**A word from Suzuki engineers**

Koji Suzuki (Product Planning Group)

In charge of Strength Analysis. Suzuki Employee for 5 years.

We are pleased to introduce the DF300AP/250AP. We are sure that the gear case was rigid enough to accommodate the drive and propeller shafts on the same plane as much as possible. We have put our best effort into the design of the lower unit gears. We focused a lot on how we could create a design with less resistance than that of our conventional model. At the same time, we made sure that the shape of the lower unit gears is significantly more durable. At the same time we made sure that the gear case was higher than the conventional model. As Suzuki's fundamentals. For example, gears deliver needed function and gear durability. To achieve success, we stuck to the principle that the drive and propeller shafts should be aligned as closely as possible. We introduced Multi Point Sequential Fuel Delivery System to obtain the best balance without sacrificing drivability. We feel sure that the gear case was rigid enough to accommodate the drive and propeller shafts on the same plane as much as possible. To do this we used the latest computer analysis to create a gear case that is significantly more durable. At the same time we made sure that the shape of the lower unit gears is significantly more durable.

Masahiro Nanba (Experiment Group)

I'm looking forward to the day in the future when we can introduce a selective rotation system. I hope as many boaters as possible try it out. We put a lot of effort into the DF300AP/250AP LEAN BURN system by combining the four-cylinder system and the counter-rotation system. By introducing the Lean Burn system we can finely control the air-fuel ratio and increase the fuel efficiency. We focused on keeping the drive and counter-rotation system on the same plane as much as possible. We are proud of the system we introduced. The DF300AP/250AP LEAN BURN system is the first in the world to introduce a counter-rotation system. We hope that the day will come when we put back on our outward motor and the “ unseen and unaccompanied rotation system” they used to control...
The World’s First Selective Rotation Outboards

Award Winning Design Integrates both Regular and Counter-Rotation Operation into a Single Unit

Showcasing Suzuki’s advanced technologies and designs, Suzuki’s flagship DF300 outboard has been recognized twice as the most innovative outboard in the industry. The original DF300 was launched as the world’s first 220.7kW (300PS) 4-stroke outboard and was acknowledged for this by the National Marine Manufacturers Association (NMMA) with its 2006 Innovation Award.

The new DF300AP incorporates several new features, the most notable being Suzuki Selective Rotation. By strengthening the lower unit’s forward and reverse gearing, Suzuki engineers have designed a lower unit for the DF300AP that will run in either right or left rotation. With this world’s first feature, the DF300AP was recognized once again with the 2012 NMMA Innovation Award.

The DF250AP is based on the DF300AP and shares the same award winning innovations and designs of Suzuki’s flagship outboard. Advanced features like Suzuki Selective Rotation, Suzuki Precision Control, and Suzuki Lean Burn Control, plus big V6 power combine to provide boaters with outstanding performance and great convenience.

Main Features of the New DF300AP/250AP

- Rated at 220.7kW (300PS)/184kW (250PS), the 4.0-liter, DOHC V6 24-valve flagship DF300AP/250AP delivers plenty of power and torque.
- New lower unit features the Suzuki Selective Rotation system—the world’s first selective rotation outboard—and a new two-way water inlet.
- Suzuki’s Precision Control (Electronic Throttle and Shift System) offers smooth and positive gear operation.
- Suzuki’s Lean Burn Control system combined with Suzuki Precision Control delivers remarkable fuel economy over a wide operating range and smooth power transitions when power is required.
- Suzuki’s O2 Sensor Feedback Control System delivers low exhaust emissions.

Suzuki Receives Seventh NMMA Innovation Award

When it comes to leading edge technology, Suzuki has time and again, delivered technological advancements that put Suzuki outboards at the forefront of advanced outboard motor design. Recognizing the DF300AP as the most innovative outboard introduced over the past year, the National Marine Manufacturers Association (NMMA) awarded the DF300AP with its prestigious NMMA Innovation Award for 2012 marking an unprecedented seventh award for Suzuki and following last year’s award with the new DF50A/40A, a second, unprecedented back-to-back win for Suzuki.

The number of awards that Suzuki has garnered over the years reflects the company’s strong desire to put boaters at the forefront of advanced outboard motor design. Recognizing the DF300AP as the most innovative outboard introduced over the past year, the National Marine Manufacturers Association (NMMA) awarded the DF300AP with its prestigious NMMA Innovation Award for 2012 marking an unprecedented seventh award for Suzuki.

Superior Durability

With the addition of Suzuki Selective Rotation, gears in the lower unit were redesigned using a different alloy and significantly larger diameters delivering greater rigidity. The gears are specially heat treated creating gears that are highly durable.

New Lower Unit

Compared to the original DF300, the biggest changes you’ll find on these outboards are in the lower unit, which was redesigned for the Suzuki Selective Rotation system—the world’s first integration of regular and counter-rotation mechanics into a single unit. The system consists of a new drive gear layout in the lower unit that allows the outboard to operate in either regular or counter-rotation mode, and a switch that connects to a circuit in the engine compartment that engages the counter-rotation mode. Like the DF300, the new DF300AP/250AP utilizes an advanced O2 Sensor Feedback Control system that put Suzuki outboards at the forefront of advanced engine control. Suzuki’s O2 Sensor Feedback Control system delivers low exhaust emissions.

Two-way Water Inlet

The engine’s cooling system relies on water supplied through low water intakes located on the lower unit. Utilizing this dual low water inlet configuration increases water flow into the lower unit, which delivers greater cooling efficiency. Positioning the forward inlet at the gear case nozzle delivers a greater water supply especially at high speeds. The second inlet is also positioned lower allowing the DF300AP/250AP to operate in shallow water conditions.

Newly Designed Low Drag Gear Case

The new DF300AP/250AP features a redesigned low drag gear case developed to accommodate the new gears utilized in the Suzuki Selective Rotation system. The case itself is actually larger than the previous model to provide increased gear durability, however it is designed with a smoother, more hydrodynamic shape that allows it to move through the water with less drag and greater efficiency. Areas with the highest drag are indicated in red in the illustrations below. The comparison shows that the new design allows the lower unit to slice through the water with less drag.

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Suzuki’s Lean Burn Control System

Suzuki’s innovative Lean Burn Control System was first introduced on the DF140/150/160 to great acclaim from boaters and the media alike. It predicts fuel needs according to operating conditions allowing the engine to run on a more efficient fuel mixture through the use of a lean-air fuel ratio. It delivers its benefits over a wide operating range, providing significant improvements in fuel economy from low-speed operation into the cruising range. Combining this system with the Suzuki Precision Control, electronic throttle and shift system, allows the operator precisely control to increase or decrease the engine RPM for improved fuel economy over a wider operating range. This combination also delivers smooth power transitions throughout the entire RPM range. In-house testing shows that while cruising, the DF300AP is 26% more economical than the original non-lean burn DF300 without sacrificing any power of the original DF300.

Comparision of Fuel Consumption per 1 Liter of Fuel

(Data used in the graphs were collected through in-house testing under uniformed conditions. Results will vary depending upon operating conditions (boat design, size, weight, weather, etc.).)

Lean Burn

\[
\begin{align*}
\text{OEM} & \quad \text{Fuel Consumption} \\
\text{New DF300AP} & \quad \text{Comparison} \\
\end{align*}
\]

\[\frac{\text{Orginal DF300}}{\text{New DF300AP}}\]

\[\frac{\text{ lean}}{\text{ rich}}\]

32-Bit ECM and Suzuki’s Multi Point Sequential Electronic Fuel Injection

Suzuki pioneered the use of multi-point sequential electronic fuel injection in four stroke outboards with the introduction of the original DF90 and DF90AP. Today, the DF300AP/250AP multi point sequential fuel injection system is the ECM (Engine Control Module), which constantly monitors a large amount of data, in real-time, from a series of sensors placed in critical areas on the engine. This comprehensive network of sensors includes the Manifold Absolute Pressure Sensor, Crankshaft Position Sensor, Intake Air Temperature Sensor, Cylinder Wall Temperature Sensor, Camshaft Position Sensor, and Exhaust Jacket Temperature Sensor. Using a very powerful 32-bit computer, the ECM processes data from all of these sensors and instantly calculates the optimum amount of fuel to be injected at high pressure into each of the 96’s cylinders by the multi point sequential fuel injection system. Benefits of this system include reduced exhaust emissions, which allow the DF300AP/250AP to comply with the California Air Resource Board (CARB) 3-star emission requirements, lower fuel consumption, smoother starts, crisper acceleration, smoother performance, and maximum efficiency.

Suzuki’s Advanced Technology Delivers the Umoest in Performance VVT (Variable Valve Timing)

Suzuki’s engineers designed the in-line 6-cylinder engine with an aggressive cam profile that delivers maximum output and performance at high rpm. In coupling this cam profile with Suzuki’s advanced Variable Valve Timing (VVT), the DF300AP/250AP attacks the additional torque that outboards need for accelerating in the low to mid-range. VVT achieves this by adjusting the timing of the intake valves, allowing them to open before the exhaust valves are fully closed, creating a momentary overlap in the timing where both sets of valves are open. Using VVT, this overlap can be increased or decreased by altering intake timing with the camshaft resulting in optimum timing for low and mid-range operation.

Suzuki Precision Control (Electronic Throttle and Shift Systems)

Suzuki Precision Control is a technologically advanced computer-based control system that replaces the mechanical control cables found in conventional control systems with electronic wiring that eliminates the source of friction and resistance. While you enjoy smooth, little friction throttle and shift operation, the system’s computer is processing and transmitting commands in real-time to actuators at the engine that deliver precise throttle controls with smoother, decisive shifting. This is most evident in the low rpm range where operation is noticeably smooth and accurate. When combined with Suzuki’s Lean Burn Control System it allows control of fuel and air flow to boost the limit of the controllable revolution range improving fuel economy over a wide operating range. Suzuki Precision Control also features built-in systems that help guard the engine and drive against damage due to mishandling, and its design and simple wiring make installation easy, reducing the time required for rigging and adjustment. The system offers precision control for single, twin or triple installation as well as dual station operation.

Control Panel

Suzuki’s Remote Control System puts precision operation right at your fingertips.

Suzuki Modular Instrument System (SMS)

SMS MULTI-FUNCTION GAUGE

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Suzuki’s Modular Instrument System (SMS) is a multi-gauge panel mounted in front of the high-coast, but mostly displays to monitor real-time graphical and numerical digital data. When connected into the SMS system, it uses many “engine functions” operable as a speedometer, tachometer, GPS*, and many others. (*)GPS requires additional hardware.

*GPS Multi-Function Gauge

*Engine Multi-Function Gauge

**The detail instructions of display-operation are explained in the Operation & Installation Manual.
DF300AP/250AP is a tuned long intake manifold. Using long intake pipes enhances the airflow into the engine, the system provides the DF300AP/250AP with improved low-end power.

Spherical Bore Throttle Body
An 83mm spherical bore throttle body smooths the turbulent airflow into the engine that occurs as the throttle begins to open. Providing a smoother airflow during acceleration results in increased throttle control and stable engine operation at low rpm.

Fuel Cooler
The cooler the fuel is, the denser it is, and the denser it is the better performance it delivers. Incorporating a fuel cooler in the DF300AP/250AP’s fuel delivery system cools the fuel before it enters the engine. Providing the engine with an optimum fuel supply results in better combustion and more performance.

Two-Stage Cam Drive System
The DF300AP/250AP utilizes a two-stage cam drive system that incorporates both gears and a chain. First stage gears transfer power between the crankshaft and the drive shaft from which a second stage utilizes a chain to deliver power from the drive shaft to the camshaft. This system allows for the use of smaller cam sprockets, which in turn allow for a reduction in valve angles also reducing the size of the cylinder head. An automatic hydraulic tensioner incorporated into the timing chain system keeps the chain properly tensioned and provides years of maintenance-free operation.

Strengthened Forged Pistons
The upper portion of pistons used in the DF300AP/250AP is treated with an alumite coating that increases heat resistance. A rain coating applied to the piston skirt increases resistance to wear and reduces friction.

Long Track Intake Manifold
Another performance enhancing feature on the DF300AP/250AP is a tuned long track intake manifold. Using long intake pipes tuned to provide smooth airflow into the engine the system provides the DF300AP/250AP with enhanced low-end power.

Large Air Intake with Water Separator
The DF300AP/250AP is designed with a large air induction port that maximizes airflow into the engine to obtain maximum power output. The increased airflow produces more low- to mid-range torque and provides a wide power band that is necessary in an outboard engine. Suzuki also designed the system with a water separator, which aids in keeping water out of the electronic throttle body and a heat shield to keep intake air from being heated by the engine.

Suzuki Water Detecting System
Water in the fuel can be the source of poor combustion, lower power output, and corrosion. To help protect the engine from moisture in the fuel, the DF300AP/250AP is equipped with a water detecting fuel filter that alerts the operator with both visual and audio warnings when water is present in the fuel.

Water-Cooled Voltage Regulator
The outboard’s electric system includes a water-cooled voltage regulator that dissipates heat in the regulator to enhance engine durability.

Fusing protecting the DF300AP/250AP’s electric system are conveniently accessible while offering a clean exterior. The outboard’s electric system includes a water-cooled voltage regulator that dissipates heat in the regulator to enhance engine durability.

Highly Reliable Direct Ignition System
Suppling spark to the big V6 engine is an advanced ignition system that utilizes integral type spark plug caps with built-in ignition coils. The system is controlled by the outboard’s powerful 32-bit computer and provides each cylinder with optimum spark timing. In addition to reducing the number of parts and simplifying the wiring system, this arrangement greatly reduces electronic engine “noise” that can interfere with VHF radios, fish finders, and other marine electronics.

Easier Maintenance Dual Engine Flush Ports
The buoy of sand and salt in the engine’s cooling system can lead to engine damage. To aid in reducing such buildup, the DF300AP/250AP is designed with two freshwaterflush ports that make flushing of the cooling system as convenient and easy as possible. With one port located on the rear panel and the second on the front panel, access is easy and flushing out the system is possible whether the boat is in or out of the water.

Suzuki’s Anti Corrosion Finish
The outside of the DF300AP/250AP is covered with Suzuki’s antiscorrosion finish that is specially formulated to increase the durability of the engine and help protect parts of the aluminum exterior that are constantly exposed to saltwater. This advanced finish offers maximum bonding to the outboard’s aluminum surface, creating an effective treatment against corrosion.

Convenient Dual Circuit Charging System
The DF300AP/250AP incorporates a dual circuit charging system that can be adapted to accommodate the dual-battery configurations often used on large boats. When used in this configuration the system is designed to charge both the main and auxiliary batteries simultaneously but on independent circuits. With this you can drain down the accessory battery powering your electronics and still have a fully charged main battery for starting the motor.