

# *metalcraft* DOCKS

## ASSEMBLY MANUAL for the STATIONARY DOCK SYSTEM



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# **ASSEMBLY MANUAL**

## **for the**

# **STATIONARY DOCK SYSTEM**

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## **OVERVIEW**

The **Metal Craft® Aluminum Stationary Dock System** is one of the easiest and fastest systems to assemble, install or remove!

Just follow the instructions below. Do not be put off by the volume or amount of detail -- the task is simple.

Verify water depths at the installation site to ensure proper Support Pipe and Brace lengths. Take all necessary items to the job site. Use the Metal Craft "Packing List" supplied with the system to ensure nothing is left behind. Have a schematic diagram of the planned installation with you.

- Assemble each section completely on shore. Use a saw horse and set each deck section on the horses, upside down.
- Install ALL components (e.g., X-Braces, Corner Half Braces, Depth Braces, End Braces, Double End Braces, Side Braces, Support Pipes, Base Pads, UHooks, etc.).
- Don't confuse "T" Caps and "O" Caps. "**T**" Caps are used on X-Braces and Corner Half Braces to hold the vertical support pipes. They are "Tightened" just enough to hold the pipe in the wishbone. "**O**" Caps are used at the bottom of Depth Braces. They should be bolted flat and tightly against the Depth Brace wishbone member. They are larger than a "T" Cap so that the vertical support pipe can easily slide up and down in the Depth Brace.
- Tighten fasteners AFTER all components are in position. This makes it much easier to align and fit the components together.
- Carry or float each section into place with "one-trip". Never try to install any of the bracing or pipes in the water -- it makes the job much, much more difficult and time consuming.

### **#1**

#### **Identify "SHORE" End of Each Section**

One end of each stationary dock section contains a pair of Deck Corner Gussets. This end of each dock section should face towards "shore" and is known as the "shore end".

The other end does not normally have the Deck Corner Gussets. It should face towards the "lake" and is known as the "lake end".



## #2 Shoreline Connection

The first dock section needs to be connected to a firm object at its “shore” end -- i.e., the end closest to the shoreline. This connection is made one of two ways:

- **Shoreline Mounting Kit**

This kit consists of (2) Shoreline Clamps, (2) 3.5'L Aluminum 2" OD pipes, and (2) Vinyl Pipe Caps.

The kit is used when there is no seawall or vertical fascia available (e.g., front side of a platform or deck).

Install the (2) Shoreline Clamps at the “Shore End” of the first dock section. Normal installation is to place them on each side of the dock at the corners. They can also be installed on the end.

Note location of the .100" flat washer -- it is installed on the end of the Shoreline Clamp contacting the Siderail of the Dock. It is used to compensate for the .100" thickness of the Deck Corner -- so that the Shoreline Clamp is flush and parallel to the side of the dock section.

When the dock is ready for installation, loosen the clamps, drive the aluminum pipe into the ground to the desired height. It is suggested that a block of wood be used between the pipe and mallet so that the pipe is not damaged. Clamp the pipe tight to the dock. Trim the pipe to desired height. Install the vinyl pipe cap.



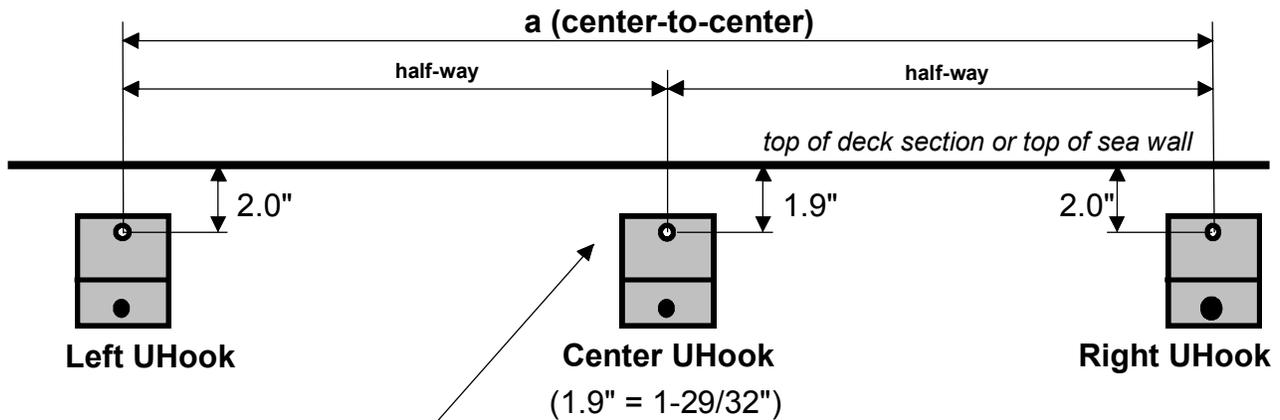
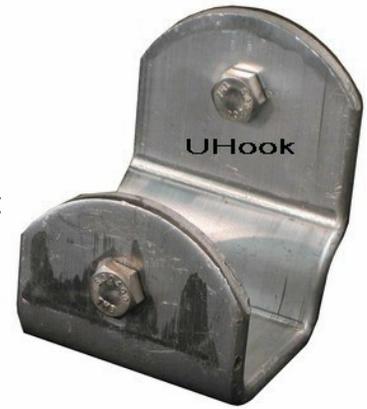
■ UHook Shore Mounting

UHooks are used when there is a seawall or vertical fascia available.

Two (2) UHooks are installed on the seawall or fascia for the end of 3' and

Three (3) UHooks are installed for the end of 5'W and 6'W dock sections.

Four (4) UHooks are installed for the 10'L side of dock sections.



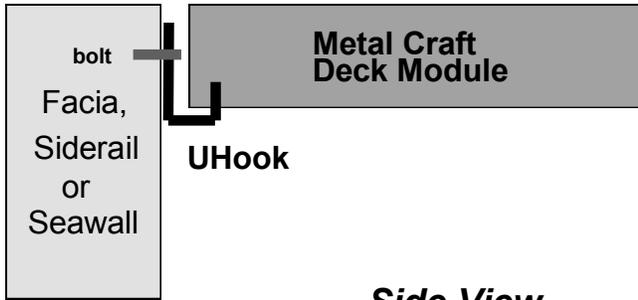
**Front View**

Center UHook only -- Add (1) .100" Aluminum Large Flat Washer between UHook and wall/siderail.

Note that the 1.9" drop-down distance is not same as the 2.0" distance for the Left and Right UHook.

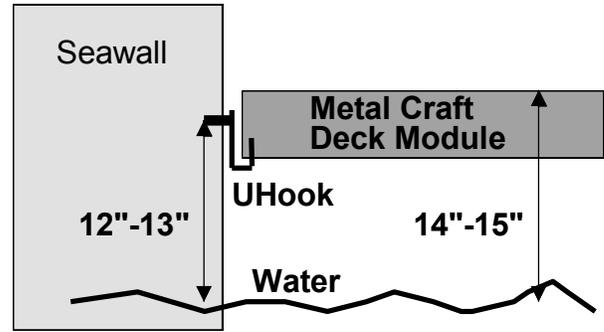
Width of Dock	UHooks Required	Horizontal Bolt Location Dimension "a"
3 ft.	2	31 1/16 <sup>th</sup> in.
4 ft.	2	43 1/16 <sup>th</sup> in.
5 ft.	3	55 1/16 <sup>th</sup> in.
6 ft.	3	67 1/16 <sup>th</sup> in.

## Flush Mount



*Side View*

## Step Mount



### #3 UHooks at "LAKE" End

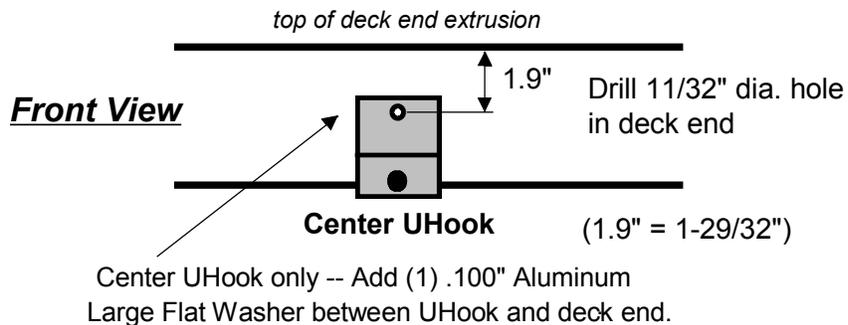
Install UHooks at the end of dock sections that will be connected to other dock sections.

**Two (2) UHooks** on the end of **3' & 4'** wide dock sections.

**Three (3) UHooks** on the end of **5'W & 6'W** dock sections.

Always use the two **outside** bolt holes in the Deck Corners for mounting UHooks. Remove the bolt and Lock nut holding the Deck Corner on the end, and install the UHook at that location.

The center Uhook on 5'W and 6'W Dock Sections get special treatment: Drill the mounting hole (11/64") in center of dock end, 1.9" down from the top of the deck end extrusion. Use one (1) .100" Aluminum Large Flat Washer (supplied) as a shim washer between the UHook and the deck end.



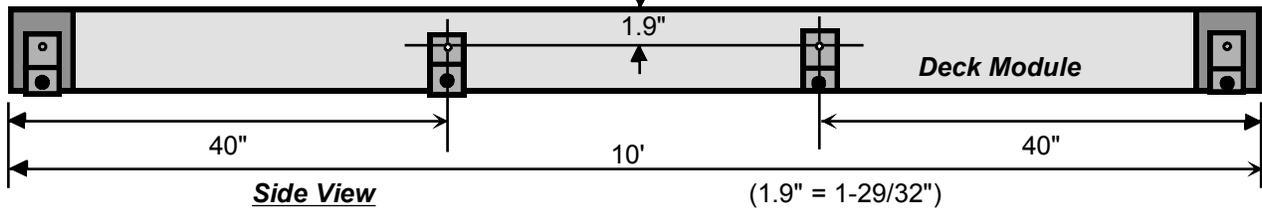
## #4 UHooks for Side-by-Side and Side-to-Wall Sections

Use four (4) UHooks when deck modules are installed flush 10'L Side-to-Side or 10'L Side-to-Wall.

**Side-to-Side:** Install one at each end of the dock on the outside of the Deck Corner. Remove the bolt and nut holding the corner and install the UHook. Locate the positions for the other two UHooks as shown below. Drill two 11/32" holes in



### Side-to-Side



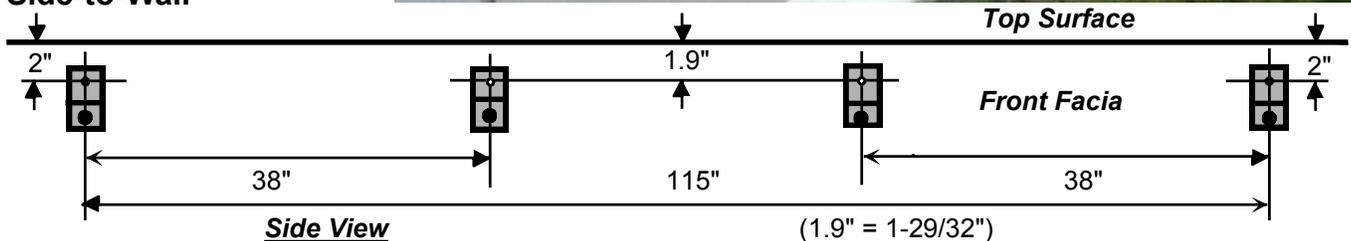
Center (2) UHooks only -- Add (1) .100" Alum. Large Flat Washer between UHook and siderail.

the siderail and install the two remaining UHooks.

**Side-to-Wall:** Install 4 UHooks on wall using dimensions shown below, use lag bolts (wood) or anchors (cement) to hold the UHooks.



### Side-to-Wall



Center (2) UHooks only -- Add (1) .100" Alum. Large Flat Washer between UHook and wall..

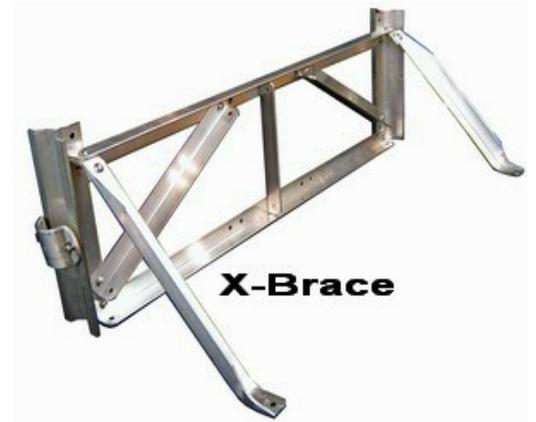
## #5 Dock Leg Supports

There are three different types of leg supports:

### ■ Classic X-Brace

Identify the X-Braces, remove the packaged stainless steel and aluminum installation hardware, and, open the two Swing Arms.

Install the X-Brace at the "Lake End" using the 4 pre-punched holes in the bottom of the deck siderail.



**Note:** The clamp that holds the pipe in the X-Brace and Corner Half Brace is called a "T-Cap". It is identified with a stamped "T".

**Do not confuse this part with a very similar one called an "O-Cap" that comes with the Stationary Depth Brace.**



## ■ Classic Corner Half Braces

Identify the Corner Half Braces, remove the packaged stainless steel and aluminum installation hardware, and, open the Swing Arms. The function of the Corner Half Brace is to position the support pipe off the front of the dock section (versus the X-Brace's side position).

There is a "Right" and a "Left":

- The "**Right**" is installed on the right front corner of the dock -- when deck side up (as viewed from other end of the dock section).
- The "**Left**" is installed on the left front corner of the dock -- when deck side up (as viewed from the other end of the dock section).

Install the Corner Half Brace using the 2 pre-punched holes in the bottom of the deck siderail.

Use one (1) Large Flat Aluminum Washer (supplied) between the siderail and Corner Half Brace at the whole location most distant from the deck corner. This will shim the Brace to make it level with the deck corner.



**Corner Half Brace - Right**



**Corner Half Brace - Left**

Measure 14" in from the deck corner along the end of the dock. Mark the location and drill one (1) 1 1/32" diameter hole. Install the Swing Arm using one (1) Large Flat Aluminum Washer (supplied) between the deck end and Swing Arm.

**Note:** The clamp that holds the pipe in the X-Brace and Corner Half Brace is called a "**T-Cap**". It is identified with a stamped "**T**". **Do not confuse this part with a very similar one called an "O-Cap" that comes with the Stationary Depth Brace.** See page 5.

## Under Dock Leg Support

Identify the Under Dock Leg Supports and remove the packaged stainless steel and aluminum installation hardware. The function of the Under Dock Leg Support is to provide good dock strength without any pipes on the side or above the deck. It also incorporates an "A" shape that flares out the Base Pads to improve stability.

There is a "Right" and a "Left":

- The "**Right**" is installed on the right front corner of the dock -- when deck side up (as viewed from other end of the dock section).
- The "**Left**" is installed on the left front corner of the dock -- when deck side up (as viewed from the other end of the dock section).

The Under Dock Leg Support comes in four widths: **3'**, **4'**, **5'**, and **6'** to match the dock module on which it is mounted.

Install the Under Dock Leg Support using the 4 pre-punched holes in the bottom of the deck siderail.

Insert the rectangular Cross Beam into the horizontal rectangular extrusions, tap into place so that the bolt holes line up.

Use one (1) Thick Rectangular Flat Aluminum Backing Washer (supplied) between the siderail and Under Dock Leg Support at each of the four mounting locations.

Install the long bolts that hold the Cross Beam in place.



## #6 Dock Legs

Install the Base Pads onto the support pipes and then install them into the leg supports (X-Braces, Corner Half Braces or Under Dock Leg Supports). Loosely tighten the two bolts holding each "T-Cap".

Dock leg support pipes come in 3.5', 5', 7', 9' and 11' lengths to accommodate your specific site and needs. All have a 1.90" OD and are made of T6 hardened Sch. 10 aluminum. Each pipe comes with a pre-drilled hole at one end -- this is the "bottom" end. The undrilled end will extend above the X-Brace when installed in the water.

### ■ Base Pads

Each support leg will have a base pad installed on the end. The standard pad is 12" x 12" square and consists of two aluminum plates that have been formed under high pressure and have a 1.60" OD drilled pipe extension.

Insert the Base Pad into the bottom end of the leg support pipe, taking care to align the holes in the Base Pad with the matching holes in the pipe. The fit is tight, so some small tapping may be necessary. Once the holes are aligned, insert the long 5/16" dia. SS bolt and tighten the lock nut (supplied).

Some installations require a larger pad to accommodate severe mud or boggy bottoms. The 18" x 18" Base Pad is made for that purpose. It will improve dock stability with bad bottoms, but is more difficult to remove.

**Base Pad, 12"x12"**



**18" x 18"**



### ■ Splayed Legs

The function of the Splayed Leg is to widen the stance of the dock and thereby improve stability. Each leg increases the effective width of the Base Pad by 1'. They are installed as pairs, so the effective width is increased by 2'. Each Splayed Leg is 2' in height, which also adds to the overall length of the support legs.



**Splayed Leg**



## #7 Deep Water Braces - Classic System

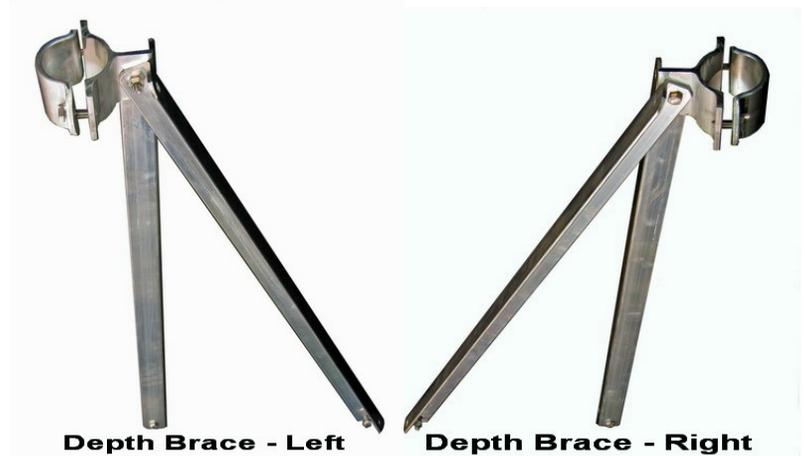
When stationary docks are installed in water greater than 3', overall stability will be improved with the use of deep water leg braces. There are four different types of Braces:

### ■ **Classic Depth Braces**

Made in a “**Left**” and a “**Right**” and is used with with the Classic X-Brace or Classic Corner Half Brace.

“**Left**” is installed on the left side of the classic X-Brace (when viewed deck side up from other end of deck module).

“**Right**” is installed on the right side of the classic X-Brace (when viewed deck side up from other end of deck module).

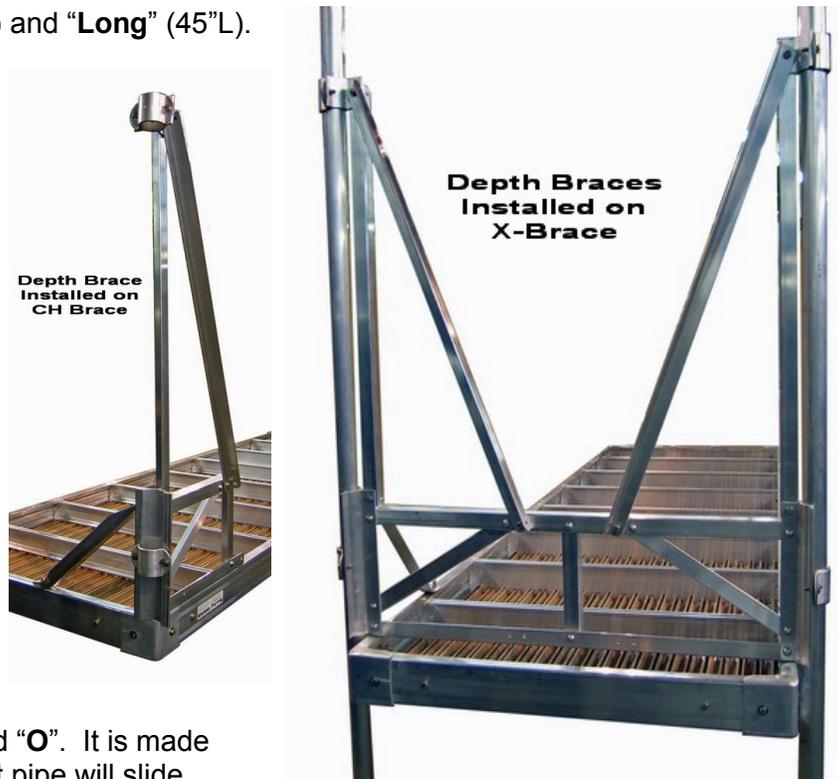


Made in two lengths: “**Medium**” (33”L) and “**Long**” (45”L).

The **Medium** is typically used with 7’L pipe and in applications where there is from 3’ to 5’ of depth below the X-Brace or Corner Half Brace.

The **Long** is typically used with 9’L pipe and in applications where there is from 5’ to 7’ of depth below the X-Brace or Corner Half Brace.

**Corner Half Braces:** The “**Right**” Depth Brace fits the “**Left**” Corner Half Brace -- just the reverse of the X-Brace.



**Note:** The clamp that guides the pipe in the Depth Brace is called an “**O-Cap**”. It is identified with a stamped “**O**”. It is made larger than the pipe so that the support pipe will slide inside the clamp to allow height adjustments of the pipe without having to dive underwater.

This O-Cap should be tightened against the wishbone shaped end of the Depth Brace.

**Do not confuse this part with a very similar one called a “T-Cap” that is used with the X-Brace and Corner Half Brace.**



■ **Classic Side Braces**

Side Braces reduce movement parallel with the deck module.

Depth Braces are a prerequisite to the installation of Side Braces. The Side Braces attach to the deck module at the top and to the Depth Brace “wishbone” at the lower end.

Made in two lengths: “**Medium**” and “**Long**”. The Medium length is sized to match with the Medium Depth Brace. The Long length is sized to match with the Long Depth Brace.

The lower end is supplied in two formats: “**Extended O-Cap**” and “**Punched End**”.

The **Extended O-Cap** is used when a X-Brace is present. Remove the regular

O-Cap that comes with the Depth Brace and replace it with the Extended O-Cap on the end of the Side Brace. Tighten both bolts and ensure that the parts are aligned such that the leg pipe moves freely up and down within the Extended O-Cap.

The **Punched End** is used when a Corner Half Brace is present. Attach the Side Brace to the fin on the back of the Extended Length Depth Brace wishbone. Ensure that the parts are aligned such that the leg pipe moves freely up and down within the Depth Brace O-Cap.

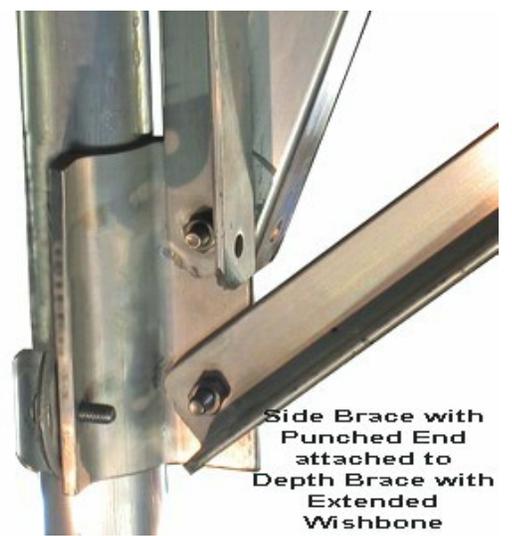
The upper end attaches to the underside of the deck module siderail. A “U” shaped clamp is positioned over a lip on the siderail.



**Side Braces with Extended O-Cap Ends, Depth Braces and X-Brace**



**Side Brace with Extended O-Cap**



**Side Brace with Punched End attached to Depth Brace with Extended Wishbone**

■ **Classic End Braces**

End Braces are generally used with platform sections to reduce movement perpendicular to the deck module.

Corner Half Braces and Depth Braces are a prerequisite to the installation of End Braces. The End Braces attach to the deck module at the top and to the Depth Brace “wishbone” at the lower end.

Made in two lengths: “**Medium**” and “**Long**”. The Medium length is sized to match with the Medium Depth Brace. The Long length is sized to match with the Long Depth Brace.

The lower end is supplied with an “**Extended O-Cap**”. Remove the regular

O-Cap that comes with the Depth Brace and replace it with the Extended O-Cap on the end of the Side Brace. Tighten both bolts and ensure that the parts are



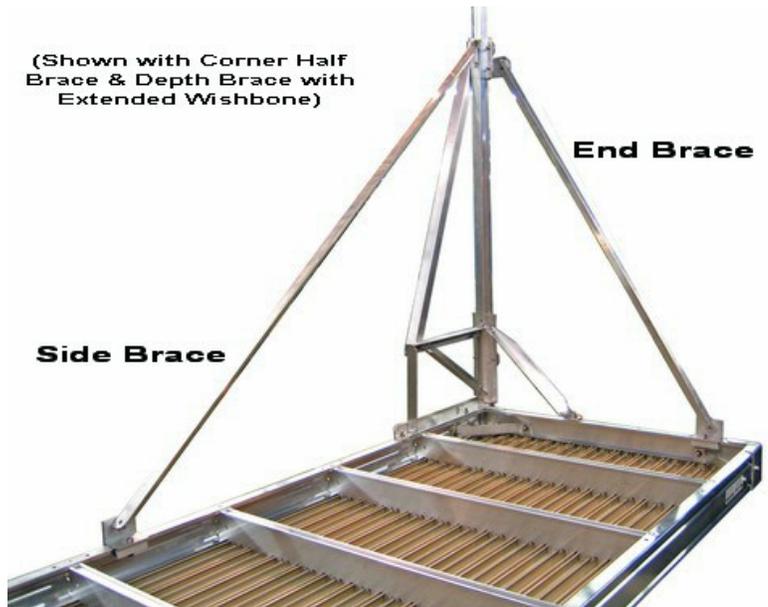
aligned such that the leg pipe moves freely up and down within the Extended O-Cap.

End Braces are often combined together with Side Braces at the corner of a platform to provide the strongest possible bracing.

An “**extended wishbone**” is required on the end of the Depth Brace. This unit is twice the normal length of the standard Depth Brace wishbone.



(Shown with Corner Half Brace & Depth Brace with Extended Wishbone)



## ■ Classic Double End Braces

**Double End Braces** reduce side-to-side movement in the end of a deck module equipped with two Corner Half Braces.

Two Corner Half Braces installed at the same dock end, and the Depth Braces are a prerequisite to the installation of the Double End Brace.

The **Double End Brace** comes in eight sizes that match the width of the deck module: **3'**, **4'**, **5'** and **6'** and the length of the Depth Braces installed on the dock: **Medium** (33"H) and **Long** (45"H).

Install the upper end of the two angles that form an "X" to the upper end of the Depth Braces. Attach the lower end of the "X" angles to the lower end of the Depth Braces.

Remove and discard the two O-Caps that came with the Depth Braces. Replace them with the one-piece beam that has an Extended O-Cap at each end. Ensure that the parts are aligned such that the let pipe moves freely up and down within the Depth Brace Extended O-Cap.



## #8 Deep Water Braces - Under Dock Leg System

There are two Deep Water Braces for the Under Dock Leg System -- the **End Brace** and the **Side Brace**.

### ■ End Brace (Under Dock Leg System)

The End Brace comes in one size. It has a punched hole at both ends. The upper end is installed using the long bolt that holds the Under Dock Leg Support cross member. The other end is equipped with a "wishbone" and "T-Cap".

Use one End Brace for most applications. For maximum stability, use two End Braces and form an "X"



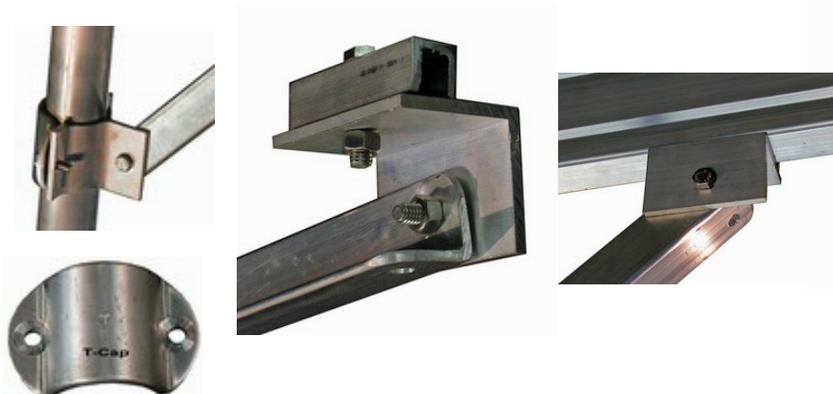
### ■ Side Brace (Under Dock Leg System)

Side Braces reduce movement parallel with the deck module. The Side Brace for the Under Dock Leg Support comes in one size.

Use one Side Brace for modest improvement and two for maximum stability.

The upper end attaches to the underside of the deck module siderail. A "U" shaped clamp is positioned over a lip on the siderail.

The other end is equipped with a "wishbone" and "T-Cap".



## #9 Deep Water Augers

**Auger Bit Kits** have a cast iron screw head that is bolted to the end of a standard aluminum pipe leg. There is a 3/4" hole drilled at the top of the pipe. It is supplied with a Shoreline Clamp and a vinyl pipe cap.

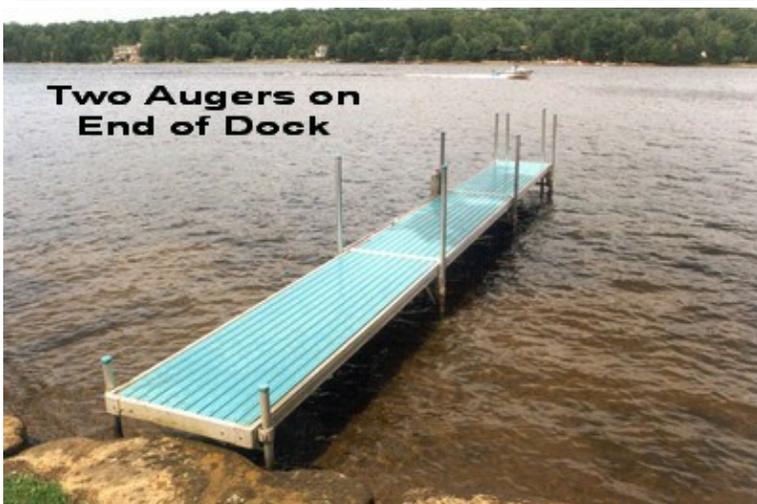
Auger Bit Kits come in 5', 7', 9' and 11' lengths.

The Shoreline Clamps may be installed before the dock is placed in the water if the ground is clear of rocks at the intended location. Otherwise, it is recommended that the Shoreline Clamp be installed once it is known where the Augers will be placed.

The Auger & Pipe are installed after the dock is in the water. Screw the Auger into the lake or river bottom until you can't turn it any more -- maximum resistance. Use a length of pipe placed through the hole at the top of the Auger to turn it -- or use the Auger Ratchet Wrench (optional, not supplied).

The Shoreline Clamps can be installed on the side or end of the dock.

The Auger Bit Kit is **in addition to** and not a replacement for the regular support leg pipe and Base Pad. The Base Pads facilitate installation and removal -- with the Augers being installed easily from on top of the dock.



## #10 Accessories

The three accessories covered are the Mooring Cleat, the Horizontal Bumper Bracket, and the Vertical Bumper Bracket.

These can be installed before the dock modules are placed in the water, or, afterwards.

### ■ **Mooring Cleat**

The Mooring Cleat attaches to the Deck Support member that connects one siderail of the dock to the other side. They are placed on 15" centers. There are two pre-punched holes in each Deck Support, one at each end. This hole is used for mounting the Mooring Cleat.

There are 14 pre-punched holes in each 10'L Stationary Dock Module so there are 14 locations for Mooring Cleat placement.

Install the "L" bracket on the "flat" side of the Deck Support with the threaded bushing centered over the open space between the dock siderail and deck slat.

Insert the long bolt, and washer through the cleat and thread into the top of the threaded bracket. It may be necessary to use a large screwdriver as a wedge to push the deck slat over slightly to enlarge the opening for the bolt. Cover the end of the screwdriver with tape to keep from scratching the decking. Tighten the Cleat into place.



### ■ **Horizontal Bumper Bracket**

The Horizontal Bumper Bracket comes in two versions.

The **Side Mount** model slides over the deck module siderail. It is designed to hold a 2" x4" beam (wood or plastic) that can be covered with a PVC Bumper (optional, not supplied).



The **End Mount** model is designed to fit on the end of a deck module. It fits over the two holes pre-punched at both ends of the deck module end.



**Horizontal Bumper Bracket - End Mount**



The Side Mount and the End Mount can be combined on the same dock to provide full bumper coverage.



■ **Vertical Bumper Bracket**

The stationary Vertical Bumper Bracket attaches to the dock module similar to the Mooring Cleat. The supplied "U" bracket is installed at the pre-punched hole at the end of the Deck Support.

The VBB is positioned over the siderail of the dock module until the pre-punched holes in the top and bottom of the VBB align with the threaded holes in the mounting bracket. It may be necessary to use a large screwdriver as a wedge to punch the deck slat over slightly to enlarge the opening for the top bolt. Cover the end of the screwdriver with tape to keep from scratching the decking.



**Vertical Bumper Bracket**

The VBB comes in two sizes: **3-1/2" x 3-1/2"ID** and **4" x 4"ID**.

The **3-1/2" x 3-1/2"ID** is sized for normal wood "4x4" posts and certain PVC posts with that dimension. The **4" x 4"ID** is sized for the 4" PVC posts carried at stores such as Home Depot and Lowes.



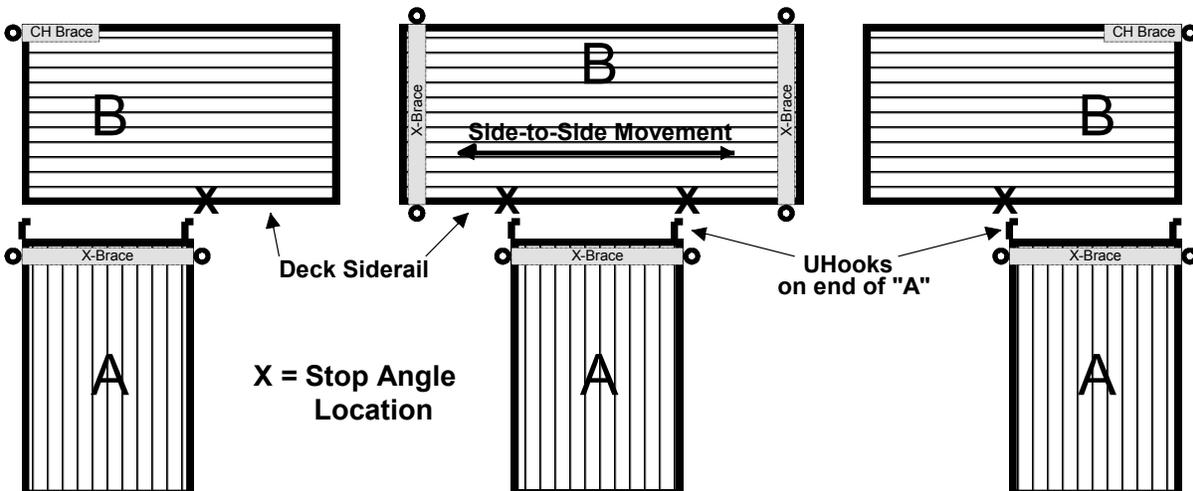
## #11 Stop Angles

In the specific configuration when the "Siderail" of one dock section rests in the UHooks mounted on the end of another dock, there could be some movement. As shown below, the Siderail of section "B" can slide back-and-forth in the UHooks of "A". This movement is eliminated by installing one or two **Stop Angles** on the bottom of the Siderail on the "B" section.

Locate the position for the Stop Angle and drill an 11/32" hole in the bottom of the Siderail. Install as shown. When finished, the UHooks on dock section "A" should be held in place by the Stop Angle(s) and "A" will not be able to move.



Note: In the "L" configuration the inboard Uhook on "A" may conflict with a Deck Support on "B". Relocate the Uhook to the pre punched adjacent hole on the end of "A" as shown in the photo on the right. Add one (1) .100" large flat aluminum washer to shim out the Uhook.



Siderail of "B" rests in UHooks of "A". "B" may move side-to-side. Install Stop Angles at locations shown to stop this movement.