

JET SKI SX-R – A Stand up Type with Unique Maneuverability



In the personal watercraft (PWC) market, the runabout type, which is a stable and easy-to-ride vehicle that is generally ridden in a sitting position, has become the mainstream. However, there is a large demand for the unique maneuverability of the stand-up type, which is why we developed the JET SKI SX-R equipped with an environmentally friendly engine. With overwhelming acceleration performance and high turning performance and stability, the JET SKI SX-R enjoys a high reputation in the market and won Japan's Boat of the Year award in the PWC category in 2017.

Introduction

Personal watercrafts (PWC) are classified into the stand-up type, which has a riding capacity of one person and is generally ridden in a standing position, and the runabout type, which has a riding capacity of two or three people and is generally ridden in a sitting position. The stand-up type is a sporty vehicle and requires some skill to ride. The runabout type is stable and easy to ride, and can tow a wakeboard. The runabout type is a recreational vehicle and has been the most popular in the market.

Emissions regulations are becoming more and more stringent, and two-stroke engines, which have been used for conventional personal watercrafts, are being replaced by environmentally friendly four-stroke engines.

1 Background

The personal watercraft market began with the JS400, which is the stand-up personal watercraft Kawasaki began mass-producing in 1973. Recently, the runabout type has become more popular and since the 2012 model, Kawasaki has been mass-producing only runabout-type personal watercrafts equipped with an environmentally friendly engine.

However, the stand-up type is the origin of Kawasaki's

jet skis and there is still a large market demand for stand-up personal watercrafts with unique maneuverability. To meet this demand, we developed the JET SKI SX-R, which is also equipped with an environmentally friendly engine.

2 Specifications

For the engine, we modified the environmentally friendly, high-power, four-stroke, four-cylinder engine with a displacement of 1,498 cm³ adopted for Kawasaki's STX-15F runabout-type personal watercraft, and adopted this engine for the JET SKI SX-R. The JET SKI SX-R has a large hull for accommodating the high-power engine.

Table 1 shows the major specifications of the SX-R and 800SX-R (previous model). The SX-R's engine has double the maximum power of the previous model, and as shown in **Fig. 1**, has easy-to-handle power characteristics with a wider power band. The SX-R's hull is larger in size than the previous model by 355 mm in total length and 35 mm in width, thereby providing improved stability.

3 Features

To achieve both high performance for experienced riders and an easy ride for beginners, the SX-R has significantly improved acceleration performance, turning

Table 1 Comparison between SX-R and its previous model 800SX-R

Item	SX-R	800SX-R
Engine type	Four-stroke, four-cylinder engine	Two-stroke, two-cylinder engine
Displacement (cm ³)	1,498	781
Bore × Stroke (mm)	83 × 69.2	82 × 74
Maximum power (kW)	118/7, 500min ⁻¹	58.9/6, 250min ⁻¹
Maximum torque (N·m)	152/7, 250min ⁻¹	94.2/5, 750min ⁻¹
Total length (mm)	2,655	2,300
Total width (mm)	765	730
Total height (mm)	840	735

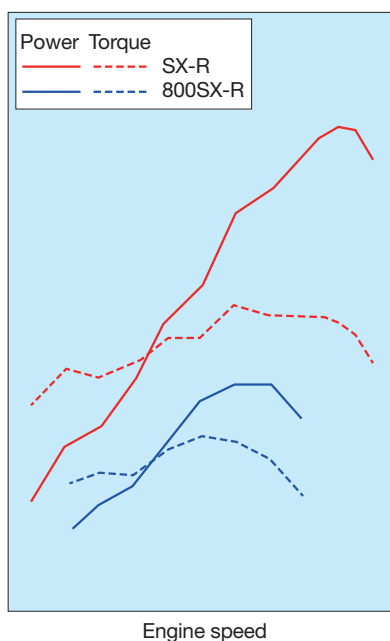


Fig. 1 Comparison of engine output characteristics

performance, and stability.

(1) Acceleration performance

The SX-R has double the maximum engine power of the previous model and has a newly designed, larger hull to accommodate the high engine power, thereby achieving overwhelming acceleration performance. As shown in **Fig. 2**, the SX-R reaches a high speed in a shorter time when accelerated from a stopped state, and in addition, the SX-R has a higher maximum speed than the previous model by approximately 25%.

(2) Turning performance

Based on feedback from people involved in racing, the SR-X was designed to have high turning performance to suit the high-power engine. The SR-X has a different hull

bottom width and angles from the bow to the stern, thereby achieving higher turning performance than the previous model, even with its increased size (**Fig. 3**). This enables light turning and tight turning unique to the stand-up type.

(3) Stability

With the increased hull size, the SX-R has improved stability in a stationary state, allowing for easy boarding. The SX-R also has improved riding stability, offers a more flexible riding position as the floor width has been increased to be the same from front to back, and has improved riding performance on various water conditions (**Fig. 4**).

The improved stability in a stationary state and during running has enabled experienced riders to enjoy advanced

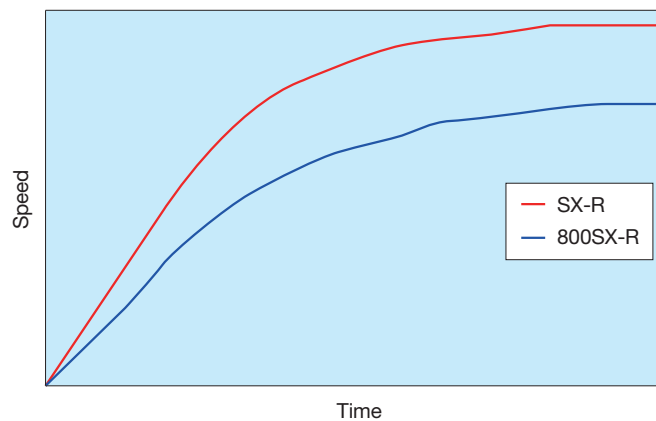


Fig. 2 Acceleration performance



Fig. 3 Hull bottom shape



Fig. 4 Floor shape

riding and beginner riders to handle this personal watercraft easily.

(4) Other

In addition to having high riding performance, the SX-R is equipped with useful functions, such as an anti-theft key and storage space below the handle pole in which ropes and other items can be stored.

Conclusion

The JET SKI SX-R enjoys a high reputation in the market and won Japan's Boat of the Year award in the PWC category in 2017. We will continue developing "fun to ride" products demanded by the market.

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