

D E S C R I P T I O NPRODUCT COVERED:

Glass-reinforced nylon sea valves and hose barbs. Models covered:

<u>Sea Valve</u>		<u>Tailpiece</u>		<u>Size (Inches)</u>
<u>Part No.</u>	<u>Model No.</u>	<u>Part No.</u>	<u>Model No.</u>	
933333	BV3/4	933143	BVTP3/4	3/4
933334	BV1	933144	BVTP1	1
933335	BV1-1/4	933145	BVTP1-1/4	1-1/4
933336	BV1-1/2	933146	BVTP1-1/2	1-1/2
933338	BV2	933148	BVTP2	2

NOTE: Refer to Ill. 1.

ALTERNATE CONFIGURATIONS:

<u>Mushroom Thru-Hull Assemblies</u>				<u>Flush Head Thru-Hull Assemblies</u>			
<u>Part Nos.</u>				<u>Part Nos.</u>			
931132	931142	931152	931160	932132	932142	932152	932160
931133	931143	931153		932133	932143	932153	
931134	931144	931154		932134	932144	932154	
931135	931145	931155		932135	932145	932155	
931136	931146	931156		932136	932146	932156	
931138	931148	931158		932138	932148	932158	
931232	931242	931252	931260	932232	932242	932252	932260
931233	931243	931253		932233	932243	932253	
931234	931244	931254		932234	932244	932254	
931235	931245	931255		932235	932245	932255	
931236	931246	931256		932236	932246	932256	
931238	931248	931258		932238	932248	932258	

NOTE: Refer to Ill. 1A.

ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

The above products are designed to provide positive closure in a piping system of a marine craft's hull. They are usually used in conjunction with a threaded thru-hull fitting.

SW/MGF/aah

INSTALLATION INSTRUCTIONS:

Installation instructions shall be provided as per Ills. 2 and 2A.

CONSTRUCTION DETAILS:

Construction details are specified in the following descriptive pages.

GLASS-REINFORCED NYLON SEA
VALVES, 1/2 AND 3/4 INCH SIZES
SHOWN; ALSO REPRESENTS 1, 1-1/4
1-1/2 AND 2 INCH SIZES:

FIG. 1 (R92-4700)
FIG. 2 (R92-4675)

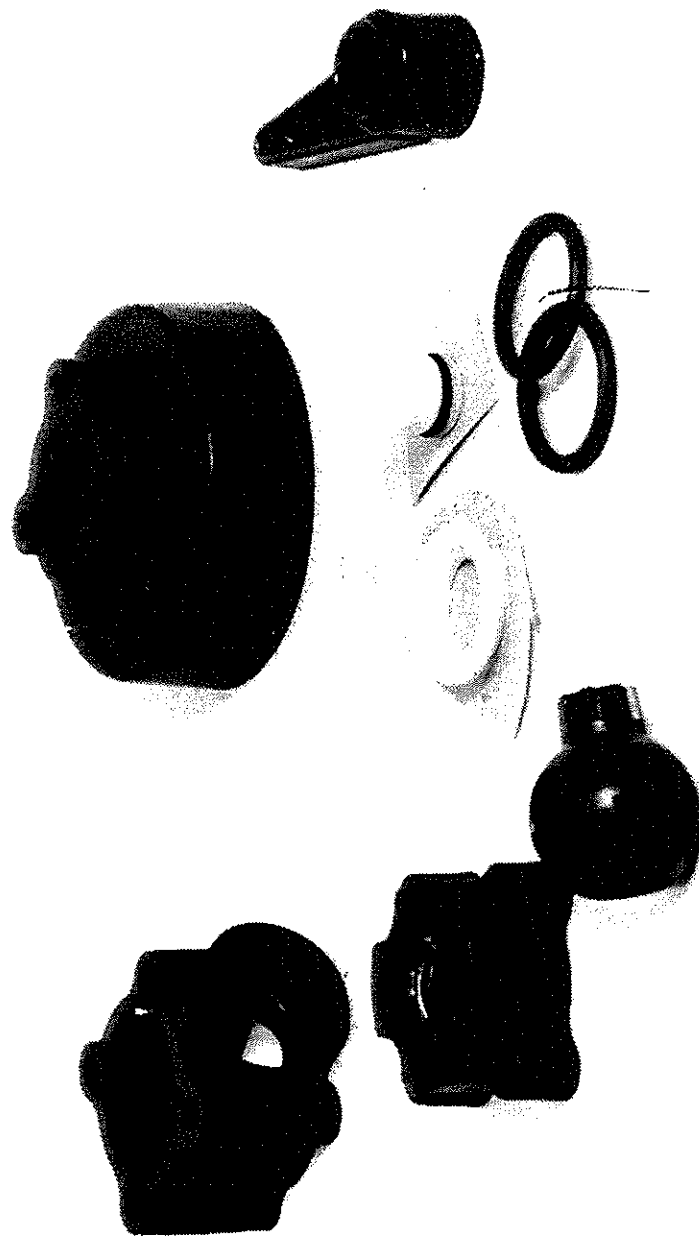
General - The general design, shape and arrangement shall be as shown.

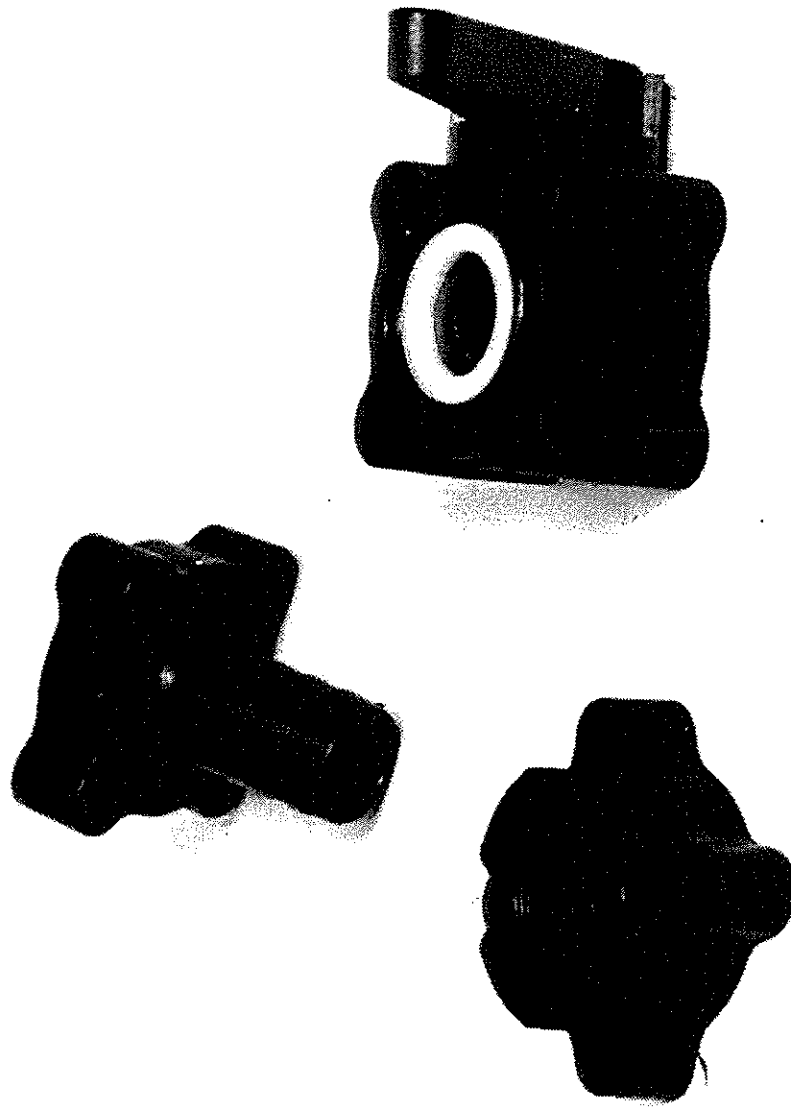
1. Operating Lever - Glass-reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One provided with slot for mounting and "FLOW", "OFF" and "3-WAY" indicators. Refer to Ill. 3.
2. Stem - Glass-reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One provided. Molded into ball, designed with hexagon shape and threads to accommodate screw and handle.
3. Ball - Glass-reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One provided. Fits into body.
4. Body - Glass-reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One side of main cylinder has opening for stem and handle.
5. Flange - Glass-reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One provided. Includes four openings for mounting sea valve to boat hull structure. Refer to Ills. 4 through 8 for location of openings.
6. Ball Seals - Two provided. Part No. Delrin 500 CL by E.I. duPont de Nemours. Refer to Ills. 4 through 8 for locations.
7. Screw - Stainless steel. One provided. Fits into stem to hold handle in place.
8. Fasteners - Four provided. 1/4"-20 RHMS 302/304, 18-8 stainless steel, and 1/4"-20 nylock nuts 302/304, 18-8 stainless steel.
9. Cap - Glass reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One provided. Fits into opening in handle.
10. "O" Rings - Nitrile rubber. Designated as Gapi compound K6 Buna N 70 shore supplied by General Seal Company. Three provided - two located in the body of the valve and one located in the operating lever.

11. Integral Hose Barb - Glass-reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One provided. Refer to Ills. 4 through 8 for location and dimensions.

Alternate - 90 degree right angle hose barb. Composition same as above.

12. Thru-Hull Fitting - Optional. Glass-reinforced nylon, Part No. 8018 WT by E.I. duPont de Nemours. Includes a symbol of a rising sun to show U.V. inhibitors added.

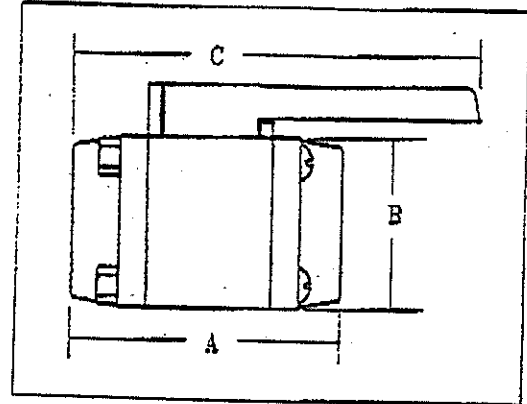
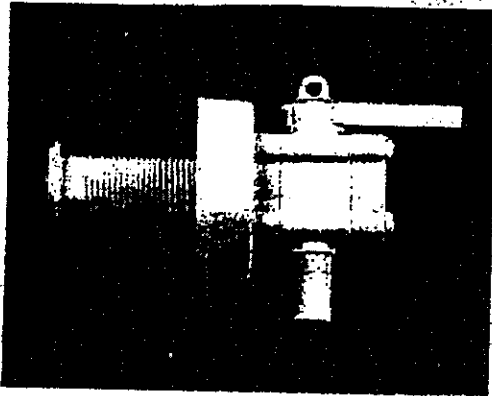




BALL VALVES

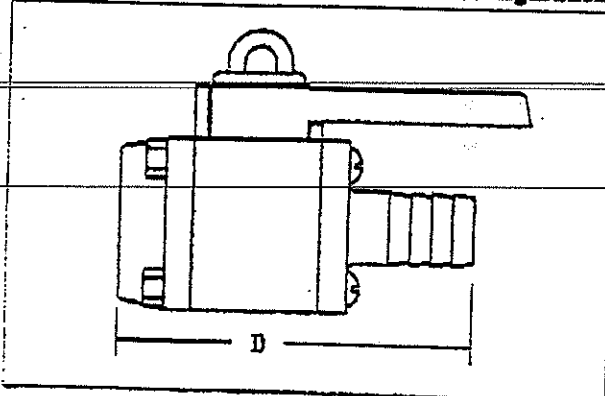
NEW

This 1992 version of our Ball Valve is made from our time tested, and marine proven **Marelon[®]** material. These valves incorporate "Dynamic Seals" and are compatible with all standard NPT Thru-Hulls, Tail Pipes, and Elbows.



Part No.	Model No.	Thread Size	Body Length	Body Diameter	Length W/ Handle	Length W/ Tail Piece
			A	B	C	D
933333	BV 3/4"	3/4"	2 7/8"	1 3/4"	4"	3 7/8"
933334	BV 1"	1"	4 5/8"	2 1/2"	6 1/4"	5 5/8"
933335	BV 1 1/4"	1 1/4"	4 5/8"	2 1/2"	6 1/4"	5 5/8"
933336	BV 1 1/2"	1 1/2"	5 1/2"	2 3/4"	7 5/8"	6"
933338	BV 2"	2"	5 1/4"	2 3/4"	7 5/8"	6"

Female thread to Tail Piece Ball Valve configuration



Part No.	Model No.	Thread Size	Hose Size
933143	BVTP 3/4	3/4"	3/4"
933144	BVTP 1	1"	1"
933145	BVTP 1 1/4	1 1/4"	1 1/4"
933148	BVTP 1 1/2	1 1/2"	1 1/2"
933148	BVTP 2	2"	2"

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11. Integral Hose Barb - Glass-reinforced nylon, Part No. 70G131BK by E.I. duPont de Nemours. One provided. Refer to Ills. 4 through 8 for location and dimensions.

Alternate - 90 degree right angle hose barb. Composition same as above.

12. Thru-Hull Fitting - Optional. Glass-reinforced nylon, Part No. 8018 WT by E.I. duPont de Nemours. Includes a symbol of a rising sun to show U.V. inhibitors added.

NEW














MARELON INTEGRATED PLUMBING SYSTEM

The new Marelon® Integrated Plumbing System affords the installation of Thru-Hull and Valve assemblies with a wide variety of connections. This U.L./A.B.Y.C. valve system permits the thru-hull king nut to bed against the hull or a backing block and, the valve body is then mounted to the king nut. The assembly becomes an integral unit that provides exceptional strength while offering all the advantages of a non-metallic corrosion proof system.

Choice of input connections should be made prior to final assembly, as its attachment is part of the completed unit. Connections are available in female pipe thread, straight hose barb, or for more compactness, a 90 degree hose barb. The design permits the orientation of the 90 degree hose barb in any of three directions. Also available with this unique system is a 90 degree input valve body which occupies the least space of any other available. The unique plug in the valve handle can be used as an external burr plug for the mating thru-hull in the event the valve needs to be removed or disassembled without hauling the boat.

To order the Marelon® Integrated Plumbing System for your specific requirements, follow these simple steps as shown in the example below: (A six digit part number starting with 93 is required.)

93 - Outlet # _____ - Body # _____ - Inlet # _____ - Size # _____

OUTLET #	BODY #	INLET #	SIZE #
#1 =  Mushroom Thru-Hull With King Nut	#1 =  Straight Thru Valve w/ Plug/Bung in Handle (Order only when using a Thru-Hull Outlet.)	#3 =  Female Pipe Thread	#2 = 1/2"
#2 =  Flush Thru-Hull With King Nut	#2 =  90 Degree Hose Barb Body Option w/ Plug/Bung in Handle (Order only when using a Thru-Hull Outlet.)	#4 =  Straight Hose Barb	#3 = 3/4" #4 = 1"
#3 =  Female Pipe Thread w/ S.S. Hex Nuts for Body Bolts	#3 =  Straight Thru Valve With Plain Handle	#5 =  90 Degree Hose Barb	#5 = 1 1/4"
#4 =  Straight Hose Barb w/ S.S. Hex Nuts for Body Bolts	#4 =  90 Degree Hose Barb Body Option w/ Plain Handle	#6 =  Blank End (Can be used w/ 90 degree Hose Barb Valve, or drilled and tapped for special threaded connections)	#6 = 1 1/2" #8 = 2"
#5 =  90 Degree Hose Barb w/ S.S. Hex Nuts for Body Bolts	EXAMPLE - HOW TO ORDER		

VALVE # 932143 JUL 01 1992 for 3/4" I.D. hose

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 LL 1A

UNDERWRITERS LABORATORIES, INC.

93 + 2 (FLUSH HEAD THRU-HULL) + 1 (VALVE BODY) + 4 (STRAIGHT HOSE BARB) + 3 (3/4" SIZE)

MARELON® THRU-HULL/SEA-VALVE INSTRUCTIONS

9. **MAINTENANCE:** FORESPAR®/R.C. Marine's MARELON® Thru-Hull/Sea-Valves are corrosion free and provide great peace of mind in that regard. They are relatively maintenance free; lubrication is not required. All that is required is to open and close them two or three times on an occasional basis. The frequency of this is determined by two (2) things. Whether the valves are routinely kept in an open or closed position, and the rate of sea growth fouling that occurs where you keep your boat. If the fouling is high and the valves are usually kept in the closed position, it may be necessary to operate the valves every couple of months to free the valve ball from growth. In the low growth/routinely open situation, once every six (6) months may be adequate.

All MARELON® valves of the integral thru-hull design have a removable plug in the handle. This plug is made to fit into the external end of the thru-hull fitting. If the occasion arises that you want to disassemble a valve while the boat is in the water, someone willing to go into the water can insert this plug into the thru-hull.

When properly installed in accordance with the following instructions, FORESPAR®/R.C. Marine's MARELON® Thru-Hull/Sea-Valve assemblies will meet and exceed all A.B.Y.C. recommendations as well as all the U.L. #1121 standards (August 21, 1990 Revised).

1) **HULL OPENINGS:** Prepare a clean round hole in the desired hull location and of the diameter for the chosen thru-hull fitting. See the diameter requirements below. For flush head thru-hull fittings only, make an external 45° chamfer 1/4" deep. If the recommended backing block is used, a uniform hole diameter must extend through the backing block.

1/2" and 3/4" Thru-Hull/Sea-Valves = 1-1/8" Hole
1" and 1-1/4" Thru-Hull/Sea Valves = 1-1/2" Hole
1-1/2" and 2" Thru-Hull/Sea-Valves = 2-1/8" Hole

2. **BACKING BLOCKS:** A backing block or an equivalent structure molded integrally into the resin/glass hull lay up is required for installations on all non-flat hull surfaces. This is also recommended procedure for flat surfaces as well. For wood backing blocks, white oak is a commonly used wood and there may be other suitable materials as well.

3. **THRU-HULL FITTING LENGTH:** The thru-hull fitting when fully installed should project beyond the internal hull/backing block surface no less than 1/2" and no more than 1-1/4". Engagement of five (5) full threads will generate the full loading strength of the thru-hull/sea-valve assembly which is well in excess of the 500 pounds required by the A.B.Y.C. and U.L. standards.

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LABEL FACSIMILE

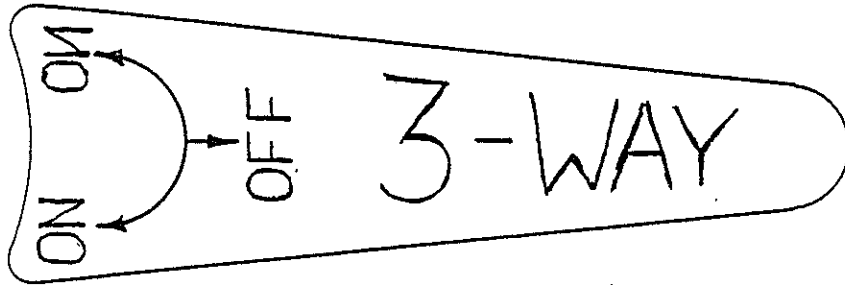


Fig. #1

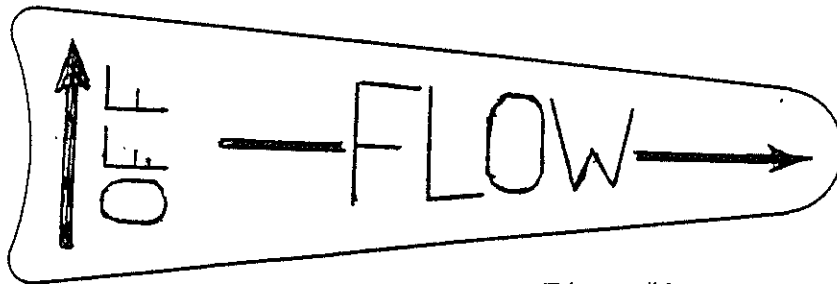


Fig. #2

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ILL. 3

THERMAL CONDITIONING TEST:

METHOD

Model 931142, 1/2 inch sea valve, was installed in accordance with the manufacturer's instructions on separate pieces of 1 inch thick, kiln-dried boards with 1 inch thick backing blocks of the material. Threaded couplings and a 1 foot length of iron pipe of equal diameter were attached to the thru-hull fittings. One sample of each size was placed in an air oven maintained at $60 \pm 5^{\circ}\text{C}$ ($140 \pm 9^{\circ}\text{F}$) and the second sample was placed in a cold chamber maintained at $-30 \pm 3^{\circ}\text{C}$ ($-22 \pm 5.4^{\circ}\text{F}$) for a period of fifty hours.

Immediately following the initial exposure, the samples in the oven and in the cold chamber were subjected to a minimum of six complete cycles of operation and then they were exchanged and conditioned for an additional 50 hours.

RESULTS

NOTE: The 1 inch thick backing block could not be used for this sample due to the fact that the thru-hull fitting, with pulley screwed into the sea valve, left a gap of approximately 2-1/8 inches; therefore, a thickness of 2-1/8 inches of dried board was used.

There was no evidence of damage, distortion or deterioration of any of the samples.

The results:

 X were acceptable. _____ were not acceptable.

T E S T R E C O R D N O. 1SAMPLES:

Samples of sea valves, Model Nos. BV1/2, BV3/4, BV1, BV1-1/4, BV1-1/2 and BV2, with integral tailpiece, Model Nos. BVTP1/2, BVTP3/4, BVTP1, BVTP1-1/4, BVTP1-1/2 and BVTP2, were provided for examination and testing. Samples of sea valves, Models BV1/2 and BV3/4, with tailpiece, Models BVTP1/2 and BVTP3/4, were subjected to the following tests.

The samples tested were considered the most critical and were therefore representative of the other configurations.

MOISTURE ABSORPTION TEST:

METHOD

Model 931142, 1/2 inch sea valve, was dried for eight hours in an air oven maintained at 60°C (140°F) for eight hours. Following this drying period, the samples were removed from the air oven. All fittings were tightened and the sample assemblies were submerged in freshwater maintained at room temperature, approximately 23°C (75°F), for eight hours.

RESULTS

There was no evidence of deterioration, damage or deformation of the samples as a result of this exposure.

The results:

 X were acceptable. were not acceptable.

EXPOSURE TO SOLVENTS TEST:

METHOD

The sample assembly was subjected to 30 days continuous immersion at 23°C in each of the following liquids. A separate sample was used for each immersion.

1. No. 3 swelling oils (ASTM D471-1977)
2. A & C reference fuels (ASTM D471-1977)
3. Sodium hypochlorite (5.25 percent by weight)
4. Commercial-type household ammonia
5. Freshwater
6. Saltwater (5 percent sodium chloride)

Following the exposure, the samples were examined for evidence of swelling, decomposition or deformation.

RESULTS

There was no degradation or decomposition as a result of this exposure.

The results of the 1/2 inch sea valve:

 X were acceptable. were not acceptable.

1. 931142 - no damage
2. 933142 - no damage
3. 931142 - no damage
4. 933142 - no damage
5. 933142 - no damage
6. 933142 - no damage

SHOCK TEST:

METHOD

The test sample used in the Vibration Test (Model 933142) was subjected to 5,000 impacts of 10g peak at a rate of six impacts per minute. The duration of the impact was 20 to 25 milliseconds measured at the base of the half sine wave shock envelope.

RESULTS

There was no evidence of cracking, distortion or deformation of the sample as a result of this test.

The results:

 X were acceptable. were not acceptable.

VIBRATION TEST:

METHOD

Model 931142, 1/2 inch sea valve, was mounted on a test fixture which in turn was bolted to a vibration test machine. The test sample was subjected to a variable frequency in each of the three rectilinear axes, horizontal, vertical and lateral, for four hours in each plane (total 12 hours) at a peak-to-peak input of 0.030 ± 0.001 inch. The vibration frequency was automatically cycled at a constant rate from 10 to 60 to 10 hertz every four minutes.

Conditions of Installation:

A threaded thru-hull fitting or sea valve is to be tested while connected to a 1 foot (0.3 m) length of iron pipe size (IPS) pipe. A thru-hull fitting or sea valve intended for use with a hose only is to be tested with a 3 foot (0.9 m) length of 30R2, Type 2 hose, complying with the Standard for Fuel and Oil Hoses, SAE J30, and supported at the free end by a bracket connected directly to the specific test table.

NOTE: This type of hose is no longer available. Conducted with 3 foot piece of 1/2 inch hose.

RESULTS

There was no evidence of cracking, deterioration or distortion of the sample as a result of this test.

The results:

 X were acceptable. were not acceptable.

VIBRATION TEST:

METHOD

Model 933142, 1/2 inch sea valve, was mounted on a test fixture which in turn was bolted to a vibration test machine. The test sample was subjected to a variable frequency in each of the three rectilinear axes, horizontal, vertical and lateral, for four hours in each plane (total 12 hours) at a peak-to-peak input of 0.030 ± 0.001 inch. The vibration frequency was automatically cycled at a constant rate from 10 to 60 to 10 hertz every four minutes.

Conditions of Installation:

A threaded thru-hull fitting or sea valve is to be tested while connected to a 1 foot (0.3 m) length of iron pipe, size (IPS) pipe. A thru-hull fitting or sea valve intended for use with a hose only is to be tested with a 3 foot (0.9 m) length of 30R2, Type 2 hose, complying with the Standard for Fuel and Oil Hoses, SAE J30, and supported at the free end by a bracket connected directly to the specific test table.

NOTE: No thru-hull fitting was provided for this sample; therefore, a bolt with identical threads was used.

NOTE: This type of hose is no longer available. Conducted with 3 foot piece of 1/2 inch hose.

RESULTS

There was no evidence of cracking, deterioration or distortion of the samples as a result of this test.

The results:

 X were acceptable. were not acceptable.

SHOCK TEST:

METHOD

The test sample used in the Vibration Test (Model 931142) was subjected to 5,000 impacts of 10g peak at a rate of six impacts per minute. The duration of the impact was 20 to 25 milliseconds measured at the base of the half sine wave shock envelope.

RESULTS

There was no evidence of cracking, distortion or deformation of the sample as a result of this test.

The results:

 X were acceptable. were not acceptable.

OPERATION TEST:

METHOD

Model 931142, 1/2 inch sea valve with the thru-hull fitting provided, was mounted on a simulated hull section. It was threaded into a test chamber capable of maintaining a controlled hydrostatic head on the external opening of the thru-hull fitting. The chamber was filled with water and pressurized to 10 pounds per square inch gauge and the sea valve operated 25 complete cycles of full, open and close. Next, the sea valve was opened and the equivalent of marsh grass and broken clam shells was inserted through the thru-hull. The sea valve was then closed and the procedure repeated five times. Following this, the sea valve was checked for water leakage.

RESULTS

There was no physical failure, impairment of operation or leakage as a result of this test.

The results:

 X were acceptable. were not acceptable.

OPERATION TEST:

METHOD

Model 933142, 1/2 inch sea valve with the thru-hull fitting provided, was mounted on a simulated hull section. It was threaded into a test chamber capable of maintaining a controlled hydrostatic head on the external opening of the thru-hull fitting. The chamber was filled with water and pressurized to 10 pounds per square inch gauge and the sea valve operated 25 complete cycles of full, open and close. Next, the sea valve was opened and the equivalent of marsh grass and broken clam shells was inserted through the thru-hull. The sea valve was then closed and the procedure repeated five times. Following this, the sea valve was checked for water leakage.

RESULTS

There was no physical failure, impairment of operation or leakage as a result of this test.

The results:

 X were acceptable.

 were not acceptable.

LEAKAGE TEST:

METHOD

Model 931142, 1/2 inch sea valve, was installed to a test frame and a pressure source was connected to the inlet of the sample and the outlet of the sample was provided with a 5 foot length of pipe or hose that was capped at its free end. The sample was subjected to an air pressure of 50 psig for one minute.

RESULTS

There was no evidence of leakage at the points of connection.

The results:

 X were acceptable.

 were not acceptable.

