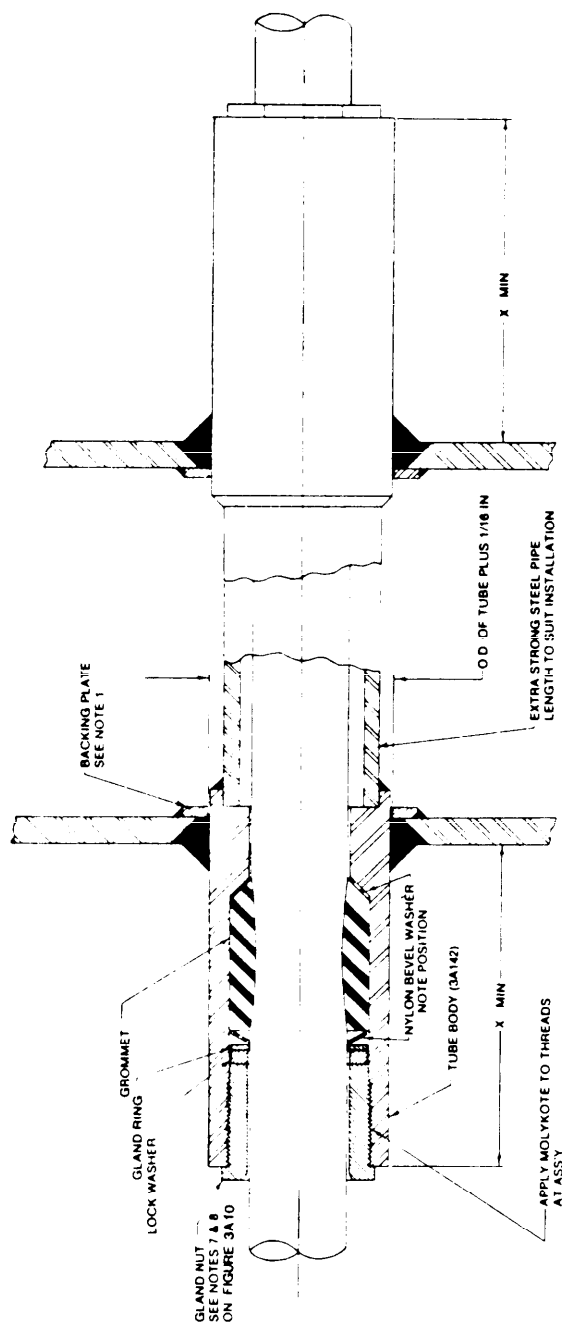
FIGURE 3A13. Passing cable through ballast tank partitions (submarines).

SH 132317089

DOD-STD-2003-3(NAVY)
24 JUNE 1987

- NOTES
1. WHEN BACKING PLATE IS USED IT SHALL BE THE THE DIAMETER OF THE TUBE PLUS (1) ONE INCH 3/16 INCH THICK
 2. NOTES ON FIGURE 3A10
 3. PIPE SHALL BE IN ACCORDANCE WITH SPECIFICATION WW-P-406
 4. THIS FIGURE SUPERSEDES SHEET 3A14 OF DRAWING 803 5001027 AND SECTION 5 SHEET 120 OF DRAWING NAVSEC NO 8000-56202-73880

3A141



3A142

TABLE OF DIMENSIONS

TUBE SIZE	EXTRA STRONG PIPE	"X"	"A"	"B"
1	3/4	3	4	1/065
2	1	3-5/16	4-5/16	1/330
3	1-1/4	3-3/4	4-3/4	1/675
4	1-1/2	4-7/16	5-7/16	1/815
5	2	5-7/16	6-3/16	2/400
6	2-1/2	6-7/16	7-1/8	2/400
7	3	7-1/8	8-1/8	3/400
8	3-1/2	8-1/8	9-1/8	3/400
9	4	9-1/8	10-1/8	3/400

SAME AS 1197030 EXCEPT AS SHOWN

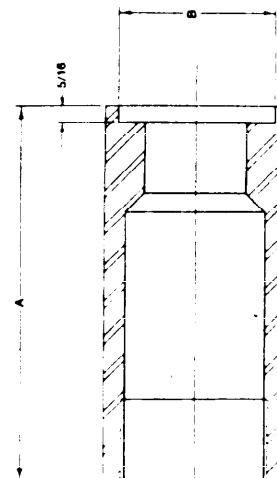


FIGURE 3A14. Passing cable through tanks (pipe extension) (submarines).

SH 132317090

DOD-STD-2003-3(NAVY)
24 JUNE 1987

- NOTES:
1. NOTES ON FIGURE 3A10 APPLY.
 2. THIS FIGURE SUPERSEDES SHEET 3A15 OF DRAWING 803-6001027 AND SECTION 5, SHEET 120 OF DRAWING NAVSEC NO. 9000-86202-73980

3A151

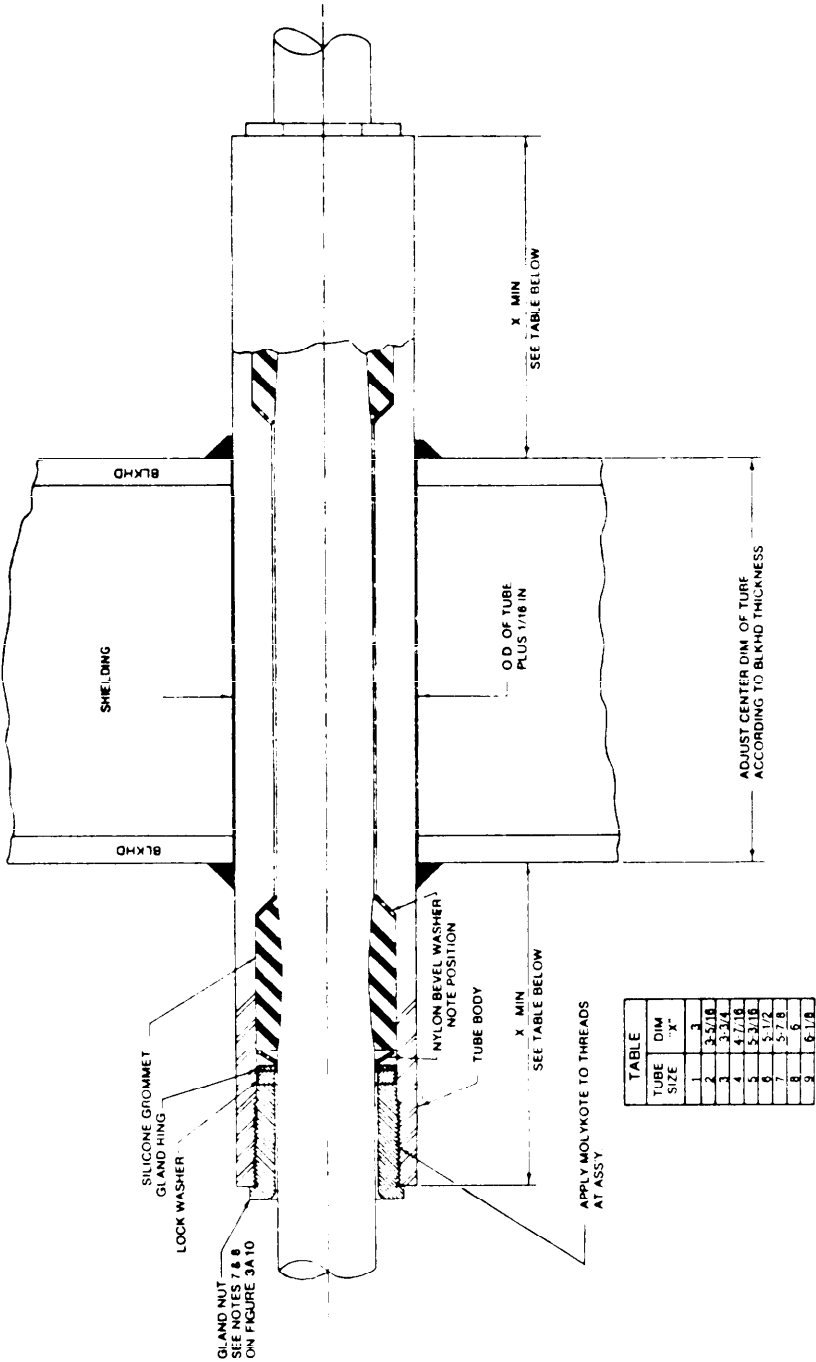


TABLE	
TUBE SIZE	DIM "X"
1	3
2	3-5/16
3	3-3/4
4	4-7/16
5	5-2/16
6	5-1/2
7	5-7/8
8	6
9	6-1/8

FIGURE 3A15. Cables through shielded bulkheads (submarines).

SH 132317091

DOD-STD-2003-3(NAVY)
24 JUNE 1987

- NOTES:
1. NOTES ON FIGURE 3A10 APPLY.
 2. THIS FITTING WAS FIRST DEVELOPED FOR USE IN FWD ELLIPTICAL BULKHEAD ON SS(N)93 CLASS VESSELS.
 3. INSTALLATION SHALL BE IN ACCORDANCE WITH NOTE 2 ON FIGURE 3A10 TUBE SPACING AND WELD JOINT EFFICIENCY SHALL BE IN ACCORDANCE WITH NAVSHIPS 0900-LP-006-9010.
 4. PROVIDE AN INTERFACE FIT OF .000 AND .001 BETWEEN A BORE AND TUBE BODY.
 5. BORE AND LENGTH DIMENSIONS (X&Y) ARE BASED ON 2-5/16 THICK ELLIPTICAL BULKHEAD.
 6. FOR CORRECT STRAIN RELIEF BUSHING SIZE, SEE TABLE 1 BELOW & NAVSEA DWG 9000-S6202-7341.
 7. THIS FIGURE SUPERSEDES SHEET 3A16 OF DRAWING 803-5001027 AND SECTION 5, SHEET 119 OF DRAWING NAVSEA NO 9000-S6202-73980.

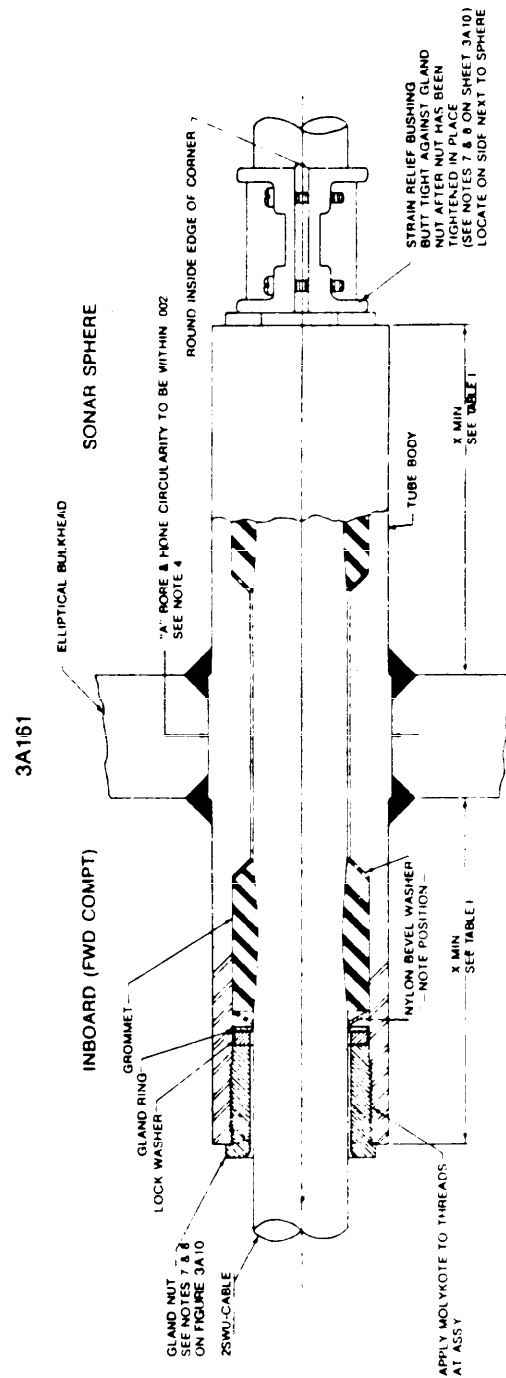


TABLE 1

TUBE SIZE	STRAIN RELIEF BUSHING -SIZE-	DIM "X"	DIM "A"
1		3-1/4	1-4/8
2		3-9/16	1-5/8
3		4-3/16	1-5/8
4		4-7/8	2-2/8
5		5-13/16	2-5/8
6	5	6-3/16	2-7/8
7	5	6-9/16	2-7/8
8	6a	7-1/8	3-3/4
9	6a	7-1/8	3-9/16

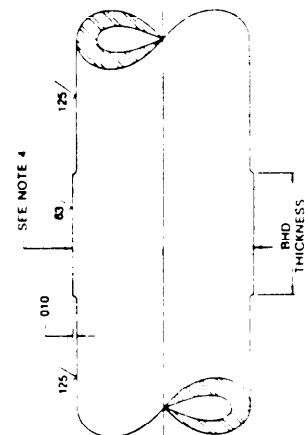


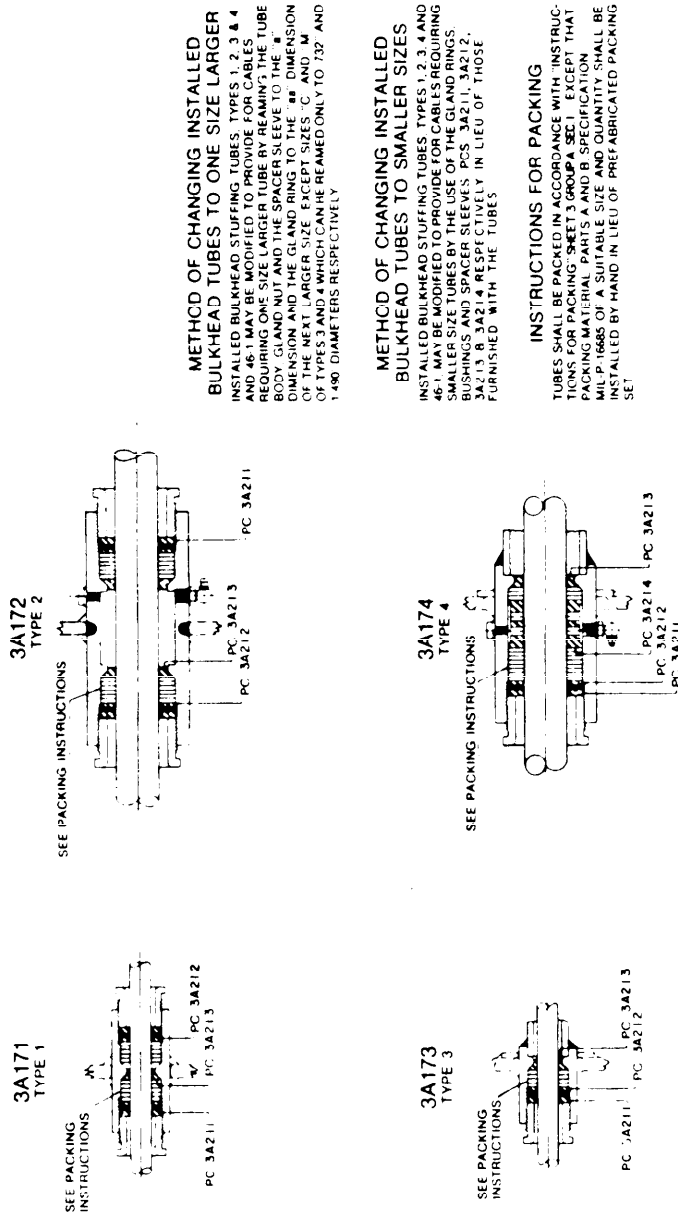
FIGURE 3A16. Cables through elliptical bulkheads (submarines).

SH 132317082

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

1. THIS FIGURE SUPERSEDES SHEET 3A17 OF DRAWING 803-5001027 AND SECTION 5, SHEET 71 OF DRAWING NAVSEC NO. 9000-56202-73980.



SH 132317093

FIGURE 3A17. Methods of changing sizes of installed bulkhead stuffing tubes types 1 to 4 & 46 - 1 (submarines).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

- NOTES:
- 1 SEALING PLUGS COVERED BY THIS FIGURE ARE INTENDED FOR TEMPORARY BLANKING OF STUFFING TUBES INSTALLED PRIOR TO INSTALLATION OF CABLES.
 - 2 MATERIAL FOR PLUG BODY TO BE BRASS SPEC. ASTM B21.
 - 3 "O" RINGS SHALL BE IN ACCORDANCE WITH SPEC. MIL-P-25732.
 - 4 "O" RINGS SHALL BE SYNTHETIC RUBBER IN ACCORDANCE WITH SPEC. MIL-P-25732.
 - 5 THIS FIGURE SUPERSEDES SHEET 3A18 OF DRAWING 803-500107 AND SECTION 5, SHEET 82 OF DRAWING NAVSEC NO 9000-56202-73980.

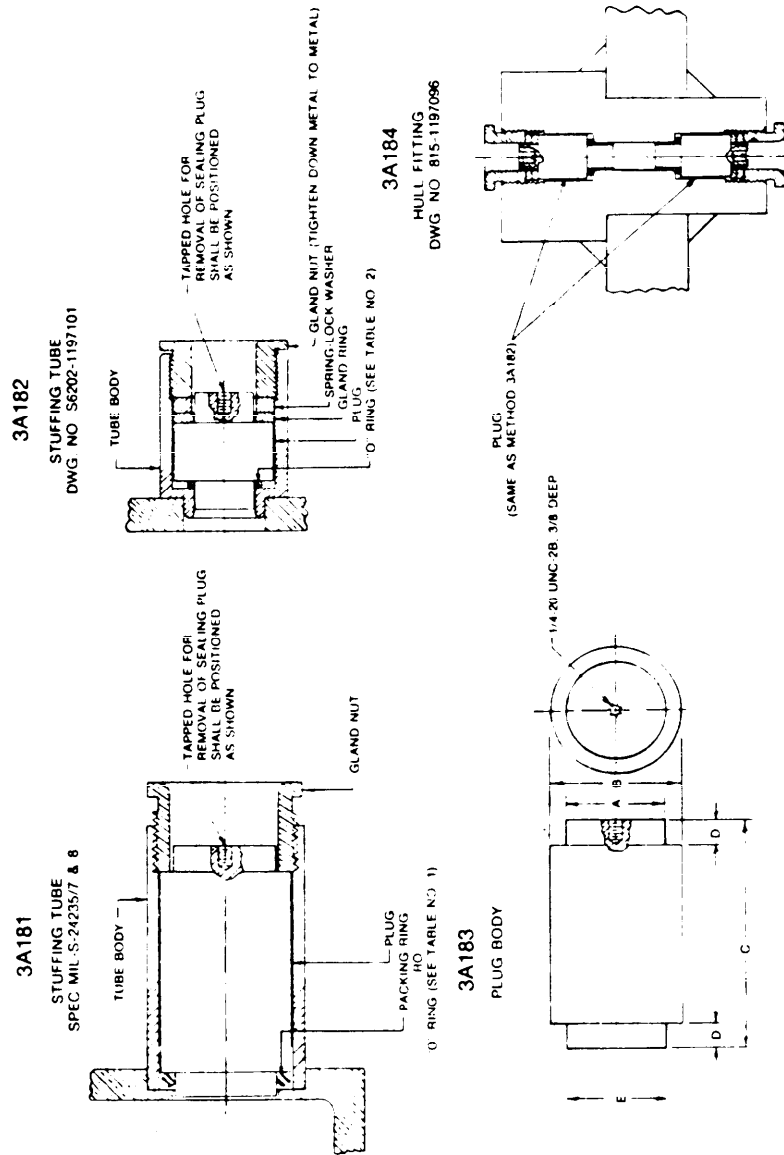


TABLE NO. 1

TABLE OF DIMENSIONS					
M24235/7 & 8 TUBE SIZE	A	B	C	D	E
A	17/32	53/64	2 1/16	1/4	17/32
B	23/32	1 1/32	2 7/16	5/16	23/32
C	31/32	1 11/32	2 13/16	5/16	31/32
D	31/32	1 11/32	3 7/32	5/16	31/32
E	1 1/32	1 3/64	2 13/16	5/16	1 1/32

TABLE NO. 2

TABLE OF DIMENSIONS					
815-1197096 SYM NO	562-1197101 TUBE SYM NO	A	B	C	D
2449 1	2448 1	500	687	2 077	625
2449 2	2448 2	621	1 084	2 767	625
2449 3	2448 3	725	1 302	2 445	625
2449 4	2448 4	1 000	1 687	2 782	750

TABLE NO. 3

TABLE OF DIMENSIONS					
815-1197096 SYM NO	562-1197101 TUBE SYM NO	A	B	C	D
2449 1	2448 1	500	687	2 077	625
2449 2	2448 2	621	1 084	2 767	625
2449 3	2448 3	725	1 302	2 445	625
2449 4	2448 4	1 000	1 687	2 782	750

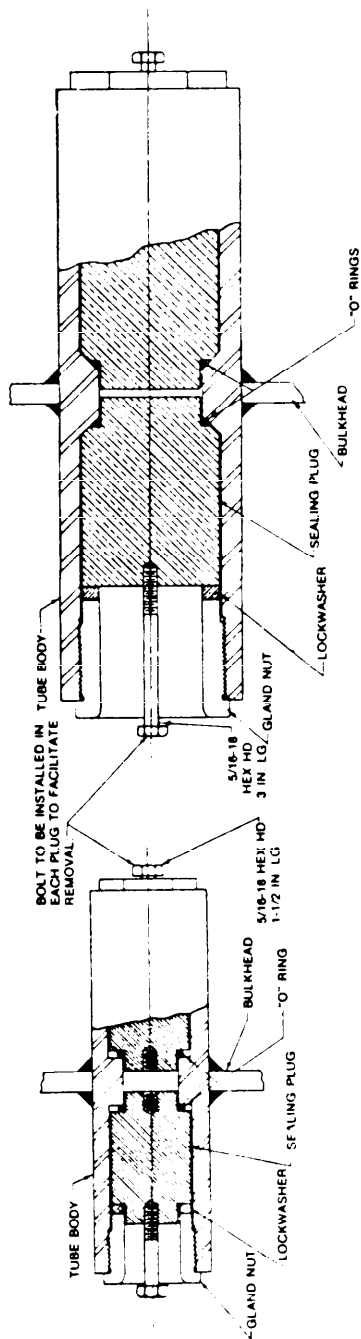
FIGURE 3A18. Sealing plugs for blanking stuffing tubes (submarines).

SH 132317094

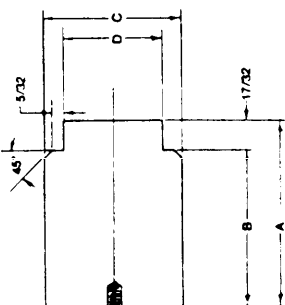
3A191

3A192

STUFFING TUBE SYM NO. 2408 TIRAU 2413



3A192-4 THROUGH 9 SEALING PLUG DETAILS



3A191-1 THROUGH 3 SEALING PLUG DETAILS

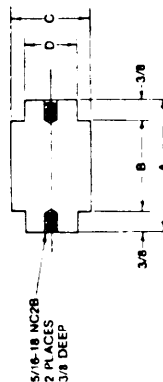


TABLE I

ASSOCIATED DATA & SEALING PLUG DIMENSIONS						
TUBE SIZE	"O" RING SIZE (2 REQ'D)	SEALING PLUG (2 REQ'D)	A	B	C	D
1	ARP506-113	3A191-1	1-53/64	1-5/64	006	564
2	118	3A191-2	2-9/64	1-1/32	1.173	797
3	214	3A191-3	2-1/2	2-3/4	1.486	047

TABLE II

ASSOCIATED DATA & SEALING PLUG DIMENSIONS							
TUBE SIZE	"O" RING SIZE (2 REQD.)	SEALING PLUG SIZE (2 REQD.)	A	B	C	D	
4	ARP-506-B	3A192-4	2-1/2	3-1/8	2-31/32	1.673	1.950
5	215	3A192-5	3-1/8	3-1/8	2-19/32	1.923	1.427
6	223	3A192-6	3-5/16	3-5/16	2-5/32	2.173	1.610
7	225	3A192-7	3-1/2	3-1/2	3-31/32	2.548	1.960
8	227	3A192-8	3-5/8	3-5/8	3-3/32	2.861	2.172
9	227	3A192-9	3-11/8	3-11/8	3-5/32	2.946	2.297

NOTES:

- 1 THE PRICES AND METHODS SHOWN ON THIS FIGURE ARE MEANS OF TEMPORARILY PLUGGING AN ELECTRICAL FITTING WHICH, DUE TO DESIGN CHANGES, NO LONGER HAS A SPECIFIC CABLE ASSIGNED TO IT. TEMPORARY PLUGGING SHALL BE USED FOR ANY OF THE FOLLOWING CONDITIONS
- (A) FITTING IS SO INACCESSIBLE AS TO PREVENT THE INSTALLATION OF PERMANENT PATCHING
- (B) WELDING HEAT INVOLVED IN PERMANENT PATCHING IS LIABLE TO DAMAGE ADJACENT FITTINGS AND CABLE
- (C) THE SHIP IS STILL IN THE CONSTRUCTION PERIOD
- (D) IMMEDIATE REUSE IS LIKELY ON ANOTHER SYSTEM
- 2 AT THE TIME OF FINAL PREPARATION FOR DELIVERY OF THE SHIP ALL CABLE FITTINGS, NOT IN CATEGORIES (A), (B), OR (D) ABOVE, SHALL BE MATCHED TO THE CABLES TO WHICH THEY ARE APPLICABLE. SHALL STRUCTURAL HEAD AND HULL PENETRATIONS
- 3 "O"-RINGS SHALL BE SYNTHETIC RUBBER IN ACCORDANCE WITH SPEC MIL-P-25732
- 4 USE EXISTING LOCKWASHERS AND GLAND NUTS
- 5 MATERIAL FOR SEALING PLUGS SHALL BE BRASS OR PVC
- 6 THIS FIGURE, SUPERSEDES SHEET 3A19 OF DRAWING 903-5001027 AND SECTION 5, SHEET 131 OF DRAWING NAVSPEC NO 9000-58202-73980

SH 132317095

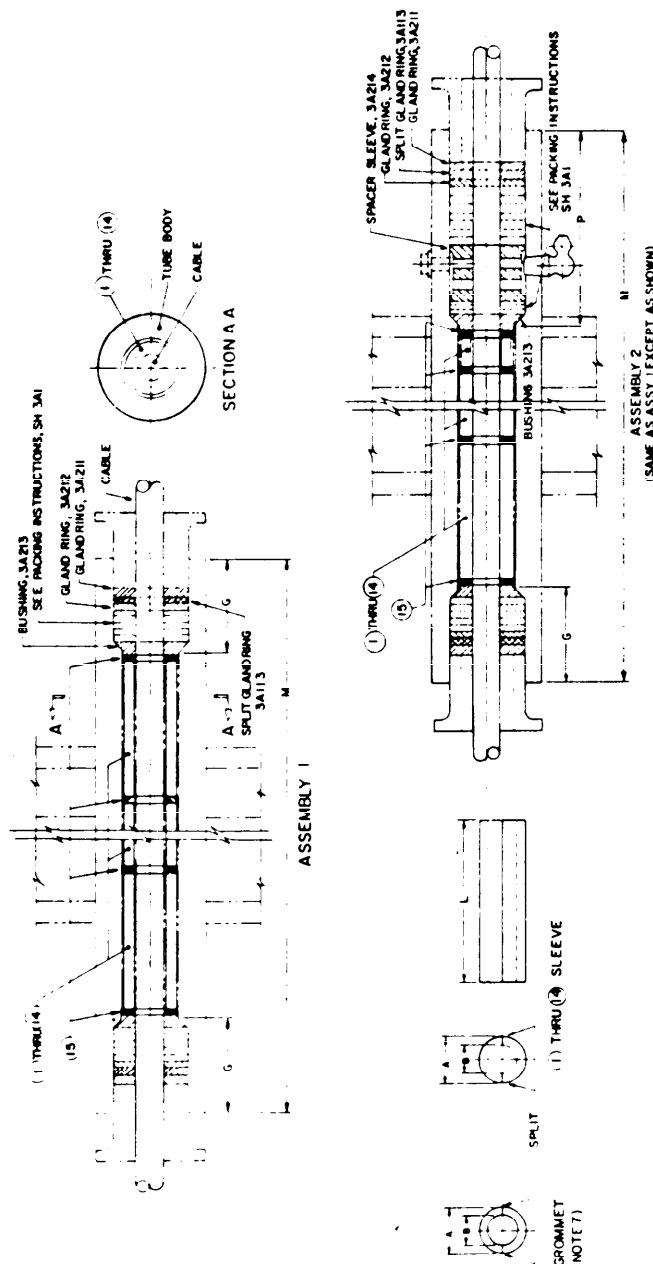
FIGURE 3A19. Temporary plugging of stuffing tubes (submarines).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

1. DEVIATION FROM THIS DRAWING IS NOT PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE NRC OR THE NAVSEA DESIGNATED REACTOR PLANT DESIGN YARD
2. APPROBATIONS ARE PER MIL STD-102
3. THE REQUIREMENTS OF THIS DRAWING ARE NOT RETROACTIVE FOR EXISTING BUSHED, STUFFING TUBES.
4. STUFFING TUBE BUSHING SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING: BUSHING SHALL BE INSTALLED IN BUSHED STUFFING TUBES THROUGH SHIELDED BULKHEADS WHEN THE DIFFERENCE BETWEEN THE INNER DIAMETER OF THE STUFFING TUBE THROAT & THE OUTER DIAMETER OF THE CABLE IS 1/4 INCH OR GREATER
5. STUFFING TUBE BUSHING SLEEVES ITEM 1 THRU 14 CAN BE INSTALLED IN ONE, TWO, OR THREE SECTIONS AS REQUIRED TO FACILITATE INSTALLATION
6. STUFFING TUBE BUSHING SLEEVES ITEM 1 THRU 14 & GROMMETS ITEM 15 SHALL BE INSTALLED IN STUFFING TUBE & TUBE SHALL BE PACKED IN ACCORDANCE WITH INSTRUCTIONS ON FIGURE 3A1
7. GROMMET ITEM 15 SHALL BE PACKED MANUFACTURED FROM SLOTTED STEEL TUBES 0.02 INCH THICK. ITEM 1 THRU 14 PRIOR TO INSTALLATION USING ADHESIVE IN ACCORDANCE WITH FEDERAL SPEC MAAA-A-121
8. MATERIAL FOR ITEM 1 THRU 14 SHALL BE STEEL BAR ROUND WITH COLD FINISH PER MIL P-24338 MAY BE SUBSTITUTED TO FACILITATE MACHINING PROVIDED THAT NO DEVIATIONS FROM THE TOLERANCES OF TABLE 1 ARE MADE
9. FOR DIMENSIONS NOT DETAILLED, SEE DRAWINGS SS-302-1716006 AND SS-302-1865724
10. THIS FIGURE SUPERSEDES SHEET 3A20 OF DRAWING 903-5001027

METHUO DELINEATED ON THIS FIGURE IS
APPLICABLE TO 55W SUBMARINES ONLY.



EXISTING STUFFING ASSY	DIM SLEEVE ITEM NO	DIM "A"	DIM "B"	DIM "L" (NOTE 5)
	A			
	B			
	C	1 0.78		
1	D	2 0.68		
	E	2 0.50		
	F	3 0.78	BF*	
	G	4 0.91	CABLE	
	J	4 1.00	OD * 0.062	
	K	5 1.09		
	L	6 1.203		
	M	7 1.344		
2	N	8 1.453		
	P	9 1.563		
	R	10 1.689		
	S	11 1.813		
	T	12 2.000		
	V	13 2.125		
	W	14 2.240		

TABLE 1 (CONT'D)

FRACTIONAL	: 1/32 INCHES
DECIMAL	: .005 INCHES
ANGLES	: 0°30' DEGREES
UNLESS OTHERWISE NOTED	

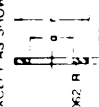
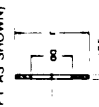
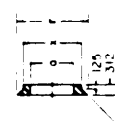
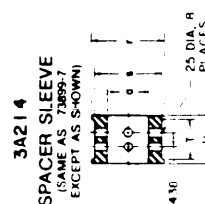
FIGURE 3A20. Bushing sleeves for stuffing tubes thru shielded bulkheads.

NOTES:

1. ADAPTERS SHALL BE IN ACCORDANCE WITH MIL-S-24235/1/2.
2. GLAND RINGS SHALL BE NATIONAL STEEL ZINC PLATED, MIL-S-24235/1/2.
- 3 THIS FIGURE SUPERSEDES SHEET 3A21 OF DRAWING NAVSEC NO 9000-S6702-73980

STUFFING TUBE		TABLE OF DIMENSIONS																NAVSEA APPROVAL				TUBE SIZE	
		BUSHED DOWN TO STUFFING TUBE SIZE																TWO TUBE SIZES MAXIMUM WITHOUT					
TYPE	SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	S	T	V	W				
1	9.5	0.406	0.515	0.640	0.750	0.812	0.843	0.923	0.1062	0.11	0.1263	0.406	0.515	0.640	0.750	0.812	0.923	1.064	1.197				
	5000	0.3764	0.485	0.610	0.720	0.782	0.813	0.893	0.1062	0.11	0.1263	0.3764	0.485	0.610	0.720	0.782	0.893	1.034	1.167				
	1	A	500	625	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172			
	3	B	625	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297			
2	46.1	0.406	0.515	0.640	0.750	0.812	0.843	0.923	0.1062	0.11	0.1263	0.406	0.515	0.640	0.750	0.812	0.923	1.064	1.197				
	5000	0.3764	0.485	0.610	0.720	0.782	0.813	0.893	0.1062	0.11	0.1263	0.3764	0.485	0.610	0.720	0.782	0.893	1.034	1.167				
	1	A	500	625	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172			
	3	B	625	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297			
	4	C	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422			
	5	D	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547			
	6	E	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672			
	7	F	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797			
	8	G	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922			
	9	H	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922	3047			
	10	I	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922	3047	3172			
	11	J	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922	3047	3172	3297			
3	46.1	0.406	0.515	0.640	0.750	0.812	0.843	0.923	0.1062	0.11	0.1263	0.406	0.515	0.640	0.750	0.812	0.923	1.064	1.197				
	5000	0.3764	0.485	0.610	0.720	0.782	0.813	0.893	0.1062	0.11	0.1263	0.3764	0.485	0.610	0.720	0.782	0.893	1.034	1.167				
	1	A	500	625	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172			
	2	B	625	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297			
	3	C	735	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422			
	4	D	797	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547			
	5	E	828	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672			
	6	F	878	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797			
	7	G	918	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922			
	8	H	938	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922	3047			
	9	I	1047	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922	3047	3172			
	10	J	1156	1250	1391	1500	1610	1735	1860	2047	2172	2297	2422	2547	2672	2797	2922	3047	3172	3297			

TUBE SIZE	r	s	t	u
A	750	187	000	250
B	875	312	000	400
C	1 000	437	187	437
D	1 125	562	187	437
E	1 250	687	187	437
F	1 375	812	187	437
G	1 500	937	187	437
H	1 625	1 062	187	437
I	1 750	1 187	187	437
J	1 875	1 312	187	437
K	2 000	1 437	187	437
L	2 125	1 562	187	437
M	2 250	1 687	187	437
N	2 375	1 812	187	437
O	2 500	1 937	187	437
P	2 625	2 062	187	437
Q	2 750	2 187	187	437
R	2 875	2 312	187	437
S	3 000	2 437	187	437
T	3 125	2 562	187	437
U	3 250	2 687	187	437
V	3 375	2 812	187	437
W	3 500	2 937	187	437



MATERIAL SHALL BE STEEL PER
MIL-S-22698, ZINC PLATED

7097
MIL-S-22698, ZINC PLATED
FIGURE 3A21. Size & details of adapters used for changing size of installed bulkhead stuffing tubes (submarines).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

TABLE OF DIMENSIONS

MIL-C-24235 TUBE MODIFIED PACKING ASSEMBLY SYMBOL NUMBERS

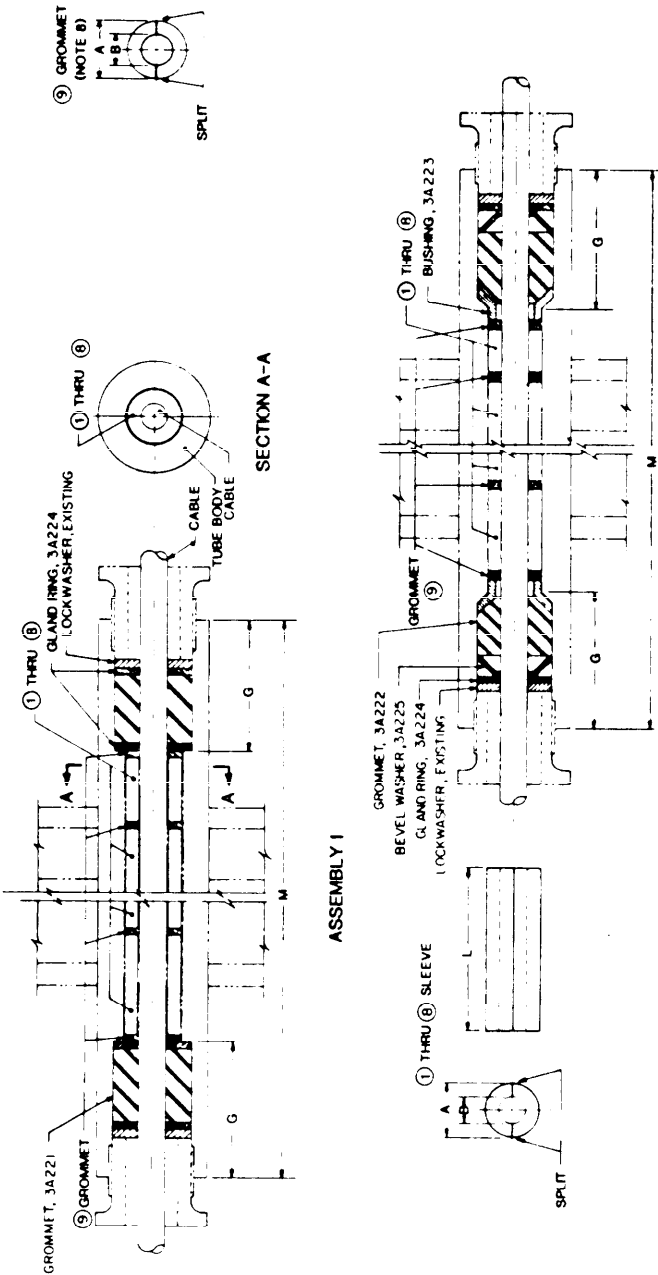
TUBE SIZE	1	2	3	4	5	6	7	8	9
2	001002003004005006007008009010011012013014015016017018019020021022023024025026027028029030031032033034035036037038039040041042043044045046047048049050051052053054055056057058059060061062063064065066067068069070071072073074075076077078079080081082083084085086087088089090091092093094095096097098099010001010102010301040105010601070108010901100111011201130114011501160117011801190120012101220123012401250126012701280129013001310132013301340135013601370138013901400141014201430144014501460147014801490150015101520153015401550156015701580159016001610162016301640165016601670168016901700171017201730174017501760177017801790180018101820183018401850186018701880189019001910192019301940195019601970198019902000201020202030204020502060207020802090210021102120213021402150216021702180219022002210222022302240225022602270228022902300231023202330234023502360237023802390240024102420243024402450246024702480249025002510252025302540255025602570258025902600261026202630264026502660267026802690270027102720273027402750276027702780279028002810282028302840285028602870288028902900291029202930294029502960297029802990300030103020303030403050306030703080309031003110312031303140315031603170318031903200321032203230324032503260327032803290330033103320333033403350336033703380339034003410342034303440345034603470348034903500351035203530354035503560357035803590360036103620363036403650366036703680369037003710372037303740375037603770378037903800381038203830384038503860387038803890390039103920393039403950396039703980399040004010402040304040405040604070408040904100411041204130414041504160417041804190420042104220423042404250426042704280429043004310432043304340435043604370438043904400441044204430444044504460447044804490450045104520453045404550456045704580459046004610462046304640465046604670468046904700471047204730474047504760477047804790480048104820483048404850486048704880489049004910492049304940495049604970498049905000501050205030504050505060507050805090510051105120513051405150516051705180519052005210522052305240525052605270528052905300531053205330534053505360537053805390540054105420543054405450546054705480549055005510552055305540555055605570558055905600561056205630564056505660567056805690570057105720573057405750576057705780579058005810582058305840585058605870588058905900591059205930594059505960597059805990600060106020603060406050606060706080609061006110612061306140615061606170618061906200621062206230624062506260627062806290630063106320633063406350636063706380639064006410642064306440645064606470648064906500651065206530654065506560657065806590660066106620663066406650666066706680669067006710672067306740675067606770678067906800681068206830684068506860687068806890690069106920693069406950696069706980699070007010702070307040705070607070708070907100711071207130714071507160717071807190720072107220723072407250726072707280729073007310732073307340735073607370738073907400741074207430744074507460747074807490750075107520753075407550756075707580759076007610762076307640765076607670768076907700771077207730774077507760777077807790780078107820783078407850786078707880789079007910792079307940795079607970798079908000801080208030804080508060807080808090810081108120813081408150816081708180819082008210822082308240825082608270828082908300831083208330834083508360837083808390840084108420843084408450846084708480849085008510852085308540855085608570858085908600861086208630864086508660867086808690870087108720873087408750876087708780879088008810882088308840885088608870888088908900891089208930894089508960897089808990900090109020903090409050906090709080909091009110912091309140915091609170918091909200921092209230924092509260927092809290930093109320933093409350936093709380939094009410942094309440945094609470948094909500951095209530954095509560957095809590960096109620963096409650966096709680969097009710972097309740975097609770978097909800981098209830984098509860987098809890990099109920993099409950996099709980999010000100101002010030100401005010060100701008010090101001011010120101301014010150101601017010180101901020010210102201023010240102501026010270102801029010300103101032010330103401035010360103701038010390104001041010420104301044010450104601047010480104901050010510105201053010540105501056010570105801059010600106101062010630106401065010660106701068010690107001071010720107301074010750107601077010780107901080010810108201083010840108501086010870108801089010900109101092010930109401095010960109701098010990110001101011020110301104011050110601107011080110901110011110111201113011140111501116011170111801119011200112101122011230112401125011260112701128011290113001131011320113301134011350113601137011380113901140011410114201143011440114501146011470114801149011500115101152011530115401155011560115701158011590116001161011620116301164011650116601167011680116901170011710117201173011740117501176011770117801179011800118101182011830118401185011860118701188011890119001191011920119301194011950119601197011980119901200012010120201203012040120501206012070120801209012100121101212012130121401215012160121701218012190122001221012220122301224012250122601227012280122901230012310123201233012340123501236012370123801239012400124101242012430124401245012460124701248012490125001251012520125301254012550125601257012580125901260012610126201263012640126501266012670126801269012700127101272012730127401275012760127701278012790128001281012820128301284012850128601287012880128901290012910129201293012940129501296012970129801299013000130101302013030130401305013060130701308013090131001311013120131301314013150131601317013180131901320013210132201323013240132501326013270132801329013300133101332013330133401335013360133701338013390134001341013420134301344013450134601347013480134901350013510135201353013540135501356013570135801359013600136101362013630136401365013660136701368013690137001371013720137301374013750137601377013780137901380013810138201383013840138501386013870138801389013900139101392013930139401395013960139701398013990140001401014020140301404014050140601407014080140901410014110141201413014140141501416014170141801419014200142101422014230142401425014260142701428014290143001431014320143301434014350143601437014380143901440014410144201443014440144501446014470144801449014500145101452014530145401455014560145701458014590146001461014620146301464014650146601467014680146901470014710147201473014740147501476014770147801479014800148101482014830148401485014860148701488014890149001491014920149301494014950149601497014980149901500015010150201503015040150501506015070150801509015100151101512015130151401515015160151701518015190152001521015220152301524015250152601527015280152901530015310153201533015340153501536015370153801539015400154101542015430154401545015460154701548015490155001551015520155301554015550155601557015580155901560015610156201563015640156501566015670156801569015700157101572015730157401575015760157701578015790158001581015820158301584015850158601587015880158901590015910159201593015940159501596015970159801599016000160101602016030160401605016060160701608016090161001611016120161301614016150161601617016180161901620016210162201623016240162501626016270162801629016300163101632016330163401635016360163701638016390164001641016420164301644016450164601647016480164901650016510165201653016540165501656016570165801659016600166101662016630166401665016660166701668016690167001671016720167301674016750167601677016780167901680016810168201683016840168501686016870168801689016900169101692016930169401695016960169701698016990170001701017020170301704017050170601707017080170901710017110171201713017140171501716017170171801719017200172101722017230172401725017260172701728017290173001731017320173301734017350173601737017380173901740017410174201743017440174501746017470174801749017500175101752017530175401755017560175701758017590176001761017620176301764017650176601767017680176901770017710177201773017740177501776017770177801779017800178101782017830178401785017860178701788017890179001791017920179301794017950179601797017980179901800018010180201803018040180501806018070180801809018100181101812018130181401815018160181701818018190182001821018220182301824018250182601827018280182901830018310183201833018340183501836018370183801839018400184101842018430184401845018460184701848018490185001851018520185301854018550185601857018580185901860018610186201863018640186501866018670186801869018700187101872018730187401875018760187701878018790188001881018820188301884018850188601887018880188901890018910189201893018940189501896018970189801899019000190101902019030190401905019060190701908019090191001911019120191301914019150191601917019180191901920019210192201923019240192501926019270192801929019300193101932019330193401935019360193701938019390194001941019420194301944019450194601947019480194901950019510195201953019540195501956019570195801959019600196101962019630196401965019660196701968019690197001971019720197301974019750197601977019780197901980019810198201983019840198501986019870198801989019900199101992019930199401995019960199701998019990200002001020020200302004020050200602007020080200902010020110201202013020140201502016020170201802019020200202102022020230202402025020260202702028020290203002031020320203302034020350203602037020380203902040020410204202043020440204502046020470204802049020500205102052020530205402055020560205702058020590206002061020620206302064020650206602067020680206902070020710207202073020740207502076020770207802079020800208102082020830208402085020860208702088020890209002091020920209302094020950209602097020980209902100021010210202103021040210502106021070210802109021100211102112021130211402115021160211702118021190212002121021220212302124021250212602127021280212902130021310213202133021340213502136021370213802139021400214102142021430214402145021460214702148021490215002151021520215302154021550215602157021580215902160021610216202163021640216502166021670216802169021700217102172021730217402175021760217702178021790218002181021820218302184021850218602187021880218902190021910219202193021940219502196021970219802199022000220102202022030220402205022060220702208022090221002211022120221302214022150221602217022180221902220022210222202223022240222502226022270222802229022300223102232022330223402235022360223702238022390224002241022420224302244022450224602247022480224902250022510225202253022540225502256022570225802259022600226102262022630226402265022660226702268022690227002271022720227302274022750227602277022780227902280022810228202283022840228502286022870228802289022900229102292022930229402295022960229702298022990230002301023020230302304023050230602307023080230902310023110231202313023140231502316023170231802319023200232102322023230232402325023260232702328023290233002331023320233302334023350233602337023380233902340023410234202343023440234502346023470234802349023500235102352023530235402355023560235702358023590236002361023620236302364023650236602367023680236902370023710237202373023740237502376023770237802379023800238102382023830238402385023860238702388023890239002391023920239302394023950239602397023980239902400024010240202403024040240502406024070240802409024100241102412024130241402415024160241702418024190242002421024220242302424024250242602427024280242902430024310243202433024340243502436024370243802439024400244102442024430244402445024460244702448024490245002451024520245302454024550245602457024580245902460024610246202463024640246502466024670246802469024700247102472024730247402475024760247702478024790248002481024820248302484024850248602487024880248902490024910249202493024940249502496024970249802499025000250102502025030250402505025060250702508025090251002511025120251302514025150251602517025180251902520025210252202523025240252502526025270252802529025300253102532025330253402535025360253702538025390254002541025420254302544025450254602547025480254902550025510255202553025540255502556025570255802559025600256102562025630256402565025660256702568025690257002571025720257302574025750257602577025780257902580025810258202583025840258502586025870258802589025900259102592025930259402595025960259702598025990260002601026020260302604026050260602607026080260902610026110261202613026140261502616026170261802619026200262102622026230262402625026260262702628026290263002631026320263302634026350263602637026380263								

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

1. ANY DEVIATIONS FROM THIS FIGURE ARE NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL OF NAVSEA 08 OR THE NAVSEA DESIGNATED REACTOR PLANT DESIGN YARD.
2. ABBREVIATIONS ARE IN ACCORDANCE WITH MIL-STD-12C.
3. THE REQUIREMENTS OF THIS FIGURE ARE NOT RETROACTIVE FOR EXISTING BUSHED STUFFING TUBES.
4. STUFFING TUBE BUSHING SLEEVES IN ACCORDANCE WITH THIS FIGURE SHALL BE INSTALLED IN BUSHED STUFFING TUBES THROUGH SHIELDED BULKHEADS WITH THE DIFFERENCE BETWEEN THE INNER DIAMETER OF THE STUFFING TUBE THROAT & THE OUTER DIAMETER OF THE CABLE IS 1/4 INCH OR GREATER.
5. STUFFING TUBE BUSHING SLEEVE ITEMS 1 THRU 8 CAN BE INSTALLED IN ONE, TWO, OR THREE SECTIONS AS REQUIRED TO FACILITATE INSTALLATION.
6. STUFFING TUBE BUSHING SLEEVES ITEMS 1 THRU 8 AND GROMMETS ITEM 9 SHALL BE INSTALLED IN STUFFING TUBE & TUBE SHALL BE PACKED IN ACCORDANCE WITH INSTRUCTIONS ON FIGURE 3A10.
7. MATERIAL FOR ITEMS 1 THRU 8 SHALL BE OF STEEL BAR, ROUND WITH COLD FINISH PER AISI-C1018 OR SEAMLESS CARBON STEEL PIPE PER MIL-P-24338 MAY BE SUBSTITUTED TO FACILITATE MACHINING PROVIDED THAT NO DEVIATIONS FROM THE TOLERANCES OF TABLE 1 ARE MADE.
8. GROMMET ITEM 9 SHALL BE MANUFACTURED FROM SILICON SHEET RUBBER, 0.25" THICK PER MIL SPEC 22-R-785, CL 2G GR50 AND SHALL BE CEMENTED TO BUSHING ITEMS 1 THRU 8 PRIOR TO INSTALLATION USING ADHESIVE IN ACCORDANCE WITH FEDERAL SPEC MMW-A-121.
9. FOR DIMENSIONS NOT DETAILED HEREIN, SEE MIL-S-24235 AND FIGURE 3A22
10. THIS FIGURE SUPERSEDES SHEET 3A23 OF DRAWING 803-6001027.

METHOD DELINEATED ON THIS SHEET IS APPLICABLE TO SS/W SUBMARINES ONLY.



ASSEMBLY 2

ASSY	STUFFING SLEEVE	DM	DM	DM	DM "L"
	TUBE	ITEM	"A"	"B"	(NOTE 5)
	SIZE	NO			
1	1	—	—	—	WHEN SLEEVE IS INSTALLED IN ONE SECTION
	2	1	0.750	—	WHEN SLEEVE IS INSTALLED IN TWO SECTIONS
	3	2	1.000	—	WHEN SLEEVE IS INSTALLED IN THREE SECTIONS
2	4	3	1.203	—	WHEN SLEEVE IS INSTALLED IN ONE SECTION
	5	4	1.375	—	WHEN SLEEVE IS INSTALLED IN TWO SECTIONS
	6	5	1.563	—	WHEN SLEEVE IS INSTALLED IN TWO SECTIONS
	7	6	1.813	—	WHEN SLEEVE IS INSTALLED IN TWO SECTIONS
	8	7	2.125	—	WHEN SLEEVE IS INSTALLED IN THREE SECTIONS
	9	8	2.250	—	WHEN SLEEVE IS INSTALLED IN THREE SECTIONS

FIGURE 3A23. Bushing sleeves for stuffing tubes thru shielded bulkheads.

SH 132317099

TOLERANCES	
FRACTIONAL	± 1/32 INCHES
DECIMAL	± .005 INCHES
ANGLES	± 0°-30 DEGREES
UNLESS OTHERWISE NOTED	

NOTES.

1. FOR CONTINUATION OF LISTING SEE FIGURE 3A9
2. THIS FIGURE SUPERSEDES SHEET 3A24 OF DRAWING
803-5001027

[illegible]

FIGURE 3A24. Steel stuffing tube cable assignment submarines.

SH 132317100

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTE:

1. THIS FIGURE SUPERSEDES SHEET 3A2.5 OF DRAWING 803-5001027.

[illegible]

FIGURE 3A25. Steel stuffing tube cable assignment submarines.

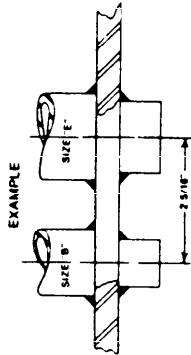
SH 132317101

DOD-STD-2003-3(NAVY)
24 JUNE 1987

HOLE SPACING IN DECKS AND BULKHEADS

FROM DESIGN DATA SHEET DDS 100-2

3B11



NOTES:

1. THE TABLE REFERRED TO IN THE FOLLOWING NOTES IS THE HOLE SPACING TABLE ON SHEET 2 OF THIS GROUP.
2. THE DIMENSIONS SHOWN IN THE HOLE SPACING TABLE ARE MINIMUMS FOR THE PRESENT OF SPECIAL TREATMENT STEEL FOR THE PROPOSED HOLE SPACING.
3. THIS TABLE MAY BE USED FOR ALL PLATE THICKNESSES NOT EXCEEDING 3 INCHES.
4. THIS TABLE MAY ALSO BE USED FOR ALUMINUM DECKS AND BULKHEADS WHERE INSTALLATION OF STUFFING TUBES ARE REQUIRED.
5. THE VALUES OF THE TABLE ARE MINIMUM PERMITTED VALUES, AND MAY BE INCREASED AS JUDGED TO BE DESIRABLE FOR ANY PARTICULAR APPLICATION.
6. USE OF THIS TABLE DOES NOT REQUIRE ANY INCREASE IN THICKNESS OF PLATING OR ADDITION OF DOUBLER PLATES. THE MINIMUM THICKNESS OF PLATING REQUIRED FOR THE HOLE SPACING IS RESTORED TO A PLATE BY THE MOUNTING OF STUFFING TUBES OR THE ADDITION OF DOUBLER PLATES.
7. THIS TABLE IS APPLICABLE TO THE GREAT MAJORITY OF INSTALLATIONS. EXCEPTIONS TO THE TABLE ARE RECOGNIZED WHEN IT IS REQUIRED TO PASS ELECTRIC CABLES THROUGH THE PRESSURE PLATE BEING PERFORATED, AND WHEN SPECIAL FITTINGS ARE REQUIRED IN PASSING ELECTRIC CABLES THROUGH THE PRESSURE PLATE BEING PERFORATED. CONSULT THE DESIGNER FOR OTHERWISE NOTED IN THIS INSTALLATION DRAWING.
8. FOR STRENGTH PRESERVATION OF BOTH MEDIUM AND SPECIAL TREATMENT STEEL PLATING, STUFFING TUBE HOLE SPACINGS SHALL BE LESS THAN 1/2 INCHES LESS THAN PLATING DIAMETERS OF ANY TWO ADJACENT HOLES FOR MEDIUM STEEL. FOR SPECIAL TREATMENT STEEL, USE THE INTERNAL DIAMETERS OF THE EXTRA STRONG DRILLED-HOLE OR SPECIAL TREATMENT STEEL. USE THE ACTUAL DIAMETER OF THE HOLE FOR THE MOUNTING OF THE TABLE.
9. IN LOCATING A HOLE FROM A RANDOMLY STRUCTURED HOLE, THE CENTER TO CENTER SPACING SHALL NOT BE LESS THAN HALF THE CENTER TO CENTER SPACING GIVEN IN THE TABLE FOR TWO TUBES OF THE SAME SIZE.
10. THIS TABLE DOES NOT IMPOSE ANY RESTRICTIONS ON HOW THE HOLES SHALL BE ARRANGED AS LONG AS THE RESTRICTIONS REGARDING MINIMUM ALLOWABLE SPACING IS NOT VIOLATED.
11. THE SPACINGS FOR TUBE SIZES 'A' THROUGH 'Z' ARE SUFFICIENT FOR THE USE OF 32 POINT BOX TYPE CROWFOOT WRENCHES SPECIFICALLY DESIGNED FOR THE USE OF 32 POINT BOX TYPE CROWFOOT WRENCHES WITH THE USE OF WRENCHES SUITABLE FOR THE USE OF OTHER TYPES OF WRENCHES.
12. THIS FIGURE SUPERSEDES SHEET 3B1 OF DRAWING 803-1001027 AND SECTION 4, SHEET 1, OF DRAWING NAVSEC 803-1000-54202-73880.

FIGURE 3B1. Stuffing tube and kickpipes minimum spacing (surface ships).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

HOLE SPACING IN DECKS AND BULKHEADS

REPRODUCED FROM DESIGN DATA SHEET DDS 100.2

3B21

NOTE

1. THIS FIGURE SUPERSEDES SHEET 3B2 OF
DRAWING 803-5001027 AND SECTION 4, SHEET 2,
OF DRAWING NAVSEC NO 9000-56202-73980

SPACING OF HOLES FOR STUFFING TUBES AND PIPES																										
THIS TABLE ALSO APPLICABLE TO ARMOR PLATE																										
NOMINAL DIA OF KICKPIPE (IRON PIPE SIZE)	DRILL FOR PIPE (MEDIUM STEEL ONLY)	DRILL FOR PIPE (SPECIAL TREAT- MENT STEEL)	TUBE SIZE	A	B	C	D	E	F	G	J	K	L	M	N	P	R	S	T	V	W	X	Y	Z	AA	BB
1"	1 1/8"	1 1/8"	406"	1 1/8"	2"																					
1 1/4"	1 3/8"	1 3/8"	515"	1 3/8"	2 1/4"																					
1 1/2"	1 7/8"	1 7/8"	640"	1 7/8"	2 1/2"	2 1/8"	2 1/8"																			
1 3/4"	2"	2"	750"	2"	2 3/4"	2 1/4"	2 1/4"	2 1/4"																		
2"	2 1/4"	2 1/4"	843"	2 1/4"	3"	2 1/4"	2 1/4"	2 1/4"	2 1/4"																	
2 1/4"	2 3/4"	2 3/4"	953"	2 3/4"	3 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"													
2 1/2"	3"	3"	1062"	3"	3 1/2"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"												
2 3/4"	3 1/4"	3 1/4"	1171"	3 1/4"	3 3/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"												
3"	3 1/2"	3 1/2"	1265"	3 1/2"	4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"											
3 1/4"	3 3/4"	3 3/4"	1406"	3 3/4"	4 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"										
3 1/2"	4"	4"	1515"	4"	4 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"									
3 3/4"	4 1/4"	4 1/4"	1625"	4 1/4"	4 3/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"								
4"	4 1/2"	4 1/2"	1750"	4 1/2"	5"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"							
4 1/4"	4 3/4"	4 3/4"	1875"	4 3/4"	5 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"						
4 1/2"	5"	5"	2062"	5"	5 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"					
4 3/4"	5 1/4"	5 1/4"	2187"	5 1/4"	5 3/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"				
5"	5 3/4"	5 3/4"	2300"	5 3/4"	6"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"				
5 1/4"	6"	6"	2609"	6"	6 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"			
5 1/2"	6 1/4"	6 1/4"	2781"	6 1/4"	6 3/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"		
5 3/4"	6 3/4"	6 3/4"	2875"	6 3/4"	7"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"		
6"	7"	7"	3157"	7"	7 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	

SH 132317 103

FIGURE 3B2. Stuffing tube and pipe minimum spacing (surface ships).

HOLE SPACING IN DECKS AND BULKHEADS

TABLE DERIVED FROM REQUIREMENTS OF DESIGN DATA SHEET D05 100 2

3831

NOTE:

1. THIS FIGURE SUPERSEDES SHEET 383 OF DRAWING 803-5001027 AND SECTION 4, SHEET 2, OF DRAWING, NAVSEC NO. 9000-SR202-73980.

		SPACING OF HOLE FOR SWAGE TUBES THIS TABLE DOES NOT APPLY TO ARMOR PLATE																			
DRILL FOR SWAGE TUBE M4235/17	NOMINAL OUTSIDE DIA OF SWAGE TUBE	TUBE SIZE		A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S
		1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11
1 1/2	1 1/2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11	11 1/2	12
1 3/4	1 3/4	2 3/4	3 1/2	4 1/2	5 1/2	6 1/2	7 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2
2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
2 1/2	2 1/2	3 1/2	4 1/2	5 1/2	6 1/2	7 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2
3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
3 1/2	3 1/2	4 1/2	5 1/2	6 1/2	7 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2
4	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
4 1/2	4 1/2	5 1/2	6 1/2	7 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2
5	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
5 1/2	5 1/2	6 1/2	7 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2
6	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
6 1/2	6 1/2	7 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2
7	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
7 1/2	7 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2
8	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
8 1/2	8 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2
9	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
9 1/2	9 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2
10	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
10 1/2	10 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2
11	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
11 1/2	11 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2
12	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
12 1/2	12 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2
13	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
13 1/2	13 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2
14	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
14 1/2	14 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2
15	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
15 1/2	15 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2
16	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
16 1/2	16 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2
17	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
17 1/2	17 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2
18	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
18 1/2	18 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2
19	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
19 1/2	19 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2
20	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
20 1/2	20 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2
21	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
21 1/2	21 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2
22	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
22 1/2	22 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2	42 1/2
23	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
23 1/2	23 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2	42 1/2	43 1/2
24	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
24 1/2	24 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2	42 1/2	43 1/2	44 1/2
25	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
25 1/2	25 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2	42 1/2	43 1/2	44 1/2	45 1/2
26	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
26 1/2	26 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2	42 1/2	43 1/2	44 1/2	45 1/2	46 1/2
27	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
27 1/2	27 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2	42 1/2	43 1/2	44 1/2	45 1/2	46 1/2	47 1/2
28	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
28 1/2	28 1/2	29 1/2	30 1/2	31 1/2	32 1/2	33 1/2	34 1/2	35 1/2	36 1/2	37 1/2	38 1/2	39 1/2	40 1/2	41 1/2	42 1/2	43 1/2	44 1/2	45 1/2	46 1/2	47 1/2	48 1/2
29	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

1. THE CABLES LISTED ON THIS FIGURE ARE PER MIL-C-915E.
2. THIS FIGURE SUPERSEDES SHEET 384 OF DRAWING 803-6001027 AND SECTION 4, SHEET 3-10 OF DRAWING, NAVSEC NO. 9000-38202-73980.

CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE
CVSF-4	N	DSGA-3	B	FNW-3	B	MCSF-4	N	MSCA-7	C	P81MU-5	C	SSGU-50	C
OCOP-1	A	-4	B	-4	B	MDU-6	J	-10	D	-10	D	-75	C
-1 1/2	A	-9	C	-9	C	-14	M	-14	D	-15	J	-100	D
-2	A	-14	D	-23	F	-19	S	-19	E	PH-3	D	-200	G
DHOF-3	B	-23	F	FPS-14	F	-24	T	-24	G	-300	J	-300	J
-4	B	-50	J	-60	X	-30	X	-30	G	-7	G	-400	K
-6	B	-75	K	FSGA-3	B	-37	J	-37	J	-12	K	-650	M
-8	B	-100	L	-4	C	-44	L	-44	L	-800	N	-800	N
-9	B	-200	R	-9	C	MHOF-7	B	-61	M	SHOF-3	A	-1000	P
-14	D	-300	T	-10	C	-10	C	-91	P	-23	B	-1600	T
-23	G	-400	V	-14	C	-14	C	MSCU-7	B	-60	C	-2000	W
-30	J	DSGU-3	A	-19	D	-19	D	-150	F	-150	F	S25	C
-43	N	-4	B	-24	E	-24	E	-200	J	-200	J	TCJA-4	B
-250	V	-9	C	-30	F	-30	F	-250	K	-250	K	TCJU-4	B
-400	Y	-14	D	-37	G	-37	G	-500	N	-500	N	TCJX-3	D
OLT-4	D	-23	E	-44	J	-44	J	-650	P	-650	P	-7	J
DNW-3	A	-75	K	-61	L	-61	L	-800	R	-800	R	-12	M
-4	B	-100	K	MMOP-5	A	-37	J	SRW	A	SRW	A	TCJX-3	D
-9	C	-200	P	MMW-7	A	-44	K	SSF-300	K	SSF-300	K	-7	J
-14	C	-300	S	-10	B	-91	N	SSGA-50	C	SSGA-50	C	TCKX-1	B
-23	D	-400	V	-14	C	-14	C	-75	D	-75	D	-3	D
-50	G	DSG-2	A	-19	C	-19	C	-100	D	-100	D	-7	J
-75	K	-3	B	-24	D	-24	D	MSPW	R	-200	G	-12	M
-100	L	-4	B	-30	S	-30	S	MU-14	A	-300	J	TCOP-2	A
DPS-3	B	DSWS-4	E	-37	E	-37	E	MWF-7	B	-400	K	TCTA-4	B
-4	B	ECM	M	-44	G	-44	G	-650	N	-650	N	TCTU-4	B
-6	C	EDMA	N	MRI-D-1	A	-10	C	-800	P	-800	P	TCTX-1	A
-9	C	FHOF-3	B	-D-2 1/2	A	-14	C	-1000	R	-1000	R	-3	C
-14	D	-4	B	-T-2 1/2	A	-19	D	-1600	T	-1600	T	-7	D
DRW	D	-5	A	MS-37	E	-24	F	-2000	W	-2000	W	-12	J
DRWA	D	-6	B	MSA-37	G	-30	G						
		-7	C			-37	J						

FIGURE 384. Aluminum and steel stuffing tubes cable assignment.

SH 132317105

24 JUNE 1987

NOTES:
 1. THE CABLES LISTED ON THIS FIGURE ARE PER MIL-C-915E
 2. THIS FIGURE SUPERSEDES SHEET 345 OF DRAWING
 803-600127 AND SECTION 1, SHEET 3-10 OF DRAWING
 NAVSEC NO. 9000-56202-7390.

CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE
THOF-3	B	TPS-3	B	TSGU-3	B	TTSA-1 1/2	A	IS50MU-16	G	2SMF-3	D	3SJ-22	A
4	B	-4	C	-4	B	-3	B	-20	G	-4	D	-20	A
6	C	-6	C	-9	C	-5	C	-40	L	-7	F	-18	A
9	C	-9	C	-14	D	-10	D	-70	P			-16	A
-14	E	-14	E	-23	E	-15	G					-14	A
-23	G	-23	G	-50	J	-20	G	IS75MU-6	J	2SMU-7	G	-12	B
-42	L	-30	J	-75	L	-30	K	2AU-40	M	75WU-1	A	-9	C
150	S			-100	M	-40	L	25U-3	C				
250	W	TPU-6	J	-150	N	-50	N	-7	D			35WU-3	D
400	AA			200	R	-60	N	-10	F			-7	G
500	BB	TRF-105	E	-300	T	TTSU-1 1/2	A	-14	G			-10	L
600	BB	-133	E	-400	W	-3	B	-19	J			-14	M
		-168	G			-5	C	-24	L			-19	N
TNW-3	B			TSP-11	D	-10	D	-30	M			-24	R
-4	B			-31	J	-15	E	-37	M			-30	S
-9	C					-20	G	-44	P			-37	T
-14	D	TRXF-84	C	TSS-2	A	-30	K	-61	R	2U-10	B	-44	W
-23	E	-105	D	-3	B	-40	L			-15	C		
-50	J	-133	E	-4	B	-50	M	25J-22	A	-19	C	3U-3	C
-75	K					-60	N	-20	A	-30	D	-7	E
-100	M	TSGA-3	B	TTOP-3	B	ISAU-44	J	-18	A	-45	G	-12	K
-150	N	-4	B	-5	C	ISMA-5	C	-16	A	-60	J		
		-9	C	-10	D	ISMU-5	B	-14	A			4NW8	D
TPNW-1 1/2	A	14	E	-15	F	ISMWU-70	P	-12	A				
-3	A	-23	G			ISU-36	J	-11	B	2WU-40	M	4SJ-20	A
-5	A	-50	J	-4	D	-60	M	-9	C	35U-3	D	-16	A
-10	B	-75	L	-4	D			-7	C			-14	A
-15	C	-100	M	-6	G	ISWU-2	B	25WU-3	C				
-20	C	-150	P	-8	J	-14	G	-7	D			5KVTSGA-100	S
-30	D	-200	R	-10	K	-20	J	-10	F			-150	T
-40	E	-300	T	-12	K	30	L	-19	J			-250	W
		400	W	-16	L	ISWF-2	C	-24	L			-350	X
								-37	M			-400	Z
								-44	V				
								-61	R	3SF-7	J		

FIGURE 3B5. Aluminum and steel stuffing tubes cable assignment.

SH 132317106

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

1. THE CABLES LISTED ON THIS FIGURE ARE PER MIL-C-918L.
2. THIS FIGURE SUPERSEDES SHEET 386 OF DRAWING NAVJ-100-107 AND SECTION 4, SHEET 3-10 OF DRAWING NAVSEC NO. 8000-36202-73860.

CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE
5KVTSGU-100	S	FNWA-3	B	PBTM-5	C	2SUS-3	C	2SWUA-1	A	3SUS-3	E		
-150	T	-4	C	-15	E	-7	D	-3	E	-7	J		
-250	W	-9	D	-30	J	-10	G	-7	J	-10	L		
-350	X	-23	G		M	-14	J	-12	L	-14	M		
-400	Y			SRWA	B	-19	K	-19	N	-19	P		
		JAS-250	—			-24	M	-24	R	-24	R		
SSS	C	—	—	TNWA-3	B	-30	M	-30	S	-30	S		
6SGA-100	R	MOY-6	L	-4	B	-37	N	-37	T	-37	T		
-125	S	-14	P	-9	D	-44	P	-61	X	-44	W		
-150	T	-23	T	-14	D	-61	S						
-200	W	-40	W	-80	J			2UJA-10	C	3SJA-22	A		
		-60	Y	-75	L	2SJA-22	A	-15	C	-20	A		
8SGU-100	P			-100	M	-20	A	-30	D	-18	A		
-125	S	MNWA-7	B	-150	P	-16	A	-45	G	-14	A		
-150	T	-10	C			-14	A	-60	J	-12	B		
-200	W	-19	C	TPNWA-1-1/2	A	-12	B			-9	D		
7PS-6	E	-24	D	-3	A	-11	B	2UW-42	E				
		-30	E	-10	C	-9	C	2UNA-42	F	3SUA-3	D		
7SGA-3	C	-37	F	-15	C	-7	D	2UWS-42	F	-7	J		
-4	D	-44	G	-20	C	-10	G	2WA-40	N	-10	L		
7SGU-3	C	MSCS-7	C	-40	F	-14	J	3SA-3	D	-37	T		
-4	C	-10	D			-19	K	-7	J	-44	W		
7SS-2	C	-14	E	TPUM-6	G	-24	L	-10	L				
		-19	F			-30	M	-14	M				
8NWR	D	-24	G	TRW	D	-37	N	-19	P				
		-30	J			-44	P	-24	R				
8NWA6	D	-37	K	TRWA	E	-61	S	-30	S	-14	M		
		-44	L	TSPA-11	E			-37	T	-19	N		
DNWA-3	B	-61	M			2SWLA-7	J	-44	W	-24	S		
-4	B	-91	P							-30	T		
-9	C			TTRSA-2	D					-37	T		
-14	D	MA-14	B	-4	E					-44	W		
-23	D			-6	G								
-50	J	MUS-14	B	-8	J								
-75	K			-10	K								
-100	L			-12	K								
				-16	L								
				ISA-44	J								

FIGURE 386. Aluminum and steel stuffing tubes cable assignment.

SH 132317 107

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:
1. THE CABLES LISTED ON THIS FIGURE ARE PER MIL-C-818E.
2. THIS FIGURE SUPERSEDES SHEET 387 OF DRAWING
803-6001027 AND SECTION 4, SHEET 3-10 OF DRAWING
NAVSEC NO. 8000-58207-73801.

CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE
BC-2	A	DFPA-4	E	DLPA-4	D	DRIB-2-1/2	A	FCSP-88	M	FRIA-3	B	MCOG	C
3	A	-9	G	-9	J	-3	B	-220	T	-4	C		
DCOP-3	B	-14	G	-14	J	-4	B	FHFA-3	C	-9	C	MCOB-7	D
-4	B	-23	J	-23	K	-6	C	-4	G	-14	E		
-6	C	-30	K	-30	L	-9	C	-9	G	-23	G	MCOB-2	B
-9	C	-40	L	-40	M	-14	C	23	K			-4	C
-14	D	-50	M	-50	N	-23	D	50	N			-5	C
-23	G	-60	M	-60	N							-7	D
-30	J	-75	N	-75	N	DRIP-3	R					-10	F
-83	N	-100	P	-100	P	-4	C	FHFTA-9	D			-12	F
-250	V	-125	R	-125	R	-9	C					-14	G
-400	Y	-150	T	-150	S	-14	C	FJF-17	B			-19	J
		-200	T	-200	T	23	D	26	B			-22	K
		-250	V	-250	V			42	C			-24	K
DCP-2	A	-300	W	-300	W	DSGA-14	D	53	D			-26	L
-3	B	-400	Y	-400	Y	-30	G	66	D			-30	L
-4	B					-40	G	-84	D			-37	M
-6	C	DHFA-4	E	DPS-14	D	-60	J	-105	E			-44	N
-9	C	-8	G			-125	M	-133	F				
-14	G	-14	G	DR1-2 1/2	A	-150	N	-166	G			MCP-4	C
-23	K	-30	K	-3	B	-250	S	-212	G			-5	C
-30	L	-40	L	-4	A							-7	D
-400	Y	-50	L	-6	B	FBSP-3 1/2	A	FJXT-84	C			-10	D
-472	BB	-80	M	-9	C	-1	A	-133	E			-12	D
		-100	P			-2	A	-166	G				
DDGT-17	G	-125	R	DR1A-3	B	-3	A	212	G			MCS-2	B
-53	K	-150	T	-4	B	-4	B					-4	C
-105	N	-200	T	-6	C							-6	B
-212	S	-250	V	-9	C	FCOP-3	B	FLA-4	G			-7	C
-400	W	-300	W	-14	D	-4	C						
		-400	Y	-23	D	-9	D	FRI-4	B			MCS-5	C
						-133	T	-9	E				
		DHFTA-8	C	FCOTR-4	B								
		DLB-4	C	FCP-1	C							MDGA-19(6)	M
				-9	D							-19(14)	P
												-19(23)	S
												-19(40)	V

FIGURE 3B7. Aluminum and steel stuffing tubes cable assignment.

SH 132317108

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

1. THE CABLES LISTED ON THIS FIGURE ARE PER MIL-C-916.
2. THIS FIGURE SUPERSEDES SHEET 388 OF DRAWING
603-5001027 AND SECTION 4, SHEET 3-10 OF DRAWING
NAVSEC NO 8000-56202-73980.

CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE	CABLE	TUBE SIZE
MDGB-12(1")	C	MHPA-2	D	PBLW-4	B	SFPA-9	C	SHFL-400	N	SLPA-300	M	TBSP-3/5	A
-12(1)	B	-4	E	PBTM-5	C	-14	C	-500	P	-400	M	-1	A
MOGD-3(14)	C	-7	G	-10	F	-23	D	-650	R	-500	N	-2	A
-7(14)	D	-14	K	-15	J	-30	D	-800	S	-650	P	-3	A
MOGL-19(6)	M	-19	L	PBTX-4	B	-40	D	1000	T	-800	R	-4	A
MDGT-17	G	-22	M	SCOP-23	B	50	D	SHFP-200	M	-1000	V	-6	B
-53	K	-26	N	-60	C	60	E	-300	M			-9	B
-105	N	-37	P	-150	G	-75	F	-1300	M	SRPA-3	A	-14	C
-212	S	-44	S	-150	G	-100	F	-400	P	-4	A	-23	D
-400	W			-200	J	-125	G	-1300	N	-6	A		
MDGW-17(4)	Y			-250	K	-150	G	-1300	N	-9	A	TCP-1	A
-15(3)	Y			-253	K	-200	J	-1300	P	-14	A	-2	A
-12(2)	Y			-800	R	-400	L	-1300	P	-23	A	-4	B
MDGY-17(4)	X			SCP-1	A	-500	M	-650	R	SRLL-4	A	-6	C
-15(3)	X			-23	B	-650	N	-800	S			-9	C
-12(2)	X			-60	C	-800	P	-1300	S	SSGA-3	A	-23	K
MDY-6	L			-153	G			SHFR-4	C	-4	A	42	M
-14	P			-200	K			SLPA-4	A	-9	A	-153	S
-23	T			-253	L			-9	C	-14	B	-400	AA
-40	W			-814	T			-14	D	-23	B		
-60	Y							-23	D	-30	B	THFR-4	G
								-30	E	-40	C		
								-40	E	-150	G	TFPA-14	J
								-50	F	-500	M	-23	J
								-60	G	-1300	S	-30	K
								-75	G			-40	K
								-100	G	SSSP-200	J	-50	L
								-125	J	-300	L	-60	M
								-150	J	-400	M	-75	P
								-200	K	-500	N	-100	R
								-300	L	-650	P	-125	S
								-400	M	-800	R	-150	T
								-500	N			-250	W
								-650	P			-300	X
								-800	R			-400	Z

FIGURE 388. Aluminum and steel stuffing tubes cable assignment.

SH 132317109

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:

1. THE CABLES LISTED ON THIS FIGURE ARE PER MIL-C-915,
MIL-C-2194, MIL-C-24145, AND ARE OBSOLETE OR
MANUFACTURING HAS BEEN DISCONTINUED
2. LISTING CONTINUED ON FIGURE 3881
3. THIS FIGURE SUPERSEDES SHEET 389 & 3861 OF DRAWING
803-5001027 AND SECTION 4, SHEET 3-10 OF DRAWING
NAVSEC NO 9000-56202-73980

[illegible]

FIGURE 3B9. Aluminum and steel stuffing tubes cable assignment.

SH 132317110

NOTES:

1. PIPE USED IN CONJUNCTION WITH STUFFING TUBES MAY BE WELDED ON ONE SIDE OF THE BULKHEADS WHERE WELDS ON BOTH SIDES ARE REQUIRED.
 2. THIS FIGURE SUPERSEDES SHEET 3810 OF DRAWING 803-5001027 AND SECTION 4, SHEET 14, OF DRAWING, NAVSEC NO 9000-56202-73980
- A BALLISTIC BULKHEADS
B SHELL PLATING
C TORPEDO DEFENSE SYSTEM BULKHEADS.

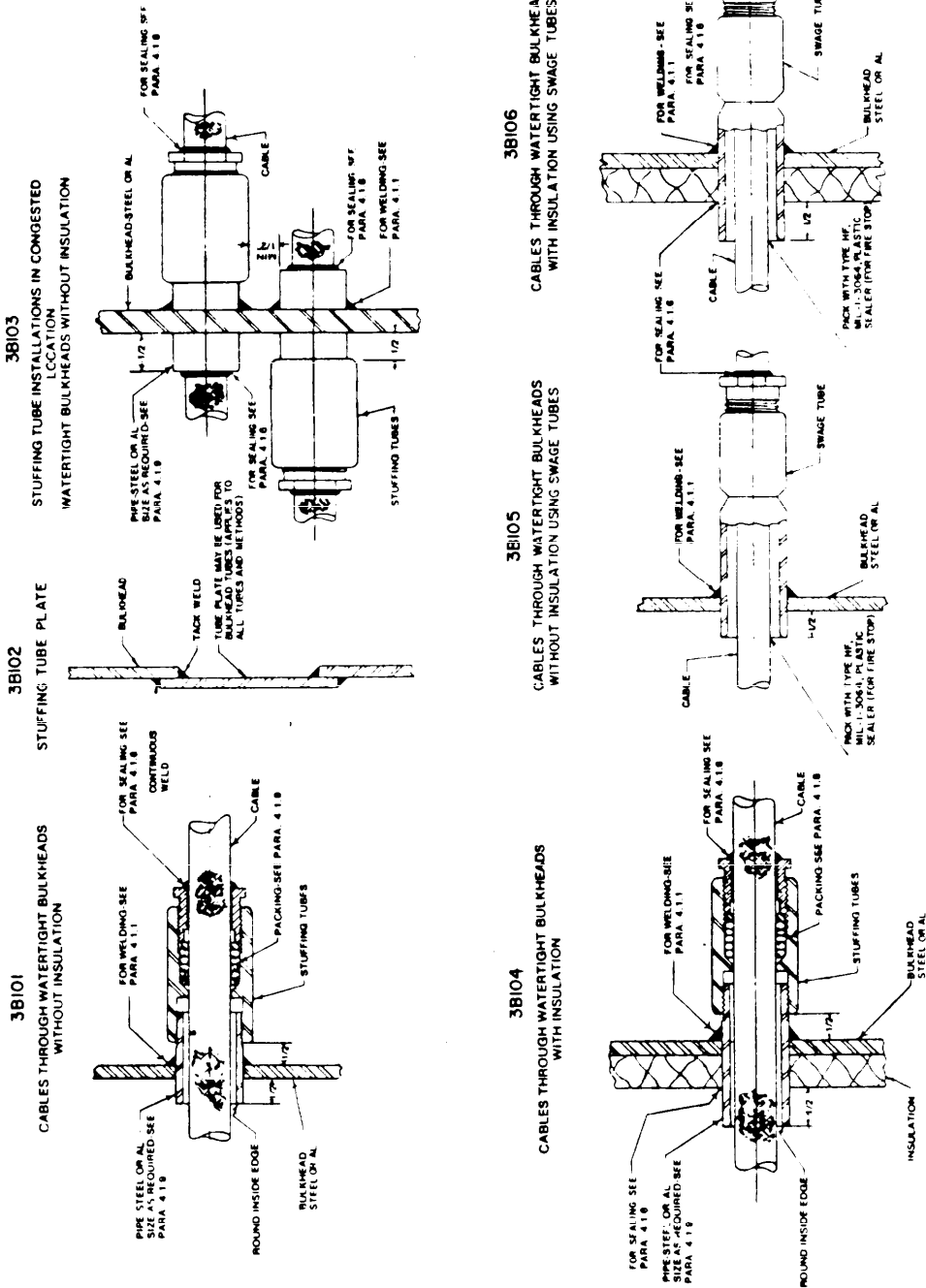


FIGURE 3810. Stuffing tubes for steel or aluminum bulkheads (surface ships).

SH 132317111

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTE

1. THIS FIGURE SUPERSEDES SHEET 3B11 OF DRAWING 8034-5001027 AND SECTION 4, SHEET 15 OF DRAWING NAVSEC NO. 6000-58202-73960

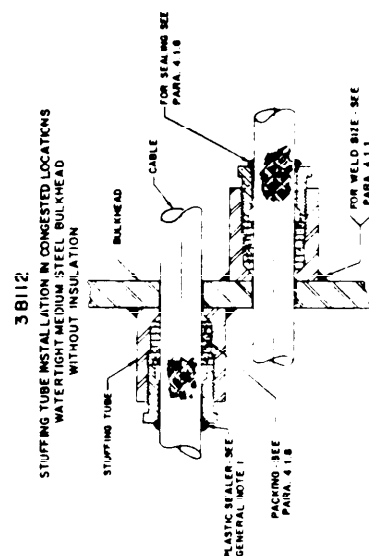
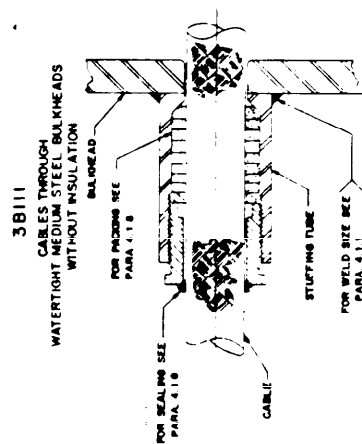


FIGURE 3B11. Stuffing tubes for steel or aluminum bulkheads (surface ships).

SH 132317112

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTE:

1. THIS FIGURE SUPERSEDES SHEET 3B12 OF DRAWING 803-5001027 AND SECTION 4, SHEET 147 OF DRAWING NAVSEC NO 9000-56202-73980.

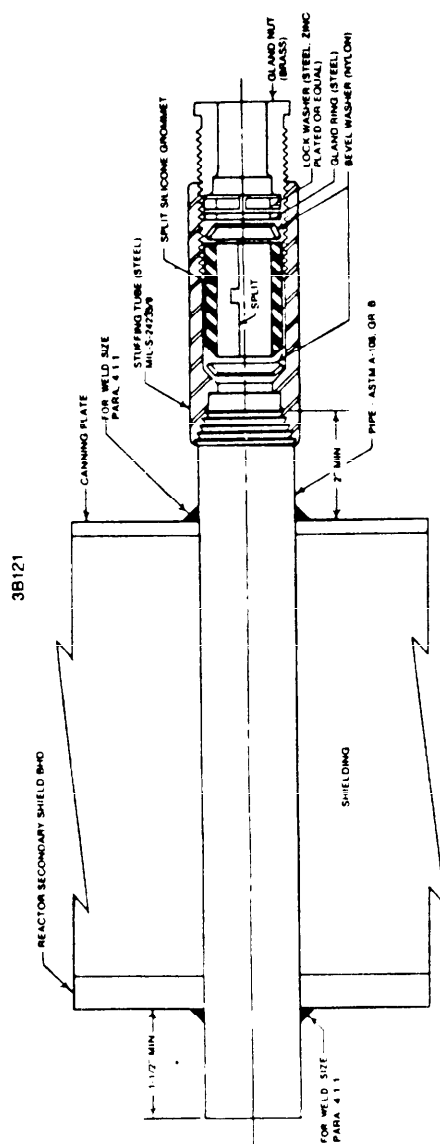
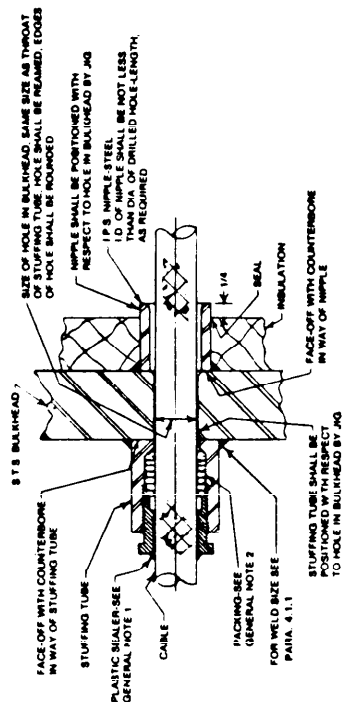


FIGURE 3B12: Stuffing tubes through shielded bulkheads (surface ships).

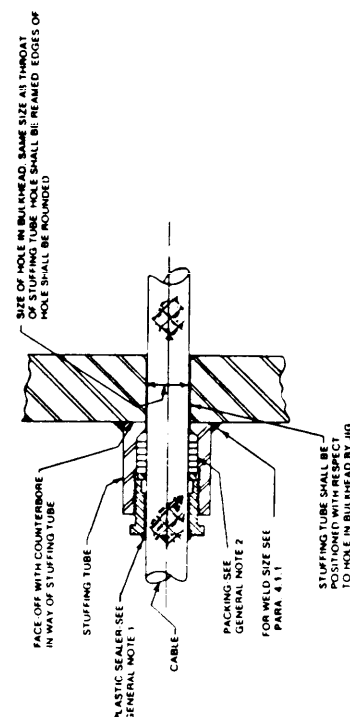
SH 132317113

NOTES:
1. THIS FIGURE SUPERSEDES SHEET 3B13 OF DRAWING 803-500 1027 AND SECTION 4 SHEET 40 OF DRAWING NAVSEC NO. 9000-58202-73980.

3B132
CABLES THROUGH S T S BULKHEADS
WITH INSULATION



3B131
CABLES THROUGH S T S BULKHEADS
WITHOUT INSULATION



SH 132317114

FIGURE 3B13. Stuffing tubes for ballistic bulkheads (surface ships).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:
1. THIS FIGURE SUPERSEDES SHEET 3B14 OF DRAWING
803-5001027 AND SECTION 4, SHEET 42 OF DRAWING,
NAVSEC NO 8000- 8000-54202-73980.

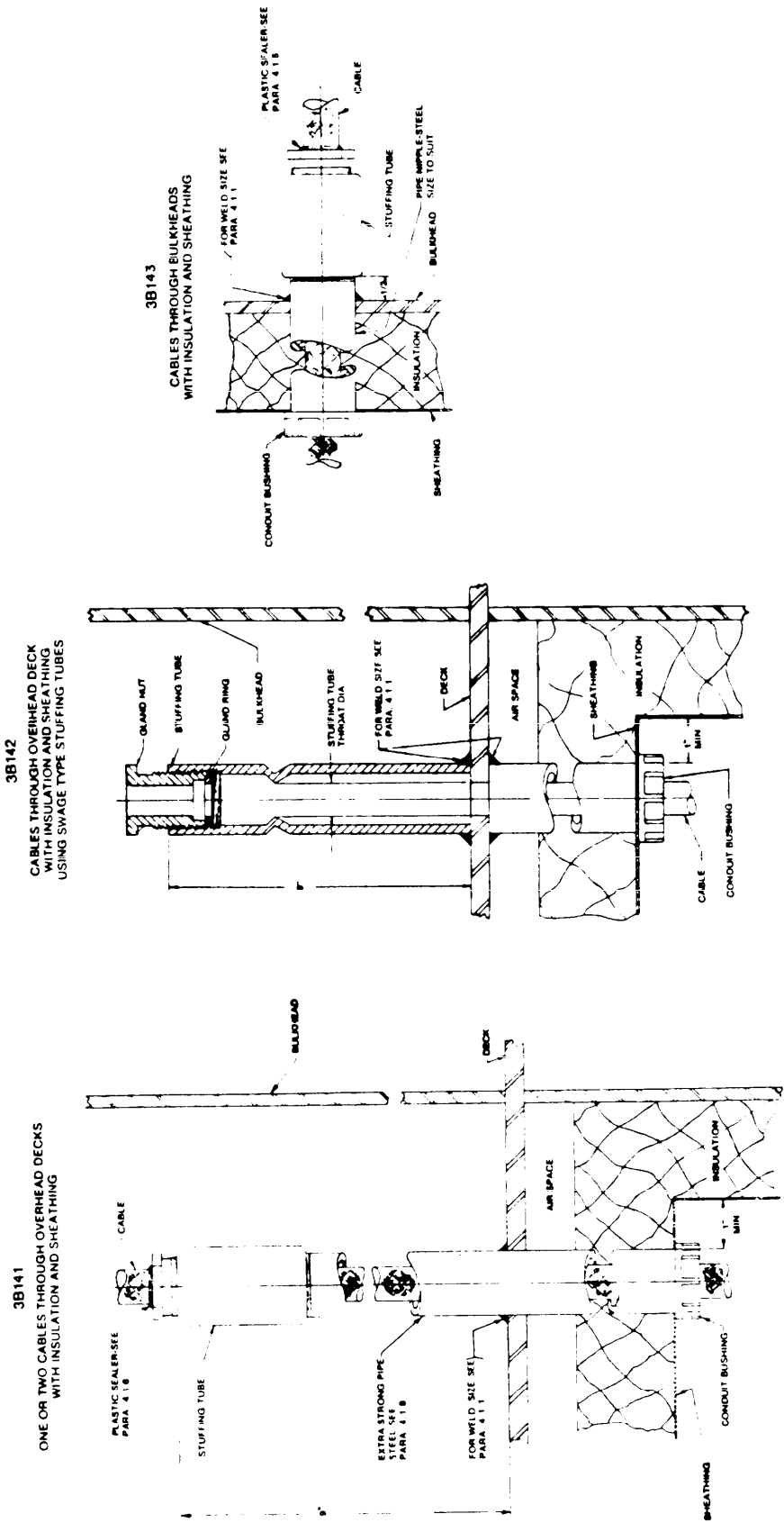


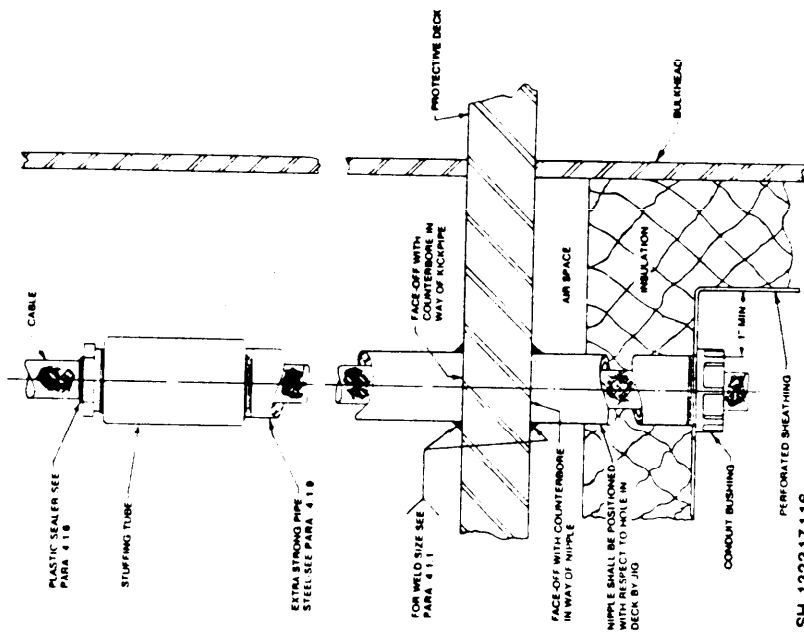
FIGURE 3B14. Stuffing tubes through acoustical spaces (surface ships).

SH 132317115

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTE:
THIS FIGURE SUPERSEDES SHEET 3B115 OF DRAWING
803-240-007 AND SHEET 4, SHEET 43 OF DRAWING
NAVSEC NO. 8080-56202-73860.

3B151
SINGLE OR MULTIPLE
CABLES THROUGH PROTECTIVE DECKS OVERHEAD
WITH INSULATION AND SHEATHING



3B152
CABLES THROUGH PROTECTIVE BULKHEADS
WITH INSULATION AND SHEATHING

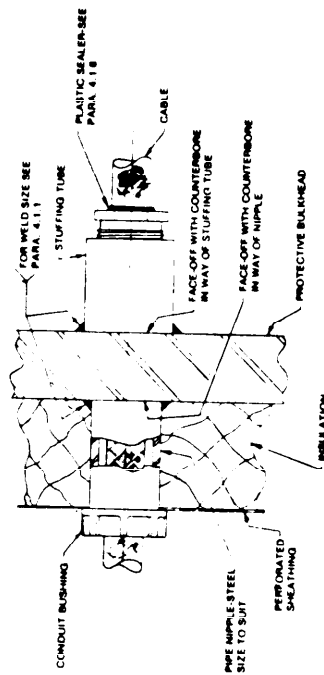


FIGURE 3B15. Stuffing tubes through acoustical spaces (surface ships).

SH 132317 118

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:
1. THE KICKPIPE CAN EITHER BE STRAIGHT OR BENT TO SUIT
INSTALLATION REQUIREMENTS.
2. THIS FIGURE SUPERSEDES SHEET 3B16 OF DRAWING
503-5001027 AND SECTION 4, SHEET 22 OF DRAWING
NAVSEC NO 9000-56202-73950

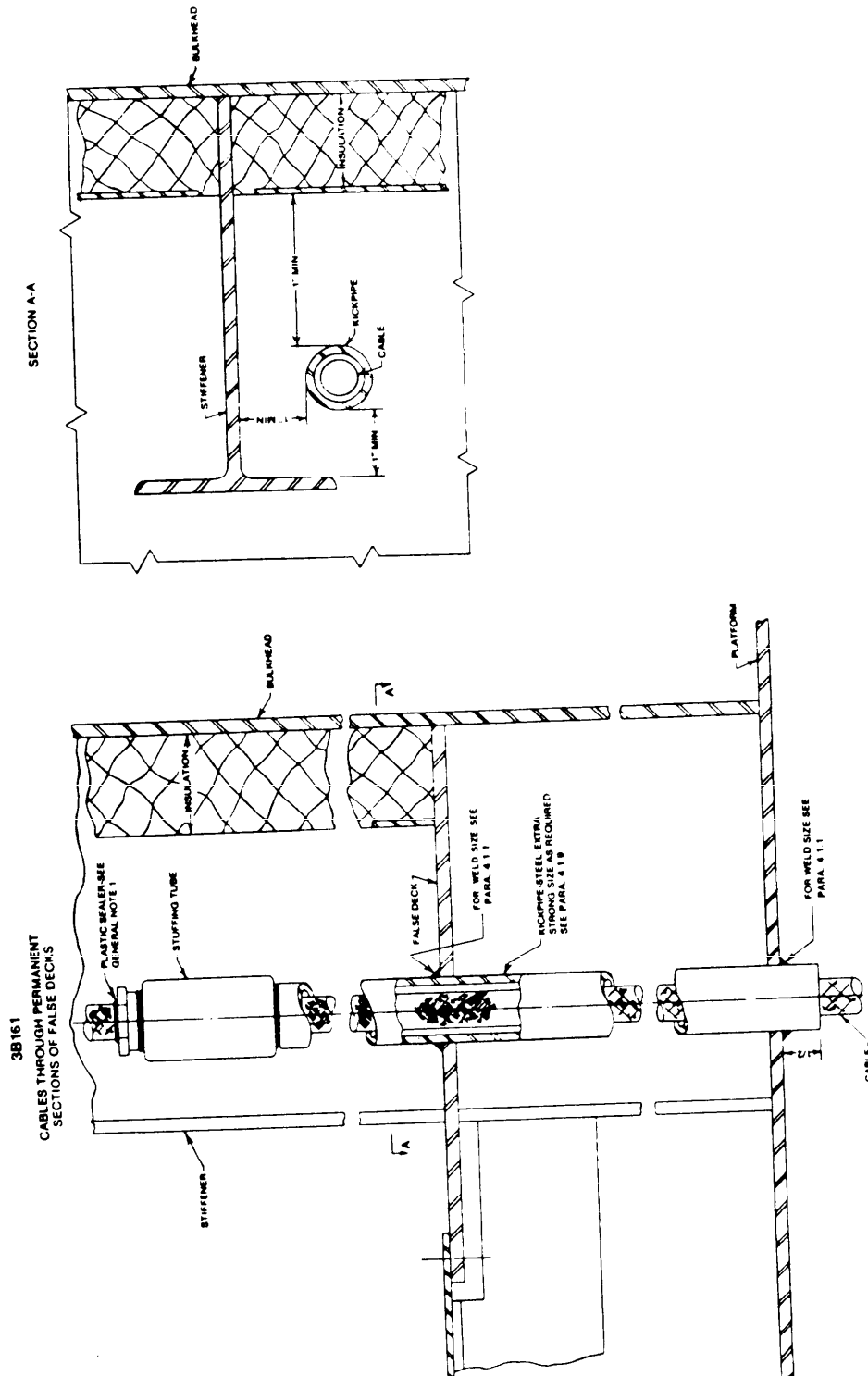
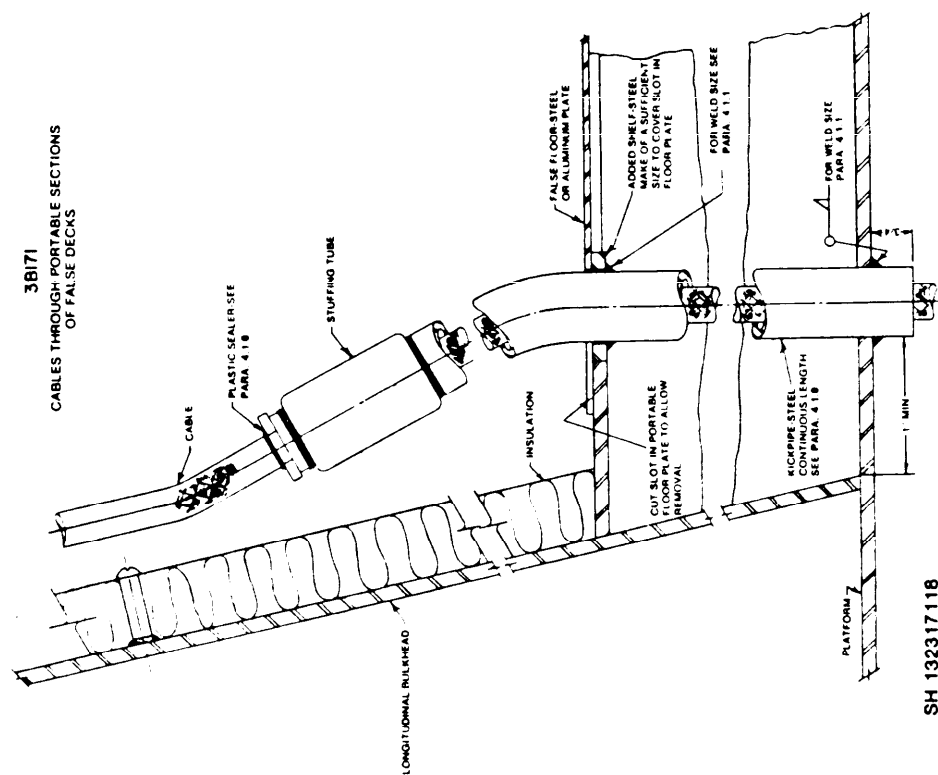


FIGURE 3B16. Stuffing tubes through false decks (surface ships).

SH 132317117

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:
1. THIS FIGURE SUPERSEDES SHEET 3B17 OF DRAWING
803-5001027 AND SECTION 4, SHEET 23 OF DRAWING.
NAVSEC NO 9000-36202-73980



SH 132317118

FIGURE 3B17. Stuffing tubes through false decks (surface ships).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES:
1. FOR KICKPIPE INSTALLATIONS THROUGH PROTECTIVE DECKS BOUNDING AIR CASINGS, THE KICKPIPE SHALL EXTEND THROUGH THE AIR CASING, AND BOTH DECKS IN ONE CONTINUOUS PIECE.
2. THIS FIGURE SUPERSEDES SHEET 3118 OF DRAWING 803-5001027 AND SECTION 4, SHEET 24 OF NAVSEC DRAWING 9000-56207-7-3980

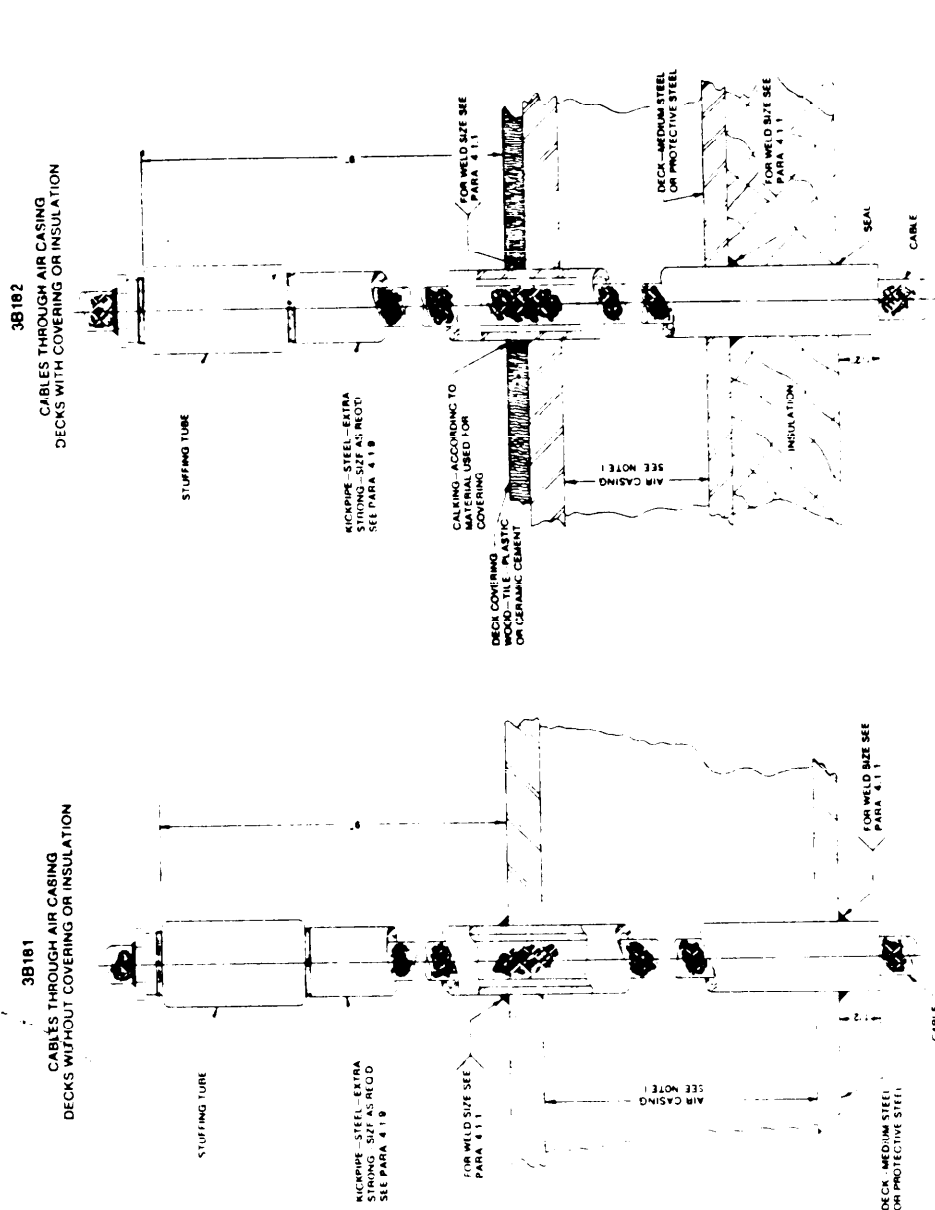
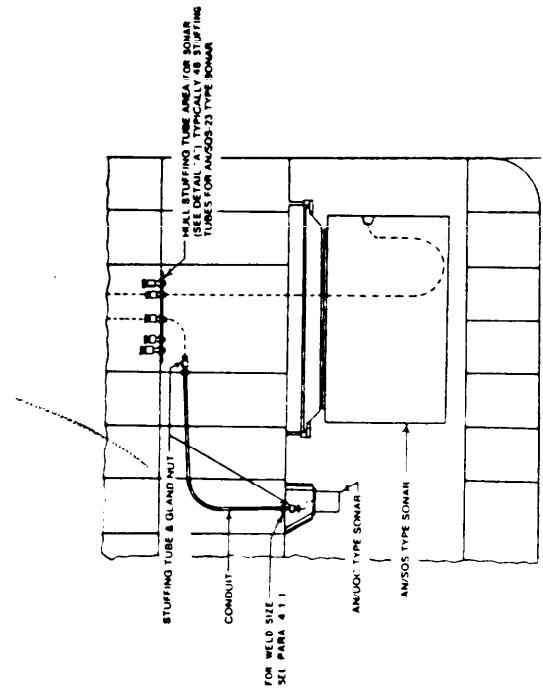
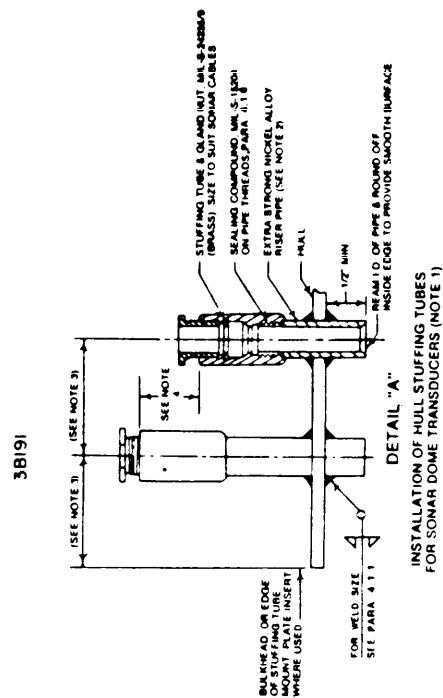


FIGURE 3B18. Stuffing tubes through air spaces (surface ships).

SH 132317119

NOTES:

1. ARRANGEMENT OF MAXI STUFFING TUBE AREA FOR SOME CONCRETE TRANSPIRES SHALL BE SPECIFIED ON DETAILED CONSTRUCTION DRAWINGS
2. INSTALLATION OF STUFFING TUBES SHALL BE IN ACCORDANCE WITH THIS DRAWING
3. HOLES FOR RISER PIPES SHALL BE DRILLED OR OTHER WISE MECHANICALLY CUT
4. STUFFING TUBE SPACING SHALL BE IN ACCORDANCE WITH SHEET 38.13.3B2
5. STAGGERED HEIGHTS MAY BE USED FOR ADJACENT RISER PIPES TO IMPROVE ACCESS TO STUFFING TUBES
6. THIS FIGURE SUPERSEDES SHEET 38.19. OF DRAWING, 803-5001027 AND SECTION 4, SHEET 113, OF DRAWING, NAVSPEC NO. 8000-5202-73990



SH 132317120

TYPICAL SONAR DOME
ARRANGEMENT

FIGURE 3B19. Stuffing tubes for sonar dome area (surface ships).

DOD-STD-2003-3(NAVY)
24 JUNE 1987

- NOTES:
1. FOR SUITABLE CABLE SUPPORT SEE MIL-STD-XXX-4.
 2. TUBES SHALL BE SPACED 1" MINIMUM FROM BULKHEAD AND 1" MINIMUM FROM EACH OTHER IN ACCORDANCE WITH FIGURE 3B2 AND 3B3.
 3. THIS FIGURE SUPERSEDES SHEET 3B20 OF DRAWING 803-5001027 AND SECTION 4, SHEET 29, OF DRAWING NAVSEC NO. 8000-56202-73980.

3B20i

THREE OR MORE CABLES THROUGH
TOPSIDE WATERTIGHT DECKS WITH INSULATION
APPLICABLE ALSO TO INBOARD INSTALLATIONS

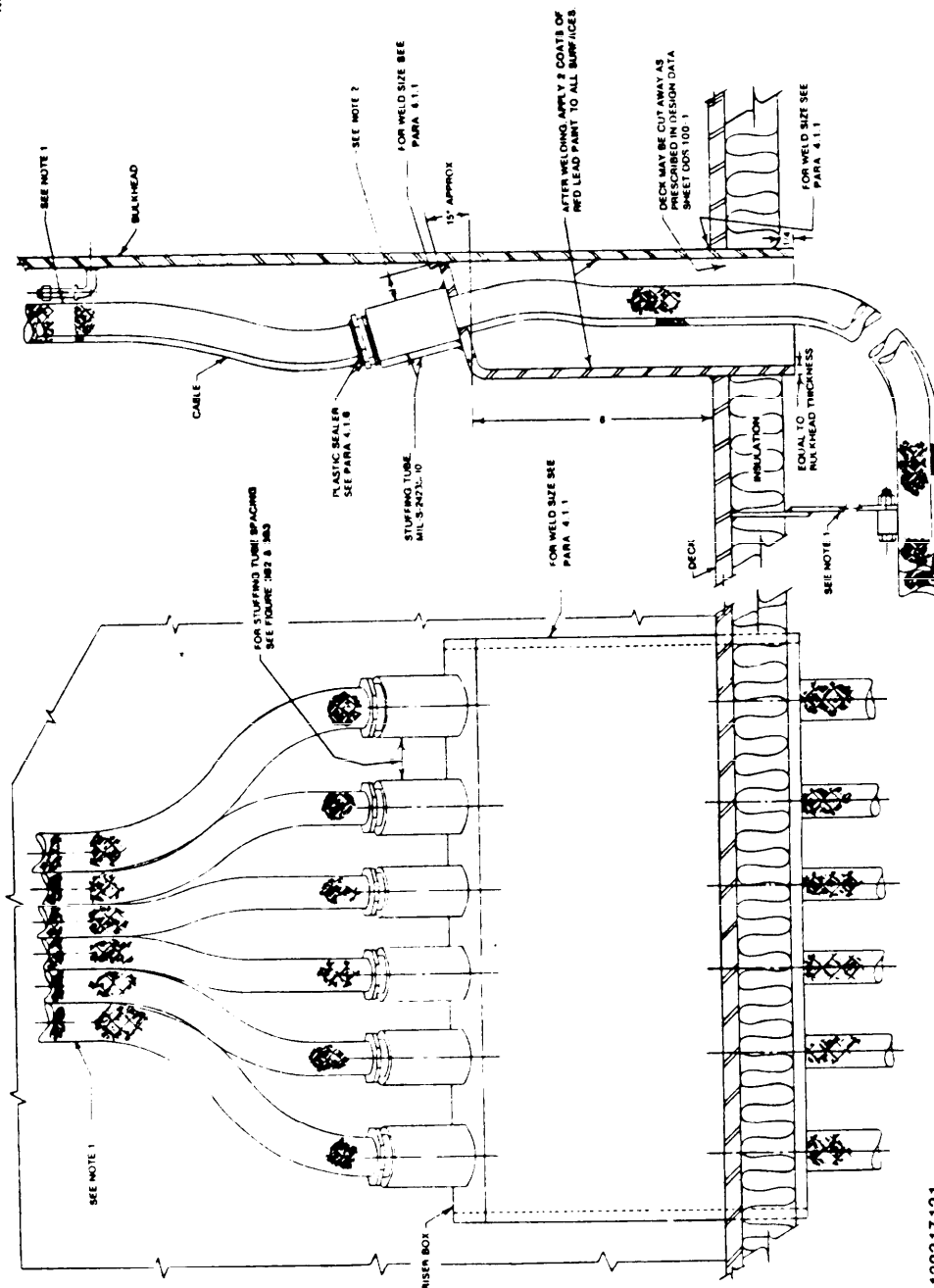
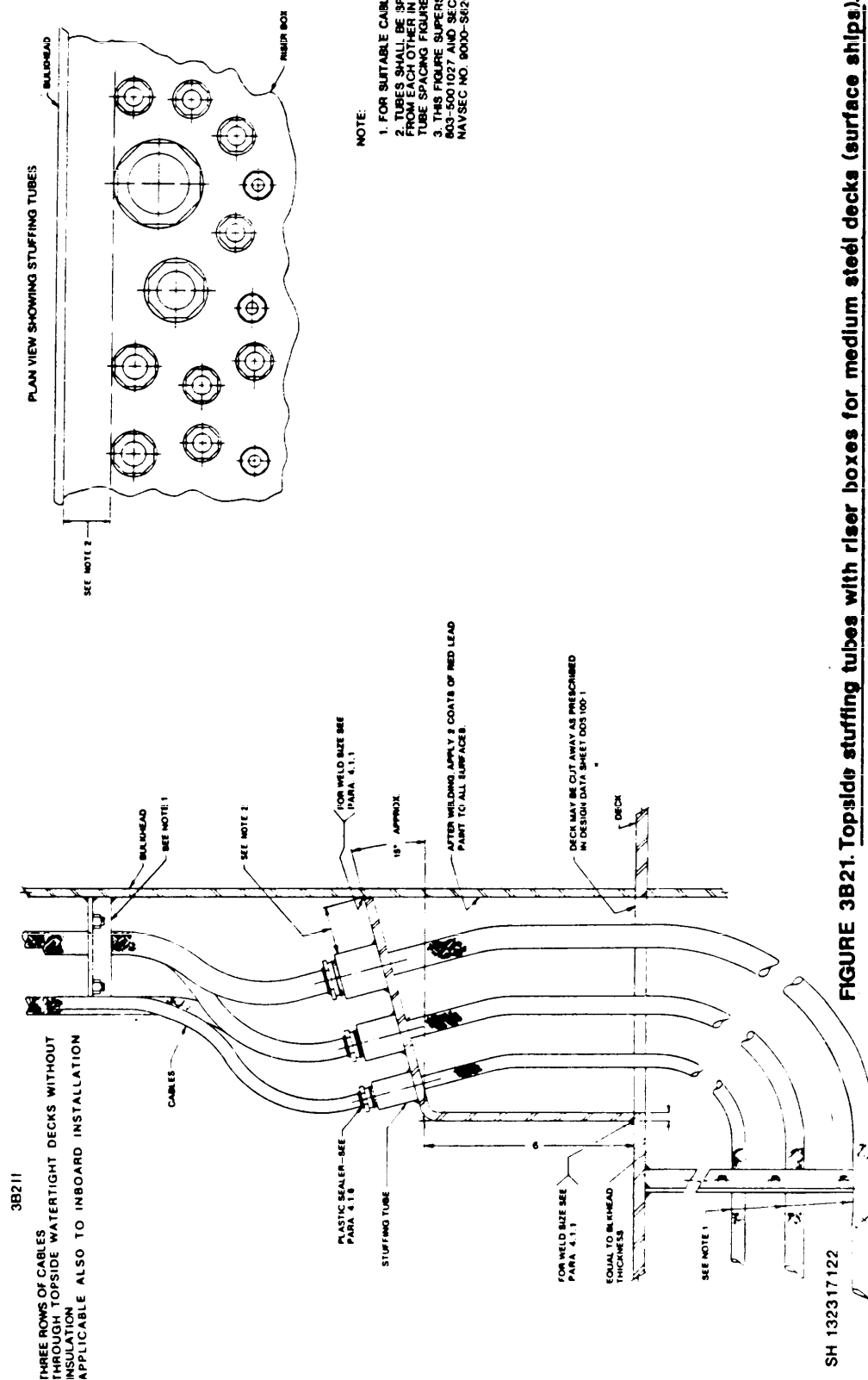


FIGURE 3B20. Topside stuffing tubes with riser box (surface ships).

SH 132317121

DOD-STD-2003-3(NAVY)
24 JUNE 1987



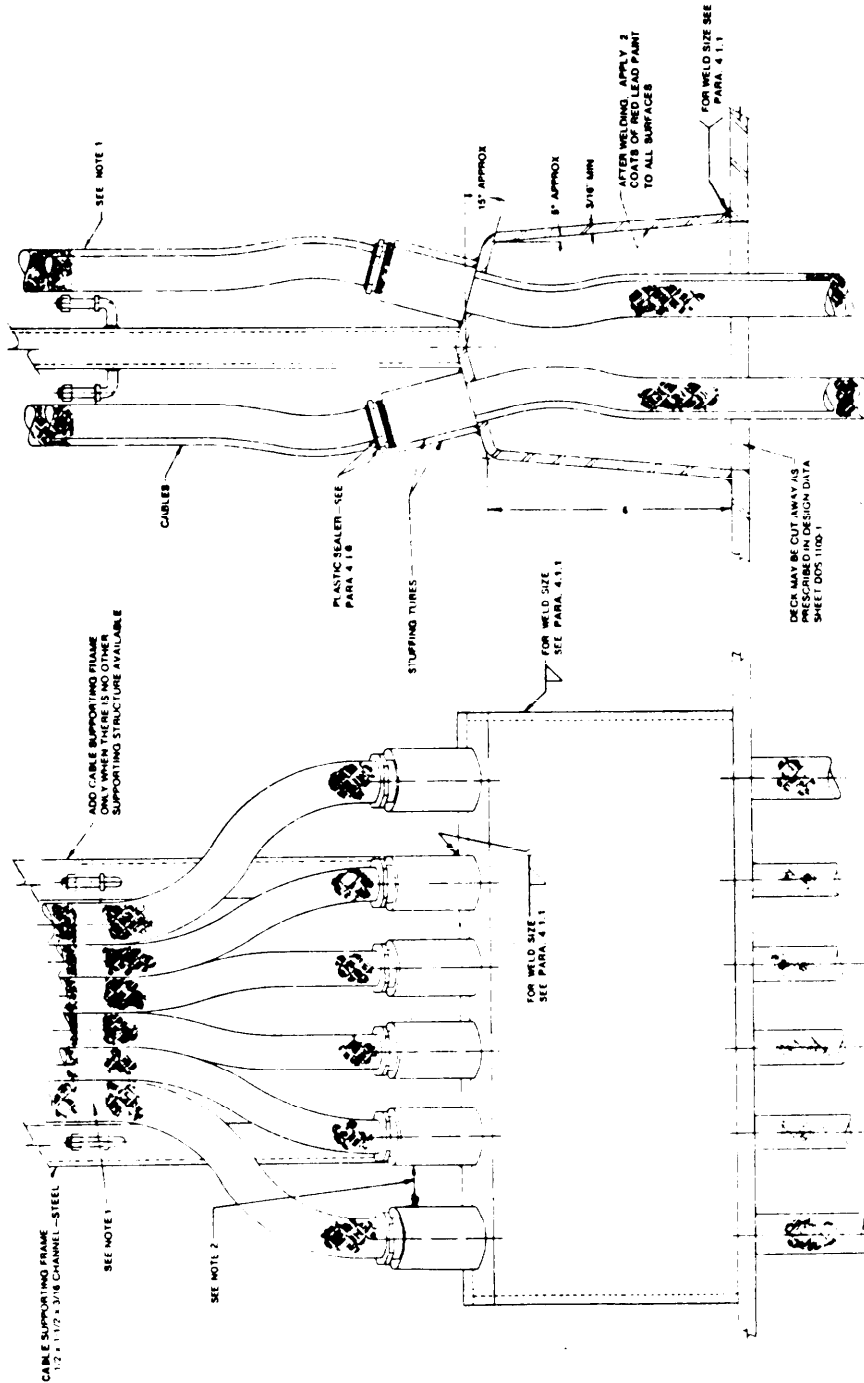
DOD-STD-2003-3(NAVY)
24 JUNE 1987

NOTES

1. FOR SUITABLE CABLE SUPPORT SEE MIL-81TD-XXX-4.
2. STUFFING TUBES SHALL BE SPACED FROM EACH OTHER AND FRAMEWORK AS PRESCRIBED ON FIGURES 3B2 AND 3B3.
3. THIS FIGURE SUPERSEDES SHEET 3B22 OF DRAWING 803-5001027 AND SECTION 4 SHEET 32 OF DRAWING NAVSEC NO. 8000-S6202-73980.

3B221

TWO ROWS OF CABLES
THROUGH WATERTIGHT DECKS WITHOUT INSULATION



SH 132317123
FIGURE 3B22. Topside stuffing tubes with riser box on medium steel decks not adjacent to a bulkhead (surface ships).

CABLE	TIME SIZE	PACKING ASSEMBLY		CABLE	TIME SIZE	PACKING ASSEMBLY		CABLE	TIME SIZE	PACKING ASSEMBLY		CABLE	TIME SIZE	PACKING ASSEMBLY	
		MM PART NO M19227	MM 5130-00			MM PART NO M19227	MM 5130-00			MM PART NO M19227	MM 5130-00			MM PART NO M19227	MM 5130-00
BC-2	1	16-0005	202-2584	DFPA-4	4T	18-0007	202-2597	DLPA-4	4T	19-0005	202-2585	DRIB-2-1/2	2	17-0001	202-2586
-3	1	16-0005	202-2584	-9	5	20-0002	202-2600	-9	5	20-0004	202-2602	-3	2	17-0004	202-2589
DCOP-3	2	17-0004	202-2589	-14	5	20-0004	202-2602	-14	5	20-0005	202-2603	-4	3	18-0018	202-2590
-4	3	18-0018	202-2590	-23	5	20-0005	202-2603	-23	5	20-0006	202-2606	-6	4T	19-0002	202-2582
-9	4T	19-0001	202-2591	-30	5	20-0008	202-2608	-30	5	20-0010	202-2608	-9	4T	19-0003	202-2583
-9	4T	19-0003	202-2591	-40	5	20-0010	202-2608	-40	6	21-0002	202-2610	-14	4T	19-0005	202-2585
-14	4T	19-0006	202-2596	-50	6	21-0002	202-2610	-50	6	21-0004	202-2612	-23	4T	19-0007	202-2587
-23	5	20-0003	202-2596	-60	6	21-0005	202-2613	-60	6	21-0006	202-2615	DRIP-3	2	17-0003	202-2588
-30	5	20-0006	202-2604	-75	7	22-0001	202-2616	-75	6	21-0007	202-2615	-4	2	17-0004	202-2589
-43	7	22-0001	202-2616	-100	7	22-0002	202-2617	-100	7	22-0002	202-2617	-9	4T	19-0002	202-2582
-250	9	24-0003	202-2630	-125	8	23-0001	202-2620	-125	8	23-0001	202-2620	-14	4T	19-0003	202-2583
-400	9	24-0007	202-2634	-150	8	23-0004	202-2623	-150	8	23-0003	202-2622	-23	4T	19-0005	202-2585
DCP-2	2	17-0001	202-2586	-250	9	24-0002	202-2629	-250	9	24-0002	202-2624	DSGA-14	4T	18-0004	202-2584
-4	3	18-0018	202-2590	-300	9	24-0004	202-2631	-300	9	24-0003	202-2630	-30	5	20-0002	202-2600
-9	4T	19-0001	202-2591	-400	9	24-0006	202-2633	-400	9	24-0006	202-2633	-40	5	20-0003	788-8711
-14	5	20-0005	202-2603	DFPA-4	4T	18-0007	202-2597	DPS-14	4T	19-0005	202-2595	-125	6	21-0005	202-2604
-23	5	20-0008	202-2607	-25	5	20-0005	202-2603	-3	2	17-0003	202-2584	-150	7	22-0001	202-2613
-30	6	21-0003	202-2611	-30	5	20-0006	202-2606	-4	2	17-0004	202-2589	-250	8	23-0003	202-2622
-400	9	24-0007	202-2634	-40	5	20-0010	202-2608	-6	3	18-0018	202-2590	FBSP-3/5	1	16-0004	202-2583
DDGT-17	5	20-0002	202-2600	-50	6	21-0002	202-2610	-9	4T	19-0002	202-2582	-1	1	16-0005	202-2584
-53	6	21-0001	202-2609	-60	6	21-0005	202-2613	DRHA-3	2	17-0003	202-2584	-2	1	16-0005	202-2584
-105	7	22-0001	202-2616	-75	7	22-0001	202-2616	-4	2	17-0004	202-2586	-3	2	17-0002	202-2587
-212	8	23-0003	202-2632	-125	8	23-0001	202-2610	-6	3	18-0018	202-2590	-4	2	17-0004	202-2590
-400	9	24-0007	202-2634	-150	8	23-0004	202-2623	-9	4T	19-0002	202-2582	FCOP-3	3	18-0018	202-2590
				-200	8	23-0006	202-2625	-14	4T	19-0003	202-2593	-4	4T	19-0002	202-2582
				-250	9	24-0002	202-2628	-23	4T	19-0005	202-2595	-9	4T	19-0005	202-2586
				-300	9	24-0004	202-2631					-133	9	24-0001	202-2628
				-400	9	24-0006	202-2633					FCOTP-4	3	18-0018	202-2590
				DFFTA-9	3	18-0018	202-2590					FCP-4	4T	19-0001	202-2581
				DLB-4	3	18-0018	202-2590					-9	4T	19-0005	202-2585

SH 132317175

FIGURE 3C8. Nylon stuffing tubes cable assignment (obsolete or discontinued cable).

NOTES
 1 THE CABLES LISTED ON THIS SHEET ARE PER
 MM-C-915, MM-X-2184, MM-C-23206 AND MM-C-24145
 AND ARE OBSOLETE OR MANUFACTURING HAS BEEN
 DISCONTINUED
 2 THIS FIGURE SUPERSEDES SHEET 3C8
 OF DRAWING 803-500127 AND SECTION 4.
 SHEET 68-73 OF DRAWING
 NAVSEC NO 9000-56202-73980

CABLE	TUBE SIZE	PACKING ASSEMBLY	CABLE	TUBE SIZE	PACKING ASSEMBLY	CABLE	TUBE SIZE	PACKING ASSEMBLY	CABLE	TUBE SIZE	PACKING ASSEMBLY
25WLA-7	5	20-0004	202-2602	35U-22	1	16-0001	202-2580	5KVTSGL-100	8	23-0003	202-2621
25WU-1	1	16-0004	202-2583	-20	1	16-0004	202-2623	-150	8	23-0005	202-2624
-3	4T	19-0005	202-2595	-18	1	16-0004	202-2633	-250	9	24-0002	202-2629
7	5	20-0004	202-2602	-16	1	16-0005	202-2644	-350	9	24-0005	202-2632
-12	6	21-0001	202-2609	-14	2	17-0001	202-2596	-400	9	24-0007	202-2634
-19	6	21-0005	202-2613	-12	2	17-0003	202-2588	SSS	4T	19-0002	202-2592
24	7	22-0002	202-2617	-9	4T	19-0003	202-2593	6SGL-100	8	23-0001	202-2620
-30	8	23-0002	202-2621	35WU-3	4T	19-0006	202-2596	-125	8	23-0004	202-2623
-37	8	23-0003	202-2622	-7	5	20-0004	202-2602	-150	8	23-0006	202-2625
61	9	24-0004	202-2631	-10	6	21-0002	202-2610	-200	9	24-0003	202-2630
25WUA-1	1	16-0004	202-2583	-14	6	21-0004	202-2612	6SGL-100	8	23-0001	202-2620
-3	4T	19-0005	202-2595	-19	6	21-0007	202-2615	-125	8	23-0004	202-2623
-7	5	20-0004	202-2602	-24	8	23-0001	202-2620	-150	8	23-0006	202-2625
-12	6	21-0001	202-2609	-30	8	23-0003	202-2622	-200	9	24-0003	202-2630
-19	6	21-0005	202-2613	-37	8	23-0006	202-2625	7PS-6	4T	19-0007	202-2597
-24	7	22-0002	202-2617	-44	9	24-0003	202-2630	7SGL-3	4T	19-0002	202-2582
-30	8	23-0002	202-2621	3U-3	4T	19-0004	202-2594	-4	4T	19-0003	202-2593
-37	8	23-0003	202-2622	-7	5	20-0002	202-2600	7SGL-3	4T	19-0002	202-2582
-61	9	24-0004	202-2631	-12	5	20-0009	202-2507	-4	4T	19-0003	202-2593
2U-10	3	18-0008	202-2580	3U-3	4T	19-0004	202-2594	7PS-6	4T	19-0007	202-2597
-15	4T	19-0002	202-2592	-7	5	20-0002	202-2600	7SGL-3	4T	19-0002	202-2582
-19	4T	19-0002	202-2592	-12	5	20-0009	202-2507	-4	4T	19-0003	202-2593
-30	4T	19-0005	202-2596	-12	5	20-0009	202-2507	7SGL-3	4T	19-0002	202-2582
-45	5	20-0003	788-8711	4NW8	4T	19-0007	202-2598	-4	4T	19-0003	202-2593
-60	5	20-0005	202-2603	4NW8	4T	19-0007	202-2598	7SS-2	4T	19-0004	202-2594
2WU-40	6	21-0005	202-2613	4NW8	4T	19-0007	202-2598	BNW6	4T	19-0004	202-2594
35U-3	4T	19-0005	202-2595	4SU-20	1	16-0004	202-2583	BNW6	4T	19-0004	202-2594
-7	5	20-0004	202-2602	-16	1	16-0006	202-2585	BNW6	4T	19-0004	202-2594
-10	5	20-0010	202-2608	-14	2	17-0002	202-2587	BNW6	4T	19-0004	202-2594
-14	6	21-0003	202-2611	4SUA-20	1	16-0004	202-2583	BNW6	4T	19-0004	202-2594
-19	6	21-0007	202-2615	-16	1	16-0006	202-2585	BNW6	4T	19-0004	202-2594
-24	7	22-0003	202-2618	-14	2	17-0002	202-2587	BNW6	4T	19-0004	202-2594
-30	8	23-0002	202-2621	5KVTSGL-100	8	23-0002	202-2621	BNW6	4T	19-0004	202-2594
-37	8	23-0005	202-2624	-150	8	23-0005	202-2624	BNW6	4T	19-0004	202-2594
-44	9	24-0001	202-2628	-250	9	24-0002	202-2629	BNW6	4T	19-0004	202-2594
35F-7	5	20-0007	202-2605	-350	9	24-0005	202-2632	BNW6	4T	19-0004	202-2594
				-400	9	24-0007	202-2634	BNW6	4T	19-0004	202-2594

SH 132317174

FIGURE 3C7. Nylon stuffing tubes cable assignment.

NOTES
 1. THIS FIGURE SUPERSEDES SHEET 3C7
 ON DRAWING 803-5001027 AND SECTION 4.
 SHEET 69-73 OF DRAWING
 NAVSEC NO. 0 8000-56202-73980
 2. LISTING CONTINUED ON FIGURE 3C21

SH 132317173

FIGURE 3C6. Nylon stuffing tube cable assignment

NOTES:
1. THIS FIGURE SUPERSEDES SHEET 3C6 OF DRAWING
803-5001027 AND SECTION 4 SHEET 89-73 OF
DRAWING NAVSEC NO. 9000-S6202-73960

CABLE	TUBE SIZE	PACKING ASSEMBLY	CABLE	TUBE SIZE	PACKING ASSEMBLY	CABLE	TUBE SIZE	PACKING ASSEMBLY	CABLE	TUBE SIZE	PACKING ASSEMBLY	CABLE	TUBE SIZE	PACKING ASSEMBLY
MSCA-7	3	18-0018	PBTMU-5	4T	19-0002	SSGU-50	4T	19-0001	THOF-3	2	17-0004	TPNW-1-1/2	1	16-0004
-10	4T	19-0004	-15	4T	20-0007	-15	4T	19-0004	-4	3	18-0018	-3	1	16-0006
-14	4T	19-0005	-30	5	20-0006	-100	4T	19-0005	-6	4T	19-0002	-5	2	17-0001
-19	4T	19-0007				-200	5	20-0003	-9	4T	19-0004	-10	3	18-0018
-24	5	20-0003	PI-3	4T	19-0004	-300	5	20-0006	-14	4T	19-0007	-15	4T	19-0005
-30	5	20-0004	-7	5	20-0002	-400	5	20-0110	-23	5	20-0004	-20	4T	19-0002
-37	5	20-0006	-12	5	20-0009	-650	6	21-0006	-42	6	21-0003	-30	4T	19-0006
-44	5	20-0009				-800	7	22-0001	-150	8	23-0004	-14	4T	19-0007
-61	6	21-0003	SHOF-3	1	16-0001	-1000	8	23-0001	-250	9	24-0003	-100	6	21-0004
-91	7	22-0001	-23	3	18-0018	-1600	9	24-0001	-400	9	24-0006	-150	7	22-0001
						-2000	9	24-0004	-500	9	24-0008	-1600	9	24-0004
MSCU-7	3	18-0018												
-10	4T	19-0004	-150	5	20-0003	SFS	4T	19-0001	THW-3	2	17-0003	THW-3	2	17-0003
-14	4T	19-0005	-200	5	20-0006				-4	2	17-0004	-4	2	17-0004
-19	4T	19-0007	-250	5	20-0009	TCJA-4	2	17-0004	-8	4T	19-0005	-8	4T	19-0005
-24	5	20-0003	-500	7	22-0001	TCJU-4	2	17-0004	-14	4T	19-0007	-14	4T	19-0007
-30	5	20-0004	-650	7	22-0003				-23	4T	19-0009	-23	4T	19-0009
-37	5	20-0006	-800	8	23-0001	TCJA-4	2	17-0004	-30	5	20-0005	-30	5	20-0005
-44	5	20-0009				TCJX-3	4T	19-0005	-50	5	20-0007	-50	5	20-0007
-61	6	21-0003	SRW	2	17-0003	-7	5	20-0005	-75	5	20-0010	-75	5	20-0010
-91	7	22-0001	SRWA	2	17-0003	-12	6	21-0003	-100	6	21-0004	-100	6	21-0004
			SF-300	5	20-0009				-150	7	22-0001	-150	7	22-0001
MSP	7	22-0003				TCCK-1	2	17-0003						
			SSGA-50	4T	19-0001	-3	4T	19-0005						
MSPW	7	23-0003	-75	4T	19-0004									
MA-14	2	17-0003	-100	4T	19-0005	-7	5	20-0005						
MU-14	2	17-0003	-300	5	20-0006	-12	6	21-0003						
MUS-14	2	17-0004	-400	5	20-0010	TCOP-2	2	17-0001						
MWF-7	3	18-0018	-650	6	21-0006	TC1A-4	2	17-0004						
-10	4T	19-0004	-800	7	22-0001									
-14	4T	19-0005	-1000	8	23-0001	TC1U-4	2	17-0004						
-19	4T	19-0007	-1600	9	24-0001	TC1X-1	1	16-0006						
-24	5	20-0002	-2000	9	24-0004									
-30	5	20-0005												
-37	5	20-0007												
PBTM-5	4T	19-0002												
-15	4T	19-0007												
-30	5	20-0006												

SH 132317172

FIGURE 3C5. Nylon stuffing tube cable assignment.

NOTES
1. THIS FIGURE SUPERSEDES SHEET 3C5 OF DRAWING 803-5001027 AND SECTION 4 SHEET 68-73 OF DRAWING NAVSEC NO 9000 56202-73980

NOTES:
1 CABLE DIAMETER MAY BE INCREASED WITH HEAT SHRINK TUBING FOR PROPER GROMMET FIT.
2 THIS FIGURE SUPERSEDES SHEET 3C4 OF DRAWING 803-5001027 AND SECTION 4 SHEET 69-73 OF DRAWING NAVSEC NO 9000-SR207-1380

CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY	
		IN PART NO	NAVSEC /			IN PART NO	NAVSEC /			IN PART NO	NAVSEC /			IN PART NO	NAVSEC /
CVSF 4	6	21-0007	202-2588	DSGA-3	2	17-0003	202-2588	FNW-3	3	18-0018	202-2580	MCSF-4	7	22-0002	202-2617
DCOP	1	16-0004	202-2583	-4	2	17-0004	202-2589	-4	4T	19-0001	202-2591	MDU-6	5	20-0006	202-2604
-1-1/2	1	16-0006	202-2585	-9	4T	19-0002	202-2592	-9	4T	19-0004	202-2594	-14	6	21-0007	202-2615
-2	2	17-0001	202-2586	-14	4T	19-0006	202-2596	-23	5	20-0002	202-2600	-23	8	23-0003	202-2622
				-50	5	20-0004	202-2602	FPS-14	5	20-0002	202-2600	-40	9	24-0001	202-2628
DI-OF 3	2	17-0004	202-2589	-75	5	20-0009	202-2607	FSCA-3	2	17-0004	202-2589	-60	9	24-0005	202-2632
-4	3	18-0018	202-2590	-100	6	21-0001	202-2609	-4	4T	18-0001	202-2591	MHOF-7	4T	19-0001	202-2591
-6	4T	19-0001	202-2591	-200	7	22-0003	202-2618	-9	4T	19-0004	202-2594	-10	4T	19-0003	202-2593
-9	4T	19-0003	202-2593	-300	8	23-0004	202-2623	-23	5	20-0004	202-2602	-14	4T	19-0004	202-2594
-14	4T	19-0007	202-2597	-400	9	24-0001	202-2628	-50	5	20-0006	202-2606	-19	4T	19-0006	202-2596
-23	5	20-0003	202-2603	DSGU-3	2	17-0003	202-2588	-75	6	21-0004	202-2612	-24	5	20-0001	20-0001
-30	5	20-0005	202-2605	-4	2	17-0004	202-2589	-100	6	21-0006	202-2614	-30	5	20-0002	202-2602
-83	6	21-0007	202-2615	-9	4T	19-0002	202-2592	-150	8	23-0001	202-2620	-37	5	20-0004	202-2604
-250	9	24-0002	202-2629	-14	4T	19-0005	202-2595	-200	8	23-0004	202-2623	-44	5	20-0006	202-2606
-400	9	24-0006	202-2633	-23	5	20-0002	202-2600	FSGU-3	2	17-0004	202-2589	-61	6	21-0001	202-2609
DLT 4	4T	19-0006	202-2596	-50	5	20-0004	202-2602	-4	4T	18-0001	202-2591	MMOP-5	1	16-0006	202-2585
				-75	5	20-0009	202-2607	-9	4T	19-0004	202-2594	MMW-7	2	17-0003	202-2588
DNW-3	2	17-0003	202-2588	-100	6	21-0001	202-2609	-23	5	20-0004	202-2602	-10	3	18-0018	202-2590
-4	2	17-0004	202-2589	-200	7	22-0003	202-2618	-50	5	20-0006	202-2606	-14	4T	19-0003	202-2591
-9	4T	19-0002	202-2592	-400	9	24-0001	202-2628	-75	6	21-0004	202-2612	-19	4T	19-0005	202-2593
-14	4T	19-0004	202-2594	DS-2	2	17-0003	202-2588	-100	6	21-0006	202-2614	-24	4T	19-0007	202-2597
-23	4T	19-0005	202-2595	-3	4T	19-0001	202-2591	-150	8	23-0001	202-2620	-37	5	20-0001	20-0001
-50	5	20-0004	202-2602	-4	4T	19-0001	202-2591	-200	8	23-0004	202-2623	-44	5	20-0004	202-2602
-75	5	20-0009	202-2607	DSWS-4	5	20-0001	20-0001	FSS-2	4T	19-0001	202-2591	MH-D-1	1	16-0001	202-2580
-100	6	21-0002	202-2610	-4	4T	19-0001	202-2591	-3	4T	19-0001	202-2591	-0-2-1/2	1	16-0001	202-2580
				DSWS-4	5	20-0001	20-0001	-4	4T	19-0004	202-2594	-1-2-1/2	1	16-0001	202-2580
DRW	4T	19-0005	202-2595	ECM	6	21-0006	202-2614	MS-250	-	-	-	MS-37	5	20-0001	20-0001
				LCMA	6	21-0006	202-2614	MCS-2	2	17-0004	202-2589	MSA-37	5	20-0001	20-0001
				FNW-3	3	18-0018	202-2590	-4	4T	19-0001	202-2591				
				-9	4T	19-0005	202-2595	-5	2	17-0003	202-2588				
				-42	6	21-0006	202-2614	-6	3	18-0018	202-2590				
				-60	7	22-0006	202-2617	-7	4T	19-0004	202-2594				
				-133	8	23-0006	202-2623								

FIGURE 3C4. Nylon stuffing tube cable assignment.

SH 132317171

NOTES:
1 SIZE 4 STRAIGHT AND ANGLE TUBE IS FOR
REPLACEMENT ONLY IN EXISTING INSTALLATIONS
WHERE SIZE 4T IS NOT INTERCHANGEABLE
2 THIS FIGURE SUPERSEDES SHEET 3C3 OF DRAWING
803-5001027 AND SECTION 4 SHEET 68 OF DRAWING
NAVSEC NO 8000-56202-73980

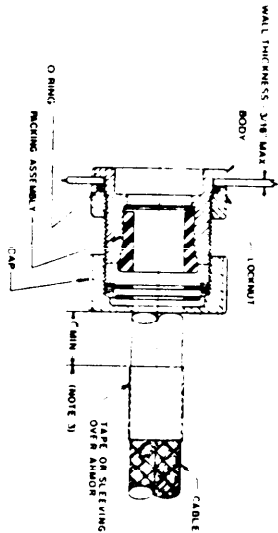
STRAIGHT TUBE SIZES 1 THRU 9, MIL-S-19822/1 (SHIPS)
ANGLE TUBE SIZES 1 THRU 6, MIL-S-19822/2 (SHIPS)
NPT TUBE SIZES 1 THRU 9, MIL-S-19822/3 (SHIPS)
"Y" TYPE TUBE SIZES 1 THRU 4, MIL-S-19822/4 (SHIPS)
(SEE NOTE 1)

STUFFING TUBE SIZES													
STRAIGHT TUBE					ANGLE TUBE					NPT TUBE			
TUBE SIZE	MILITARY PART NO M19822/1	NATIONAL STOCK NO 5975-00-	O RING ARP NO	NSN 5330-00-	CLEARANCE HOLE	MILITARY PART NO M19822/1	NATIONAL STOCK NO 5975-00-	O RING ARP NO	NSN 5330-00-	CLEARANCE HOLE	MILITARY PART NO M19822/1	NATIONAL STOCK NO 5975-00-	NPT TAP SIZE
1	1-001	-298-4082	568-212	-187-3538	888	2-001	-503-4884	568-212	-187-3538	888	3-001	-608-4883	1/2
2	1-002	-298-4083	568-214	-188-5382	1 010	2-002	-603-4883	568-212	-187-3538	888	3-002	-608-4884	3/4
3	1-003	-477-4881	568-216	-188-8177	1 136	2-003	-477-4884	568-216	-188-8177	1 136	3-003	-477-4884	1
4	1-004	-296-4075	568-220	-188-8188	1 385	2-004	-503-4852	568-216	-188-5385	1 280	3-004	-603-9272	1 1/4
5	1-005	-298-4086	568-228	-298-0180	2 010	3-005	-503-4886	568-218	-298-0180	2 010	3-005		1 1/2
6	1-007	-298-4087	568-230	-054-4888	2 510	2-007	-503-4887	568-220	-054-4888	2 510	3-006	-608-4088	2
7	1-008	-298-4088	568-232	-188-3720	2 780						3-007	-608-4087	2 1/2
8	1-008	-298-4089	568-238	-231-4107	3 280						3-008	-608-4086	3
9	1-010	-298-4100	568-242	-188-3737	4 010						3-009	-608-4088	3 1/2
4T	1-004	-5975-0046	568-218	-188-5385	1 280	2-004	-5975-0045	568-218	-171-8818	1 280		-692-9235 ¹	4T
"Y" TUBE													
TUBE SIZE	MILITARY PART NO M19822/1	NATIONAL STOCK NO 5975-00-	O RING ARP NO	NSN 5330-00-	CLEARANCE HOLE								
1	4-01	-182-8136	568-212	-187-3538	8 888								
2	4-02	-182-8140	568-214	-188-5382	1 010								
3	4-03	-182-8141	568-216	-188-8177	1 136								
4	4-04	-182-8142	568-220	-188-8188	1 385								

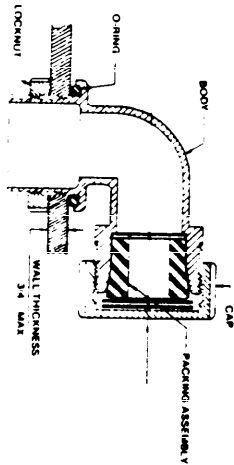
SEE NOTE 1

FIGURE 3C3. Nylonstuffing tube data.

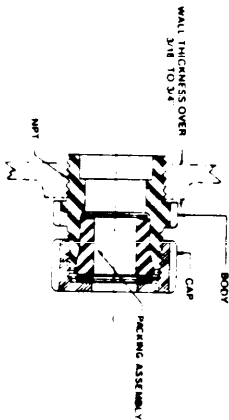
3C21
STRAIGHT TYPE
MIL-S-19622/1



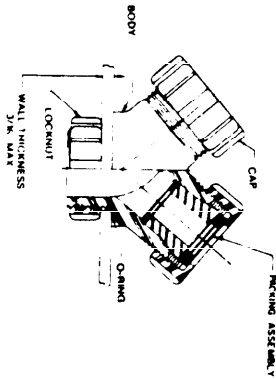
3C23
90° ANGLE TYPE
MIL-S-19622/2



3C22
NPT TYPE
MIL-S-19622/3

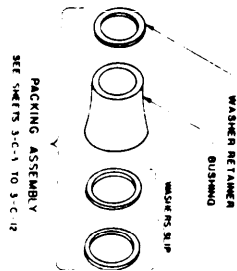


3C24
"Y" TYPE
MIL-S-19622/4



NOTES:

- 1 PACKING ASSEMBLIES AND "O" RINGS ARE NOT FURNISHED WITH STUFFING TUBES THEY MUST BE ORDERED SEPARATELY BY INSTALLING ACTIVITY TO SUIT INSTALLATIONS.
- 2 "O" RINGS ARE NOT REQUIRED FOR NON-WATERTIGHT INSTALLATIONS.
- 3 SECURE ARMOR ON CABLE A MINIMUM OF 1' FROM PLASTIC TUBE FACE WITH PRESSURE SENSITIVE VINYL TAPE MIL-I-24391 OR BY A SHRINK FIT PLASTIC SLEEVE METAL SQUEEZE RINGS SIMILAR TO BURNBY-HYBRING MAY BE USED
- 4 SEE FIGURE 3C1 FOR GENERAL INSTALLATIONS NOTES
- 5 THIS FIGURE SUPERSEDES SHEET 3C2 OF DRAWING 803-5001027 AND SECTION 4 SHEET 65 & 66 OF DRAWING NAVSEC NO 9000-56202-73980

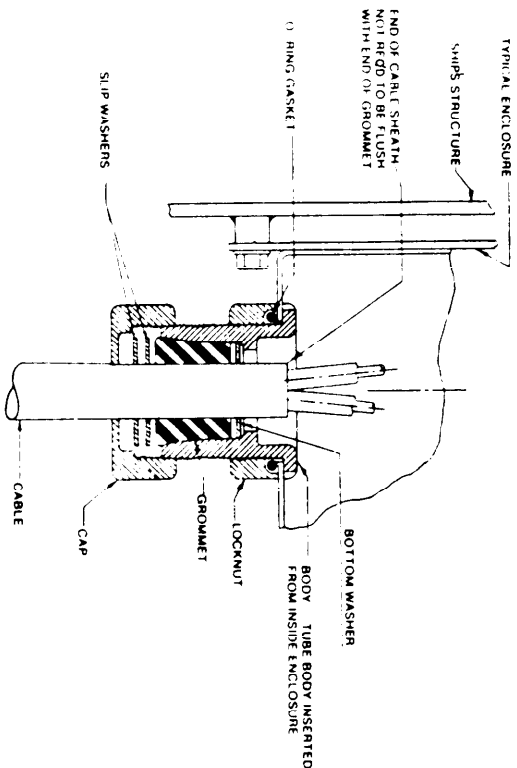


SH 132317169

FIGURE 3C2. Nylon stuffing tube assembly.

- NOTES:
- 1 IN GENERAL THE STUFFING TUBES SIZE IS THE SAME AS THAT ASSIGNED TO THE CABLES BODY AND END STUFFING TUBES ARE NOT REQUIRED IN THOSE SITUATIONS WHERE THE ADDITION OF THE REQUIRED SYNTHETIC RESIN TUBING INCREASES THE DIAMETER OF THE BUNCHED INDIVIDUAL LEADS LARGER THAN THE THROAT DIAMETER OF THE ASSIGNED TUBE THE NEXT LARGER TUBE SIZE IS SPECIFIED
 - 2 IN THOSE CASES WHERE THE BUNCHED CONDUCTOR LEADS CANNOT BE ACCOMMODATED IN THE STUFFING TUBE USE THE SIZE OF THE ASSIGNED TUBE TO THE TUBE FREEZE THE PLUG TO 400 F AND DRILL A HOLE TO THE DIMENSION GIVEN, THIS MAKING A NEW GROMMET
 - 3 THIS FIGURE SUPERSEDES SHEET 3C1 OF DRAWING 803-5001027 AND SECTION 4, SHEET 64, OF DRAWING, NAVSEC NO 99000-56207-73980

- INSTALLATION NOTES
- 1 INSPECT THE HOLE IN THE ENCLOSURE FOR CONFORMANCE WITH THE CLEARANCE HOLE REQUIRED AS SHOWN ON FIGURES 3C3 THROUGH 3C12 AND REMOVE ANY FLAKES OR IRREGULARITIES
 - 2 FOR STEEL ENCLOSURES, WHERE THE ROUGHNESS IS GREATER THAN A 125 MICRO INCH FINISH, (NOT REQUIRED ON ALUMINUM ENCLOSURES) SURFACE PREPARATION WITH 120 GRIT SANDPAPER IS REQUIRED. SPREAD 1/2" WIDE AROUND THE HOLE ON THE EXTERIOR OF THE ENCLOSURE. APPLY ONE COAT OF PRIMER GATES ENG. CO. N-10 OR EQUAL AND ALLOW TO SET DUST COATED SURFACE WITH TALC (SOAPSTONE) IF PRIMER IS THOUGHOUTLY DRY AT TIME OF TUBE INSTALLATION. OMIT TALC.
 - 3 WITH STRAIGHT TUBE TYPE INSERT THE STUFFING TUBE BODY IN THE HOLE FROM INSIDE THE ENCLOSURE. IF THE TUBE IS ANGLE TYPE, THE INTERIOR FITTING FROM THE ENCLOSURE MUST BE THE INTERIOR FITTING FROM THE ENCLOSURE.
 - 4 WITH ANGLE AND "Y" TUBES, INSERT THE STUFFING TUBE BODY IN THE HOLE FROM THE OUTSIDE OF THE ENCLOSURE. EXCESS LENGTH PROTRUDING INTO THE ENCLOSURE MAY BE REMOVED.
 - 5 SCREW LOCKNUT ONTO BODY AND TIGHTEN AGAINST O-RING GASKET SUFFICIENTLY TO OBTAIN PLASTIC TO METAL CONTACT OF THE STUFFING TUBE AND ENCLOSURE. IF THE LOCKNUT IS NOT TIGHTENED TO THIS POINT, CONTACT CANNOT BE OBTAINED. TIGHTEN THE LOCKNUT UNTIL THE THREADS START TO SKIP. THIS WILL BE CONSIDERED A SATISFACTORY INDICATION OF TIGHTNESS. (SEE INSTALLATION NOTE 13)
 - 6 REMOVE SUFFICIENT ARMOR FROM THE CABLE FOR CONNECTIONS WITHIN THE ENCLOSURE PLUS THE BODY LENGTH AND TRIM TO SUIT. AVOID CUTTING CABLE SHEATH. SEIZE END OF ARMOR OF CABLE WITH STEVENSON WIRE AND PLACE CAP AND THE TWO SLIP WASHERS OVER END OF CABLE.
 - 7 PREPARE CONDUCTORS FOR MAKING ELECTRICAL CONNECTION.
 - 8 PLACE BOTTOM WASHER OVER THE END OF CABLE AGAINST THE END OF THE GROMMET.
 - 9 INSERT END OF CABLE THROUGH STUFFING TUBE AND INTO THE ENCLOSURE SO AS TO SEAT THE GROMMET INTO TUBE BODY AND TIGHTEN SUFFICIENTLY TO CLAMP THE GROMMET TO FORM A TIGHT SEAL BETWEEN THE CABLE AND TUBE.
 - 10 SCREW CAP AND TIGHTEN SUFFICIENTLY TO PREVENT TURNING ALSO HOLD TUBE BODY WHEN TIGHTENING CAP TO PREVENT BREAKING THE WATER TIGHT SEAL.
 - 11 SEALING PLUGS ARE FOR USE IN SERVICE TO SEAL NYLON STUFFING TUBES FROM WHICH THE CABLES HAVE BEEN REMOVED. WHEN INSTALLING THE PLUGS, THE GROMMET SHALL BE DISCARDED BUT THE NYLON WASHERS SHALL BE RETAINED AND LEFT IN THE STUFFING TUBE. BONDING AGENT IS NOT REQUIRED ON PLUG.
 - 12 "O" RINGS SHALL BE FURNISHED BY THE INSTALLING ACTIVITY IN ACCORDANCE WITH MIL-P-5518 OR MIL-G-18586 CL. 2 OR RESISTANT TYPE IS WHEN NECESSARY TO PASS AIRCRAFT TEST. APPLY ELASTIC 31731 RIV SILICONE RUBBER TO THE GROMMET.

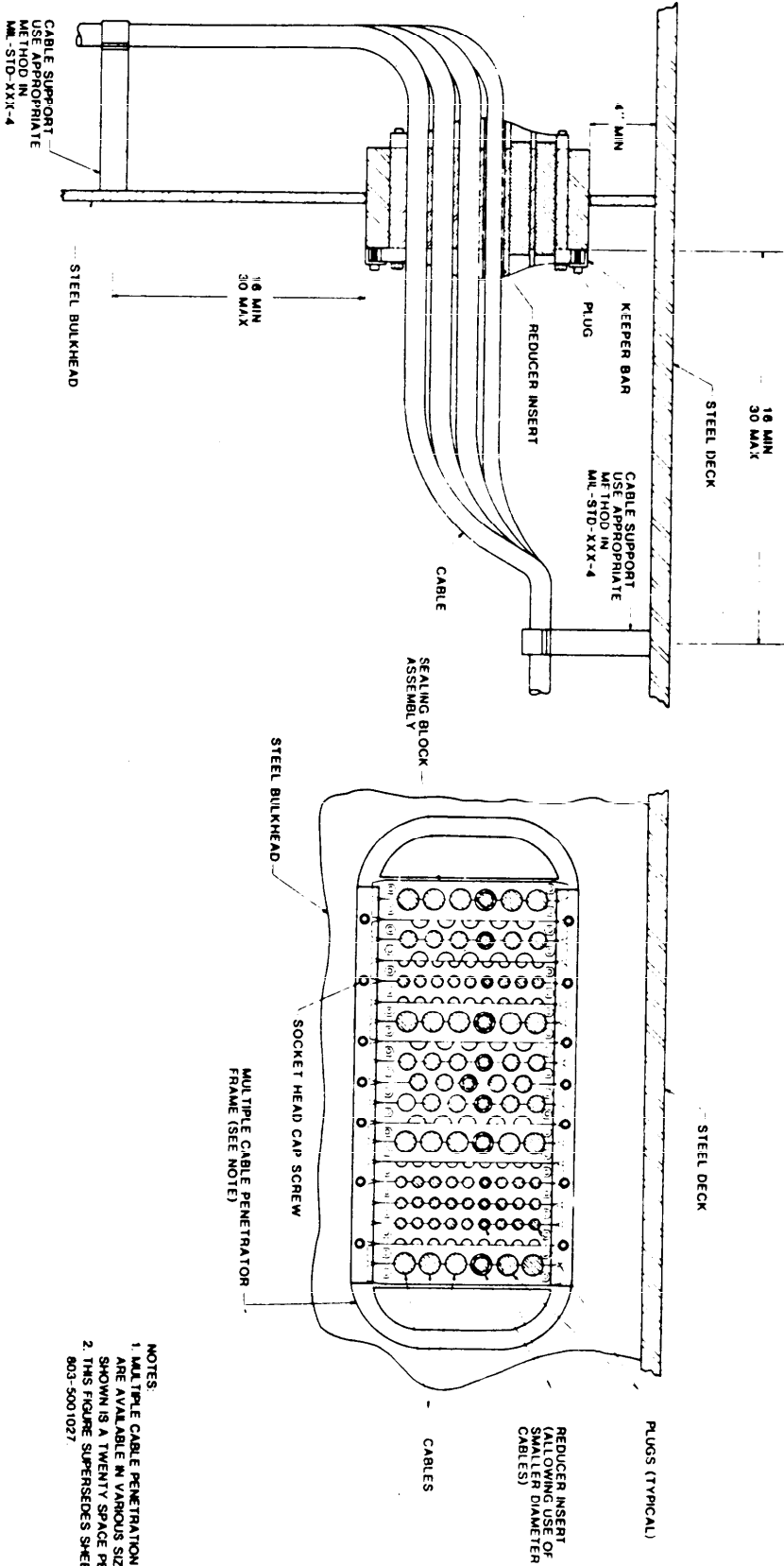


3C11
APPLIES ALSO TO ANGLE TUBES

FIGURE 3C1. Nylon stuffing tube typical installation.

SH 132317167

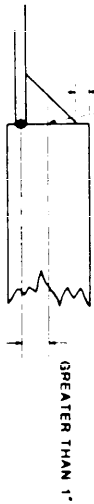
FIGURE 3B66. Multi-cable penetrators (type TW) typical installation in steel bulkhead.



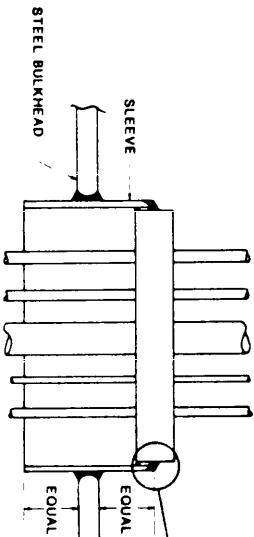
- NOTES
1. MULTIPLE CABLE PENETRATOR FRAME ARE AVAILABLE IN VARIOUS SIZES AND ARRANGEMENTS. SHOWN IS A TWENTY SPACE PENETRATOR.
 2. THIS FIGURE SUPERSEDES SHEET 3B66 OF DRAWING 803-5001027

WELD GUSSETS, 25 MIN THICKNESS AT CENTER OF KEYSIDE AND ON TWFS 30. WELD TWO MORE GUSSETS APPROX. 4 INCHES BOTH SIDES OF CENTER GUSSET.

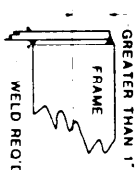
	SLEEVE		
	DM "A"	DM "B"	DM "C"
PENETRATOR	6.11	12.25	1.82
TWFS 8	9.36	14.75	3.63
TWFS 10	11.25	23.96	5.00
TWFS 20	11.75	32.08	5.00



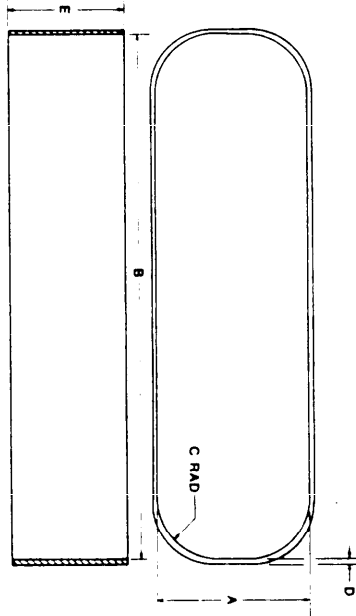
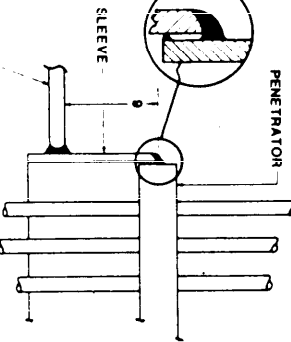
PROVISIONS FOR ECCENTRIC MOUNTING



INSTALLATION FOR BULKHEADS WHERE SLEEVE IS REQUIRED



INSTALLATION FOR DECKS

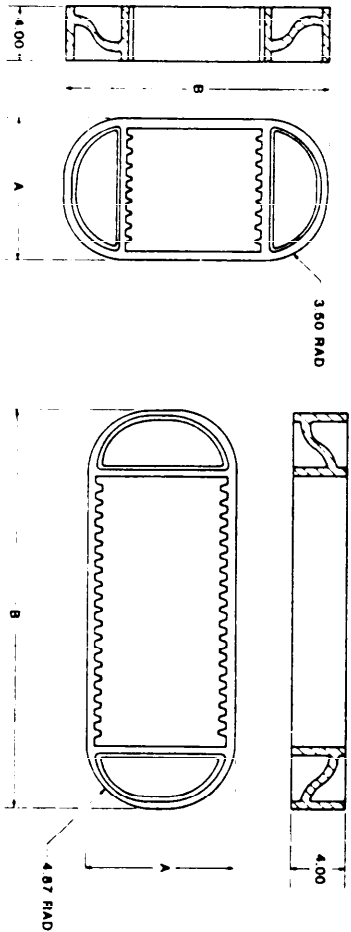


BULKHEADS										DECKS									
DIMEN. "D"					DIMEN. "E"					DIMENSION "D" / DIMENSION "E"									
DK PL LBS					DK PL LBS														
PENETRATOR					PENETRATOR					PENETRATOR									
TWFS 6	N/R	N/R	N/R	625	N/R	N/R	N/R	N/R	3.75	TWFS 6	11.4	5/16	3/8	1/2	1/2	1/2	1/2	1/2	1/2
TWFS 10	N/R	N/R	625	625	N/R	N/R	N/R	N/R	4.50	TWFS 10	11.4	5/16	3/8	1/2	1/2	1/2	1/2	1/2	1/2
TWFS 20	N/R	625	625	75	N/R	N/R	4.25	5.00	4.75	TWFS 20	11.4	5/16	3/8	1/2	1/2	1/2	1/2	1/2	1/2
TWFS 30	N/R	625	625	75	N/R	4.00	4.75	5.00	5.50	TWFS 30	11.4	5/16	3/8	1/2	1/2	1/2	1/2	1/2	1/2

NOTE
1. THIS FIGURE SUPERSEDES SHEET 3B65 OF
DRAWING 803-5001027.

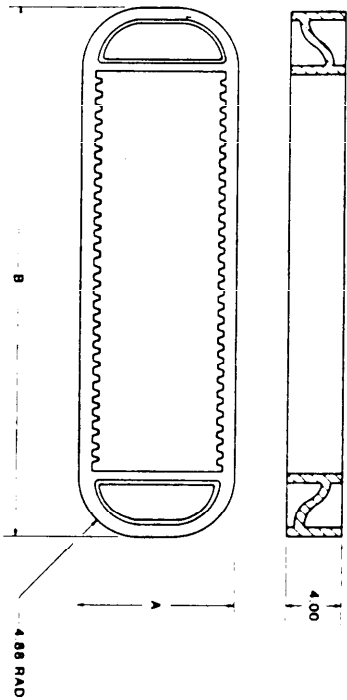
FIGURE 3B65. Multi-cable penetrator (Type TW) sleeve installation.

SH 132317166



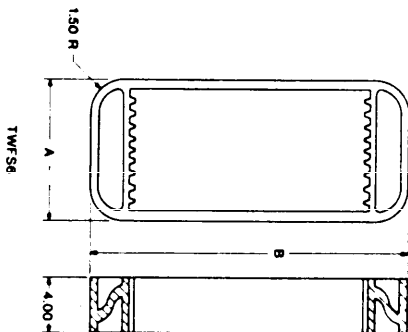
Ø/D PL	7.65	15.3	25.5
LBS	10.2	17.85	30.6
TWFS 10	12.75	20.4	
Ø/D "A"	9.10	.098	
Ø/D "B"	14.50	1.05	

Ø/D PL	7.65	15.3	25.5
LBS	10.2	17.85	
TWFS 20	12.75	20.4	
Ø/D "A"	11.00	1.12	
Ø/D "B"	23.72	1.26	



TWFS 30

Ø/D PL	7.65	15.3
LBS	10.2	17.85
TWFS 30	12.75	20.4
Ø/D "A"	11.50	1.17
Ø/D "B"	31.82	1.37



TWFS 6	5.86	.087
"A"	13.00	.015
"B"		

SH 132317165

FIGURE 3B64. Multi-cable penetrator (type TW) frame details.

NOTE:
1. THIS FIGURE SUPERSEDES SHEET 3B64 OF
DRAWING 803-5001027

GENERAL

1. TW MULTI-CABLE PENETRATORS ARE DEVICES UTILIZING STANDARD UNITS AND DIMENSIONS WHICH ARE COMPATIBLE WITH VARIOUS NUMBERS AND SIZES OF CABLES THAT MAY BE USED WHENEVER THERE IS A NEED TO SEAL CABLES PENETRATING WATERTIGHT, AIRTIGHT AND FIRE PROOF BULKHEADS AND DECKS.
2. FEW PARTS REQUIRED TO SEAL A WIDE RANGE OF CABLE DIAMETERS.
3. HIGH DEGREE OF FLEXIBILITY WITH INTERCHANGEABLE SEALING BLOCK ASSEMBLIES AND A SELECTION OF DIFFERENT SIZE OF FRAMES.
4. FRAME
 - (A) ONE PIECE CAST STEEL MOUNTING FRAME TO BE WELDED DIRECTLY INTO BULKHEAD OR DECK.
 - (B) CAST KEYWAYS IN MOUNTING FRAME ALONG AND POSITION SEALING BLOCK ASSEMBLIES.
 - (C) FRAMES MAY BE INSTALLED SO THAT SEALING BLOCK ASSEMBLIES CAN BE USED INSERTED IN EITHER HORIZONTAL OR VERTICAL POSITION.
5. SEALING BLOCK ASSEMBLY
 - (A) SPECIALLY FORMULATED ELASTOMERIC MATERIAL BETWEEN CAST MALLEABLE PRESSURE PLATE PROTECTS CABLE FROM MECHANICAL DAMAGE. PROVIDES HIGH PULL-OUT RESISTANCE. PROVIDES POSITIVE CABLE SEPARATION AND EXPANSION DURING FIRE TO SEAL ANY VOIDS LEFT BY BURNED CABLE INSULATION.
 - (B) INTERCHANGEABLE SEALING BLOCK ASSEMBLIES FIT ALL TW MULTI-CABLE PENETRATOR MOUNTINGS FRAMES.
 - (C) CAST STOPS ON FRONT PRESSURE PLATE PREVENTS SEALING BLOCK ASSEMBLIES FROM SLIPPING THROUGH FRAME DURING INSTALLATION.
 - (D) SEALING BLOCK ASSEMBLIES ARE OFFERED FOR ALL CABLE OUTSIDE DIAMETERS FROM 0.250 INCHES TO 3.500 INCHES (6.4 MM TO 88.9 MM).
 - (E) DEPENDING ON OPENING SIZE RANGE, A STANDARD SEALING BLOCK ASSEMBLY WILL SEAL FROM TWO TO ELEVEN CABLES. IT IS POSSIBLE TO INCREASE CABLE DENSITY WITH DOUBLE-SIDED SEALING BLOCK ASSEMBLIES. (SEE TABLE 1, FIGURE 3B62) SANDWICHED BETWEEN HALVES OF A STANDARD ASSEMBLY.
 - (F) REDUCERS PERMIT SEALING BLOCK ASSEMBLIES TO ACCEPT CABLES WITH A SMALLER O.D. THAN THE SPECIFIED RANGE.
 - (G) PLUGS ARE TO FILL UNUSED OPENINGS IN SEALING BLOCK ASSEMBLIES.
6. BLANK SEALING BLOCK ASSEMBLIES ARE USED TO FILL UNUSED SPACES IN FRAMES, PROVIDING FOR FUTURE EXPANSION.
7. TEMPLATE ALL WORK FROM SHIP.
8. ALL WELDING AND INSPECTION TO BE IN ACCORDANCE WITH MIL-STD-278.
9. ALL PAINTING TO BE IN ACCORDANCE WITH MIL-E-917.
10. THE STRUCTURAL REINFORCEMENT SHOWN ON THIS DRAWING DOES NOT APPLY TO FLIGHT DECK BENTS, FLIGHT DECK SUPPORT STRUCTURES OR OTHER SIMILAR TYPE STRUCTURE ON OTHER SHIPS. SUCH CASES MUST BE INDIVIDUALLY RESOLVED WITH STRUCTURAL DESIGN.
11. MATERIAL OR FLAT BAR REINFORCEMENT IS TO BE SIMILAR TO MATERIAL OF BULKHEAD OR DECK.
12. THIS PLAN WAS DEVELOPED FROM DESIGN DATA SHEET DOST-100-1, REINFORCEMENT OF OPENINGS IN STRUCTURE OF SURFACE SHIPS OTHER THAN IN PROTECTIVE PLATING TO PERMIT INSTALLATION OF MULTI-CABLE PENETRATOR FRAME (CROUSE-HINDS SH 132317163

PRODUCT) IN WATERTIGHT BULKHEADS AND DECKS ON SURFACE SHIPS.

13. FILLET WELD REINFORCEMENT FOR T-2 WELD JOINT SHALL BE 1/8" INCH FOR PLATING UP TO 15.5" AND 1/4" INCH FOR PLATING ABOVE 17.85".

SELECTION OF PARTS

1. THE SELECTION OF COMPONENTS IS BASED ON THE QUANTITY AND SIZE OF CABLES GOING THROUGH THE PENETRATION. ONCE THEY ARE KNOWN, THE SEALING BLOCK ASSEMBLIES AND FRAMES CAN BE SELECTED.
2. GROUP CABLES BY OUTSIDE DIAMETER (O.D.) AND RANK FROM LARGEST TO SMALLEST, KEEPING IN MIND THAT SEALING BLOCK ASSEMBLIES ARE AVAILABLE IN ONE-QUARTER INCH INCREMENTS. GROUP CABLES THAT FALL WITHIN THE SAME SEALING BLOCK ASSEMBLY O.D. SIZE RANGE, STARTING WITH THE LARGEST CABLE O.D. SELECT THE SEALING BLOCK ASSEMBLIES REQUIRED. SPECIFY REDUCERS TO ACCOMMODATE SMALLER DIAMETER CABLES AND PLUGS TO FILL OPENINGS NOT USED. ALL OPENINGS MUST BE FILLED.
3. TOTAL THE FRAME SPACES REQUIRED FOR THE SPECIFIED SEALING BLOCK ASSEMBLIES AND SELECT AN APPROPRIATE FRAME(S). KEEP "SPARE" REQUIREMENTS IN MIND WHEN SPECIFYING FRAME. SPECIFY BLANK SEALING BLOCK ASSEMBLIES TO FILL UNUSED FRAME SPACE.

INSTALLATION OF SEALING BLOCK ASSEMBLIES

1. CLEAN ALL INSIDE SURFACES OF FRAME AND EDGES OF FRAME OPENING, REMOVING ALL FOREIGN MATERIALS.
2. LUBRICATE ALL INSIDE SURFACES OF FRAMES, WITH A SILICONE BASED LUBRICANT.
3. MOVE CABLES FROM IMMEDIATE AREA OF FRAME WHERE FIRST SEALING BLOCK ASSEMBLY WILL BE INSTALLED. GROUP CABLES ACCORDING TO THEIR DIAMETER AND WITH RESPECT TO SIZES OF OPENINGS IN THE SEALING BLOCK ASSEMBLIES TO BE INSTALLED. THE DIAMETER OF OPENINGS OF SEALING BLOCK ASSEMBLIES ARE IN ONE-QUARTER INCH INCREMENTS (6.4 MM) AND EACH IS MARKED WITH THEIR SIZE RANGE. CABLES TO BE SEALED IN A GIVEN SEALING BLOCK ASSEMBLY NEED NOT ALL BE OF THE SAME SIZE. REDUCERS MAY BE USED WITH CABLES HAVING AN O.D. UP TO ONE-QUARTER INCH (6.4 MM) SMALLER THAN THE RANGE OF THE OPENING IN THE SEALING BLOCK ASSEMBLY.
4. SLIDE THE FIRST SECTION OF SEALING BLOCK ASSEMBLY INTO FRAME KEYWAYS, BEGINNING AT ONE END OR BOTTOM OF FRAME. BE CERTAIN THAT FLAT SIDE OF THIS ASSEMBLY IS AGAINST INSIDE SURFACE OF FRAME.
5. ARRANGE CABLES IN SLOTS OF SEALING BLOCK ASSEMBLY SECTION WHILE HOLDING THESE CABLES IN PLACE. SLIDE THE MATING SECTION OF SEALING BLOCK INTO FRAME. CAUTION: WHEN INDIVIDUAL CONDUCTORS OF A POWER CIRCUIT ARE CARRIED THROUGH A FRAME, ALL CONDUCTORS OF THAT CIRCUIT SHOULD BE INSTALLED IN THE SAME SEALING BLOCK ASSEMBLY TO AVOID HEATING OF THE PRESSURE PLATE DUE TO ELECTRO-MAGNETIC INDUCTION. REPEAT OPERATIONS OF STEPS 4 AND 5 WITH APPROPRIATE SEALING BLOCK ASSEMBLIES UNTIL ALL SEALING BLOCK ASSEMBLIES ARE IN PLACE.
6. INSTALL REDUCERS WHERE NEEDED. FILL UNUSED FRAME SPACES WITH BLANK SEALING BLOCK ASSEMBLIES. FILL UNUSED OPENINGS IN THE SEALING BLOCK ASSEMBLIES WITH CORRECT SIZE PLUGS. FOR HOLES ONE SIZE LARGER THAN PLUG USE PLUG AND REDUCER IN COMBINATION. BE SURE THAT PLUGS AND REDUCERS ARE FULLY INSERTED INTO OPENINGS OF SEALING BLOCK ASSEMBLIES.
7. ASSEMBLY KEEPER BAR OVER CAST STOPS OF FRONT PRESSURE PLATES.
8. TIGHTEN ALL NUTS ONLY A FEW TURNS AT A TIME UNTIL SEALING MATERIAL "ROLLS" INTO SPACES BETWEEN PRESSURE PLATES OF SEALING BLOCK ASSEMBLIES AND BETWEEN PRESSURE PLATES AND FRAME. THIS STEP TO BE PERFORMED WHEN AMBIENT TEMPERATURE IS AT LEAST 40 F (4.5 C).
- UNIFORM TIGHTENING OF COMPRESSION HARDWARE IS IMPORTANT. IT CAN BE PROPERLY DONE BY NOTING HOW FAR THREADED STUDS EXTEND THROUGH NUTS. IN GENERAL, WHEN ASSEMBLIES ARE ALL INSTALLED, EXTENSION OF THREADED STUDS WILL BE NEARLY THE SAME FOR THOSE ASSEMBLIES OCCUPYING THE SAME NUMBER OF FRAME SPACES.
- CAUTION: TORQUE VALUES ON NUTS SHOULD NOT EXCEED 12 FT LBS ON 5/16 BOLTS NOR 45 FT LBS ON 7/16 BOLTS. THESE TORQUE LEVELS ARE NOT ORIGINALLY REQUIRED TO EFFECT A SEAL. HOWEVER, IF NUTS ARE TORQUED TO THESE VALUES AND A TIGHTER SEAL IS REQUIRED RE TORQUE AFTER 24 HOURS.
9. CHECK TIGHTNESS OF ASSEMBLY BY PLACING A BRIGHT LIGHT SOURCE ON ONE SIDE OF THE ASSEMBLY AND INSPECTING IT FROM THE OPPOSITE SIDE TO SEE IF ANY LIGHT IS VISIBLE THROUGH THE ASSEMBLY. ANY VISIBLE LIGHT INDICATES THAT PROPER SEAL HAS NOT BEEN FORMED. TIGHTEN COMPRESSION HARDWARE FURTHER.

FIGURE 3B62. Multi-cable penetrators Installation notes (type TW).

NOTE

1. THIS FIGURE SUPERSEDES SHEET 3B62 OF DRAWING 803-5001027

THIS PAGE INTENTIONALLY LEFT BLANK

- NOTES:
1. THIS METHOD IS EQUAL TO AND IS AN ACCEPTABLE REPLACEMENT FOR M24235/17 AND 18
 2. WELDING SHALL BE IN ACCORDANCE WITH MIL-STD-278
 3. BREAK ALL SHARP EDGES.
 4. PIPE SHALL BE PER ASTM-A106-80 GRADE A
 5. THIS FIGURE SUPERSEDES SHEET 3860 OF DRAWING 803-5001027

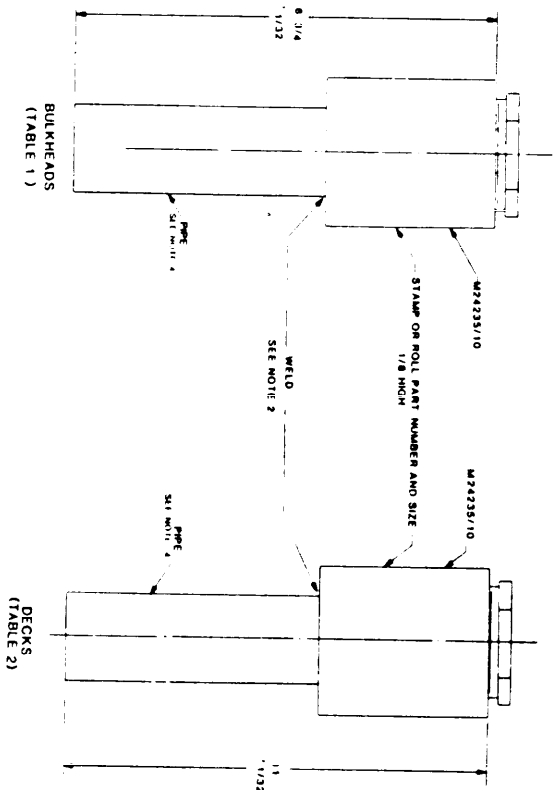


TABLE 1-FOR BULKHEADS

PART NO	TUBE SIZE	STUFFING TUBE	IPS PIPE SIZE	PIPE LENGTH
386001	A	M24235/10-01	1/2 SCH 80-(27/32)	5
386002	B	M24235/10-02	1/2 SCH 80-(27/32)	5
386003	C	M24235/10-03	3/4 SCH 40-(1-1/8)	5
386004	D	M24235/10-04	3/4 SCH 40-(1-1/8)	5
386005	E	M24235/10-05	1 SCH 40-(1-1/8)	5
386006	F	M24235/10-06	1 SCH 40-(1-1/8)	5
386007	G	M24235/10-07	1 SCH 40-(1-1/8)	5
386008	H	M24235/10-08	1 SCH 40-(1-1/8)	5
386009	I	M24235/10-09	1-1/4 SCH 40-(1-21/32)	5-15/16
386010	J	M24235/10-10	1-1/4 SCH 40-(1-21/32)	5-15/16
386011	K	M24235/10-11	1-1/4 SCH 40-(1-21/32)	5-15/16
386012	L	M24235/10-12	1-1/4 SCH 40-(1-21/32)	5-15/16
386013	M	M24235/10-13	1-1/2 SCH 40-(1-29/32)	5-7/8
386014	N	M24235/10-14	1-1/2 SCH 40-(1-29/32)	5-7/8
386015	O	M24235/10-15	1-1/2 SCH 40-(1-29/32)	5-7/8
386016	P	M24235/10-16	2 SCH 40-(1-5/8)	5-7/8
386017	Q	M24235/10-17	2 SCH 40-(1-5/8)	5-7/8
386018	R	M24235/10-18	2-1/2 SCH 40-(1-7/8)	5-7/8
386019	S	M24235/10-19	2-1/2 SCH 40-(1-7/8)	5-7/8
386020	T	M24235/10-20	2-1/2 SCH 40-(1-7/8)	5-7/8
386021	U	M24235/10-21	3 SCH 40-(1-1/2)	5-7/8
386022	V	M24235/10-22	3 SCH 40-(1-1/2)	5-7/8
386023	W	M24235/10-23	3 SCH 40-(1-1/2)	5-7/8

SH 132317161

TABLE 2-FOR DECKS

PART NO	TUBE SIZE	STUFFING TUBE	IPS PIPE SIZE	PIPE LENGTH
386001	A	M24235/10-01	1/2 SCH 80-(27/32)	5-1/4
386002	B	M24235/10-02	1/2 SCH 80-(27/32)	5-1/4
386003	C	M24235/10-03	3/4 SCH 40-(1-1/8)	5-1/4
386004	D	M24235/10-04	3/4 SCH 40-(1-1/8)	5-1/4
386005	E	M24235/10-05	1 SCH 40-(1-1/8)	5-1/4
386006	F	M24235/10-06	1 SCH 40-(1-1/8)	5-1/4
386007	G	M24235/10-07	1-1/4 SCH 40-(1-21/32)	5-3/16
386008	H	M24235/10-08	1-1/4 SCH 40-(1-21/32)	5-3/16
386009	I	M24235/10-09	1-1/4 SCH 40-(1-21/32)	5-3/16
386010	J	M24235/10-10	1-1/4 SCH 40-(1-21/32)	5-3/16
386011	K	M24235/10-11	1-1/2 SCH 40-(1-29/32)	5-7/8
386012	L	M24235/10-12	1-1/2 SCH 40-(1-29/32)	5-7/8
386013	M	M24235/10-13	1-1/2 SCH 40-(1-29/32)	5-7/8
386014	N	M24235/10-14	2 SCH 40-(1-5/8)	5-7/8
386015	O	M24235/10-15	2 SCH 40-(1-5/8)	5-7/8
386016	P	M24235/10-16	2-1/2 SCH 40-(1-7/8)	5-7/8
386017	Q	M24235/10-17	2-1/2 SCH 40-(1-7/8)	5-7/8
386018	R	M24235/10-18	2-1/2 SCH 40-(1-7/8)	5-7/8
386019	S	M24235/10-19	3 SCH 40-(1-1/2)	5-7/8
386020	T	M24235/10-20	3 SCH 40-(1-1/2)	5-7/8
386021	U	M24235/10-21	3 SCH 40-(1-1/2)	5-7/8
386022	V	M24235/10-22	3 SCH 40-(1-1/2)	5-7/8
386023	W	M24235/10-23	3-1/2 SCH 40-(1-1/2)	4-1/8

3B60. Stuffing tubes reduced diameter for decks and bulkheads with pipe protection.

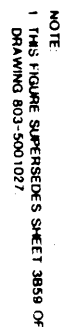


FIGURE 3B5.9. Round multiple cable penetrator installation in steel or aluminum bulkhead.

88

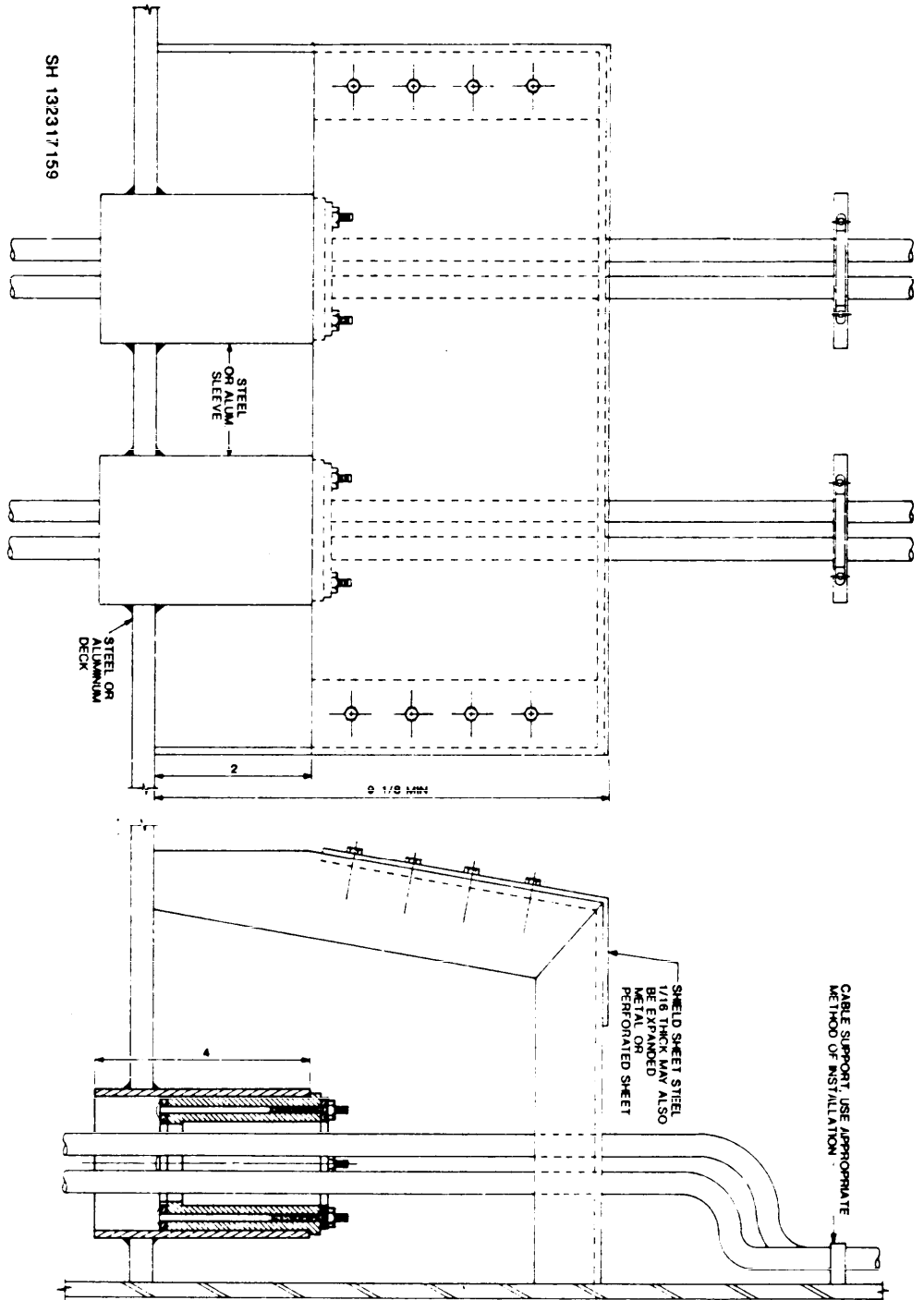


FIGURE 3B58. Round multiple cable penetrator shield.

NOTE:
1. THIS FIGURE SUPERSEDES SHEET 3B58 OF
DRAWING 803-5001027

SH 132317158

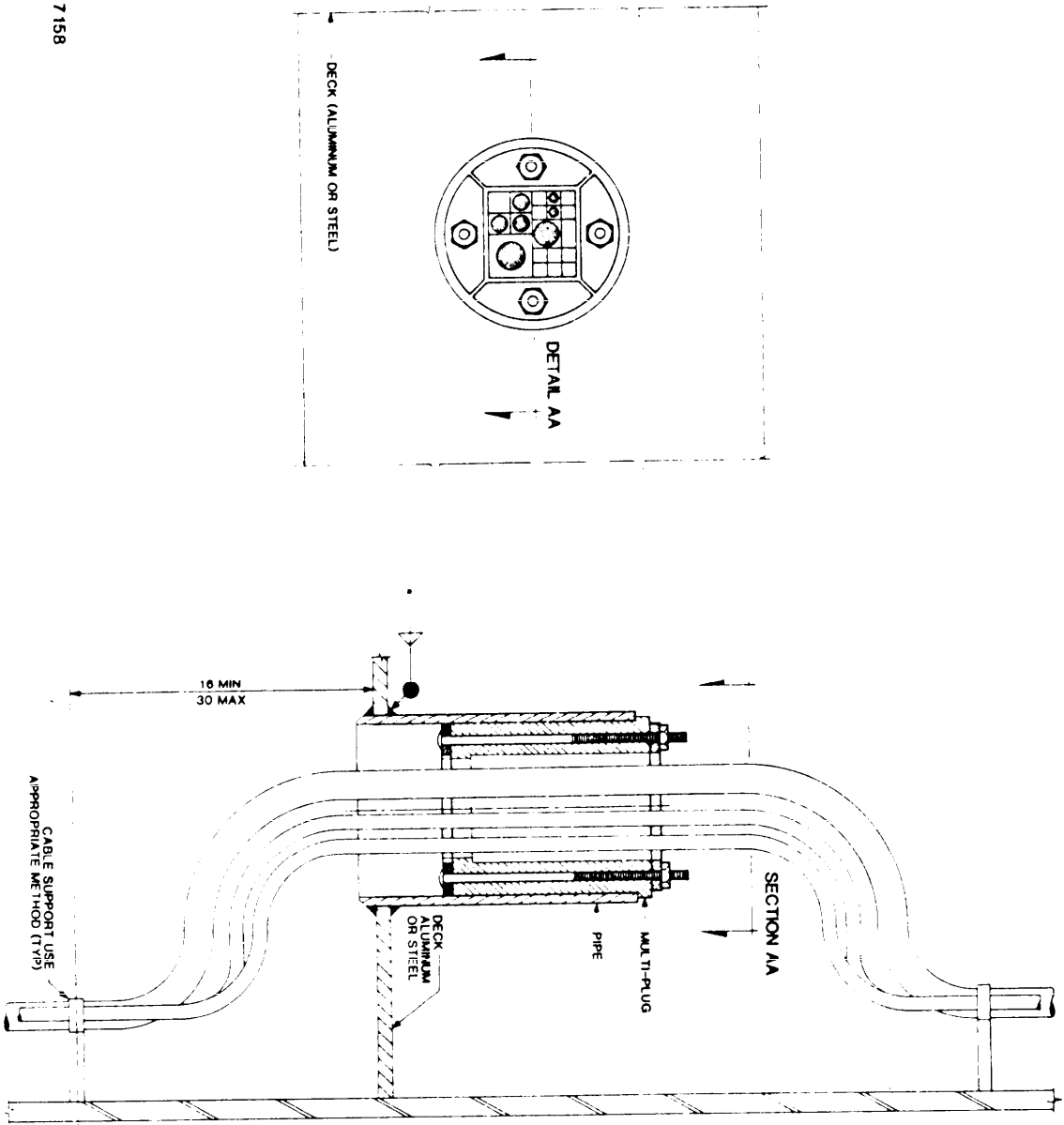


FIGURE 3857. Multiple cable penetrators installation in steel or aluminum decks adjacent to bulkheads.

NOMENCLATURE

ROUND MULTIPLE CABLE PENETRATORS (RMCP)
A SYSTEM OF PASSING CABLES THROUGH WATER
AND WIND TIGHT BULKHEADS AND DECKS
AND PROVIDING A SEAL TO PREVENT BULKHEAD AND
DECK WEATHERS.

(A) PHYSICAL ARRANGEMENT AND IDENTIFICATION
RMCP-20 SQUARE OPENING IN INCHES
FOR CABLE ACCEPTANCE
RMCP AND PIPE SIZE DESIGNATION
ROUND MULTIPLE CABLE PENETRATOR BODY

(B) RMCP CONSISTS OF: (1) SEVEN BASIC SIZES 2,
2.5, 3, 4, 5, 6 AND 8 FOR INSERTION INTO STEEL
PIPE (TABLE 1) OR ALUMINUM PIPE (DETAIL 2).
(C) COMPRESSION HARDWARE FOR SEALING IS
COMPRISED OF THE FOLLOWING:

(1) BACK COMPRESSION PLATE (DETAIL 1) WITH
PRESS FITTED COMPRESSION BOLT (TABLE 3)
TO MAKE FURNISHED ASSEMBLY (TABLE 2).

(2) FRONT COMPRESSION PLATE SMALLER TO
BACK COMPRESSION PLATE ONLY IT IS
FURNISHED WITHOUT COMPRESSION BOLT.

(3) HEX NUT (TABLE 4) TO BE USED WITH FRONT
COMPRESSION PLATE AND STD.

(D) INSERT BLOCKS:
TWIN HALF BLOCKS ARE SPECIALLY FORMULATED
OF A NEOPRENE ELASTOMER WITH A CENTERED
SEMI-CIRCULAR GROOVE WHEN MATED AROUND
A CABLE, THESE BLOCKS FORM A SINGLE BLOCK
WITH A TIGHT FIT. SEE NOTE 2.

(E) SPACERS:
SPACER BLOCKS ARE SPECIALLY FORMULATED OF
A NEOPRENE ELASTOMER WITH A CENTERED
FLAT SURFACE. THESE BLOCKS ARE USED IN
ADDITION TO SPACER PROVISIONS FOR ADDITION OF
FUTURE CABLES. SIZES SHOWN ON SHEET 3828.

(F) FILLING:
SAME MATERIAL AS INSERT BLOCKS AND
SPACERS AND ARE USED TO FILL THICKNESSES
OF 5 OR 10 MILLIMETERS CREATED BY THE
PRESENCE OF DIFFERENT SIZE BLOCKS IN THE
SAME ROW. ALSO EMPLOYED TO INCREASE
THE RESISTANCE TO WATER INGRESS. THESE
FILLERS ARE AVAILABLE IN TWO SIZES
24X3/0 OR 12X10/0. SEE SHEET 3828.
SERIATIONS HAVE BEEN PROVIDED TO PERMIT
SLICING OF THE FILLERS TO THE REQUIRED
LENGTH. EXAMPLE: 6X10/0, 6X5/0 ETC.

(G) TALLOW:
INSERT BLOCK LUBRICANT USED WHEN PACKING
PENETRATOR ON CABLES. THE BLOCKS SLIDE
EASILY ON CABLES. THE BLOCKS ARE USED
AND COMPRESSION THEM AROUND CABLES.

(H) SEALER:
ROUND SILICONE RUBBER APPLIED TO CABLE
SIDE OF EACH GAUGE BLOCK. UPON
COMPRESSION THIS PROVIDES A SEAL
BETWEEN THE ARMOR OF THE CABLE AND ITS
IMPERVIOUS INNER SHEATH.

(I) ASSEMBLY STEPS:
(1) PLACE RMCP INTO APPROPRIATE PIPE
SLEEVE AND LEAVE SLIGHTLY EXTENDED
(2) PLACE INSERT BLOCKS AROUND CABLE AND
(3) PLACE SPACERS AROUND CABLE AND
INSIDE RMCP.
(4) PRESS COMPLETE ASSEMBLY INTO PIPE
(5) THEN FLANGE IS FLUSH WITH END OF PIPE
(6) THEN TIGHTEN HARDWARE FOR MULTI-
CABLE TO ACHIEVE AIR AND WATER SEAL.
(7) ALL DIMENSIONS ARE IN INCHES UNLESS
OTHERWISE STATED.

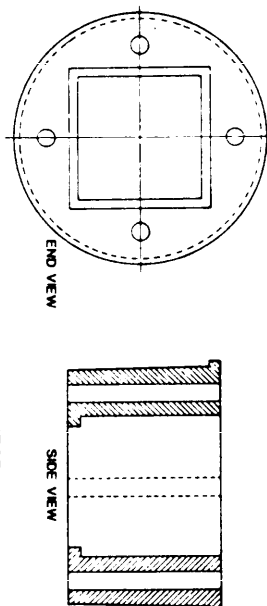
(J) ALL DIMENSIONS ARE IN INCHES UNLESS
OTHERWISE STATED.

TABLE 1

ROUND CARBON STEEL TUBE					
IDENT NO.	OD	WALL	THEORETICAL ID	TYPE	WT. PER FT.
RMCP2	2-3/8	.184	2.067	SCH 40 PIPE	3.653
RMCP2.5	2-7/8	.203	2.469	SCH 40 PIPE	5.793
RMCP3	3-1/2	.216	3.066	SCH 40 PIPE	7.576
RMCP4	4-1/2	.237	4.026	SCH 40 PIPE	10.790
RMCP5	5-9/16	.256	5.047	SCH 40 PIPE	14.670
RMCP6	6-5/8	.280	6.065	SCH 40 PIPE	18.870
RMCP8	8-5/8	.322	7.981	SCH 40 PIPE	28.550

TABLE 2

ROUND ALUMINUM (ALLOY 6061-T6)					
IDENT NO.	OD	WALL	THEORETICAL ID	TYPE	WT. PER FT.
RMCP2	2-3/8	.154	2.067	SCH 40 PIPE	1.264
RMCP2.5	2-7/8	.203	2.469	SCH 40 PIPE	2.004
RMCP3	3-1/2	.216	3.066	SCH 40 PIPE	2.621
RMCP4	4-1/2	.237	4.026	SCH 40 PIPE	3.733
RMCP5	5-9/16	.256	5.047	SCH 40 PIPE	5.057
RMCP6	6-5/8	.280	6.065	SCH 40 PIPE	6.564
RMCP8	8-5/8	.322	7.981	SCH 40 PIPE	9.876



ROUND MULTIPLE-CABLE PENETRATOR



COMPRESSION BOLT

- TABLE 3
1. 48-32 FLAT HEAD STUCCY CLINCH BOLT
(APPLICABLE ON SIZE 2, 3 AND 3 RMCP)
 2. M-6 RD. HEAD STUCCY CLINCH BOLT
(APPLICABLE ON SIZE 4 AND 5 RMCP)
 3. M-8 RD. HEAD STUCCY CLINCH BOLT
(APPLICABLE ON SIZES 6 AND 8 RMCP)

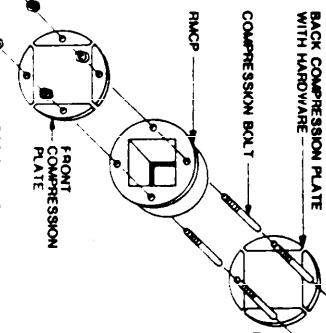


BACK COMPRESSION BOLT

FRONT COMPRESSION BOLT

FIGURE 3B56. ROUND MULTIPLE-CABLE PENETRATORS.

BACK COMPRESSION PLATE WITH HARDWARE



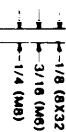
NOTES:

1. BOLTS AND BACK COMPRESSION PLATES ARE FACTORY ASSEMBLED INTO ONE UNIT.
2. INSERT BLOCK CABLE ASSIGNMENTS ARE SHOWN ON SHEETS 3828, 3841 AND 3842.
3. THIS FIGURE SUPERSEDES SHEET 3856 OF DRAWING 803-5001027.

ROUND MULTIPLE-CABLE PENETRATOR ASSEMBLY

TABLE 4

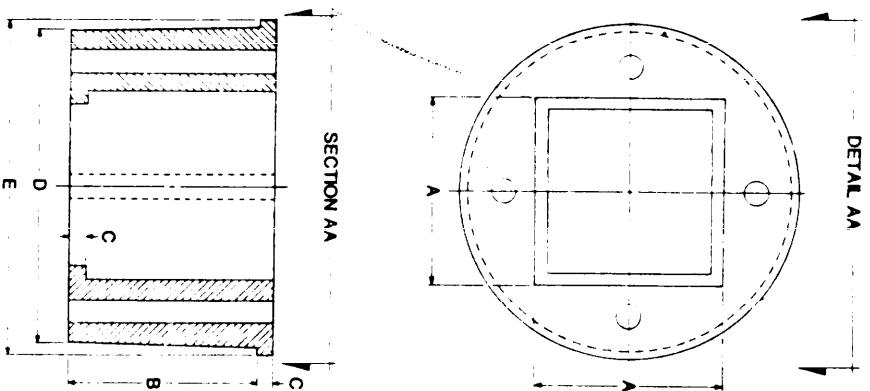
HEX NUT	UTILIZED FOR UNIT COMPRESSION
5/16	8X32 HEX NUT APPLICABLE WITH RMCP2, 2.5 AND 3
3/8	M6 HEX NUT APPLICABLE WITH RMCP4 AND RMCP5
1/2	M8 HEX NUT APPLICABLE WITH RMCP6 AND RMCP8



COMPRESSION NUT



FRONT COMPRESSION PLATE



	N	A	B	C	D	E
RMCP2	1.181	30	2.559	.197	2.000	2.232
RMCP2S	1.220	30	2.559	.197	2.302	2.634
RMCP3	1.614	40	2.559	.197	3.000	3.340
RMCP4	2.362	60	2.559	.197	4.000	4.282
RMCP5	3.168	80	2.559	.197	5.000	5.339
RMCP6	3.543	90	2.559	.197	6.000	6.375
RMCP8	4.763	120	2.559	.197	8.000	8.312

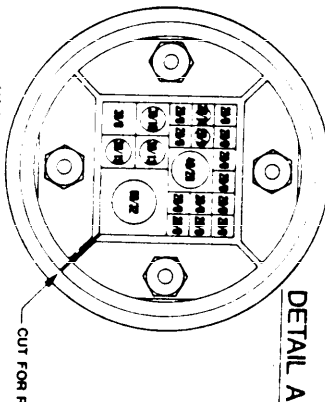
FOR FACTORY CUT CORNER FOR RETROFIT APPLICATIONS
ADD "0" TO THE NOMENCLATURE IE "RMCP0"
MATERIAL: SPECIAL NEOPRENE ELASTOMER

NOTE
1 THIS FIGURE SUPERSEDES SHEET 3B55
OF DRAWING 803-5001027

FIGURE 3B55. ROUND MULTIPLE CABLE PENETRATORS (DIMENSIONS).

INSTALLATION NOTES ROUND MULTIPLE CABLE PENETRATORS

1. ROUND MULTI-CABLE PENETRATOR (RMCP) IS A MODULAR SYSTEM THAT UTILIZES STANDARD UNITS AND DIMENSIONS TO ALLOW MAXIMUM FLEXIBILITY AND COMPATIBILITY WITH VARIOUS TYPES AND SIZES OF CABLES. THE RMCP IS DESIGNED TO PROVIDE WATER-TIGHT, AIR-TIGHT, AND FIRE-PROOF BULKHEAD OR DECK PENETRATIONS.
2. FREELY LUBRICATE OUTSIDE THE RMCP WITH (TALLOW) BEFORE INSERTING INTO PIPE SLEEVE, BUT DO NOT PUSH RMCP COMPLETELY INTO THE SLEEVE AT THIS TIME. APPROACH IN A HORIZONTAL PLANE TO THE PENETRATOR. CABLES SHALL ALWAYS BE APPROACHED IN THE WEAREST CABLE HANGER IS 18 IN. FROM BULKHEAD. BENDING RADIUS OUTSIDE OF THE RMCP MUST BE 18 IN. WHILE IN THE PROCESS OF PULLING CABLES, IT IS IMPERATIVE THAT A REASONABLE AMOUNT OF FORCE SHOULD BE LEFT TO FACILITATE MOVEMENT OF CABLES WITHIN THE RMCP. WORK SHOULD BE CONTINUED UNTIL THE RMCP IS FULLY INSERTED INTO THE SLEEVE. CABLES SHOULD BE PULLED FROM THE INSIDE OF THE RMCP. IT IS NECESSARY THAT EACH CABLE BE IDENTIFIED ON PACKING AND SIZE. CABLES SHOULD BE PULLED THROUGH A NEW ROUND MULTIPLE CABLE PENETRATOR SHALL BE FILLED PRIOR TO INSTALLING INSERT BLOCKS.
3. AFTER PULLING ALL CABLES THROUGH A PARTICULAR ROUND MULTIPLE CABLE PENETRATOR IT CAN BE PACKED WITH A LIGHT COAT OF CABLE LUBRICANT (TALLOW) TO ALL OUTSIDE SURFACES OF THE INSERT BLOCKS AND INSIDE OF THE RMCP. APPLY GENERAL ELECTRIC RTV-106 SEALER TO EACH BLOCK AND INSIDE OF EACH BLOCK THAT CONTACTS THE CABLE (A 1/8 BEAD EVERY 1/2" AROUND EACH BLOCK THICK). EACH RMCP MUST BE LAID OUT (BLOCKED) SHOWING SLOID TYPICAL EXHAUSTION OF PACKED RMCP UNIT WITH LOCATION ASSIGNMENTS FOR PACKING IS SHOWN BELOW.



- (A) SELECT INSERT BLOCKS AND SPARES (SEE NOTE 2) AND PREPARE AS ILLUSTRATED ABOVE. (LUBRICANT AND SEALER WHERE REQUIRED).
- (B) STARTING WITH LARGEST CABLE, PLACE THE LOWER HALF OF THE 80/32 INSERT BLOCK UNDER THE CABLE. THEN ADD THE NEXT SIZE. REPEAT THE PROCEDURE WITH THE 30/15, THEN ADD THE 30/15. PLACE THE LOWER HALF OF THE 30/13 AND 30/19 UNDER CABLE THEN ADD LOWER HALVES.

CAUTION: FOR EASIEST PACKING DO NOT INSERT THE BLOCKS FULLY INTO THE SQUARE HOLE UNTIL ALL CABLE HOLDING AND SPARE BLOCKS ARE IN THEIR ASSIGNED LOCATIONS.

SH 132317155

FIGURE 3B54. Round multi-cable penetrators installation notes.

- (C) ON TOP OF THE PREVIOUSLY INSTALLED BLOCKS, PLACE FOUR 20/10 SPARES AND THE LOWER HALF OF THE 40/28 UNDER ITS CABLE. IN HALF OF 20/9 AND 20/11 UNDER THEIR RESPECTIVE CABLES. THEN ADD LOWER HALVES OF 40/28, 20/9, 20/11 ON TOP.
- (D) ADD FINAL ROW OF (6) SIX 20/10 SPARES.
- (E) ALL BLOCKS AND THEIR RMCP CAN NOW BE FULLY INSERTED SMALLER UNITS, IE THE BLOCKS PUSHED COMPLETELY INTO THE SQUARE HOLE OF THE PLUG AND RMCP COMPLETELY INTO THE SLEEVE.
- (F) WHEN THE RMCP UNIT IS COMPLETELY FILLED AND INSERTED THEN THE NUTS ARE ALTERNATELY TIGHTENED UNTIL THE RMCP IS SECURE IN THE HOLE. THE INSTALLATION IS THEN COMPLETE.
4. TO ADD A NEW CABLE TO A PACKED RMCP UNIT, LOOSEN THE FOUR HEX NUTS AND REMOVE THE DESPRED SPARE INSERT MODULES. PULL THE NEW CABLE AND ADD MATCHING CABLE HOLDING BLOCKS PER PREVIOUS INSTRUCTIONS.
5. TEMPORARY ALL WORK FROM SHIP.
6. ALL WELDING AND INSPECTION TO BE IN ACCORDANCE WITH NM-STD-278.
7. ALL PAINTING TO BE DONE IN ACCORDANCE WITH NM-E-917.
8. THIS PLAN WAS DEVELOPED FROM DESIGN DATA SHEET DDS 1100-1. REINFORCEMENT OF OPENINGS IN STRUCTURES OF SURFACE SHIPS OTHER THAN IN PENETRATOR IN WATER-TIGHT DECKS AND BHDS OF SURFACE SHIPS.
9. FILET WELD REINFORCEMENT FOR 12V. 1 WELD JOINT SHALL BE 1/8" FOR PLATING UP TO 15.34" AND 1/4" FOR PLATING ABOVE 17.854".
10. THE BHDS AND DECKS WHICH ARE CONSIDERED TO BE LONGITUDINAL STRENGTH MEMBERS ARE DEFINED IN NAVSHIPS DESIGN DATA SHEET DDS 1100-1. STRENGTH ENVELOPE (IE IN OUTSIDE PLATING UPPER AND LOWER SURFACES) AND THEIR ASSOCIATED LONGITUDINAL FRAMING AND THERE IS DIFFICULTY IN DEFINITION. CONSULT WITH STRUCTURAL DESIGN.
11. AFTER INSTALLATION IS COMPLETE, PRE SLEEVE OF PENETRATOR MAY BE PAINTED TO SUIT SURROUNDING STRUCTURE IN ACCORDANCE WITH GENERAL SPECIFICATIONS FOR BUILDING SHIPS FOR THE U.S. NAVY.
12. TEMPORARILY INSULATE CABLE FOR PROTECTION AGAINST WELDING AND BURNING FOR EXISTING CABLES.
13. REMOVE OLD NON-WATER-TIGHT STRUCTURE.
14. PREPARE HOLE IN BULKHEAD TO RECEIVE ROUND MULTIPLE CABLE PENETRATOR (FOR SPARE, REMOVED) ONE CORNER OF RMCP IS CUT (SEE DETAIL A) TO ALLOW IT TO BE OBTAINED AND PLACED AROUND THE EXISTING CABLES. PRE SLEEVE MUST ALSO BE PLACED AROUND THE CABLE.
15. SEGREGATE AND CONFINE REQUIRED CABLES FOR PROTECTION AND INSTALLATION.
16. SLIDE UNIT INTO PREPARED SLEEVE IN BULKHEAD. THEN PROCEED AS OUTLINED IN NOTE 3.

- NOTES
1. THE ROUND MULTI-CABLE PENETRATOR SHALL NOT BE INSTALLED IN BULKHEADS AND DECKS WHICH ARE EXPOSED TO THE WEATHER.
 2. INSERT BLOCK CABLE ASSIGNMENTS ARE SHOWN ON FIGURES 3B26, 3B41 AND 3B42.
 3. THIS FIGURE SUPERSEDES SHEET 3B54 OF DRAWING 803-5001027.

CABLE	ADAPTER SET (3 FEET)	ADAPTER SET (6 FEET)	HOST TYPE	EFFECTIVE PRODUCTION SIZE

DOD-STD-2003-3(NAVY)
24 JUNE 1987

FIGURE 3B53. Stuffing tubes cable assignment using reducer adapters

NOTES
1 ADAPTER SET CONSIST OF ONE (1) FLAT WASHER AND
ONE (1) BELL ENDING ADAPTER
2 THIS FIGURE SUPERSEDES SHEET 3B51 OF DRAWING
803-5001027.

SH 132317153

SH 132317152

FIGURE 3B51. Stuffing tubes cable assignment using reducer adapters

DOD-STD-2003-3(NAVY)
24 JUNE 1987

CABLE	ADAPTER M1 (157511)	ADAPTER M2 (157511)	HOST UNIT	EFFECTIVE RECTION RATE
CVR-4	—	—	N	—
DCOR-1	3848118BA	3848118BA	B	A
DCOR-1/1/2	3848118BA	3848118BA	B	A
DCOR-2	3848118BA	3848118BA	B	A
DCOR-3	—	—	B	—
DCOR-4	—	—	B	—
DCOR-5	—	—	B	—
DCOR-6	—	—	B	—
DCOR-7	—	—	B	—
DCOR-8	—	—	B	—
DCOR-9	—	—	B	—
DCOR-10	—	—	B	—
DCOR-11	—	—	B	—
DCOR-12	—	—	B	—
DCOR-13	—	—	B	—
DCOR-14	—	—	B	—
DCOR-15	—	—	B	—
DCOR-16	—	—	B	—
DCOR-17	—	—	B	—
DCOR-18	—	—	B	—
DCOR-19	—	—	B	—
DCOR-20	—	—	B	—
DCOR-21	—	—	B	—
DCOR-22	—	—	B	—
DCOR-23	—	—	B	—
DCOR-24	—	—	B	—
DCOR-25	—	—	B	—
DCOR-26	—	—	B	—
DCOR-27	—	—	B	—
DCOR-28	—	—	B	—
DCOR-29	—	—	B	—
DCOR-30	—	—	B	—
DCOR-31	—	—	B	—
DCOR-32	—	—	B	—
DCOR-33	—	—	B	—
DCOR-34	—	—	B	—
DCOR-35	—	—	B	—
DCOR-36	—	—	B	—
DCOR-37	—	—	B	—
DCOR-38	—	—	B	—
DCOR-39	—	—	B	—
DCOR-40	—	—	B	—

FIGURE 3B50. Stuffing tubes cable assignment using reducer adapters

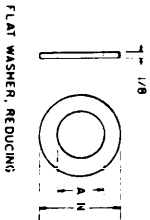
NOTES
1. ADAPTER SET CONSIST OF ONE (1) FLAT WASHER
AND ONE (1) BEVEL REDUCING ADAPTER
2. THIS FIGURE SUPRESEDES SHEET 3B50 OF DRAWING
803-5001027

HOLE SPACING IN DECKS & BULKHEADS
TABLE DERIVED FROM REQUIREMENTS OF DESIGN DATA SHEET DDS 1100-2
(MIL-S-24235/18)

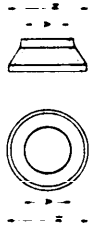
SPACING OF HOLE FOR SWAGE TUBES THIS TABLE DOES NOT APPLY TO ANCHOR PLATE		DRILL FOR SWAGE TUBE M24235/18		NOMINAL OUTSIDE DIA. OF SWAGE TUBE		TUBE SIZE		A	B	C	D	E	F	G	J	K	L	M	N	P	R	S	T	V	W	X	Y	Z	AA	BB
1/2	8400(1/2)	A	1 1/2																											
1/2	8400(1/2)	B	1 1/2	2																										
1/2	10900(1/2)	C	1 1/2	2	2 1/4																									
1/2	10900(1/2)	D	2 1/4	2 1/4	2 1/4																									
1/2	1315(1/2)	E	2 1/4	2 1/4	2 1/4	2 1/4																								
1/2	1315(1/2)	F	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4																							
1/2	1315(1/2)	G	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4																						
1/2	1660(1/2)	J	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4																					
1/2	1660(1/2)	K	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4																				
1/2	1660(1/2)	L	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4																			
1/2	1660(1/2)	M	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4																		
1/2	1900(1/2)	N	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4																	
1/2	2375(1/2)	P	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4																
1/2	2375(1/2)	R	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4															
1/2	2375(1/2)	S	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4														
1/2	2875(1/2)	T	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4													
1/2	2875(1/2)	V	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4												
1/2	2875(1/2)	W	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4											
1/2	3500(1/2)	X	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4										
1/2	3500(1/2)	Y	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4									
1/2	3500(1/2)	Z	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4								
1/2	3500(1/2)	AA	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4							
1/2	4000(1/2)	BB	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	

NOTES:
1. THIS FIGURE SUPERSEDES SHEET 3B49 OF DRAWING
803-5001027

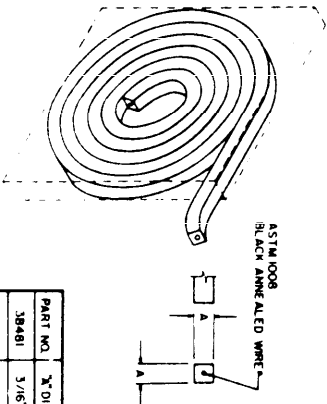
SH 132317150
FIGURE 3B49. MIL-S-24235/18 Stuffing tube and kickpipes minimum spacing.



FLAT WASHER, REDUCING



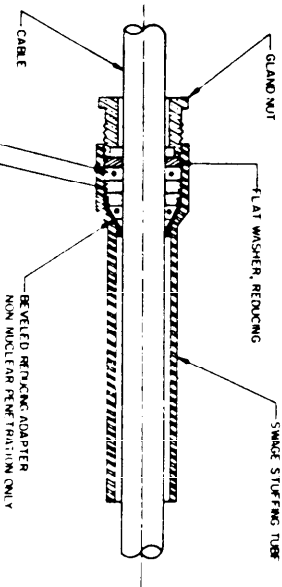
BEVELED REDUCING ADAPTER



PART NO.	"N" DIM
3B481	3/16"
3B482	1/4"
3B483	5/16"
3B484	3/8"
3B485	7/16"
3B486	1/2"
3B487	9/16"

REINFORCED NEOPRENE PACKING

ADAPTER SET (STEEL)	ADAPTER SET (ALUMINUM)	EXISTING TUBE	"N" DIM O.D.	EFFECTIVE REDUCTION SIZE	"A" DIM I.D.
3B481SBA	3B481ABA	B	0.875	A	0.406
3B482SDA	3B482ADA	D	1.032	A	406
3B483SDB	3B483ADB	D	1.032	B	515
3B484SDC	3B484ADC	D	1.032	C	640
3B485SDB	3B485ACB	G	1.360	B	516
3B486SDC	3B486ACG	G	1.360	C	640
3B487SDG	3B487ADG	G	1.360	D	790
3B488SGE	3B488AGE	G	1.360	E	812
3B489SGF	3B489AGF	G	1.360	F	843
3B4810SLG	3B4810ALG	L	1.703	G	953
3B4811SLJ	3B4811ALJ	L	1.703	J	1062
3B4812SLK	3B4812ALK	L	1.703	K	1172
3B4813SML	3B4813AML	N	1.875	L	1265
3B4814SMN	3B4814AMN	N	1.875	M	1406
3B4815SSN	3B4815ASN	S	2.562	N	1515
3B4816SSP	3B4816ASP	S	2.562	P	1625
3B4817SSR	3B4817ASR	S	2.562	R	1790
3B4818SYS	3B4818ANS	W	3.000	S	1875
3B4819SWT	3B4819AWT	W	3.000	T	2062
3B4820SWV	3B4820AWV	W	3.000	V	2187
3B4821SAAX	3B4821AAAX	AA	3.625	X	2500
3B4822SAAY	3B4822AAAY	AA	3.625	Y	2609
3B4823SAAZ	3B4823AAAZ	AA	3.625	Z	2761



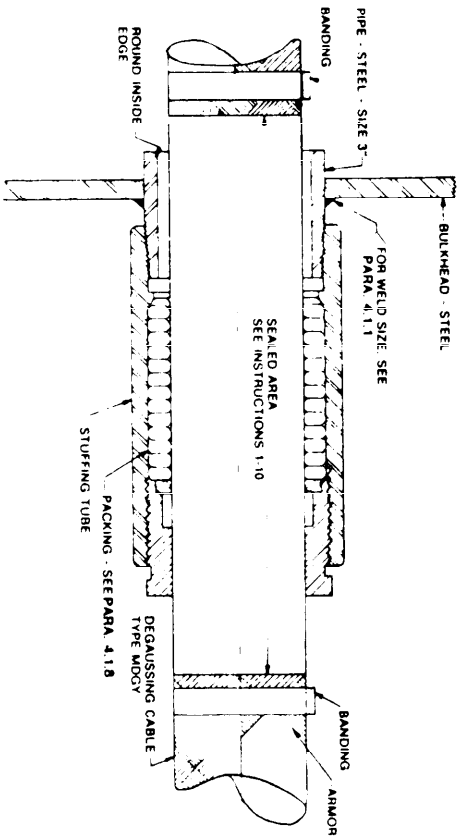
STUFFING TUBES BEVEL REDUCING ADAPTER ASSEMBLIES (MIL-S-24235/18)

FIGURE 3B48. Stuffing tubes bevel reducing adapter assemblies (MIL-S-24235/18).

- NOTES:
- ADAPTER SET CONSIST OF ONE FLAT WASHER AND ONE BEVEL REDUCING ADAPTER
 - DEFINITION OF ADAPTER SETS NUMBERING SYSTEM FOLLOWS
- SECTION GROUP
- 3B481SBA REDUCING SIZE
- STEEL OR ALUMINUM (S OR A)
- SEQUENCE
- 3 NEOPRENE SHALL BE IN ACCORDANCE WITH MIL-H-16624, CLASS 1, GRADE 50
- 4 THIS FIGURE SUPERSEDES SHEET 3B48 OF DRAWING 803-5001027

NOTE
1 THIS FIGURE SUPERSEDES SHEET 3847 OF DRAWING
803-5001027 AND SECTION 4 SHEET 148 OF
DRAWING, NAVSEC NO 9000 56202-73980

38471

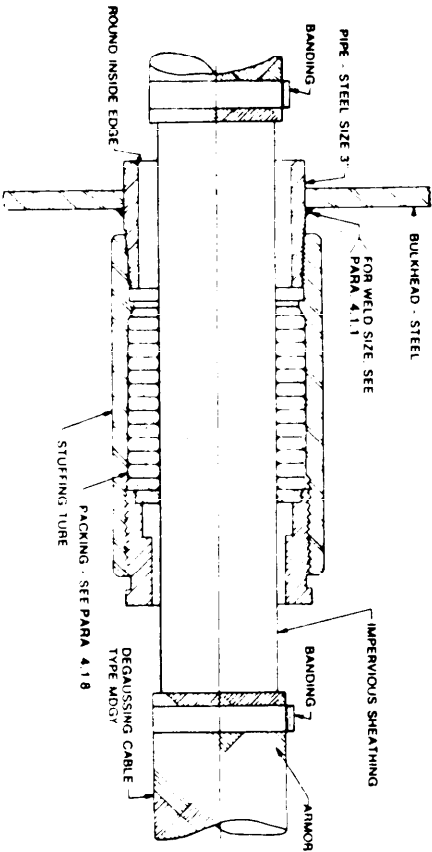


38472

- INSTRUCTIONS
- 1 CUT AWAY THE OUTER ARMOR IN THE WAY OF THE STUFFING TUBE AND REMOVE THE DUCK TAPE DOWN TO THE IMPERVIOUS SHEATHING.
 - 2 CLEAN THE IMPERVIOUS SHEATHING TO ALLOW BONDING OF THE SEALANT.
 - 3 WRAP THE CABLE AREA TO BE SEALED, WITH LAYERS OF POROUS PLASTIC SPACER TAPE UNTIL THE DIAMETER OF THE AREA TO BE SEALED IS NEARLY EQUAL TO THE OUTER DIAMETER OF THE MDGY CABLE.
 - 4 ATTACH THE INJECTION FITTING NEAR THE CENTER OF THE AREA TO BE SEALED.
 - 5 COVER THE AREA TO BE SEALED WITH A LAYER OF NO. 72 SCOTCH ELECTRIC TAPE TO FORM THE OUTER MOLD FOR THE RESIN AND TO SECURE THE INJECTION FITTING IN PLACE.
 - 6 COVER THE ELECTRICAL TAPE WITH A CLOTH TAPE. WHEN X-RAYED TO RESTRAIN THE MOLD WHEN IT IS UNDER PRESSURE.
 - 7 INJECT "SCOTCHCAST" RESIN NO. 4 (MINNESOTA MINING & MFG. CO.) INTO THE SEALING AREA BY MEANS OF A PRESSURE GUN ATTACHED TO THE INJECTION FITTING.
 - 8 PRICK PIN HOLES THROUGH THE ELECTRICAL TAPE NEAR THE EXTREMITIES OF THE SEAL. THE SEALING AREA IS FILLED AND VOID FREE WHEN DROPS OF RESIN FORM AT THE PIN HOLES.
 - 9 AFTER THE RESIN HAS CURED REMOVE THE CLOTH TAPE AND CUT OFF THE INJECTION FITTING.
 - 10 POSITION THE MOLD AREA OF THE MDGY CABLE WITHIN THE STUFFING TUBE AND TIGHTEN CLAMP NOT.

38472
ALTERNATE TO METHOD 38471

- INSTRUCTIONS
- 1 CUT AWAY THE OUTER ARMOR IN THE WAY OF THE STUFFING TUBE AND REMOVE THE DUCK TAPE DOWN TO THE IMPERVIOUS SHEATHING.
 - 2 INSERT EXTRA PACKING RINGS IN STUFFING TUBE.
 - 3 POSITION THE IMPERVIOUS SHEATHING AREA WITHIN THE STUFFING TUBE AND TIGHTEN CLAMP NOT.

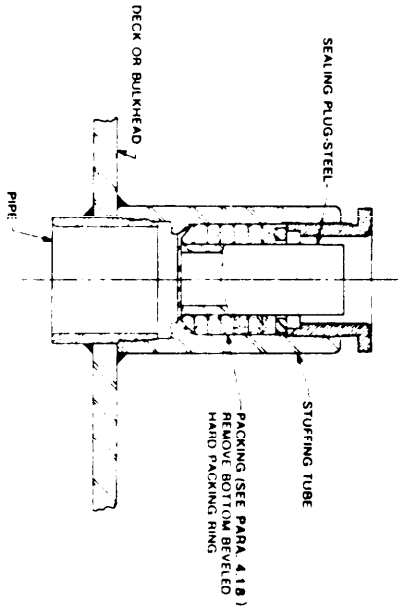


SH 132317148

FIGURE 3847 Sealing degaussing cable in bulkhead stuffing tubes.

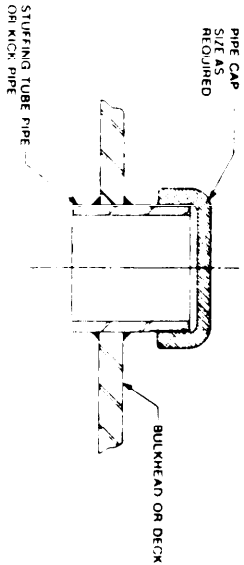
3B461

SEALING UNUSED STUFFING TUBES
IN DECKS AND BULKHEADS
SEALING PLUG MIL-S-23235/19
APPLICABLE TO ALL DECK AND BULKHEAD TYPES



3B462

SEALING UNUSED KICKPIES AND
STUFFING TUBES WITH REMOVABLE
STUFFING TUBE BODY



SH 132317147

FIGURE 3B46. Sealing unused stuffing tubes in medium steel bulkheads and decks.

NOTES:
1. APPLICATION OF THE METHODS SHOWN (3B461 & 3B462)
ARE INTENDED FOR EXISTING INSTALLED STUFFING TUBES
WHOSE CABLES HAVE BEEN REMOVED AND NOT NECESSARILY
REPLACED.

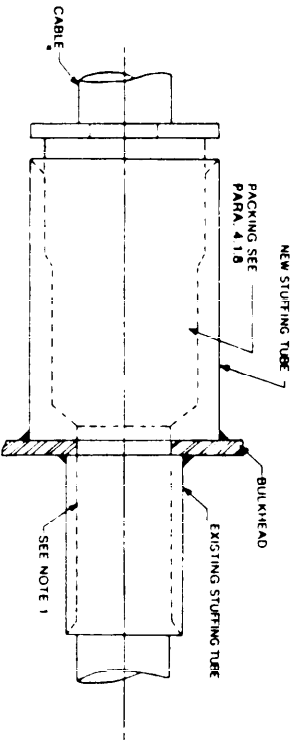
2. THIS FIGURE SUPERSEDES SHEET 3B46 OF DRAWING
803-5001027, SECTION 4, SHEET 17 OF DRAWING NAVSEC
NO. 9000-58202-71980.

- NOTES:
1. TABLE B INDICATES NEW TUBE SIZE LIMITATIONS FOR ADAPTATION TO UNDERSIZED NON-REUSABLE STUFFING TUBES.
 2. REAM SMOOTH AND ROUND OFF INSIDE EDGE OF EXISTING TUBE TO PREVENT CABLE CHAFING.
 3. THIS FIGURE SUPERSEDES SHEET 3B45 OF DRAWING 803-5001027 SECTION 4, SHEET 103, OF DRAWING NAVSEC NO. 9000-S6202-73980.

3B45I

TABLE A
STUFFING TUBE SIZES FOR ADAPTATION
TO EXISTING UNDERSIZED STUFFING TUBES OF THE
SAME TYPE TO ACCOMMODATE LARGER SIZE
CABLE

NEW STUFFING TUBES MIL-S-24235/AD																										
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
EXISTING STUFFING TUBES MIL-S-24235/AD	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
AA																										
Z																										
Y																										
X																										
W																										
V																										
U																										
T																										
S																										
R																										
Q																										
P																										
N																										
M																										
J																										
I																										
H																										
G																										
F																										
E																										
D																										
C																										
B																										
A																										



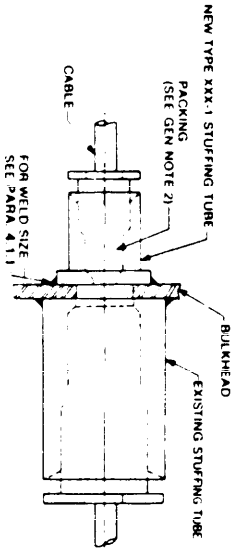
TYPICAL INSTALLATION

FIGURE 3B45. Changing stuffing tube sizes to accommodate larger cable.

TABLE A
TYPE XXX-1 STUFFING TUBE SIZES (WITH COLLAR)
FOR ADAPTATION TO EXISTING OVERSIZED
STUFFING TUBES TO ACCOMMODATE SMALLER
CABLE

MIL - 5 - 24235/0 STUFFING TUBE (EXISTING)																										
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
AA																										
AB																										

TYPE XXX-1 STUFFING TUBE WITH COLLAR
(SEE NOTE 2)



TYPICAL INSTALLATION

3B441

- NOTES:
1. FOR ALTERNATE METHODS, SEE METHOD 3B431.
 2. THE USE OF THE METHOD SHOWN (3B441) DEPENDS UPON THE AVAILABILITY OF TYPE XXX-1 STUFFING TUBES, WHICH ARE OBSOLETE.
 3. DISCARD METAL GLAND WASHER BUT RETAIN GLAND NUT OF EXISTING TUBE TO PREVENT CABLE CHAFING.
 4. TABLE A INDICATES TYPE XXX-1 TUBE SIZE LIMITATIONS FOR ADAPTATION TO OVERSIZED NON-REUSABLE STUFFING TUBES.
 5. THIS FIGURE SUPERSEDES SHEET 3B44 OF DRAWING 803-5001027 AND SECTION 4, SHEET 103, OF DRAWING NAVSEC NO. 8000-73980.

SH 132317145

FIGURE 3B44. Changing stuffing tube sizes to accommodate smaller cables.

- NOTES:
1. CUT A SLOT IN A DISK OR WASHER ON ONE SIDE OF THE CABLE HOLE ONLY. TWO SLOTTED DISKS OR SLOTTED WASHERS ARE THEN SLIPPED AROUND THE CABLE BOTH IN THE GLAND BOTTOM AND UNDER THE GLAND NUT. TO HOLD THE PACKING SECURELY IN PLACE.
 2. THIS METHOD IS AN ALTERNATE TO METHOD 3B441.
 3. THIS FIGURE SUPERSEDES SHEET 3B43 ON DRAWING 803-5001027 AND SECTION 4, SHEET 114 OF DRAWING, NAVSEC NO. 9000-56202-73860.

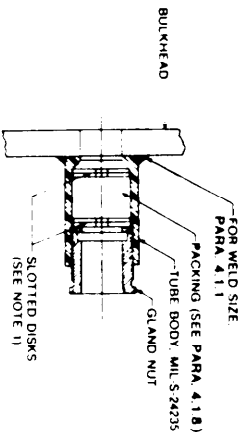
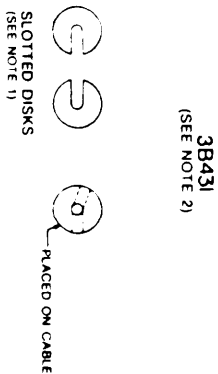


FIGURE 3B43. Adapting stuffing tubes for smaller size cables using slotted packing disks.

SH 132317144

CABLE TYPE	CABLE DRAIN-TERM INCHES	CABLE DRAIN-TERM M	INSERT BLOCK PART NUMBER	INSERT BLOCK PART NUMBER
TNW-3	0.241	10.24	30/0	
TNW-4	0.245	10.43	30/0	
TNW-5	0.252	10.68	30/0	
TNW-6	0.260	10.82	30/0	
TNW-7	0.268	11.07	30/0	
TNW-8	0.276	11.32	30/0	
TNW-9	0.284	11.57	30/0	
TNW-10	0.292	11.82	30/0	
TNW-11	0.300	12.07	30/0	
TNW-12	0.308	12.32	30/0	
TNW-13	0.316	12.57	30/0	
TNW-14	0.324	12.82	30/0	
TNW-15	0.332	13.07	30/0	
TNW-16	0.340	13.32	30/0	
TNW-17	0.348	13.57	30/0	
TNW-18	0.356	13.82	30/0	
TNW-19	0.364	14.07	30/0	
TNW-20	0.372	14.32	30/0	
TNW-21	0.380	14.57	30/0	
TNW-22	0.388	14.82	30/0	
TNW-23	0.396	15.07	30/0	
TNW-24	0.404	15.32	30/0	
TNW-25	0.412	15.57	30/0	
TNW-26	0.420	15.82	30/0	
TNW-27	0.428	16.07	30/0	
TNW-28	0.436	16.32	30/0	
TNW-29	0.444	16.57	30/0	
TNW-30	0.452	16.82	30/0	
TNW-31	0.460	17.07	30/0	
TNW-32	0.468	17.32	30/0	
TNW-33	0.476	17.57	30/0	
TNW-34	0.484	17.82	30/0	
TNW-35	0.492	18.07	30/0	
TNW-36	0.500	18.32	30/0	
TNW-37	0.508	18.57	30/0	
TNW-38	0.516	18.82	30/0	
TNW-39	0.524	19.07	30/0	
TNW-40	0.532	19.32	30/0	
TNW-41	0.540	19.57	30/0	
TNW-42	0.548	19.82	30/0	
TNW-43	0.556	20.07	30/0	
TNW-44	0.564	20.32	30/0	
TNW-45	0.572	20.57	30/0	
TNW-46	0.580	20.82	30/0	
TNW-47	0.588	21.07	30/0	
TNW-48	0.596	21.32	30/0	
TNW-49	0.604	21.57	30/0	
TNW-50	0.612	21.82	30/0	
TNW-51	0.620	22.07	30/0	
TNW-52	0.628	22.32	30/0	
TNW-53	0.636	22.57	30/0	
TNW-54	0.644	22.82	30/0	
TNW-55	0.652	23.07	30/0	
TNW-56	0.660	23.32	30/0	
TNW-57	0.668	23.57	30/0	
TNW-58	0.676	23.82	30/0	
TNW-59	0.684	24.07	30/0	
TNW-60	0.692	24.32	30/0	
TNW-61	0.700	24.57	30/0	
TNW-62	0.708	24.82	30/0	
TNW-63	0.716	25.07	30/0	
TNW-64	0.724	25.32	30/0	
TNW-65	0.732	25.57	30/0	
TNW-66	0.740	25.82	30/0	
TNW-67	0.748	26.07	30/0	
TNW-68	0.756	26.32	30/0	
TNW-69	0.764	26.57	30/0	
TNW-70	0.772	26.82	30/0	
TNW-71	0.780	27.07	30/0	
TNW-72	0.788	27.32	30/0	
TNW-73	0.796	27.57	30/0	
TNW-74	0.804	27.82	30/0	
TNW-75	0.812	28.07	30/0	
TNW-76	0.820	28.32	30/0	
TNW-77	0.828	28.57	30/0	
TNW-78	0.836	28.82	30/0	
TNW-79	0.844	29.07	30/0	
TNW-80	0.852	29.32	30/0	
TNW-81	0.860	29.57	30/0	
TNW-82	0.868	29.82	30/0	
TNW-83	0.876	30.07	30/0	
TNW-84	0.884	30.32	30/0	
TNW-85	0.892	30.57	30/0	
TNW-86	0.900	30.82	30/0	
TNW-87	0.908	31.07	30/0	
TNW-88	0.916	31.32	30/0	
TNW-89	0.924	31.57	30/0	
TNW-90	0.932	31.82	30/0	
TNW-91	0.940	32.07	30/0	
TNW-92	0.948	32.32	30/0	
TNW-93	0.956	32.57	30/0	
TNW-94	0.964	32.82	30/0	
TNW-95	0.972	33.07	30/0	
TNW-96	0.980	33.32	30/0	
TNW-97	0.988	33.57	30/0	
TNW-98	0.996	33.82	30/0	
TNW-99	1.004	34.07	30/0	
TNW-100	1.012	34.32	30/0	
TNW-101	1.020	34.57	30/0	
TNW-102	1.028	34.82	30/0	
TNW-103	1.036	35.07	30/0	
TNW-104	1.044	35.32	30/0	
TNW-105	1.052	35.57	30/0	
TNW-106	1.060	35.82	30/0	
TNW-107	1.068	36.07	30/0	
TNW-108	1.076	36.32	30/0	
TNW-109	1.084	36.57	30/0	
TNW-110	1.092	36.82	30/0	
TNW-111	1.100	37.07	30/0	
TNW-112	1.108	37.32	30/0	
TNW-113	1.116	37.57	30/0	
TNW-114	1.124	37.82	30/0	
TNW-115	1.132	38.07	30/0	
TNW-116	1.140	38.32	30/0	
TNW-117	1.148	38.57	30/0	
TNW-118	1.156	38.82	30/0	
TNW-119	1.164	39.07	30/0	
TNW-120	1.172	39.32	30/0	
TNW-121	1.180	39.57	30/0	
TNW-122	1.188	39.82	30/0	
TNW-123	1.196	40.07	30/0	
TNW-124	1.204	40.32	30/0	
TNW-125	1.212	40.57	30/0	
TNW-126	1.220	40.82	30/0	
TNW-127	1.228	41.07	30/0	
TNW-128	1.236	41.32	30/0	
TNW-129	1.244	41.57	30/0	
TNW-130	1.252	41.82	30/0	
TNW-131	1.260	42.07	30/0	
TNW-132	1.268	42.32	30/0	
TNW-133	1.276	42.57	30/0	
TNW-134	1.284	42.82	30/0	
TNW-135	1.292	43.07	30/0	
TNW-136	1.300	43.32	30/0	
TNW-137	1.308	43.57	30/0	
TNW-138	1.316	43.82	30/0	
TNW-139	1.324	44.07	30/0	
TNW-140	1.332	44.32	30/0	
TNW-141	1.340	44.57	30/0	
TNW-142	1.348	44.82	30/0	
TNW-143	1.356	45.07	30/0	
TNW-144	1.364	45.32	30/0	
TNW-145	1.372	45.57	30/0	
TNW-146	1.380	45.82	30/0	
TNW-147	1.388	46.07	30/0	
TNW-148	1.396	46.32	30/0	
TNW-149	1.404	46.57	30/0	
TNW-150	1.412	46.82	30/0	
TNW-151	1.420	47.07	30/0	
TNW-152	1.428	47.32	30/0	
TNW-153	1.436	47.57	30/0	
TNW-154	1.444	47.82	30/0	
TNW-155	1.452	48.07	30/0	
TNW-156	1.460	48.32	30/0	
TNW-157	1.468	48.57	30/0	
TNW-158	1.476	48.82	30/0	
TNW-159	1.484	49.07	30/0	
TNW-160	1.492	49.32	30/0	
TNW-161	1.500	49.57	30/0	
TNW-162	1.508	49.82	30/0	
TNW-163	1.516	50.07	30/0	
TNW-164	1.524	50.32	30/0	
TNW-165	1.532	50.57	30/0	
TNW-166	1.540	50.82	30/0	
TNW-167	1.548	51.07	30/0	
TNW-168	1.556	51.32	30/0	
TNW-169	1.564	51.57	30/0	
TNW-170	1.572	51.82	30/0	
TNW-171	1.580	52.07	30/0	
TNW-172	1.588	52.32	30/0	
TNW-173	1.596	52.57	30/0	
TNW-174	1.604	52.82	30/0	
TNW-175	1.612	53.07	30/0	
TNW-176	1.620	53.32	30/0	
TNW-177	1.628	53.57	30/0	
TNW-178	1.636	53.82	30/0	
TNW-179	1.644	54.07	30/0	
TNW-180	1.652	54.32	30/0	
TNW-181	1.660	54.57	30/0	
TNW-182	1.668	54.82	30/0	
TNW-183	1.676	55.07	30/0	
TNW-184	1.684	55.32	30/0	
TNW-185	1.692	55.57	30/0	
TNW-186	1.700	55.82	30/0	
TNW-187	1.708	56.07	30/0	
TNW-188	1.716	56.32	30/0	
TNW-189	1.724	56.57	30/0	
TNW-190	1.732	56.82	30/0	
TNW-191	1.740	57.07	30/0	
TNW-192	1.748	57.32	30/0	
TNW-193	1.756	57.57	30/0	
TNW-194	1.764	57.82	30/0	
TNW-195	1.772	58.07	30/0	
TNW-196	1.780	58.32	30/0	
TNW-197	1.788	58.57	30/0	
TNW-198	1.796	58.82	30/0	
TNW-199	1.804	59.07	30/0	
TNW-200	1.812	59.32	30/0	
TNW-201	1.820	59.57	30/0	
TNW-202	1.828	59.82	30/0	
TNW-203	1.836	60.07	30/0	
TNW-204	1.844	60.32	30/0	
TNW-205	1.852	60.57	30/0	
TNW-206	1.860	60.82	30/0	
TNW-207	1.868	61.07	30/0	
TNW-208	1.876	61.32	30/0	
TNW-209	1.884	61.57	30/0	
TNW-210	1.892	61.82	30/0	
TNW-211	1.900	62.07	30/0	
TNW-212	1.908	62.32	30/0	
TNW-213	1.916	62.57	30/0	
TNW-214	1.924	62.82	30/0	
TNW-215	1.932	63.07	30/0	
TNW-216	1.940	63.32	30/0	
TNW-217	1.948	63.57	30/0	
TNW-218	1.956	63.82	30/0	
TNW-219	1.964	64.07	30/0	
TNW-220	1.972	64.32	30/0	
TNW-221	1.980	64.57	30/0	
TNW-222	1.988	64.82	30/0	
TNW-223	1.996	65.07	30/0	
TNW-224	2.004	65.32	30/0	
TNW-225	2.012	65.57	30/0	
TNW-226	2.020	65.82	30/0	
TNW-227	2.028	66.07	30/0	
TNW-228	2.036	66.32	30/0	
TNW-229	2.044	66.57	30/0	
TNW-230	2.052	66.82	30/0	
TNW-231	2.060	67.07	30/0	
TNW-232	2.068	67.32	30/0	
TNW-233	2.076	67.57	30/0	
TNW-234	2.084	67.82	30/0	
TNW-235	2.092	68.07	30/0	
TNW-236	2.100	68.32	30/0	
TNW-237	2.108	68.57	30/0	
TNW-238	2.116	68.82	30/0	
TNW-239	2.124	69.07	30/0	
TNW-240	2.132	69.32	30/0	
TNW-241	2.140	69.57	30/0	
TNW-242	2.148	69.82	30/0	
TNW-243	2.156	70.07	30/0	
TNW-244	2.164	70.32	30/0	
TNW-245	2.172	70.57	30/0	
TNW-246	2.180	70.82	30/0	
TNW-247	2.188	71.07	30/0	
TNW-248	2.196	71.32	30/0	
TNW-249	2.204	71.57	30/0	
TNW-250	2.212	71.82	30/0	
TNW-251	2.220	72.07	30/0	
TNW-252	2.228	72.32	30/0	
TNW-253	2.236	72.57	30/0	
TNW-254	2.244	72.82		

NOTES.

1. FOR OBSOLETE CABLES AND COAXIAL CABLES SEE FIGURE 3B36.

2. THIS FIGURE SUPERSEDES SHEET 3B41 OF DRAWING 803-5001027

FIGURE 3B41. Multiple cable penetrator cable assignment (type RGS and RGA).

SH 132317141

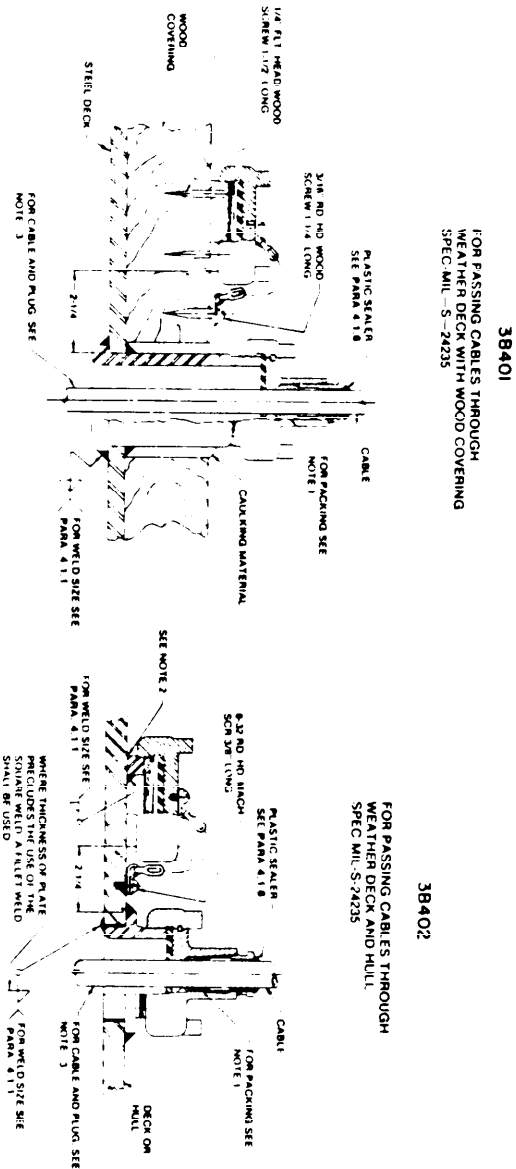
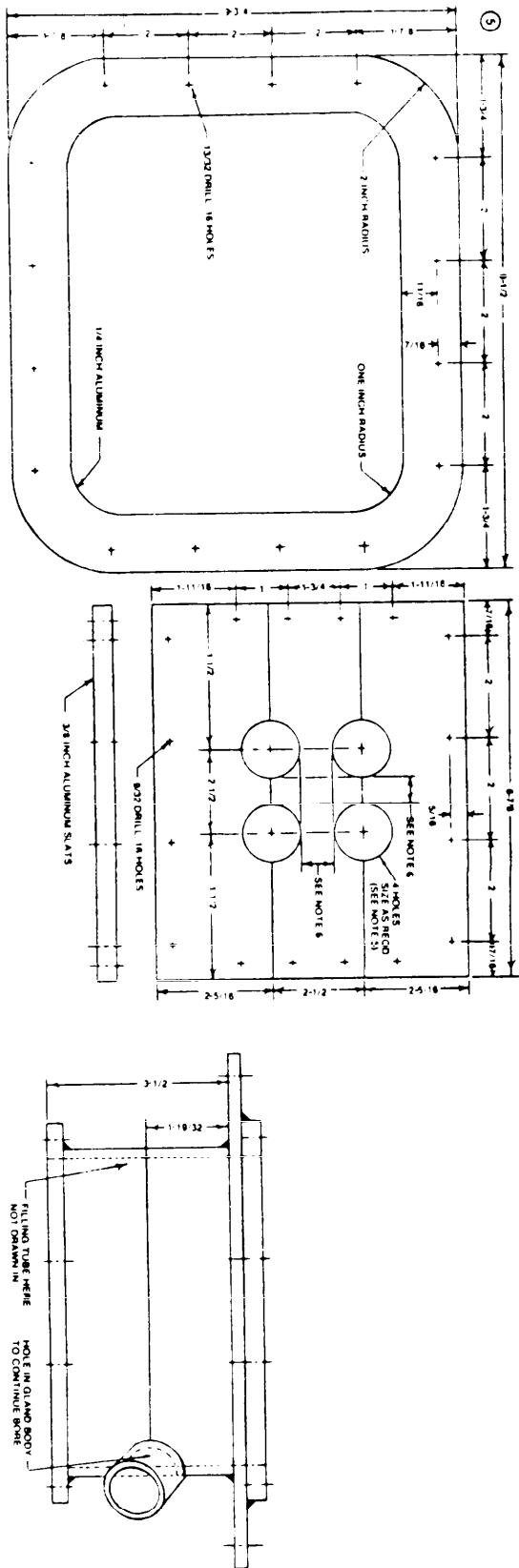
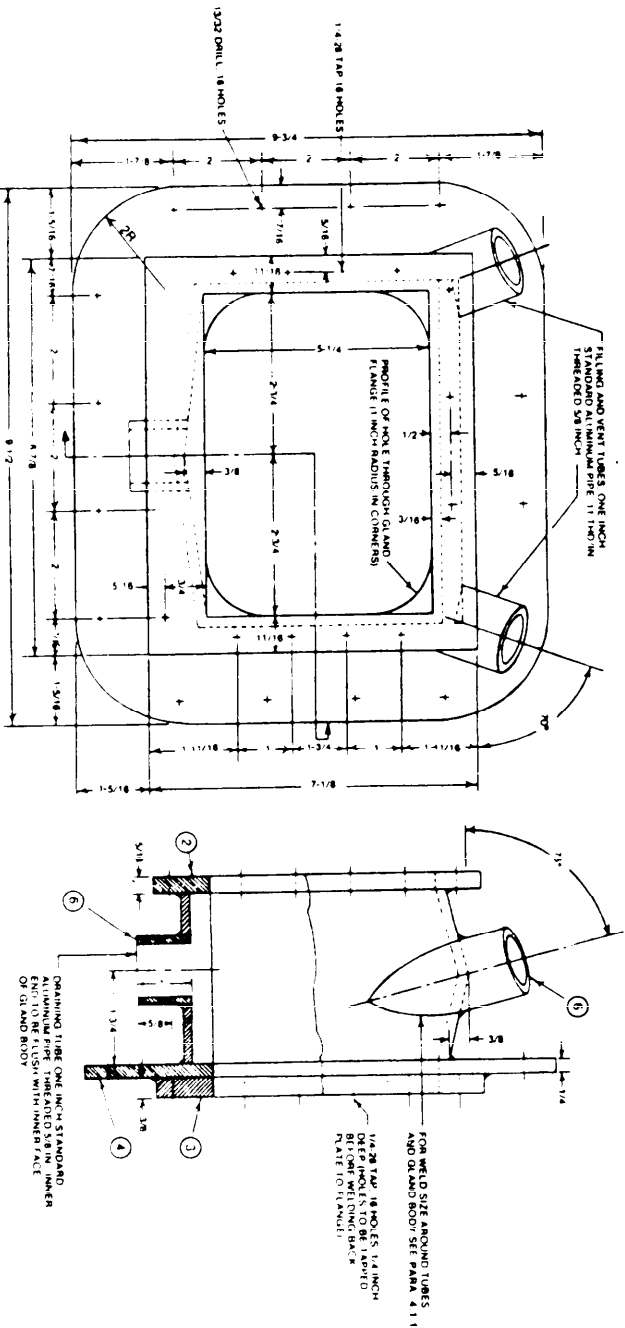


FIGURE 3840. Deck outlets for portable cables (surface ships).

- NOTES
1. ISLANDS OF OUTLETS SHALL BE PACKED WITH PREFABRICATED PACKING TYPE 2 SIZE "B" IN ACCORDANCE WITH SPEC. MIL. P-16665
 2. AFTER WELDING DIAMARY PLUG (SPEC. MIL. P-24235) IN PLACE, AN APPROVED COAL TAR PITCH EMULSION SHALL BE USED TO SEAL THE CRACKS FILL THE INSIDE FLUSH
 3. OUTLETS ARE DESIGNED TO ACCOMMODATE A SINGLE CABLE AND TYPE CCC-2 PLUG IN ACCORDANCE WITH DRAWING MIL. R-2726/68
 4. THIS FIGURE SUPERSEDES SHEET 3840 OF DRAWING 803-5001027 AND SECTION 4, SHEET 94 OF DRAWING NAVSEC NO 9000-56202-73980

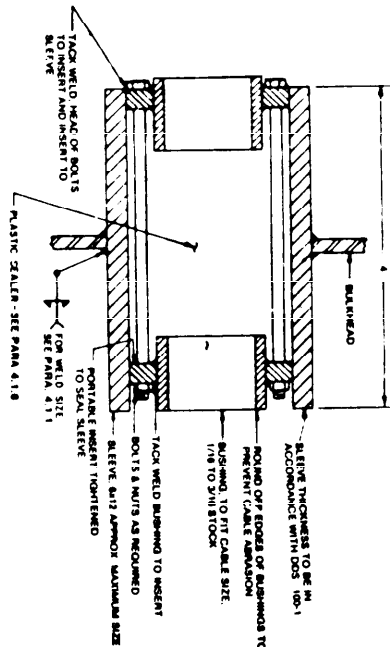
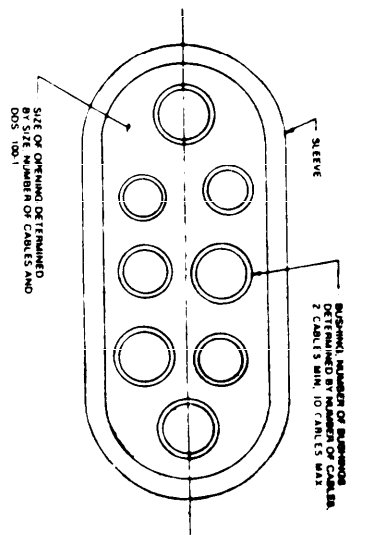


- NOTES
- 1 FOR MATERIAL SEE LIST OF MATERIAL ON FIGURE 3B38
 - 2 SEE FIGURE 3B38 FOR FILL, DRAIN & VENT CAP DETAIL
 - 3 DRILL FRONT AND BACK SLATS AT THE SAME TIME
 - 4 PAINTING SHALL BE IN ACCORDANCE WITH APPROVED METHODS
 - 5 THE DIAMETER OF THE HOLES SHOULD BE SAME SIZE (1/16-0) OUTSIDE DIAMETER OF MINESWEEP CABLE USED
 - 6 THE SEPARATION OF THESE HOLES SHOULD PROVIDE A MINIMUM SPACING OF 0.625 BETWEEN CABLES AND ALSO PROVIDE A MINIMUM SPACING OF 0.5 BETWEEN CABLE AND INNER FACES OF GLAND BODY
 - 7 THIS FIGURE SUPERSEDES SHEET 3B39 OF DRAWING 803-5001027 AND SECTION 4 SHEET 146 OF DRAWING 803-5001027 AND SECTION 4 SHEET 146 OF DRAWING NAVSEC NO 8000-56202 73990



SH 132317140

FIGURE 3B39. Community stuffing tubes for minesweepers (details).



38371

NOTE:
1. THIS FIGURE SUPERSEDES SHEET 3837 OF DRAWING 803-500 1027 AND SECTION 4, SHEET 159, OF DRAWING, NAVSEC NO 8000-56202-73960

SH 132317138

FIGURE 3B37. Community cable tube-watertight bulkheads (trowled seal).

NOTE:

1. THIS FIGURE SUPERSEDES SHEET 38.18 OF DRAWING 803-5001027 AND SECTION 4, SHEET 145, OF DRAWING, NAVSEC NO. 9000-S6202-73980.

INSTALLATION NOTES

1. THE U/LAND IS TO BE POSITIONED ON THE BULKHEAD SO THAT THERE IS REASONABLE ACCESS TO THE FILLING DRAIN AND VENT TUBES. THE U/LAND IS TO BE POSITIONED WITH THE LONGEST DIMENSION PERMISSIBLE. THE U/LAND IS TO BE HORIZONTAL (MAXIMUM TOLERANCE: 1 INCH IN 10 FEET).
2. AN APPROXIMATE 1/2 INCH HIGH BY 7/16 INCH WIDE SHOULD BE PREPARED IN THE BULKHEAD FOR RECEIVING THE U/LAND.
3. FIT RUBBER GASKETS AND BOLTS U/LAND TO BULKHEAD
4. Wipe the U/LAND INTERIOR COMPLETELY TO REMOVE TRACES OF GREASE ON OIL
5. REMOVE THE U/LAND THROUGH THE G/LAND REMOVING WHERE POSSIBLE, ALL TRAP AND GREASE FROM CABLES
6. THE PORTIONS OF THE CABLES PASSING THROUGH THE G/LAND ESPECIALLY AT THE SLAT ASSEMBLY POSITIONS, MUST BE WIPED CLEAN WITH A RAG OR TOWEL. THE PURPOSE IS TO REMOVE ALL TRACES OF GREASE ON OIL FROM THE CABLES
7. COAT THE CABLES' BOTTOM EDGES AND BUTTING SIDE OF THE BOTTOM SLATS WITH SEALER. PEECE IS IF THE SLATS INTO POSITION AND SECURE TO GLAND BODY (1 SLAT EACH SIDE)
8. PROCEED IN A BOTTOM UP MANNER, TO POSITION THE CABLES UNTIL ALL SLATS ARE IN POSITION
9. AFTER CABLES ARE IN POSITION THEY SHOULD NOT BE DISTURBED
10. FINAL O/LAND CLEANING OPERATION - REMOVE THE CAPS FROM THE FILLING DRAIN AND VENT TUBES. FIT A HOSE TO THE DRAIN TUBE TO THE G/LAND. FILL THE GLAND WITH LIQUID DEGRADING AGENT
- CAUTION: USE ADEQUATE VENTILATION, AVOID PROLONGED CONTACT WITH SKIN. DO NOT TAKE INTERNALLY AFTER OPERATED
11. AFTER THE GLAND IS FULLY FULLED, WAIT FOR ABOUT 3 MINUTES. RELEASE THE CLAMP TO DRAIN THE GLAND AND BLOW OUT THE GLAND WITH AIR. REMOVE THE HOSE FROM THE TOP FOR ABOUT 5 MINUTES TO ENSURE COMPLETE DRAINING
12. THE GLAND MUST REMAIN IN THE GLAND ANY LEAKS NOTED DURING THE CLEANING OPERATION SHOULD BE REPAIRED
13. THE FILLING COMPOUND IS TO BE SEPARATED INTO TWO COMPANED PEECE IT, CONSISTS OF TWO SEPARATE FILLING COMPOUNDS. THE FILLING COMPOUND IS TO BE USED TO THE SUCCESS OF THE RESULTANT COMPOUND DEPENDS ON THE PROPER MIXING AND THIS SHOULD BE A STRONG ACTION. THE COMPOUND IS TO BE USED TO THE SUCCESS OF THE RESULTANT COMPOUND DEPENDS ON THE PROPER MIXING AND THIS SHOULD BE A STRONG ACTION. THE COMPOUND IS TO BE USED TO THE SUCCESS OF THE RESULTANT COMPOUND DEPENDS ON THE PROPER MIXING AND THIS SHOULD BE A STRONG ACTION.
14. INSTRUCTIONS ARE PRINTED ON THE FILLING COMPOUND CONTAINER
15. FIT THE FILLING COMPOUND INTO THE GLAND UNTIL THE TUBES ARE FILLED
16. THE PORTIONS OF THE GLAND MUST BE INSPECTED DURING THE FILLING OPERATION. IF THERE IS A LEAK, IT MUST BE STOPPED IMMEDIATELY BY EXTERNAL APPLICATION OF SEALER. IF LEAKAGE PERSISTS, THE FILLING OPERATION MUST STOP. IMMEDIATELY DRAIN THE FILLING COMPOUND FROM THE GLAND. IF LEAKAGE PERSISTS, THE FILLING OPERATION MUST STOP. IMMEDIATELY DRAIN THE FILLING COMPOUND FROM THE GLAND. IF LEAKAGE PERSISTS, THE FILLING OPERATION MUST STOP.
17. FIT FILLING AND VENT TUBE CAPS

ITEM NO	DESCRIPTION	QTY	UNIT	PRICE	TOTAL	REMARKS
18	PLASTIC SEALER	1	EA	1.50	1.50	
17	FILING COMP	1	EA	1.50	1.50	
16	GASKET CAP	1	EA	1.50	1.50	
15	GASKET FLANGE	1	EA	1.50	1.50	
14	3/8" NUT	1	EA	1.50	1.50	
13	3/16" BOLT LENGTH AS REQD	1	EA	1.50	1.50	
12	1/4" FILM SCREW 1/4" LONG	1	EA	1.50	1.50	
11	3/2" FILM SCREW 3/8" LONG	1	EA	1.50	1.50	
10	SLAT 2 1/4" INCH	1	EA	1.50	1.50	
9	SLAT 1 3/4" INCH	1	EA	1.50	1.50	
8	SLAT 2 INCH	1	EA	1.50	1.50	
7	CAP - FILL DRAIN & VENT	1	EA	1.50	1.50	
6	PIPE 1 INCH LENGTH TO SUIT	1	EA	1.50	1.50	
5	BACKING PLATE 1/4" PL	1	EA	1.50	1.50	
4	FLANGE 1/4" PL	1	EA	1.50	1.50	
3	BACK FACE PLATE 3/8" PL	1	EA	1.50	1.50	
2	FRONT FACE PLATE 5/16" PL	1	EA	1.50	1.50	
1	GLAND BODY 3/16" PLATE	1	EA	1.50	1.50	

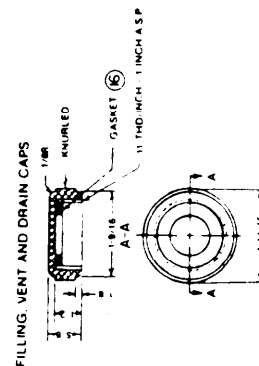
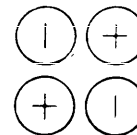
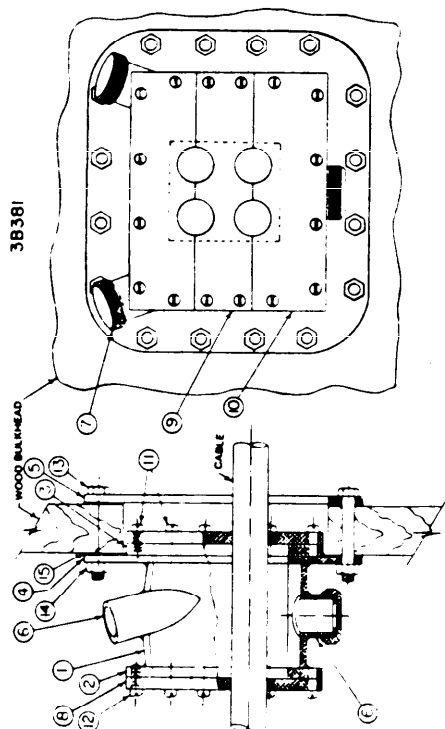


FIGURE 3B38. Community stuffing tube for minesweepers.

SH 132317139

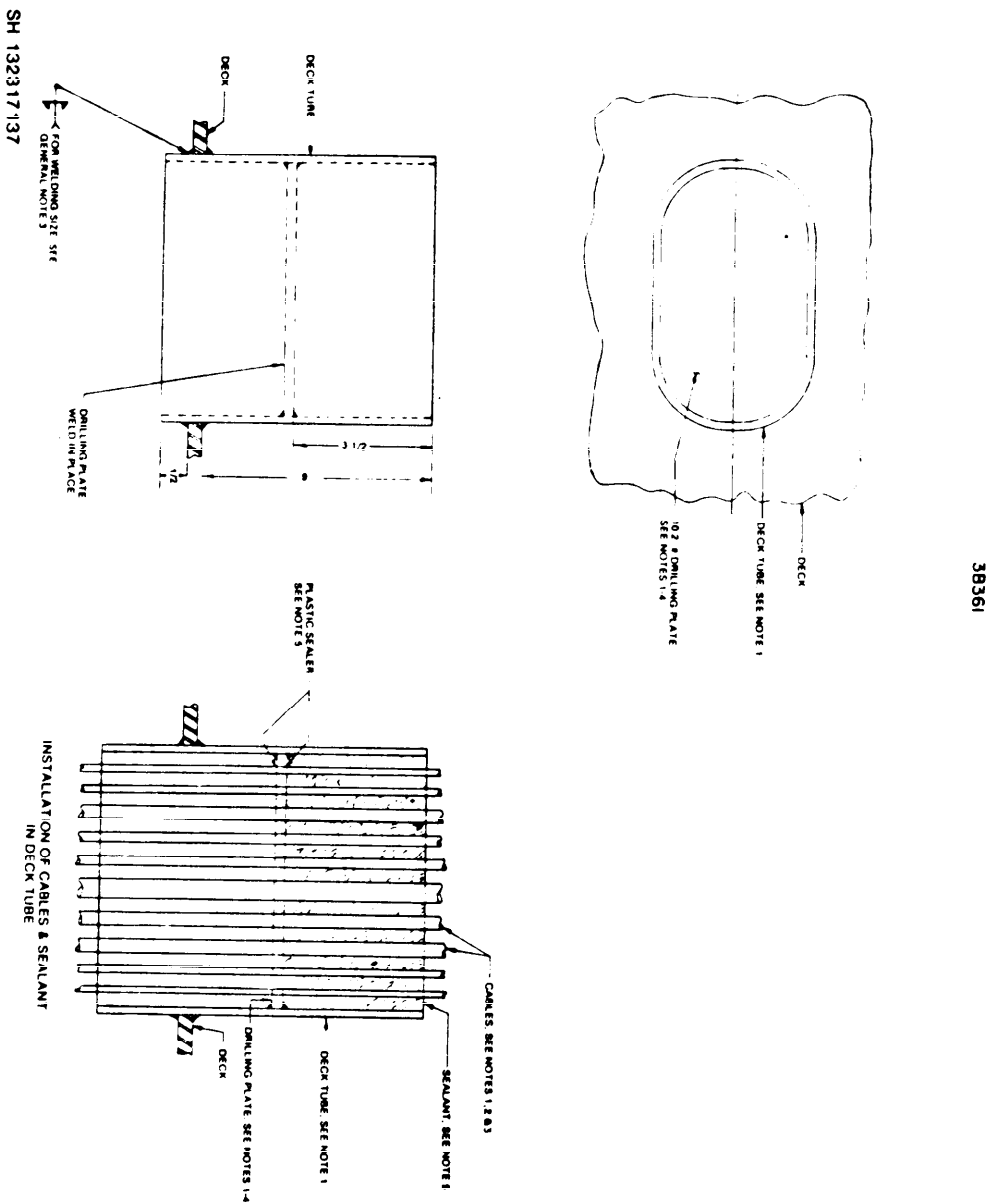
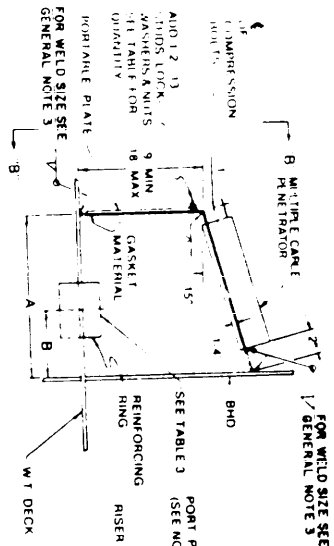


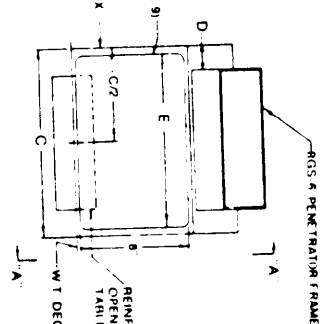
FIGURE 3B36. Community cable tube-waterlight decks (poured seal).

- NOTES
1. DECK TUBE WALL THICKNESS, MAXIMUM SIZE, AND MAXIMUM QUANTITY OF CABLES THROUGH DRILLING PLATE SHALL BE IN ACCORDANCE WITH DODS 100-1.
 2. CABLE SIZE AND QUANTITY UP TO THE MAXIMUM ALLOWED SHALL BE DETERMINED BY THE USER.
 3. CABLE CLEARANCE HOLES SHALL BE SIZED IN ACCORDANCE WITH STANDARD SHIPYARD PRACTICE. HOLES TO BE ROUNDED TO THE NEXT MINIMUM CLEARANCE BETWEEN HOLES IN DRILLING PLATE AND SIDE OF DECK TUBE.
 4. SEALANT SHALL BE PRODUCT'S RESEARCH & DEVELOPMENT, FINISHED POLYMER OF THREE INCHES, PRIOR TO POURING SEALANT. SEALANT SHALL BE PACKED WITH PLASTIC SEALER AND 1/2" TYPE HP TO REMAIN IN PLACE IN THE GOOD STATE AND SERVE AS A PERMANENT FIRE STOP.
 5. THIS FOLDING SUPERSEDES SHEET 3036 OF DRAWING 803-6001037 AND 8000-88703-73801.

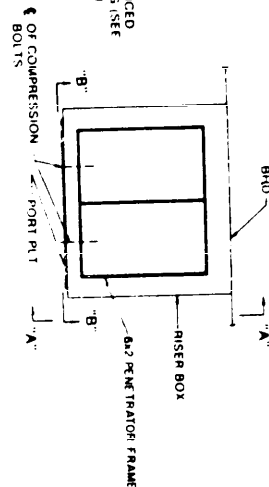
NOTES
1 THIS FIGURE SUPERSEDES SHEET 3B35 OF
DRAWING 803-5001027 AND SECTION 4, SHEET 180,
OF DRAWING, NAVSEC NO 9000-56202-73960



DETAIL A-A
SCALE 3/10

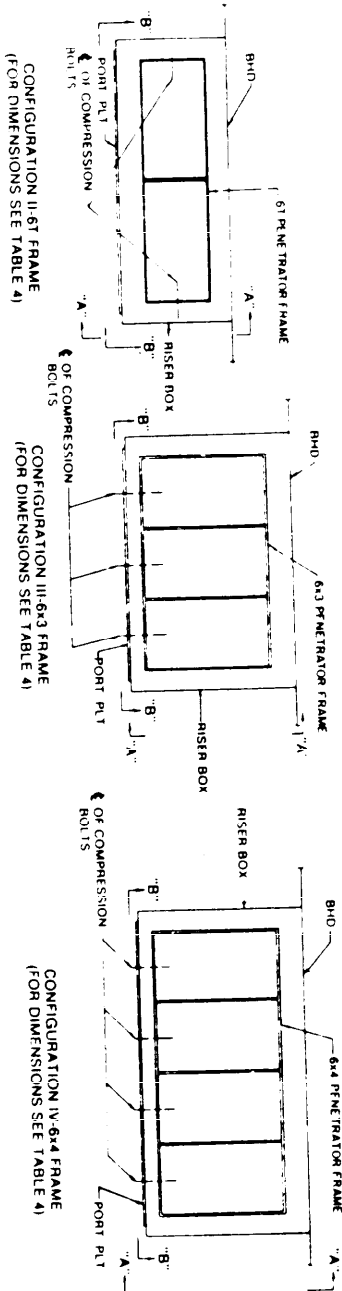


DETAIL B-B
TYPICAL VIEW - SEE CABLE PENETRATOR
FRAMES CONFIGURATIONS I-IV AND
REFER TO TABLE 4 FOR DIMENSIONS



CONFIGURATION I - 6x2 FRAME
(FOR DIMENSIONS SEE TABLE 4)

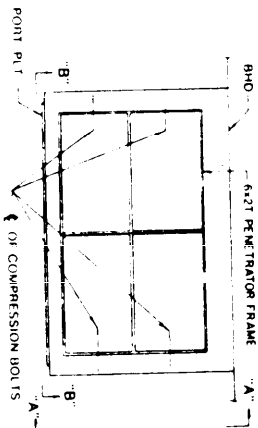
65



CONFIGURATION II-6x2 FRAME
(FOR DIMENSIONS SEE TABLE 4)

CONFIGURATION III-6x3 FRAME
(FOR DIMENSIONS SEE TABLE 4)

CONFIGURATION IV-6x4 FRAME
(FOR DIMENSIONS SEE TABLE 4)



CONFIGURATION V-6x2 FRAME
(FOR DIMENSIONS SEE TABLE 4)

NO. FRAMES	SIZE OF OPG
6x2	10 x 4
6x3	15 x 4
6x4	20 x 4 OR 16 x 5

(MIN OF 20 SQ IN OPG FOR EACH FRAME)

DIMENSIONS							BOLTS REQ'D
CONFIGURATION NUMBER	A	B	C	D	E	F	
I	12 1/2	5	14	5 3/4	1 1/2	14	14
II	12 1/2	5	14	5 3/4	2 1/8	16	16
III	12 1/2	5	19	5 5/8	1 1/2	18	18
IV	12 1/2	5	24	5 5/8	1 1/2	21	18
V	12 1/2	5	21	5 5/8	2 1/8	20	16

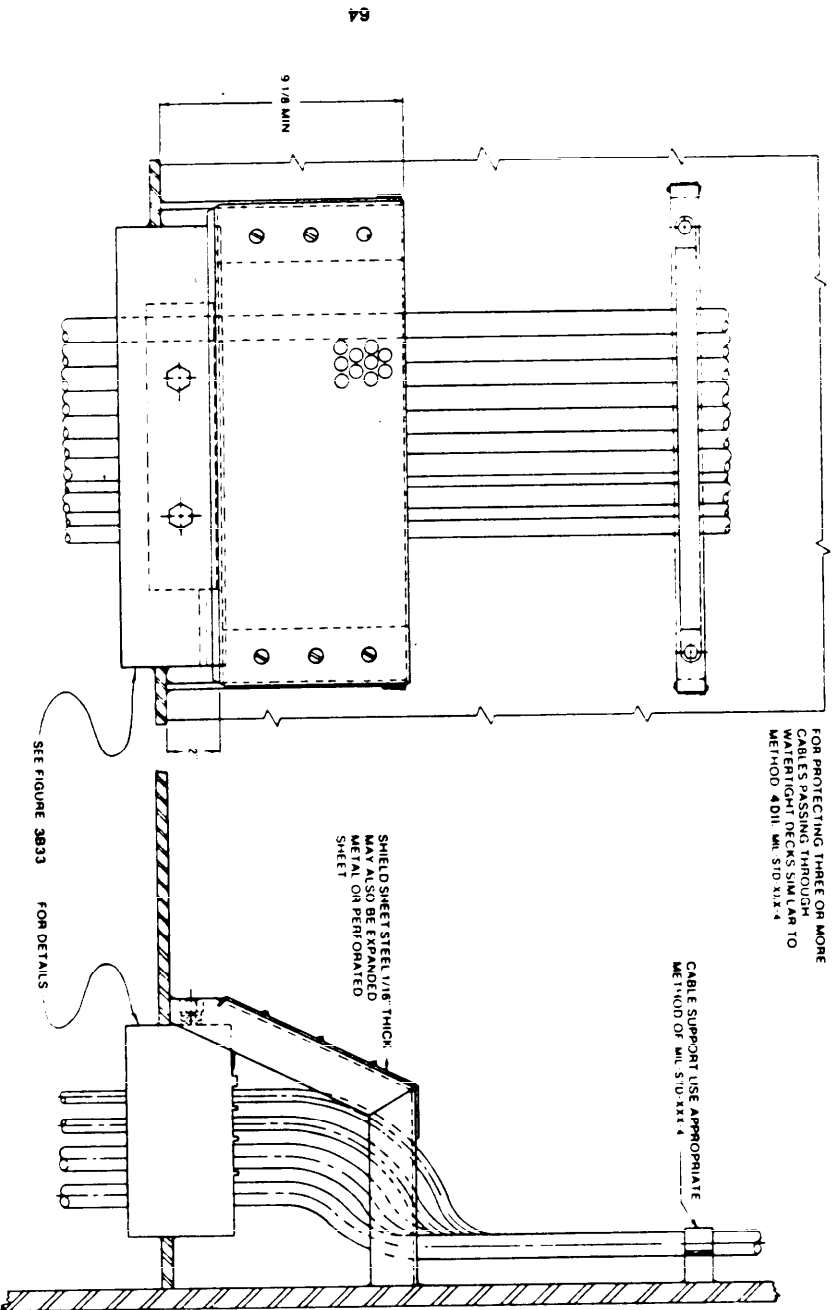
TABLE NO. 3

TABLE NO. 4

SH 132317136

FIGURE 3B35. Multiple cable penetrator riser box.

38341



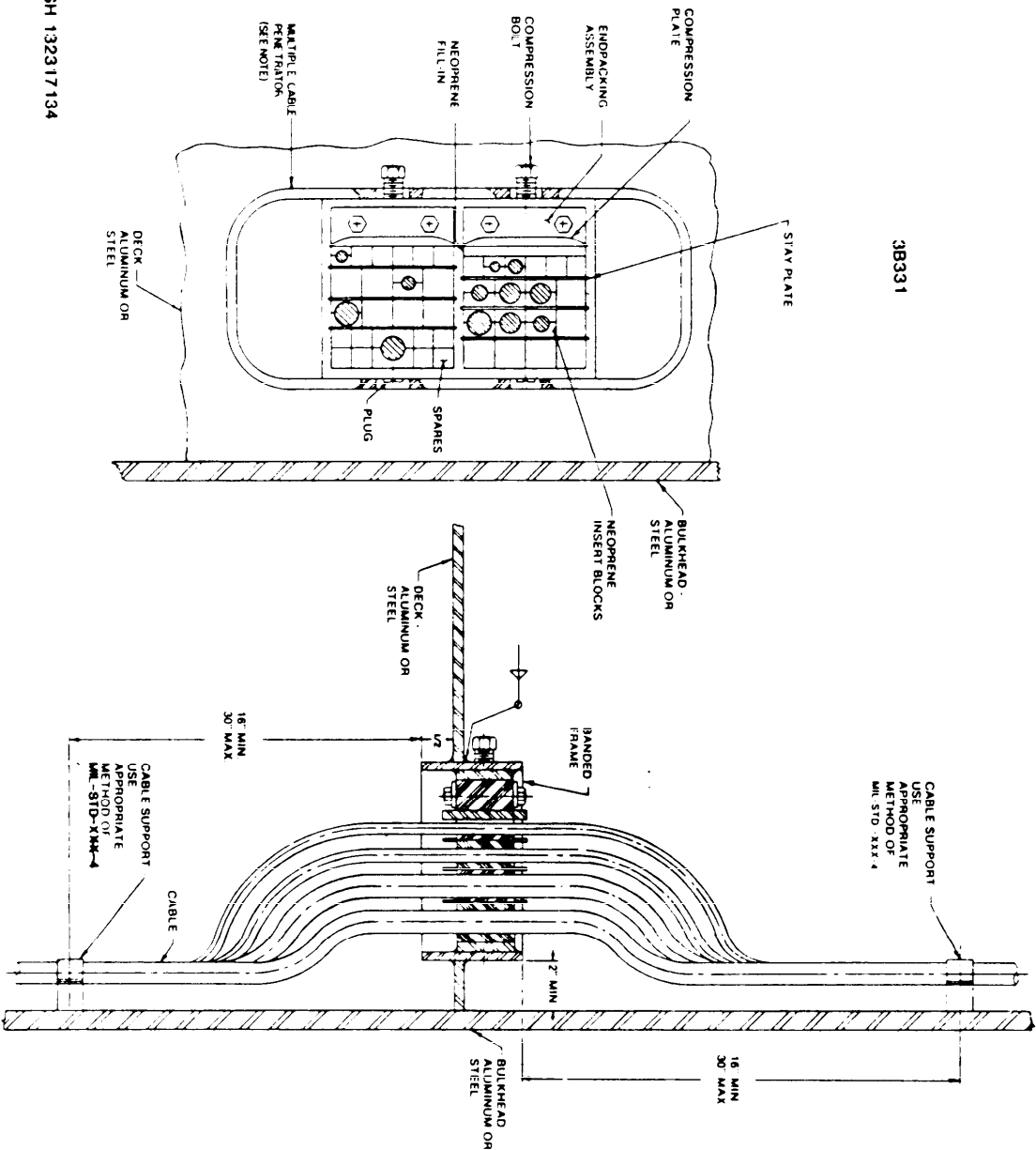
SH 132317135

FIGURE 3834. Multiple cable penetrator (type RGS and RGA) shield.

NOTE:

1. THIS FIGURE SUPERSEDES SHEET 3834 OF DRAWING 803-5001027 AND SECTION 4, SHEET 179, OF DRAWING NAVSEC NO 8000-56202-73980

- NOTES
- 1 MULTIPLE CABLE PENETRATOR FRAMES ARE AVAILABLE IN VARIOUS SIZES AND ARRANGEMENTS SHOWN IS A TWO FRAME PENETRATOR
 - 2 THIS FIGURE SUPERSEDES SHEET 3833 OF DRAWING 803-5001027 AND SECTION 4, SHEET 178, OF DRAWING, NAVSEC NO 9000-56202-73980



SH 132317134

FIGURE 3833. Multiple cable penetrator frame in decks (Type RGS and RGA).

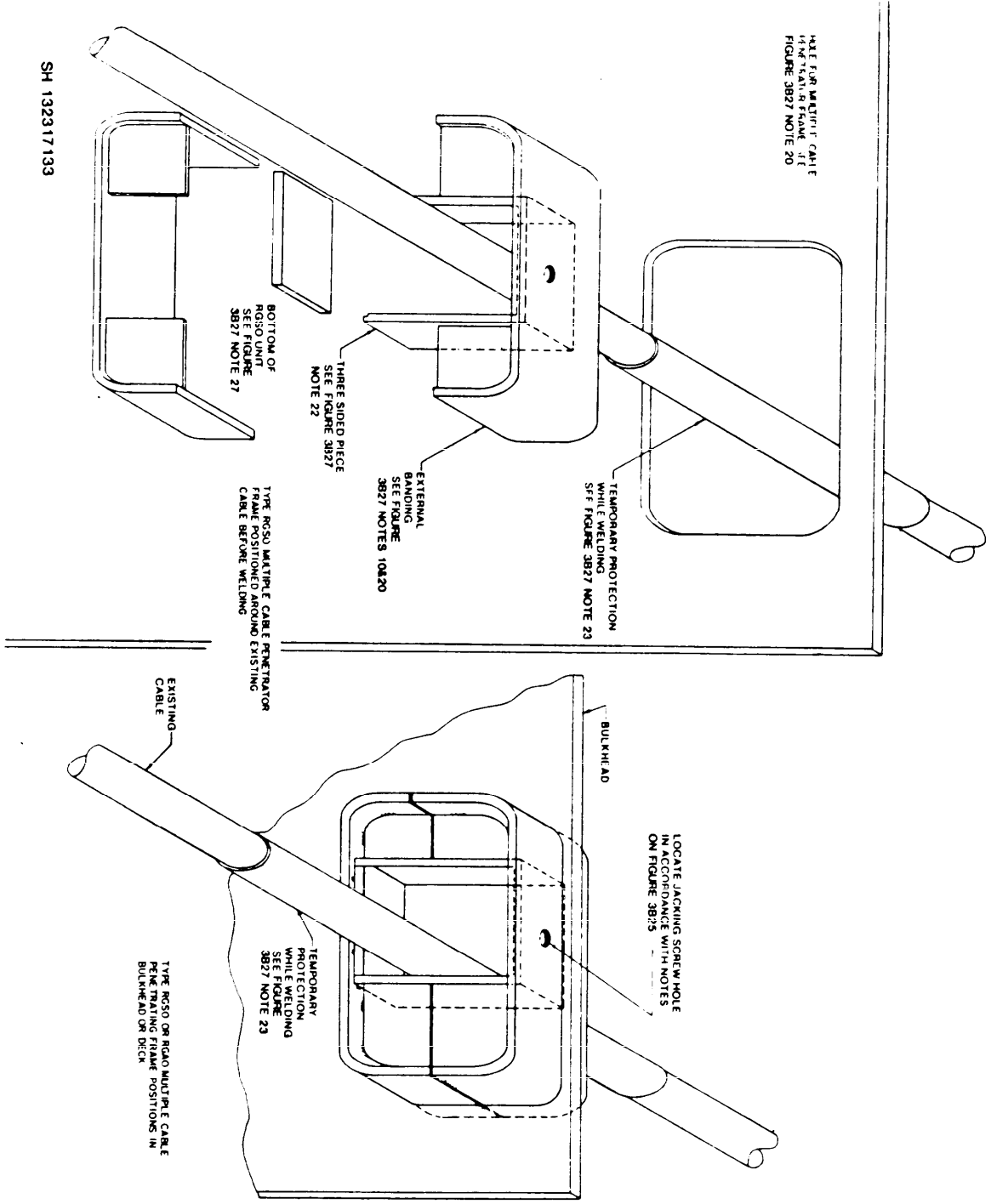


FIGURE 3832. Multiple cable penetrator installation details (type RGS and RGA)

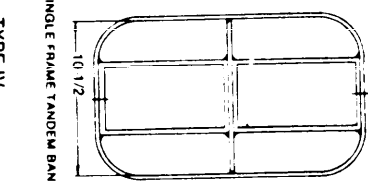
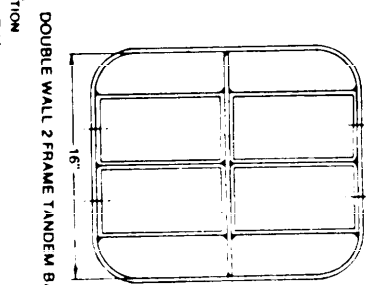
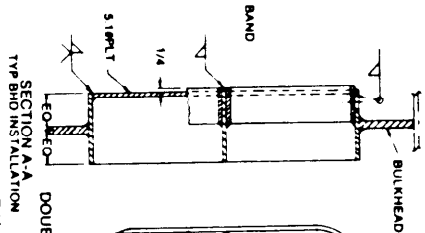
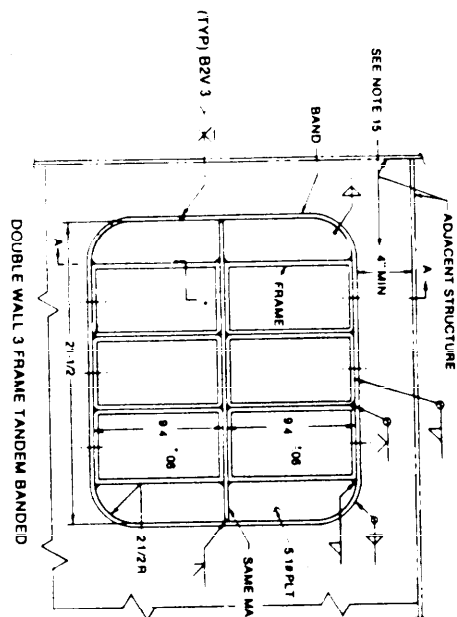
NOTES:
1. SEE FIGURE 3827 NOTES 18 THROUGH 26 FOR
ADDITIONAL DATA.
2. THIS FIGURE SUPERSEDES SHEET 3832 OF DRAWING
803-500 1027 AND SECTION 4, SHEET 177, OF DRAWING
NAVSEC NO. 9000-56202-73980

9

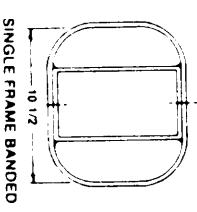
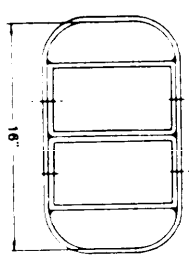
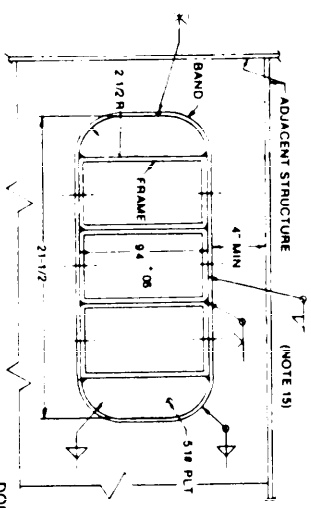
TYPE IV			
SIZE OF BAND		BHD'S & DECKS	
WT OF STRUCTURE PENETRATED	LONGI. STRENGTH MEMBER DECKS	OTHER THAN LONGI. STRENGTH MEMBERS	
7.65 LBS	5"x5/16	12"x5/16	5"x5/16
10.2	5"x3/8	12"x3/8	
12.75			
15.3	5"x1/2	12"x1/2	5"x3/8
17.85			
20.4	5"x5/8	12"x5/8	5"x1/2
25.5	5"x3/4	12"x3/4	5"x5/8
30.6			
35.7	6"x3/4	5"x3/4	

TYPE V			
SIZE OF BAND		BHD'S & DECKS	
WT OF STRUCTURE PENETRATED	LONGI. STRENGTH MEMBER DECKS	OTHER THAN LONGI. STRENGTH MEMBERS	
7.65 LBS	5"x5/16	12"x5/16	5"x5/16
10.2	5"x3/8	12"x3/8	
12.75			
15.3	5"x1/2	12"x1/2	5"x3/8
17.85			
20.4	5"x5/8	12"x5/8	5"x1/2
25.5	5"x3/4	12"x3/4	5"x5/8
30.6			
35.7	6"x3/4	5"x3/4	

TYPE IV			
SIZE OF BAND		BHD'S & DECKS	
WT OF STRUCTURE PENETRATED	LONGI. STRENGTH MEMBER DECKS	OTHER THAN LONGI. STRENGTH MEMBERS	
7.65 LBS	5"x5/16	12"x5/16	5"x5/16
10.2	5"x3/8	12"x3/8	
12.75			
15.3	5"x1/2	12"x1/2	5"x3/8
17.85			
20.4	5"x5/8	12"x5/8	5"x1/2
25.5	5"x3/4	12"x3/4	5"x5/8
30.6			
35.7			



NOTE
1. THIS FIGURE SUPERSEDES SHEET 3B31 OF DRAWING 803-5001027 AND SECTION 4, SHEET 176, OF DRAWING, NAVSEC NO. 9000-56202-73960.



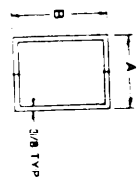
TYPE III			
SIZE OF BAND		BHD'S & DECKS	
WT OF STRUCTURE PENETRATED	LONGI. STRENGTH MEMBER DECKS	OTHER THAN LONGI. STRENGTH MEMBERS	
7.65 LBS	6"x3/8	12"x3/8	5"x5/16
10.2			
12.75	6"x7/16	12"x7/16	5"x3/8
15.3			
17.85	6"x1/2	12"x1/2	5"x5/8
20.4			
25.5	6"x3/4	12"x3/4	5"x1/2
30.6	7"x3/4	12"x3/4	
35.7	7"x7/8	12"x7/8	5"x3/4

DOUBLE WALL 3 FRAME BANDED			
SIZE OF BAND		BHD'S & DECKS	
WT OF STRUCTURE PENETRATED	LONGI. STRENGTH MEMBER DECKS	OTHER THAN LONGI. STRENGTH MEMBERS	
7.65 LBS	5"x5/16	12"x5/16	5"x5/16
10.2	5"x3/8	12"x3/8	
12.75			
15.3	5"x1/2	12"x1/2	5"x3/8
17.85			
20.4	5"x5/8	12"x5/8	5"x1/2
25.5	5"x3/4	12"x3/4	5"x5/8
30.6			
35.7	5"x7/8	12"x7/8	

TYPE II			
SIZE OF BAND		BHD'S & DECKS	
WT OF STRUCTURE PENETRATED	LONGI. STRENGTH MEMBER DECKS	OTHER THAN LONGI. STRENGTH MEMBERS	
7.65 LBS	5"x5/16	12"x5/16	5"x5/16
10.2	5"x3/8	12"x3/8	
12.75			
15.3	5"x1/2	12"x1/2	5"x3/8
17.85			
20.4	5"x5/8	12"x5/8	5"x1/2
25.5	5"x3/4	12"x3/4	5"x5/8
30.6			
35.7	5"x7/8	12"x7/8	

TYPE I			
SIZE OF BAND		BHD'S & DECKS	
WT OF STRUCTURE PENETRATED	LONGI. STRENGTH MEMBER DECKS	OTHER THAN LONGI. STRENGTH MEMBERS	
7.65 LBS	5"x5/16	12"x5/16	5"x5/16
10.2	5"x3/8	12"x3/8	
12.75			
15.3	5"x1/2	12"x1/2	5"x3/8
17.85			
20.4	5"x5/8	12"x5/8	5"x1/2
25.5	5"x3/4	12"x3/4	5"x5/8
30.6			
35.7	5"x7/8	12"x7/8	

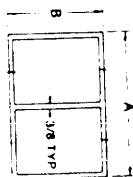
FIGURE 3B31. Multiple cable penetrator details (type RGS and RGA).



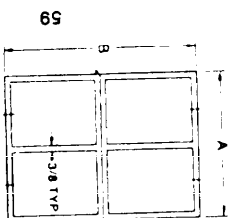
3/8 THK SINGLE FRAME

TYPE	A	B
RGS-2	5.506	4.726
RGS-4	5.506	5.17029
RGS-6	5.506	5.9333

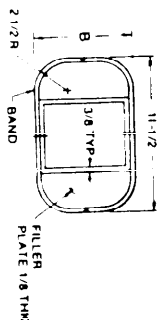
DETAIL "A"



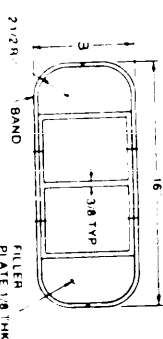
DETAIL "B"



DETAIL "C"



DETAIL "D"



DETAIL "E"

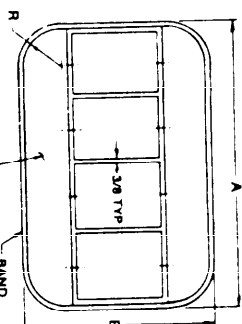
SH 132317130

3/8 THK 1 THRU 6 MULTI-FRAME

TYPE	1 FRAME	2 FRAME	3 FRAME	4 FRAME	5 FRAME	6 FRAME
RGS-2	5.506	10.637	15.766	20.896	26.030	31.161
RGS-4	5.506	10.637	15.766	20.896	26.030	31.161
RGS-6	5.506	10.637	15.766	20.896	26.030	31.161
RGS-2	4.726	4.726	4.726	4.726	4.726	4.726
RGS-4	7.029	7.029	7.029	7.029	7.029	7.029
RGS-6	9.333	9.333	9.333	9.333	9.333	9.333

3/8 THK 1 THRU 6 TANDEM MULTI-FRAME

TYPE	1 FR	2 FR	3 FR	4 FR	5 FR	6 FR
RGS-2	5.506	10.637	15.766	20.896	26.030	31.161
RGS-4	5.506	10.637	15.766	20.896	26.030	31.161
RGS-6	5.506	10.637	15.766	20.896	26.030	31.161
RGS-2	4.726	4.726	4.726	4.726	4.726	4.726
RGS-4	7.029	7.029	7.029	7.029	7.029	7.029
RGS-6	9.333	9.333	9.333	9.333	9.333	9.333



DETAIL "G"

3/8 THK 4 FRAME BANDED

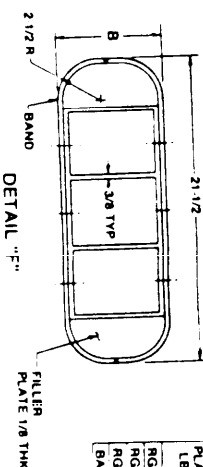
BHD	PLATE	RGS-2	RGS-4	RGS-6	A	B
10.2	12.75	15.3	17.85	20.4	25.5	30.6
17.85	20.4	23.0	25.5	28.1	33.2	38.3
25.5	28.1	30.6	33.2	35.7	40.8	45.9

3/8 SINGLE FRAME BANDED

BHD	PLATE	RGS-2	RGS-4	RGS-6	A	B
10.2	12.75	15.3	17.85	20.4	25.5	30.6
17.85	20.4	23.0	25.5	28.1	33.2	38.3
25.5	28.1	30.6	33.2	35.7	40.8	45.9

3/8 THK 2 FRAME BANDED

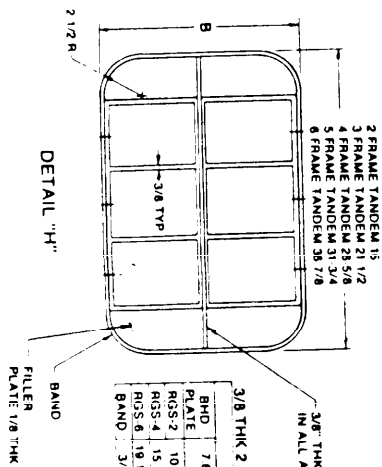
BHD	PLATE	RGS-2	RGS-4	RGS-6	A	B
10.2	12.75	15.3	17.85	20.4	25.5	30.6
17.85	20.4	23.0	25.5	28.1	33.2	38.3
25.5	28.1	30.6	33.2	35.7	40.8	45.9



DETAIL "F"

3/8 THK MULTI-FRAME BANDED

BHD	PLATE	RGS-2	RGS-4	RGS-6	A	B
10.2	12.75	15.3	17.85	20.4	25.5	30.6
17.85	20.4	23.0	25.5	28.1	33.2	38.3
25.5	28.1	30.6	33.2	35.7	40.8	45.9



DETAIL "H"

3/8 THK 2 THRU 6 TANDEM MULTI-FRAME BANDED

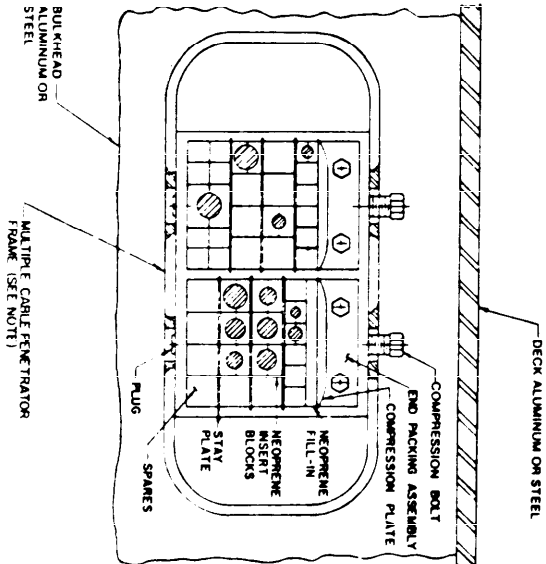
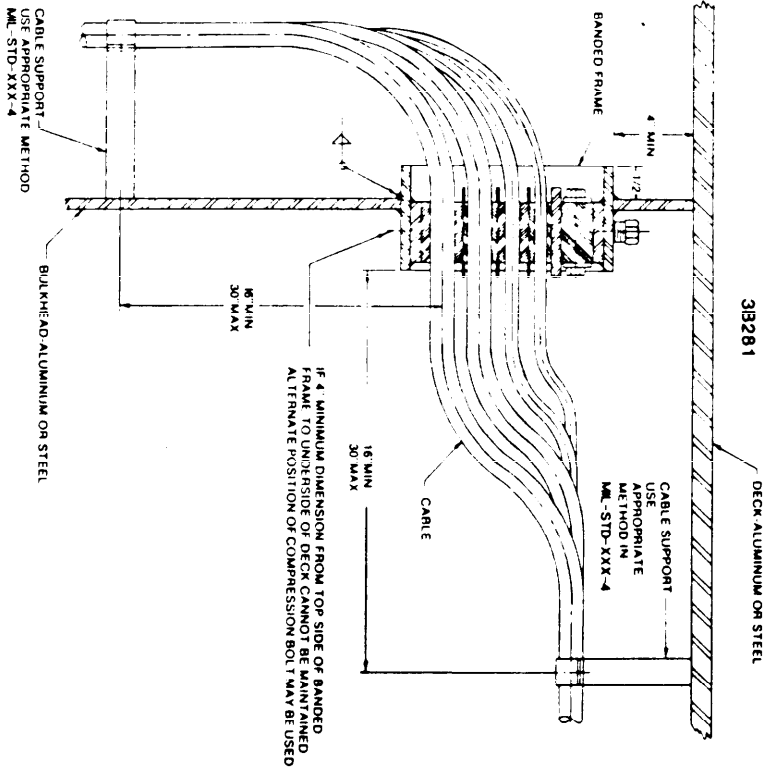
BHD	PLATE	RGS-2	RGS-4	RGS-6	A	B
10.2	12.75	15.3	17.85	20.4	25.5	30.6
17.85	20.4	23.0	25.5	28.1	33.2	38.3
25.5	28.1	30.6	33.2	35.7	40.8	45.9

FIGURE 3B29. Multiple cable penetrator details (Type RGS and RGA).

NOTES:

1. MATERIAL RGS FRAMES AND FILLER PLATES ARE MILD STEEL (ASTM A36). REINFORCING BARS ARE EITHER MILD STEEL (ASTM A36) OR TENSILE STEEL (ASTM A615). IN ORDER IN WHICH PENETRATION IS BEING MADE OR DECK IN WHICH PENETRATION IS BEING MADE.
2. THIS FIGURE SUPERSEDES SHEET 3B29 OF DRAWING 803-5001027 AND SECTION 4, SHEET 174, OF DRAWING, NAVSEC NO 9000-56202-73960.

58



- NOTES:
1. MULTIPLE CABLE PENETRATOR FRAMES ARE AVAILABLE IN VARIOUS SIZES AND ARRANGEMENTS SHOWN IN A TWO FRAME PENETRATOR.
 2. THIS FIGURE SUPERSEDES SHEET 3B28 OF DRAWING 803-500 1027 AND SECTION 4, SHEET 173, OF DRAWING, NAVSEC NO 8000-56202-73890

FIGURE 3B28. Multiple cable penetrator installation in steel or aluminum bulkheads using two frame penetrator (type RGS and RGA).

SH 132317120

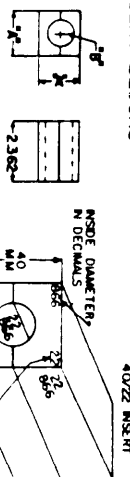
SH 13231127

[illegible][illegible]

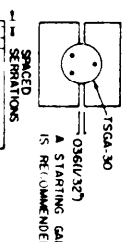
CABLE TYPE	CABLE DRAINAGE HOLES	CABLE TIE-IN MM	NESTED CABLE NUMBER	NESTED CABLE SIZE MM	NESTED CABLE NAME
RE-24VU	0.318	12.07	2002	2002	2002
RE-25VU	0.330	10.87	2003	2003	2003
RE-27VU	0.343	17.07	2007	2007	2007
RE-28VU	0.348	4.38	1164	1164	2004
RE-30VU	0.352	4.13	1165	1165	2005
RE-32VU	0.363	10.82	2006	2006	2006
RE-34VU	0.368	1.80	1168	1168	2008
RE-36VU	0.380	10.82	2009	2009	2009
RE-38VU	0.385	8.30	1169	1169	2008
RE-40VU	0.398	12.07	2012	2012	2012
RE-42VU	0.408	12.07	2012	2012	2012
RE-44VU	0.418	12.07	2012	2012	2012
RE-46VU	0.428	10.82	2000	2000	2000
RE-48VU	0.438	10.82	2000	2000	2000
RE-50VU	0.448	10.82	2000	2000	2000
RE-52VU	0.458	12.07	2013	2013	2013
RE-54VU	0.468	12.07	2013	2013	2013
RE-56VU	0.478	12.07	2013	2013	2013
RE-58VU	0.488	12.07	2013	2013	2013
RE-60VU	0.498	12.07	2013	2013	2013
RE-62VU	0.508	12.07	2013	2013	2013
RE-64VU	0.518	12.07	2013	2013	2013
RE-66VU	0.528	12.07	2013	2013	2013
RE-68VU	0.538	12.07	2013	2013	2013
RE-70VU	0.548	12.07	2013	2013	2013
RE-72VU	0.558	12.07	2013	2013	2013
RE-74VU	0.568	12.07	2013	2013	2013
RE-76VU	0.578	12.07	2013	2013	2013
RE-78VU	0.588	12.07	2013	2013	2013
RE-80VU	0.598	12.07	2013	2013	2013
RE-82VU	0.608	12.07	2013	2013	2013
RE-84VU	0.618	12.07	2013	2013	2013
RE-86VU	0.628	12.07	2013	2013	2013
RE-88VU	0.638	12.07	2013	2013	2013
RE-90VU	0.648	12.07	2013	2013	2013
RE-92VU	0.658	12.07	2013	2013	2013
RE-94VU	0.668	12.07	2013	2013	2013
RE-96VU	0.678	12.07	2013	2013	2013
RE-98VU	0.688	12.07	2013	2013	2013
RE-100VU	0.698	12.07	2013	2013	2013
RE-102VU	0.708	12.07	2013	2013	2013
RE-104VU	0.718	12.07	2013	2013	2013
RE-106VU	0.728	12.07	2013	2013	2013
RE-108VU	0.738	12.07	2013	2013	2013
RE-110VU	0.748	12.07	2013	2013	2013
RE-112VU	0.758	12.07	2013	2013	2013
RE-114VU	0.768	12.07	2013	2013	2013
RE-116VU	0.778	12.07	2013	2013	2013
RE-118VU	0.788	12.07	2013	2013	2013
RE-120VU	0.798	12.07	2013	2013	2013
RE-122VU	0.808	12.07	2013	2013	2013
RE-124VU	0.818	12.07	2013	2013	2013
RE-126VU	0.828	12.07	2013	2013	2013
RE-128VU	0.838	12.07	2013	2013	2013
RE-130VU	0.848	12.07	2013	2013	2013
RE-132VU	0.858	12.07	2013	2013	2013
RE-134VU	0.868	12.07	2013	2013	2013
RE-136VU	0.878	12.07	2013	2013	2013
RE-138VU	0.888	12.07	2013	2013	2013
RE-140VU	0.898	12.07	2013	2013	2013
RE-142VU	0.908	12.07	2013	2013	2013
RE-144VU	0.918	12.07	2013	2013	2013
RE-146VU	0.928	12.07	2013	2013	2013
RE-148VU	0.938	12.07	2013	2013	2013
RE-150VU	0.948	12.07	2013	2013	2013
RE-152VU	0.958	12.07	2013	2013	2013
RE-154VU	0.968	12.07	2013	2013	2013
RE-156VU	0.978	12.07	2013	2013	2013
RE-158VU	0.988	12.07	2013	2013	2013
RE-160VU	0.998	12.07	2013	2013	2013
RE-162VU	1.008	12.07	2013	2013	2013
RE-164VU	1.018	12.07	2013	2013	2013
RE-166VU	1.028	12.07	2013	2013	2013
RE-168VU	1.038	12.07	2013	2013	2013
RE-170VU	1.048	12.07	2013	2013	2013
RE-172VU	1.058	12.07	2013	2013	2013
RE-174VU	1.068	12.07	2013	2013	2013
RE-176VU	1.078	12.07	2013	2013	2013
RE-178VU	1.088	12.07	2013	2013	2013
RE-180VU	1.098	12.07	2013	2013	2013
RE-182VU	1.108	12.07	2013	2013	2013
RE-184VU	1.118	12.07	2013	2013	2013
RE-186VU	1.128	12.07	2013	2013	2013
RE-188VU	1.138	12.07	2013	2013	2013
RE-190VU	1.148	12.07	2013	2013	2013
RE-192VU	1.158	12.07	2013	2013	2013
RE-194VU	1.168	12.07	2013	2013	2013
RE-196VU	1.178	12.07	2013	2013	2013
RE-198VU	1.188	12.07	2013	2013	2013
RE-200VU	1.198	12.07	2013	2013	2013
RE-202VU	1.208	12.07	2013	2013	2013
RE-204VU	1.218	12.07	2013	2013	2013
RE-206VU	1.228	12.07	2013	2013	2013
RE-208VU	1.238	12.07	2013	2013	2013
RE-210VU	1.248	12.07	2013	2013	2013
RE-212VU	1.258	12.07	2013	2013	2013
RE-214VU	1.268	12.07	2013	2013	2013
RE-216VU	1.278	12.07	2013	2013	2013
RE-218VU	1.288	12.07	2013	2013	2013
RE-220VU	1.298	12.07	2013	2013	2013
RE-222VU	1.308	12.07	2013	2013	2013
RE-224VU	1.318	12.07	2013	2013	2013
RE-226VU	1.328	12.07	2013	2013	2013
RE-228VU	1.338	12.07	2013	2013	2013
RE-230VU	1.348	12.07	2013	2013	2013
RE-232VU	1.358	12.07	2013	2013	2013
RE-234VU	1.368	12.07	2013	2013	2013
RE-236VU	1.378	12.07	2013	2013	2013
RE-238VU	1.388	12.07	2013	2013	2013
RE-240VU	1.398	12.07	2013	2013	2013
RE-242VU	1.408	12.07	2013	2013	2013
RE-244VU	1.418	12.07	2013	2013	2013
RE-246VU	1.428	12.07	2013	2013	2013
RE-248VU	1.438	12.07	2013	2013	2013
RE-250VU	1.448	12.07	2013	2013	2013
RE-252VU	1.458	12.07	2013	2013	2013
RE-254VU	1.468	12.07	2013	2013	2013
RE-256VU	1.478	12.07	2013	2013	2013
RE-258VU	1.488	12.07	2013	2013	2013
RE-260VU	1.498	12.07	2013	2013	2013
RE-262VU	1.508	12.07	2013	2013	2013
RE-264VU	1.518	12.07	2013	2013	2013
RE-266VU	1.528	12.07	2013	2013	2013
RE-268VU	1.538	12.07	2013	2013	2013
RE-270VU	1.548	12.07	2013	2013	2013
RE-272VU	1.558	12.07	2013	2013	2013
RE-274VU	1.568	12.07	2013	2013	2013
RE-276VU	1.578	12.07	2013	2013	2013
RE-278VU	1.588	12.07	2013	2013	2013
RE-280VU	1.598	12.07	2013	2013	2013
RE-282VU	1.608	12.07	2013	2013	2013
RE-284VU	1.618	12.07	2013	2013	2013
RE-286VU	1.628	12.07	2013	2013	2013
RE-288VU	1.638	12.07	2013	2013	2013
RE-290VU	1.648	12.07	2013	2013	2013
RE-292VU	1.658	12.07	2013	2013	2013
RE-294VU	1.668	12.07	2013	2013	2013
RE-296VU	1.678	12.07	2013	2013	2013
RE-298VU	1.688	12.07	2013	2013	2013
RE-300VU	1.698	12.07	2013	2013	2013
RE-302VU	1.708	12.07	2013	2013	2013
RE-304VU	1.718	12.07	2013	2013	2013
RE-306VU	1.728	12.07	2013	2013	2013
RE-308VU	1.738	12.07	2013	2013	2013
RE-310VU	1.748	12.07	2013	2013	2013
RE-312VU	1.758	12.07	2013	2013	2013
RE-314VU	1.768	12.07	2013	2013	2013
RE-316VU	1.778	12.07	2013	2013	2013
RE-318VU	1.788	12.07	2013	2013	2013
RE-320VU	1.798	12.07	2013	2013	2013
RE-322VU	1.808	12.07	2013	2013	2013
RE-324VU	1.818	12.07	2013	2013	2013
RE-326VU	1.828	12.07	2013	2013	2013
RE-328VU	1.838	12.07	2013	2013	2013
RE-330VU	1.848	12.07	2013	2013	2013
RE-332VU	1.858	12.07	2013	2013	2013
RE-334VU	1.868	12.07	2013	2013	2013
RE-336VU	1.878	12.07	2013	2013	2013
RE-338VU	1.888	12.07	2013	2013	2013
RE-340VU	1.898	12.07	2013	2013	2013
RE-342VU	1.908	12.07	2013	2013	2013
RE-344VU	1.918	12.07	2013	2013	2013
RE-346VU	1.928	12.07	2013	2013	2013
RE-348VU	1.938	12.07	2013	2013	2013
RE-350VU	1.948	12.07	2013	2013	2013
RE-352VU	1.958	12.07	2013	2013	2013
RE-354VU	1.968	12.07	2013	2013	2013
RE-356VU	1.978	12.07	2013	2013	2013
RE-358VU	1.988	12.07	2013	2013	2013
RE-360VU	1.998	12.07	2013	2013	2013
RE-362VU	2.008	12.07	2013	2013	2013
RE-364VU	2.018	12.07	2013	2013	2013
RE-366VU	2.028	12.07	2013	2013	2013
RE-368VU	2.038	12.07	2013	2013	2013
RE-370VU	2.048	12.07	2013	2013	2013
RE-372VU	2.058	12.07	2013	2013	2013
RE-374VU	2.068	12.07	2013	2013	2013
RE-376VU	2.078	12.07	2013	2013	2013
RE-378VU	2.088	12.07	2013	2013	2013
RE-380VU	2.098	12.07	2013	2013	2013
RE-382VU	2.108	12.07	2013	2013	2013
RE-384VU	2.118	12.07	2013	2013	2013
RE-386VU	2.128	12.07	2013	2013	2013
RE-388VU	2.138	12.07	2013	2013	2013
RE-390VU	2.148	12.07	2013	2013	2013
RE-392VU	2.158	12.07	2013	2013	2013
RE-394VU	2.168	12.07	2013	2013	2013
RE-396VU	2.178	12.07	2013	2013	2013
RE-398VU	2.188	12.07	2013	2013	2013
RE-400VU	2.198	12.07	2013	2013	2013
RE-402VU	2.208	12.07	2013	2013	2013
RE-404VU	2.218	12.07	2013	2013	2013
RE-406VU	2.228	12.07	2013	2013	2013
RE-408VU	2.238	12.07	2013	2013	2013
RE-410VU	2.248	12.07	2013	2013	2013
RE-412VU	2.258	12.07	2013	2013	2013
RE-414VU					

[illegible][illegible]

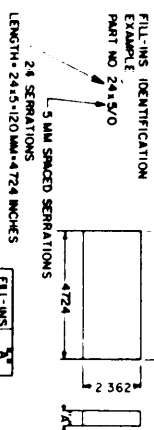
TABLE NO.1
INSERT BLOCKS



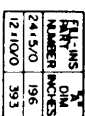
TYPICAL INSERT BLOCK IDENTIFICATION



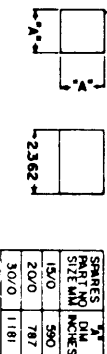
0361V327
A STARTING GAP OF V32 TO V6
IS RECOMMENDED



FIL-INS IDENTIFICATION
EXAMPLE
PART NO 24-5/0
5 MM SPACED SERRA
24 SERRATIONS
LENGTH-24x5-120 MM=4 7/2 INCHES



FELT-INS PART NUMBER	INCHES
2445/0	196
12410/0	393



NOTES:

1. THIS POLYURETHANE SHEET 3826 OF DRAWING 803-500 1027 AND SECTION 4, SHEET 171, OF DRAWING NAVSEC NO. 8000-56202-75690
2. SEE FIGURES 3841 AND 3842 FOR CURRENT CABLE ASSIGNMENT

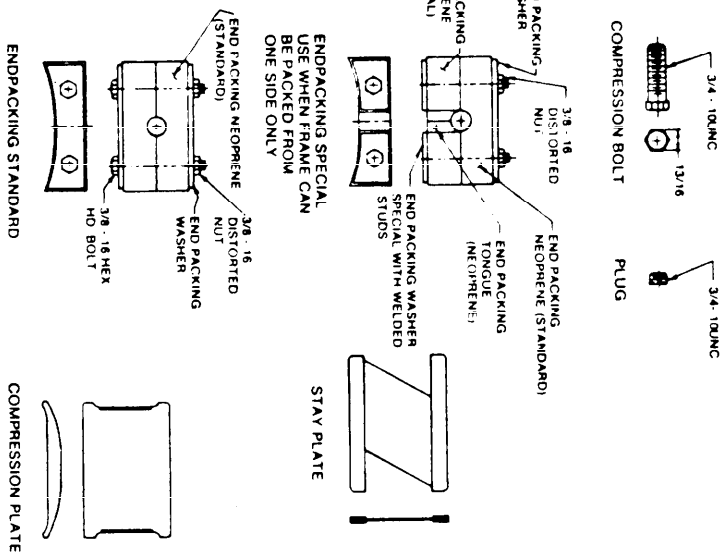
TABLE 2 CONTINUED ON FIGURES 3B41 & 3B42

FIGURE 3B26. Cable Information and assignment for MCP insert blocks

NOMENCLATURE

NOTES

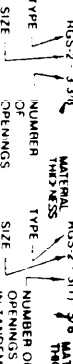
1. MULTIPLE CABLE PENETRATIONS SHALL NOT BE USED IN BULKHEADS OR DECKS WHICH ARE EXPOSED TO THE WEATHER.
2. FOR ALTERNATE MULTIPLE CABLE PENETRATOR DESIGN SEE 3826 THRU 3866.
3. THIS FIGURE SUPERSEDES SHEET 3825 OF DRAWING 803-5001027 AND SECTION 4 SHEET 170 OF DRAWING NAVSEC NO 9800 56-202-7380.



- (12) ASSEMBLY WHICH CONSISTS OF TWO NEOPRENE ELASTOMER BLOCKS AND TWO END PACKING WASHERS HELD TOGETHER BY TWO 3/8-16 NUTS AND BOLTS ARE USED FOR NON-MAGNETIC APPLICATIONS. STAINLESS STEEL IS USED.
- (13) END PACKING SPECIAL
- (14) COMPRESSES THE INSERT BLOCKS USED WHEN FRAME CAN ONLY BE PACKED FROM ONE SIDE
- (15) ASSEMBLY WHICH CONSISTS OF FOUR NEOPRENE ELASTOMER PIECES, ONE END PACKING WASHER, TWO END PACKING WASHERS (STANDARD) AND TWO 3/8-16 NUTS ALLOWING TWO APPLICATIONS
- (16) STAINLESS STEEL IS USED
- (17) INSERT BLOCKS
- (18) TWIN HALF BLOCKS ARE SPECIALLY FORMULATED OF A NEOPRENE ELASTOMER WHEN MOUNTED AROUND A CABLE THESE BLOCKS FORM A SINGLE BLOCK WITH A TIGHT FIT BASIC SIZES ARE SHOWN ON FIGURE 3826
- (19) SPACERS
- (20) SPACERS ARE SPECIALLY FORMULATED OF A NEOPRENE ELASTOMER AND ARE USED AS SPACERS ON SPARE PROVISIONS FOR ADDITION OF FUTURE CABLES SIZES ARE SHOWN ON FIGURE 3826
- (21) FILLS
- (22) SAME MATERIAL AS INSERT BLOCKS AND SPACERS USED TO PACK THICKNESSES OF 3/8 AND 1/2 MULTIMETERS CAUSED BY THE PRESSURE OF MULTIPLE CABLES IN THE SAME ROW ALSO EMPLOYED TO INCREASE THE PRESSURE IN THE PENETRATOR FRAME WHEN EXCEPTIONALLY SOFT CABLES ARE USED THESE FILLS ARE AVAILABLE IN TWO SIZES 24 X 5/8 OR 12 X 1/8 (SEE FIGURE 3826) STRIPATIONS HAVE BEEN PROVIDED TO PERMIT SLICING OF THE FILLS TO THE REQUIRED LENGTH
- (23) EXAMPLE: 6 X 1/8 X 24, ETC.
- (24) TALLOW
- (25) TALLOW BLOCK LUBRICANT USED WHEN PACKING
- (26) INSERT BLOCK LUBRICANT USED WHEN PACKING
- (27) INSERT BLOCK LUBRICANT USED WHEN PACKING
- (28) SEALER
- (29) LIQUID SILICONE RUBBER APPLIED TO CABLE SIDE OF EACH GAUGE BLOCK UPON COMPRESSION THIS PROVIDES A SEAL BETWEEN THE ARMOR OF THE CABLE AND ITS IMPERVIOUS INNER SHEATH
- (30) DISTORTED W/ IN TO BE IN ACCORDANCE WITH FIGURE 3826
- (31) ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE STATED

ENDPACKING STANDARD

COMPRESSION PLATE



SINGLE OR DOUBLE WALL Banded OR UNBanded MUST BE SPECIFIED

(10) COMPRESSION BOLT

(11) STAINLESS STEEL 3/4 - 10 THREAD WHEN TIGHTENED SEALS THE COMPRESSION PLATE FARTHER DOWN INTO THE TRANSIT FRAME

(12) PLUG

(13) STAINLESS STEEL 3/4 - 10 THREAD USED TO PLUG TAPPED HOLE IN FRAME OPPOSITE COMPRESSION BOLT

(14) STAY PLATE

(15) EITHER STEEL OR ALUMINUM NORMALLY PLACED BETWEEN ELASTOMER BLOCKS TO INSURE PROPER SEPARATION OF THE TRANSIT FRAME

(16) COMPRESSION PLATE

(17) EITHER CAST IRON OR CAST ALUMINUM SEALS AND COMPRESSES THE INSERT BLOCKS SO THAT THE ENDPACKING CAN BE INSERTED IN THE TRANSIT FRAME

(18) END PACKING - STANDARD

(19) COMPRESSES THE INSERT BLOCKS USED WHEN FRAME CAN BE PACKED FROM EITHER SIDE

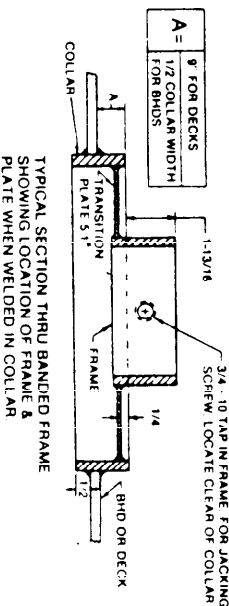
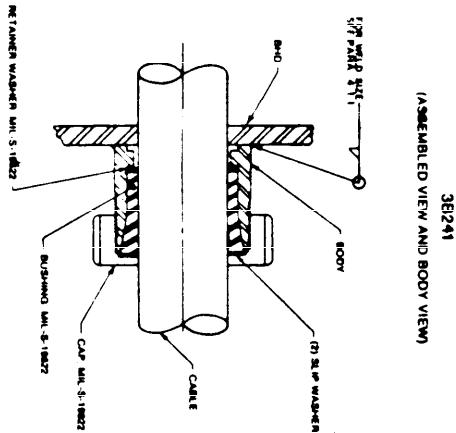


FIGURE 3825. Multiple cable penetrator nomenclature.



SH 132317125

FIGURE 3B24. Stuffing tube for steel and aluminum bulkheads (surface ships).

TUBE SIZE	TUBE BODY										CLEARANCE BETWEEN BULKHEAD	STD PIPE SIZE
	A	B	C	D	E	F	G	H	I	J		
1	3000	8750	6000	11870	7500	6450	8150	7100	1497	760	315	315
2	5040	11000	8250	11870	7500	6450	11300	8750	1500	815	500	500
3	6870	11250	8500	11870	7500	6450	11750	8750	1500	1100	500	500
4	8250	12500	10000	11870	7500	6450	12500	10000	1500	1175	750	750
5	11870	20000	13450	15000	7500	8750	22000	16000	1875	1625	1125	1125
6	13500	23000	17500	16000	7500	8750	23500	18000	2125	1825	1500	1500
7	16000	27500	21000	16000	7500	8750	27500	21000	2375	2125	2000	2000
8	20000	32000	25500	17500	7500	10000	31500	25000	2625	2375	2400	2400
9	24000	40000	32500	19000	7500	11000	40000	30000	2875	2625	3000	3000

- NOTES:
1. METHOD 3B24 IS FOR WELDING TO KICK-PIPE (RISER) AND BULKHEADS.
 2. THESE STUFFING TUBES ARE AUTHORIZED FOR USE ONLY ON WEATHER DECKS IN DECK HOUSE BULKHEADS AND BELOW DECKS ABOVE THE TIGHTNESS LEVEL IN SURFACE SHIPS.
 3. THIS FIGURE SUPERSEDES SHEET 3B24 OF DRAWING 803-5001027 AND SECTION 4, SHEET 154, OF DRAWING, NAVSEC NO. 9000-56202-73990.

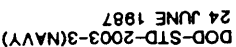


FIGURE 3B23. Topside stuffing tubes with riser box (surface ships)

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES:
1. THE CABLES LISTED ON THIS SHEET ARE PER MIL-C-915, MIL-C-2194, MIL-C-23206 AND MIL-C-24145 AND ARE OBSOLETE OR MANUFACTURING HAS BEEN DISCONTINUED.
 2. THIS FIGURE SUPERSEDES SHEET 3C9 OF DRAWING 803-5001027 AND SECTION 4, SHEET 69-73 OF DRAWING NAVSEC NO 800-56202-73980.

CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY	
		MIL PART NO	WH 5330-00			MIL PART NO	WH 5330-00			MIL PART NO	WH 5330-00			MIL PART NO	WH 5330-00
FCSF-66	6	21-0006	202-2614	FRIB-3	3	18-0018	202-2590	MCOP-2	3	18-0018	202-2590	MDGL-19(6)	6	21-0005	202-2613
-220	9	24-0001	202-2628	-4	4T	19-0002	202-2592	-4	4T	19-0001	202-2591	MDGT-17	5	20-0003	788-8711
FHFA-3	4T	19-0003	202-2593	-6	4T	19-0004	202-2594	-5	4T	19-0002	202-2592	-53	6	21-0001	202-2608
-4	5	20-0002	202-2600	-9	4T	19-0005	202-2595	-7	4T	19-0004	202-2594	-105	7	22-0001	202-2616
-23	5	20-0004	202-2602	-14	4T	19-0007	202-2597	-10	5	20-0002	202-2600	-212	8	23-0004	202-2623
-50	6	21-0006	202-2607	-23	5	20-0002	202-2600	-12	5	20-0002	202-2600	-400	9	24-0004	202-2631
FHFA-9	4T	19-0003	202-2614	FRIP-3	2	17-0004	202-2589	-14	5	20-0003	788-8711				
			202-2593	-4	3	18-0018	202-2590	-19	5	20-0006	202-2604				
FUF-17	2	17-0004	202-2589	FT-2	1	16-0004	202-2583	-22	5	20-0010	202-2608	MDGW-17(4)	9	24-0001	202-2628
-26	3	18-0018	202-2590	-3	1	16-0004	202-2583	-24	5	20-0010	202-2608	-15(3)	9	24-0001	202-2628
-42	4T	19-0002	202-2592	FTS-2	1	16-0004	202-2583	-30	6	21-0003	202-2611	-12(2)	9	24-0001	202-2628
-53	4T	19-0004	202-2594	-3	1	16-0004	202-2583	-37	6	21-0005	202-2613				
-66	4T	19-0005	202-2595	GICA-2	4T	19-0001	202-2591	-44	7	22-0001	202-2616	MDGY-17(4)	8	23-0006	202-2625
-84	4T	19-0007	202-2597									-15(3)	8	23-0006	202-2625
-105	4T	19-0008	202-2599	GICF-7	4T	19-0004	202-2594	MCP-4	4T	19-0001	202-2591	-12(2)	8	23-0006	202-2625
-133	5	20-0002	202-2600	-10	4T	19-0006	202-2596	-5	4T	19-0002	202-2592	MDY-6	6	21-0001	202-2609
-168	5	20-0003	788-8711	-14	5	20-0005	202-2603	-7	4T	19-0004	202-2594	-14	7	22-0002	202-2617
-212	5	20-0005	202-2603	-19	6	21-0004	202-2612	-10	4T	19-0005	202-2595	-23	8	23-0006	202-2525
FJXF-84	4T	19-0004	202-2594	-22				-12	4T	19-0006	202-2596	-40	9	24-0003	202-2633
-105	4T	19-0006	202-2596	-26				MCS-2	3	19-0018	202-2590	-60	9	24-0006	202-2633
-133	4T	19-0008	202-2599	-30	7	22-0001	202-2616	-4	4T	19-0001	202-2591	MFPA-2	4T	19-0005	202-2595
-168	5	20-0002	202-2600	-37	7	22-0002	202-2617	-6	3	18-0018	202-2590	-4	4T	19-0006	202-2596
-212	5	20-0004	202-2602	-44	7	22-0002	202-2617	-7	4T	19-0003	202-2593	-7	5	20-0002	202-2600
FLA-4	5	20-0004	202-2602	GICP-2	4	19-0001	202-2591	MCS-5	4T	19-0003	202-2593	-10	5	20-0006	202-2604
												-14	5	20-0009	202-2607
FRI-4	2	17-0004	202-2589	MA-14	2	17-0003	202-2588	MDGA-19(6)	8	21-0005	202-2613	-19	6	21-0001	202-2609
-9	4T	19-0003	202-2593	MCGC-	4T	19-0004	202-2594	-18(14)	7	22-0002	202-2617	-22	6	21-0004	202-2612
FRIA-3	2	17-0004	202-2589	MCMB-7	4T	19-0005	202-2595	-19(23)	8	23-0004	202-2623	-26	6	21-0006	202-2614
-4	3	18-0018	202-2590					-19(40)	9	24-0002	202-2629	-30	6	21-0007	202-2615
-6	4T	19-0002	202-2592					MDGB-12(11/2)	4T	19-0003	202-2593	-37	7	22-0002	202-2617
-9	4T	19-0004	202-2594					(1)	3	18-0018	202-2590	-44	8	23-0002	202-2621
-14	4T	19-0006	202-2596												
-23	4T	19-0008	202-2599												

FIGURE 3C9. Nylon stuffing tubes cable assignment (obsolete or discontinued cable).

SH 132317176

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES
1. THE CABLE LISTE ON THIS SHEET ARE PER MIL-C-915, MIL-C-2194, MIL-C-23206 AND MIL-C-24145 AND ARE OBSOLETE OR MANUFACTURING HAS BEEN DISCONTINUED
2. THIS FIGURE SUPERSEDES SHEET 3C10 OF DRAWING 803-5001027 AND DRAWING, NAVSEC NO8000-56202-73980.

CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO M194211/	CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO M194211/	CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO M194211/	CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO M194211/	CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO M194211/
MHFF-2	3	18-0018	SDGA-400	6	21-0003	SDGA-400	6	21-0003	SDGA-400	6	21-0003	SDGA-400	6	21-0003
	4	19-0001	-500	6	21-0005	-500	6	21-0005	-500	6	21-0005	-500	6	21-0005
	7	19-0004	-650	6	21-0007	-650	6	21-0007	-650	6	21-0007	-650	6	21-0007
	10	20-0002	-800	7	22-0002	-800	7	22-0002	-800	7	22-0002	-800	7	22-0002
	14	20-0003	-1000	8	23-0002	-1000	8	23-0002	-1000	8	23-0002	-1000	8	23-0002
	19	20-0006	-1300	8	23-0004	-1300	8	23-0004	-1300	8	23-0004	-1300	8	23-0004
	22	20-0010	-1600	9	24-0001	-1600	9	24-0001	-1600	9	24-0001	-1600	9	24-0001
	24	20-0010	2000	9	24-0003	2000	9	24-0003	2000	9	24-0003	2000	9	24-0003
	26	21-0001												
	30	21-0003	SDU-500	6	21-0003	SDU-500	6	21-0003	SDU-500	6	21-0003	SDU-500	6	21-0003
	37	21-0005	-800	7	22-0001	-800	7	22-0001	-800	7	22-0001	-800	7	22-0001
	44	21-0007												
PBJX-4	3	18-0018	SFPA-9	4T	19-0001	SFPA-9	4T	19-0001	SFPA-9	4T	19-0001	SFPA-9	4T	19-0001
			-14	4T	19-0002	-14	4T	19-0002	-14	4T	19-0002	-14	4T	19-0002
PBLW-4	3	18-0018	-23	4T	19-0003	-23	4T	19-0003	-23	4T	19-0003	-23	4T	19-0003
PBTM-5	4T	19-0002	-30	4T	19-0003	-30	4T	19-0003	-30	4T	19-0003	-30	4T	19-0003
-10	4T	19-0008	-40	4T	19-0004	-40	4T	19-0004	-40	4T	19-0004	-40	4T	19-0004
-15	5	20-0006	-50	4T	19-0005	-50	4T	19-0005	-50	4T	19-0005	-50	4T	19-0005
			-60	4T	19-0007	-60	4T	19-0007	-60	4T	19-0007	-60	4T	19-0007
PBTX-4	3	18-0018	-75	4T	19-0007	-75	4T	19-0007	-75	4T	19-0007	-75	4T	19-0007
SCOP-23	3	18-0018	-100	4T	19-0008	-100	4T	19-0008	-100	4T	19-0008	-100	4T	19-0008
-60	4T	19-0004	-125	5	20-0002	-125	5	20-0002	-125	5	20-0002	-125	5	20-0002
-150	5	20-0004	-150	5	20-0003	-150	5	20-0003	-150	5	20-0003	-150	5	20-0003
-153	5	20-0003	-200	5	20-0005	-200	5	20-0005	-200	5	20-0005	-200	5	20-0005
-200	5	20-0006	-250	5	20-0009	-250	5	20-0009	-250	5	20-0009	-250	5	20-0009
-253	5	20-0009	-300	5	20-0010	-300	5	20-0010	-300	5	20-0010	-300	5	20-0010
-800	8	23-0002	-400	5	20-0008	-400	5	20-0008	-400	5	20-0008	-400	5	20-0008
SCP-1	1	16-0001	-500	6	21-0004	-500	6	21-0004	-500	6	21-0004	-500	6	21-0004
-23	2	17-0004	-650	6	21-0006	-650	6	21-0006	-650	6	21-0006	-650	6	21-0006
-60	4T	19-0003	-800	7	22-0001	-800	7	22-0001	-800	7	22-0001	-800	7	22-0001
-153	5	20-0003												
-200	5	20-0009												
-253	6	21-0001												
-814	9	24-0001												

FIGURE 3C10. Nylon stuffing tube cable assignment (obsolete or discontinued cable).

SH 132317177

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES:

- THE CABLES LISTED ON THIS SHEET ARE PER MIL-C-914, MIL-C-2104, MIL-C-23208 AND MIL-C-24145 AND ARE OBSOLETE OR MANUFACTURING HAS BEEN DISCONTINUED
- THIS FIGURE SUPERSEDES SHEET 3C11 OF DRAWING 803-5001027 AND SECTION 4, SHEET 69-73, OF DRAWING, NAVSEC NO 9000-58202-73980.

CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO SHEET 1/	PACKING ASSEMBLY MIL PART NO SHEET 1/	CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO SHEET 1/	PACKING ASSEMBLY MIL PART NO SHEET 1/	CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO SHEET 1/	PACKING ASSEMBLY MIL PART NO SHEET 1/	CABLE	TUBE SIZE	PACKING ASSEMBLY MIL PART NO SHEET 1/	PACKING ASSEMBLY MIL PART NO SHEET 1/
SSGA-3	1	16-0004	202-2583	THFR-4	5	20-0003	788-8711	TLPA-4	4T	19-0008	202-2586	TPTP-3	4T	19-0003	202-2583
-4	1	16-0005	202-2584					-9	5	20-0005	202-2603	-5	4T	19-0004	202-2584
-9	2	17-0001	202-2586	TFPA-14	5	20-0004	202-2602	-14	5	20-0006	202-2604	-10	4T	19-0008	202-2598
-14	2	17-0002	202-2587	-23	5	20-0008	202-2604	-23	5	20-0009	202-2607	-15	5	20-0002	202-2600
-23	2	17-0003	202-2588	-30	5	20-0008	202-2608	-30	6	21-0002	202-2610	-25	5	20-0004	202-2602
-30	2	17-0004	202-2589	-40	5	20-0009	202-2607	-40	6	21-0004	202-2612	-30	5	20-0005	202-2603
-40	3	18-0018	202-2590	-50	6	21-0001	202-2609	-50	6	21-0005	202-2613	-40	5	20-0006	202-2604
-150	4T	19-0008	202-2599	-60	6	21-0003	202-2611	-60	6	21-0007	202-2615	-50	5	20-0009	202-2607
-500	6	21-0004	202-2612	-75	7	22-0002	202-2617	-75	7	22-0001	202-2616	-60	5	20-0010	202-2608
-1300	8	23-0004	202-2623	-100	8	23-0001	202-2620	-100	7	22-0003	202-2618				
				-125	8	23-0003	202-2632	-125	8	23-0003	202-2622	TRI-2	2	17-0001	202-2586
SSSP-200	5	20-0006	202-2604	-150	8	23-0006	202-2625	-150	8	23-0005	202-2624	-3	2	17-0002	202-2587
-300	6	21-0001	202-2609	-250	9	24-0004	202-2631	-200	9	24-0001	202-2628	-4	2	17-0004	202-2589
-400	6	21-0004	202-2612	-300	9	24-0005	202-2632	-300	9	24-0004	202-2631	-6	3	18-0018	202-2590
-500	6	21-0006	202-2614	-400	9	24-0008	202-2633					-8	4T	19-0002	202-2592
-650	7	22-0002	202-2617					TPTA-3	2	17-0004	202-2589				
-800	8	23-0001	202-2620	THFA-3	4T	19-0001	202-2681	-5	4T	19-0004	202-2584	TRIA-2	2	17-0001	202-2586
				-4	4T	19-0008	202-2599	-10	4T	19-0008	202-2586	-3	2	17-0003	202-2588
TBSP-3/5	1	16-0004	202-2583	-8	5	20-0002	202-2600	-15	4T	19-0008	202-2599	-4	2	17-0004	202-2589
-1	1	16-0004	202-2583	-14	5	20-0004	202-2602	-20	5	20-0002	202-2600	-6	4T	19-0001	202-2591
-2	1	16-0005	202-2584	-23	5	20-0008	202-2604	-25	5	20-0003	788-8711	-9	4T	19-0002	202-2592
-3	2	17-0001	202-2586	-30	5	20-0010	202-2608	-30	5	20-0004	202-2602	-14	4T	19-0004	202-2594
-4	2	17-0003	202-2588	-40	6	21-0002	202-2610	-40	5	20-0005	202-2603	-23	4T	19-0008	202-2596
-6	3	18-0018	202-2590	-50	6	21-0003	202-2611	-50	5	20-0008	202-2606				
-9	4T	19-0001	202-2591	-60	6	21-0006	202-2614	-60	5	20-0009	202-2607	TRIB-2	2	17-0001	202-2586
-14	4T	19-0003	202-2593	-75	7	22-0002	202-2617	-75	7	22-0002	202-2607	-3	2	17-0002	202-2587
-23	4T	19-0005	202-2595	-100	8	23-0001	202-2620	-100	5	20-0002	202-2600	-4	2	17-0004	202-2589
				-125	8	23-0003	202-2625					-6	4T	19-0002	202-2592
TCP-1	1	16-0004	202-2583	-150	8	23-0006	202-2628	-10	6	21-0008	202-2614	-9	4T	19-0003	202-2583
-2	2	17-0001	202-2586	-200	9	24-0001	202-2630	-15	7	22-0003	202-2618	-14	4T	19-0004	202-2594
-3	2	17-0003	202-2588	-250	9	24-0003	202-2632					-23	4T	19-0007	202-2597
-4	3	18-0018	202-2590	-300	9	24-0005	202-2633								
-6	4T	19-0001	202-2591	-350	9	24-0008	202-2635					TRIP-2	2	17-0001	202-2586
-9	4T	19-0002	202-2592	-400	9	24-0007						-3	2	17-0003	202-2588
-23	5	20-0009	202-2607									-4	2	17-0004	202-2589
-42	6	21-0004	202-2612									-9	4T	19-0002	202-2592
-153	8	23-0004	202-2623									-14	4T	19-0005	202-2595
-400	9	24-0008	202-2635									-23	4T	19-0005	202-2595

FIGURE 3C11. Nylon stuffing tube cables assignment (obsolete or discontinued cable).

SH 132317178

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES.

1. THE CABLES LISTED ON THIS SHEET ARE PER MIL-C-915, MIL-C-2194, MIL-C-23208 AND MIL-C-24145 AND ARE OBSOLETE OR MANUFACTURING HAS BEEN DISCONTINUED.
2. THIS FIGURE SUPERSEDES SHEET 3C12 OF DRAWING 803-5001027 AND SECTION 4, SHEET 69-73, OF DRAWING NAVSEC NO 8000-S6202-73880

CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY	
		MIL PART NO	NSN 5330 00			MIL PART NO	NSN 5330 00			MIL PART NO	NSN 5330 00
TSGA-30	5	20-0003	788-8711	THFWA-1-1-2	2	17-0001	202-2586	IS75MAA-8	5	20-0007	202-2605
-40	5	20-0004	202-2602	-3	2	17-0004	202-2589	2A-40	6	21-0006	202-2614
-60	5	20-0009	202-2607	-5	4T	19-0002	202-2592	25A-3	4T	19-0001	202-2591
-125	7	22-0007	202-	-10	4T	19-0004	202-2584	-7	4T	19-0005	202-2595
-250	8	23-0004	202-2623	-15	4T	19-0007	202-2587	-10	5	20-0002	202-2600
-350	9	24-0002	202-2628	-20	5	20-0005	202-2603	-14	5	20-0005	202-2603
TTTFA-1	1	16-0003	202-2587	-40	5	20-0008	202-2606	-19	5	20-0007	202-2605
-3	4T	19-0001	202-2591	-50	6	21-0003	202-2611	-24	6	21-0003	202-2611
-5	4T	19-0002	202-2592	-60	6	21-0005	202-2613	-30	6	21-0004	202-2612
-10	4T	19-0004	202-2594	TTTSA-2	4T	19-0006	202-2586	-37	6	21-0006	202-2614
-15	4T	19-0007	202-2595	-4	4T	19-0007	202-2597	-44	7	22-0002	202-2617
-20	4T	19-0007	202-2597	-6	5	20-0004	202-2602	-61	8	23-0003	202-2622
-25	5	20-0001	04-032-3021	-8	5	20-0005	202-2604	2SWA-3	4T	19-0001	202-2591
-30	5	20-0002	202-2600	-10	5	20-0009	202-2607	-7	4T	19-0005	202-2595
-40	5	20-0004	202-2602	-12	5	20-0009	202-2607	-10	5	20-0002	202-2600
-50	5	20-0005	202-2603	-16	6	21-0001	202-2609	-14	5	20-0005	202-2603
-60	5	20-0009	202-2607	TTTSP-42	8	23-0001	202-2620	-19	5	20-0007	202-2605
TTTFF-3	3	18-0018	202-2590	-400				-30	6	21-0004	202-2612
-5	4T	19-0002	202-2592	ISA-44	5	20-0006	202-2604	-37	6	21-0006	202-2614
-10	4T	19-0005	202-2595	ISMA-16	5	20-0002	202-2600	-44	7	22-0002	202-2617
-15	5	20-0002	202-2600	-40	6	21-0002	202-2610	-61	8	23-0003	202-2622
-20	5	20-0005	202-2603	70	7	22-0003	202-2618	2WA-40	6	21-0006	202-2614
-25	5	20-0008	202-2606	ISMWA-70	7	22-0003	202-2618	3SA-3	4T	19-0008	202-2596
-30	5	20-0010	202-2608	ISWA-2	2	17-0004	202-2589	-7	5	20-0004	202-2602
-40	6	21-0004	202-2612	-14	5	20-0003	788-8711	-10	6	21-0002	202-2610
-50	7	22-0011	202-2616	-20	5	20-0007	202-2605	-14	6	21-0004	202-2612
-60	7	22-0003	202-2618	-30	6	21-0003	202-2611	-19	6	21-0007	202-2615
				ISSOMA-16	5	20-0002	202-2600	-24	8	23-0001	202-2620
				-20	5	20-0004	202-2602	-30	8	23-0003	202-2622
				-40	6	21-0002	202-2610	-37	8	23-0006	202-2625
				-70	7	22-0003	202-2618	-44	9	24-0003	202-2630

FIGURE 3C12. Nylon stuffing tubes cable assignment (obsolete or discontinued cable).

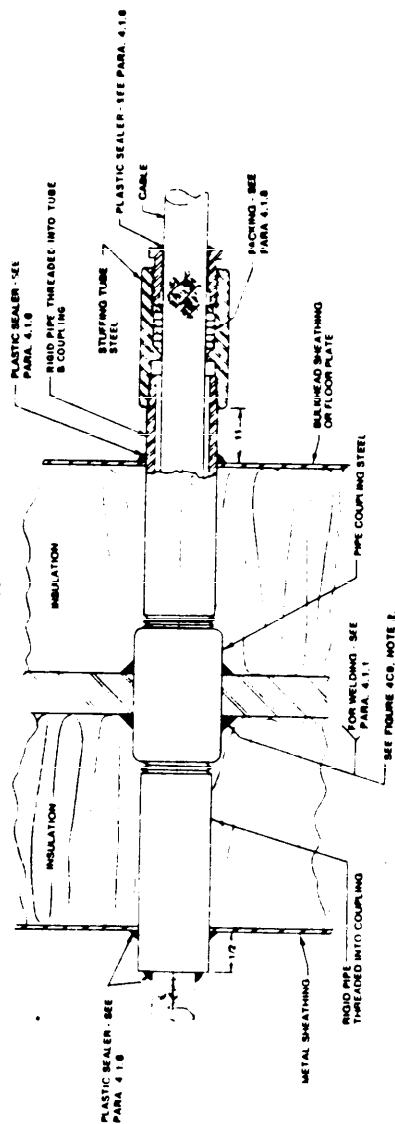
SH 13231719

NOTES:
1. THIS FIGURE SUPERSEDES SHEET 3C13 OF DRAWING
803-5001027 AND SECTION 4, SHEET 45, OF DRAWING
NAVSEC NO. 8000-58202-73980

TUBE SPEC MIL-S-24235

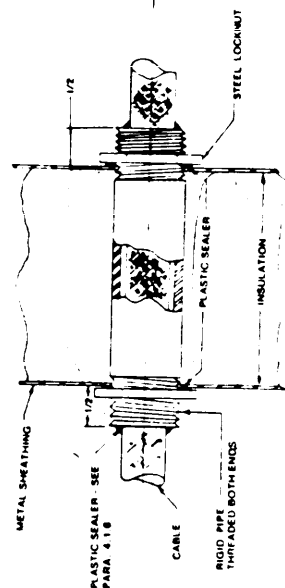
3C131

CABLES THROUGH STEEL PARTITION BULKHEADS OR
DECKS WITH INSULATION AND SHEATHING
ON BOTH SIDES



3C132

CABLES THROUGH PARTITION BULKHEADS
OF FIBROUS GLASS AND SHEATHING



SH 132317180

FIGURE 3C13. Stuffing tubes through refrigerated spaces.

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES:

1. FOR SUITABLE CABLE SUPPORT SEE MIL-STD-XXX-4
2. PLASTIC PIPE AND FITTING SHALL BE NYLON OR PVC
3. THIS FIGURE SUPERSEDES SHEET 3C14 OF DRAWING 803-5001027 AND DRAWING NAVSEC NO 9000-36202-73980

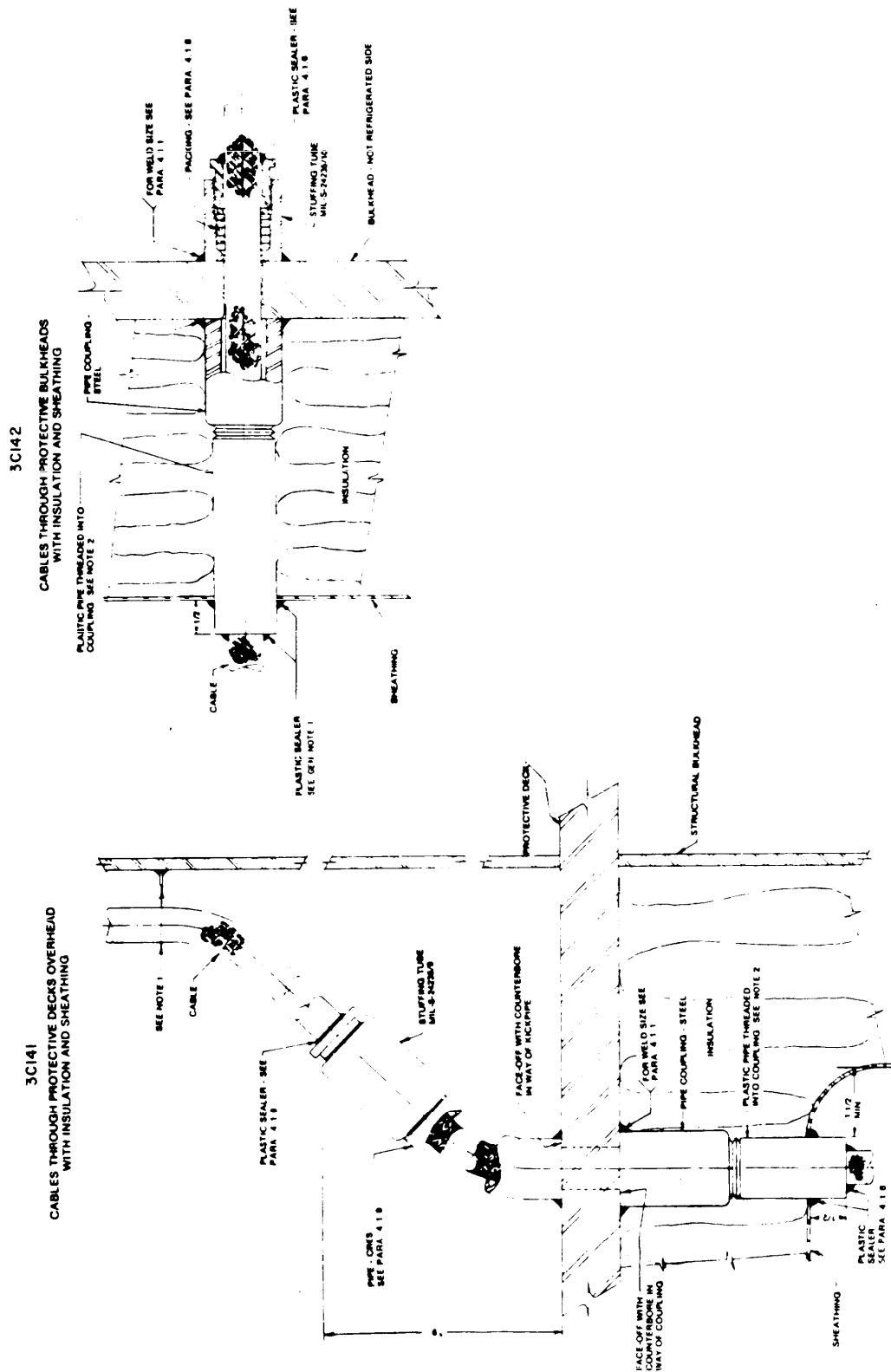


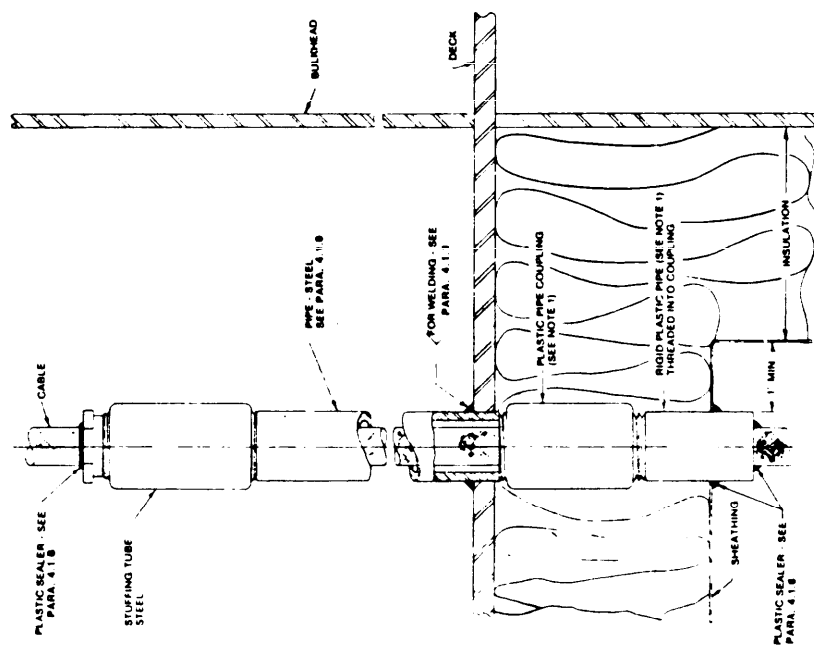
FIGURE 3C14. Stuffing tubes through refrigerated spaces.

SH 132317181

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES:
1. PLASTIC PIPE AND FITTINGS SHALL BE NYLON OR PVC.
 2. THIS FIGURE SUPERSEDES SHEET 3C15 OF DRAWING 803-5001027 AND SECTION 4, SHEET 44, OF DRAWING NAVSEC NO. 9000-S8202-73980.

3C151
CABLES THROUGH OVERHEAD STEEL DECKS
WITH INSULATION AND SHEATHING



SH 132317182

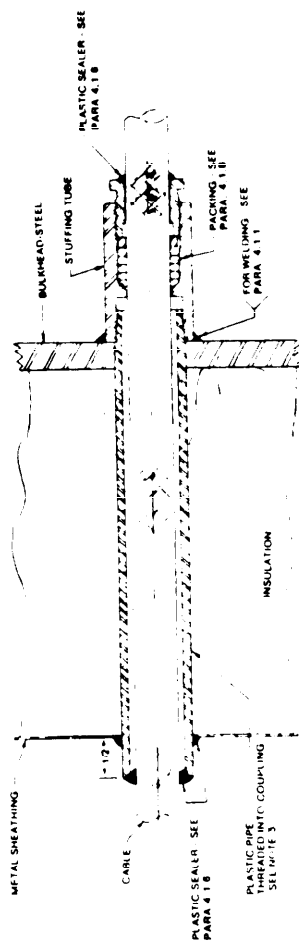
FIGURE 3C15. Stuffing tubes through refrigerated spaces.

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES
1. CABLE ENTRANCE TO REFRIGERATED SPACES PREFERABLY THROUGH BULKHEADS OR OVERHEAD DECK'S
 2. STUFFING TUBES ARE LOCATED PREFERABLY ON THE WARM SIDE OF BOUNDARY BULKHEADS OR OVERHEAD DECK'S
 3. PLASTIC PIPE AND FITTINGS SHALL BE NYLON OR PVC
 4. THIS FIGURE SUPERSEDES SHEET 3C18 OF DRAWING 803 5001027 AND SECTION 4, SHEET 45, OF DRAWING NAVSEC NO 9000 56702-73880

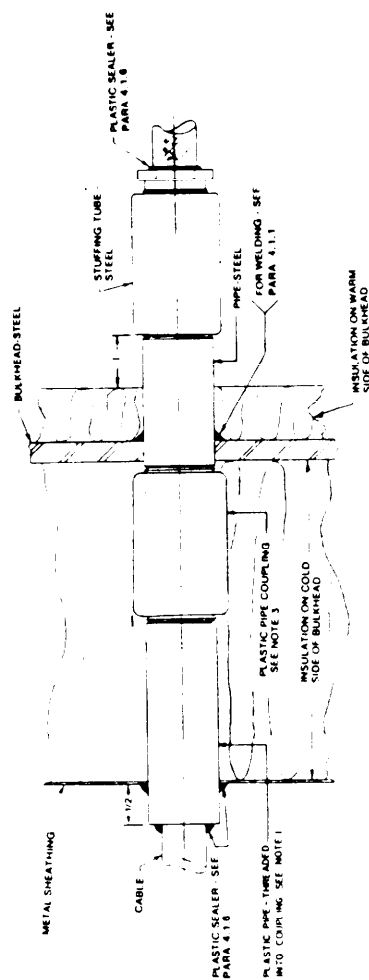
3C161

CABLES THROUGH BOUNDARY BULKHEADS OR OVERHEAD DECK'S WITH INSULATION AND SHEATHING ON THE COLD SIDE



3C162

CABLES THROUGH BOUNDARY BULKHEADS OR OVERHEAD DECK'S WITH INSULATION AND SHEATHING ON THE COLD SIDE AND INSULATION WITHOUT SHEATHING ON THE WARM SIDE



SH 132317183

FIGURE 3C16. Stuffing tubes through refrigerated spaces.

DOD-STD-2003-3 (NAVY) 24 JUNE 1987

NOTES

1. THE DESIGN SHOWN HEREON IS FOR USE FOR PASSING CABLES THROUGH BALLAST TANK BULKHEADS FOR SUBMARINES AND IS A TYPICAL INSTALLATION ONLY. BULKHEAD FITTINGS FOR SUBMARINES SHALL WITHSTAND MAXIMUM PRESSURE OF 45 PSI AND CONFORM TO SPEC MIL-S-24235.
2. THIS METHOD IS ALSO APPLICABLE TO SURFACE SHIPS BY VARYING SIZE TO SUIT THE NUMBER AND SIZE OF CABLES TO BE ACCOMMODATED AND THE SPECIFIED MATERIAL MAY BE CHANGED TO SUIT THE SHIPBUILDER EXCEPT THAT GROMMET SHALL REMAIN NEOPRENE OF 40-45 DUROMETER AND GLAND RING SHALL BE BRASS. OTHER CHANGES MAY BE MADE TO LIGHTEN THE CONSTRUCTION SUCH AS DECREASE OF HOUSING THICKNESS AND FLANGE THICKNESS PROVIDING GLAND RING IS THREADED INTO HOUSING USING THE SAME CONSTRUCTION USED FOR SINGLE CABLE STUFFING TUBES. DESIGN FOR SURFACE SHIPS SHALL WITHSTAND MINIMUM PRESSURE OF 15 PSI.
3. FOR WOOD CONSTRUCTION HOUSING SHALL BE DESIGNED WITH A SUITABLE FLANGE FOR SECURING TO WOOD BULKHEAD.
4. RADIAL STAGGERING OF CABLES TO ATTAIN MAXIMUM ACCEPTANCE OF CABLES IN MINIMUM SPACE IS SATISFACTORY. HOWEVER REQUIREMENTS OF GSS REGARDING BULKHEAD STRENGTH AND TIGHTNESS MUST BE MAINTAINED.
5. THIS SHEET SHOWING METHOD 3C171 IS CONSIDERED A WORKING PLAN. THE SUBMISSION OR PREPARATION OF PLANS SHOWING DETAILS OF ACCOMPLISHING THE METHOD OR THE PERMISSIVE NOTES THEREFOR ON THIS SHEET IS NOT REQUIRED.
6. POSITION STUFFING TUBE SO THAT PACKING GLAND IS ON THE MOST ACCESSIBLE SIDE OF BALLAST TANK PARTITION.
7. THIS FIGURE SUPERSEDES SHEET 3C17 OF DRAWING 805-5001027 AND SECTION 4, SHEET 144, OF DRAWING NAVSEC NO. 8000-58202-73980.

3C171

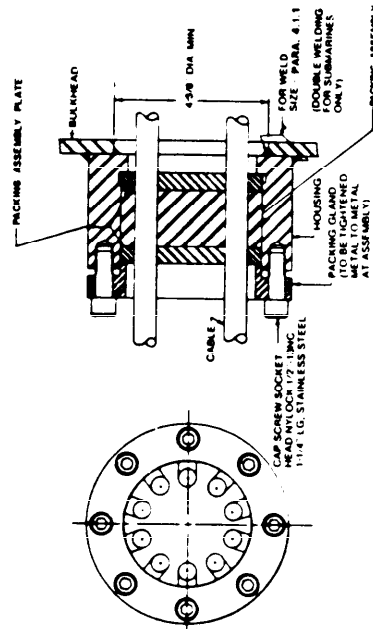


FIGURE 3C17. Community stuffing tubes for bulkheads.

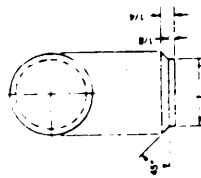
SH 132317 184

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

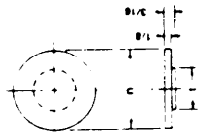
NOTES:

1. FOR METHOD OF SEALING CABLE ENDS SEE PARA. 4.1.6
2. FOR CABLE ASSIGNMENT SEE FIGURES 3C3 THRU 3C12
3. INSERT, PC 3C181 USED WITH NYLON STUFFING TUBES, MIL-S-19822
4. INSERTS, PCS 3C182 & 3C183 USED WITH STEEL STUFFING TUBES, MIL-S-24235, DRAWN AND MACHINED RESPECTIVELY
5. INSERTS PC 3C181, 3C182 & 3C183 MAY BE MADE OF THE FOLLOWING MATERIALS
(A) POLYAMIDE (NYLON) PLASTIC, SPEC MIL-M-20683.
(B) LAMINATED PLASTIC, SPEC MIL-P-15037.
THE LAMINATIONS SHALL BE PARALLEL TO THE FACES OF THE INSERT
- (C) MOLDED PHENOLIC TYPE MAI-60 MIL-M-14.
- (D) FIBER, SPEC. MIL-F-1148, GRADE "CH" FORM "R" OR "S". THE FIBER SHALL BE GIVEN A COAT OF INSULATING VARNISH SPEC MIL-V-13497.
6. THIS FIGURE SUPERSEDES SECTION 1, SHEET 43, OF DRAWING, NAVSEC NO 9000-S6202-73960.

3C183



3C182



INSERT PC 3C182 & 3C183	
SIZE	DIMENSIONS
A	3/4
B	1/8
C	1
D	1 1/8
E	1 1/8
F	1 1/8
G	1 1/8
H	1 1/8
I	1 1/8
J	1 1/8
K	1 1/8
L	1 1/8
M	1 1/8
N	1 1/8
O	1 1/8
P	1 1/8
Q	1 1/8
R	1 1/8
S	1 1/8
T	1 1/8
U	1 1/8
V	1 1/8
W	1 1/8
X	1 1/8
Y	1 1/8
Z	1 1/8
AA	1 1/8

3C181



INSERT PC 3C181	
SIZE	DIMENSIONS
1	550
2	615
3	755
4	895
5	1333
6	1740
7	1977
8	2302
9	3240

FIGURE 3C18. Stuffing tube inserts.

SH 132317185

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES
1. MATERIAL TO BE STEEL ASTM GRADE A36 OR ASTM GRADE A441
 2. THIS FIGURE SUPERSEDES SHEET 3C19 OF DRAWING 800-6001027 AND SECTION 1 SHEET 81 OF DRAWING NAVSPEC NO 9000-56202-73680

3C19I

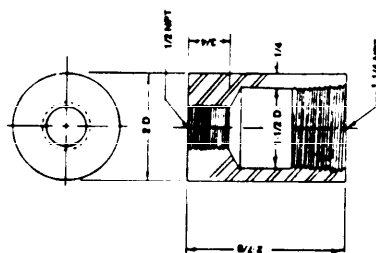


FIGURE 3C19. stuffing tube adapter.

SH 132317186

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

THIS SHEET INTENTIONALLY LEFT BLANK

FIGURE 3C20. NOT USED

SH 132317187

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES:

1. TABLE CONTINUED FROM FIGURE 3C7.
2. THIS FIGURE SUPERSEDES SHEET 3C21 OF DRAWING 803-5001027.

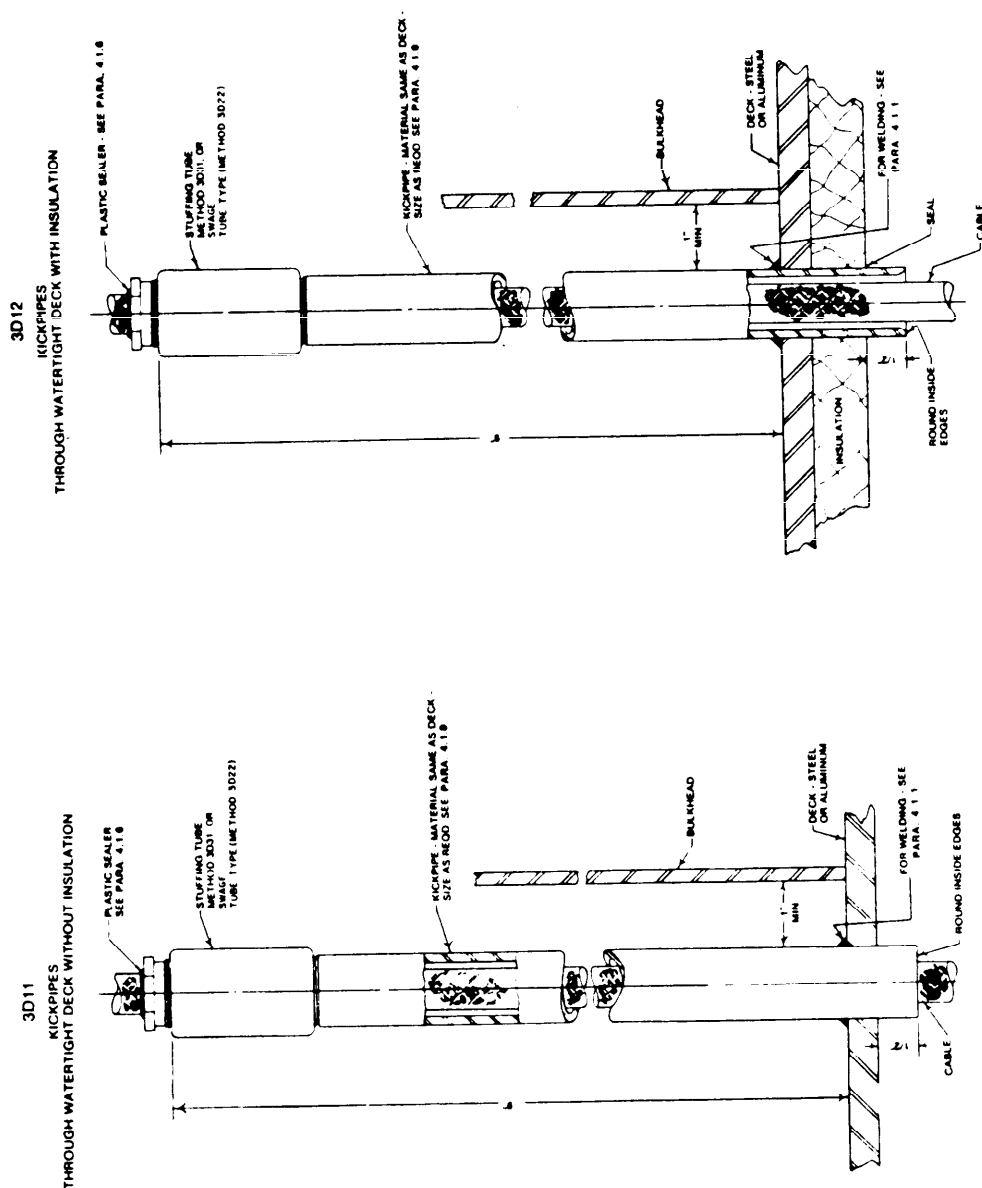
CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY		CABLE	TUBE SIZE	PACKING ASSEMBLY	
		ML PART NO M9421//	NON 5330-00			ML PART NO M9421//	NON 5330-00			ML PART NO M9421//	NON 5330-00			ML PART NO M9421//	NON 5330-00
TPNWA-3	2	17-0003	202-2588	25JA-22	1	16-0001	202-2580	35JA-22	1	16-0001	202-2580	25A-3	4T	19-0001	202-2591
-4	2	17-0004	202-2589	-20	1	16-0004	202-2580	-20	1	16-0004	202-2583	-7	4T	19-0005	202-2595
-9	4T	19-0004	202-2594	-18	1	16-0004	202-2583	-18	1	16-0004	202-2583	-10	5	20-0007	202-2600
-14	4T	19-0005	202-2595	-16	1	16-0004	202-2583	-16	1	16-0005	202-2584	-14	5	20-0074	202-2602
-23	4T	19-0007	202-2598	-14	1	16-0006	202-2585	-14	2	17-0001	202-2586	-19	5	20-0007	202-2605
-50	5	20-0004	202-2603	-12	2	17-0002	202-2587	-12	2	17-0003	202-2588	-24	6	21-0001	202-2609
-75	5	20-0004	202-2603	-11	2	17-0004	202-2589	-9	4T	19-0003	202-2593	-30	6	21-0004	202-2612
-100	6	21-0004	202-2612	-9	4T	19-0004	202-2591	-37	6	21-0004	202-2596	-44	7	22-0002	202-2617
-150	7	22-0001	202-2616	-7	4T	19-0003	202-2593	-44	9	24-0004	202-2625	-61	7	22-0003	202-2618
TPNWA-1-1/2	1	16-0004	202-2583	2UA-10	3	18-0018	202-2590	35WA-3	4T	19-0006	202-2596	25WA-3	4T	19-0001	202-2598
-3	1	16-0006	202-2585	-15	4T	19-0002	202-2592	-7	5	20-0004	202-2602	-7	4T	19-0005	202-2595
-5	2	17-0001	202-2586	-19	4T	19-0002	202-2592	-14	6	21-0002	202-2610	-10	5	20-0002	202-2600
-10	3	18-0018	202-2590	-30	4T	19-0005	202-2596	-19	7	21-0007	202-2615	-14	5	20-0005	202-2603
-15	4T	19-0001	202-2591	-45	5	20-0003	788-8711	-24	8	23-0001	202-2620	-19	5	20-0077	202-2605
-20	4T	19-0002	202-2592	-60	5	20-0005	202-2603	-37	8	23-0006	202-2625	-24	6	21-0003	202-2611
-30	4T	19-0005	202-2595	2UW-42	4T	19-0007	202-2597	-44	9	24-0004	202-2625	-30	6	21-0004	202-2612
-40	4T	19-0007	212-2598	2UW-42	4T	19-0007	202-2597	35WUS-3	4T	19-0008	202-2595	-37	6	21-0006	202-2614
ISUA-36	5	20-0005	202-2603	2UW-42	4T	19-0007	202-2597	-10	5	20-0010	202-2633	-44	7	22-0002	202-2617
-60	6	21-0004	202-2612	2UWS-42	5	20-0002	202-2600	-14	6	21-0004	202-2612	-61	8	23-0001	202-2622
ISWA-2	2	17-0004	202-2589	2WA-40	7	22-0001	202-2616	-19	6	21-0007	202-2615				
-14	5	20-0003	202-2601	35A-3	4T	19-0005	202-2595	-24	7	22-0003	202-2618				
-20	5	20-0007	202-2615	-7	5	20-0004	202-2602	-37	8	23-0002	202-2621				
-30	6	21-0003	202-2611	-10	5	20-0016	202-2608	-44	9	24-0001	202-2628				
ISONA-16	5	20-0002	202-2600	-14	6	21-0003	202-261	35US-3	4T	19-0007	202-2597				
-20	5	20-0004	202-2602	-19	6	21-0007	202-2615	-7	5	20-0004	202-2602				
-40	6	21-0001	202-2609	-24	7	22-0003	202-2618	-10	5	20-0008	202-2606				
-70	7	22-0001	202-2616	-30	8	23-0002	202-2621	-14	6	21-0002	202-2610				
28US-3	4T	19-0002	202-2592	-37	8	23-0005	202-2624	-16	6	21-0004	202-2612				
-7	4T	19-0006	202-2596	-44	9	24-0001	202-2628	-19	7	22-0001	202-2616				
-10	5	20-0004	202-2602	35US-3	4T	19-0007	202-2597	-24	7	22-0003	202-2618				
-14	5	20-0006	202-2604	-7	5	20-0004	202-2602	-30	8	23-0003	202-2622				
-19	5	20-0008	202-2606	-10	5	20-0004	202-2602	-37	8	23-0006	202-2625				
-24	6	21-0003	202-2611	-14	6	21-0002	202-2610	-44	9	24-0002	202-2629				
-30	6	21-0004	202-2612	-16	6	21-0004	202-2612								
-37	6	21-0007	202-2615												
-44	7	22-0003	202-2618												
-61	8	23-0003	202-2622												

SH 132317188

FIGURE 3C21. Nylon stuffing tubes cable assignment.

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES:
1. USE BENT KICKPIPE TO CONSERVE SPACE.
 2. FOR SUITABLE CABLE SUPPORT SEE MIL-STD-XXX-4.
 3. THIS FIGURE SUPERSEDES SECTION 4, SHEET 12, OF DRAWING NAVSEC NO 9000-56202-73980.



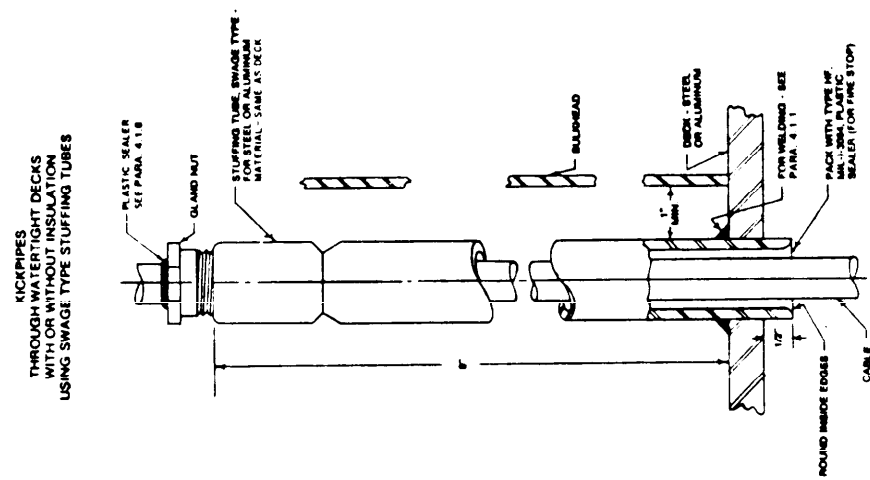
SH 132317189

FIGURE 3D1 Kickpipes through steel or aluminum decks.

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES
1. USE BENT KICKPIPE TO CONSERVE SPACE
 2. FOR SUITABLE CABLE SUPPORT, SEE MIL-STD-XXX-4
 3. THIS FIGURE SUPERSEDES SECTION 4, SHEET 12, OF DRAWING NAVSPEC NO 800-58262-73860

3D22



3D21

KICKPIPES THROUGH
WATERTIGHT DECKS WITH OR WITHOUT INSULATION

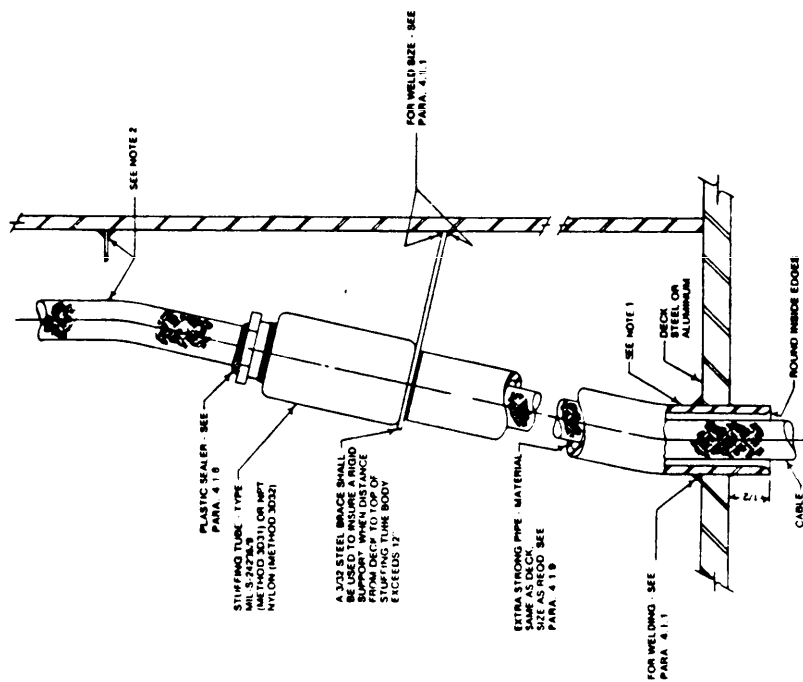


FIGURE 3D2. Kickpipes through steel or aluminum decks.

SH 132317190

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES:

- 1 THIS FIGURE SUPERSEDES SECTION SHEET HD3 OF DRAWING 803-5001027 AND SECTION 4, SHEET 13, OF DRAWING NAVSEC NO 9000-56202-71980

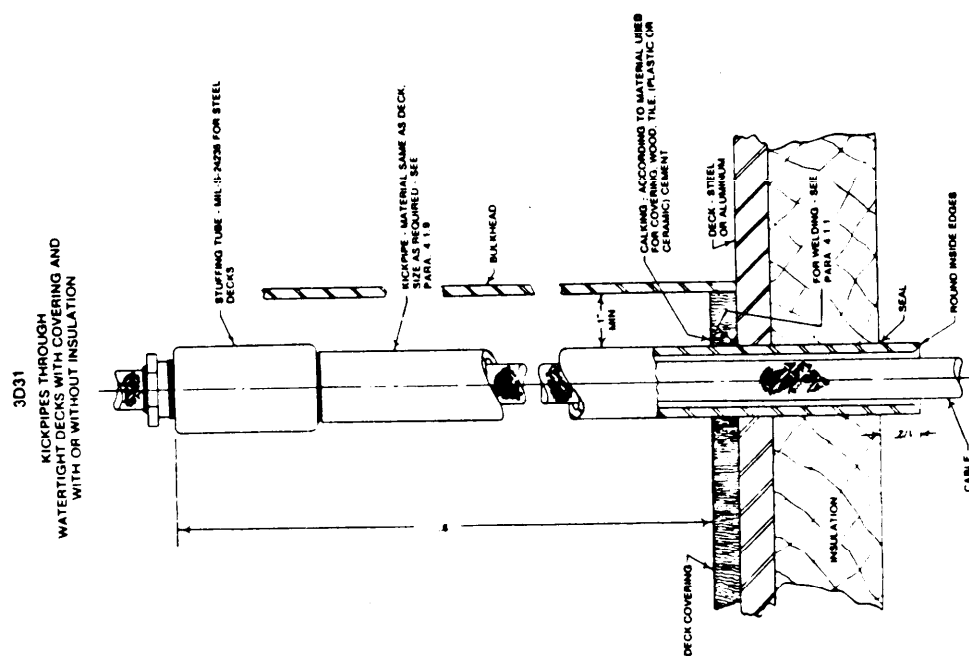


FIGURE 3D3. Kickpipes through steel or aluminum decks.

SH 132317191

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTE:
1. THIS FIGURE SUPERSEDES SHEET 3D4 OF DRAWING
803-5001027 AND SECTION 4, SHEET 28 OF DRAWING
NAVSEC NO. 8000-S6202-73980

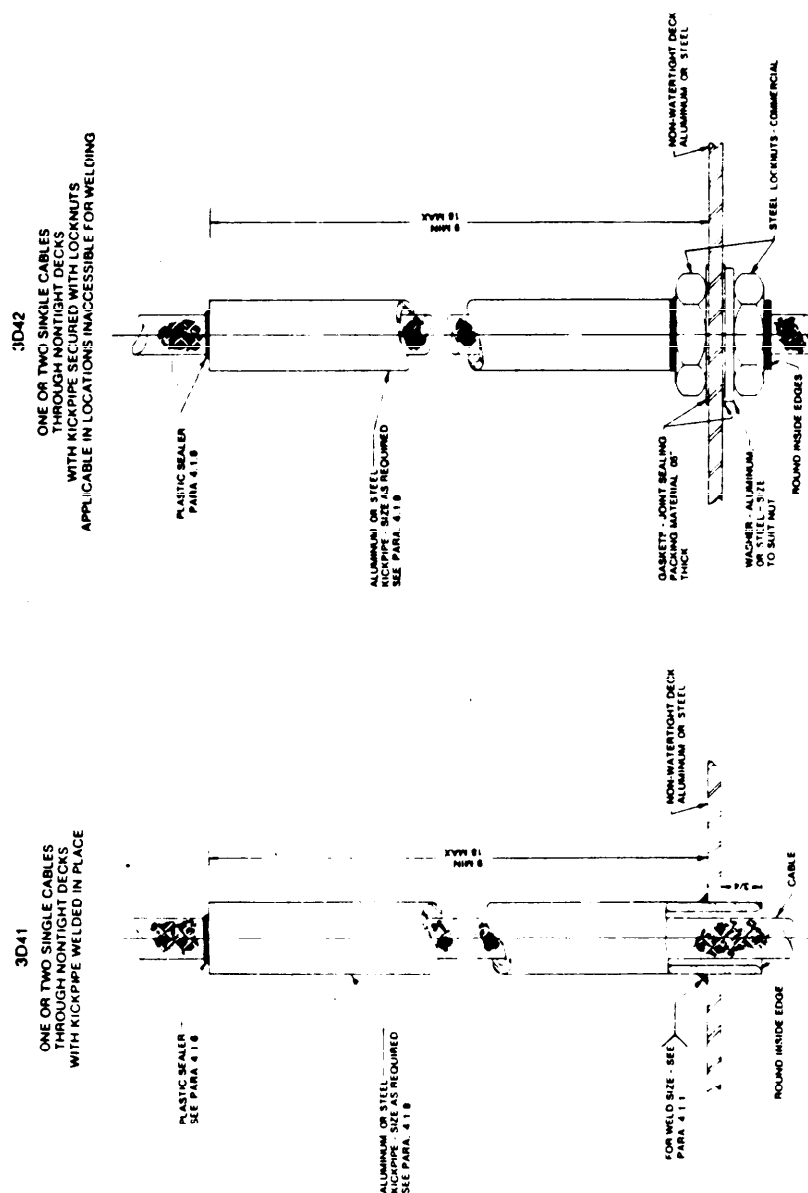


FIGURE 3D4. Kickpipes through non-waterlight decks.

SH 132317192

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTE

1. THIS FIGURE SUPERSEDES SHEET 305 OF DRAWING 803-500 1027
AND SECTION 4 SHEET 38 OF DRAWING NAVSEC NO 8000-56202-73980

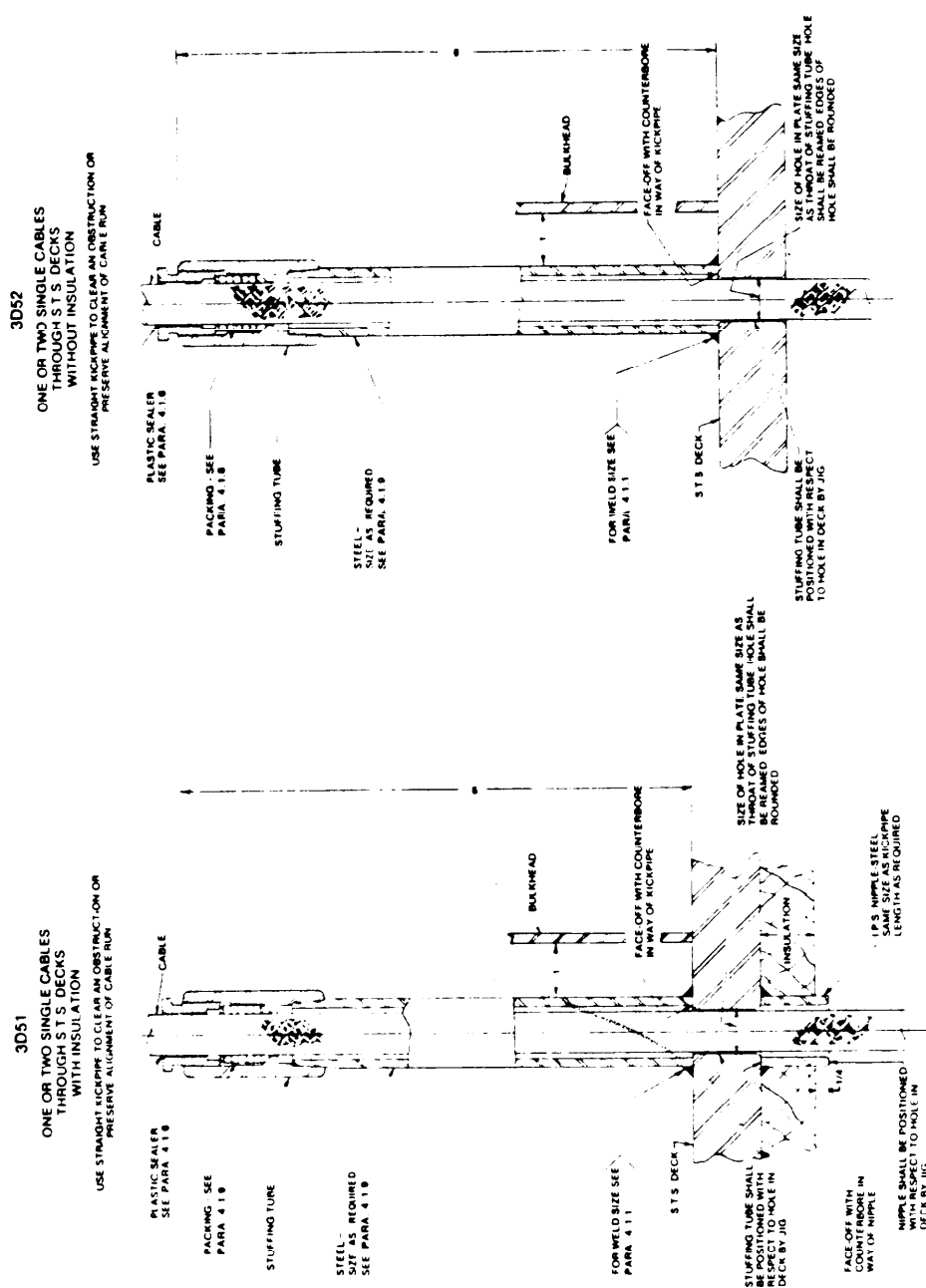


FIGURE 3D5. Kickpipes through ballistic plating.

SH 132317193

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES:

1. FOR SUITABLE CABLE SUPPORT SEE MIL-STD-XXX-4
2. THIS FIGURE SUPERSEDES SHEET 306 OF DRAWING 803-5001027 AND SECTION 4 SHEET 39 OF DRAWING NAVSEC NO. 8000-56202-73960.

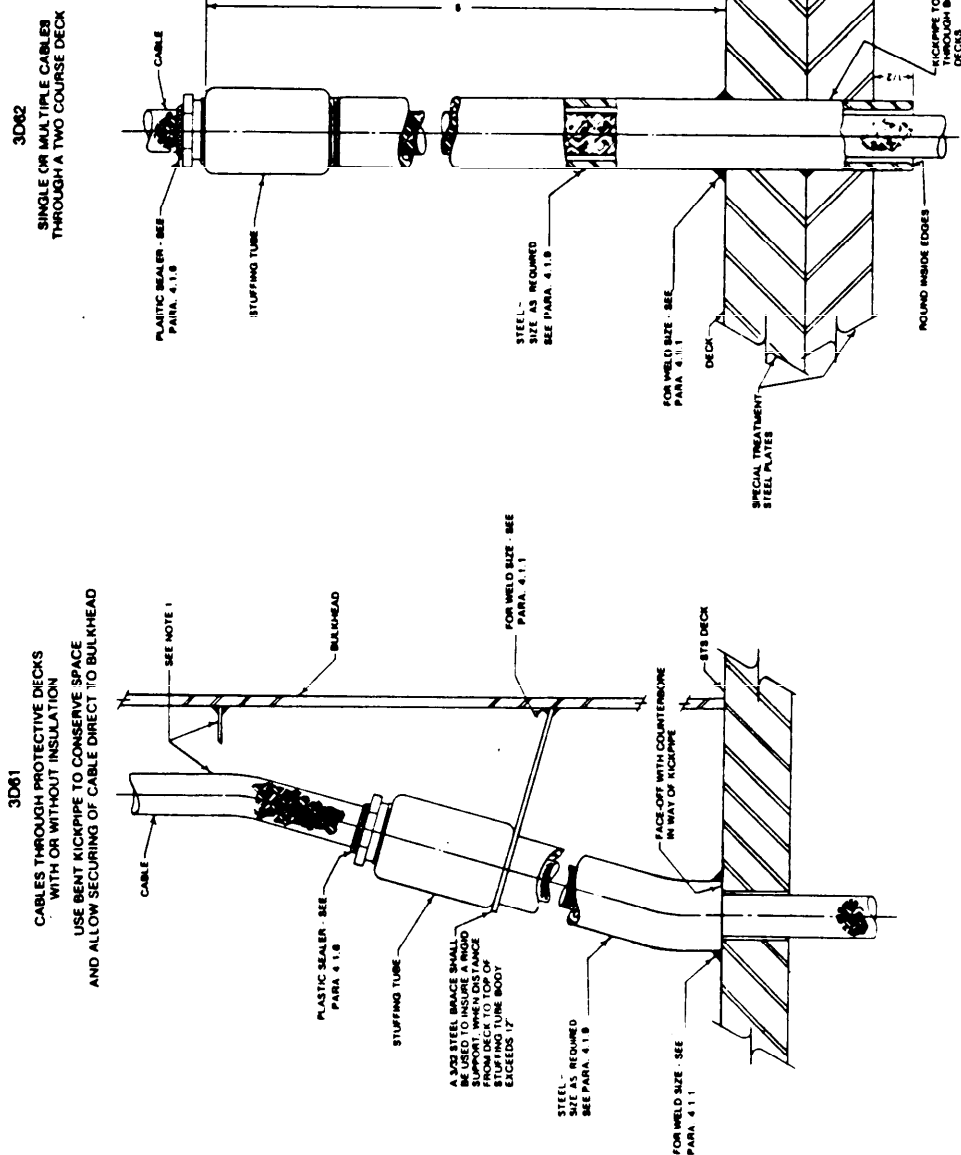


FIGURE 3D6. Kickpipes through ballistic plating.

SH 132317194

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

NOTES:

1. LAG OR WOOD SCREWS (GRES) NOT LESS THAN 1" LONG
2. PLASTIC PIPE FITTINGS AND STUFFING TUBE MAY BE USED IN LIEU OF ALUMINUM TYPE SHOWN. STUFFING TUBE SHOULD BE NYLON METHOD 3891 OR ML-S-19822 SIZE TO SUIT. FOR EXAMPLE IM6822-3 PIPE AND FITTINGS MAY BE NYLON OR PVC FOR CEMENTED ATTACHMENT PART MUST BE NYLON FOR NYLON OR PVC TO PVC
3. FOR SUTURE CABLE SUPPORT ML-S1TD-XXX-4
4. THIS FIGURE SUPERSEDES SHEET 307 OF DRAWING 803-5001027 AND SECTION 4 SHEET 47 OF DRAWING NAVSEC NO 9000-56202 / 73980

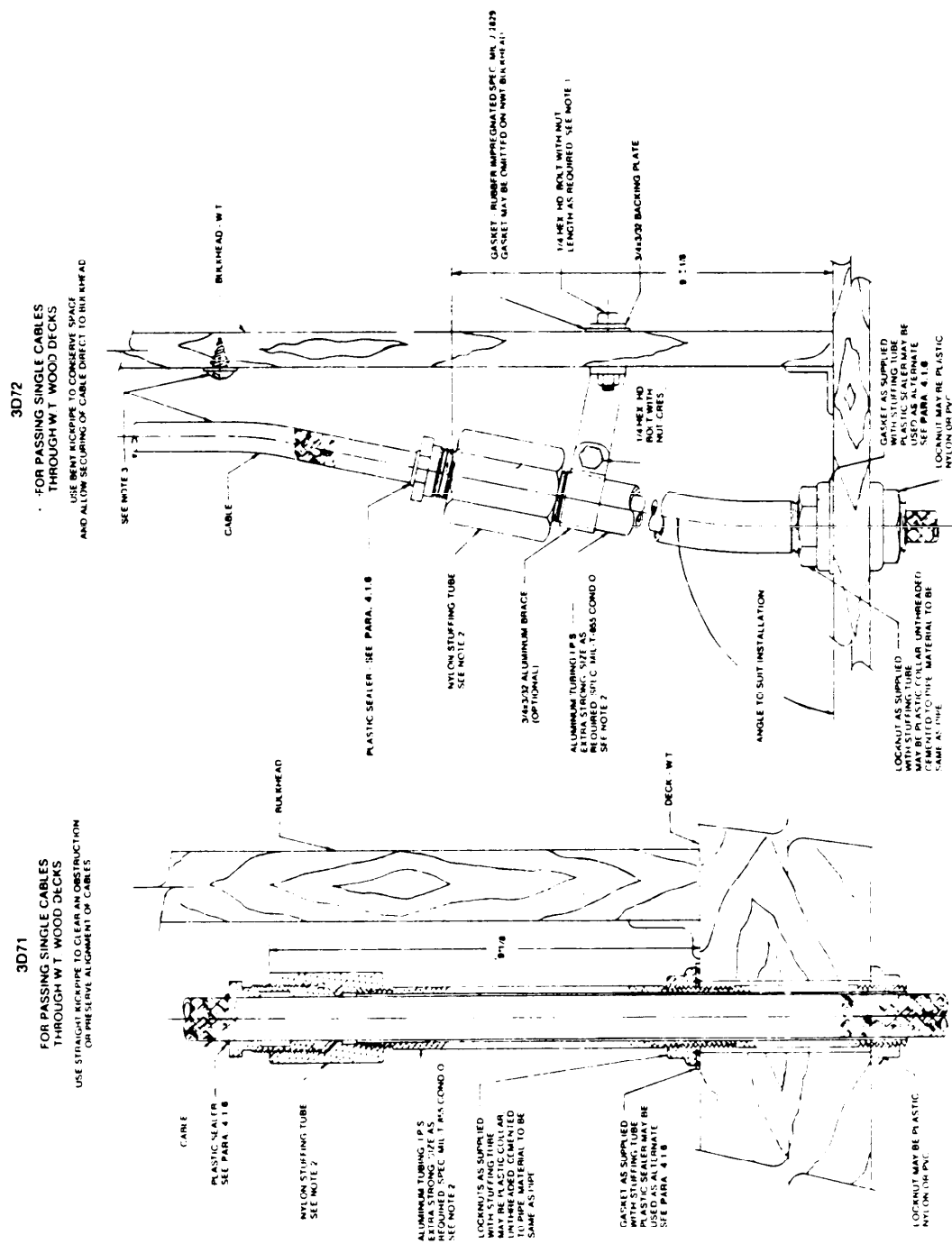


FIGURE 3D7. Kickpipes through wooden decks.

SH 132317195

NOTE:
1. THIS FIGURE SUPERSEDES SHEET 308 OF DRAWING
803-5001027 AND SECTION 4, SHEET 25 OF DRAWING
NAVSEC NO. 9030-S6202-73980.

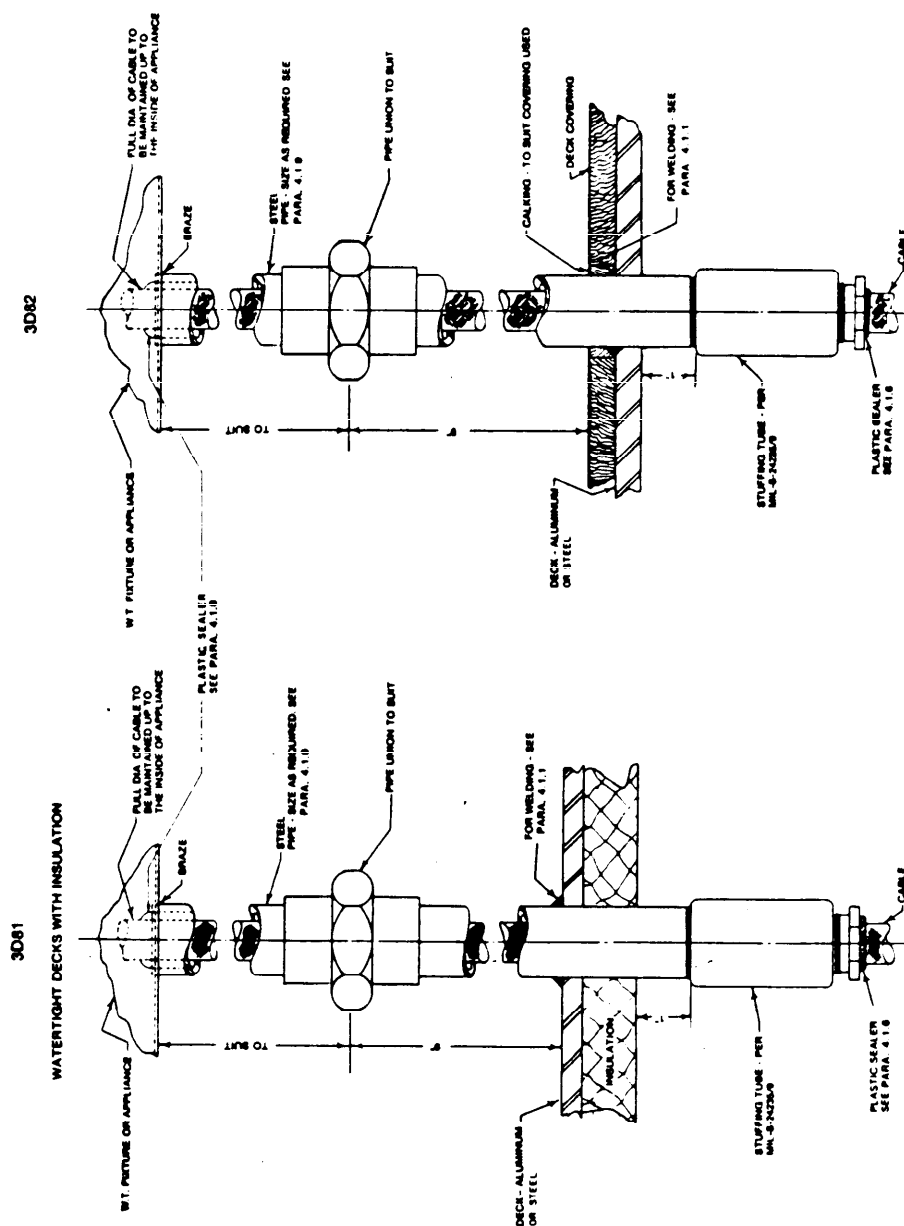


FIGURE 3D8. Kickpipes with unions.

NOTES

1. "O" RING SURFACES ON HULL INSERTS SHALL BE SUITABLY PROTECTED FROM DAMAGE OR TO DISAPPEAR AT ALL TIMES PRIOR TO INSTALLATION OF HULL FITTING.
2. DOTTED LINE INDICATES OUTLINE FOR SINGLE CABLE HULL FITTING.
3. COAT "O" RINGS AND "O" RING SURFACES WITH GREASE CONFORMING TO SPEC MIL G 4343 (DC 7).
4. TO INSTALL HULL FITTING IN PLACE, POSITION "O" RINGS AS SHOWN AND SECURE IN PLACE WITH WASHER, LOCKNUT, AND RETAINER RING.
5. REMOVE RECEPTACLE CAPS PRIOR TO INSTALLATION OF MOLDED PLUG ASSEMBLIES (SEE NOTE 9).
6. SECURE INBOARD CABLE IN PLACE WITH CABLE SUPPORTS AS REQUIRED.
7. METHODS SHOWN HEREIN HAVE BEEN TESTED AND APPROVED FOR DEEP DIVING SUBMARINES.
8. METHODS FOR TEMPORARY SEALING HULL INSERTS AND PRESSURE PROOF PLUG ASSEMBLIES ARE SHOWN ON FIGURE 3E2.
9. WHEN MOLDED PLUG ASSEMBLIES ARE TEMPORARILY DISCONNECTED, REINSTALL CAPS (SEE NOTE 5 ABOVE).
10. HULL INSERT TO BE FURNISHED BY SHIPBUILDER OF A STEEL COMPATIBLE WITH APPLICABLE HULL. FOR FURTHER DETAILED REQUIREMENTS SEE MIL C 24231.
11. POSITION HULL INSERT TO OUTBOARD CABLE RUNS (MULTIPLE HULL FITTINGS).
12. THIS FIGURE SUPERSEDES SHEET 3E1 OF DRAWING 800-50010277 AND OF SECTION 5 SHEET 105 OF DRAWING NAVSEC NO 9000-506022-73980.

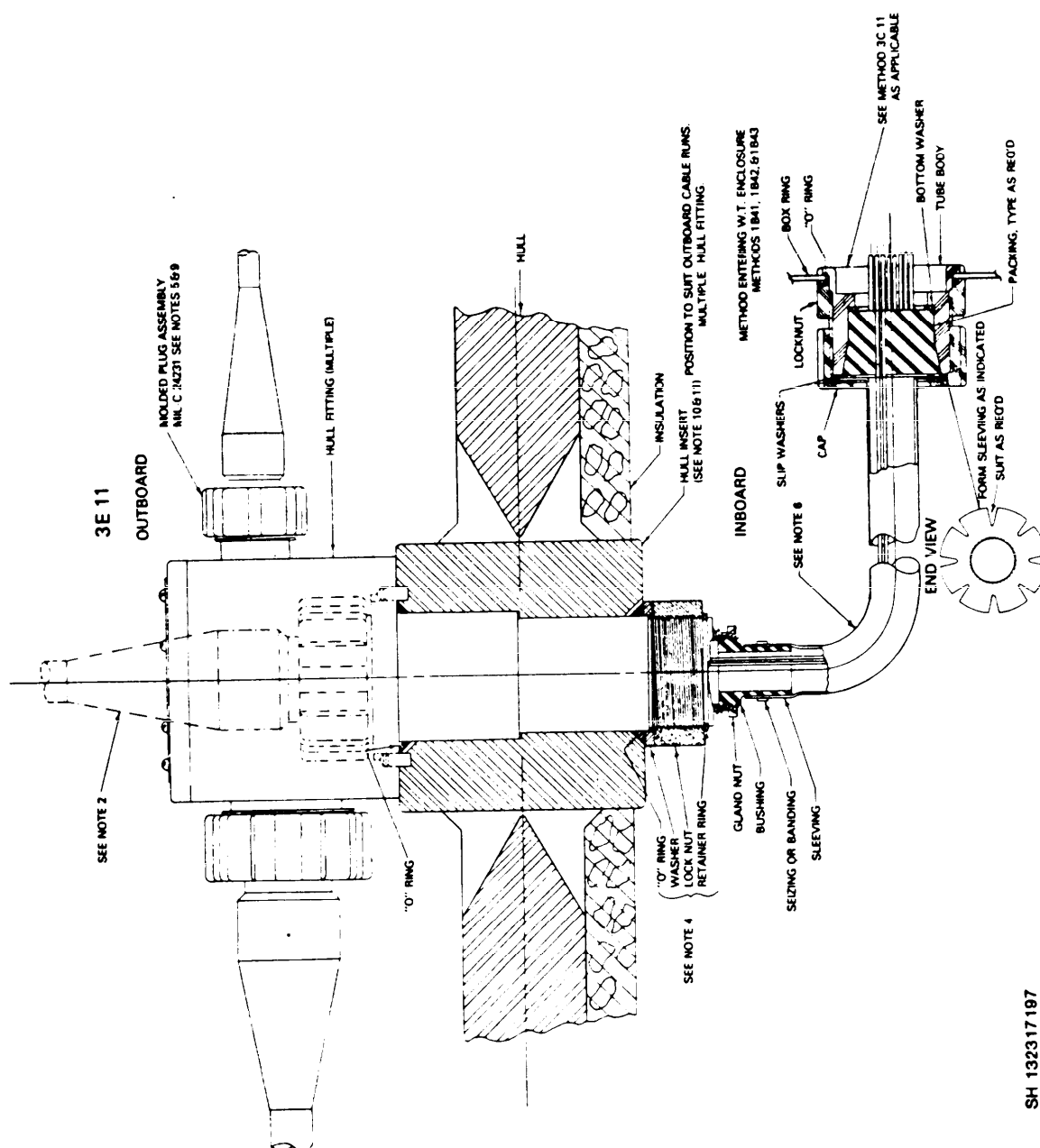
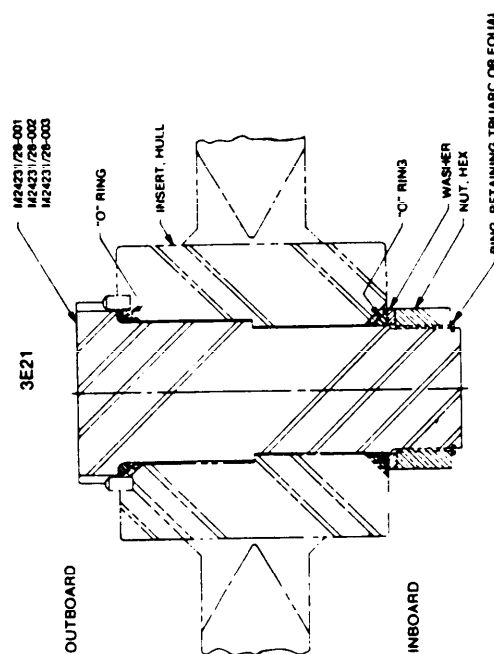


FIGURE 3E1 Cable connections through pressure hulls of submarines

- NOTES:
1. SEALING PLUGS ARE FOR CLOSURE OF THE HULL INSERTS.
 2. HULL INSERTS SHALL BE FURNISHED WITH SEALING PLUGS IN PLACE TO PROTECT "O" RING SURFACES FROM DAMAGE. SEALING PLUGS SHALL REMAIN IN PLACE DURING WELDING AND SHALL NOT BE REMOVED UNTIL INSERTION OF SINGLE OR MULTIPLE CABLE HULL FITTING.
 3. EACH SEALING PLUG SHALL BE CHECKED WITH "GO" AND "NO GO" GAGES TO INSURE INTERCHANGEABILITY WITH HULL INSERTS.
 4. FOR INSTALLATION OF HULL FITTINGS AND HULL INSERTS SEE FIGURE 3E1
 5. SILICONE "O" RINGS ARE USED ONLY WHEN WELDING IN SINTER BUNA TYPE "O" RINGS ARE REQ'D FOR SERVICE INSTALLATION.
 6. THIS FIGURE SUPERSEDES SHEET 3E2 OF DRAWING 803-5001027 AND SECTION 5, SHEET 104 OF DRAWING NAVSEC 100 9000-56202-73980.



QUANTITIES FOR ONE SEALING PLUG ASSEMBLY							
INSERT PLUG ASSY	NUMBER REQUIRED - ONE						
	INSERT PLUG	RETAINING RING	NUT	WASHER	"O" RING " OUTBOARD	"O" RING " INBOARD	FOR HULL INSERT
	M24231/28-001	M24231/5-078	M24231/5-074	M24231/5-075	ARP566-328	ARP 566-327	M24231/25-001
	M24231/28-002	M24231/10-043	M24231/10-044	M24231/10-043	ARP566-334	ARP 566-332	M24231/25-002
	M24231/28-003	M24231/19-014	M24231/19-014	M24231/19-025	ARP566-342	ARP 566-339	M24231/25-003

***MATERIAL
SILICONE RUBBER
SPEC ZZ-R-765
CLASS III**

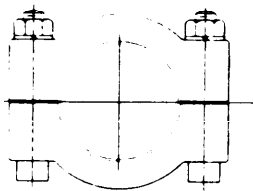
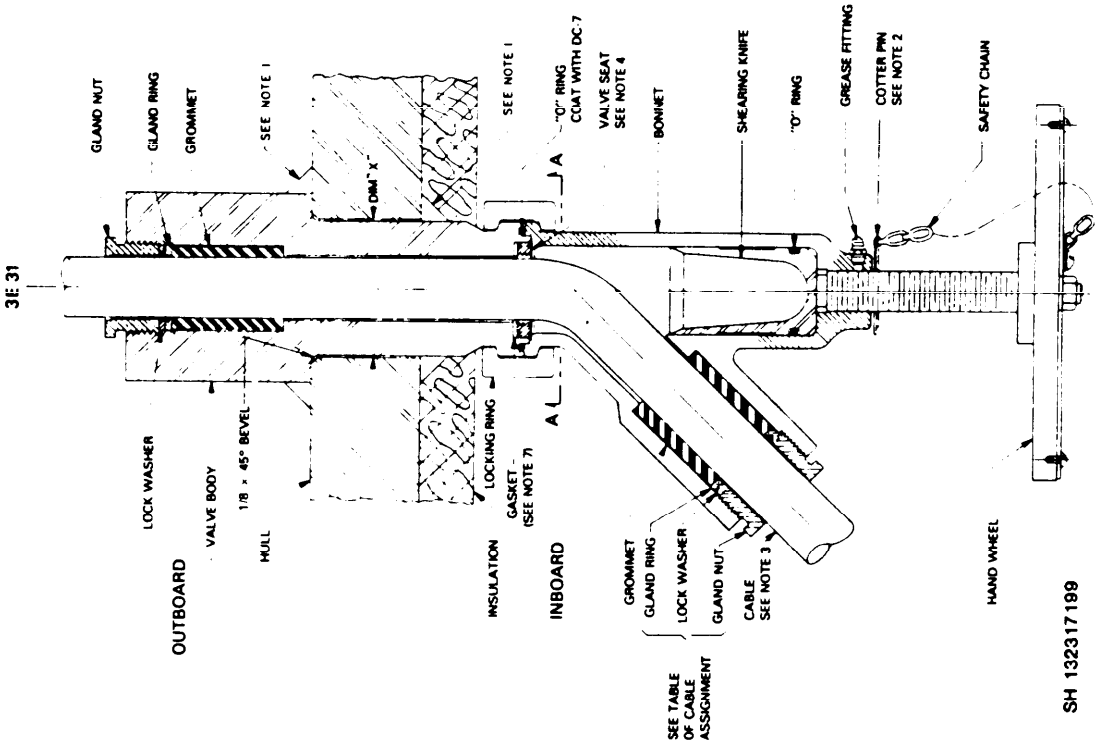
FIGURE 3E2 Sealing plugs for hull inserts on submarines

SH 132317198

NOTES:

1. WELDING SHALL COMPLY WITH NAVSHIPS 0900-LP-006-9010
2. BEFORE ASSEMBLY, DRILL HOLE FOR COTTER PIN WITH VALVE IN FULL OPEN POSITION
PIN MUST BE EASILY REMOVED, BEND ONLY ENOUGH TO PREVENT FALLING OUT.
3. THE CABLE SHEARING VALVES ARE DESIGNED FOR CABLES IN ACCORDANCE WITH SPECIFICATION MIL-C-915.
4. IF VALVE SEAT BECOMES DAMAGED, IT CAN BE REVERSED AND REINSTALLED WITH A NEW VALVE SEAT GASKET. REMOVAL OF VALVE SEAT IS ACCOMPLISHED BY USE OF A 7/8-12 STUD FOR SYMBOL NO 512 OR A 1 3/8-12 STUD FOR SYMBOL NO 513
5. TERMINATE INBOARD CABLE IN A JUNCTION BOX, WHICH WILL BE LOCATED IN THE VICINITY OF THE SHEAR VALVE
6. FOR SPECIFICATIONS, SEE MIL-S-24235/16
7. CEMENT GASKET TO VALVE SEAT AND BODY.
8. THIS FIGURE SUPERSEDES SHEET 3E3 OF DRAWING 803-5001027 AND SECTION 5, SHEET 80, OF DRAWING, NAVSEC NO. 9000-56202-73980.

CABLE ASSIGNMENT					
SYMBOL NO	CABLE SIZE	CABLE O. D.	GROMMET PC NO	GLAND RING PC NO	DIM "X"
512	17A/U	475	48	59	2.062
	17A/U	510	41	60	
	17A/U	530	41	60	
	17A/U	545	48	61	
512.1	MIRFF 7	827	48	62	2.062
	TYRS 2	832	50	63	
	TYRS 4	770	51	64	
	TYRS 10	750	51	64	
513	MIRFF 10	795	52	65	2.562
	TYRS 8	805	53	66	
	TYRS 12	830	53	66	
	TYRS 14	844	54	67	
513.1	MIRFF 19	995	56	68	2.562
	TYRS 8	1020	56	69	
	MIRFF 22	1115	57	70	
	TYRS 10	1120	58	71	



SH 132317189

FIGURE 3E3 Passing cable through pressure hull of submarines using cable shearing valve

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES:**
- 1 FOR INSTALLATION DETAILS SEE APPLICABLE DRAWING FOR SHIPS CLASS
 - 2 HULL INSERTS SHALL BE MACHINED TO FINISHED DIMENSIONS AS SHOWN UNDER METHOD 3E42 AFTER ALL WELDING HAS BEEN COMPLETED ON SONAR SPHERE
 - 3 HULL INSERT MATERIAL SHALL BE NI-CU MONEL SPEC QQ-N-281, CLASS A, HOT ROLLED, DIMENSIONS SHOWN ARE APPLICABLE AFTER WELDING IN SONAR SPHERE AND AFTER MACHINING TO ACCEPT PCS 1, 3 & 9 OF DWG 815-119718 OUTER DIAMETER SHALL BE SUCH AS TO PROVIDE ADEQUATE COMPENSATION HULL INSERTS ARE TO BE INSERED IN THE SHIPRAULDER
 - 4 USE OF EXPANSION RING IS INTENDED TO PROVIDE ADDITIONAL "O" RING SO INSERTS WILL BE THE SAME HOLE DIAMETER IN HULL INSERT WHICH HAS BEEN REPAIRED IN ACCORDANCE WITH PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, N.H., PROCESS INSTRUCTION 5845-941 263, PARAGRAPH 1.1.13
 - 5 EXPANSION RING, PART 3E43-1, SHALL BE "KAPSEAL" KIN SIZE DASH NUMBER 5216, AS MANUFACTURED BY MINNEAPOLIS RUBBER CO., 3630 WOODDALE AVENUE, MINNEAPOLIS, MINNESOTA 554 G
 - 6 USE OF EXPANSION RING IS NOT TO BE APPLIED TO NEW CONSTRUCTION WITHOUT SPECIFIC APPROVAL
 - 7 WITH THE AID OF A POLYETHYLENE STRIP AS SHOWN ON METHOD 3E43, THE EXPANSION RING MUST BE CAREFULLY UP OVER THREADS AND INTO "O" RING GROOVE, WITHOUT OVERSTRETCHING TEFLON RING
 - 8 CABLE MARKER SHALL CONSIST OF HEAT SHRINKABLE TUBING - WHITE PER MIL-I-23033/5, CLASS 1, WITH CABLE DESIGNATION STAMPED AS REQUIRED AND THEN COVERED BY A CLEAR HEAT SHRINKABLE TUBING PER MIL-I-23053/5, CLASS 2. THIS METHOD MAY BE USED AS AN ALTERNATE TO THE STANDARD METHOD OF MARKING SONAR CABLES
 - 9 THE METHOD SHOWN HERE IS PER 815-119728 FOR THE SONAR CABLES, FOR OTHER SHIPS SEE THEIR APPLICABLE SDI
 - 10 THIS FIGURE SUPERSEDES SHEET 3E4 OF DRAWING 803-5001027 AND SECTION 5, SHEET 140, OF DRAWING NAVSEC NO 9000-56202-73980.

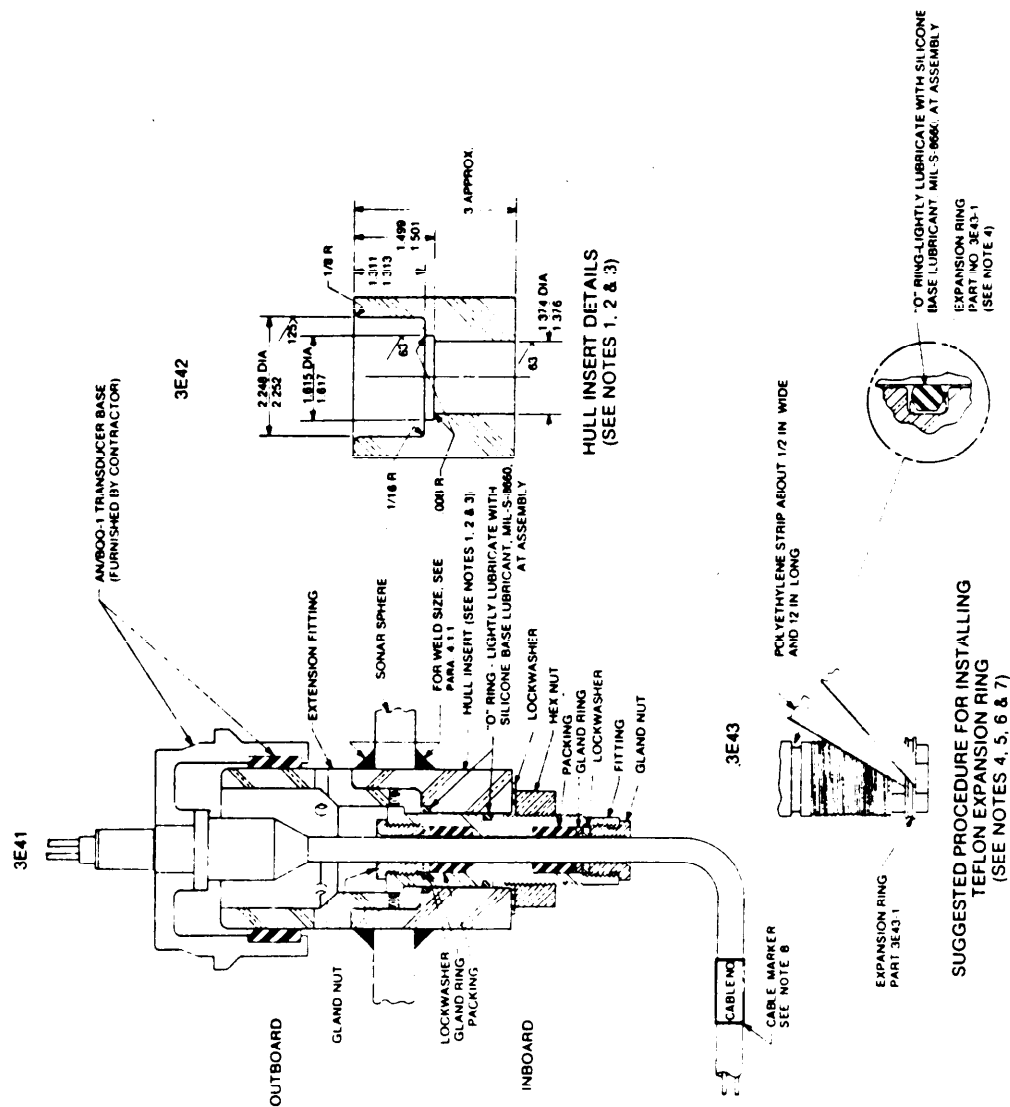
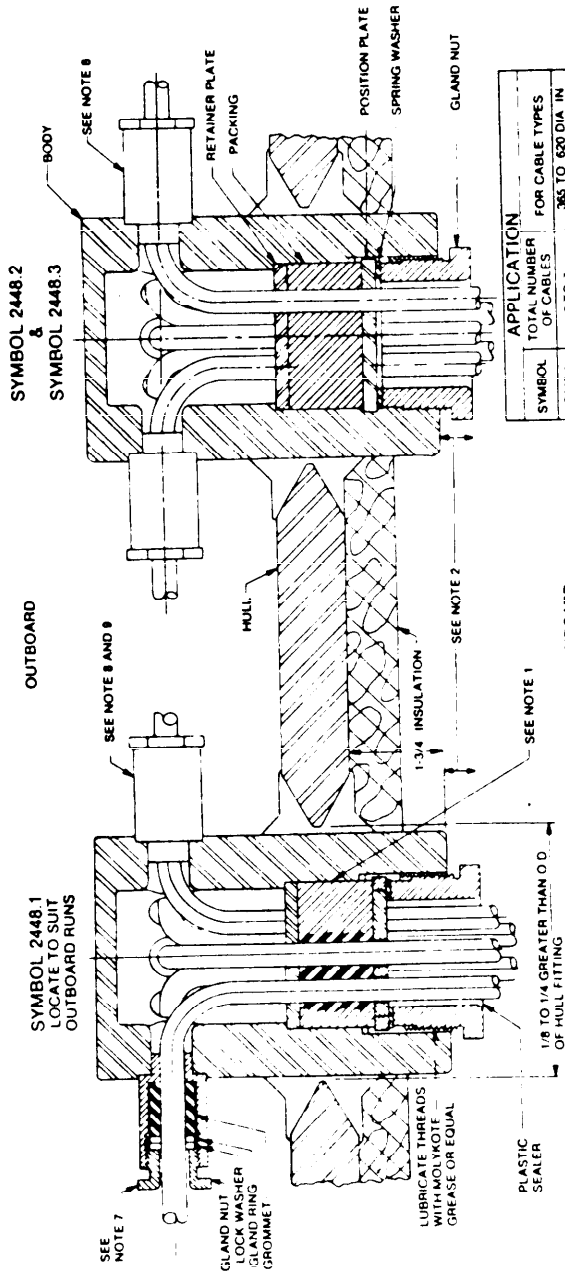


FIGURE 3E4 Hull fitting installation for sonar sphere

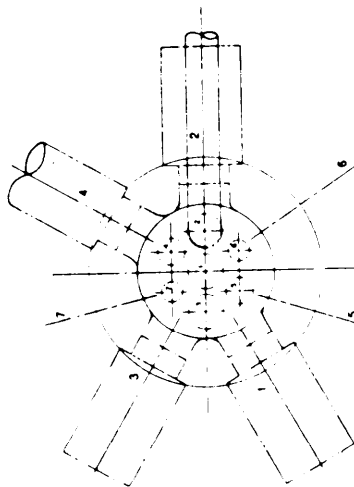
SH 132317200

- NOTES:
- 1 PRIOR TO WELDING, FITTING SHALL BE DISASSEMBLED BY REMOVING INTERIOR RUBBER PACKING. PLUGS SHALL REMAIN IN OUTBOARD TUBES UNTIL CABLES ARE INSTALLED.
 - 2 TURN GLAND NUT DOWN SO THAT THIS DIMENSION IS BETWEEN 19/32 AND 23/32 AT ASSEMBLY WITH CABLES DEPENDING ON TYPE AND NUMBER.
 - 3 CHECK COLOR CODING ON PACKING GROMMETS AND MEASURE O.D. OF CABLES TO MATCH WITH THE GROMMETS TO MATCH WITH SIZES LISTED IN CABLE AND PACKING ASSIGNMENT TABLE.
 - 4 THREAD CABLES IN PLACE, MAINTAINING PROPER RETENTION THROUGH POSITIONING PLATE, PACKING, RETAINER PLATE, GROMMET AND ASSOCIATED STUFFING TUBE.
 - 5 SECURE CABLES IN OUTBOARD STUFFING TUBES WITH GLAND RING, LOCK WASHER AND GLAND NUT IN SEQUENCE INDICATED. GLAND NUTS SHALL BE TIGHTENED DOWN METAL TO METAL.
 - 6 TIGHTEN INBOARD GLAND NUT IN PLACE AS INDICATED.
 - 7 TURN GLAND NUT DOWN METAL TO METAL AT ASSEMBLY.
 - 8 SEALING PLUGS FURNISHED WITH HULL FITTING SHALL REMAIN IN PLACE UNTIL CABLES ARE INSTALLED.
 - 9 FOR REFERENCE ON PRESSURE PROOF HULL FITTING AND STUFFING TUBE ASSY, SEE BU DWG 815-1197096 AND TUBE DWG 9000 56202-1197101.
 - 10 THIS FIGURE SUPERSEDES SHEET 3E5 OF DRAWING NAVSEC 803 500 1027 AND SECTION 5, SHEET 68 OF DRAWING NAVSEC NO 9000 56202 73980.



APPLICATION	
SYMBOL	TOTAL NUMBER OF CABLES
2448.1	2 TO 7
2448.2	8
2448.3	8

CABLE AND PACKING ASSIGNMENTS FROM DWG. NO. 1197101			
CABLE TYPE	CABLE O.D.	GROMMET	COLOR CODING FOR GROMMETS
DSS-2	365 TO 390	2447.1	3 BLUE DOTS
DSS-3	480 TO 500	2447.3	2 YELLOW DOTS
DSS-4	500 TO 625	2447.4	4 GREEN DOTS



VIEW SHOWING THE RELATIONSHIP OF STUFFING TUBES TO HOLE LOCATIONS IN PACKING, RETAINER AND POSITION PLATES, AND ALSO THE SEQUENCE OF SIZES TO BE FOLLOWED

FIGURE 3E5 Passing SS type cable through pressure hull of submarines

SH 132317201

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES:
1. UPPER AND LOWER ELECTRODE SURFACES SHALL BE FREE FROM CONTAMINANTS TO INSURE CIRCUIT WHEN IMMersed IN WATER.
 2. SURFACES OF TEFLON INSULATOR SHALL BE PROTECTED DURING INSTALLATION TO PREVENT DAMAGE AND/OR CONTAMINATION BY DIRT, GREASE, ETC.
 3. COAT "O" RINGS AND "O" RING SURFACES WITH GREASE CONFORMING TO SPEC MIL-G-4343 (DC7)
 4. REMOVE RECEPTACLE CAP FURNISHED WITH ELECTRODE ASSEMBLY PRIOR TO INSTALLATION OF MOLDED PLUG ASSEMBLY
 5. THIS ELECTRODE IS DESIGNED TO WITHSTAND 2000 PSI HYDROSTATIC PRESSURE AGAINST EITHER THE ELECTRODE OR THE RECEPTACLE SIDE
 6. THIS DRAWING WAS DEVELOPED FROM BUREAU OF SHIPS DRAWING NO. 815-1197212
 7. THIS FIGURE SUPERSEDES SHEET 3E6 OF DRAWING 803-5001027 AND SECTION 5, SHEET 138, OF DRAWING NAVSEC NO. 9600-58202-73960

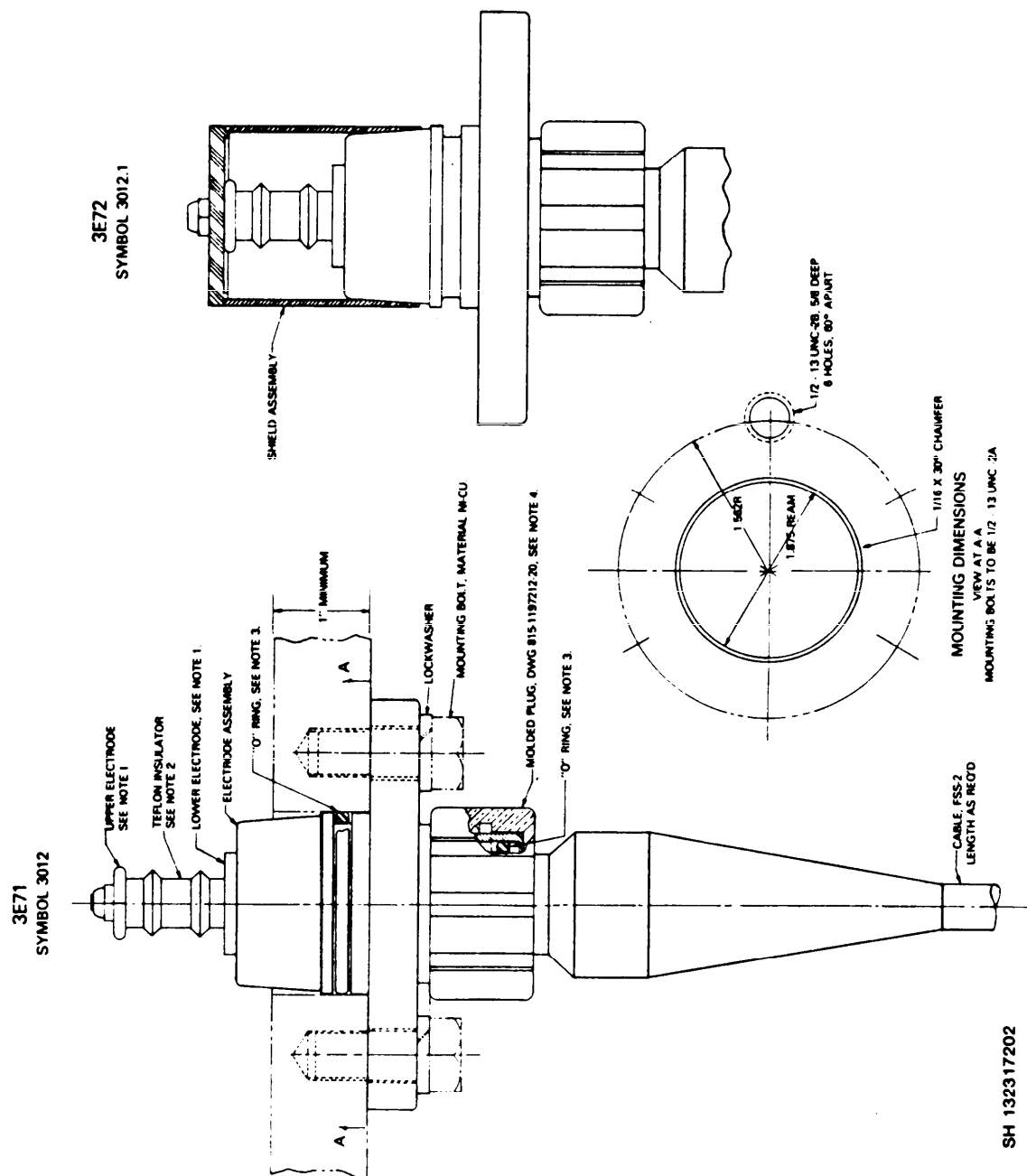


FIGURE 3E6 Mounting pressure proof electrodes on submarines

SH 132317202

DOD-STD-2003-3 (NAVY)
24 JUNE 1987

- NOTES:
1. TYPICAL METHODS SHOWN HEREON ARE FOR INFORMATION AND GUIDANCE TO INSTALLING ACTIVITIES FOR SEALING AND/OR SECURING OF PRESSURE PROOF PNI TYPE MOLDED CONNECTORS THAT HAVE BEEN TEMPORARILY DISCONNECTED FROM THEIR ASSOCIATED RECEPTACLE
 2. TEMPORARY SEALING OF PNI CONNECTOR HULL FITTINGS OR RECEPTACLES ARE SHOWN ON FIGURES 3E1 & 3E2
 3. CABLES SHALL BE PROPERLY SECURED OR PROTECTED TO PREVENT DAMAGE FROM CHAFFING, WELD SPATTER AND/OR OTHER HAZARDS
 4. THIS FIGURE SUPERSEDES SHEET 3E7 OF DRAWING 803-5001027

3E71

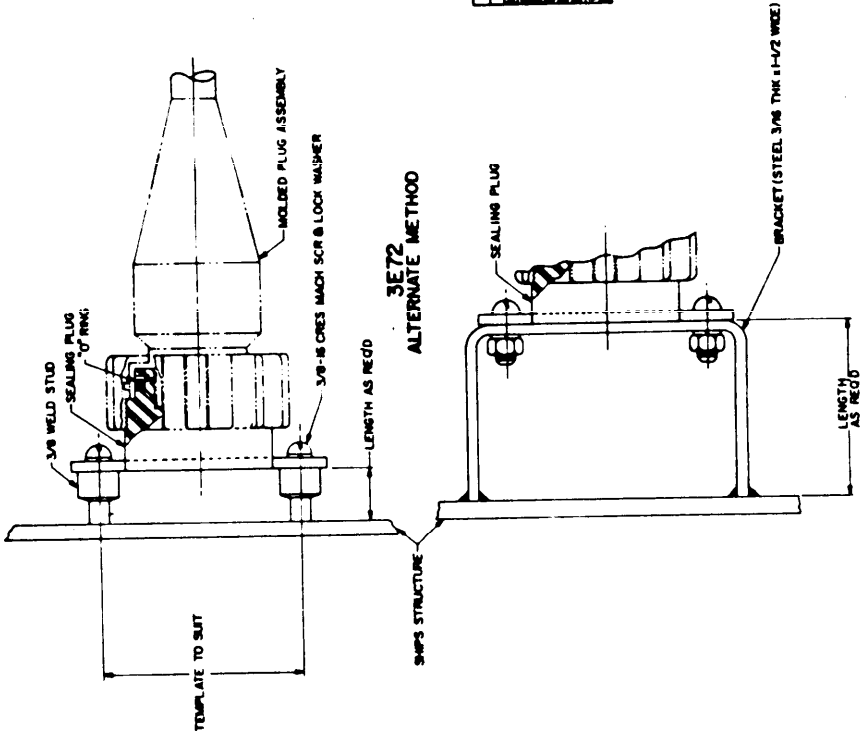


TABLE		
MOLDED PLUG OR ORS MACH SCR & LOCK WASHER		
M2-22-1/2	SYN	01
M2-22-1/2	SYN	02
M2-22-1/2	SYN	03
M2-22-1/2	SYN	04
M2-22-1/2	SYN	05
M2-22-1/2	SYN	06
M2-22-1/2	SYN	07
M2-22-1/2	SYN	08
M2-22-1/2	SYN	09
M2-22-1/2	SYN	10
M2-22-1/2	SYN	11
M2-22-1/2	SYN	12
M2-22-1/2	SYN	13
M2-22-1/2	SYN	14
M2-22-1/2	SYN	15
M2-22-1/2	SYN	16
M2-22-1/2	SYN	17
M2-22-1/2	SYN	18
M2-22-1/2	SYN	19
M2-22-1/2	SYN	20
M2-22-1/2	SYN	21
M2-22-1/2	SYN	22
M2-22-1/2	SYN	23
M2-22-1/2	SYN	24
M2-22-1/2	SYN	25
M2-22-1/2	SYN	26
M2-22-1/2	SYN	27
M2-22-1/2	SYN	28
M2-22-1/2	SYN	29
M2-22-1/2	SYN	30

FIGURE 3E7 Temporary sealing and securing pressure proof molded plug assemblies

SH 132317203

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE NAVY
 COMMANDER
 NAVAL SEA SYSTEMS COMMAND (SEA 5523)
 DEPARTMENT OF THE NAVY
 WASHINGTON, DC 20362-5101

OFFICIAL BUSINESS
 PENALTY FOR PRIVATE USE \$300

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 12503 WASHINGTON D C

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE NAVY

COMMANDER
 NAVAL SEA SYSTEMS COMMAND (SEA 5523)
 DEPARTMENT OF THE NAVY
 WASHINGTON, DC 20362-5101

NO POSTAGE
 NECESSARY
 IF MAILED
 IN THE
 UNITED STATES

