



FOUR STROKE OUTBOARD PETROL ENGINE HOMOLOGATION FILE

International Homologation File Number: 00529B		
Homologation Valid from	2013	Expiry: 2026 dec 31
Valid for the following classes:	CIRCUIT: GT15 OFFSHORE:	
Manufacturer:	Suzuki Motor Corporation	
Engine Model:	DF15ARS	
Number Manufactured:	1000+	
At the date:	2 March 2013	
Certified by the National Authority of:	Sweden	
At the date:	2 March 2013	
UIM Homologation Group Inspector	Mikael Lundblad	
At the date:	2 March 2013	
UIM Certification Approval:		
At the date:		
Running Production Changes		
Change Detail (A))	ECU part number	Page No. 23A
Date Approved for Use	15 March 2017	Approved by 
Change Detail (B)	ECU part number	Page No. 23B
Date Approved for Use	25 July 2024	Approved by 

PICTURES

Photo of the complete engine, 45° from the front at the port side.

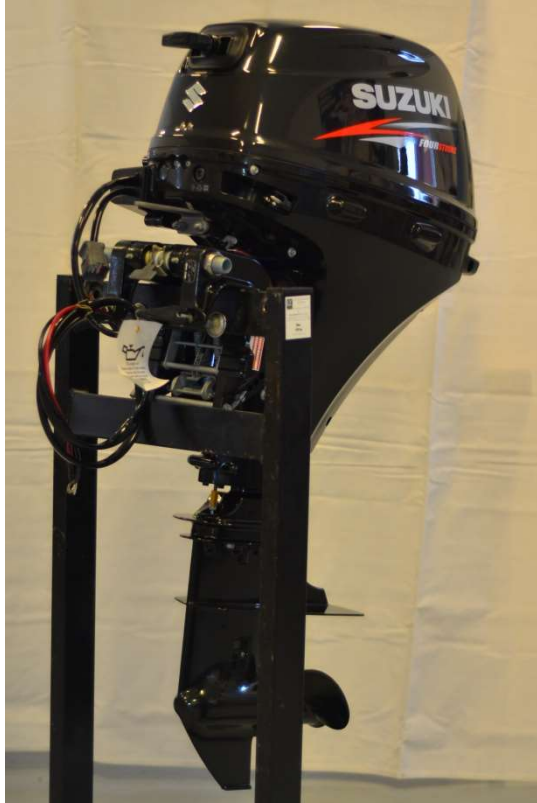


Photo of the complete engine, 45° from the front at the starboard side.



Photo of the complete engine, 45° from the rear at the port side.



Photo of the complete engine, 45° from the rear at the starboard side.



Photo without top cover, 45° from the front at the port side.



Photo without top cover, 45° from the front at the starboard side.



Photo without top cover, 45° from the rear at the port side

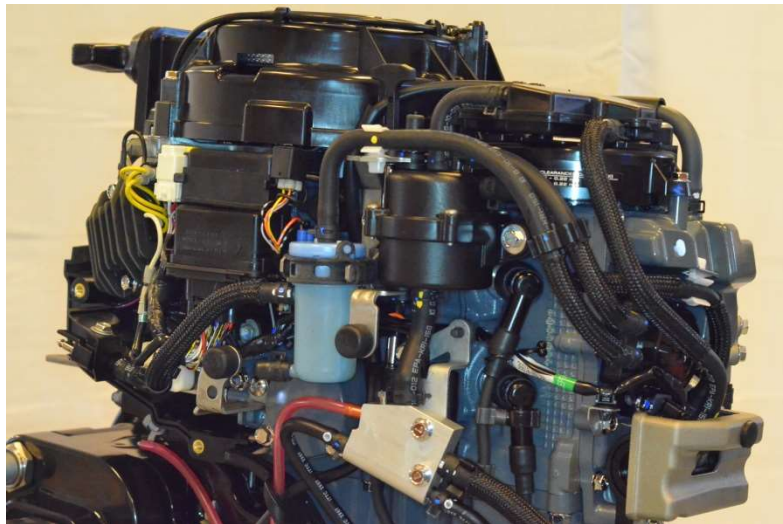
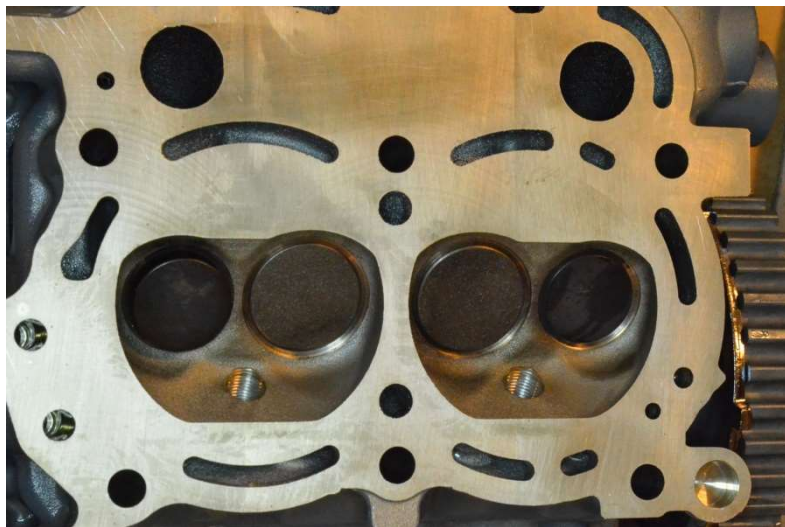


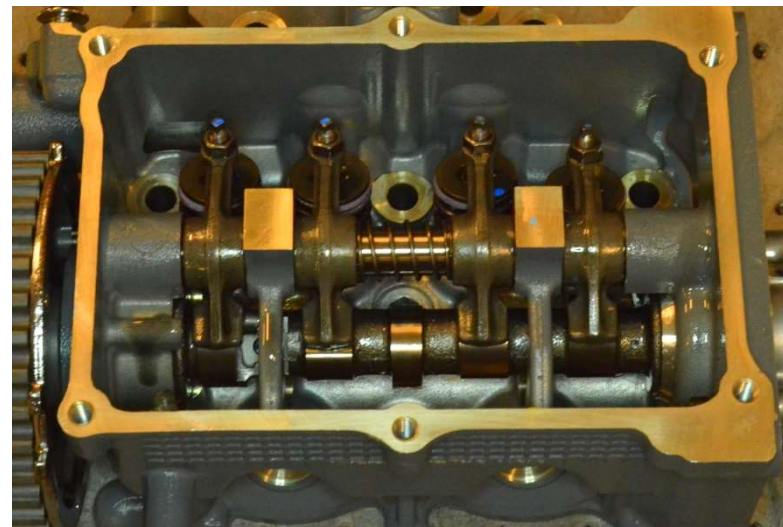
Photo without top cover, 45° from the rear at the starboard side.



Cylinder head from the combustion chamber side



Cylinder head from the valve assembly side.



Combustion chamber Detail



Rocker arm



Cylinder head showing intake port – from intake side.



Cylinder head showing intake port – from combustion side



Cylinder head showing exhaust ports – from combustion side



Cylinder head showing exhaust ports – from exhaust side



Intake and Exhaust valve.



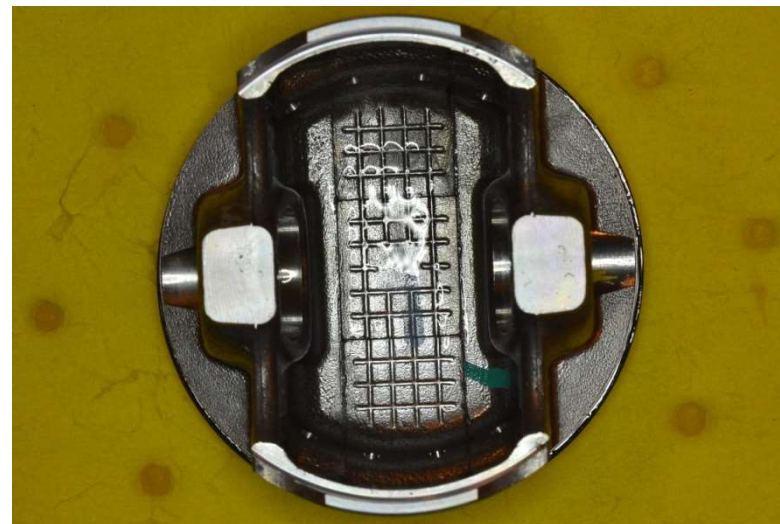
Valve springs and retainers



Piston viewed from the top



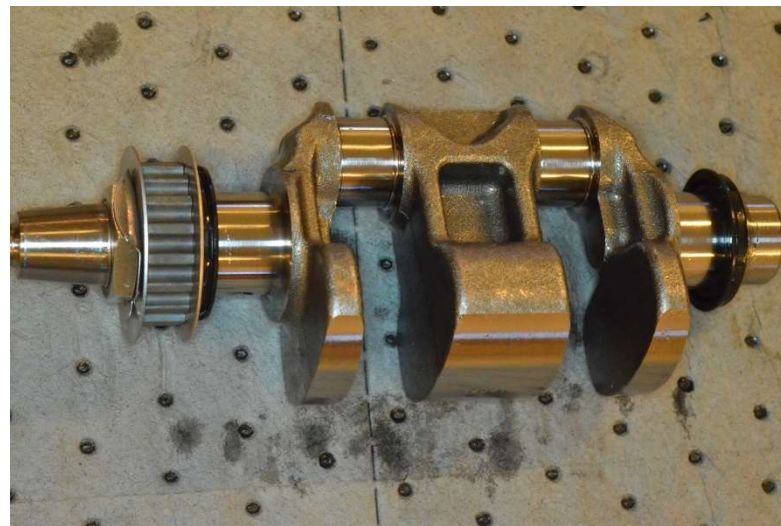
Piston viewed from the bottom



Piston, viewed 45° from the wrist pin.



Crankshaft.



Connecting rod and piston.



Throttle house



Intake restrictor



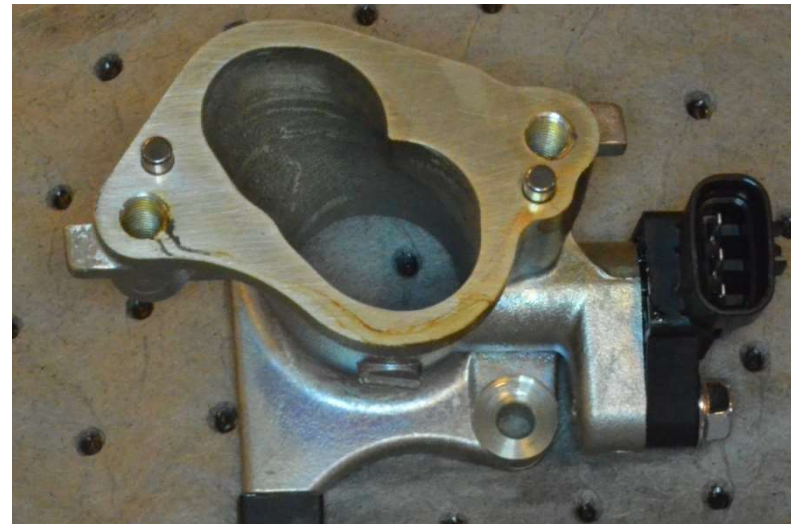
Intake restrictor - Side towards throttle



Intake silencer air intakes



Intake manifold



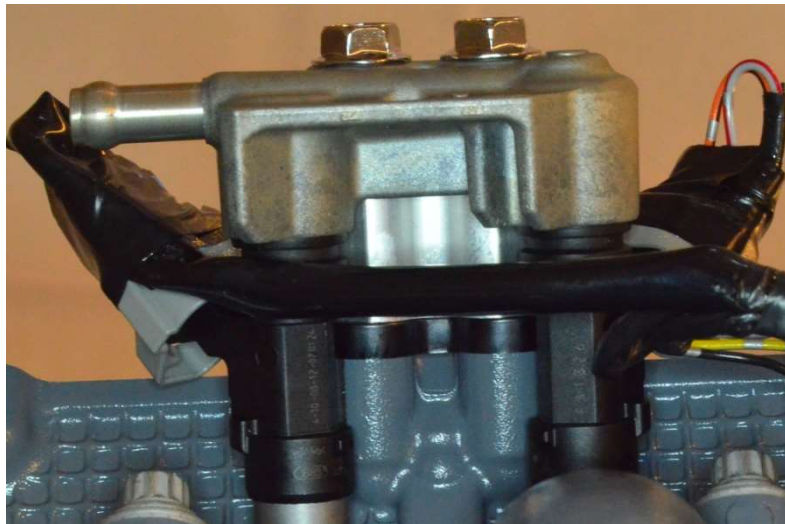
Intake manifold - Close up



Intake manifold - Close up



Fuel Injector Rail



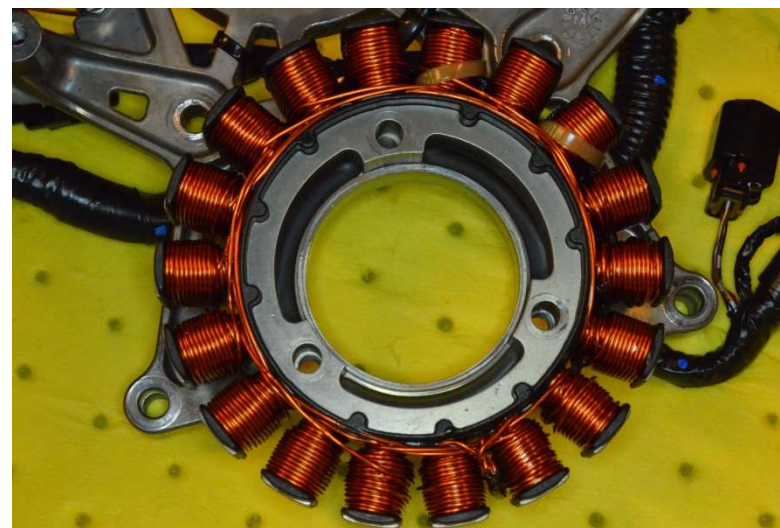
Fuel Injector - Close up



Fuel pump



Stator



ECU box Front



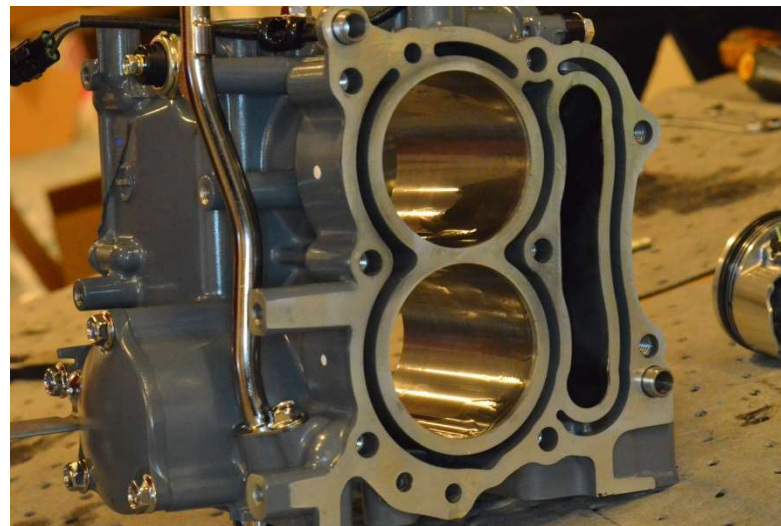
ECU box Connection



Cylinder block, viewed 45° from front starboard side.



Cylinder block, viewed 45° from rear, port side



Oil pump



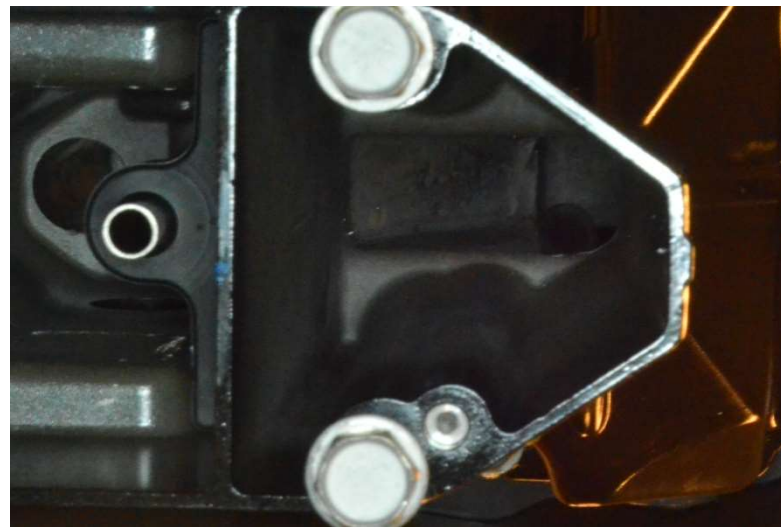
Internal exhaust pipe



Exhaust pipe– viewed engine side



Exhaust pipe – viewed from bottom side



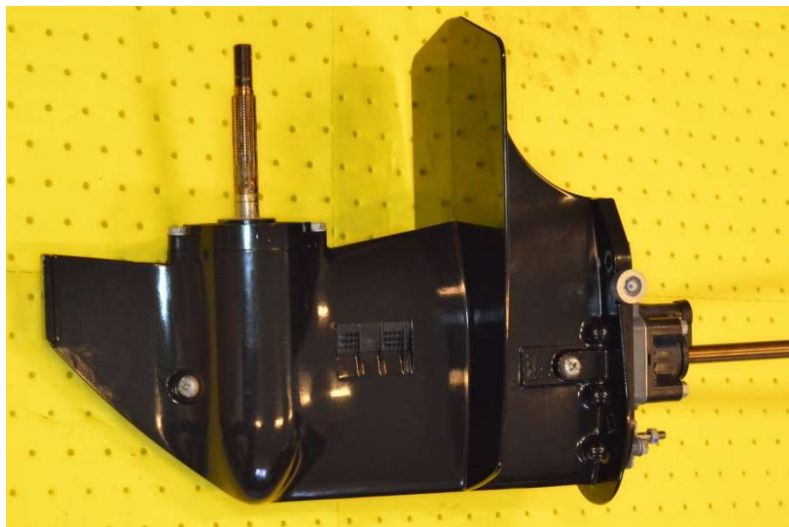
Flywheel – viewed from top side



Flywheel – viewed from bottom side



Gear house



Gear house - Exhaust



Gear House Skeg



Gear house skeg - Close up from bottom side



MEASUREMENTS

ENGINE FUEL

Type:	Petrol Unleaded
Minimum octane required:	91 RON

ENGINE TYPE

Number of cylinders:	2 Cylinders
Cylinder arrangement:	In line

ENGINE BLOCK

	Tolerance	Measurement	Unit
Bore standard		Ø 60.40	
oversize 2nd	-0.00 +0.015	Ø 60.90	mm
Stroke	+/- 0.05	57.00	mm
Capacity per cylinder		163.4	
oversize 2nd	max	166.1	cc
Total Capacity		326.8	
oversize 2nd	max	332.2	cc
Cylinder block material		Aluminium	
Cylinder liner material		Steel	
Distance from crankshaft centreline to cylinder block deck face.	+/- 0.50	144.70	mm

CYLINDER HEAD

	Tolerance	Measurement	Unit
Cylinder head material		Aluminium	
Volume of combustion chamber (without volume of spark plug hole)	min	13.0	cc
Compression ratio	max	10.5	
Thickness of cylinder head	+/- 0.20	96.05	mm

Inlet Port:

Size of port at cylinder head/manifold face	+/- 0.50	Kiddny shaped 53.7x28.8	mm
Internal diameter of valve seat insert	+/- 0.20	Ø 22.95	mm
Surface finish of port		Cast	

Exhaust Port:

Size of port at cylinder head/manifold face	+/- 0.50	Ø 18.6	mm
Internal diameter of valve seat insert	+/- 0.20	Ø 18.2	mm
Surface finish of port		Cast	

Inlet Valves:

Diameter of stem	+/- 0.02	5.48	mm
Diameter of head	max	26.50	mm
Overall length of inlet valve	min	70.50	mm

Exhaust Valves:

Diameter of stem	+/- 0.02	5.45	mm
Diameter of head	max	22.25	mm
Overall length of exhaust valve	min	70.50	mm

Valve Springs:

Diameter of wire	max	3.00	mm
Inside diameter of coil	min	16.20	mm
Free length	max	33.90	mm
Number of working turns	+/- 0.5	4.7	turns

CAMSHAFT/SHAFTS

Tolerance Measurement Unit

Inlet:

Tappet clearance for checking timing	+/- 0.02	0.20	mm
Total valve lift	+/- 0.10	7.15	mm
Total inlet opening angle (measured at flywheel in degrees at 0,1 mm lift)	+/- 5°	248	degrees
Duration inlet opening angle 3mm under max lift (measured at flywheel in degrees)	+/- 2°	129	degrees
Base circle diameter of lobe	+/- 0.05	20.00	mm
Total height at lobe	+/- 0.05	23.70	mm

Exhaust:

Tappet clearance for checking timing	+/- 0.02	0.20	mm
Total valve lift	+/- 0.10	6.75	mm
Total inlet opening angle (measured at flywheel in degrees at 0,1 mm lift)	+/- 5°	244	degrees
Duration inlet opening angle 3mm under max lift (measured at flywheel in degrees)	+/- 2°	131	degrees
Base circle diameter of lobe	+/- 0.05	20.00	mm
Total height at lobe	+/- 0.05	23.55	mm

PISTONS

Material of piston	Aluminium		
Type and thickness of rings	Barrel	1.05	mm
	Barrel	1.20	mm
	Oil scraper	2.10	mm

CONNECTING ROD

	Tolerance	Measurement	Unit
Length of rod from big end to small end (centre to centre)	+/- 0.10	93.98	mm

CRANKSHAFT

	Tolerance	Measurement	Unit
Number of main bearing journals		3	
Diameter of main bearing journals	+0.00/- 0.016	31.99	mm
Diameter of connecting rod journals	+0.00/- 0.016	28.99	mm
Surface finish of crankshaft		Cast	

TYPE OF BEARINGS

Piston Pin	Plain bearing
Connecting Rod journal	Plain bearing
Main journal	Plain bearing

FUEL INJECTION

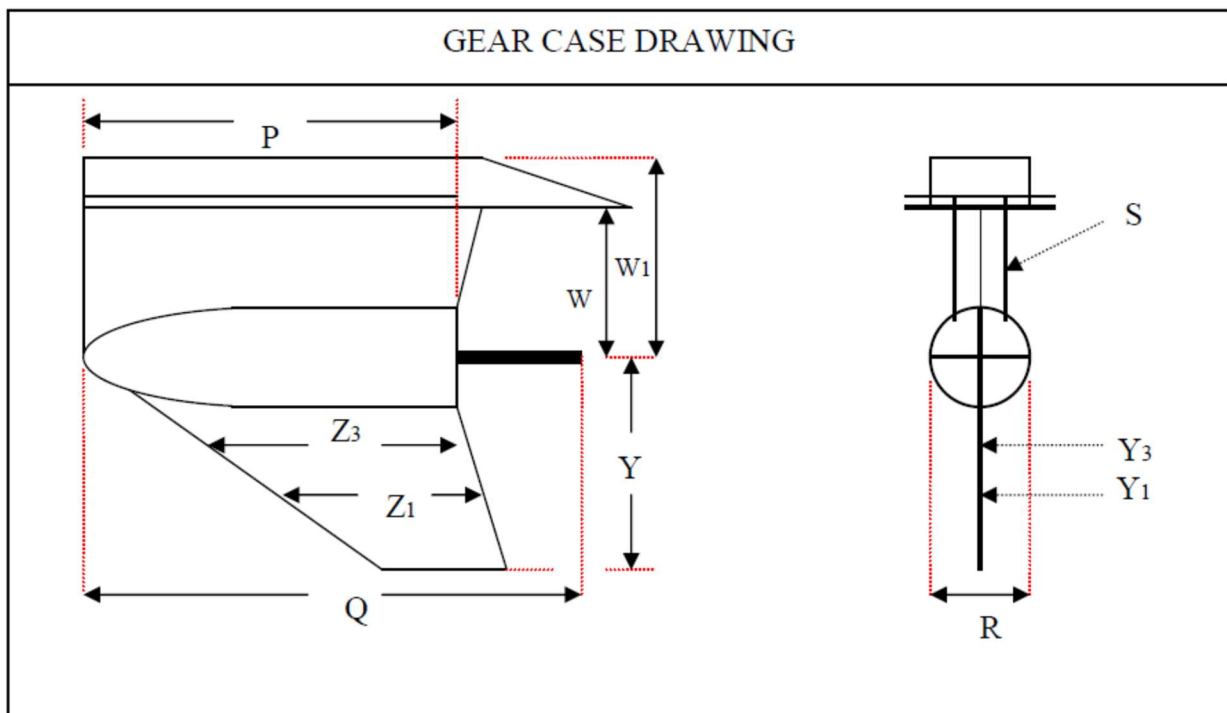
	Tolerance	Measurement	Unit
Make		Mitsubishi	
Type of pump, model no.		Electric	
Total number of injectors		2	Injectors
Type of injectors		Electric fuel	
Diameter of throttle bore	max	Ø 30.2	mm
Restrictor plate	+/- 0.15	Ø 18.05	mm
	+/- 0.15	6 x Ø 3.15	mm

COOLING SYSTEM

Type	Water
Method	Thermostat controlled
Pump	Impeller
Number of impeller blades	6

WEIGHTS	Tolerance	Measurement	Unit
Inlet valve (bare)	min	24.2	g
Exhaust valve (bare)	min	20.0	g
Camshaft (with decompression mech)	min	450.0	g
Steel rocker arm	min	36.0	g
Piston (with rings)	min	110.0	g
Piston Pin	min	34.0	g
Connecting Rod (with bearings and bolts)	min	122.0	g
Crankshaft (with cam gear and top gasket)	min	2950.0	g
Flywheel (bare)	min	3350.0	g

UNDERWATER UNIT	Tolerance	Measurement	Unit
Gear Ratio		2.08	-
P Longitudinal length of gearcase torpedo	+/- 5.0	170.0	mm
Q Longitudinal dimension of gearcase including propeller shaft	max	277.0	mm
R Transverse dimension of gearcase	min	70.0	mm
S Thickness of strut	min	25.7	mm
Z1 Skeg chord length, 25mm above bottom	+/- 5.0	76.0	mm
Z3 Skeg chord length, 50mm above bottom	+/- 5.0	97.0	mm
W1 Distance from propeller shaft to upper flange	+/- 5.0	241.0	mm
W Distance from propeller shaft to anti-ventilation plate	+/- 5.0	134.5	mm
Y1 Thickness of skeg, 25mm above bottom	min	4.9	mm
Y3 Thickness of skeg, 50mm above bottom	min	5.9	mm
Y Skeg depth from propeller shaft	+/- 5.0	124.7	mm



**FOUR STROKE OUTBOARD
PETROL ENGINE**

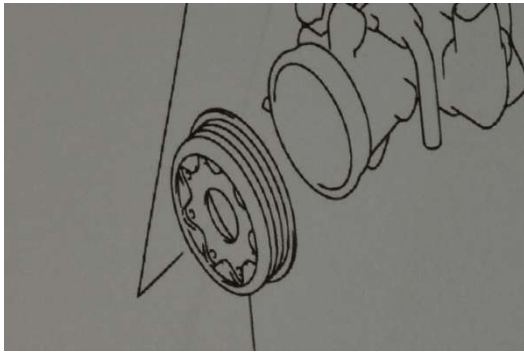
NOTES

Observe! Difference between DF20A and DF15A!

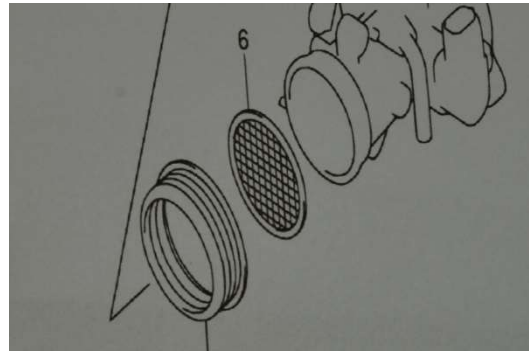
Restrictor between intake box and throttle



DF15A Throttle house with restrictor fitted.



DF15A with restrictor



DF20A without restrictor

ECU



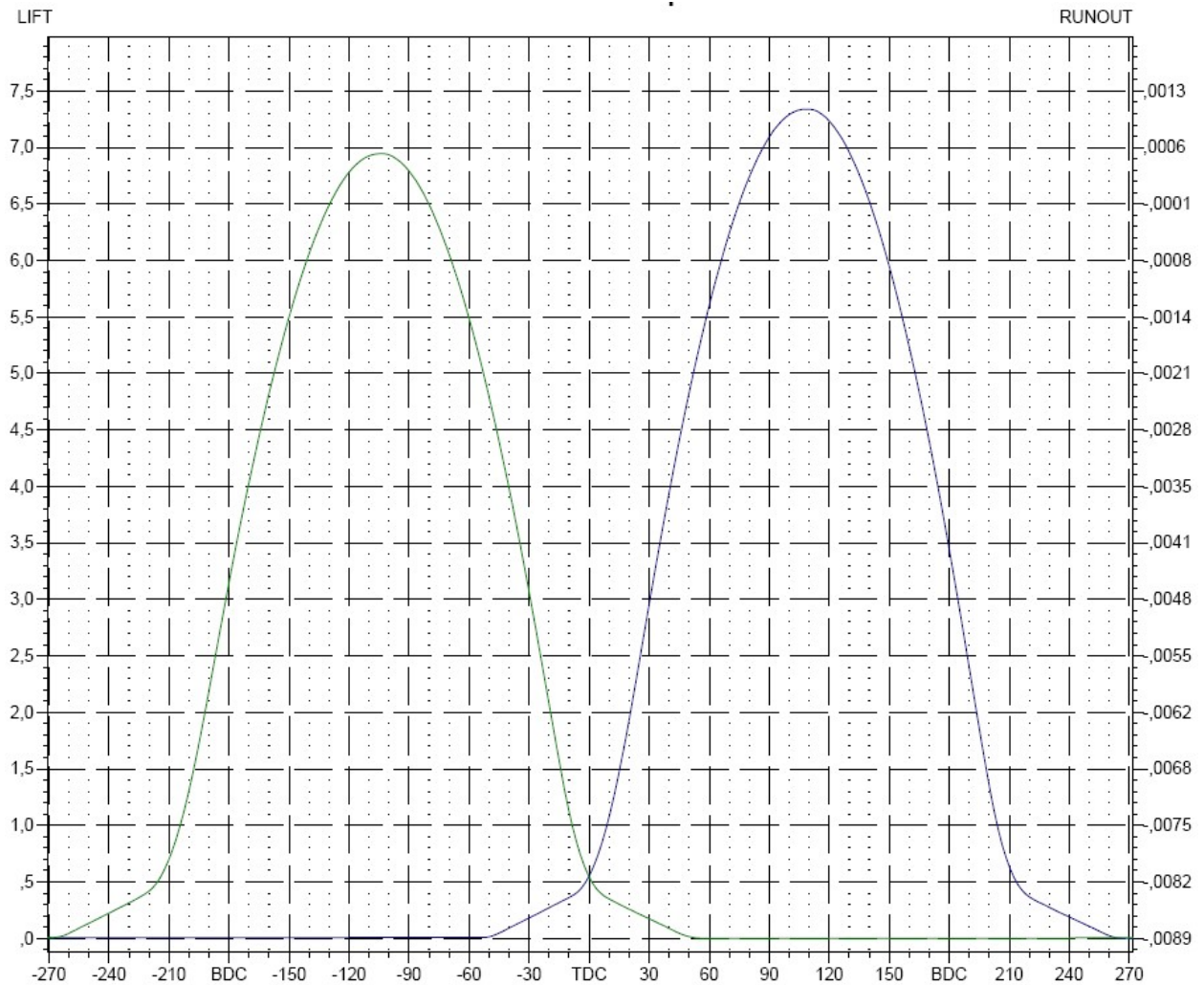
DF15A has part no 33920 89L01 and DF20A has part no 33920 89L21.

ECU

ECM check software – Not Available at homologation

Attachment 1 - Camlift measurement

Profile



Measured profile information

		LIFT	DUR.	OPEN	CLOSE	AREA
Lobe	I1	----	-----	-----	-----	-----
Centerline	106,46 ATDC	0,02	309,15	48,62 BTDC	80,53 ABDC	508,0
Runout	0,0051	1,00	195,15	8,89 ATDC	24,04 ABDC	489,2
Peak Open Acc.	0,01475	1,27	188,29	12,59 ATDC	20,88 ABDC	486,4
Peak Nose Acc.	-0,00825	2,00	173,07	20,63 ATDC	13,70 ABDC	474,0
Peak Close Acc.	0,02100	3,00	153,93	30,39 ATDC	4,32 ABDC	447,0
Lift @ TDC	0,551	4,00	133,74	40,58 ATDC	5,68 BBDC	410,6
Valve Lash	0,000	5,00	110,90	52,07 ATDC	17,04 BBDC	363,1
Rocker Ratio	1,00	6,00	83,12	66,07 ATDC	30,82 BBDC	286,4
Lobe Separation	106,5	7,00	41,88	86,96 ATDC	51,16 BBDC	151,4
		7,3379	---	PEAK CAM LIFT ---		
		7,3379	---	PEAK VALVE LIFT ---		

H:\My Documents\Pro-Service\CAM\New Folder\Suzuki DF15ARS 20013.CPP
 Measured in head on valve zero lach

		LIFT	DUR.	OPEN	CLOSE	AREA
Lobe	E1	----	-----	-----	-----	-----
Centerline	106,46 BTDC	0,02	312,27	83,48 BBDC	48,79 ATDC	486,5
Runout	0,0050	1,00	195,96	24,45 BBDC	8,49 BTDC	467,1
Peak Open Acc.	0,01350	1,27	188,75	20,53 BBDC	11,78 BTDC	462,9
Peak Nose Acc.	-0,00725	2,00	172,76	12,06 BBDC	19,30 BTDC	449,1
Peak Close Acc.	0,01900	3,00	152,23	1,60 BBDC	29,37 BTDC	422,4
Lift @ TDC	0,545	4,00	130,17	9,56 ABDC	40,27 BTDC	386,8
Valve Lash	0,000	5,00	104,74	22,44 ABDC	52,82 BTDC	324,3
Rocker Ratio	1,00	6,00	72,26	38,80 ABDC	68,94 BTDC	233,5
Lobe Separation	106,5	6,9450	---	PEAK CAM LIFT ---		
		6,9450	---	PEAK VALVE LIFT ---		

Update of ECU

	DF15ARS ECU	DF20ARS ECU (not allowed)
2013/14 model	33920-89L01 ECU	33920-89L21 ECU
2015 model	33920-89L02 ECU	33920-89L22 ECU
2016/17 model	33920-89L80 ECU	33920-89LA0 ECU
2018 model	33920-89LG0 ECU	33920-89LJ0 ECU
2019-2024 model	33920-89L00 ECU	33920-89L20 ECU

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