



ADVANCE PRODUCT SERVICE INFORMATION

INFORMATION BULLETIN NO. 40

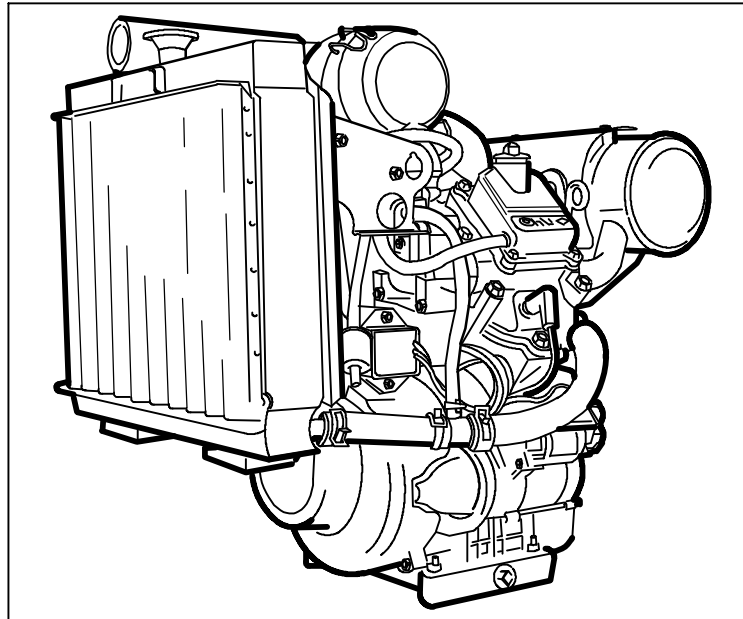
DATE 3-03-2003

SUBJECT: Liquid Cooled V-Twin Vanguard™ Engine

This information will be included in upcoming Vanguard™ 2/LC Repair Manual 275429.

Introducing the new Briggs & Stratton Vanguard™ 2-cylinder liquid cooled engine, Model Series 470000. This engine features a Donaldson air cleaner package, and is available with or without the radiator and muffler packages. A full two-year commercial warranty applies.

Vanguard™
2-LC,
Model
Series
470000



Common Specifications

Armature Air Gap	0.005 - 0.007 (0.13 - 0.18 mm)
Bore	3.19 (81 mm)
Compression Ratio	8.4:1
Coolant Capacity	3.7 quarts (3.5 L)
Crankshaft End Play	0.004 - 0.011 (0.10-0.28 mm)
Displacement	45.9 ci. (752 cc)
Governed Idle Speed	1750 RPM
Governed Top Speed	3600 RPM
Oil Capacity	87 oz. (2.6L)
Spark Plug Gap	0.020 (0.51 mm)
Stroke	2.87 (73.0 mm)
Valve Clearance (Cold) - Int. and Exh.	0.007 - 0.010 (0.18 - 0.25 mm)

Fastener Specifications

Description	Wrench/Socket Size	Torque
Air Cleaner Support Bracket	T-30	90 in-lbs (10 Nm)
Alternator		30 in-lbs (3 Nm)
Breather	10 mm	35 in-lbs (4 Nm)
Carburetor Elbow	10 mm	90 in-lbs (10 Nm)
Carburetor Elbow to Intake Manifold	10 mm	90 in-lbs (10 Nm)
Connecting Rod		125 in-lbs (14 Nm)
Cylinder Head	14 mm	350 in-lbs (39 Nm)
Exhaust Manifold	T-40 / 12 mm	185 in-lbs (21 Nm)

Fan Retainer		70 in-lbs (8 Nm)
Fan Belt Adjuster Bolt	12 mm	110 in-lbs (12 Nm)
Fan Belt Bracket Pivot	14 mm	125 in-lbs (14 Nm)
Fan Bracket to Cylinder	12 mm	150 in-lbs (17 Nm)
Fan housing (M6 screws)		70 in-lbs (8 Nm)
Fan housing (M8 screws)		140 in-lbs (16 Nm)
Flywheel Nut	32 mm	125 ft-lbs (169 Nm)
Fuel Pump	10 mm	35 in-lbs (4 Nm)
Governor Control Bracket	10 mm	70 in-lbs (8 Nm)
Governor Lever Nut	10 mm	70 in-lbs (8 Nm)
Ignition Armature	7 mm	30 in-lbs (3 Nm)
Intake Manifold	10 mm	90 in-lbs (10 Nm)
Muffler Bracket	T-30	185 in-lbs (21 Nm)
Oil Filter Nipple		240 in-lbs (27 Nm)
Oil Pump		70 in-lbs (8 Nm)
Oil Drain Plug	16 mm	240 in-lbs (27 Nm)
Oil Drip Tray	10 mm	50 in-lbs (6 Nm)
PTO Pulley	13 mm	195 in-lbs (22 Nm)
Radiator Isolator Nuts		100 in-lbs (11 Nm)
Rocker Arm Lock Nut	13 mm	70 in-lbs (8 Nm)
Rocker Arm Stud	10 mm	100 in-lbs (11 Nm)
Spark Plug		170 in-lbs (19 Nm)
Starter Motor Bracket	12 mm	140 in-lbs (16 Nm)
Starter Motor Thru Bolts	8 mm	50 in-lbs (6 Nm)
Sump Base/Crankcase Cover	13 mm	200 in-lbs (23 Nm)
Thermostat Cover	10 mm	70 in-lbs (8 Nm)
Valve Cover	10 mm	70 in-lbs (8 Nm)
Voltage Regulator	10 mm	40 in-lbs (5 Nm)
Water Pump Cover	10 mm	90 in-lbs (10 Nm)
Water Pump Impeller		95 in-lbs (11 Nm)

Standard and Reject Dimensions

Description	Standard Dimension	Reject Dimension
Cylinder		
Piston Bore	3.190 (81.03 mm)	3.193 (81.10 mm)
Out-of-Round		.0015 (.04 mm)
Main Bearing	1.775 (45.09 mm)	1.7765 (45.12 mm)
Cam Bearing	0.788 (20.02 mm)	.790 (20.07 mm)
Cylinder Head		
Valve Guide	0.237 (6.02 mm)	.240 (6.09 mm)
Valve Stem	0.234 (5.94 mm)	.233 (5.92 mm)
Crankcase Cover		
Main Bearing	1.775 (45.09 mm)	1.7765 (45.12 mm)
Cam Bearing	0.788 (20.02 mm)	.790 (20.07 mm)
Crankshaft		
Crankpin Journal	1.654 (42.01 mm)	1.6525 (41.97 mm)
Magneto, PTO Journals	1.771 (44.98 mm)	1.7695 (44.95 mm)
Camshaft		
Journals	0.786 (19.96 mm)	.7845 (19.93 mm)
Lobes	1.346 (34.19 mm)	1.341 (34.06 mm)
Connecting Rod		
Crankpin Bearing	1.656 (42.06 mm)	1.658 (42.11 mm)
Piston Pin Bearing	0.828 (21.02 mm)	.8285 (21.04 mm)
Piston		
Piston Pin Bearing	0.827 (21.01 mm)	.828 (21.03 mm)
Piston Pin	0.827 (21.00 mm)	.826 (20.98 mm)
Piston Ring		
End Gap		
Top	0.011 (0.28 mm)	.030 (.76 mm)
Center	0.018 (0.46 mm)	.030 (.76 mm)
Oil	0.018 (0.46 mm)	.030 (.76 mm)
Side Clearance - Top	0.002 (0.05 mm)	.005 (.13 mm)
Center	0.002 (0.05 mm)	.005 (.13 mm)
Oil	0.004 (0.10 mm)	.007 (.18 mm)