merCruiser
STERN DRIVES & INBOARDS

service bulletin

A. MCM 185 (V-6) Tune-Up Specifications
B. MCM 185 (V-6) Electrical Specifications
C. MCM 185 (V-6) Carburetor Specifications
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NUMBER: 83-9

CIRCULATE TO:
SERVICE MANAGER ☐
PARTS MANAGER ☐
MECHANICS ☐
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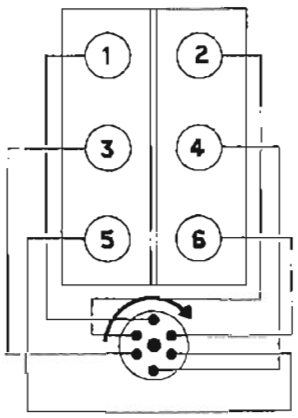
A. MCM 185 (V-6) TUNE-UP SPECIFICATIONS

Horsepower (Kilowatts)	185 (138kw)
Displacement	229 Cu. In. (3.8 Liters)
Engine Type and Number of Cylinders	V-6
Bore	3.736" (95mm)
Stroke	3.480" (88.4mm)
Compression Ratio	8.5:1
Compression Pressure	155 psi (1069kPa)
Point Gap	.020" (.51mm)
Point Dwell 34°-38°	36° - 42° SET-165
Point Spring Tension 20-27	~~4-32~~ Oz. (~~539-907~~g)
Spark Plug Type	AC-MR43T, or Champion RBL8
Spark Plug Gap	.035" (0.9mm)
Timing at Idle RPM	12° ~~8°~~ BTDC
Maximum RPM at Wide-Open-Throttle	4400-4800 RPM
Idle RPM in Forward Gear	650-700 RPM
Firing Order	1-6-5-4-3-2
Fuel Required	88 Octane Minimum (Average Octane Rating)
Fuel Pump Pressure	3-7 psi (21-48kPa)
Electrical System	12-Volt Negative Ground
Alternator Rating	55 Amperes

Recommended Battery Rating	Min. 350 Amps - Cold Cranking Amperage
Crankcase Oil Capacity with New Filter	*4-1/2 U.S. Qts. (4.28 Liters)
Oil Pressure at 2000 RPM	30-55 psi (207-379kPa)
Valve Lash	One Turn Down From Zero Lash
Thermostat	143°F (62°C)
Stern Drive Unit Oil Capacity (Approx.)	32 Oz. (.95 Liter)
Stern Drive Unit Gear Ratio	1.84:1 1.65:1 (Optional)

* *Approximately, ALWAYS use dipstick to determine exact quantity of oil required.*

FRONT



Firing Order
1-6-5-4-3-2

Left-Hand Rotation Engine Firing Order

B. MCM 185 (V-6) ELECTRICAL SPECIFICATIONS

IGNITION SPECIFICATIONS

Engine Model	185
Resistor Wire (Ohms)	1.8-2
Spark Plug Type Spark Plug Gap Point Dwell Point Spring Tension Timing	Refer to "Tune-Up Specifications"
Condenser	.18 - .25 MFD

Engine Model	185
Coil	Coil Part No. 32193A2
Coil Primary Resistance (Ohms) Minimum	1.1
Coil Primary Resistance (Ohms) Maximum	1.5
Coil Secondary Resistance (Ohms)	9,500-15,000

STARTER MOTOR SPECIFICATIONS

Identification Number	No Load Test					Brush Spring Tension
	Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM	
50-99416A1 (Delco-Remy) 1998318	10.6	60	100	5300	10,600	56 - 105 Oz. (1588 - 2976 g)

C. MCM 185 (V-6) CARBURETOR SPECIFICATIONS

All Measurements are ± 1/64" (0.4mm)

Make (Model)	Rochester (4MV)
Part No. Mercury/Rochester	3300-8886/ 17083515
Float Level	15/64" (5.9mm)
Pump Rod Hole Location	Inner
Accelerator Pump (NOTE 1)	23/64" (9.1mm)
Air Valve Dash Pot (Air Valve Rod)	.025" (.64mm)
Vacuum Break	.190" [3/16" (4.8mm)]
Air Valve Spring Wind Up	1/4 Turn (40 - 50 g)
Choke Coil Rod (NOTE 2)	Top of Rod Even with Bottom of Hole

Main Jet	.066" (16.8mm)
Metering Rod (Primary)	.036" (9.1mm)
Metering Rod (Secondary)	DH
Idle Mixture Screw, Preliminary Setting	2-3 Turns

NOTES:

1) *Accelerator Pump Measurement Taken From Flame Arrestor Mounting Surface to Pump Stem With Throttle Plates Fully Closed. THIS IS DIFFERENT THAN PREVIOUS METHOD.*
2) *Choke Coil Rod Adjustment Performed With Choke Valve Completely Closed, Choke Rod In Bottom of Choke Lever Slot and Choke Coil Rod Pushed Down to End of Travel. THIS DIFFERS FROM PRIOR METHOD.*

D. MCM 185 (V-6) INTERNAL ENGINE SPECIFICATIONS

Cylinder Bore:

Diameter			3.7350" - 3.7385" (94.8690-94.9579mm)
Out of Round	Production		.001" (.025mm) Max.
	Service		.002" (.051mm) Max.
Taper	Production	Thrust Side	.0005" (.0127mm) Max.
		Relief Side	.001" (.025mm) Max.
	Service		.001" (.025mm) Max.

Piston:

Clearance	Production	.0007" - .0017" (.0178-.0432mm)
	Service	.0027" (.0686mm) Max.

Piston Ring: (1) HI Production Limit

Compression	Groove Side Clearance	Production	Top	.0012" - .0032" (.0305 - .0813mm)
			2nd	.0012" - .0032" (.0305 - .0813mm)
		Service		(1) +.001" (.025mm)
	Gap	Production	Top	.010" - .020" (.254 - .508mm)
			2nd	.010" - .025" (.254 - .635mm)
		Service		(1) +.010" (.254mm)
Oil	Groove Side Clearance	Production		.002" - .007" (.051 - .178mm)
		Service		(1) +.001" (.025mm)
	Gap	Production		.015" - .055" (.381 - 1.397mm)
		Service		(1) +.010" (.254mm)

Piston Pin:

Diameter		.9270" - .9273" (23.5458 - 23.5534mm)
Clearance	Production	.00025" - .00035" (.00635 - .00889mm)
	Service	.001" (.025mm) Max.
Fit in Rod		.0008" - .0016" (.0203 - .0406mm) Interference

Crankshaft:

Main Journal	Diameter	No. 1	2.4484" - 2.4493" (62.1894 - 62.2122mm)
		No. 2, 3	2.4481" - 2.4490" (62.1817 - 62.2046mm)
		No. 4	2.4479" - 2.4488" (62.1767 - 62.1995mm)
	Taper	Production	.0002" (.0051mm) Max.
		Service	.001" (.025mm) Max.
	Out of Round	Production	.0002" (.0051mm) Max.
		Service	.001" (.025mm) Max.
Main Bearing Clearance	Production	No. 1	.0008" - .0020" (.0203 - .0508mm)
		No. 2, 3	.0011" - .0023" (.0279 - .0584mm)
		No. 4	.0017" - .0032" (.0432 - .0813mm)
	Service	No. 1	.001" - .0015" (.0254 - .0381mm)
		No. 2, 3	.001" - .0025" (.0254 - .0635mm)
		No. 4	.0025" - .0035" (.0635 - .0889mm)
Crankshaft End Play			.002" - .006" (.051 - .152mm)
Connecting Rod Journal	Diameter		2.0986" - 2.0998" (53.3095 - 53.3349mm)
	Taper	Production	.0005" (.0127mm) Max.
		Service	.001" (.025mm) Max.
	Out of Round	Production	.0005" (.0127mm) Max.
		Service	.001" (.025mm) Max.
Rod Bearing Clearance		Production	.0013" - .0035" (.0330 - .0889mm)
		Service	.003" (.0762mm) Max.
Rod Side Clearance			.008" - .014" (.203 - .356mm)
Crankshaft Runout			.0015" (.0381mm) Max.

Camshaft and Drive:

Lobe Lift ±.002" (.051mm)	Intake	.357" (9.0678mm)
	Exhaust	.390" (9.906mm)
Journal Diameter		1.8682" - 1.8692" (47.452 - 47.478mm)
Journal Out-of-Round		.001" (.025mm) Max.
Camshaft End Play		.004" - .012" (.102 - .304mm)
Timing Chain Deflection		3/8" (9.5mm) From Taut Position [3/4" (19.1mm) Total]

Valve System:

Lifter Type			Hydraulic
Rocker Arm Ratio			1.50 to 1
Valve Lash (Intake & Exhaust)			1 Turn Down from Zero Lash
Face Angle (Intake & Exhaust)			45°
Seat Angle (Intake & Exhaust)			46°
Seat Runout (Intake & Exhaust)			.002" (.051mm) Max.
Seat Width	Intake		1/32" - 1/16" (.79 - 1.59mm)
	Exhaust		1/16" - 3/32" (1.59 - 2.38mm)
Stem Clearance	Production	Intake	.0010" - .0027" (.0254 - .0686mm)
		Exhaust	.0010" - .0027" (.0254 - .0686mm)
	Service	Intake	.0037" (.0940mm)
		Exhaust	.0047" (.1194mm)
Valve Spring	Free Length		2.03" (51.6mm)
	Pressure Lbs. @ In. (NOTE 1)	Closed @ 1.70" (43.16)	76 - 84 Lbs. (34.5 - 38.1kg)
		Open @ 1.25" (31.75mm)	194 - 206 Lbs. (88.1 - 93.5kg)
	Installed Height		1-23/32" (43.7mm)
Damper	Free Length		1.86" (47.24mm)
	Approximate No. of Coils		4

NOTE 1: Test spring pressure with damper removed.

Cylinder Head:

Gasket Surface Flatness	.003" (.076mm) in 6" (15.24cm) .007" (.178mm) Overall Maximum

Flywheel:

Runout	.008" (.203mm) Max.

E. MCM 185 (V-6) TORQUE SPECIFICATIONS

Camshaft Sprocket	20 LB. FT. (27.1 N.m)
Conn. Rod Cap	45 LB. FT. (61.0 N.m)
Crankcase Front Cover	80 LB. IN. (9.0 N.m)
Cylinder Head	65 LB. FT. (88.1 N.m)
Distributor Clamp	20 LB. FT. (27.1 N.m)
Exhaust Manifold	20 LB. FT. (27.1 N.m)
Flywheel/Coupler	40 LB. FT. (54 N.m)
Flywheel Housing	30 LB. FT. (40.7 N.m)
Intake Manifold	30 LB. FT. (40.7 N.m)
Main Bearing Cap	70 LB. FT. (95 N.m)
Oil Filter	25 LB. FT. (33.9 N.m)
Oil Filter By-Pass Valve	80 LB. IN. (9.0 N.m)
Oil Pan to Crankcase (5/16-18)	165 LB. IN. (18.6 N.m)
Oil Pan to Crankcase (1/4-20)	80 LB. IN. (9.0 N.m)
Oil Pan Drain Plug	20 LB. FT. (27.1 N.m)
Oil Pump	65 LB. FT. (88.1 N.m)
Oil Pump Cover	80 LB. IN. (9.0 N.m)
Rocker Arm Cover	45 LB. IN. (5.1 N.m)
Spark Plug	180 LB. IN. (20.3 N.m)
Torsional Damper	60 LB. IN. (81.3 N.m)
Water Pump	30 LB. FT. (40.7 N.m)

F. MCM 185 (V-6) DISTRIBUTOR INSTALLATION

The MCM 185 (V-6) is an uneven firing engine (Figure 1).

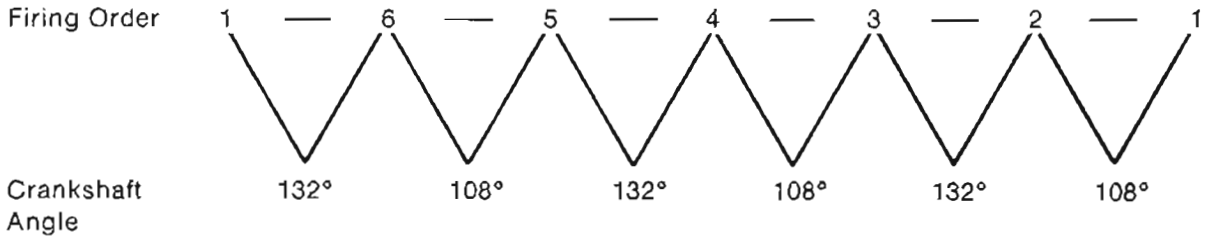
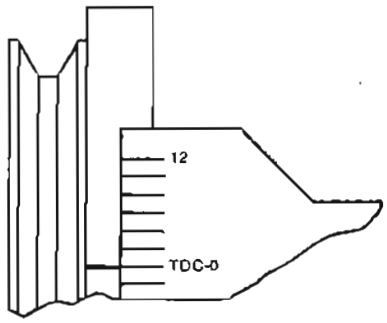


Figure 1. Crankshaft Angle vs. Firing Order

Because of this, care must be taken when installing the distributor. Install as follows:

1. Rotate engine (in normal direction of rotation) until timing mark on crankshaft balancer lines up with "0" (TDC) on timing tab and engine is in #1 firing position.
2. Look closely at the cam in the distributor. You will notice that three of the lobes have a sharper profile than the other three. They are situated sharp-round-sharp-round, etc. (Figure 2)



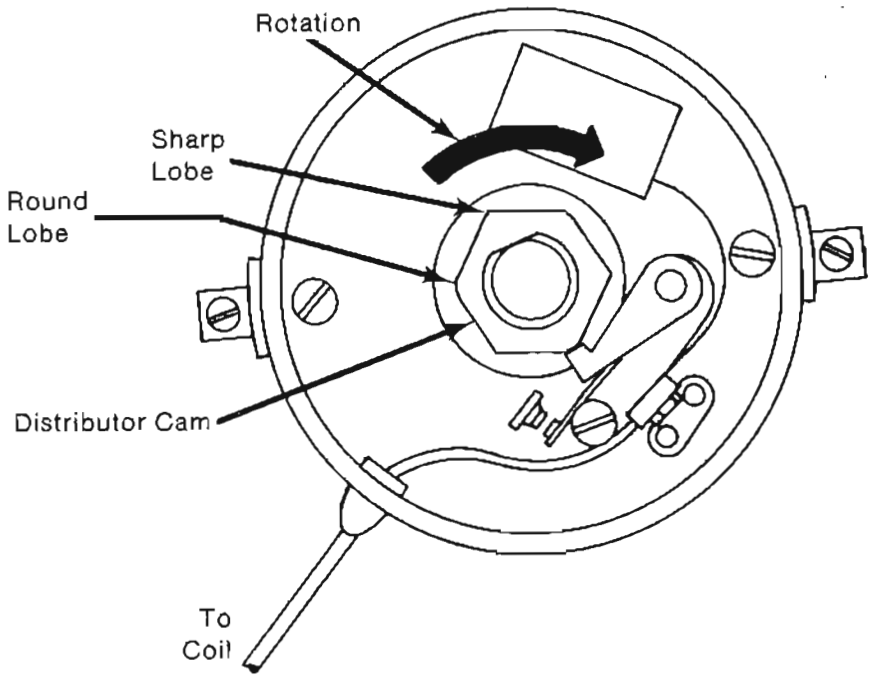
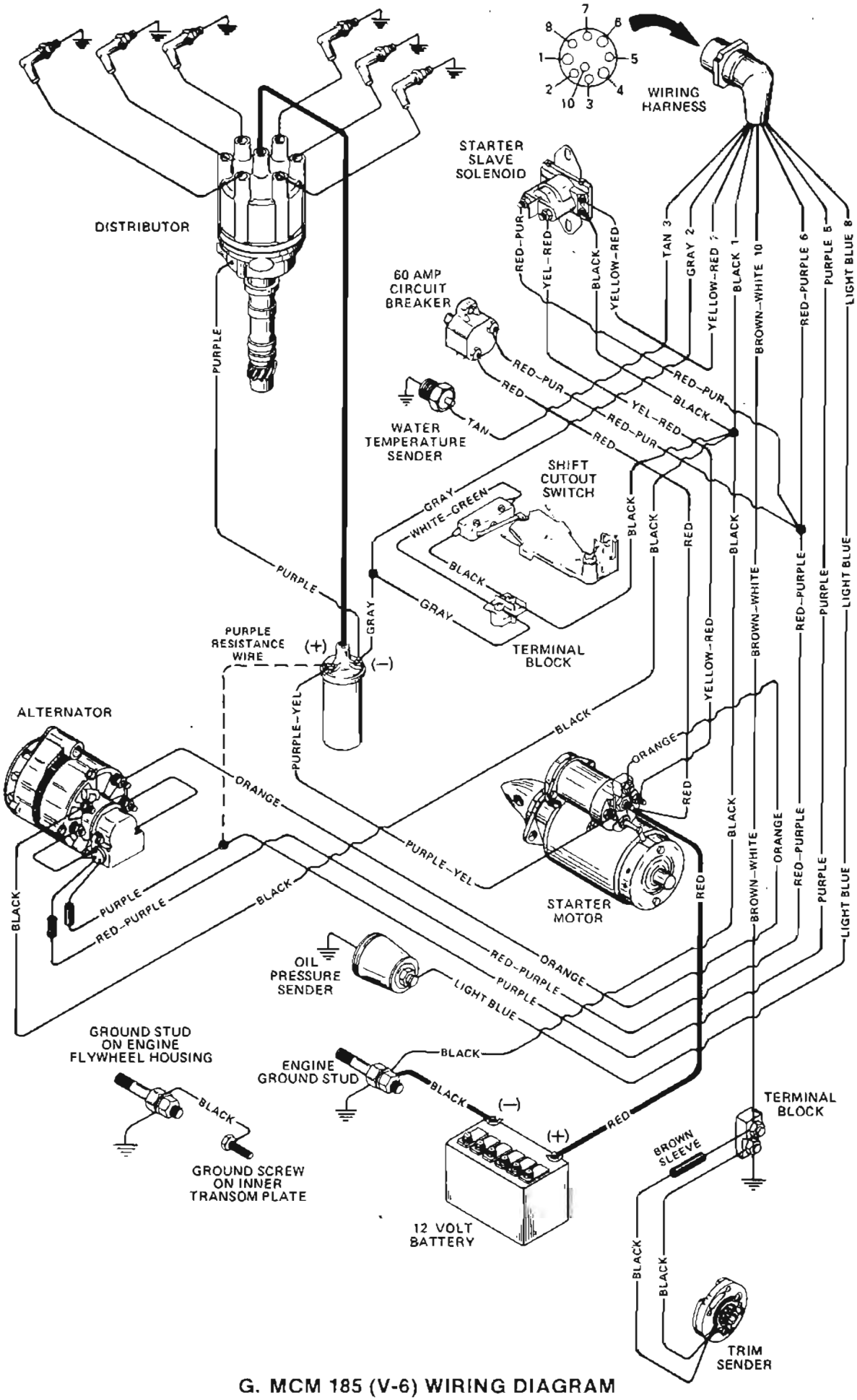


Figure 2. V-6 Distributor

3. Install distributor into engine so that when the rotor is aligned with the #1 spark plug tower, a rounded lobe is aligned with the rubbing block of the breaker points.

   NOTE: For proper fit of spark plug wires, select the rounded lobe which positions the distributor body so that the lead which connects distributor to coil exits towards the rear of the engine.

4. Secure distributor with clamp and check engine timing with timing light.



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G. MCM 185 (V-6) WIRING DIAGRAM