

NOTICE OF CHANGE

INCH-POUND

MIL-STD-777E(SH)
NOTICE 6
19 February 2002

MILITARY STANDARD

SCHEDULE OF PIPING, VALVES, FITTINGS, AND ASSOCIATED
PIPING COMPONENTS FOR NAVAL SURFACE SHIPS

TO ALL HOLDERS OF MIL-STD-777E(SH) :

1. THE FOLLOWING PAGES OF MIL-STD-777E(SH) HAVE BEEN REVISED AND SUPERSEDED THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
15	19 February 2002	15	7 February 1986
R-1.1	19 February 2002	R-1.1	13 November 1991
R-1.2	19 February 2002	R-1.2	13 November 1991
R-1.3	19 February 2002	NEW PAGE	
R-2.1	DELETED		
R-2.2	DELETED		
R-3.1	19 February 2002	R-3.1	13 November 1991
R-3.2	19 February 2002	R-3.2	13 November 1991
R-4.1	19 February 2002	R-4.1	13 November 1991
R-4.2	19 February 2002	NEW PAGE	

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD-777E(SH) will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

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<u>Category and group</u>	<u>Service</u>	<u>Date</u>
R-1	Waste water, oily water drainage, oily waste transfer, weather deck drainage systems and contaminated deck drains, 50 psig, 150°F	19 February 2002
R-2	Deleted	19 February 2002
R-3	Plumbing drains and vents, interior space deck drains and AC condensate drains, 50 psig, 150°F	19 February 2002
R-4	Sewage collection, holding and transfer (CHT) and vacuum collection, holding, and transfer (VCHT) 50 psig, 150°F	19 February 2002
S-1	Aqueous film-forming foam (AFFF) concentrate and AFFF/SW solution, 250 psig	November 13, 1991
T-1	Fixed CO ₂ , cofferdam inerting systems, 1900 psig	February 7, 1986
T-2	HALON 1301 fire extinguishing systems distribution piping and discharge piping, 2800 psig, 200°F	February 7, 1986
T-3	Halon 1301 fire extinguishing systems actuation piping, 2800 psig, 200°F	February 7, 1986
U-1	Stripping, fuel, 150 psig	February 7, 1986
V-1	Voice tubes	February 7, 1986
W-1	Pneumatic tubes	February 7, 1986
Y-1	Overflows, sounding tubes, vents and air escapes for JP-5 tanks	November 13, 1991
Y-2	Overflows, sounding tubes, vents and air escapes for fuel tanks (except JP-5)	February 7, 1986
Y-3	Overflows sounding tubes, vents and air escapes for other than fuel tanks (fresh water (except potable) clean ballast, voids, etc.)	February 7, 1986
Y-4	Vents, reduction gear, 5 psi ambient	November 13, 1991

Category and group	Services	Maximum system pressure psig	Maximum system temperature °F	Remarks
R-1	Waste water, oily water drainage, oily waste transfer, weather deck drainage systems and contaminated deck drains	50	150	See notes R-1-1 through R-1-5

Item	Types	Material	Applicable documents	Remarks
Pipe	Seamless or welded	90-10 Copper-Nickel	MIL-T-16420	
	Seamless	Aluminum alloy, 5086	WW-T-700/5	
		Carbon Steel, galvanized	ASTM A106, grade B	
		Glass Reinforced Plastic	MIL-P-24608	
Valves	Gate, 2-1/2 to 12 NPS	Bronze	Drawing 803-2177917	Flanged ends only
	Gate, 1/4 to 2 NPS		Drawing 803-1385714	Union ends only
	Globe/angle stop and stop check 2-1/2 NPS and above		Drawing 803-1385541	Flanged ends only
	Globe/angle stop, stop check and needle 1/4 to 2 NPS		Drawing 803-4384536	Union ends only
	Swing check, 2-1/2 to 12 NPS		Drawing 803-1385637	Flanged ends only
	Swing check, 1/4 to 2 NPS		Drawing 803-1385721	Union ends only
	Ball, 1/4 to 2-1/2 NPS	Bronze	Drawing 803-5001003	Bronze body with Bronze, Ni-Cu, or Cu-Ni end piece
		Copper-Nickel		Cu-Ni body with Cu-Ni end piece
	Ball, 3 to 6 NPS	Bronze	Drawing 803-5001004	See Note 6.C.(A) Material 6 NPS valve is butt welded only
Ball or plug, fullport, 1-1/4 to 8 NPS	MIL-V-24509			

SUPERSEDES PAGE R-1.1 OF NOTICE 2 TO MIL-STD-777E

R-1.1

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Category and group	Services	Maximum system pressure psig	Maximum system temperature °F	Remarks
R-1 cont'd	Waste water, oily water drainage, oily waste transfer, weather deck and contaminated deck drains	50	150	See notes R-1-1 and R-1-4

Item	Types	Material	Applicable documents	Remarks
Fittings	Silver-brazing	Bronze	MIL-F-1183	
	Deck drain	Copper-Nickel	Drawing 803-1385789	
		Carbon steel, galvanized	Commercial	
	Butt welding	90-10 Copper-Nickel	Drawing 803-1385880	
		Aluminum alloy, 5086 or carbon steel, galvanized.	ASME B16.9	
	Socket bonded	Glass Reinforced Plastic	MIL-P-24608	See notes R-1-4 and R-1-5
	Socket welding	Carbon steel, galvanized. ASTM A105 or ASTM A181, class 70	ASME B16.11	
Mechanically attached (MAFs)	Various	ASTM F1387	See 4.49	
Take-down Joints	Flanges, silver-brazing	Bronze	MIL-PRF-20042	
	Flanges, socket bonded	Glass Reinforced Plastic	MIL-P-24608	See notes R-1-4 and R-1-5
	Flanges, socket welding	Carbon steel, galvanized. ASTM A105 or ASTM A181, class 70	ASME B16.5	
Gaskets	Sheet	Synthetic rubber	MIL-PRF-1149	
		Synthetic rubber cloth inserted	HH-P-151	
Flange bolting	Bolts, studs and nuts	Nickel-Copper		See 4.15

SUPERSEDES PAGE R-1.2 OF NOTICE 2 TO MIL-STD-777E

R-1.2

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NEW PAGE

Category and group	Services	Maximum system pressure psig	Maximum system temperature °F	Remarks
R-1 cont'd	Waste water, oily water drainage, oily waste transfer, weather deck and contaminated deck drains	50	150	See notes R-1-1 and R-1-4

NOTES:

- R-1-1 Aluminum pipe, fittings and drains are to be used in area of aluminum structures only.
- R-1-2 Steel pipe, fittings and deck drains are to be used only in the weather deck drains above the main deck in the area of steel structure outside ship envelope.
- R-1-3 Copper-Nickel pipe, bronze fittings and valves to be used in weather deck drains within ship envelope, oily waste, waste water and oily waste transfer.
- R-1-4 Glass Reinforced Plastic pipe or fittings may be used in oily waste transfer. The mass of Glass Reinforced Plastic pipe installed shall be limited to 25 pounds per 1000 cubic feet of compartment volume, because of personnel fire-fume hazard.
- R-1-5 Adhesive in accordance with MIL-P-24608 shall be used for joining GRP pipe to GRP fittings and flanges.

R-1.3

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Category and group	Services	Maximum system pressure psig	Maximum system temperature °F	Remarks
R-3	Plumbing drains and vents, interior space deck drains and AC condensate drains	50	150	

Item	Types	Material	Applicable documents	Remarks
Pipe	Seamless or welded	90-10 Copper-Nickel	MIL-T-16420	See note R-3-1
		Carbon Steel (galvanized)	ASTM A106	See note R-3-2
	Seamless	Copper	MIL-T-24107	See note R-3-3
		Aluminum alloy 5086	ASTM B 210	See note R-3-5
		Glass Reinforced Plastic (GRP)	MIL-P-24608	See note R-3-7
Valves	Flanged, 50 psig scupper	Bronze	Drawing 810-1385707	
	Swing check 1/4 to 2 NPS		Drawing 803-1385721	Union ends only
	Swing check 2-1/2 to 12 NPS		Drawing 803-1385637	Flanged ends only
	Ball or plug, full port, 1-1/4 to 8 NPS		MIL-V-24509	See note R-3-4
Fittings	Silver-brazing	Bronze	MIL-F-1183	See note R-3-6
	Socket welding	Carbon Steel, galvanized. ASTM A105, ASTM A181, class 70	ASME B16.11	
	Butt welding	Carbon steel, galvanized. ASTM A105, ASTM A234, class WPB, or ASTM A181, class 70	ASME B16.9	
		Copper-Nickel	Drawing 803-1385880	
	Deck drain	Aluminum alloy 5086 Copper-Nickel	Drawing 803-1385789	See note R-3-5
	Mechanically attached (MAFs)	Various	ASTM F1387	See 4.49
	Socket (bonded)	Glass Reinforced Plastic	MIL-P-24608	See note R-3-7 and R-3-8

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R-3.1

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SUPERSEDES PAGE R-3.2 OF NOTICE 2 TO MIL-STD-777E

Category and group	Services	Maximum system pressure psig	Maximum system temperature °F	Remarks
R-3 cont'd	Plumbing drains and vents, interior space deck drains and AC condensate drains	50	150	

Item	Types	Material	Applicable documents	Remarks
Take-down joints	Flanges, silver-brazing	Bronze	MIL-PRF-20042	
	Union, silver-brazing		MIL-F-1183	
	Flanges, socket (bonded)	Glass Reinforced Plastic	MIL-P-24608	
Gaskets	Sheet	Synthetic rubber	MIL-PRF-1149	
Flange bolting	Bolts, studs and nuts	Nickel-Copper		See 4.15

NOTES:

- R-3-1 Required for gravity water closet and urinal drains, and sea water waste drains, and vent piping subject to sea water emersion up to a height of fixture overflow, and sewage treatment plant effluent overboard discharge.
- R-3-2 Steel pipe and fittings are to be used only in vent piping above the height of fixture overflows.
- R-3-3 Use for fresh water drains and vents up to a height of fixture overflow.
- R-3-4 Impregnation of castings as an aid in meeting tightness test is permissible on flanged end valves which have no need for application of heat in either manufacture or installation. Impregnation requirements of NAVSEA S9074-AQ-GIB-010/278 are applicable.
- R-3-5 Use aluminum alloy for fresh water drains in interior aluminum superstructure.
- R-3-6 Fittings used in gravity drainage systems shall promote smooth flow and facilitate cleaning. Pipe bends, long radius elbows, sweep ties, laterals and reducing fittings shall be used to the maximum extent practicable. The use of short radius elbows, tees and bushings shall be avoided.
- R-3-7 Glass Reinforced Plastic pipe and fittings may be used only for interior space deck drains and plumbing vents except for deck drains from spaces subject to fuel spills. The mass of glass reinforced plastic pipe installed shall be limited to 25 pounds per 1000 cubic feet of compartment volume, because of personnel fire-fume hazard.
- R-3-8 Adhesive in accordance with MIL-P-24608 shall be used for joining GRP pipe to GRP fittings and flanges.

R-3.2

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Category and group	Services	Maximum system pressure psig	Maximum system temperature °F	Remarks
R-4	Sewage collection, holding and transfer (CHT) and vacuum collection, holding and transfer (VCHT)	50	150	See notes R-4-1 and R-4-3

Item	Types	Material	Applicable documents	Remarks
Pipe	Seamless	Glass Reinforced Plastic (GRP)	MIL-P-24608	See note R-4-5
	Seamless or welded	90-10 Copper-Nickel	MIL-T-16420	
Valves	Swing check 1/4 to 2 NPS	Bronze	Drawing 803-1385721	Union ends only
	Swing check 2-1/2 to 12 NPS		Drawing 803-1385637	Flanged ends only
	Swing check 14 NPS and above	Bronze Nickel-Aluminum-Bronze	MIL-V-17547	
	Swing check with manual jack-open device	Bronze		See note R-4-2
	Ball or plug, full port		MIL-V-24509	
	Ball or plug, 3 port, two position			
Fittings	Welding	Copper-Nickel	Drawing 803-1385880	
	Silver-brazing	Bronze	MIL-F-1183	
	Socket bonded	Glass Reinforced Plastic	MIL-P-24608	See note R-4-4 and R-4-5
	Mechanically attached (MAFs)	Various	ASTM F1387	See 4.49
Take-down joints	Flanges, silver brazing	Bronze	MIL-PRF-20042	
	Unions, silver brazing		MIL-F-1183	

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R-4.1

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Category and group	Services	Maximum system pressure psig	Maximum system temperature °F	Remarks
R-4 (cont'd)	Sewage collection, holding and transfer (CHT) and vacuum collection, holding and transfer (VCHT)	50	150	See notes R-4-1 and R-4-3

Item	Types	Material	Applicable documents	Remarks
Gaskets	Sheets	Synthetic rubber	MIL-PRF-1149	
			HH-P-151	
Flange bolting	Bolts, studs and nuts	Nickel-Copper		See 4.15

NOTES:

- R-4-1 Deck discharge connections shall be in accordance with Drawing 803-4444650.
- R-4-2 Impregnation of castings as an aid in meeting tightness test is permissible on flanged end valves which have no need for application of heat in either manufacture or installation. Impregnation requirements of NAVSEA S9074-AQ-GIB-010/278 are applicable.
- R-4-3 This category and group shall apply to VCHT system collection piping, waste drain pump and sewage pump suction and discharge piping, overflow and vent piping for CHT, VCHT and waste drain tanks, and aeration and tank washdown piping located inside CHT, VCHT and waste drain tanks.
- R-4-4 May be used only for CHT, VCHT or waste drain tank overflow and vent piping, and for piping installed inside CHT, VCHT or waste drain tanks, such as pump suction, aeration, or tank washdown piping. The mass of Glass Reinforced Plastic pipe installed shall be limited to 25 pounds per 1000 cubic feet of compartment volume, because of personnel fire-fume hazard.
- R-4-5 Adhesive in accordance with MIL-P-24608 shall be used for joining GRP pipe to GRP fittings and flanges.

R-4.2

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