

TIDES MARINE

RPB Type D Installation Overview

The Tides Marine Type-D system components include a FRP liner, a re-useable alignment plug and fastener assembly and the Type-D bearing and seal.

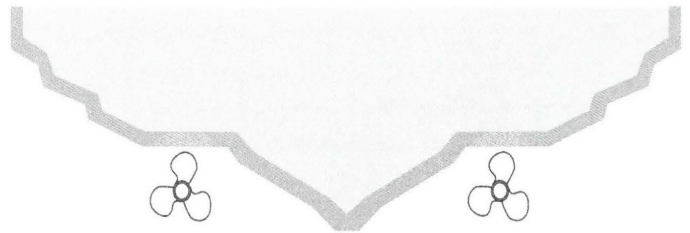
Molded from FRP and compatible with polyester, vinylester and epoxy systems, each Type-D liner has an internal thread to accept its corresponding rudder bearing and seal.

The Type-D rudder bearing and seal assembly consists of a one-piece UHMW housing with a nitrile lip seal. The UHMW bearing eliminates metal-to-metal contact and associated problems of abrasion, electrolysis and corrosion. They are 100% watertight. Their performance characteristics match those of other Tides Marine rudder ports in that they are quiet, smooth and vibration free.

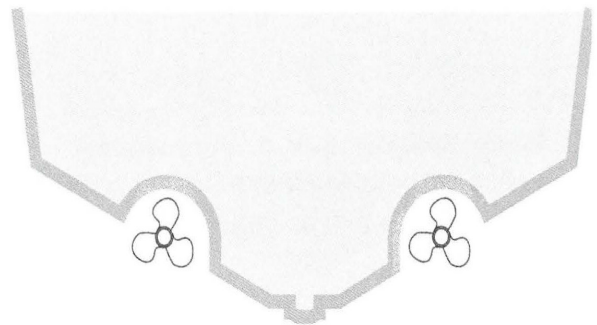
Installation Types

The procedure for modifying the mold and installing the liner prior to lay-up differs according to the type of hull being produced. The following are three of the most common variations.

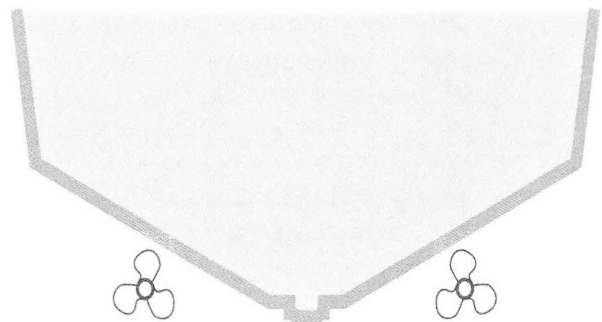
Type One: Molds with an existing “flat” at the rudder port location. This installation will use the standard flange-type liner.



Type Two: Molds which require modification to achieve a “flat” surface or pocket for mounting a standard flange-type liner.



Type Three: Molds which require modification to accept an angled liner to match dead rise and rocker angles.



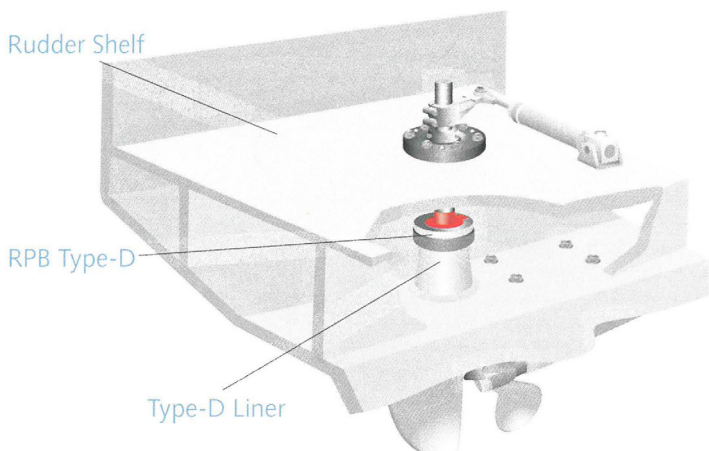
TIDES MARINE

RPB Type D Installation Overview

Installation Overview Type One

Mold Modifications

1. Locate the exact position of the rudder stock center in the mold surface.
2. Carefully drill a small pilot hole through the mold. Re-drill the hole, this time, slightly larger than the diameter of the threaded rod which Tides will supply.
3. From inside the mold, pass the threaded rod through the hole and screw it into the aluminum block located outside the mold.
4. Align the threaded rod (on the inside of the mold) so that its axis matches the desired axis of the rudder.
5. Temporarily affix the threaded rod in position until the aluminum block can be glassed in place. *Note: Some reshaping of the block may be required to ensure that it contacts this side of the mold in the most secure manner.*
6. Bond the aluminum block to the mold.
7. Remove the threaded rod and build up the required flat area on the mold surface to accommodate the flange of the Type-D liner and create the desired surface transitions. Use proper mold materials and techniques. If another length of threaded rod is inserted into the aluminum block before starting this “build-up”, it will help keep the hole in the mold clean and “in reference” .



Liner Installation Prior to Lay-Up

1. Prepare the liner for lay-up by roughing the outer-surfaces with a grinder and wipe clean with thinner.
2. Screw the UHMW plug into the liner until the bottoms are flush.
3. Mask the top of the assembly to protect it from overspray /excess resin.
4. Locate the assembly against the mold surface and bolt in place through the hole in the mold.

Lay-Up Procedures

1. Begin the hull lay-up in the normal manner.
2. Cut an X in the cloth above the liner so that it can be laid down and around the flange base with tabs against the outer wall of the liner.
3. On subsequent layers, stagger the position of the X cuts so that the tabs overlap each other.
4. Lay-up should radiate out away from the tube at least two times the diameter of the liner.
5. Before removing the hull from the mold, remove the plug bolt. Leave the UHMW plug in the hull until it is time to install the rudder.

Installation of Type D Assembly

1. Remove the UHMW plug from the liner.
2. Inspect the interior shoulder of the liner. Confirm that there is no resin on the shoulder and that it is clean and free of dust and debris.
3. Confirm that the “O” ring under the shoulder of the Type-D Assembly is in place. Add a bead of marine sealant (such as Lifecaulk™ or 3-M™ 101) to this area.
4. Thread the Type-D assembly into the liner until the bottom of the assembly is flush with bottom of the hull. In this position, the “O” ring will be sufficiently compressed, resulting in a watertight fitting.
5. Tighten firmly with a strap wrench.

NOTE: Before installing the rudder, • insert the red installation hat into the lip seal. When rudder is in place, remove, invert and replace it on top of the Type -D unit to keep debris off the lip seal during use.

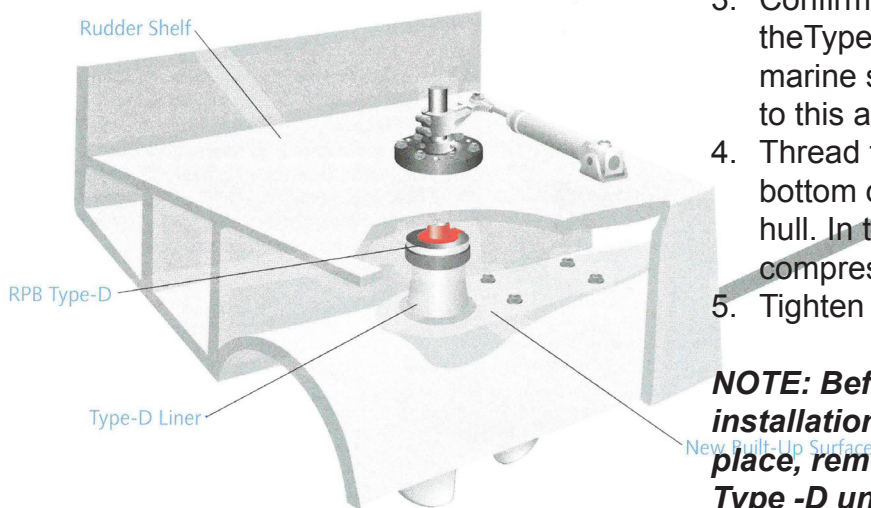
TIDES MARINE

RPB Type D Installation Overview

Installation Overview Type Two

Mold Modifications

1. Locate the exact position of the rudder stock center in the mold surface.
2. Carefully drill a small pilot hole through the mold. Re-drill the hole, this time, slightly larger than the diameter of the threaded rod which Tides will supply.
3. From inside the mold, pass the threaded rod through the hole and screw it into the aluminum block located outside the mold.
4. Align the threaded rod (on the inside of the mold) so that its axis matches the desired axis of the rudder.
5. Temporarily affix the threaded rod in position until the aluminum block can be glassed in place. *Note: Some reshaping of the block may be required to ensure that it contacts this side of the mold in the most secure manner.*
6. Bond the aluminum block to the mold.
7. Remove the threaded rod and build up the required flat area on the mold surface to accommodate the flange of the Type-D liner and create the desired surface transitions. Use proper mold materials and techniques. If another length of threaded rod is inserted into the aluminum block before starting this "build-up", it will help keep the hole in the mold clean and "in reference" .



Liner Installation Prior to Lay-Up

1. Prepare the liner for lay-up by roughing the outer-surfaces with a grinder and wipe clean with thinner.
2. Screw the UHMW plug into the liner until the bottoms are flush.
3. Mask the top of the assembly to protect it from overspray /excess resin.
4. Locate the assembly against the mold surface and bolt in place using the threaded rod. The threaded rod will align the liner correctly relative to the mold when the liner/ plug bottom are flat against the mold surface.

Lay-Up Procedures

1. Begin the hull lay-up in the normal manner.
2. Cut an X in the cloth above the liner so that it can be laid down and around the flange base with tabs against the outer wall of the liner.
3. On subsequent layers, stagger the position of the X cuts so that the tabs overlap each other.
4. Lay-up should radiate out away from the tube at least two times the diameter of the liner.
5. Before removing the hull from the mold, remove the plug bolt. Leave the UHMW plug in the hull until it is time to install the rudder.

Installation of Type D Assembly

1. Remove the UHMW plug from the liner.
2. Inspect the interior shoulder of the liner. Confirm that there is no resin on the shoulder and that it is clean and free of dust and debris.
3. Confirm that the "O" ring under the shoulder of the Type-D Assembly is in place. Add a bead of marine sealant (such as Lifecaulk™ or 3-M™ 101) to this area.
4. Thread the Type-D assembly into the liner until the bottom of the assembly is flush with bottom of the hull. In this position, the "O" ring will be sufficiently compressed, resulting in a watertight fitting.
5. Tighten firmly with a strap wrench.

NOTE: Before installing the rudder, • insert the red installation hat into the lip seal. When rudder is in place, remove, invert and replace it on top of the Type -D unit to keep debris off the lip seal during use.

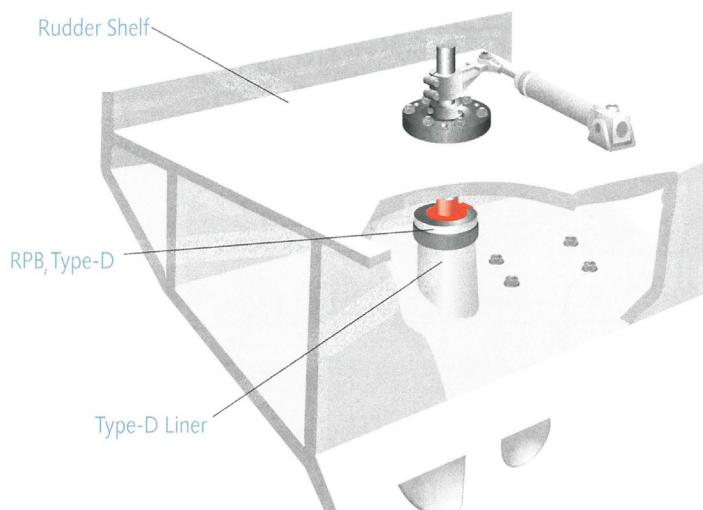
TIDES MARINE

RPB Type D Installation Overview

Installation Overview Type Three

Mold Modifications

1. Locate the exact position of the rudder stock center in the mold surface.
2. Carefully drill a small pilot hole through the mold. Re-drill the hole, this time, slightly larger than the diameter of the threaded rod which Tides will supply.
3. From inside the mold, pass the threaded rod through the hole and screw it into the aluminum block located outside the mold.
4. Align the threaded rod (on the inside of the mold) so that its axis matches the desired axis of the rudder.
5. Temporarily affix the threaded rod in position until the aluminum block can be glassed in place. *Note: Some reshaping of the block may be required to ensure that it contacts this side of the mold in the most secure manner.*
6. Bond the aluminum block to the mold.
7. Remove the threaded rod and build up the required flat area on the mold surface to accommodate the flange of the Type-D liner and create the desired surface transitions. Use proper mold materials and techniques. If another length of threaded rod is inserted into the aluminum block before starting this "build-up", it will help keep the hole in the mold clean and "in reference" .



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5. Before removing the hull from the mold, remove the plug bolt. Leave the UHMW plug in the hull until it is time to install the rudder.

Installation of Type D Assembly

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