FOUR STROKE OUTBOARD PETROL ENGINE HOMOLOGATION FILE

International Homologation File Number: 00547		
Homologation Valid from:	**2026**	**Expiry: 2036 dec 31**
Valid for the following classes:	**US Superstock, V2, Offshore 3**	
Manufacturer:	**Mercury Marine**	
Engine Model:	**Mercury Racing 300 ROS**	
Number Manufactured:	**>1,000**	
At the date:	**Dec 31, 2024**	
Certified by the National Authority of:		
At the date:		
UIM Homologation Group Inspector:	**M Lundblad**	
At the date:	2026 feb 24	
UIM Certification Approval:	**Union Internationale Motonautique**	
At the date:	2026 feb 24	
Running Production Changes		
Change Detail		Page No.
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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.

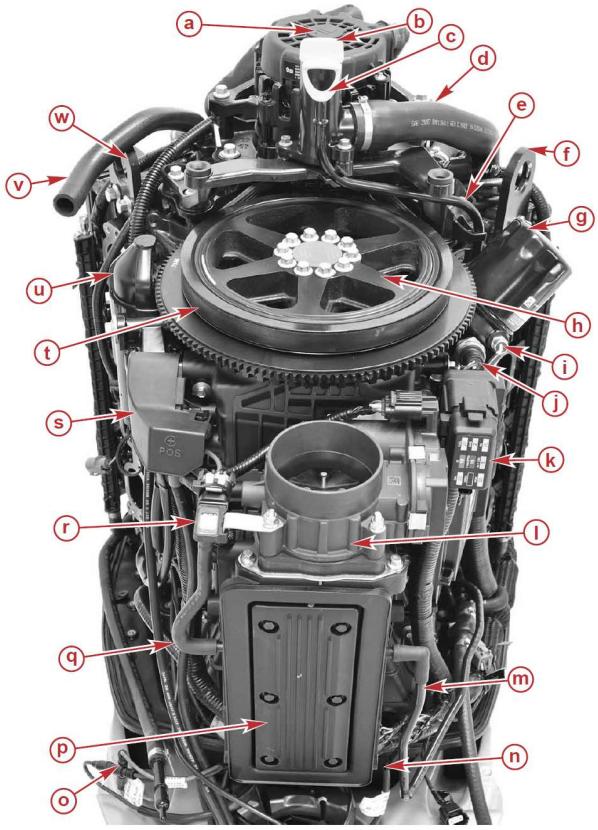
PICTURES

Photo of the complete engine, from the rear.

Picture of the complete engine, 45° from the front port side without top cowl.

Picture of the complete engine, 45° from the front starboard side without top cowl.

Front view of lay out.



Shown without intake runners, flywheel cover, fuel rail cover, electrical panel cover, and lower cowls

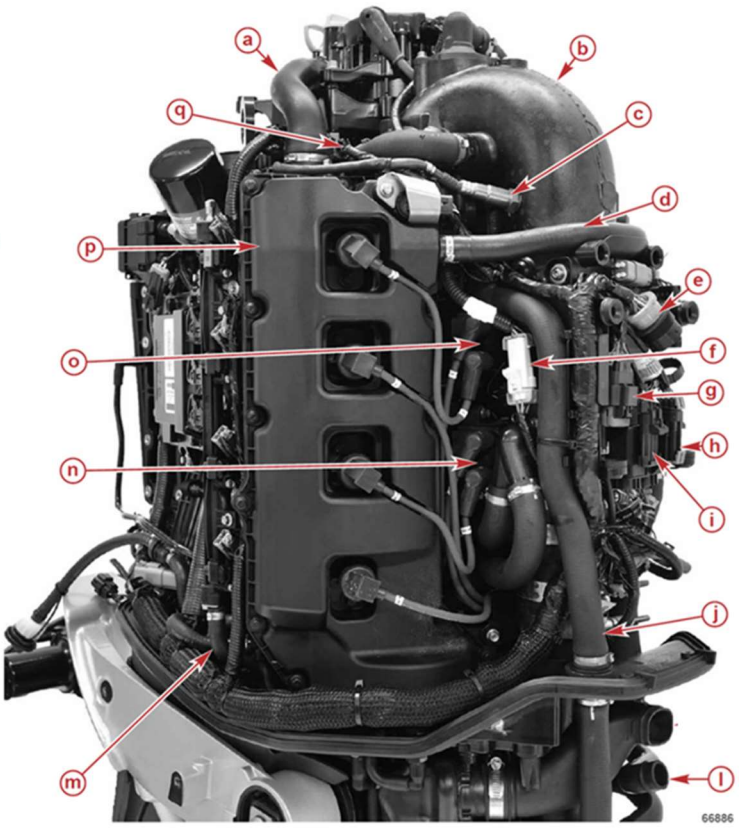
a - Alternator
b - Oil fill cap
c - Dipstick
d - Oil fill hose
e - Dipstick tube
f - Port lifting eye
g - Oil filter
h - Flywheel
i - Oil temperature sensor
j - Oil pressure sensor
k - Fuse block
l - Electronic throttle body
m - Fuel supply module (FSM) reference hose
n - Trim position sensor connector
o - Power trim motor connectors
p - Intake plenum
q - Manifold absolute pressure (MAP) reference hose
r - Manifold absolute pressure (MAP) sensor
s - Battery cable cover
t - Alternator belt
u - Starter motor
v - Breather hose to cold air intake
w - Starboard lifting eye

Port aft view of lay out.

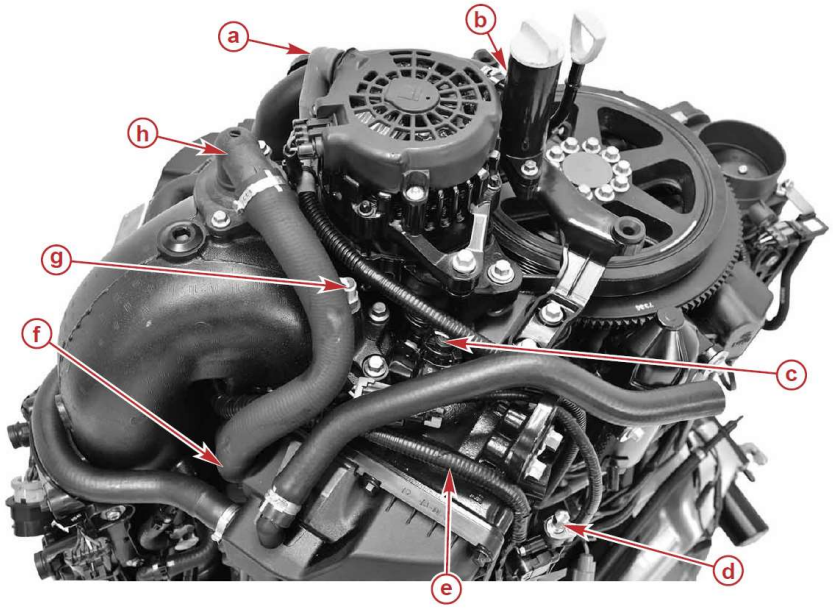
Shown without intake runners, flywheel cover, fuel rail cover, electrical panel cover, and lower cowls

a - Oil fill hose
b - Exhaust tube
c - Oxygen sensor
d - Breather hose
e - 14-pin connector
f - Ignition coil primary lead connector
g - 10-pin CAN terminator
h - 6-pin boat harness connector
i - 3-pin power steering connector
j - Thermostat dump hose

l - Idle exhaust relief
m - Fuel hose from fuel supply module (FSM)
n - #6, #7 ignition coil
o - #5, #2 ignition coil
p - Port camshaft cover
q - Crankshaft position sensor connector



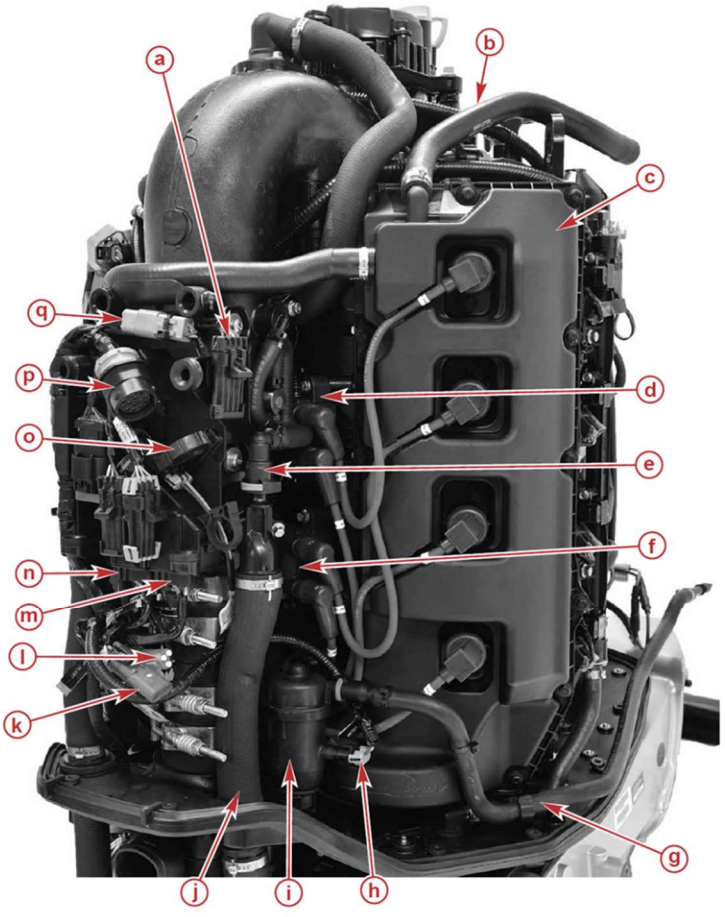
Starboard aft top view of lay out.



Shown without intake runners, flywheel cover, fuel rail cover, electrical panel cover, and lower cowls

a - Positive charge lead from the alternator
b - Oil fill tube
c - Block water pressure sensor
d - Schrader valve on starboard fuel rail
e - Starboard injector harness
f - Thermostat dump hose
g - Engine coolant temperature sensor
h - Thermostat housing

Starboard aft view of lay out.



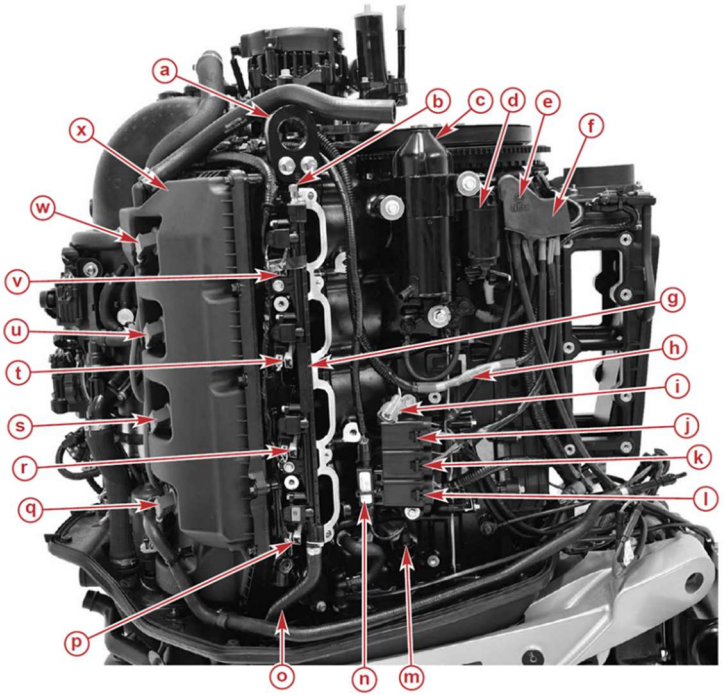
Shown without intake runners, flywheel cover, fuel rail cover, electrical panel cover, and lower cowls

a - 4-pin depth transducer connector
b - Breather hose to cold air intake
c - Starboard camshaft cover
d - #1, #4 ignition coil
e - Water strainer fitting
f - #3, #8 ignition coil
g - Fuel inlet hose
h - Water-in-fuel (WIF) sensor connector
i - Fuel filter
j - Cooling water supply hose
k - CAN X termination resistor
l - Moving propeller (MP) alert connector
m - Start relay
n - Fuel pump relay
o - Ring clip for 14-pin data harness
p - 14-pin connector
q - Analog gauge connector

Starboard view.

Shown without intake runners, flywheel cover, fuel rail cover, electrical panel cover, and lower cowls

a - Starboard lifting eye
b - Schrader valve
c - Starter motor
d - Starter solenoid
e - Negative battery cable connection (under cover)
f - Positive battery cable connection (under cover)
g - Starboard fuel rail
h - 150-amp fusible link
i - Manifold air temperature (MAT) sensor connector (sensor is on intake runner)
j - Trim down relay
k - Trim up relay
l - Main power relay
m - Oil level sensor
n - Oil level module
o - Fuel hose from fuel supply module (FSM)
p - #7 injector
q - Cylinder #7 high-tension lead
r - # 5 injector
s - Cylinder #5 high-tension lead
t - #3 injector
u - Cylinder #3 high-tension lead
v - #1 injector
w - Cylinder #1 high-tension lead
x - Starboard camshaft cover



Port view of layout

Shown without intake runners, flywheel cover, fuel rail cover, electrical panel cover, and lower cowls

a - Oil filter
b - Port lifting eye
c - Cylinder #2 injector
d - Camshaft position sensor
e - Cylinder #2 high-tension lead
f - #4 injector
g - Cylinder #4 high-tension lead
h - #6 injector
i - Cylinder #6 high-tension lead
j - Cylinder #8 high-tension lead
k - #8 injector
l - Flush hose
m - Fuel supply module (FSM) reference hose
n - Port fuel rail
o - PCM
p - Fuse holder
q - Schrader valve

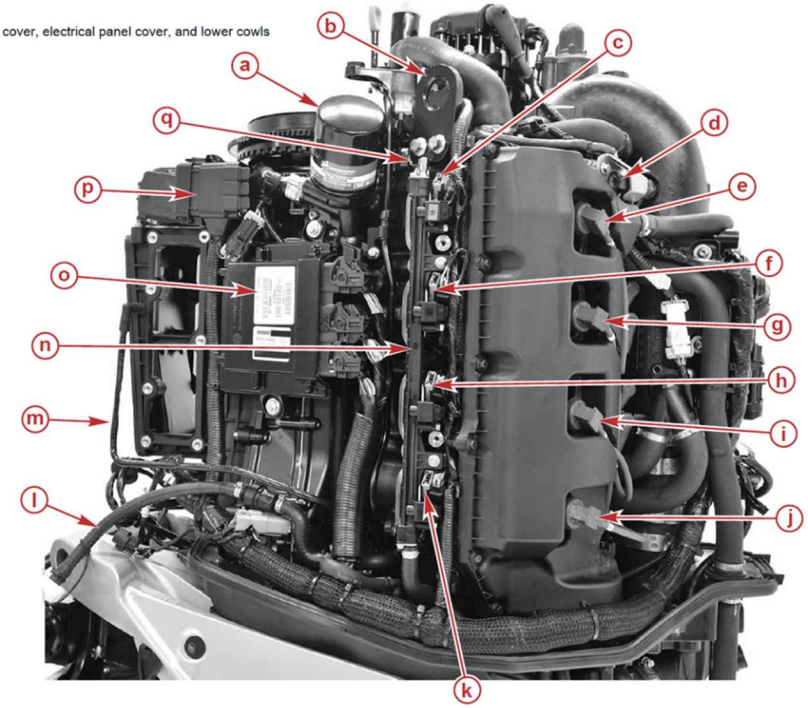
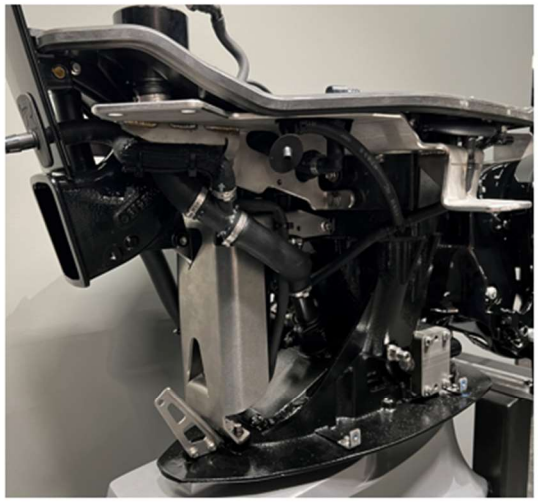
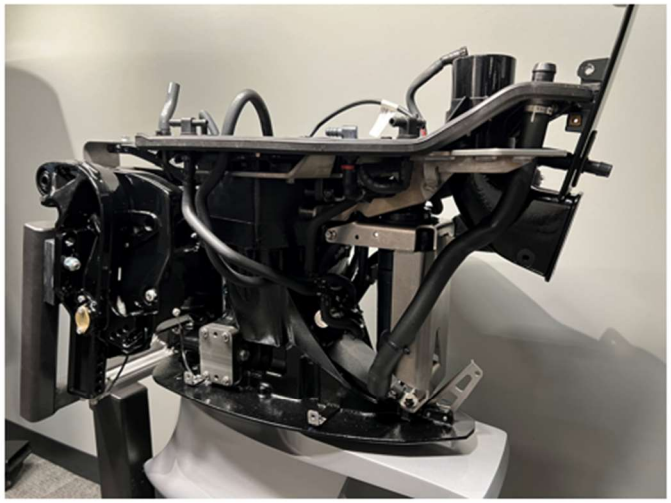


Photo without engine covers, 45° from the front, port side 	Photo without engine covers, 45° from the front, stbd side 
Photo without engine covers, 45° from the rear, port side 	Photo without engine covers, 45° from the rear, stbd side 

15” Midsection assembly, 45° from the aft, stbd side

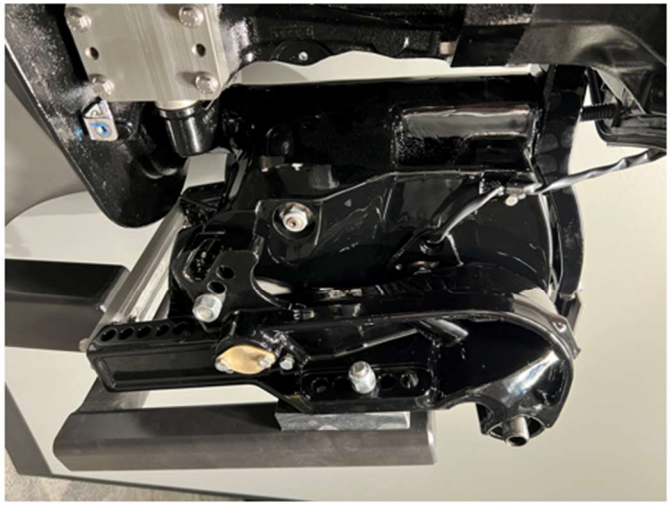


15” Midsection assembly, 45° from the aft, port side



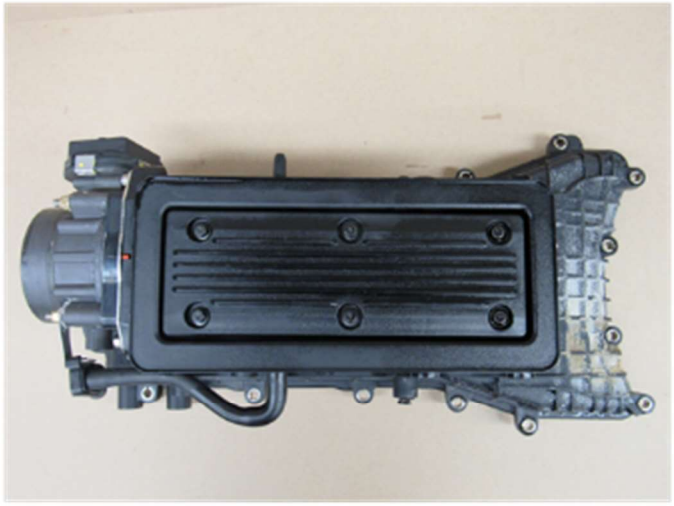
15” Transom bracket, 45° from the rear, port side

15” Transom bracket, 45° from the rear, stbd side



Throttle and intake manifold - top

Throttle and intake manifold - front



Throttle and intake manifold - side

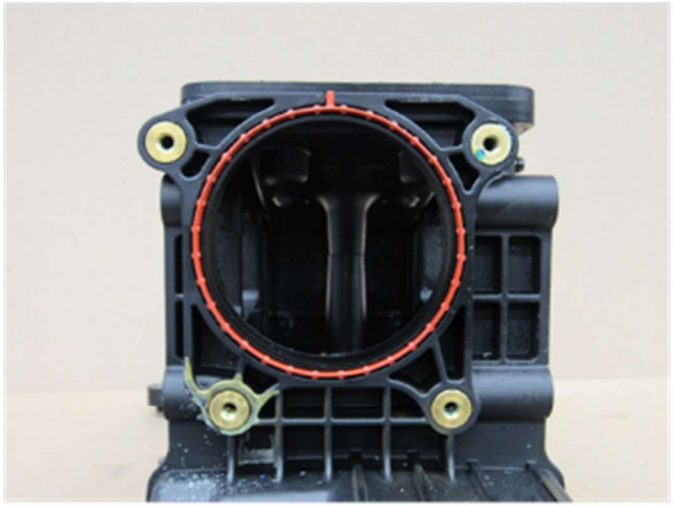
Port intake runners - inside

Port intake runners - outside

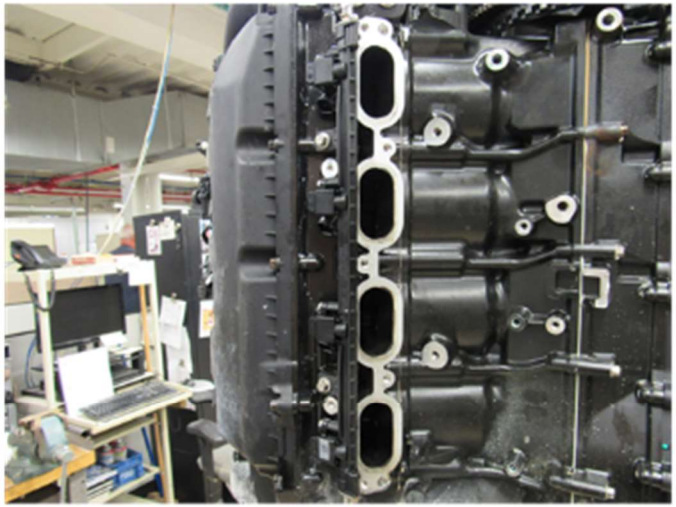
Starboard intake runners - inside

Starboard intake runners - outside

Intake manifold throttle adapter

Intake manifold without throttle adapter 	Intake manifold port outlet 
Throttle body – inlet side 	Throttle body – outlet side 

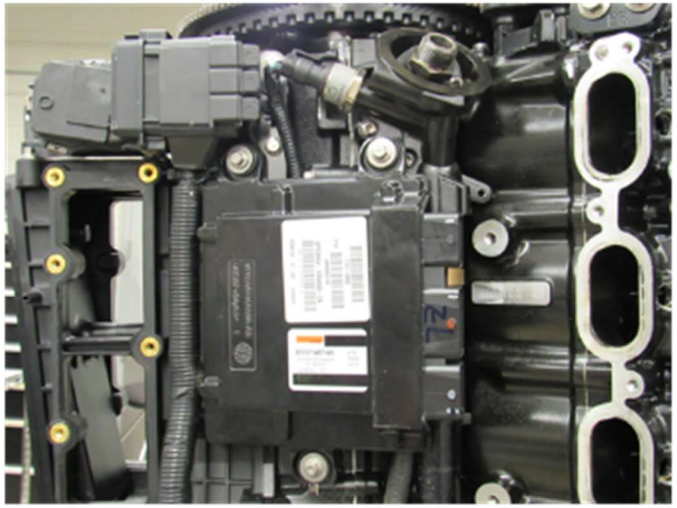
Fuel rail on engine (stbd side)



Fuel injector tip

Engine control unit (ECU) – connector side

ECU on-engine – under port intake runners



Cylinder head (port) from combustion chamber side

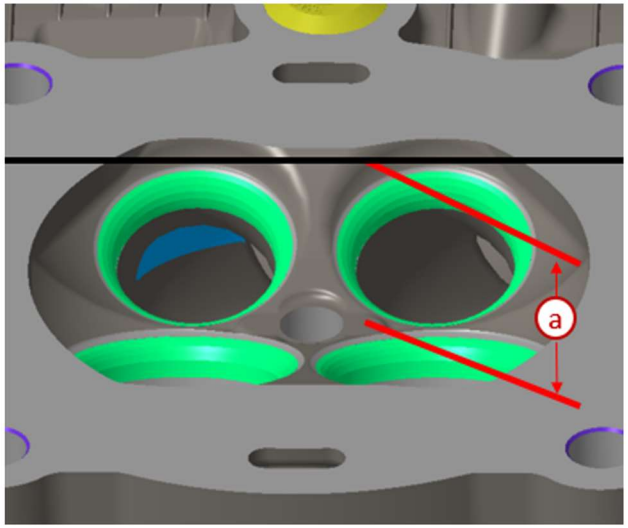
Cylinder head (starboard) from combustion chamber side

Combustion chamber

Combustion chamber without valves

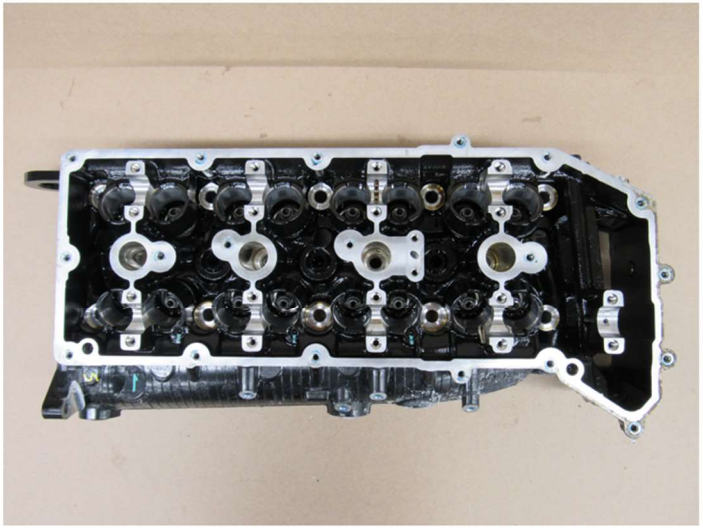
Note: clean-up around port throat is variable due to casting tolerance

Combustion chamber height a min 14.0 mm

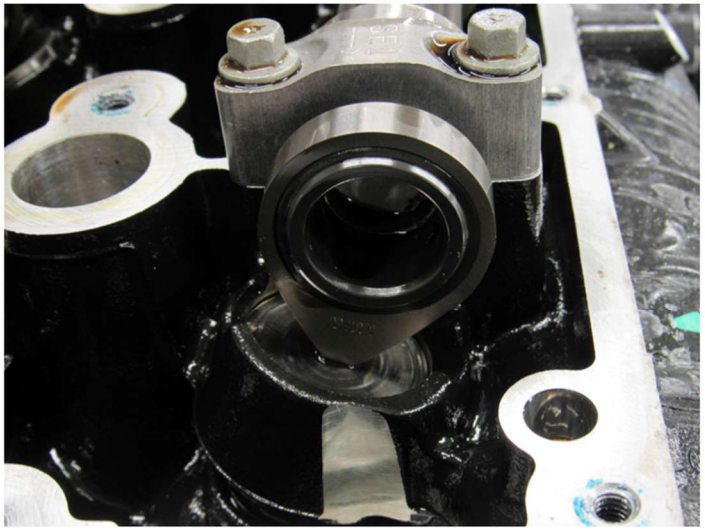


Cylinder head (port) from the valvetrain side

Cylinder head (starboard) from the valvetrain side



Valvetrain – close-up

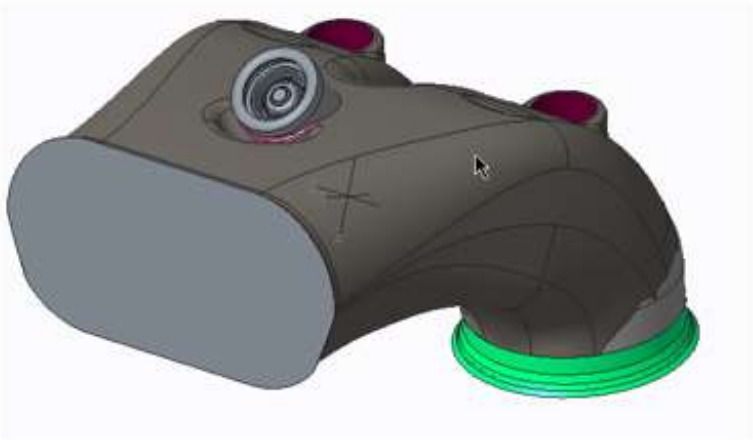


Cylinder head showing intake port

Exhaust outlet – port cylinder head

Exhaust outlet – starboard cylinder head

Intake port core from manifold flange to intake valves, including valve stems; maximum volume = 152 cc



Intake (left) and exhaust (right) valves 	Valve spring with keys and retainer 
Intake (left) and exhaust (right) valves 	Piston viewed from top 

Piston and rod assembly

Piston viewed 45° from wrist pin

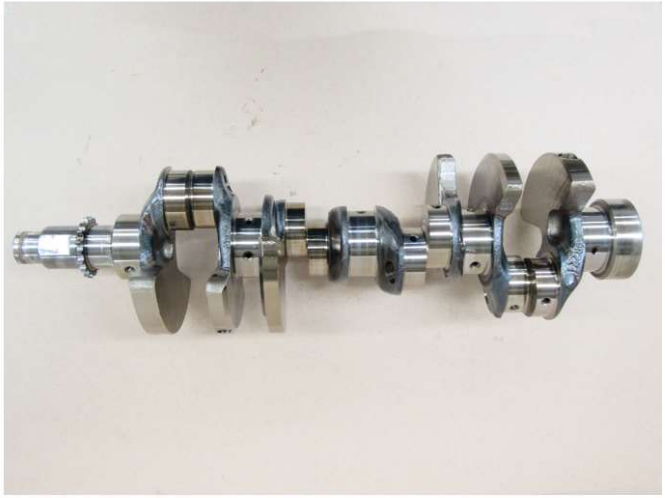
Piston viewed from bottom

Connecting rod

Cylinder block from port deck side

Cylinder block from starboard deck side

Crankshaft



Cylinder block from crankshaft side

Oil cooler on-engine – under port intake runners

Exhaust manifold

Lower exhaust pipe inlet

Exhaust manifold inlet and outlet

Oil pump without cover	Flywheel bottom (L) and top (R)
	 

MEASUREMENTS

ENGINE FUEL

Type:		**Gasoline**	
Minimum octane required (300 ROS):		**95**	RON

ENGINE TYPE

Number of cylinders:		**8**	Cylinders
Cylinder arrangement:		**Vee (64°)**	

ENGINE BLOCK	Tolerance	Measurement	Unit
Bore	+/- 0.10	**92.00**	mm
Stroke	+/- 0.10	**86.00**	mm
Capacity per cylinder	max	**573.6**	cc
Total Capacity	max	**4 589**	cc
Cylinder block material		**XK360.2-T5 Aluminium**	
Cylinder liner material		**Grey iron**	
Distance from crankshaft centreline to cylinder block deck face.	+/- 0.10	**210.0**	mm

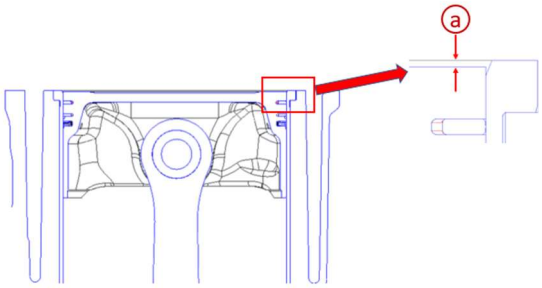
CYLINDER HEAD	Tolerance	Measurement	Unit
Cylinder head material		**A356-T6 Aluminium**	
Volume of combustion chamber (without volume of spark plug hole)	min	**51.9**	cc
Compression ratio	max	**10.1 nom**	
Thickness of cylinder head	+/- 0.20	**96.0**	mm
Inlet Port:			
Size of port at cylinder head/manifold face	max	**30 x 60**	mm
Internal diameter of valve seat insert	+/- 0.20	**33.1**	mm
Surface finish of port		**Cast**	
Exhaust Port:			
Size of port at cylinder head/manifold face	max	**N/A**	mm
Internal diameter of valve seat insert	+/- 0.20	**26.1**	mm
Surface finish of port		**Cast**	

Inlet Valves:			
Diameter of stem	+/- 0.008	**5.4725**	mm
Diameter of head	+/- 0.1	**37.00**	mm
Overall length of inlet valve	+/- 0.25	**88.49**	mm
Exhaust Valves:			
Diameter of stem	+/- 0.008	**5.464**	mm
Diameter of head	+/- 0.1	**31.0**	
Overall length of exhaust valve	+/- 0.25	**87.67**	mm
Valve Springs:			
Diameter of wire	max	**2.925**	mm
Inside diameter of coil	min	**17.5**	mm
Free length	+/- 0.5	**46.1**	mm
Number of working turns	+/- 0.5	**6.1**	turns

CAMSHAFT/SHAFTS	Tolerance	Measurement	Unit
Inlet:			
Tappet clearance for checking timing	+/- 0.050	**0.175**	mm
Total valve lift (at nominal lash)	+/- 0.10	**8.54**	mm
Total (duration) inlet opening angle (measured at flywheel in degrees at 1,0 mm valve lift at specified valve lash)	+/- 5°	**200**	degrees
Duration inlet opening angle 3mm under max valve lift (measured at flywheel in degrees)	+/- 2°	**124**	degrees
Base circle diameter of lobe	+/- 0.02	**35.00**	mm
Cam shaft lobe height	+/- 0.05	**43.72**	mm
Exhaust:			
Tappet clearance for checking timing	+/- 0.050	**0.350**	mm
Total valve lift (at nominal lash)	+/- 0.10	**8.89**	mm
Total (duration) exhaust opening angle (measured at flywheel in degrees at 1,0 mm valve lift at specified valve lash)	+/- 5°	**204**	degrees
Duration inlet opening angle 3mm under max valve lift (measured at flywheel in degrees)	+/- 2°	**120**	degrees
Base circle diameter of lobe	+/- 0.02	**35.00**	mm
Cam shaft lobe height	+/- 0.05	**44.24**	mm

PISTONS

Material of piston		**Aluminium**	
Type and thickness of rings	Square	**1.20**	mm
	Taper Faced Napier	**1.00**	mm
	Oil Control	**2.00**	mm
Piston crown height from head deck at top dead center (a)	min	**0.30**	mm



CONNECTING ROD	Tolerance	Measurement	Unit
Length of rod from big end to small end (centre to centre)	+/- 0.05	**140.5**	mm

CRANKSHAFT	Measurement	Unit
Number of main bearing journals	**5**	
Diameter of main bearing journals	**59.984-60.000**	mm
Diameter of connecting rod journals	**53.984-54.000**	mm
Surface finish of crankshaft	**Primarily machined, with some as-forged**	

TYPE OF BEARINGS

Piston Pin	**Floating**
Connecting Rod journal	**Plain**
Main journal	**Plain**

FUEL INJECTION	Tolerance	Measurement	Unit
Make		**Walbro**	
Type of pump, model no.		**Gerotor, FGB-29**	
Fuel pressure at idle		**approx 290-340**	kPa
Fuel pressure no running		**340-370**	kPa
Total number of injectors		**8**	Injectors
Diameter of throttle bore	max	**80.0**	mm

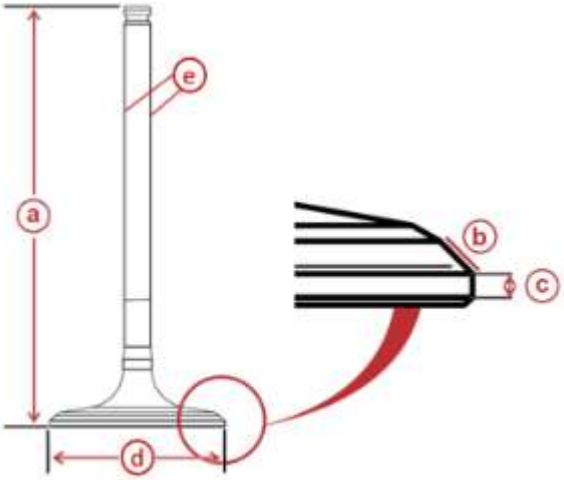
COOLING SYSTEM

Type	**Raw water cooled**	
Method	**Thermostat controlled**	
Pump	**Rubber impeller vane pump**	
Number of impeller blades	**6**	
Thermostat start opening temperature	**57-61**	°C
Thermostat fully opened	**77**	°C

VALVE INSPECTION

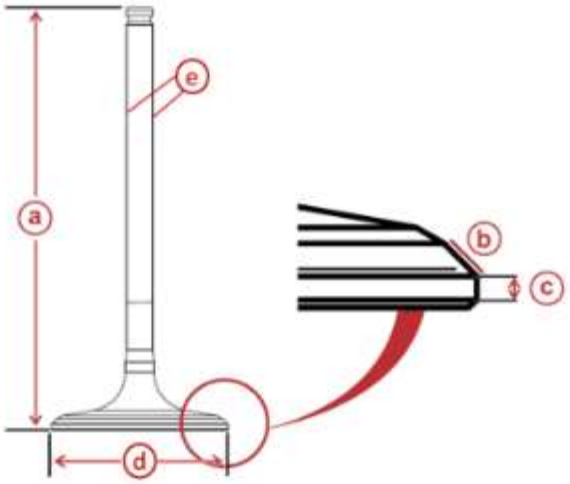
Intake valve

Intake Valve Specifications		
Intake valve	Height (a)	88.49 ± 0.25 mm
	Valve stem diameter (e)	5.4645-5.4805 mm
	Valve face angle	45°
	Outside diameter (d)	37.0 ± 0.1 mm
	Valve margin width (c)	0.875 ± 0.2 mm
	Valve stem service limit runout (measured at valve face)	0.030 mm



Exhaust valve

Exhaust Valve Specifications		
Exhaust valve	Height (a)	87.667 ± 0.25 mm
	Valve stem diameter (e)	5.456-5.472 mm
	Valve face angle	46°
	Outside diameter (d)	31.0 ± 0.1 mm
	Valve margin width (c)	1.331 ± 0.2 mm
	Valve stem service limit runout (measured at valve face)	0.030 mm



SENSOR TESTS

Cylinderblock coolant sensor

Meter Test Leads		Temperature	Reading (nominal)
Red	Black		
Pin A (black/orange)	Pin B (brown/black)	0 °C (32 °F)	32.6 kΩ
		20 °C (68 °F)	12.5 kΩ
		40 °C (104 °F)	5.3 kΩ
		65 °C (150 °F)	2.1 kΩ
		95 °C (203 °F)	786 Ω

Manifold Absolute Pressure Sensor

Manifold Absolute Pressure (MAP) Sensor Readings	
At idle (neutral)	35-48 kPa (5-7 psi)
At wide-open throttle	Within 15% of BARO

Manifold Air Temperature Sensor

Meter Test Leads		Temperature	Reading (nominal)
Red	Black		
Pin A (tan)	Pin B (black/orange)	0 °C (32 °F)	6.5 kΩ
		15 °C (59 °F)	3.2 kΩ
		25 °C (77 °F)	2.1 kΩ
		100 °C (212 °F)	150 Ω

Spark plug

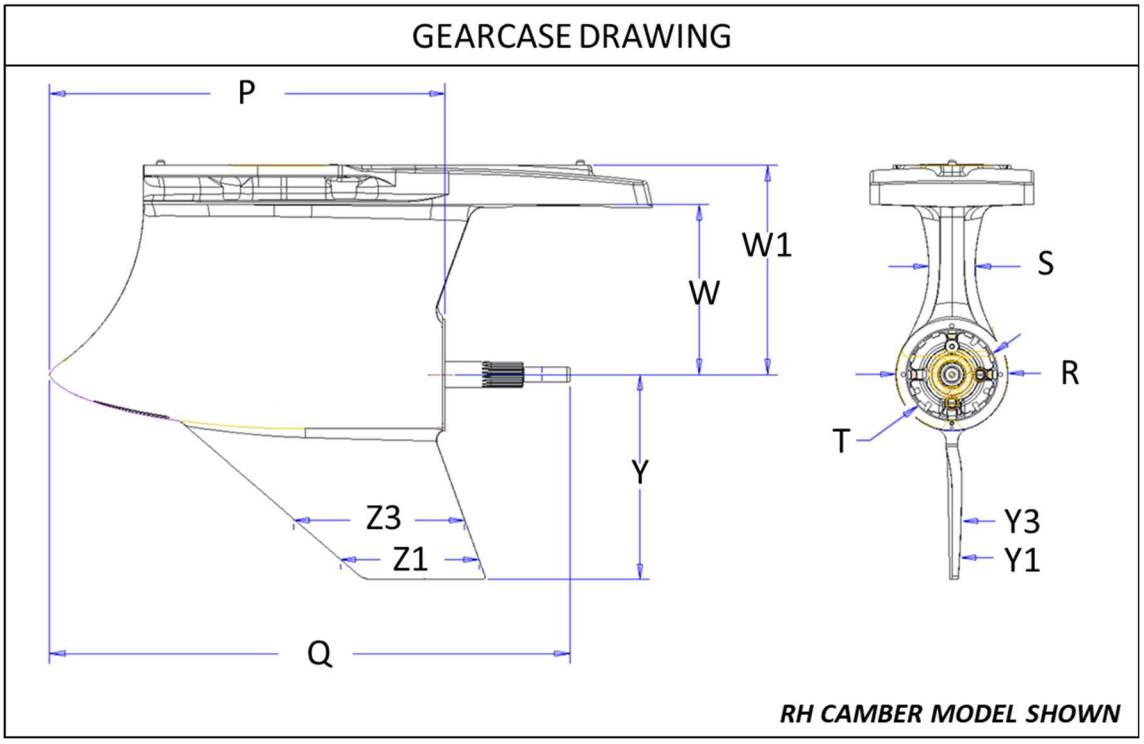
Brand	**NGK**
Model	**LKAR7C-9**

WEIGHTS	Tolerance	Measurement	Unit
Inlet valve (bare)	min	**47**	g
Exhaust valve (bare)	min	**36**	g
Valve spring	min	**23.5**	g
Inlet camshaft (port and stbd)	min	**1 070**	g
Exhaust camshaft (port)	min	**1 350**	g
Exhaust camshaft (stbd)	min	**1 320**	g
Piston (with rings)	min	**291**	g
Piston Pin	min	**66.5**	g
Connecting Rod (with bearings and bolts)	min	**440**	g
Crankshaft	min	**15 310**	g
Flywheel (bare)	min	**5 780**	g

UNDERWATER UNIT
Sport Master (Straight or RH cambered skeg)

	Tolerance	Measurement	Unit
Gear Ratio		**1.75 (14/29)**	
Gear Ratio		**1.60 (15/24)**	
P Longtitudinal length of gearcase torpedo	+/- 5.0	**492.0**	mm
Q Longtitudinal dimension of gearcase including propeller shaft	max	**648.0**	mm
R Transverse dimension of gearcase	min	**140.0**	mm
S Thickness of strut	min	**57.0**	mm
T Diameter of exhaust outlet	max	**112.0**	mm
Z1 Skeg chord length, 25mm above bottom	+/- 5.0	**172.4**	mm
Z3 Skeg chord length, 75mm abobe bottom	+/- 5.0	**212.4**	mm
W1 Distance from propeller shaft to upper flange	+/- 5.0	**259.3**	mm
W Distance from propeller shaft to anti-ventilation plate	+/- 5.0	**211.0**	mm
Y1 Thickness of skeg, 25mm above bottom*	Min	***Straight* 7.6**	mm
Y1 Thickness of skeg, 25mm above bottom*	min	***Cambered* 9.3**	mm
Y3 Thickness of skeg, 75mm above bottom*	min	***Straight* 10.1**	mm
Y3 Thickness of skeg, 75mm above bottom*	min	***Cambered* 11.4**	mm
Y Skeg depth from propeller shaft	+/- 5.0	**253.7**	mm

**measurement made at skeg trailing edge*

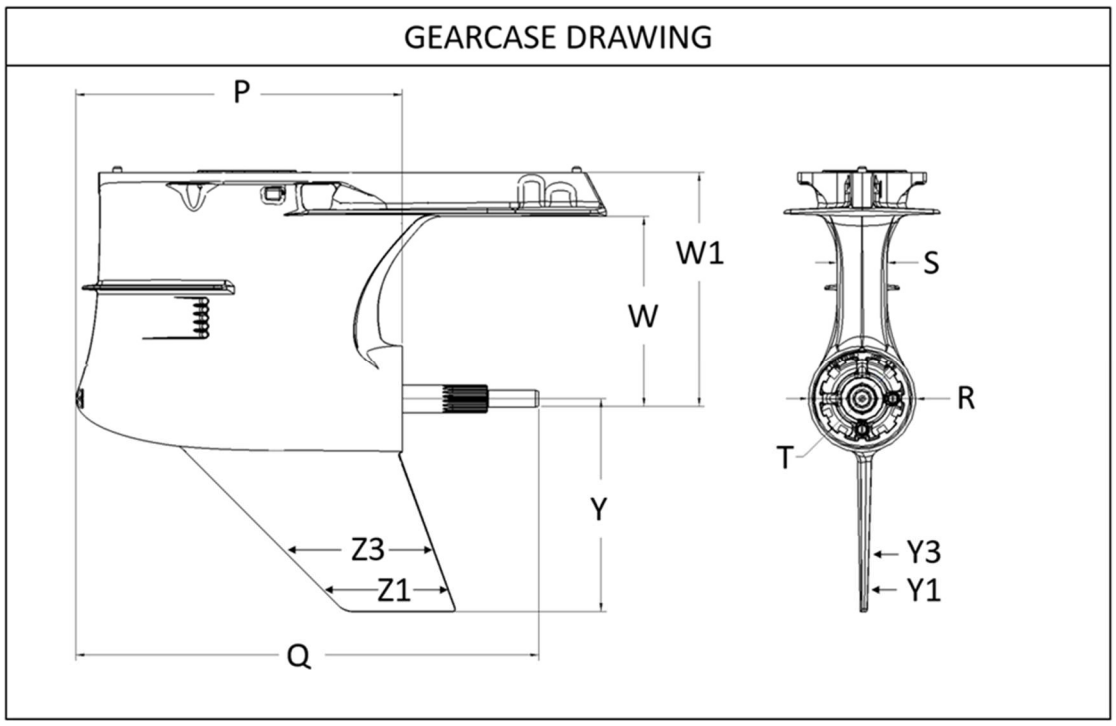


UNDERWATER UNIT
Torque Master

	Tolerance	Measurement	Unit
Gear Ratio		**1.75 (12/21)**	
P Longtitudinal length of gearcase torpedo	+/- 5.0	**371.0**	mm
Q Longtitudinal dimension of gearcase including propeller shaft	max	**526.0**	mm
R Transverse dimension of gearcase	min	**121.9**	mm
S Thickness of strut	min	**56.6**	mm
T Diameter of exhaust outlet	max	**112.0**	mm
Z1 Skeg chord length, 25mm above bottom	+/- 5.0	**143.8**	mm
Z3 Skeg chord length, 75mm abobe bottom	+/- 5.0	**175.5**	mm
W1 Distance from propeller shaft to upper flange	+/- 5.0	**266.0**	mm
W Distance from propeller shaft to anti-ventilation plate	+/- 5.0	**216.0**	mm
Y1 Thickness of skeg, 25mm above bottom*	min	**7.1**	mm
Y3 Thickness of skeg, 75mm above bottom*	min	**8.9**	mm
Y Skeg depth from propeller shaft	+/- 5.0	**241.0**	mm

**measurement made at skeg trailing edge*

GEARCASE DRAWING



NOTES

Inspection of ECM

Model	300 ROS
ECM over speed limiter*	6600 rpm
ECM calibration part number+	8M0240736

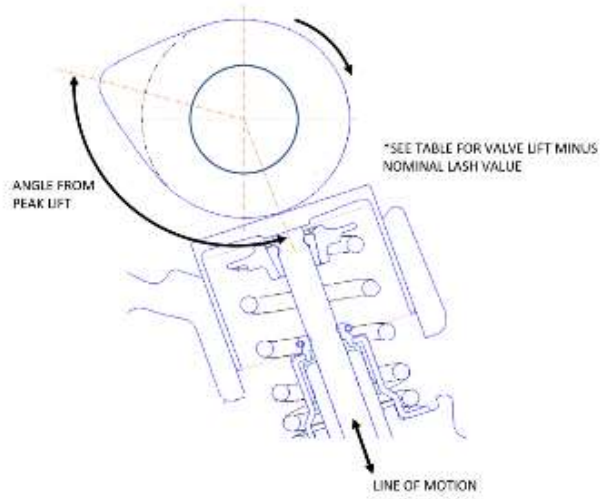
*Note, over speed limiter indicates speed at which one bank of cylinders are cut. At 6,700 rpm all cylinders are cut. Instantaneous spikes over 6,700 rpm are possible if the prop completely exits the water (e.g. wave jump)

+The calibration part number is current as of the publication of this document. Subsequent calibration revisions may be made by Mercury with the approval of UIM COMINTECH.

Cowling

Cowlings may be either Mercury OEM as shipped or may be a lightweight facsimile of the production cowling. External latches may be added or replacing original latches. Mercury decals must appear with contrasting color on any substituted cowling in a manner similar to Mercury OEM cowlings. Rear air inlets must remain, with identical location and cross-sectional area

Attachment 1 - Camlift measurement



Valve Lift Table (in Cam angle) at Nominal Lash				
INTAKE (INT#1 Lobe Index Timing @ Max Lift: 114 degrees in Crank ATDC)			EXHAUST (EXH#1 Lobe Index Timing @ Max Lift: 110 degrees in Crank BTDC)	
Cam Angle	Valve Lift [mm]		Cam Angle	Valve Lift [mm]
-72	0.053			
-70	0.087			
-68	0.121			
-66	0.155			
-64	0.189		-64	0.007
-62	0.223		-62	0.041
-60	0.257		-60	0.075
-58	0.291		-58	0.121
-56	0.337		-56	0.224
-54	0.438		-54	0.431
-52	0.643		-52	0.759
-50	0.965		-50	1.184
-48	1.384		-48	1.667
-46	1.860		-46	2.170
-44	2.355		-44	2.674
-42	2.852		-42	3.176
-40	3.346		-40	3.673
-38	3.832		-38	4.160
-36	4.302		-36	4.631
-34	4.753		-34	5.082
-32	5.180		-32	5.510
-30	5.583		-30	5.913
-28	5.961		-28	6.292
-26	6.315		-26	6.646
-24	6.643		-24	6.975
-22	6.945		-22	7.278
-20	7.222		-20	7.556
-18	7.472		-18	7.808

-16	7.697		-16	8.033
-14	7.895		-14	8.233
-12	8.067		-12	8.406
-10	8.212		-10	8.553
-8	8.332		-8	8.673
-6	8.424		-6	8.766
-4	8.490		-4	8.833
-2	8.530		-2	8.873
0	8.543		0	8.887
2	8.530		2	8.873
4	8.490		4	8.833
6	8.424		6	8.766
8	8.332		8	8.673
10	8.212		10	8.553
12	8.067		12	8.406
14	7.895		14	8.233
16	7.697		16	8.033
18	7.472		18	7.808
20	7.222		20	7.556
22	6.945		22	7.278
24	6.643		24	6.975
26	6.315		26	6.646
28	5.961		28	6.292
30	5.583		30	5.913
32	5.180		32	5.510
34	4.753		34	5.082
36	4.302		36	4.631
38	3.832		38	4.160
40	3.346		40	3.673
42	2.852		42	3.176
44	2.355		44	2.674
46	1.860		46	2.170
48	1.384		48	1.667
50	0.965		50	1.184
52	0.643		52	0.759
54	0.438		54	0.431
56	0.337		56	0.224
58	0.291		58	0.121
60	0.257		60	0.075
62	0.223		62	0.041
64	0.189		64	0.007
66	0.155			
68	0.121			
70	0.087			
72	0.053			