

Specifications - 2 and 4

General

2

4

Full Throttle Operating Range	4200 - 4800 rpm	4000 - 5000 rpm
Idle rpm in Forward Gear	650 rpm	600 rpm
Test Wheel and rpm	Part No. 316021	Part No. 317738
	(4-9/16" dia. x 5/8" wide)	(5-1/4" dia. x 11/16" wide)
	3900 rpm	4550 rpm

Powerhead

Bore and Stroke	39,69 x 34,93 mm	39,69 x 34,93 mm
	(1.5625" Bore x 1.375" Stroke)	(1.5625" Bore x 1.375" Stroke)
Piston Displacement	43 cm ³ (2.64 cu. in.)	87 cm ³ (5.28 cu. in.)
Width of Ring	1,588 - 1,562 mm (0.0625" - 0.615")	1,588 - 1,562 mm (0.0625" - 0.615")
Crankshaft Size		
Top Journal	19,055 - 19,042 mm (0.7502" - 0.7497")	19,075 - 19,063 mm (0.7510" - 0.7506")
Center Journal	16,993 - 16,980 mm (0.6690" - 0.6685")	
Bottom Journal	19,055 - 19,042 mm (0.7502" - 0.7497")	19,055 - 19,045 mm (0.7502" - 0.7498")
Connecting Rod Crank Pin	17,018 - 17,005 mm (0.6700" - 0.6695")	17,018 - 17,005 mm (0.6700" - 0.6695")
+Standard Bore Size	39,815 - 39,800 mm (1.5675" - 1.5668")	39,751 - 39,733 mm (1.5650" - 1.5643")

+To determine correct bore size for oversize pistons, merely add oversize dimension to standard bore size.

Ignition System

Ignition	Flywheel magneto	Flywheel magneto
Spark Plug		
Champion	J6J or RJ6J - 14 mm	L86 or RL86 - 14 mm
Spark Plug Gap	0,76 mm (0.030")	0,76 mm (0.030")
Breaker Point Gap	0,51 mm (0.020")	0,51 mm (0.020")
Condenser	Part No. 580321 - 0.18 - 0.22 Mfd.	Part No. 580321 - 0.18 - 0.22 Mfd.
Ignition Coil	Part No. 582370	Part No. 582370

Ignition Coil Test Specifications

Coil Part No. 582370

Stevens Tester Model ST-75

Normal Polarity (Switch Setting Standard)	2,2
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Stevens Tester Model No. M.A. - 75 or 80

Switch	Index Adjustment
B	22

Merc-O-Tronic

Operating Amperage	Primary Resistance		Secondary Continuity	
	Min.	Max.	Min.	Max.
1,6	0,5	0,7	35	45

Graham Tester Model 51

Maximum Secondary	Maximum Primary	Coil Index	Minimum Coil Test	Max. Gap Index
5500	1,2	75	33	75

Coil Ohmmeter Test

Primary (Low Ohms)	0.6 Ω ± 0.2
Secondary (High Ohms)	4200 Ω ± 200

Fuel System

Carburetion	Single barrel float feed, with high and low speed adjustments, manual choke	Single barrel float feed, fixed high speed adjustable low speed, manual choke
Float Level Setting	Between steps on gauge Part No. 324891	Between steps on gauge part No. 324891
Float Drop Setting	28 - 38 mm (1.125" - 1.500")	28 - 38 mm (1.125" - 1.500")

Clearance Chart

Powerhead

Piston Ring Gap	0,64 - 0,38 mm (0.025" - 0.015")	0,38 - 0,13 mm (0.015" - 0.005")
Piston Ring Groove	0,10 - 0,05 mm (0.0040" - 0.0020")	0,10 - 0,05 mm (0.0040" - 0.0020")
Cylinder and Piston	0,140 - 0,109 mm (0.0055" - 0.0043")	0,076 - 0,046 mm (0.0030" - 0.0018")
Connecting Rod - Piston End	0,028 - 0,010 mm (0.0011" - 0.0004")	Needle Bearings

Lower Unit

Driveshaft and Bushing in Gearcase	0,071 - 0,025 mm (0.0028" - 0.0010")	
Gearcase Head and Propeller Shaft	0,056 - 0,018 mm (0.0022" - 0.0007")	
Propeller on Shaft	0,145 - 0,056 mm (0.0057" - 0.0022")	0,170 - 0,056 mm (0.0067" - 0.0022")
Gearcase Bushing on Propeller Shaft	0,056 - 0,018 mm (0.0022" - 0.0007")	

Torque Chart

Powerhead

Flywheel Nut	30 - 34 N·m (20 - 25 ft. lbs.)	40 - 54 N·m (30 - 40 ft. lbs.)
Connecting Rod Screws	7,0 - 7,5 N·m (60 - 66 in. lbs.)	7,0 - 7,5 N·m (60 - 66 in. lbs.)
Cylinder Head Screws	7,0 - 9,0 N·m (60 - 80 in. lbs.)	7,0 - 9,0 N·m (60 - 80 in. lbs.)
Crankcase to Main Bearing Screws		
Upper, Center, Lower		7,0 - 9,0 N·m (60 - 80 in. lbs.)
Bearing Housing to Cylinder Screws	7,0 - 9,0 N·m (60 - 80 in. lbs.)	
Spark Plug	24 - 27 N·m (18 - 21 ft. lbs.)	24 - 27 N·m (18 - 21 ft. lbs.)
Gearcase Mounting Screws	7 - 9 N·m (60 - 80 in. lbs.)	7 - 9 N·m (60 - 80 in. lbs.)

Specifications - 4.5, 6 and 7.5

General

4.5

6 and 7.5

Full Throttle Operating Range	4500 - 5500 rpm	4500 - 5500 rpm
Idle rpm in Forward Gear	600 rpm	650 rpm
Test Wheel and rpm	Part No. 390123 (5-3/4" dia. x 5/8" wide) 5100 rpm	Part No. 390239 (5-3/4" dia. x 1-1/8" wide) 4900 rpm

Powerhead

Bore and Stroke	39,69 mm x 34,93 mm (1.5625" Bore x 1.375" Stroke)	49,21 mm x 43,18 mm (1.9375" Bore x 1.700" Stroke)
Piston Displacement	87 cm ³ (5.28 cu. in.)	164 cm ³ (10.0 cu. in.)
Width of Ring	1,588 - 1,562 mm (0.0625" - 0.0615")	1,588 - 1,562 mm (0.0625" - 0.0615")
Crankshaft Size		
Top Journal	19,075 - 19,063 mm (0.7510" - 0.7505")	22,282 - 22,155 mm (0.87725" - 0.87225")
Center Journal	16,993 - 16,980 mm (0.6690" - 0.6685")	20,712 - 20,585 mm (0.81545" - 0.8104")
Bottom Journal	19,055 - 19,045 mm (0.7502" - 0.7498")	19,207 - 19,045 mm (0.7562" - 0.7498")
Connecting Rod Crank Pin	17,018 - 17,005 mm (0.6700" - 0.6695")	17,018 - 17,005 mm (0.6700" - 0.6695")
+Standard Bore Size	39,751 - 39,733 mm (1.5650" - 1.5643")	49,23 - 49,20 mm (1.9380" - 1.9373")

+To determine correct bore size for oversize pistons, merely add oversize dimension to standard bore size.

Ignition System

Ignition	Flywheel magneto, breakerless C.D.	Flywheel magneto, breakerless C.D.
Spark Plug		
Champion	L77J4 or QL77J4 - 14 mm	L77J4 or QL77J4 - 14 mm
Spark Plug Gap	1,0 mm (0.040")	1,0 mm (0.040")
Ignition Coil	Part No. 582106	Part No. 582106

Ignition Coil Test Specifications			**Use Model CD-1 Adapter Red test clip to orange/black Black test clip to orange	
Stevens Model ST-75			Graham Tester Model 51	
Reverse Polarity (Switch Setting CD)	1.1		Maximum Secondary	400 ohms
Stevens Tester Model M.A.-75 or M.A.-80			Primary Continuity, Point Test Scale	0.1 ohm, maximum
Switch	Index Adjustment		Maximum Primary	0.4 ohm
**A	20		Coil Index	50
Merc-O-Tronic with Capacitor Discharge Adapter Model 55-980			Coil Test Minimum AMPLIFIED	26 (With secondary circuit "open.") Hi tension lead disconnected
Operating Amperage	Primary Resistance	Secondary Continuity	Gap Index	50 (coil must fire spark gap on tester at this setting.)
1.0	0.1 Ohm OR LESS	5 Approx	Ignition Coil Ohmmeter Test	
			Primary (Low Ohms)	Secondary (High Ohms)
			0.1 ± 0.05	275 ± 50

Ignition Component Tests						
	Resistance		Ground Test		Output	
	Meter Setting	Reading	Meter Setting	Reading	Meter Setting	Reading
Charge coil	High ohms scale	575 ± 75 Ω	High ohms scale	∞	(-), 500	230
Sensor coil	Low ohms scale	40 ± 10 Ω	Low ohms scale	∞	S, 5	0,3
Power pack					(-), 500	180

Fuel System

Carburetion	Single barrel, float feed, fixed high speed adjustable low speed, manual choke	Single barrel, float feed, fixed high speed adjustable low speed, manual choke
Float Level Setting	Between steps on gauge Part No. 324891	Between steps on gauge Part No. 324891
Float Drop Setting	28 - 32 mm (1.125" - 1.500")	28 - 32 mm (1.125" - 1.500")

Clearance Chart

Piston Ring Gap	0,38 - 0,127 mm (0.015" - 0.005")	0,38 - 0,127 mm (0.015" - 0.005")
Piston Ring Groove	0,102 - 0,051 mm (0.0040" - 0.0020")	0,089 - 0,051 mm (0.0035" - 0.0020")
Cylinder and Piston	0,076 - 0,046 mm (0.0030" - 0.018")	0,076 - 0,046 mm (0.0030" - 0.0018")

Torque Chart

Powerhead

Flywheel Nut	40 - 54 N·m (30 - 40 ft. lbs.)	54 - 67 N·m (40 - 50 ft. lbs.)
Connecting Rod Screws	7,0 - 8,0 N·m (60 - 66 in. lbs.)	7,0 - 8,0 N·m (60 - 66 in. lbs.)
Cylinder Head Screws	7,0 - 9,0 N·m (60 - 80 in. lbs.)	16,0 - 19,0 N·m (12 - 14 ft. lbs.)
Crankcase to Main Bearing Screws		
Upper, Center, Lower	7,0 - 9,0 N·m (60 - 80 in. lbs.)	16,0 - 19,0 N·m (12 - 14 ft. lbs.)
Spark Plugs	24 - 27 N·m (18 - 21 ft. lbs.)	24 - 27 N·m (18 - 21 ft. lbs.)
Power Pack Mounting Screws	5,5 - 7,0 N·m (48 - 60 in. lbs.)	5,5 - 7,0 N·m (48 - 60 in. lbs.)
Ignition Coil Mounting Screws	7,0 - 9,5 N·m (60 - 80 in. lbs.)	7,0 - 9,5 N·m (60 - 80 in. lbs.)

Lower Unit

Gearcase Mounting Screws		
Front Screws	14 - 16 N·m (10 - 12 ft. lbs.)	14 - 16 N·m (10 - 12 ft. lbs.)
Rear Screws	7 - 9 N·m (60 - 80 in. lbs.)	7 - 9 N·m (60 - 80 in. lbs.)

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Specifications - 9.9, and 15

General

9.9 and 15

Full Throttle Operating Range	9.9-4500 - 5500 rpm 15-5500 - 7000 rpm
Idle rpm in Forward Gear	650 rpm
Test Wheel and rpm	Part No. 386537 (7" dia. x 1" wide) 9.9-5500 rpm 15-6200 rpm

Powerhead

Bore and Stroke	55,58 x 44,70 mm (2.188" Bore x 1.760" Stroke)
Piston Displacement	216 cm ³ (13.20 cu. in.)
Width of Ring	
Upper	1,788 - 1,765 mm (0.0700" - 0.0695")
Lower	1,562 - 1,588 mm (0.0615" - 0.0625")
Crankshaft Size	
Top Journal	22,255 - 22,243 mm (0.8762" - 0.8757")
Center Journal	20,638 - 20,625 mm (0.8125" - 0.8120")
Bottom Journal	20,638 - 20,625 mm (0.8125" - 0.8120")
Connecting Rod Crankpin	20,638 - 20,625 mm (0.8125" - 0.8120")
+Standard Bore Size	55,58 - 55,56 mm (2.1883" - 2.1875")

+To determine correct bore size for oversize pistons, merely add oversize dimension to standard bore size.

Ignition System

Ignition	Flywheel magneto, breakerless C.D.
Spark Plug	
Champion	L77J4 or QL77J4
Spark Plug Gap	1,0 mm (0.040")
Ignition Coil	Part No. 582106

Ignition Coil Test Specifications			**Use Model CD-1 Adapter Red test clip to orange/black Black test clip to orange	
Stevens Model ST-75			Graham Tester Model 51	
Reverse Polarity (Switch Setting CD) 1.1			Maximum Secondary 400 ohms	
Stevens Tester Model M.A.-75 or M.A.-80			Primary Continuity, Point Test Scale 0.1 ohm, maximum	
Switch	Index Adjustment		Maximum Primary 0.4 ohm	
**A	20		Coil Index 50	
Merc-O-Tronic with Capacitor Discharge Adapter Model 55-980			Coil Test Minimum AMPLIFIED 26 (With secondary circuit "open.") Hi tension lead disconnected	
Operating Amperage	Primary Resistance	Secondary Continuity	Gap Index 50 (coil must fire spark gap on tester at this setting.)	
1.0	0.1 Ohm OR LESS	5 Approx	Ignition Coil Ohmmeter Test	
			Primary (Low Ohms)	Secondary (High Ohms)
			0.1 ± 0.05	275 ± 50

Ignition Component Tests						
	Resistance		Ground Test		Output	
	Meter Setting	Reading	Meter Setting	Reading	Meter Setting	Reading
Charge coil	High ohms scale	575 ± 75 Ω	High ohms scale	∞	(-), 500	230
Sensor coil	Low ohms scale	40 ± 10 Ω	Low ohms scale	∞	S, 5	0,3
Power pack					(-), 500	180

Electrical System

Electrical System	60 watt 12 V AC
AC Stator Resistance	Part No. 582426
Trailing Coil (Yellow to Yellow/Blue)	1.2 ± 0.3 ohms
Leading Coil (Yellow to Yellow/Gray)	0.9 ± 0.2 ohms

Fuel System

Carburetion	Single barrel, float feed, fixed high speed adjustable low speed, manual choke
Float Level Setting	Between steps on gauge Part No. 324891
Float Drop Setting	28 - 32 mm (1.125" - 1.500")

Clearance Chart

Powerhead

Piston Ring Gap	0,38 - 0,13 mm (0.015" - 0.005")
Piston Ring Clearance, Lower	0,089 - 0,064 mm (0.0035" - 0.0025")
Cylinder and Piston	0,097 - 0,064 mm (0.0038" - 0.0025")

Lower Unit

Propeller Shaft in Front Gear Bushing	0,221 - 0,005 mm (0.0087" - 0.0002")
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Torque Chart

Powerhead

Flywheel Nut	60 - 70 N·m (45 - 50 ft. lbs.)
Connecting Rod Screws	5,0 - 7,0 N·m (48 - 60 in. lbs.)
Cylinder Head Screws	24 - 27 N·m (18 - 20 ft. lbs.)
Crankcase to Main Bearing Screws	
Upper, Center, Bottom	16 - 19 N·m (12 - 14 ft. lbs.)
Spark Plug	24 - 27 N·m (18 - 21 ft. lbs.)
Electric Start Thru-Bolts	4 - 5 N·m (30 - 40 in. lbs.)
Starter Motor Pinion Nut	17 - 19 N·m (150 - 170 in. lbs.)
Power Pack Mounting Screws	5 - 7 N·m (48 - 60 in. lbs.)
Ignition Coil Mounting Screws	7,0 - 9,5 N·m (60 - 80 in. lbs.)
Manual Starter Assembly Screw	32 - 36 N·m (24 - 26 ft. lbs.)

Mid-Section

Upper Mounts	7 - 9 N·m (60 - 80 in. lbs.)
Pilot Shaft to Steering Bracket Screws	11 - 15 N·m (8 - 10 ft. lbs.)

Lower Unit

Gearcase Mounting Screws	14 - 16 N·m (10 - 12 ft. lbs.)
Slip Clutch Propeller	115 N·m (85 ft. lbs. min.)

Specifications - 20, 25, 35, and 40 Com.

General

20, 25 and 35

40 Com.

Full Throttle Operating Range	20, 25-4500 - 5500 rpm 35-5200 - 5800 rpm	4000 - 5000 rpm
Idle rpm in Forward Gear	650 rpm	700 rpm
Test Wheel and rpm	20, 25 Part No. 388880 (7" dia. x 1" wide) 35-Part No. 386891 (7" dia. x 2-3/16" wide) 20-4650 rpm 25-5200 rpm 35-5300 rpm	Part No. 378566 (7" dia. x 1-5/8" wide) 4500 rpm

Powerhead

Bore and Stroke	76,20 x 57,15 mm (3.000" Bore x 2.250" Stroke)	80,90 x 69,85 mm (3.1875" Bore x 2.7500" Stroke)
Piston Displacement	521 cm ³ (31.8 cu. in.)	719 cm ³ (43.9 cu. in.)
Width of Ring		
Upper	2,286 - 2,273 mm (0.0900" - 0.0895")	2,286 - 2,273 mm (0.0900" - 0.0895")
Lower	1,588 - 1,562 mm (0.0625" - 0.0615")	1,588 - 1,562 mm (0.0625" - 0.0615")
Crankshaft Size		
Top Journal	31,775 - 31,788 mm (1.2510" - 1.2515")	38,046 - 38,034 mm (1.4979" - 1.4974")
Center Journal	30,056 - 30,069 mm (1.1833" - 1.1838")	34,930 - 34,620 mm (1.3752" - 1.3748")
Bottom Journal	24,999 - 25,009 mm (0.9842" - 0.9846")	30,017 - 29,997 mm (1.1815" - 1.1810")
Connecting Rod Crankpin	30,043 - 30,030 mm (1.1828" - 1.1823")	30,043 - 30,030 mm (1.1828" - 1.1823")
+Standard Bore Size	76,21 - 76,19 mm (3.0005" - 2.9995")	80,98 - 80,95 mm (3.1880" - 3.1870")

+To determine correct bore size for oversize pistons, merely add oversize dimension to standard bore size.

Ignition System

Ignition	Flywheel magneto, breakerless C.D.	Low tension magneto or Flywheel magneto, breakerless C.D.
Spark Plug		
Champion	L77J4 or QL77J4	UL81J or RL82
Spark Plug Gap	1,0 mm (0.040")	0,07 mm (0.030")
Breaker Point Gap		0,50 mm (0.020")
Driver Coil		1.45 ± 0.4 ohms
Condenser		Part No. 581419
Capacity		0.25 - 0.29 Mfd
Ignition Coil	Part No. 582106	Part No. 581786

Ignition Coil Test Specifications - Part No. 582106

Ignition Coil Test Specifications			**Use Model CD-1 Adapter Red test clip to orange/black Black test clip to orange	
Stevens Model ST-75			Graham Tester Model 51	
Reverse Polarity (Switch Setting CD)	1,1		Maximum Secondary	400 ohms
Stevens Tester Model M.A.-75 or M.A.-80			Primary Continuity, Point Test Scale	0.1 ohm, maximum
Switch	Index Adjustment		Maximum Primary	0.4 ohm
**A	20		Coil Index	50
Merc-O-Tronic with Capacitor Discharge Adapter Model 55-980			Coil Test Minimum AMPLIFIED	26 (With secondary circuit "open.") Hi tension lead disconnected
Operating Amperage	Primary Resistance	Secondary Continuity	Gap Index	50 (coil must fire spark gap on tester at this setting.)
1.0	0.1 Ohm OR LESS	5 Approx.	Ignition Coil Ohmmeter Test	
			Primary (Low Ohms)	Secondary (High Ohms)
			0.1 ± 0.05	275 ± 50

Ignition Coil Test Specifications - Part No. 581786

Tester	Stevens ST-75
Reverse polarity (switch setting standard)	1,3
Tester	Stevens Tester Model M.A.-75 or M.A.-80 with M.A.-14 Adapter in Series with High Tension Lead
Switch	B
Index adjustment	25
Tester	Merc-O-Tronic with Capacitor Discharge Adapter Model 55-980
Operating amperage	1,7
Primary resistance	0,8 Min.-1,2 Max.
Secondary continuity	60 Min.-70 Max.
Tester	Graham Model 51
Maximum secondary	20,000 ohms
Maximum primary	14,0 ohms
Coil index	50
Coil test minimum amplifier	24 (With secondary circuit "open.") Hi tension lead disconnected
Gap index	45 (Coil must fire spark gap on tester at this setting.)
Coil Ohmmeter Test	Primary (Low Ohms)
	1.35 ± 0,3 ohms
	Secondary (High Ohms) 13,500 ± 1500 ohms

Ignition Component Tests - 20, 25 and 35 (40 Com. C.D.)						
	Resistance		Ground Test		Output	
	Meter Setting	Reading	Meter Setting	Reading	Meter Setting	Reading
Charge coil	High ohms scale	575 ± 75 Ω	High ohms scale	∞	(-), 500	230
Sensor coil	Low ohms scale	40 ± 10 Ω	Low ohms scale	∞	S, 5	0.3
Power pack	—	—	—	—	(-), 500	180

Electrical System

20, 25 and 35

40 Com.

Alternator System

Electric Start 4 amp flywheel alternator
 Manual Start 60 watt AC at 12 V

Fuel System

Carburetion Single barrel, float feed Single barrel, float feed,
 fixed high speed adjustable fixed high speed adjustable
 low speed, manual choke low speed, manual choke
 Float Level Setting Between steps on gauge Between steps on gauge
 Part No. 324891 Part No. 324891
 Float Drop Setting 28 - 41 mm (1.125" - 1.625") 28 - 41 mm (1.125" - 1.625")

Clearance Chart

Powerhead

Piston Ring Gap 0,43 - 0,18 mm (0.017" - 0.007") 0,43 - 0,18 mm (0.017" - 0.007")
 Piston Ring Groove Clearance, Lower 0,102 - 0,038 mm (0.0040" - 0.0015") 0,102 - 0,038 mm (0.0040" - 0.0015")
 Cylinder and Piston 0,165 - 0,089 mm (0.0065" - 0.0035") 0,127 - 0,076 mm (0.0050" - 0.0030")
 Crankshaft End Play 0,635 - 0,000 mm (0.025" - 0.000") 0,028 - 0,076 mm (0.011" - 0.003")

Lower Unit

Propeller Shaft in Front Gear Bushing 0,051 - 0,025 mm (0.0020" - 0.0010") 0,051 - 0,025 mm (0.0020" - 0.0010")
 Rear Reverse Gear to Rear Bushing 0,051 - 0,013 mm (0.0020" - 0.0005") 0,051 - 0,013 mm (0.0020" - 0.0005")
 Reverse Gear Bushing to Propeller Shaft 0,038 - 0,013 mm (0.0015" - 0.0005") 0,038 - 0,013 mm (0.0015" - 0.0005")
 Propeller on Shaft at Drive Pin Hole 0,018 - 0,076 mm (0.007" - 0.003")
 Propeller on Shaft-Above the Shoulder 0,17 - 0,086 mm (0.0069" - 0.0034")

Torque Chart

Powerhead

Flywheel Nut 135 - 140 N·m (100 - 105 ft. lbs.) 136 - 140 N·m (100 - 105 ft. lbs.)
 Connecting Rod Screws 40 - 42 N·m (29 - 31 ft. lbs.) 40 - 42 N·m (29 - 31 ft. lbs.)
 Cylinder Head Screws 24 - 27 N·m (18 - 20 ft. lbs.) 19 - 22 N·m (14 - 16 ft. lbs.)
 Crankcase to Main Bearing Screws
 Upper, Center, Bottom 19 - 22 N·m (14 - 16 ft. lbs.) Upper and lower-16 - 18 N·m
 (150 - 170 in. lbs.)
 Center-18 - 19 N·m (162 - 168 in. lbs.)
 Powerhead to Exhaust Housing Screws 19 - 24 N·m (16 - 18 ft. lbs.) 7 - 9 N·m (5 - 7 ft. lbs.)
 Electric Starter Thru-Bolts 7 - 9 N·m (60 - 80 in. lbs.)
 Electric Starter Motor Pinion Nut 27 - 34 N·m (20 - 25 ft. lbs.)
 Spark Plug 24 - 27 N·m (18 - 21 ft. lbs.) 24 - 27 N·m (18 - 21 ft. lbs.)
 Manual Starter Assembly Screws 11 - 14 N·m (8 - 10 ft. lbs.) 11 - 14 N·m (8 - 10 ft. lbs.)
 Power Pack Mounting Screws 5 - 7 N·m (48 - 60 in. lbs.)
 Ignition Coil Mounting Screws 7 - 9 N·m (60 - 80 in. lbs.)

Lower Unit

Pilot Shaft to Steering Bracket 14 - 16 N·m (10 - 12 ft. lbs.) 14 - 16 N·m (10 - 12 ft. lbs.)
 *Pull at Propeller Shaft for Tilt Up 14 - 18 kg (30 - 40 lbs.) 14 - 18 kg (30 - 40 lbs.)
 *Pull at Propeller Shaft to Overcome
 Reverse Lock 68 - 113 kg (150 - 250 lbs.) 127 - 140 kg (260 - 310 lbs.)
 Gearcase Mounting Screws 14 - 16 N·m (10 - 12 ft. lbs.) 14 - 16 N·m (10 - 12 ft. lbs.)

*Standard length models

Specifications - 50, 60, 55, 55 Com., 70, and 75

General

	50 and 60	55 and 55 Com.	70 and 75
Full Throttle Operating Range	50-4500 - 5500 60-5000 - 6000	4500 - 5500	70-4500 - 5500 75-5200 - 5800
Idle rpm in Forward Gear	750 rpm	750 rpm	750 rpm
Test Wheel and rpm	Part No. 387635 (9-7/8" dia. x 2-1/4" wide) 50-4900 rpm 60-5600 rpm	Part No. 382861 (10" dia. x 2" wide) 5200 rpm	Standard-Part No. 386950 (10" dia. x 2-5/16" wide) Long shaft-Part No. 386665 (11-3/16" dia. x 1-27/32" wide) 70-5000 rpm 75-5200 rpm

Powerhead

Bore and Stroke	80,96 - 71,63 mm (3.1875" Bore x 2.820" Stroke)	80,96 - 71,63 mm (3.1875" Bore x 2.820" Stroke)	76,20 - 59,53 mm (3.000" Bore x 2.3437" Stroke)
Piston Displacement	737 cm ³ (45 cu. in.)	737 cm ³ (45 cu. in.)	814 cm ³ (49.7 cu. in.)
Width of Ring			
Upper	2,286 - 2,273 mm (0.0900" - 0.0895")	2,286 - 2,273 mm (0.0900" - 0.0895")	2,286 - 2,273 mm (0.0900" - 0.0895")
Lower	1,588 - 1,562 mm (0.0625" - 0.0615")	1,588 - 1,562 mm (0.0625" - 0.0615")	1,588 - 1,562 mm (0.0625" - 0.0615")
Crankshaft Size			
Top Journal	38,047 - 38,034 mm (1.4979" - 1.4974")	38,047 - 38,034 mm (1.4979" - 1.4974")	38,047 - 38,034 mm (1.4979" - 1.4974")
Center Journal	34,930 - 34,920 mm (1.3752" - 1.3748")	34,930 - 34,920 mm (1.3752" - 1.3748")	34,930 - 34,920 mm (1.3752" - 1.3748")
Bottom Journal	30,110 - 29,997 mm (1.1815" - 1.1810")	30,110 - 29,997 mm (1.1815" - 1.1810")	30,110 - 29,997 mm (1.1815" - 1.1810")
Connecting Rod Crankpin	30,043 - 30,030 mm (1.1828" - 1.1823")	30,043 - 30,030 mm (1.1828" - 1.1823")	30,043 - 30,030 mm (1.1828" - 1.1823")
+Standard Bore Size	80,98 - 80,95 mm (3.1880" - 3.1870")	80,98 - 80,95 mm (3.1880" - 3.1870")	76,21 - 76,19 mm (2.9995 - 3.0005")

+To determine correct bore size for oversize pistons, merely add oversize dimension to standard bore size.

Ignition System

Ignition	Flywheel magneto, breakerless C.D.	Flywheel magneto, breakerless C.D.	Flywheel magneto, breakerless C.D.
Spark Plug			
Champion	L77J4 or QL77J4	L77J4 or QL77J4	L77J4 or QL77J4
Spark Plug Gap	1,0 mm (0.040")	1,0 mm (0.040")	1,0 mm (0.040")
Ignition Coil	Part No. 582366 or 582106	Part No. 582366 or 582106	Part No. 582366 or 582106

Ignition Coil Test Specifications - Part No. 582366 or 582106

Stevens Model ST-75	Primary Resistance	0.1
Reverse Polarity (Switch Setting CD) 1.1	Secondary Continuity	5 approx.
Stevens Tester Model M.A.-75 or M.A.-80	Graham Tester Model 51	
Switch A (Use Model CD-1 Adapter - Red test clip to orange/black - Black test clip to orange)	Maximum Secondary	400 ohms
Index Adjustment 20	Maximum Primary	0.4 ohm
Merc-O-Tronic with Capacitor Discharge Adapter Model 55-980	Primary Continuity, Point Test Scale	0.1 ohm max.
Operating Amperage 1.0	Coil Index	50
	Coil Test Minimum AMPLIFIED	26
	(With secondary circuit "open")	
	Hi tension lead disconnected	
	Gap Index	50 (Coil must fire spark gap on tester at this setting)

Ignition Component Tests - 50, 55, 55 Com. and 60 Models

	Resistance		Ground Test		Output (Cranking)	
	Meter Setting	Reading	Meter Setting	Reading	Meter Setting	Reading
Charge coil	High ohms scale	575 ± 75 Ω (Manual start) 475 ± 75 Ω (Electric start)	High ohms scale	∞	(-), 500	230
Sensor coil	Low ohms scale	40 ± 10 Ω-50 and 60 45 ± 10 Ω-55	High ohms scale	∞	S, 5	0,3
Power pack					(-), 500	180
Ignition coil primary	Low ohms scale	0,1 ± 0,05 Ω				
Secondary	High ohms scale	275 ± 50 Ω				

Ignition Component Tests - 70 and 75 Models

	Resistance		Ground Test		Output (Cranking)	
	Meter Setting	Reading	Meter Setting	Reading	Meter Setting	Reading
Charge coil	High ohms scale	550 ± 75 Ω	High ohms scale	∞	(-), 500	220
Sensor coil	Low ohms scale	17 ± 5 Ω	Low ohms scale	∞	S, 5	0,4
Power pack					(-), 500	230
Ignition coil primary	Low ohms scale	0,1 ± 0,05 Ω				
Secondary	High ohms scale	275 ± 50 Ω				

Electrical System

50 and 60

55 and 55 Com.

70 and 75

Alternator 5 amp-Flywheel alternator 6 amp-Flywheel alternator

Fuel System

Carburetion Single barrel, float feed Single barrel, float feed, Single barrel, float feed,
 fixed low and high speed fixed low and high speed fixed low and high speed
 jets, primer starting system jets, manual primer jets, primer starting system

Float Level Setting Between steps on gauge Between steps on gauge Between steps on gauge
 Part No. 324891 Part No. 324891 Part No. 324891

Float Drop Setting 28 - 41 mm (1.125" - 1.625") 28 - 41 mm (1.125" - 1.625") 28 - 41 mm (1.125" - 1.625")

Clearance Chart

Piston Ring Gap	0,43 - 0,18 mm (0.017" - 0.007")	0,43 - 0,18 mm (0.017" - 0.007")	0,43 - 0,18 mm (0.017" - 0.007")
Piston Ring Groove Clearance - Lower	0,102 - 0,038 mm (0.0040" - 0.0015")	0,102 - 0,038 mm (0.0040" - 0.0015")	0,102 - 0,038 mm (0.0040" - 0.0015")
Cylinder and Piston	0,125 - 0,048 mm (0.0049" - 0.0018") at major dia.	0,125 - 0,048 mm (0.0049" - 0.0018") at major dia.	0,140 - 0,114 mm (0.0055" - 0.0045")
Forward Gear Bushing to Propeller Shaft	0,05 - 0,03 mm (0.002" - 0.001")	0,05 - 0,03 mm (0.002" - 0.001")	0,05 - 0,03 mm (0.002" - 0.001")

Torque Chart

Flywheel Nut	110 - 115 N·m (80 - 85 ft. lbs.)	110 - 115 N·m (80 - 85 ft. lbs.)	135 - 140 N·m (100 - 105 ft. lbs.)
Connecting Rod Screws	40 - 42 N·m (29 - 31 ft. lbs.)	40 - 42 N·m (29 - 31 ft. lbs.)	40 - 42 N·m (29 - 31 ft. lbs.)
Cylinder Head Screws	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)
Crankcase to Cylinder Main Bearing Screws and Nuts			
Upper, Center, Bottom	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)
Spark Plugs	24 - 27 N·m (18 - 21 ft. lbs.)	24 - 27 N·m (18 - 21 ft. lbs.)	24 - 27 N·m (18 - 21 ft. lbs.)
Stator Screws	7 - 9 N·m (60 - 80 in. lbs.)	7 - 9 N·m (60 - 80 in. lbs.)	5 - 7 N·m (48 - 60 in. lbs.)
Lower Journal Bearing Head Screws	11 - 14 N·m (96 - 120 in. lbs.)	11 - 14 N·m (96 - 120 in. lbs.)	11 - 14 N·m (96 - 120 in. lbs.)
Driveshaft Pinion Nut	54 - 60 N·m (40 - 45 ft. lbs.)	54 - 60 N·m (40 - 45 ft. lbs.)	54 - 60 N·m (40 - 45 ft. lbs.)
Starter Motor Thru-Bolts			
Prestolite	12 - 14 N·m (110 - 122 in. lbs.)		12 - 14 N·m (110 - 122 in. lbs.)
Bosch	11 - 12 N·m (90 - 105 in. lbs.)		11 - 12 N·m (90 - 105 in. lbs.)
Starter Motor Pinion Nut			
Prestolite	34 - 40 N·m (25 - 30 ft. lbs.)		34 - 40 N·m (25 - 30 ft. lbs.)
Bosch	27 - 34 N·m (20 - 25 ft. lbs.)		27 - 34 N·m (20 - 25 ft. lbs.)
Power Pack Mounting Screws	5 - 7 N·m (48 - 60 in. lbs.)	5 - 7 N·m (48 - 60 in. lbs.)	5 - 7 N·m (48 - 60 in. lbs.)
Ignition Coil Mounting Screws	7 - 9 N·m (60 - 80 in. lbs.)	7 - 9 N·m (60 - 80 in. lbs.)	7 - 9 N·m (60 - 80 in. lbs.)
Pivot Shaft Nut (Long Shaft)	180 - 200 N·m (130 - 150 ft. lbs.)	180 - 200 N·m (130 - 150 ft. lbs.)	180 - 200 N·m (130 - 150 ft. lbs.)
Gearcase Mounting Screws	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)
Exhaust Housing to Powerhead Screws	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)
Pull at Propeller Shaft to Overcome Reverse Lock			
Standard Length	318 - 363 kg (700 - 800 lbs.)	318 - 383 kg (700 - 800 lbs.)	227 - 318 kg (500 - 700 lbs.)
Long Shaft	261 - 306 kg (575 - 675 lbs.)	261 - 306 kg (575 - 675 lbs.)	318 - 408 kg (700 - 900 lbs.)

Specifications - V-4 and V-6

General

	V-4	V-6
Full Throttle Operating Range	4500 - 5500 rpm	150 and 175-4500 - 5500 rpm 200 and 235-4750 - 5750 rpm
Idle rpm in Forward Gear	650 rpm	650 rpm
Test Wheel and rpm	90-Part No. 382861 (10" dia. x 2" wide) 115-Part No. 384933 (11-1/4" dia. x 2-3/16" wide) 140-Part No. 386246 (11-1/4" dia. x 2-1/8" wide) 90 and 115-4800 rpm 140-4900 rpm	150-Part No. 324890 (11-3/16" dia. x 2-3/16" wide) 175, 200 and 235-Part No. 387388 (11-1/8" dia. x 2-1/4" wide) 150 and 200-4800 rpm 175-4750 rpm 235-5200 rpm

Powerhead

Bore and Stroke	88,90 x 65,74 mm (3.500" Bore x 2.588" Stroke)	150, 175 and 200-88,90 x 65,74 mm (3.500" Bore x 2.588" Stroke) 235-92,07 x 65,74 mm (3.625" Bore x 2.588" Stroke)
Piston Displacement	1632 cm ³ (99.6 cu. in.)	150, 175 and 200-2448 cm ³ (149.4 cu. in.) 235-2627 cm ³ (160.3 cu. in.)
Width of Ring		
Upper	2,273 - 2,286 mm (0.0895" - 0.0900")	2,273 - 2,286 mm (0.0895" - 0.0900")
Lower	1,562 - 1,588 mm (0.0615" - 0.0625")	1,562 - 1,588 mm (0.0615" - 0.0625")
Crankshaft Size		
Top Journal	41,158 - 41,145 mm (1.6204" - 1.6199")	41,158 - 41,145 mm (1.6204" - 1.6199")
Center Journal(s)	55,563 - 55,550 mm (2.1875" - 2.1870")	55,563 - 55,550 mm (2.1875" - 2.1870")
Bottom Journal	35,011 - 34,999 mm (1.3784" - 1.3779")	35,011 - 34,999 mm (1.3784" - 1.3779")
Connecting Rod Crankpin	34,955 - 34,943 mm (1.3762" - 1.3757")	34,955 - 34,943 mm (1.3762" - 1.3757")
+Standard Bore Size	88,89 - 88,91 mm (3.4995" - 3.5005")	150, 175 and 200-88,89 - 88,91 mm (3.4995" - 3.5005") 235-92,06 - 92,09 mm (3.6255" - 3.6245")

+To determine correct bore size for oversize pistons, merely add oversize dimension to standard bore size.

Ignition System

Ignition	Flywheel magneto, breakerless C.D.	Flywheel magneto, breakerless C.D.
Spark Plug		
Champion	90 and 115-QL77J4 or L77J4 140-UL77V or QUL77V	UL77V or QUL77V
Spark Plug Gap	90 and 115-1,0 mm (0.040")	
Ignition Coil	Part No. 582366 or 582106	Part No. 582366 or 582106

Ignition Coil Test Specifications - Part No. 582366 or 582106

Stevens Model ST-75	Primary Resistance	0.1
Reverse Polarity (Switch Setting CD)	Secondary Continuity	5 approx.
Stevens Tester Model M.A.-75 or M.A.-80	Graham Tester Model 51	
Switch	Maximum Secondary	400 ohms
A (Use Model CD-1 Adapter - Red test clip to orange/black - Black test clip to orange)	Maximum Primary	0.4 ohm
Index Adjustment	Primary Continuity, Point Test Scale	0.1 ohm max.
20	Coil Index	50
Merc-O-Tronic with Capacitor Discharge Adapter Model 55-980	Coil Test Minimum AMPLIFIED	26
Operating Amperage	(With secondary circuit "open")	
1.0	Hi tension lead disconnected	
	Gap Index	50 (Coil must fire spark gap on tester at this setting)

Ignition Component Tests - 90, 115 and 140 Models

	Resistance		Ground Test		Output (Cranking)	
	Meter Setting	Reading	Meter Setting	Reading	Meter Setting	Reading
Charge coil	High ohms scale	560 ± 75 Ω	High ohms scale	∞	(-), 500	160
Sensor coil	Low ohms scale	40 ± 10 Ω	Low ohms scale	∞	S, 5	0,3
Power pack	—	—	—	—	(-), 500	160
Ignition coil primary	Low ohms scale	0,1 ± 0,05 Ω				
Secondary	High ohms scale	275 ± 50 Ω				

Ignition Component Tests - 150, 175, 200 and 235 Models

	Resistance		Ground Test		Output	
	Meter Setting	Reading	Meter Setting	Reading	Meter Setting	Reading
Charge coil	High ohms scale	550 ± 75Ω	High ohms scale	∞	(-), 500	160
Sensor coil	Low ohms scale	17 ± 5Ω	Low ohms scale	∞	S, 5	0,25
Power pack	—	—	—	—	(-), 500	170

Electrical System

V-4

V-6

Alternator	10 amp-Regulated flywheel alternator (6 amp ML models)	10 amp-Regulated flywheel alternator
Engine Fuse	20 amp-Littlefuse 1A.G. or Buss A.G.A.	20 amp-Littlefuse 1A.G. or Buss A.G.A.
Trim and Tilt Fuse	30 amp-Littlefuse 1A.G.-30 or Buss A.G.A.-30	30 amp-Littlefuse 1A.G.-30 or Buss A.G.A.-30

Fuel System

Carburetion	2 Dual throat carburetors, fixed low and high speed jets, primer starting system	3 Dual throat carburetors, fixed low and high speed jets, primer starting system
Float Level Setting	Between notches on gauge (Part No. 324891)	Between notches on gauge (Part No. 324891)
Float Drop Setting	22 - 28 mm (0.88" - 1.125")	22 - 28 mm (0.88" - 1.125")

Clearance Chart

Piston Ring Gap	0,43 - 0,18 mm (0.017" - 0.007")	150, 175 and 200-0,43 - 0,18 mm (0.017" - 0.007")
Piston Ring Groove Clearance	0,102 - 0,51 mm (0.0040" - 0.0020")	235-0,838 - 0,508 mm (-0.033 - 0.020) 0,102 - 0,51 mm (0.0040" - 0.0020")
Cylinder and Piston	0,190 - 0,114 mm (0.0075" - 0.0045")	0,190 - 0,114 mm (0.0075" - 0.0045") 235-0,228 - 0,254 mm (-0.009 - 0.010)
Crankshaft End Play	0,28 - 0,20 mm (0.011" - 0.008")	0,28 - 0,20 mm (0.011" - 0.008")
Forward Gear Bushing to Propeller Shaft	0,05 - 0,03 mm (0.002" - 0.001")	0,05 - 0,03 mm (0.002" - 0.001")

Torque Chart

Flywheel Nut	135 - 140 N·m (100 - 105 ft. lbs.)	190 - 200 N·m (140 - 145 ft. lbs.)
Connecting Rod Screws	40 - 42 N·m (29 - 31 ft. lbs.)	40 - 42 N·m (29 - 31 ft. lbs.)
Cylinder Head Screws	24 - 27 N·m (18 - 20 ft. lbs.)	150, 175 and 200-24 - 27 N·m (18 - 20 ft. lbs.) 235-27 - 30 N·m (20 - 22 ft. lbs.)
Crankcase to Cylinder Main Bearing Screws and Nuts		
Upper, Center, Bottom	24 - 27 N·m (18 - 20 ft. lbs.)	24 - 27 N·m (18 - 20 ft. lbs.)
Power Pack Mounting Screws	5 - 7 N·m (48 - 60 in. lbs.)	5 - 7 N·m (48 - 60 in. lbs.)
Ignition Coil Mounting Screws	7 - 9 N·m (60 - 80 in. lbs.)	7 - 9 N·m (60 - 80 in. lbs.)
Spark Plugs	24 - 27 N·m (18 - 21 ft. lbs.)	24 - 27 N·m (18 - 21 ft. lbs.)
Lower Journal Bearing Retainer Plate Screws	11 - 14 N·m (96 - 120 in. lbs.)	11 - 14 N·m (96 - 120 in. lbs.)
Stator Screws	14 - 16 N·m (10 - 12 ft. lbs.)	14 - 16 N·m (10 - 12 ft. lbs.)
Crankcase Head Screws		
Upper	14 - 16 N·m (10 - 12 ft. lbs.)	8 - 11 N·m (6 - 8 ft. lbs.)
Lower	11 - 14 N·m (8-10 ft. lbs.)	8 - 11 N·m (6 - 8 ft. lbs.)
Starter Motor Thru-Bolts		
Prestolite	12 - 14 N·m (110 - 122 in. lbs.)	12 - 14 N·m (110 - 122 in. lbs.)
Bosch	10 - 12 N·m (90 - 105 in. lbs.)	10 - 12 N·m (90 - 105 in. lbs.)
Starter Motor Pinion Nut		
Prestolite	34 - 40 N·m (25 - 30 ft. lbs.)	34 - 40 N·m (25 - 30 ft. lbs.)
Bosch	27 - 34 N·m (20 - 25 ft. lbs.)	27 - 34 N·m (20 - 25 ft. lbs.)
Driveshaft Pinion Nut	80 - 90 N·m (60 - 65 ft. lbs.)	80 - 90 N·m (60 - 65 ft. lbs.)
Pivot Shaft Nut	180 - 200 N·m (130 - 150 ft. lbs.)	180 - 200 N·m (130 - 150 ft. lbs.)
Exhaust Housing to Powerhead Screws	16 - 19 N·m (12 - 14 ft. lbs.)	16 - 19 N·m (12 - 14 ft. lbs.)
Gearcase Mounting Screws	30 - 33 N·m (22 - 24 ft. lbs.)	30 - 33 N·m (22 - 24 ft. lbs.)
Pull at Propeller Shaft to Overcome Reverse Lock	340 - 408 kg (750 - 900 lbs.)	340 - 408 kg (750 - 900 lbs.)