

# PRODUCT INFORMATION

*FOUR STROKE*

## DF60/70

*Electronic Fuel Injection*



 **SUZUKI**

# ***Suzuki Looks to the Future With the DF60 and DF70.***

*The new DF60 and DF70 4-stroke outboard motors are the next step in the evolution of environmentally friendly outboards from Suzuki. Drawing upon its years of solid research into motorcycle, automotive and marine engines, Suzuki has applied its advanced technology and know-how into the creation of a new breed of 4-stroke outboard engines. The result is a pair of outboards that provide you with the power and performance you demand, as well as pass future E.P.A. requirements set to take effect in the year 2006.*

*Underneath their clean, simple lines covered in Shadow Black Metallic paint, you'll find the first 4-stroke outboard engines equipped with a Multi Point Sequential Electronic Fuel Injection system. Controlled by an Electronic Control Unit this system provides optimum performance and reliability at all times. These outboards are also equipped with Suzuki's exclusive Multi-Function Tachometer.*

*The release of these two new outboards reflects Suzuki's firm intention to stay at the forefront in the development of products that are sensitive to the continuous need to preserve our global environment.*



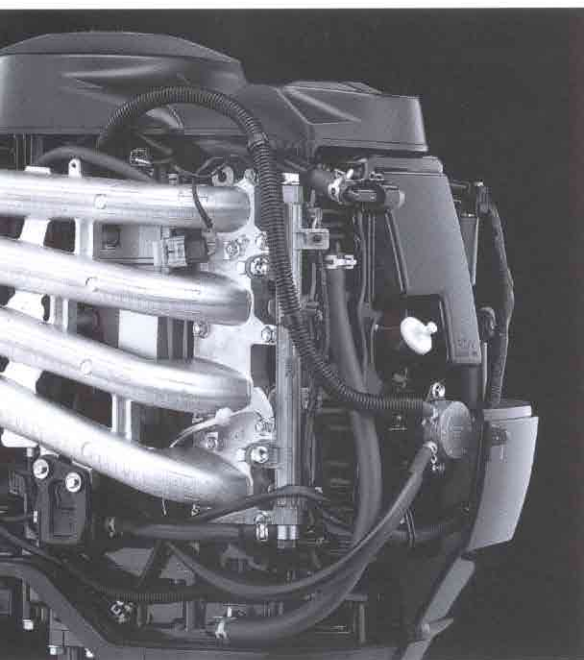
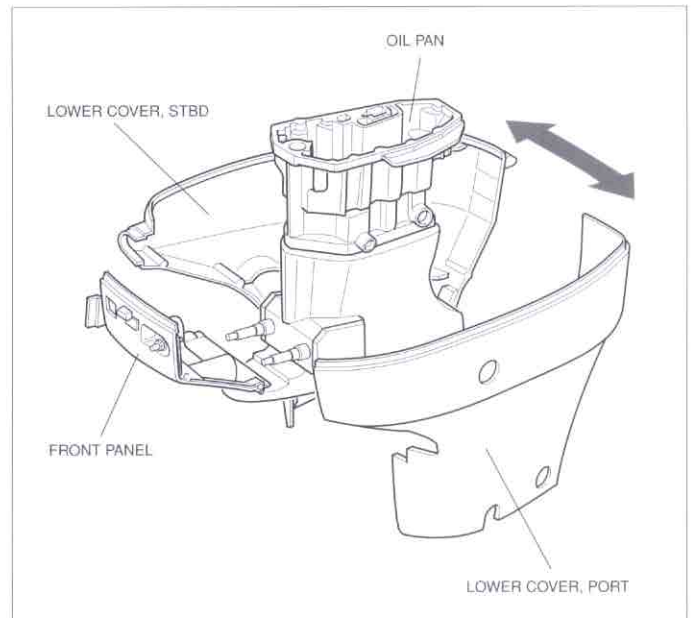


The following points have been kept in mind to design the DF60 and DF70 4-stroke outboard motors.

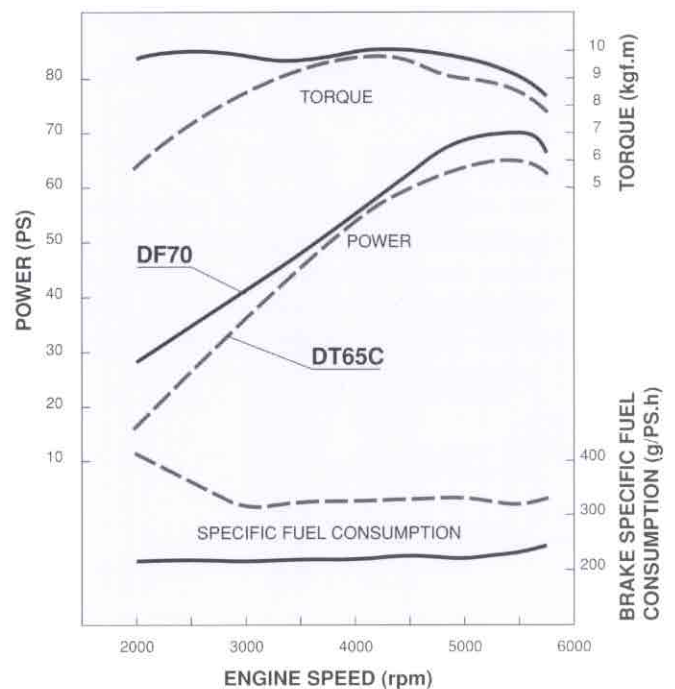
- ❶ Compliance with future EPA regulations set to take effect in the year 2006.
- ❷ Low fuel consumption, low noise level, and low vibration.
- ❸ Incorporate Electronic Fuel Injection into 4-Stroke outboards.
- ❹ Distinctive styling with new Shadow Black Metallic color and new graphics.
- ❺ Base the outboard's engine on Suzuki's successful 1298cc 4-cylinder automotive engine.

The distinct styling found in Suzuki's DF9.9 and DF15 is evident in the DF60 and DF70 as well. Smooth, distinctive lines present a refined image that promotes their clean running characteristics. The engine lower cover is made of plastic thus reducing the overall weight of the engine. The lower cover also separates into two, the port and starboard side sections. This design allows easier access to the 4-stroke engine for maintenance and repairs. Both models are also equipped with Suzuki's exclusive Multi-Function Tachometer.

The graph shows a comparison of the performance of the DF70 engine with the DT65C. At idle, fuel consumption of the DF70 is a mere 25% of the DT65C. Even at maximum performance levels, the DF70 consumes more than 20% less fuel than its 2-stroke counterpart. A relatively flat torque curve also provides plenty of power throughout the entire speed range from low to high speeds and increases its overall drivability.



## PERFORMANCE CURVES



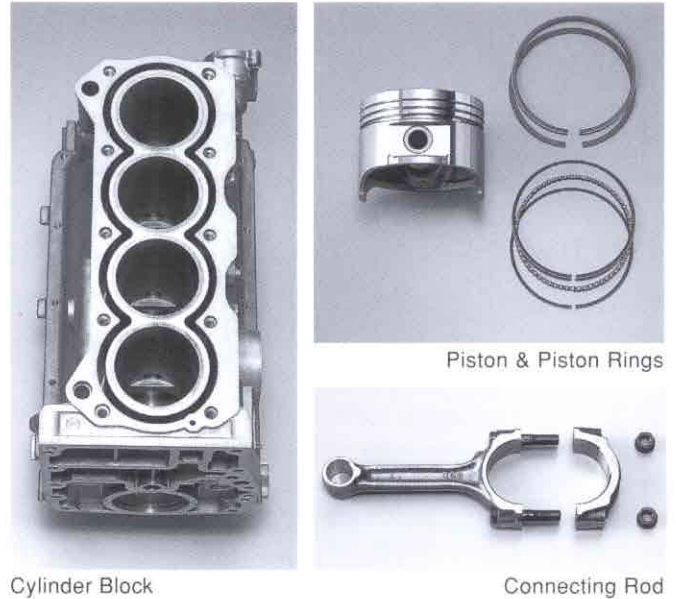
Drawing upon a long history in the design and manufacturing of motorcycle, automotive and marine engines, Suzuki has flawlessly combined its high level of technology and know-how acquired in these three separate fields into the creation of the DF60 and DF70 outboard engines.

Both of these outboards are based on Suzuki's 1298cc four-cylinder automotive engines. The layout of basics such as bore/stroke and valve layout is the same as their automotive counterparts. Components such as connecting rods, piston rings, valves/valve springs, rocker arm/rocker shaft, bearings, timing belt, and oil filter are identical those used in Suzuki automotive engines.

Because of the difference in operating conditions and environment, Suzuki has redesigned and strengthened critical structural parts such as the cylinder head, cylinder block, crank shaft, cam shaft, and pistons in order to provide maximum reliability and durable operation. Metal gaskets have also been employed in such critical areas as the cylinder head, exhaust manifold, intake manifold, engine holder, and oil pan for maximum durability.

The cylinder head is a SOHC (Single Over Head Camshaft) Cross Flow design with two valves on each cylinder. In order to optimize combustion efficiency and engine compactness, the angle of both intake and exhaust valves has been set to 20 degrees, and the intake valve diameter is 36mm, while the exhaust valve diameter is 30mm. This serves to reduce the intake resistance at high speeds to the lowest levels possible.

The crank pulley and the camshaft pulley have been made using an aluminum die-cast method. Their surfaces have been treated with alumite, which gives them excellent resistant to abrasion and corrosion. Additional reliability is also provided by the water-resistant timing belt.

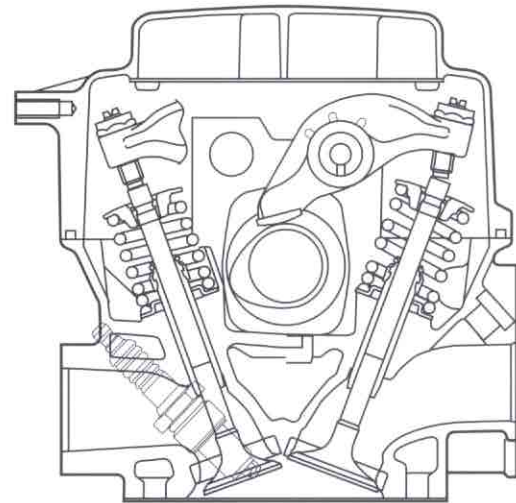


Cylinder Block

Piston & Piston Rings

Connecting Rod

### CYLINDER HEAD ASSY



Timing Belt & Timing Pulleys



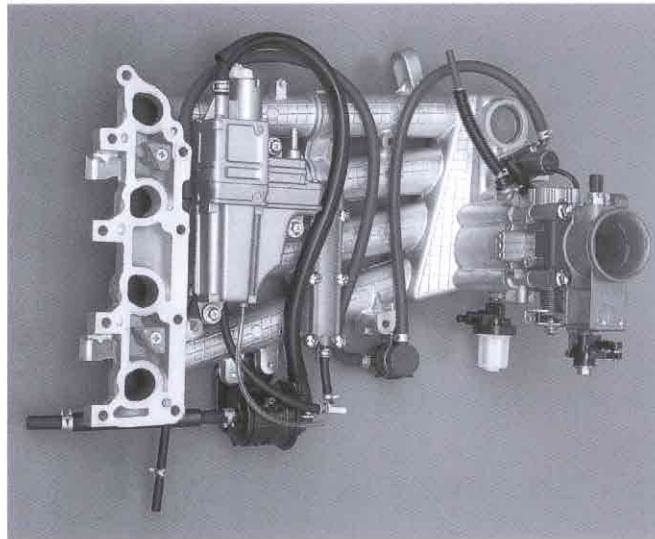
## DF60/70 PRODUCT INFORMATION

A camshaft-driven lubrication system with a trochoid type oil pump has been adopted. With the adoption of a cartridge type oil filter the durability of the crank journal and big end have been greatly improved. The oil drain is positioned on the front side of the engine making oil changes easier than before, and allows for easy servicing in the full tilt position.



Oil Filter, Oil Pump & Oil Gallery Block

The intake manifold consists of the ISC (Idle Speed Control) valve, Vapor Separator, two types of Fuel Filters and the Throttle Body and related fuel system components in a compact module which is much easier to maintain. So in the off season, it is simply a matter of inspecting one side of the engine in order to check on the fuel line and fuel related components.



Intake Manifold

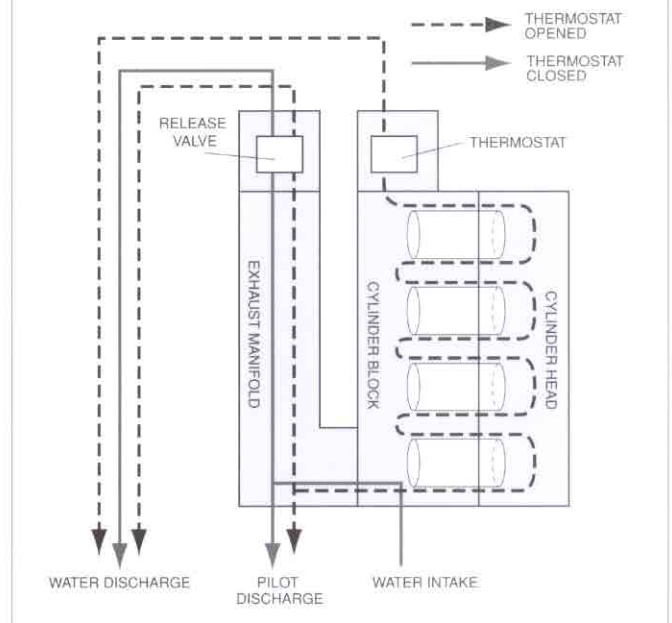


Exhaust Manifold

Both the DF60 and DF70 incorporate Dual Cooling system. Different from the cooling systems found in the DF9.9, DF15 and 2-stroke engines, its major advantage is in the prevention of overcooling. Thus, a stable operating temperature is maintained at all times, under all conditions, which increases the reliability and durability of the engine.

A prop-hub exhaust system has been adopted. This is basically the same as the exhaust system which is employed in 2-stroke engines. A three-stage baffle chamber is located in the exhaust release circuit to reduce noise while idling.

### DUAL WATER COOLING SYSTEM

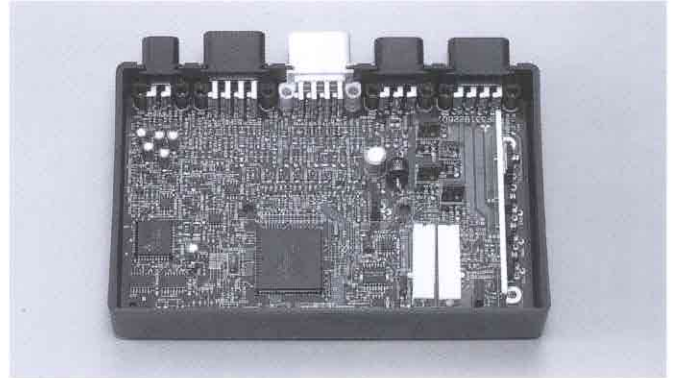


## Multi Point Sequential Electronic Fuel Injection

The DF60 and DF70 both incorporate a Multi Point Sequential Electronic Fuel Injection system which is of the Speed-Density type. With this particular Electronic Fuel Injection system these outboards are able to pass future emission regulations while providing lower fuel consumption, smoother starting, better drivability and outstanding throttle response.

The E.C.U (Electronic Control Unit) system incorporated into the DF60 and DF70 controls the engines ignition system and also provides an ideal fuel supply under all running conditions. The E.C.U. constantly monitors crucial data, in real time, from a series of sensors placed in critical areas in the engine. The sensor system is made up of the Boost Sensor, Engine RPM Sensor, Air Intake Temperature Sensor and Cylinder Wall Temperature Sensor. The data from these sensors is conveyed to a computer which instantly calculates (Speed-Density type) the optimum amount of fuel to be injected at high pressure into each of the cylinders.

Also incorporated into the DF60 and DF70, ISC (Idling Speed Control), a Fast Idle Function, and a Dash



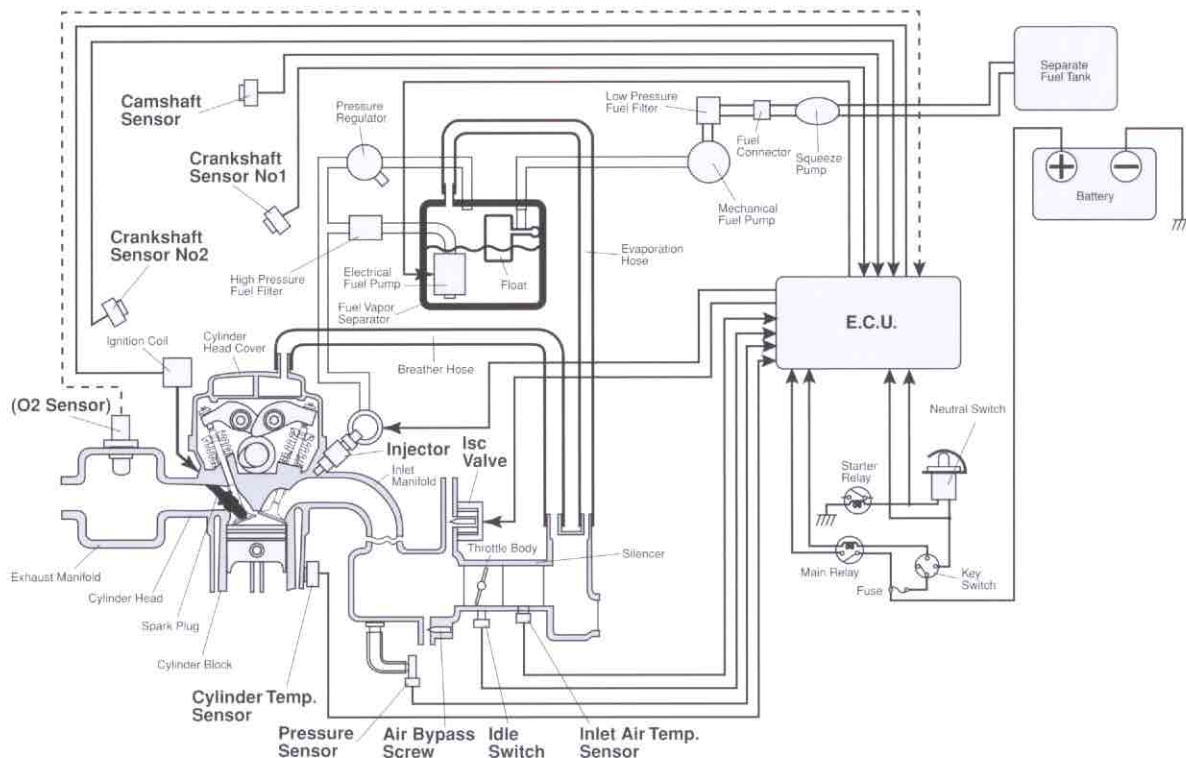
E.C.U. (Electronic Control Unit)

Pot System provide stable engine operation at all times

The ISC is programmed to let the engine idle at a low 700 rpm's. Regulating intake air under different running conditions, intake air is increased when the engine's rpm's are low, and decreased when rpm's are high.

A Fast Idle Function provides smooth, quick starts and stable engine warmups. When the engine is started, the ISC valve fully opens to let an increased flow of air into the cylinder.

## Multi Point Sequential Electronic Fuel Injection





Suzuki's Dash Pot System is of an electronic type, other makers 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 lessen stress on the engine.

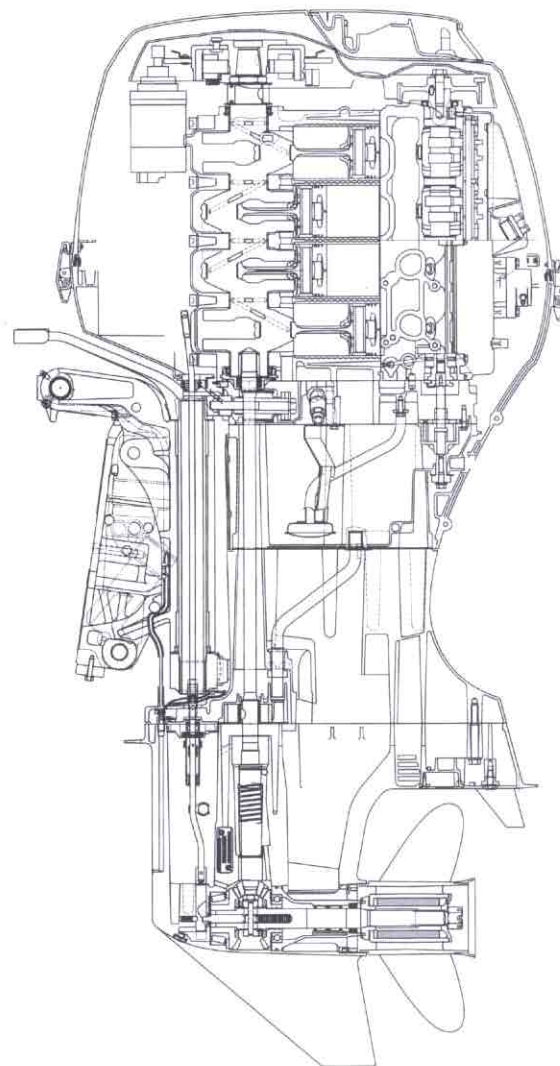
Common in automotive applications, Suzuki is the first to incorporate a Solid State Full Transistor Ignition System into an outboard engine application. This system taps into voltage supplied by the battery enabling it to increase spark duration regardless of engine speed. A nine fold increase compared to spark duration produced by conventional CDI units. The result is an increased spark strength of 2.4 times in the same comparison. Compared to conventional CDI units it is controlled with only 1/10th the voltage, the circuit design is simple, therefore increasing durability and reliability.

The blow-by gas which is generated inside the crankcase is separated into the liquid and gas components inside breather chamber. Only the resulting gas component is sent via the breather hose to the silencer. After this, it is mixed with fresh air, and the resulting mixture is drawn into the combustion chamber and burnt instead of being released as pollution into the atmosphere.

## Multi-Function Tachometer

The DF60 and DF70 are equipped with a Multi-Function Tachometer which includes a comprehensive monitoring system to provide you with an excellent backup to the performance of the outboard engine. This system detects abnormalities in the running of the outboard, giving you the needed information and alerts before problems arise, so that appropriate measures can be taken before the problem becomes serious.

A Warning System alerts you to changes in oil pressure, over heating, low voltage and over rev. The Self-Diagnostic system uses internal circuitry placed in the Electronic Fuel Injection system to inform the operator of any abnormal conditions. This system also has an operation mode which permits return to the launch site under reduced power in the unlikely event of E.C.U. failure. Finally, an Operation Time Indicator shows approximately how many hours the outboard has been run. Useful for keeping track of routine maintenance.



## MULTI-FUNCTION TACHOMETER



## DF60/70 OTHER FEATURES

- The direction of the Pilot discharge is adjustable.
- Freshwater Flushing System.
- Largest Gear Ratio in the same class of 4-stroke outboards.



## DF60/70 SPECIFICATIONS

MODEL	DF60	DF70
ENGINE TYPE	4-stroke OHC 4-cylinder	
FUEL DELIVERY SYSTEM	Multi Point Sequential Electronic Fuel Injection	
TRANSOM HEIGHT in.	L:20	
STARTING SYSTEM	Electric	
WEIGHT kg (lbs.)	L:152.0 (335.1)	
NO. OF CYLINDERS	4	
PISTON DISPLACEMENT cm <sup>3</sup> (cu. in.)	1,298 (79.2)	
BORE × STROKE m/m (in.)	74 × 75.5 (2.91 × 2.97)	
MAXIMUM OUTPUT kw (PS)	44.1 (60)	51.5 (70)
FULL THROTTLE OPERATING RANGE rpm	4,700 – 5,300	5,200 – 5,800
STEERING	Remote-Control	
CHOKE	-	
OIL PAN CAPACITY ℓ (US/Imp. pt.)	4.5 (9.5/7.9)	
FUEL TANK CAPACITY ℓ (US/Imp. gal.)	25 (6.6/5.5)	
IGNITION SYSTEM	Full-transistorized	
ALTERNATOR	12V 300W	
ENGINE MOUNTING	Shear Mount	
TRIM METHOD (POSITIONS)	Power Trim and Tilt (5)	
GEAR RATIO	12:29 (2.42)	
GEAR SHIFT	F.N.R.	
EXHAUST	Through Prop Hub Exhaust	
DRIVE PROTECTION	Rubber Hub	
PROPELLER SIZE in.*	13-1/4 × 17 (U1700)	
○: Stainless steel propeller	13 × 18 (U1800)	
	13 × 19 (U1900)	
	13-1/2 × 15 (V1500)	
	13-1/4 × 17 (V1700)	
	13 × 19 (V1900)	
	13 × 21 (V2100)	
	○13-1/2 × 15 (VS1500)	
	○13-1/4 × 17 (VS1700)	
	○13 × 19 (VS1900)	
	○13 × 21 (VS2100)	

\* 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.

SUZUKI MOTOR CORPORATION reserves the right to change, without notice, equipment, specifications, colours, 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 colours may differ slightly from the colours in this brochure.

## DF60/70 FEATURES

- Multi-Function Tachometer
- Check Engine Indicator
- Oil Pressure Indicator
- Rev-Limit Indicator
- Overheat Warning Indicator
- Emergency Stop Switch
- Transistorized Ignition System
- Remote Control
- Through Tube Bracket
- Spiral Bevel Gear
- Full Shifting
- Start-in-Gear Protection
- Power Trim & Tilt
- Speedometer Pickup on Gear Case
- Tilt Stopper
- Dual Water Intakes
- S.S. Water Pump Housing
- Anti-Corrosion System
- Fishing Line Cutter
- Throttle Tension Adjuster



Winner of 1997 International Marine Trades Exhibit and Convention (IMTEC) Innovation Award.



AMERICAN SUZUKI MOTOR CORPORATION  
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