Turning Characteristics and Capabilities of High-Speed Monohulls

By Jeffrey Bowles

Abstract

The turning characteristics and capabilities of displacement vessels are well understood and documented. Standards for the maneuvering capability of displacement vessels exist. However, the same information regarding high speed craft is not so readily available. Most documents in the public domain contain information on what high speed craft shouldn’t be able to do, not what they should be able to do.

This paper examines various aspects of the turning capabilities and characteristics of high speed monohull craft with regard to typical behavior and what type of maneuvering performance should be achievable. The dynamics, characteristics, and relationships of a hard chine monohull in a high speed turn are investigated and summarized.

The execution of high speed turns on hard chine monohulls can sometimes lead to unexpected responses. This paper identifies several of the typical symptoms. The severity of these events will be discussed, and typical causes are identified. Notional maneuvering criteria are also proposed.

References