



# South African Maritime Safety Authority

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## Marine Notice No 10 of 2019

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### Redundancy requirements for Twin or Multiple Drive by Wire (DBW) Outboard Engines.

TO ALL PRINCIPAL OFFICERS, SURVEYORS, AUTHORISED AGENTS, SAFETY OFFICERS, BOAT BUILDERS, BOAT DEALERS, BOAT OWNERS AND OTHER INTERESTED AND AFFECTED PARTIES

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#### *Summary*

The following marine notice provides guidance for Drive by Wire (DBW) twin or multiple outboard engine requirements in terms of the Merchant Shipping (National Small Vessel Safety) Regulations, 2007 as amended.

#### 1. INTRODUCTION

##### **Drive by Wire (DBW) – Twin or Multiple Outboard Engines**

The South African **Merchant Shipping (National Small Vessel Safety) Regulations 2007** as amended, **Regulation 6** under Annexure 1 “Construction requirements”, 7(3) “Engine Power” states that:

*“Every category A, B and C power-driven vessel that employs outboard engine propulsion must be provided with at least two engines either of which must be capable of propelling the vessel, in its full load condition, at a speed in calm water of at least 5 knots. Additionally, if the vessel is to be operated in the surf, either engine must be capable of propelling the vessel at a safe speed when operating in surf conditions.”*

With the advent of new technology (outboard motors) which allows for electronic throttle and shift control rather than by cable (**Drive by Wire/Precision Control**), it has come to the Authority’s attention that some of these multiple engine installations may share components on the installation, which do not render them as independent propulsion units and thus is in direct conflict with the aforementioned Regulation.

#### 2. SAFETY CONCERNS

The intention of the Regulation is that if multiple outboard motors are fitted to a vessel, then there must be a redundancy in place should one of the motors fail, whether at sea or operating in a surf. In conditions of surf launching this is imperative, as a total engine failure of both engines can cause the vessel to capsize, with dire consequences to the persons on board.

The Authority has contacted the major outboard engine manufacturers in South Africa to confirm whether their outboard installations of these new DBW systems have full redundancy and provide independence between the outboards installed on these category vessels, as the Authority have been

informed of recent incidents where one failure on a particular manufacturer's installation has rendered total loss of propulsion on a vessel.

### 3. FINDINGS

The Authority has through its enquiries into the aforementioned incidents ascertained that certain outboard engines currently in use do not meet the requirements of the Merchant Shipping (National Small Vessel Safety) Regulations 2007, as amended.

It was discovered that one of the manufacturers used a single control system which operated two or more engines without any redundancy. It shares common components such as the single loom, the start stop switch, BCM and many more. As these are not separated, they operate as a single unit and if a failure occurs, it will result in a "deadship".

### 4. FEEDBACK

Suzuki has however confirmed the following:

quote

*"This is to confirm that we have developed an alternative installation in SA which provides for the independent control of each engine on dual engine installations which gives the system full redundancy.*

*This installation basically sets each engine up as a single engine installation and uses Genuine Suzuki Components."*

Unquote

### 5. SUZUKI OUTBOARD ENGINES AFFECTED

The following is a list of DBW models that the Authority is aware of in the Suzuki range that are non-compliant with the requirements of Regulation 6 (1) (c) of the Merchant Shipping (National Small Vessel Safety) Regulations 2007 as amended:

#### 1. Current Models:

- a. DF150AP
- b. DF175AP
- c. DF200AP
- d. DF250AP
- e. DF300AP
- f. DF325A
- g. DF350A

#### 2. Legacy Models

- a. DF300
- b. DF150 TG/ZG
- c. DF175TG/ZG

**Note:** any Suzuki engines that are fitted with Suzuki's "**Precision Control**" and that are NOT configured as single engines, are affected.

## 6. REMEDIAL ACTION

Principal Officers, Surveyors and Safety Officers are to ensure that all vessels currently fitted with outboard engines with DBW or Precision Control that do not comply with Regulation 6 (1) (c) Merchant Shipping (National Small Vessel Safety) Regulations 2007 as amended which area of operation is of Category B (less than 40NM from shore) and Category C (less than 15NM from shore), is downgraded to Category D (less than 5NM from shore) until such time that the conversion is completed and signed off.

It is recommended that Owners of vessels fitted with DBW or Precision Control systems without any redundancy in place, to have the conversion done as soon as possible.

Boat Builders and Fitment Centres of new builds or new engines are to ensure that the redundancy conversion is done before the vessel is produced for its final safety survey.

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