

MAINTENANCE MANUAL  
FOR  
THE TERRACE

Bellingham Marine Industries, Inc. is as proud of your new marina as you are--and justifiably so. Many hours of work by dedicated people have gone into the planning and completion of your marina. We know you will want to maintain this system in the condition you received it for many years of trouble free service. Through our years of involvement with the Unifloat\* system, Bellingham Marine Industries has compiled a list of items that could need attention. While not every eventuality may be covered, we hope you will find the following guide to be of assistance in your maintenance program.

I. UNIFLOAT\* SYSTEM

A. The single most important item is ensuring that your Unifloat\* system remains tight. This is done by tightening thru-rods and other hardware using normal pressure on a standard ratchet drive wrench with the appropriate size socket.

5/16" Nut	=	1/2" socket
1/2" Nut	=	3/4" socket
5/8" Nut	=	15/16" socket
3/4" Nut	=	1-1/8" socket

Normal "walk-throughs" will locate most loose components, i.e., springy under foot; however,

complete tightening or checking should occur as follows:

1. First and Second Year: Retighten appropriate hardware quarterly (keep records of trouble spots).
2. Third and Following Years: Retighten complete system annually. Re-tighten trouble spots semi-annually. Note: Although tightening generally refers to the thru-rods, it also means plywood screws, cleat bolts, stiff arm bolts and turn buckles, etc. Pay special attention to ramps or other areas where loadings vary. Also be sure to compensate the float system for added equipment or appurtenances as time passes.

- B. On occasion all concrete can chip or spall off when struck or impacted by a solid object. Fortunately, the concrete used in the Unifloat\* can be patched by using standard patching practices.

We recommend the use of a complete patching material such as Sona Patch or Sika 123. By following the instructions furnished with the product, a good looking patch can be obtained.

- C. The wood used throughout your system is Douglas Fir, S4S, Grade #1, treated with CCA. CCA is a chemical known to the State of California to cause cancer. While Bellingham Marine issues this warning to all its

customers, the State of California requires that you distribute consumer information sheets with the warning requirement to your employees and/or customers in accordance with "Proposition 65". Consumer information sheets have been provided with this manual addressing site and handling precautions.

It is permissible to paint over this preservative should you desire. The wood end joints should be gapped to allow system flexibility and the wood should be kept fairly level throughout the system. Repairs or cuts may be field treated with an appropriate copper base compound.

- D. Most steel components are manufactured from mild steel and hot dip galvanized after fabrication. Any field modifications should be well treated with a cold galvanizing compound. All steel-to-steel components should be fastened with cut washers as opposed to wood-to-wood fasteners which require plate washers.
- E. Plywood components are 3/4" MDO signal grade plywood, pressure treated with CCA and covered with two coats of slip-resistant paint. The paint commonly used is Perma Deck or equal.
- F. As-built drawings reflecting the final configuration and components of your Unifloat\* marina are enclosed with this manual. Store them in a safe place where

they can be used for reference should you need to order materials from your BMI representative in the future.

- G. Your marina was constructed in 1991 and was assigned project number 1417. Referencing this number when discussing your maintenance and parts needs will help us serve you better.

## II. MISCELLANEOUS

- A. Cleats: Your cleats are hot dipped galvanized for protection against rust and should be kept tight at all times.
- B. Rubber Hinge Connector: Where the platform float connects to the swim float and to the moorage float there is a rubber hinge connector assembly. On a regular basis inspect that the bolts holding the cover plates are tight. The hinge connector itself may be inspected by raising the cover plate and safely securing it in an upright position. Check the rubber portion of the connector for any deformation or tearing. Insure that all connector nuts and bolts are tight.
- C. Stains: The three stains that appear most often on docks are grease (oil), rust, and bird droppings. Most fresh grease or oil spots can be removed with Oil-Sorb or muriatic acid and Oil-Sorb. Rust can be removed

with oxalic acid and rinsing with fresh water and Dutch cleanser. Bird droppings can normally be scrubbed off with a fiber bristle brush. Fiber bristle brushes are recommended as they do not leave small pieces of wire that will eventually rust.

- D. Debris: If your marina is located in a high-debris area, specific care should be taken to ensure that flotsam does not become lodged between or underneath float modules.

### III. ANCHORAGE SYSTEM

The anchorage system is the most critical element of your float system. It consists of a stiff arm assembly that connects the main platform floats to the shore, a chain connecting the swim float to the shore, a chain with weights connecting the moorage floats to shore, and three anchor lines connected to off-shore concrete anchors.

**WARNING: ANCHOR LINES AND WEIGHTS MAY BE IN TENSION IN EXCESS OF 1500 LBS.!! USE EXTREME CAUTION!!**

- A. Stiff Arm: Insure that all nuts, bolts, and hinge pins are in place and tight. Cross cables should be tight and with equal tension. Adjust tension with turn-buckles. Inspect for any damage or excessive corrosion.
- B. Swim Float Shore Chain: Keep chain from becoming too slack. Too much slack being defined as allowing more

than two feet of motion at swim float end. Inspect and insure integrity of chain shackles.

- C. All Other Anchor Lines: Inspect and insure integrity of shoreside connection. Insure that chains are properly seated in keeper plates located in anchor wells (circular covers at four locations). Inspect on a regular basis for damage and corrosion both above and underwater. Tension should be maintained so the outboard edge of floats form a straight line and that no more than two feet of motion occurs at float ends.

#### IV. LAKE LEVEL ADJUSTMENTS

The lake level is controlled and at times is varied. Though your float system is designed to accommodate most of these variations with a minimum amount of operations, a certain amount of preparation and adjustment is required. There are two major categories of lake level adjustments as they relate to your float system.

- A. Level Changes of Ten Feet And Less (see sheet 6 and 6A of the drawings):

1. Prior to lowering: Slacken the stiff arm cross cables by use of the turnbuckles. Slacken the anchor lines that connect both to the shore and to the offshore anchors. **WARNING: Anchor lines and weights may be in tension in excess of 1500 lbs. Use extreme caution!** Remove boats from moorage

area.

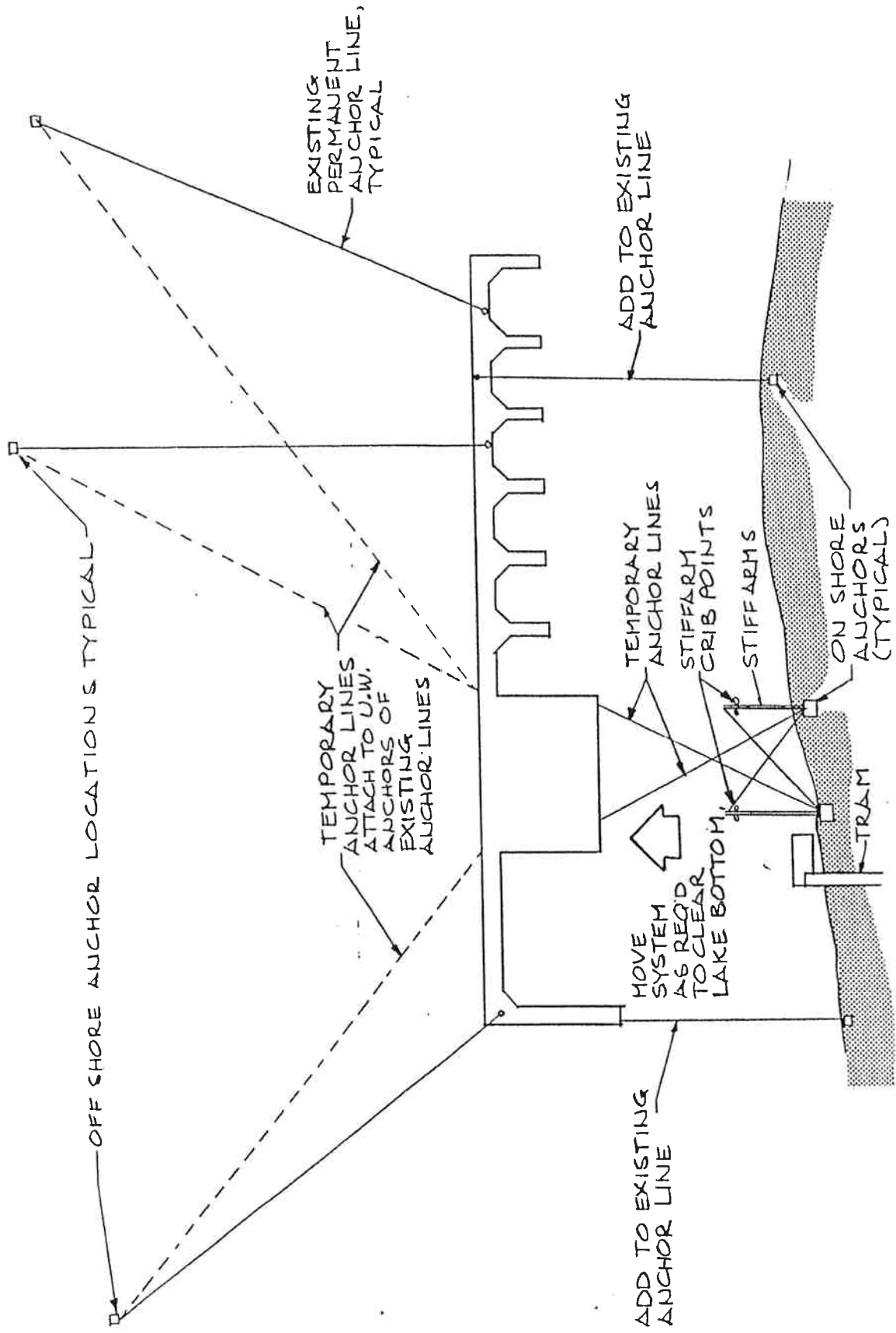
2. During lowering: Monitor the system during the lowering of the lake level to insure that stiff arm cross cables and anchor lines remain slightly slack and do not experience excessively unequal loadings. Insure that floats and stiff arms do not become hung up on the lake bottom or objects that might get caught between the bottom and the float system.
3. After lowering: Retighten the stiff arm cross cables by use of the turnbuckles. Retighten the anchor lines that connect both to the shore and to the offshore anchors. **WARNING: Anchor lines and weights may be in tension in excess of 1500 lbs. Use extreme caution!** Insure that there is enough clearance between the float system and the lake bottom to accommodate any wave action. Inspect the gangway to insure that the rollers are tracking on their guides.
4. Prior to raising: Slacken the stiff arm cross cables by use of the turnbuckles. Slacken the anchor lines that connect both to the shore and to the offshore anchors. **WARNING: Anchor lines and weights may be in tension in excess of 1500 lbs. Use extreme caution!**
5. During raising: Monitor the system during the raising of the lake level to insure that stiff arm

cross cables and anchor lines remain slightly slack and do not experience excessively unequal loadings.

6. After raising: Retighten the stiff arm cross cables by use of the turnbuckles. Retighten the anchor lines that connect both to the shore and to the offshore anchors. **WARNING: Anchor lines and weights may be in tension in excess of 1500 lbs. Use extreme caution!** Inspect the gangway to insure that the rollers are tracking on their guides.

B. Level changes in excess of ten feet: (**NOTICE:** The float system is not engineered for water level drops in excess of ten to twelve feet that would warrant the relocation of the system. The following offered only as a suggested method to relocated and temporarily anchor the system in the rare event that the lake level drops that much.)

1. Prior to lowering: Remove boats from moorage area. Detach gangway from shore side and ease it onto the platform float. Slacken the stiff arm cross cables by use of the turnbuckles. Crib float side ends of stiff arms by driving pipe into the lake bottom at angles so that they cross directly below the stiff arms forming a tripod configuration. Bolt pipes together and secure stiff arms to the cribs. Should Lake bottom conditions be such that pipe cribbing is not practical, other means of supporting stiff arms could be developed.



LEVEL CHANGES IN EXCESS OF 10 FEET