

# MACHINED

*Fin*



## Fast facts

- Offers the best possible performance for keel.
- With a wide range of production methods available, including, but not limited to, fabrication, casting or forging.
- Wide range of materials possible, not unlike the fabricated versions of the fins.
- Complete repeatability of the keel for fleet work or replacement.
- Very wide scope of surface shape possible, virtually anything that can be generated in a surface file can be machined.

**M**arsKeel Technology delivers the very highest level of accuracy and quality in the production of machined fins and bulbs. We use the very best practices in design and manufacturing, coupled with the finest personal in each trade to produce the finest products possible.

The production process begins once the required design information is provided or requested:

(1) Complete production drawing. Generally speaking, we will receive a conceptual drawing depicting how the designer and engineer think the keel can be made. It is then up to MarsKeel Technology, in partnership with our MarsKeel Design Group, to generate useable shop drawings. The drawings will include the design of all weld joints, based on the CWB (Canadian Welding Bureau) Standards, implementation of all best practice details used in the assemble and final manufacturing of the part. The construction file is then submitted to the designer and builder or owner and possibly the insurance underwriter for final acceptance.

(2) An IGES file, surfacing file. This file is usually generated by the original designer. They take great care to fine tune the surface to produce the best performance possible. This file details every surface on the keel to be machined. Once condition is met the file is used as offered.

The machining of the keel fin can start from any one of three basic points. These could be either: (1) a

plate or billet metal, (2) a fabricated fin or (3) a cast fin.

(1) If the keel is to be made from plate or billet of steel, or a basic fabrication, any needed joints are pre-machined from the rough cut plate and welded together to CWB standard. The part is then thermally stress relieved and placed on the mill for the CNC surfacing to the final shape. The offered IGES file will be used to check the part throughout production, as well as to generate the final surfacing program if the fin is to be created from plate steel. The materials that are available for this process are set by the choices of the designer.

(2) If the machining process is to begin with a fabricated fin, the offered drawings will be used to produce the initial fabricated fin. The fabrication process is similar to a non-machined fin; however, the outer plates, or any machined surface, of the fin has to be designed with thicker plates to leave the required plate thickness after surfacing. The fin will then be stress relieved and machined. The material choice can range from standard Stainless Steel to Armour plate.

(3) If the keel fin is to be a cast part, the offered drawings are used for the creation of the casting pattern. The required machine tolerance, as well as the related shrinkage and possible casting movement, must be included in the casting pattern, which is usually done in the pattern shop. This is true for both the production of the fin and

bulb pattern. The only difference is the amount of tolerance required by the different materials and casting methods. Once the part is cast, it is stress relieved and surfaced. The material choices are those materials that can be cast.

Once the machining keel is complete, the keel is sent to the finishing room where it goes through the several steps:

1. Cleaned of all water-based machining oil;
2. Etched with self etching metal primer, if necessary;
3. Coated with 4 coats of Interprotect 2000E;
4. Dr- sanded to approx. 180 grit;
5. Additional coats of Interprotect are applied;
6. If required, keel undergoes wet sanding. The fin and/or bulb can be wet sanded to approx. 400 grit. The final surface is smooth, free of all machining marks and ready for the customer to apply the required anti-fouling paint or surface.

Once the finishing process is complete, the keel is sent to the packaging department where it is prepared for shipping to the customer.

Completed projects can be viewed at [www.marskeel.com](http://www.marskeel.com). For more information, please call +1.905.637.3862 or email [sales@marskeel.com](mailto:sales@marskeel.com).

