



Section E. Handling Characteristics

Introduction

Boat handling is a complex skill that requires knowledge and practical, underway experience to build confidence and skill level. Always use forethought and finesse when handling the boat. Know the boat's handling features, monitor weather conditions, and be aware of the operating limitations of the boat.

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General Boat Handling

E.1. Characteristics

The Defender Class boat is a powerful, highly maneuverable platform, which requires a solid understanding of boat handling concepts, particularly the effects of trim on hull efficiency, engine performance, and reduction of impact stress and injuries to boat crews. In addition, coxswains and crews should be familiar with the capabilities, limitations, and handling characteristics of the boat, as well as their own personal training and experience levels.

When operating at high speed, it is critical that the engines be trimmed down (in) before making hard turns or maneuvers. Trimming the engines down (in) causes the bow of the boat to be pushed down by the thrust of the engines and is considered the safest position when accelerating, performing hard maneuvers, and heading into wind and waves.

Performing high speed turns and maneuvers with the engines trimmed out (up) or level can result in hooking a chine, where the chine of the boat abruptly catches the water. The result can be violent in nature, the physical forces of which may cause personnel in the boat to be thrown in the direction of momentum.

WARNING

High speed turns while “trimmed out” (up) or “trimmed level” can result in “hooking a chine”, causing a violent reaction which may create immediate loss of control of the boat and sufficient force to pitch crewmembers overboard.

CAUTION !

The Defender Class boat is sensitive to changes to the Longitudinal Center of Gravity (LCG). These changes can occur by adding or subtracting weight, or through simple crew movements. These changes will change the boat handles in any given situation. The coxswain must assess any LCG change and may have to make many trim adjustments during a sortie.

Prior to making a high speed or tactical turn, crews and passengers must be forewarned and given the opportunity to prepare themselves for the maneuver. The forces created as the boat turns at high speeds will result in injury and ejection if crews are not properly restrained.



Turning and Pivoting

E.2. Characteristics

Each Defender Class boat turns or pivots, for steering purposes, on its vertical axis, at approximately the aft cabin bulkhead when fully trimmed in. Because of this characteristic (which provides other benefits such as straight-line tracking and planning), coxswains must be aware of the boat's turning capabilities.

WARNING

High-speed turns while improperly trimmed, may result in injury to crew or damage to the boat.

E.2.a. Turning on Plane

Avoid making sharp, high-speed turns while improperly trimmed. Due to the reduced amount of wetted surface (hull in water), sharp, high-speed turns may result in "hooking a chine". This can be hazardous and may result in injury to the crew or damage to the boat. If a sharp turn is required, trim the engines in before turning.



Head Seas

E.3. Buoyancy The primary consideration when advancing in head seas is to maintain forward momentum and keep the bow into the swell. The buoyant construction of the boat allows it to ride up over oncoming seas.

E.4. Over-Acceleration When heading into the wind and up the face of large waves, care must be taken to avoid over-accelerating, which can result in the bow being caught and creating a pitch-pole situation where the boat is inverted end-over-end.
