

PRODUCT INFORMATION

DF140

4
STROKE

FOUR STROKE / Electronic Fuel Injection



EURO 1
EMISSIONS STANDARDS



Leading the Industry in 4-Stroke Outboard Design and Technology

In developing its 4-stroke outboard line Suzuki engineers have taken great advantage of the company's extensive experience with 4-stroke motorcycle and automotive engines, turning out outboards that have time and again led the industry with advanced technology and designs, and raised the bar for



DF70

outboard quality and performance.

The current lineup spans from the little single cylinder DF2.5 to the very powerful V6 DF300, and features engines that deliver excellent performance across the entire powerband, clean and economic operation, plus low noise and low vibration. It also proudly features models that have won awards and acclaim for their advanced technology, innovative ideas and

designs. Outboards like the DF60 and DF70, winner of the National Marine Manufacturers Association's

(NMMA) Innovation Award for the first 4-strokes to utilize digital sequential electronic fuel injection, and the DF40 and DF50—the first 4-strokes to use a self-adjusting timing chain in a package that included a high-performance, four-valve per cylinder, dual overhead camshaft design—which received the same award a year later making Suzuki the industry's first back-to-back winner of the Innovation Award.



Suzuki moved forward, breaking new ground with the DF90 and DF115 which used an offset driveshaft in combination with a two-stage mixed camshaft drive system and two-stage gear reduction system to make these the most compact outboards in their class. The DF140 followed delivering even greater performance from a 4-stroke in-line 4-cylinder outboard that weighed just 186kg. The lineup has since filled out and expanded upward

with the addition of Suzuki's breakthrough fuel-injected V6 4-stroke outboards which include the DF250 and another award winner for Suzuki, and the DF300—the world's first 300 horsepower 4-stroke.



The DF140 four-stroke is a four cylinder in-line outboard motor that delivers smooth horsepower through advanced technology. Suzuki designed the DF140 to be compact and deliver power comparable or better than a two-stroke outboard. And of course, it is environmentally friendly. The DF140 produces less emission, delivers excellent fuel efficiency, plus provide quiet operation, low vibration and superb reliability so that your boating experience is always a pleasurable one.

Delivering the Performance

Obtaining more power from an engine can be done in ways such as increasing the number of cylinders, displacement, rpms, etc., but often the corresponding increase in size and weight detracts from the improvement in total power. With the DF140, our goal was to obtain 103kW (140ps) from a compact, lightweight four-cylinder engine without forfeiting reliability. Obtaining this from a 2,044cm³ engine with an 86mm bore x 88mm stroke results in an engine that delivers nearly 51.5kW (70ps) per liter (50.4kW/ℓ [68.5ps/ℓ]).

To get maximum power output from this in-line four, it was necessary to increase the supply of air to the engine. So we incorporated an enhanced air intake system to obtain maximum airflow into the engine (fig.1). Air entering the intake is first channeled into a large silencer then on through the long branch aluminum intake manifold and finally into the cylinders via the DF140's high performance DOHC, four-valve per cylinder head (fig.2, 3, 4).

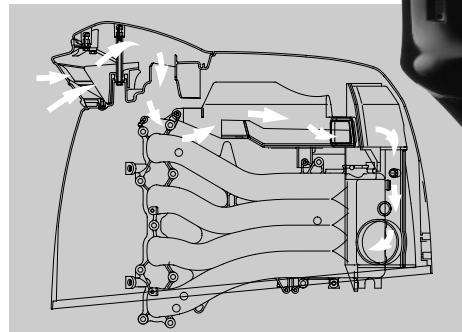
With an increased volume of air flowing efficiently to the engine it was necessary to increase exhaust efficiency as well. Therefore we chose, as we did on the DF90/115, a "4 into 2 into 1" exhaust system. Cast into the cylinder head and cylinder block, this race proven technology reduces drag in the exhaust system allowing smooth and orderly exhaust flow out of the cylinders.

The entire arrangement, from the shape of the air intake through to the exhaust system, is designed to increase low end to mid range torque and provide a wide powerband that is a must in an outboard engine.

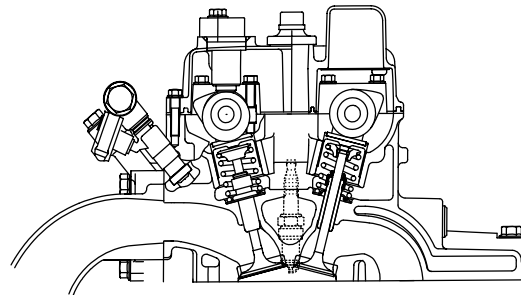


DF140

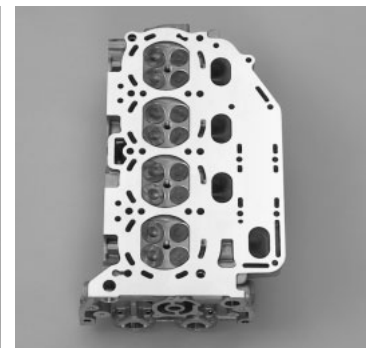
(fig.1)



CYLINDER HEAD ASSY (fig.2)



Cylinder Block (fig.3)



Cylinder Head (fig.4)

Keeping the Outboard Cool

The DF140 utilizes a comprehensive cooling system that circulates water not only through the block but also cools the crankcase, intake manifold, fuel line. Just as in the DF115, fan blades incorporated into the flywheel design (fig.5) efficiently expel heat from within the engine cover, out of the side of the cowl, keeping the temperature within the cowl under control (fig.6).

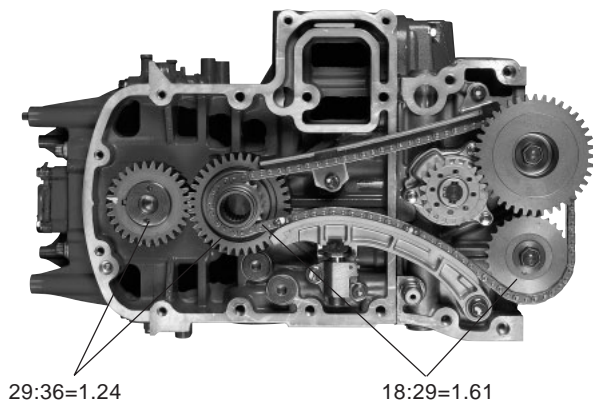
Delivering Efficient Propulsion

With such a high performance engine now at our disposal, losing any power in the propulsion system would be a waste, so an efficient means of supplying maximum propulsion was sought out. Unlike rubber tires on a surface, a propeller rotating at a high speed in the water has a tendency to slip. As shown in fig.7, when two propellers of the same pitch but different diameters are rotated, the smaller propeller will slip more than the larger. So to obtain maximum propulsion, spinning a bigger propeller with a suitable pitch is the answer.

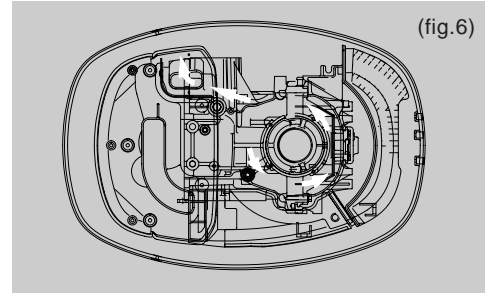
But to spin a large propeller, an increase in propeller shaft torque is necessary. To obtain the necessary increase in torque, the corresponding increases in weight and resistance due to the use of larger gears and a larger gearbox does not always provide effective results. Utilizing a two-stage gear reduction system provides the necessary torque without adding unwanted bulk and weight.

The reduction ratio used in our two-stroke DT140 is 2.08 (12:25). By comparison, the DF140 utilizes a first stage gear reduction (29:36) between the crankshaft and the driveshaft and a second stage reduction (12:25) in the lower unit's gear case resulting in an overall gear ratio of 2.59 (fig.8, 9). Such powerful reduction allows the DF140 to turn a propeller that is one inch larger than the propeller utilized on the two-stroke DT140, delivering greater acceleration than the DT140 (fig.10). Along with greater acceleration, the gear reduction in combination with the four-stroke engine's wide power band is capable of handling a wide variety of loads, which is a significant benefit to boaters whose loads vary from day to day.

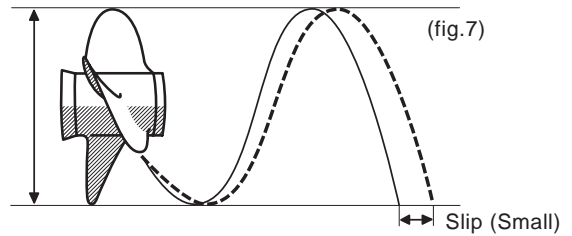
Reduction Gear & Cam Drive System (fig.9)



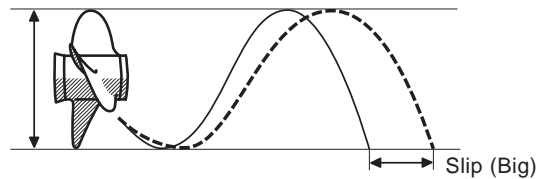
Flywheel magneto (fig.5)



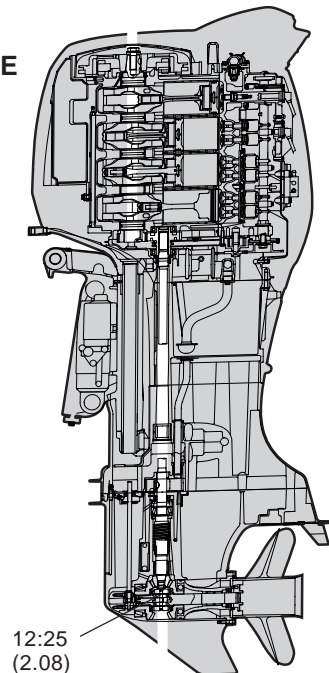
(fig.6)



(fig.7)



OFFSET DRIVE SHAFT (fig.8)



Making the DF140 Compact

Utilizing a small displacement, high output engine contributed greatly to keeping the size and weight of the DF140 to a minimum. But to keep the outboard's size and weight down, we also took a fresh look at each component often redesigning parts we felt could be improved. Parts like the clamp brackets, which are now designed lighter than those previously used. Such intense scrutiny left the DF140 at an impressively light weight weighing slightly less than the DF115. Delivering nearly 51.5kW/ℓ (70ps/ℓ), the resulting power to weight ratio (1.85kg/kW [1.36kg/ps], UL transom height) broke what had been the norm in four-stroke outboard motor design to offer greater performance.

Also contributing to the compact size of the DF140 is the use of an offset drive shaft. While making the DF140 more compact than competing outboard models (fig.11), this system positions the crankshaft in front of the drive shaft (fig.8), moving the outboard's center of gravity forward thus improving power performance as well as reducing vibration.

Further size reducing contributions can be found in the utilization of a two-stage mixed camshaft drive system. Incorporating both gears and a chain, the system's first stage gears transfer power between the crankshaft and the drive shaft (29:36) while the second stage utilizes a chain to deliver power from the drive shaft to the camshaft (18:29) (fig.9). This allows for the use of smaller diameter cam sprockets, which in turn allows a reduction in valve angles also reducing the size of the cylinder head.

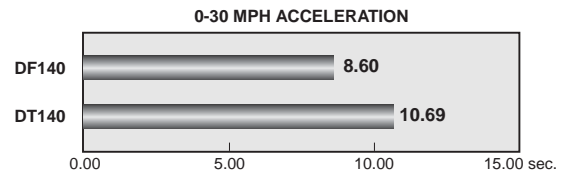
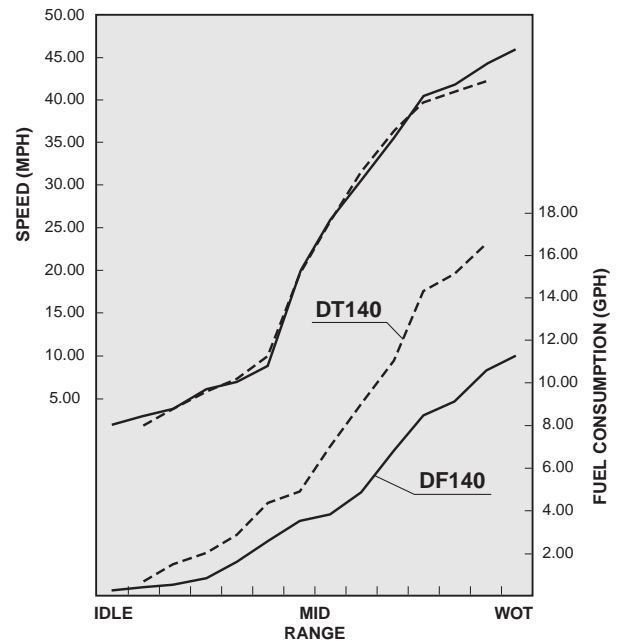
Excellent Fuel Economy

The graph (fig.10) shows a comparison in the performance of the DF140 engine with the two-stroke DT140. At idle, fuel consumption of the DF140 is over 60% less than the DT140. Even when operating at maximum performance levels, the DF140 consumes over 30% less fuel than its two-stroke counterpart. A comparison in performance levels also shown in the graph illustrate the DF140's wide power range and its ability to deliver power even from lower rpm. Powerful acceleration is also evident with the DF140 reaching the 30mph mark approximately 2 seconds faster than the DT140.

Keeping Your Boating Experience Pleasurable

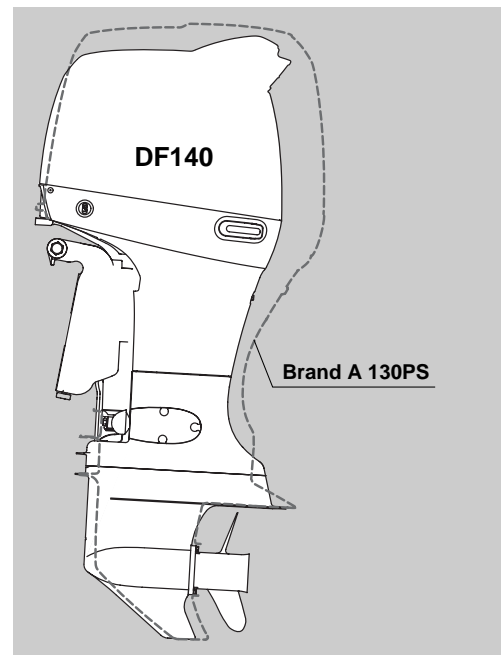
Of course the DF140 provides the same level of reliability that Suzuki's entire two and four-stroke lineups have long been known for. Quiet operation, on par with the DF115, further enhances your boating experience allowing conversation even at speed. Easy engine access makes maintenance easy and there is no need to mix oil with the fuel as is necessary with a two-stroke outboard. This eliminates the smell and mess associated with two-stroke operation while saving both time and money at the fuel pump.

COMPARISON (fig.10)



According to Suzuki internal running test.

FOUR-STROKE ENGINE SIZE/ PROFILE COMPARISON (fig.11)



Low Emissions

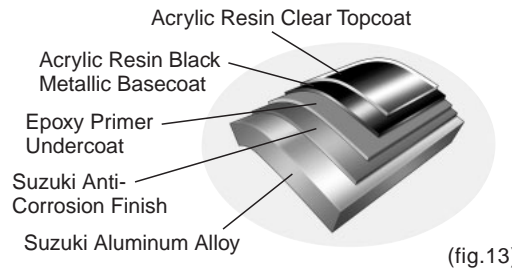
As found on the DF40 through DF115, the DF140 incorporates an ECM (Electronic Control Module) (fig.12) and Suzuki's Multi Point Sequential Fuel Injection. The ECM constantly monitors crucial data, in real time, from a series of sensors placed in critical areas on the engine. The sensor system is made up of the Manifold Absolute Pressure Sensor, Crankshaft Position Sensor, Intake Air Temperature Sensor, Cylinder Wall Temp Sensor, Camshaft Position Sensor, and Exhaust Jacket Temp Sensor. The data from these sensors is conveyed to ECM's computer, which instantly calculates the optimum amount of fuel to be injected at high pressure by the Multi Point Sequential Fuel Injection system into each of the cylinders. This system greatly reduces exhaust emissions allowing the DF140 to pass the CARB 2008 regulations, the strictest exhaust regulations to date, while providing lower fuel consumption, smooth starts, crisp acceleration, smooth performance and maximum efficiency.

The Idle Air Control with its Fast Idle Function provides enhanced performance and operation. A quiet linear solenoid system that is programmed to let the engine idle at 700 rpm regulates intake air under different running conditions, increasing intake air when the engine's rpm's are low and decreasing when they are high.

The Fast Idle Function provides smooth, quick starts and stable engine warm-ups. When the engine is started, the IAC valve fully opens to let an increased flow of air into the cylinder.

Suzuki's Anti Corrosion Finish

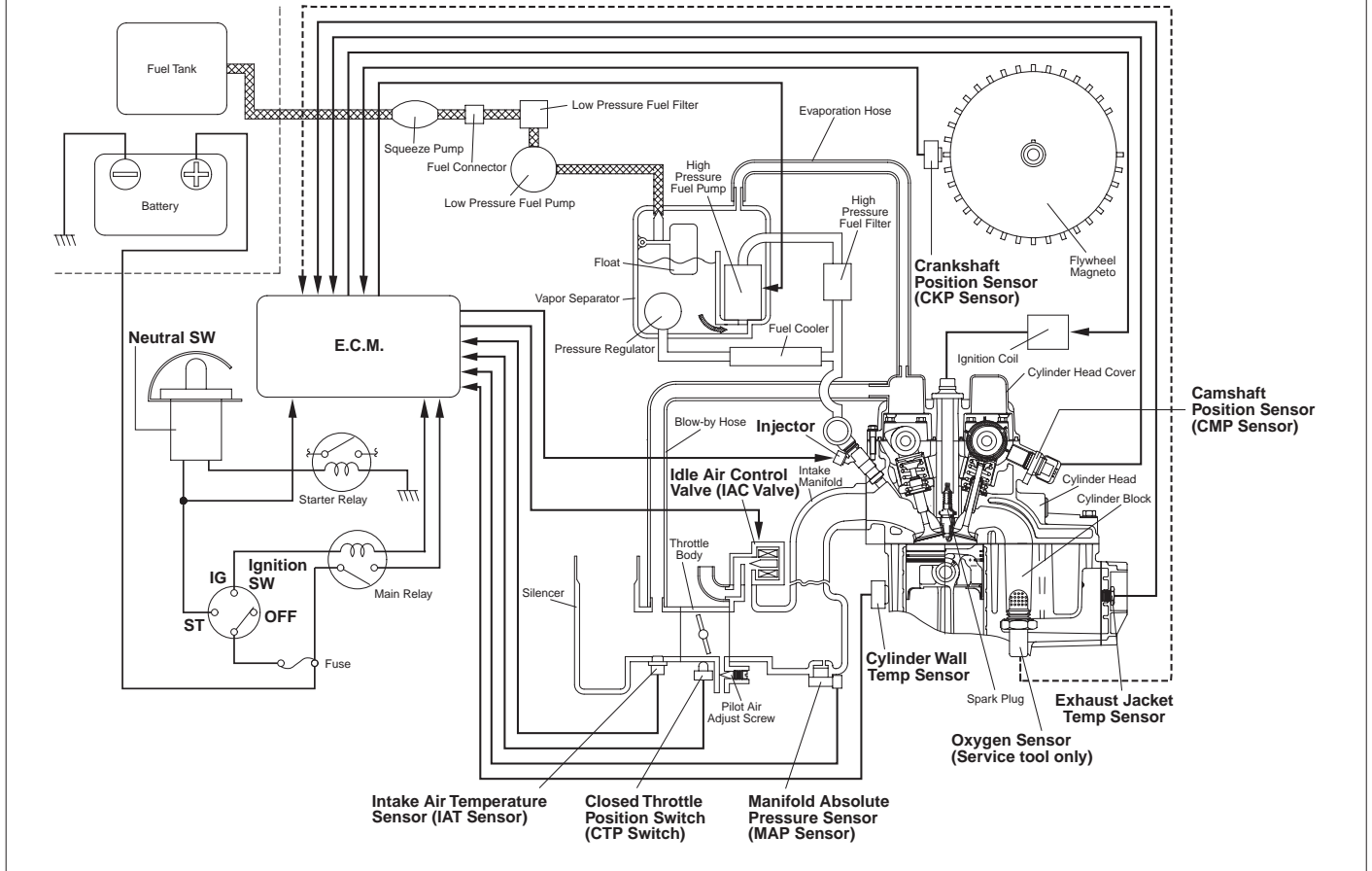
The outside of the DF140 is covered with Suzuki's anti-corrosion finish that is specially formulated to increase the durability of the engine and help protect parts of the aluminum exterior that are constantly exposed to saltwater. This advanced finish offers maximum bonding of the finish to the outboard's aluminum surface, creating an effective treatment against corrosion.



(fig.13)

Multi Point Sequential Electronic Fuel Injection

(fig.12)



Suzuki utilizes an electronic Dash Pot System where other manufactures generally use mechanical systems. The Electronic Dash Pot System only functions when there is a sudden throttle transition, from open to closed, smoothly reducing rpm's to reduce stress on the engine.

The timing chain is equipped with an automatic hydraulic tensioner to keep the chain properly tensioned. This system provides years of maintenance-free operation.

While contributing to the compactness of the outboard engine, the offset drive shaft moves the engine forward placing its axis of inertia, the point where vibrations produced by the engine are at a minimum, up over the upper engine mount thus greatly reducing vibration. Larger motor mounts—compared to our two-stroke V6, the DT150, 1.8 times larger on the upper and 1.6 times larger on the lower—provide a further reduction in vibration.

The DF140's high output alternator delivers a total of 40A (12V) of electrical power. The alternator is designed to deliver a majority of that power at lower rpms so there is plenty of power to keep an assortment of electronics up and running (fig.14).

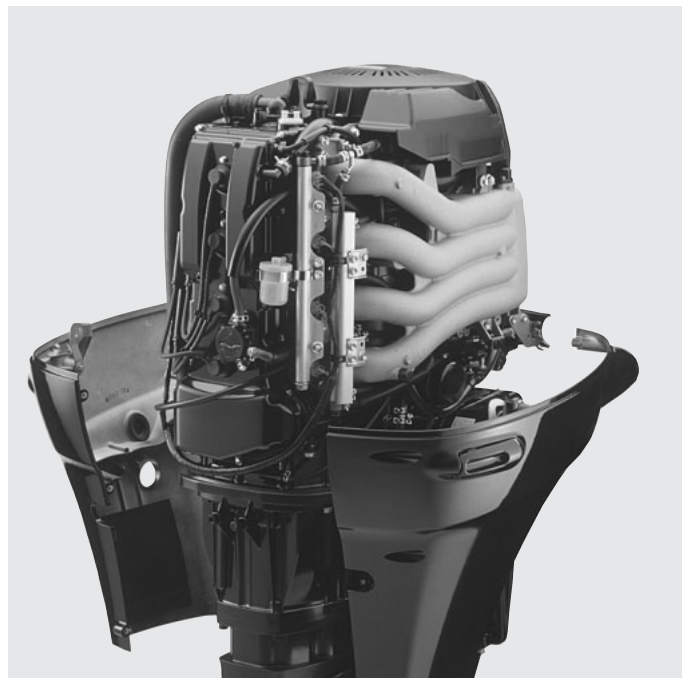
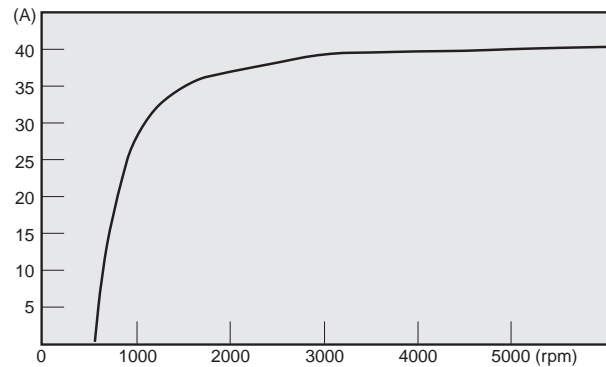
The distinctive styling found throughout Suzuki's DF series is evident in the DF140. Smooth, flowing lines present a refined image that promotes their clean running characteristics. The upper cover incorporates a large air-intake duct that is designed to increase airflow into the engine while helping to prevent moisture from entering inside the engine cover. The lower cover separates into two sections; the port and starboard, to allow easier access for maintenance to the four-stroke engine (fig.15).

An oil change reminder system, built into the Multi-Function Tachometer, informs the user with a flashing oil lamp that it's time to change the oil. Oil changes are easy since the oil drain plug is located on the front of the oil pan allowing draining of the oil with the engine in the vertical position. Also, a spin-on oil filter is used for easy maintenance and the oil filler cap is located on the top of the cylinder head for easy access from the boat.

Along with its oil change reminder system, Suzuki's Multi-Function Tachometer (fig.16, optional) includes a comprehensive monitoring system to provide you with an excellent backup to the performance of the outboard engine. Using data supplied from each sensor to the ECM, this system detects abnormalities in the running or the outboard giving you the needed information and alerts, so that appropriate measures can be taken before the problem becomes serious.

A counter rotation model is also available to keep your boat on a straight course with good handling, maneuverability and maximum speed on twin engine configurations.

ALTERNATOR OUTPUT (fig.14)



The lower cover separates into two pieces (fig.15)



MULTI-FUNCTION TACHOMETER
(optional)
(fig.16)



DF140 SPECIFICATIONS

MODEL	DF140	Counter Rotation Model
ENGINE TYPE	4-Stroke DOHC 16 Valves	
FUEL DELIVERY SYSTEM	Multi Point Sequential Electronic Fuel Injection	
TRANSOM HEIGHT mm (in.)	L:508 (20), X:635 (25)	
STARTING SYSTEM	Electric	
WEIGHT kg (lbs.)	L:186 (410.1), X:191 (421.1)	
NO. OF CYLINDERS	4	
PISTON DISPLACEMENT cm ³ (cu.in.)	2,044 (124.7)	
BORE × STROKE m/m (in.)	86 × 88 (3.4 × 3.5)	
MAXIMUM OUTPUT kW (ps)/rpm	103 (140)/6000	
FULL THROTTLE OPERATING RANGE rpm	5600 — 6200	
STEERING	Remote	
OIL PAN CAPACITY ℓ (US/lmp. qt.)	5.5 (5.8/4.8)	
IGNITION SYSTEM	Fully-transistorized	
ALTERNATOR	12V 40A	
ENGINE MOUNTING	Shear Mount	
TRIM METHOD	Power Trim and Tilt	
GEAR RATIO	2.59:1	
GEAR SHIFT	F-N-R	
EXHAUST	Through Prop Hub Exhaust	
PROPELLER SIZE (in.)*	● 13-1/2 × 15 (X1500)	○ 14 × 18 (XSZ1800)
● 3-blade aluminium type	● 14 × 17 (X1700)	○ 14 × 20 (XSZ2000)
○ 3-blade stainless steel type	● 14 × 19 (X1900)	○ 14 × 22 (XSZ2200)
	● 14 × 21 (X2100)	○ 14 × 24 (XSZ2400)
	● 14 × 23 (X2300)	
	○ 14 × 18 (XS1800)	
	○ 14 × 20 (XS2000)	
	○ 14 × 22 (XS2200)	
	○ 14 × 24 (XS2400)	

*Boats and motors come in a large variety of combinations. See your authorized dealer for correct prop. selection to meet recommended RPM range at W.O.T.

Please read your owners manual carefully. Remember, boating and alcohol or other drugs don't mix. Please operate your outboard safely and responsibly.

Suzuki encourages you to operate your boat safely and with respect for the marine environment.

SUZUKI MOTOR CORPORATION reserves the right to change, without notice, equipment, specifications, colors, materials and other items to apply to local conditions. Each model may be discontinued without notice. Please inquire at your local dealer for details of any such changes. Actual body colors may differ slightly from the colors in this brochure.

DF140 FEATURES

- Electronic Fuel Injection
- Two-Stage Mixed Cam Drive System
- Oil-Bathed Timing Chain
- Cool Air Intake System
- Offset Driveshaft
- 4-into-2-into-1 Exhaust System
- Over-Rev Limiter
- Low Oil Pressure Caution
- Oil Change Reminder System
- Emergency Stop Switch
- Fully-Transistorized Ignition
- Temp Activated Fast Idle
- Full Shifting
- Neutral rpm Limiter
- P.T.T. Switch
- Tilt Stopper
- Anti-Corrosion System
- Fishing Line Cutter
- Freshwater Engine Flush Port
- The lower cover separates into two pieces
- 40A Alternator
- Counter Rotation Model Available
- Multi-Function Tachometer (optional)

EURO 1
EMISSIONS STANDARDS

EURO 1 Emissions Standards

This label represents conformity to EU emissions standards (exhaust gases and noise levels) set by the European Parliament and the Council. These standards for 4-stroke outboard motors are effective on January 1st, 2006. The outboard motors stuck on the former "EU 2005 Emissions Standards" label are also in conformity with these standards.



SUZUKI MOTOR CORPORATION
300 TAKATSUKA, MINAMI, HAMAMATSU, JAPAN
DF140 Product Information 0705
99999-C2044-031 © Printed in Japan