mercruiser

SERVICE MANUAL

Number 9

MARINE ENGINES

GM V-8 Cylinder

Printed in U.S.A.

90-14499--1 887

V-8 Models covered in this manual also MerCruiser versus Sea Ray cross reference.

MerCruiser		Sea Ray	Cubic Inch Displacement Engine Type	Drives Available
1987	1988	1988		
MCM 200	5.0 Litre		305 production	Alpha One
MCM 230	5.0 Litre LX		305 production	Alpha One
MCM230 TR			305 production	TR
MCM 260	5.7 Litre	5.7L	350 production	Alpha One, TR
MCM 260 TR			350 production	TR
MCM 350 Magnum	350 Magnum	SRX 5.7L	350 production	Alpha One
MCM 454 Magnum		SRX 7.4L	454 production	Alpha One
	7.4 Litre		454 production	Bravo One, TR
	454 Magnum	SRX 7.4L-H	454 production performance	Bravo One
MCM 330 B/W			454 production	TR, TRS II SSM
MIE 230	5.0 Litre		305 production	Borg-Warner
MIE 260	5.7 Litre	5.7L	350 production	Borg-Warner
MIE 340	7.4 Litre	7.4L	454 production	Borg-Warner
5.7 Ski	5.7 Litre Comp. Ski		350 production	
MCM 300 Tempest (1986)			350 production performance	TRS, IISSM
MCM 320 EFI	HP 320 EFI		350 production performance	Alpha One SS, Bravo One
MCM 370 TRS			454 production performance	TRS, IISSM
MCM 400 (1986)			454 production performance	TRS, IISSM, IIISSM
MCM 420 (1986)	HP 420		454 production performance	TRS, IISSM, IIISSM
MCM 440 (1986)			454 production performance	IIISSM, IVSSM
MCM 460 (1986)			482 production performance	IIISSM, IV SSM
MCM 575	HP 575		540 production performance	IIISSM, IVSSM

IMPORTANT: Refer to "Engine Identification", page

NOTICE
Refer to appropriate MerCruiser Stern Drive Service Manual for transom assembly and stern drive unit repair.

Service Manual Outline

IMPORTANT INFORMATION

1
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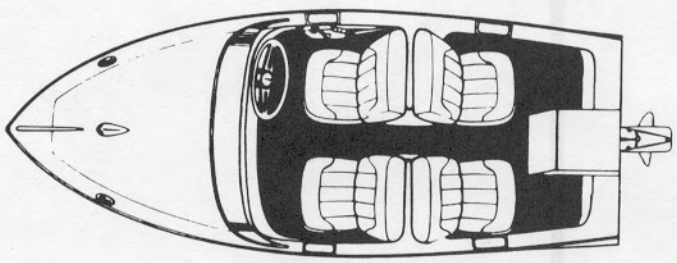


Index

NOTICE

Refer to Appropriate Stern Drive service manual for transom assembly and Stern Drive unit repair.

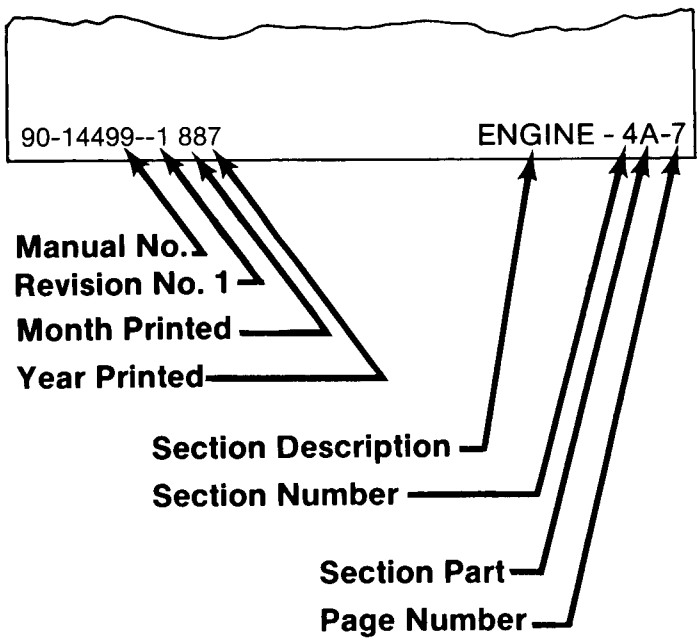
How to Use This Manual

This manual is divided into sections which represent major components and systems.

Some sections are further divided into parts which more fully describe the component.

Page Numbering

Two number groups appear at the bottom of each page. Following is an example and description.



Introduction

This comprehensive overhaul and repair manual is designed as a service guide for the models previously listed. If provides specific information, including procedures for disassembly, inspection, assembly and ajustment. To enable dealers and service mechanics to repair and tune these engines.

Before attempting repairs or tune up, it is suggested that the procedure first be read through to gain knowledge of the methods and tools used and the cautions and warning required for safety.

Notice To Users Of This Manual

This service manual has been written and published by the service department of Mercury Marine to aid our dealers mechancis and company service personnel when servicing the products described herein.

It is assumed that these personnel are familiar with the servicing procedures of these products, of like or similar products manufactured and marketed by Mercury Marine. That they have been trained in the recommended servicing procedures of these products which includes the use of mechanics common hand tools and the special Mercury Marine or recommended tools from other suppliers.

We could not possibly know of and advise the service trade of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not undertaken any such wide evaluation. Therefore, anyone who uses a service procedure and/or tool, which is not recommended by the manufacturer, first must completely satisfy himself that neither his nor the product's safety will be endangered by the service procedure selected.

All information, illustrations and specifications contained in this manual are based on the latest product information available at time of publication.

It should be kept in mind, while working on the product, that the electrical system and ignition system is capable of violent and damaging short circuits or severe electrical shocks. When performing any work where electrical terminals could possibly be grounded or touched by the mechanic, the battery cables should be disconnected at the battery.

Any time the intake or exhaust openings are exposed during service they should be covered to protect against accidental entrance of foreign material which could enter the cylinders and cause extensive internal damage when the engine is started.

It is important to note that, during any maintenance procedure, replacement fasteners must have the same measurements and strength as those removed, whether metric or customary. Numbers on the heads of the metric bolts and on surfaces of metric nuts indicate their strength. Customary bolts use radial lines for this purpose, while most customary nuts do not have strength markings. Mismatched or incorrect fasteners can result in damage or malfunction, or possibly personal injury. Therefore, fasteners removed should be saved for re-use in the same locations whenever possible. Where the fasteners are not satisfactory for re-use, care should be taken to select a replacement that matches the original.

Notice

Throughout this publication, "Dangers", "Warnings" and "Cautions" are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. —— Observe them carefully!

These "Safety Alerts" alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus "common sense" operation, are major accident prevention measures.

⚠DANGER

DANGER — Immediate hazards which WILL result in severe personal injury or death.

⚠WARNING

WARNING — Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠CAUTION

CAUTION — Hazards or unsafe practices which could result in minor personal injury of product or property damage.

Replacement Parts

⚠WARNING

Electrical, ignition and fuel system components on MerCrusier Engines and Stern drives are designed and manufactured to comply with U.S. Coast Guard Rules and Regulations to minimize risks of fire or explosion.

Use of replacement electrical, ignition or fuel system components, which do not comply to these rules and regulations, could result in a fire or explosion hazard and should be avoided.

When servicing the electrical, ignition and fuel systems, it is extremely important that all components are properly installed and tightened. If not, any electrical or ignition component opening would permit sparks to ignite fuel vapors from fuel system leaks, if they existed.

Engine Mechanical Components

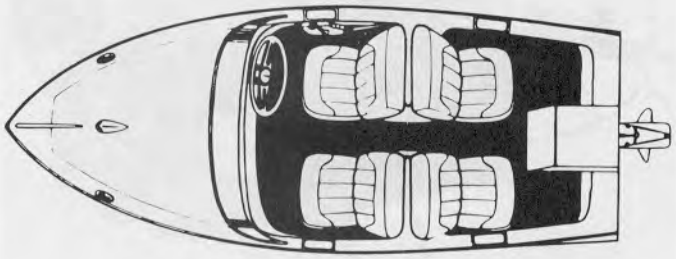
Many of the engine mechanical components are designed for marine applications. Unlike automotive engines, marine engines are subjected to extended periods of heavy load and wide-open-throttle operation, therefore, require heavy-duty components. Special marine engine parts have design and manufacturing specifications which are required to provide long life and dependable performance. Marine engine parts also must be able to resist the corrosive action of salt or brackish water that will rust or corrode standard automotive parts within a short period of time.

Failure to use recommended Quicksilver service replacement parts can result in poor engine performance and/or durability, rapid corrosion of parts subjected to salt water and possibly complete failure of the engine.

Use of parts other than recommended service replacement will void the warranty on those parts which are damaged as a result of the use of other than recommended parts.

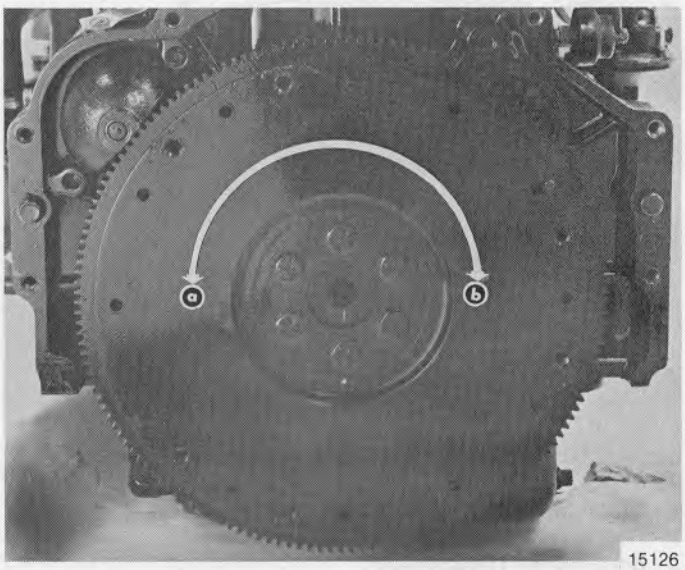
Directional References

Front of boat is bow; rear is stern. Starboard side is right side; port side is left side. In this maintenance manual, all directional references are given as they appear when viewing boat from stern, looking toward bow.



Engine Rotation

Engine rotation is determined by observing flywheel rotation from the rear (stern end) of the engine looking forward (water pump end). Propeller rotation is not necessarily the same as engine rotation. When ordering replacement engine, short blocks or parts for engine, be certain to check engine rotation. Do not rely on propeller rotation in determining engine rotation.



15126

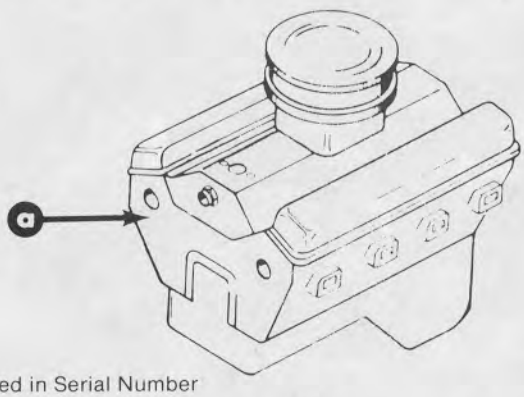
a - Standard Left Hand Rotation - All MCM Stern Drive Engines; MIE Inboard L.H. Rotation Engines
b - Opposite Right Hand Rotation - MIE Inboard R.H. Rotation Engines

V-8 Engine Serial Number Locations

16727

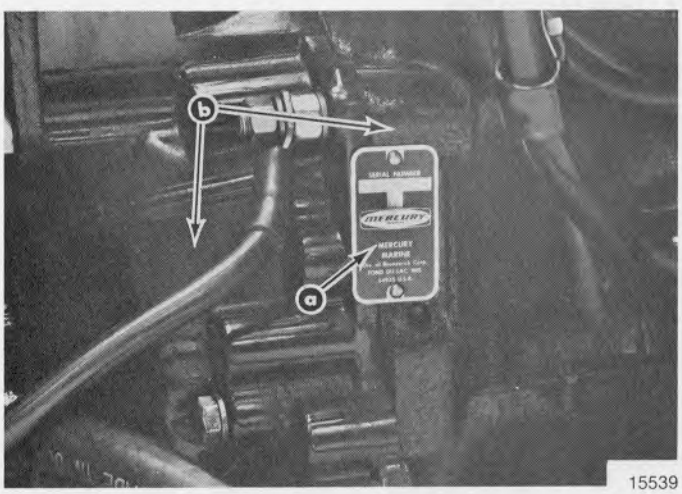
a - Serial Number Plate
b - Starter Motor

MCM 200/230/260/350 Magnum/454 Magnum/ 320 EFI/5.0 Litre/5.0 Litre LX/5.7 Litre/7.4 Litre



a - Stamped in Serial Number

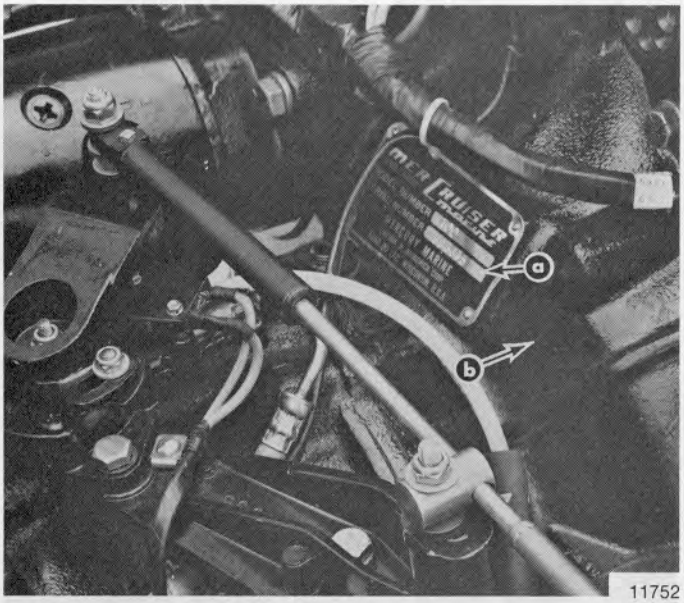
MCM 300 Tempest Alpha One/TRS



15539

a - Serial Number Plate
b - Starboard Side fo Flywheel Bell Housing and Cylinder Block

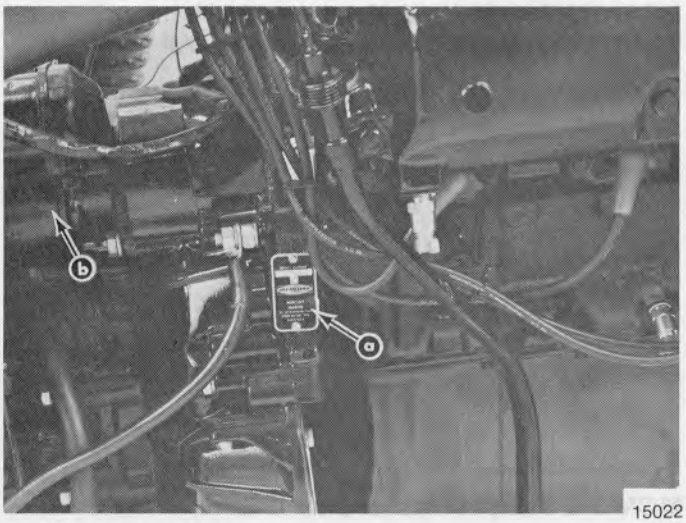
MCM 330 B/W/370 TRS (S.N. 6721528 and Above)
MCM 420/MCM 575



11752

a - Serial Number Plate
b - Flywheel Bell Housing

MCM 370 TRS (S.N. 6721527 and Below)/400 TRS/ 400 Cyclone/440 Cyclone/460 Cyclone/230 TR/260 TR

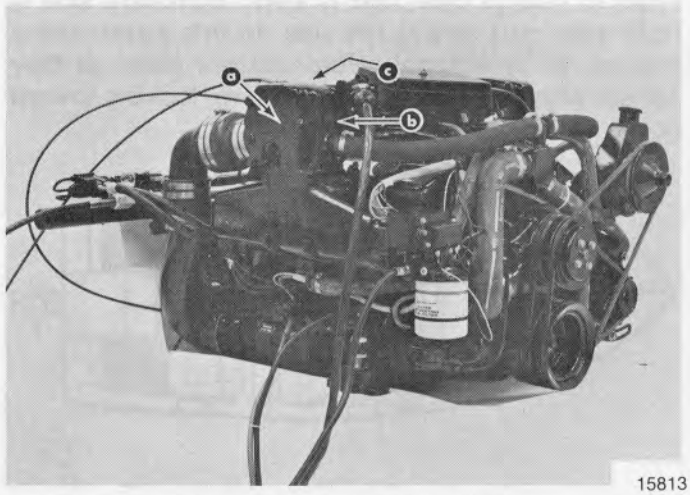


15022

a - Serial Number Plate
b - Starter Motor

MIE 230/260/340/5.7 Ski/5.0 Litre/5.7 Litre/7.4 Litre

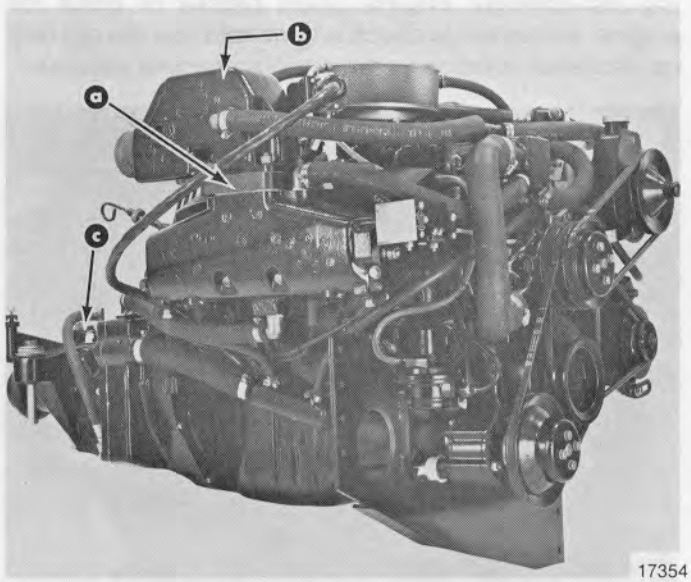
Engine Identification



15813

a - Exhaust Elbow Mounted In Center of Manifold
b - Shift Plate On Side of Exhaust Elbow
c - Thunderbolt IV (HEI) Ignition System

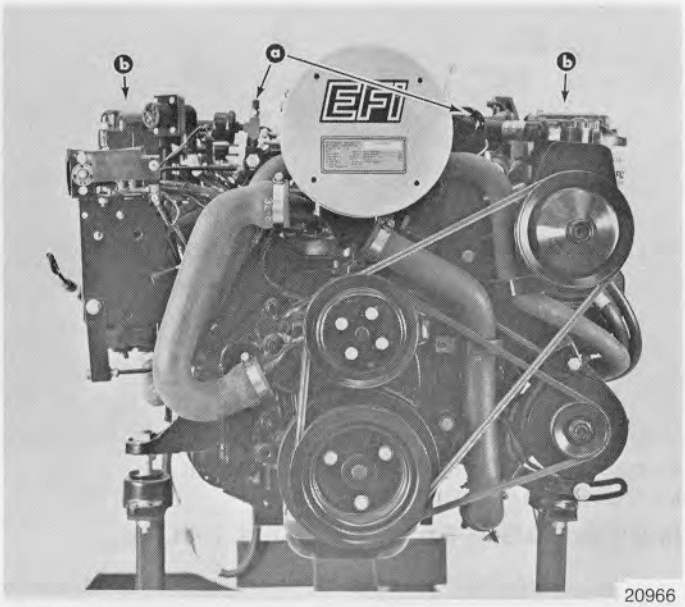
MCM 200, 230, 260, 300 Tempest Alpha One, 350 Magnum, 454 Magnum, 5.0 Litre, 5.0 Litre LX, 5.7 Litre, 7.4 Litre



17354

a - Center Mounted Exhaust Elbow
b - Thunderbolt IV (HEI) Ignition System
c - Borg-Warner Transmission

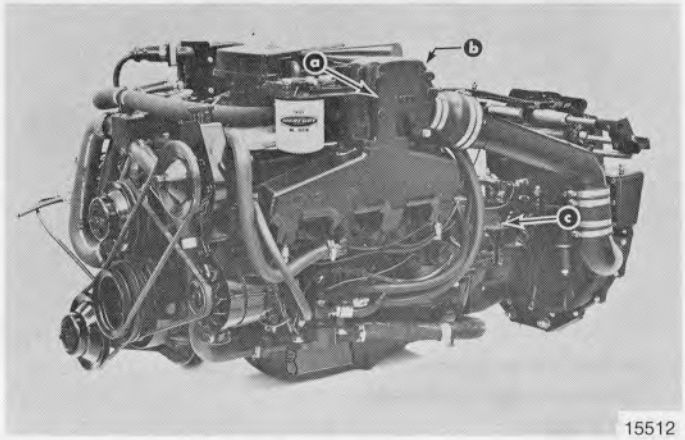
MCM 300 Tempest TRS



20966

a - EFI System
b - Center Mounted Exhaust

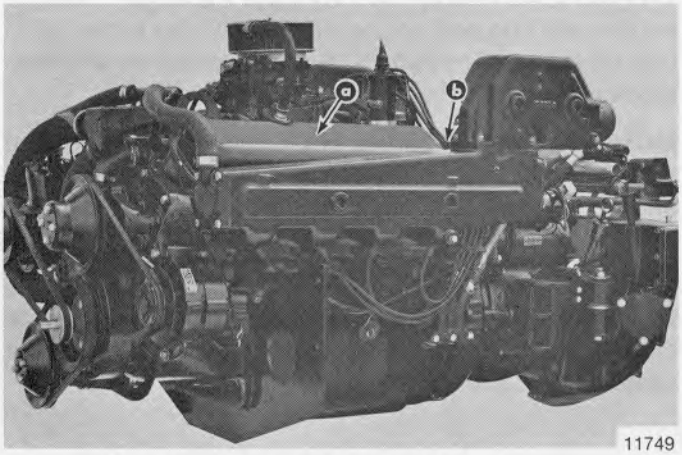
MCM 320 EFI



15512

a - Center Mounted Exhaust Elbow
b - Thunderbolt IV (HEI) Ignition System
c - Borg-Warner Transmission

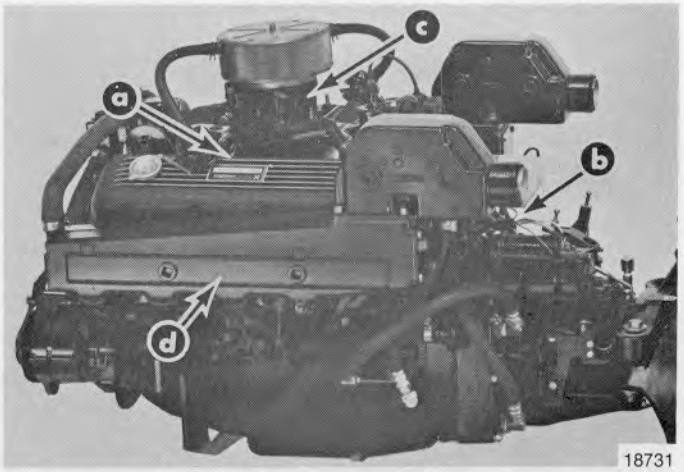
MCM 330 (B/W)/370 TRS (S.N. 6721528 and Above)



11749

a - Rocker Arm Cover Decal - "370" or "Series 400"
b - Serial Number Plate on Flywheel Housing - "370" Stamped in Plate

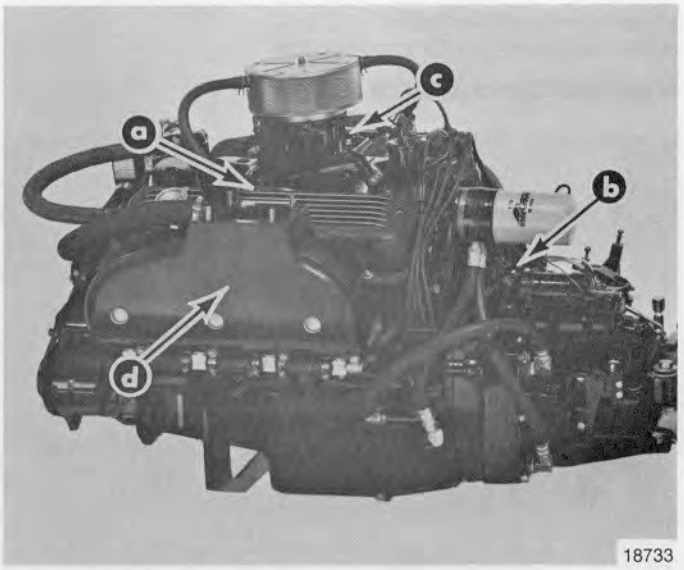
MCM 370 TRS (S.N. 6721527 and Below)



18731

a - Rocker Arm Cover Decal - "400"
b - Serial Number Plate on Flywheel Housing "400" Stamped in Plate
c - Rochester 4 Barrel Carburetor
d - 370 Type Exhaust Manifold and Elbow

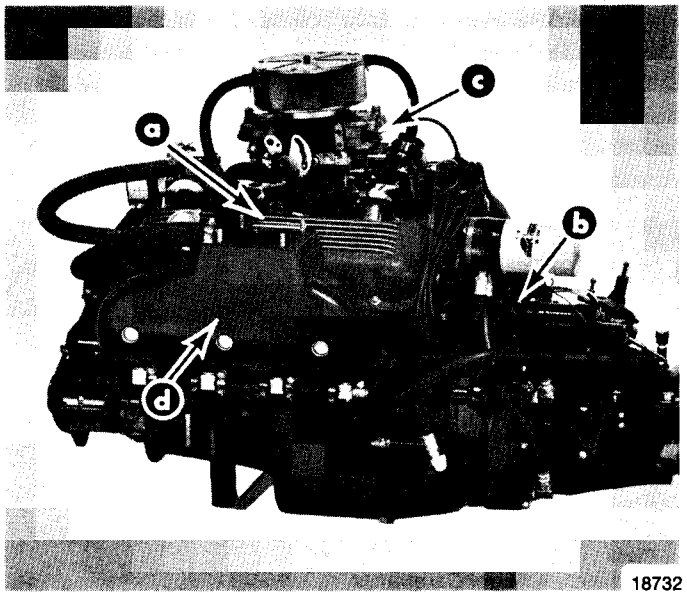
MCM 400 Cyclone



18733

a - Rocker Arm Cover Decal - "440"
b - Serial Number Plate on Flywheel Housing - "440" Stamped in Plate
c - Early Models Had Rochester 4 Barrel Carburetor, Later Models Had Holley 4 Barrel Carburetor
d - Center Outlet Type Exhaust Manifold

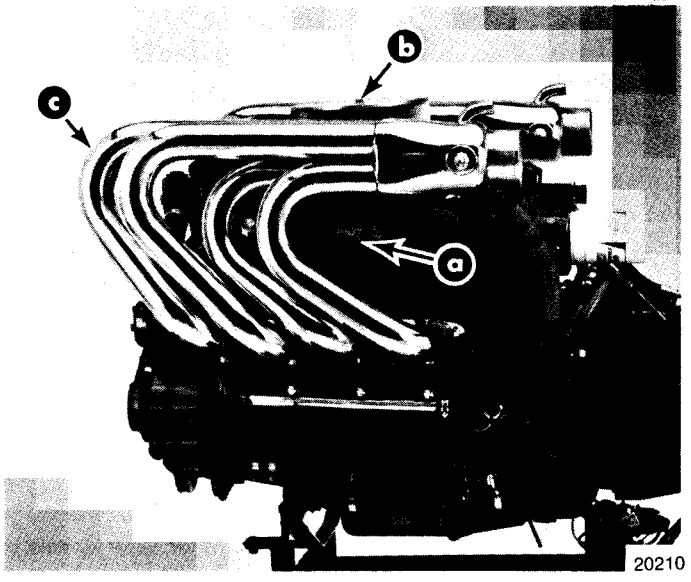
MCM 440 Cyclone



18732

a - Rocker Arm Cover Decal - "460" or "420"
b - Serial Number Plate on Flywheel Housing - "460" Only Serial Number Plate on Starboard Side, Rear of Engine Block "420" Only
c - Holley 4 Barrel Carburetor
d - Center Outlet Type Exhaust Manifold

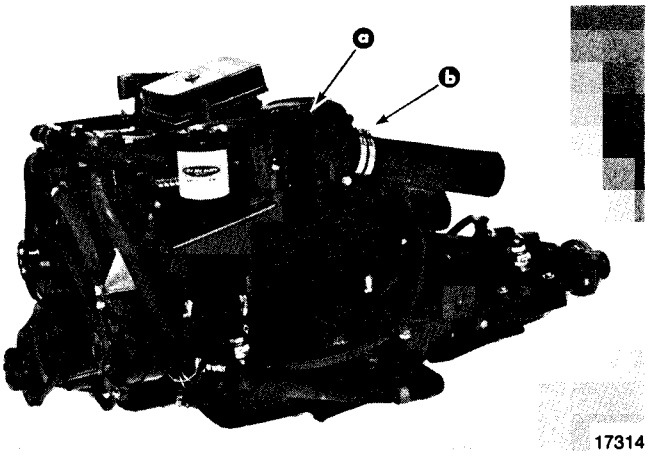
MCM 460 Cyclone/MCM 420



20210

a - Rocker Arm Decal "575"
b - Holley 4 Barrel Carburetor
c - "Stelling" Exhaust "Headers"

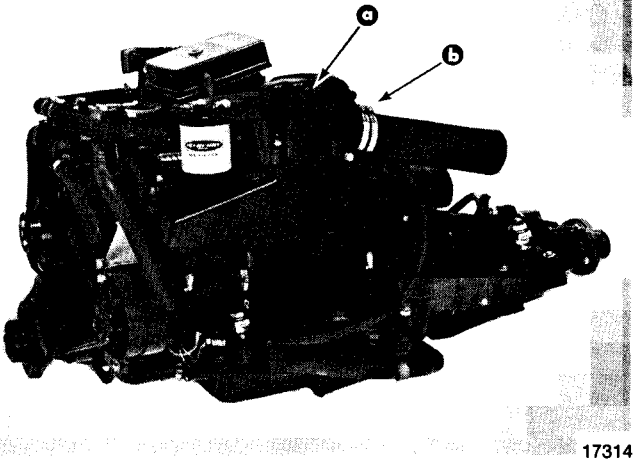
MCM 575



17314

a - Exhaust Elbow Mounted in Center of Manifold
b - Thunderbolt IV (HEI) Ignition System

MIE 230/260/340, 5.0 Litre, 5.7 Litre, 7.4 Litre



17314

a - Exhaust Elbow Mounted in Center of Manifold
b - Coventional Ignition System

MIE 5.7 Ski

MCM 230TR/260TR

Mercury Marine Hi-Performance Products has built 2 TR Production Performance Power Packages. "Removal, Installation and Alignment" are similar to the MCM 330 (B-W) in "Section 2". For transmission and tailstock repair, refer to "Section 8".

MCM 230TR: MIE 230 (L.H.) inboard engine with a Borg-Warner transmission (for TR package) added to engine. Repair and specifications for engine is the same as MIE 230.

MCM 260TR: MIE 260 (L.H.) inboard engine with a Borg-Warner transmission (for TR package) added to engine. Repair and specifications for engine is the same as MIE 260.

Propeller Information

Refer to the "Propeller" Section in appropriate MerCruiser Stern Drive Service Manual, or order publication P/N 90-86144 "What You Should Know About Quicksilver Propellers".

Changing diameter, pitch or coupling of a propeller will affect engine RPM and boat performance. The blade configuration also will affect performance. Two like propellers, same pitch and diameter, from two different manufacturers also will perform differently.

It is the responsibility of the boat manufacturer and/or selling dealer to equip the boat with the correct propeller to allow the engine to operate within its specified RPM range at wide open throttle (W.O.T).

Because of the many variables of boat design and operation, only testing will determine the best propeller for the particular application.

To test for correct propeller, operate boat (with an average load onboard) at W.O.T. and check RPM with an accurate tachometer. Engine RPM should be near top of the specified range so that, under heavy load, engine speed will not fall below specifications.

If engine exceeds the specified RPM, an increase in pitch and/or diameter is required.

If engine is below rated RPM, a decrease in pitch and/or diameter required.

Normally, a change of approximately 300 to 500 RPM will be achieved for each single pitch change of propeller.

⚠CAUTION

If a propeller is installed that does not allow engine RPM to reach the specified full-throttle RPM range, the engine will "labor" and will not produce full power. Operation under this condition will cause excessive fuel consumption, engine overheating and possible piston damage (due to detonation). On the other hand, installation of a propeller, that allows engine to run above the specified RPM limit, will cause excessive wear on internal engine parts which will lead to premature engine failure.

Hi-Performance Boating

Written by Marine Engineers, order publication P/N 90-86168, entitled "Hi-Performance Boat Operation.

Engine 20-Hour Break-In Period

IMPORTANT: Proper break-in is essential to obtaining minimum oil consumption, maximum engine performance and service.

The first 20 hours of operation is the engine (new or rebuilt) break-in period. During this period, it is extremely important that the engine is operated, as outlined following.

1. Do not operate engine below 1500 RPM for extended periods of time during the first 10 hours. During this period, shift into gear as soon as possible after starting engine and advance throttle so that RPM is above 1500 (provided that conditions permit safe operation at this speed).
2. Do not operate at any one constant speed for extended periods of time.
3. Do not exceed 3/4 of full throttle during the first 10 hours of operation. During the next 10 hours, occasional operation at full throttle (5 minutes at-a-time maximum) is permissible.
4. Avoid full throttle acceleration from stopped position.
5. Do not operate at full throttle until engine reaches normal operating temperature.
6. Observe instrumentation carefully. If an abnormal reading occurs, stop engine immediately and determine cause.
7. Frequently check crankcase oil level and add oil if necessary. It is normal for oil consumption to be somewhat high during the break-in period.
8. At end of 20-hour break-in period, drain break-in oil from crankcase and replace oil filter. Fill crankcase with correct grade and viscosity oil.

Water Testing New Engines

Use care during the first 20 hours of operation on new MerCruiser engines or possible engine failure may occur. If a new engine has to be water-tested at full throttle before the break-in period is complete, follow this procedure.

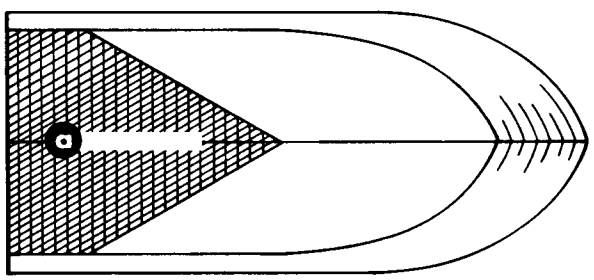
1. Start engine and run at idle RPM until normal operating temperature is reached.
2. Run boat up on plane.
3. Advance engine RPM (in 200 RPM increments) until engine reaches its maximum rated RPM.

IMPORTANT: Do not run at maximum RPM for more than 2 minutes.

Boat and Engine Performance

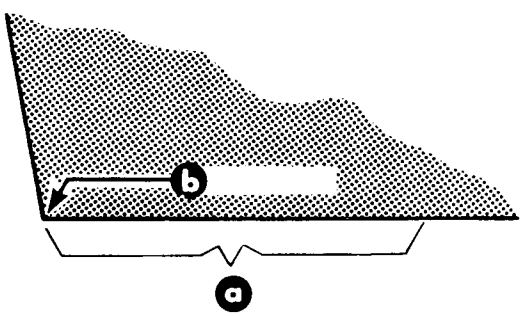
Boat Bottom

For maximum speed, a boat bottom should be as flat as possible in a fore-aft direction (longitudinally) for approximately the last 5 ft. (1.5m).



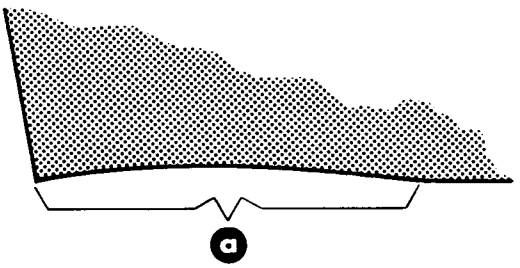
a - Critical Bottom Area

For best speed and minimum spray, the corner between the bottom and the transom should be sharp.



a - Flat
b - Sharp Corner

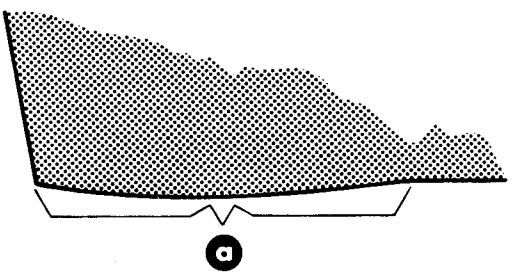
The bottom is referred to as having a "hook" if it is concave in the fore-and-aft direction. A hook causes more lift on the bottom near the transom and forces the bow to drop. This increases wetted surface and reduces boat speed. A hook, however, aids in planing and reduces any porpoising (rhythmical bouncing) tendency. A slight hook is often built in by the manufacturer. A hook also can be caused by incorrect trailering or storing the boat with support directly under the transom.



a - Hook

A "rocker" is the reverse of a hook. The bottom is convex or bulged in the fore-and-aft direction. It can cause the boat to porpoise.

Any hook, rocker or surface roughness on the bottom, particularly in the all-important center-aft portion will have a negative effect on speed, often several miles-per-hour on a fast boat.



a - Rocker

Marine Fouling

Fouling is an unwanted build-up (usually animal-vegetable-derived) occuring on the boat's bottom and drive unit. Fouling adds up to drag, which reduces boat performance. In fresh water, fouling results from dirt, vegetable matter, algae or slime, chemicals, minerals and other pollutants. In salt water, barnacles, moss and other marine growth often produce dramatic build-up of material quickly. So it is important to keep the hull as clean as possible in all water conditions to maximize boat performance.

Special hull treatments, such as anti-fouling paint, will reduce the rate of bottom fouling. However, due to the fact that drive units (outboard or stern drive) are made primarily of aluminum, be sure to select an anti-fouling paint having a copper-free, organo-tin base. The BIS (Tri Butyl Tin) Adipate (TBTA) base paint will not set up a galvanic corrosion "cell" as it is completely compatible with aluminum and avoids any electrolysis problems connected with many other paints. Applied according to instructions, it also is very effective.

Weight Distribution

Weight distribution is extremely important; it affects a boat's running angle or attitude. For best top speed, all movable weight — cargo and passengers — should be as far aft as possible to allow the bow to come up to a more effecient angle (3° to 5°). On the negative side of this approach is the problem that, as weight is moved aft, some boats will begin an unacceptable porpoise. Secondly, as weight is moved aft, getting on plane becomes more difficult.

Finally, the ride in choppy water becomes more uncomfortable as the weight goes aft. With these factors in mind, each boater should seek out what weight locations best suits his/her needs.

Weight and passenger loading placed well forward increases the "wetted area" of the boat bottom and, in some cases, virtually destroys the good performance and handling characteristics of the boat. Operation in this configuration can produce an extremely wet ride, from wind-blown spray, and could even be unsafe in certain weather conditions or where bow steering may occur.

Weight distribution is not confined strictly to fore and aft locations, but also applies to lateral weight distribution. Uneven weight concentration to port or starboard of the longitudinal centerline can produce a severe listing attitude that can adversely affect the boat's performance, handling ability and riding comfort. In extreme rough water conditions, the safety of the boat and passengers may be in jeopardy.

Water in Boat

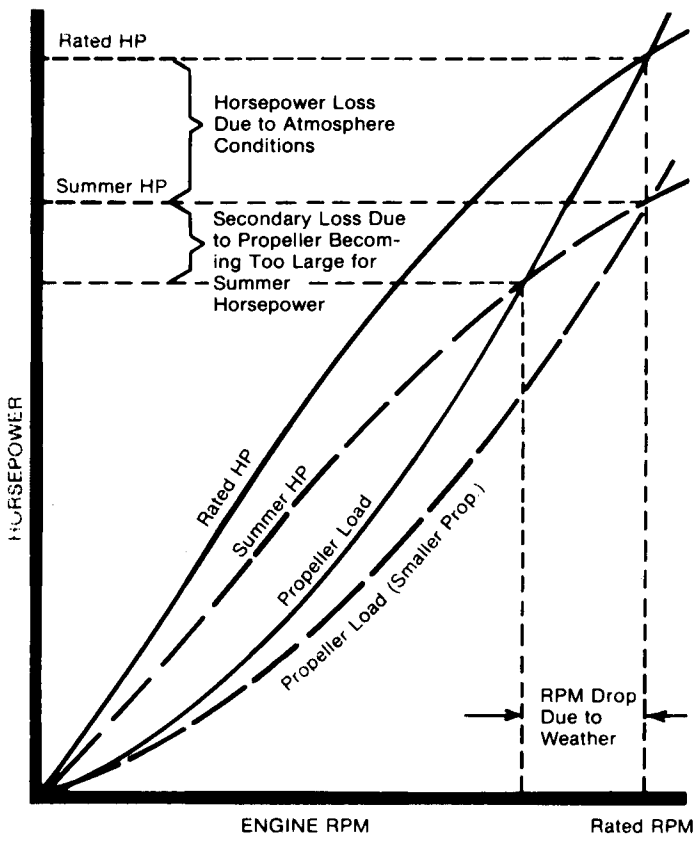
When a boat loses performance, check bilge for water. Water can add considerable weight to the boat, thereby decreasing the performance and handling.

Make certain that all drain passages are open for complete draining.

Elevation and Climate

Elevation has a very noticeable effect on the wide-open throttle power of an engine. Since air (containing oxygen) gets thinner as elevation increases, the engine begins to starve for air. Humidity, barometric pressure and temperature do have a noticeable effect on the density of air. Heat and humidity thin the air. This phenomenon can become particularly annoying when an engine is propped out on a cool, dry day in spring and later, on a hot, sultry day in August, does not have its old zip. (See chart)

Although some performance can be regained by dropping to a lower-pitch propeller, the basic problem still exists. The propeller is too large in diameter for the reduced power output. The experienced marine dealer or a Quicksilver Propeller Repair Station can determine how much diameter to remove from a lower-pitch propeller for specific high-elevation locations. In some cases, a gear-ratio change to the drive unit to more reduction is possible and very beneficial. It is a known fact that weather conditions exert a profound effect on power output of internal combustion engines. Therefore, established horsepower ratings refer to the power that the engine will produce at its rated RPM under a specific combination of weather conditions.



MAINTENANCE

1B

Location and Service	When Starting Engine Each Day	After First 20 Hours of Operation	Every 50 Hours of Operation
Engine Crankcase Oil - Check level	•		
Closed Cooling Coolant - Check coolant level	•		
Remote Control and Steering System - Check for proper operation	•		
Power Package (Entire) - Observe for obvious leaks (water, fuel, oil, exhaust, etc.)	•		
Ignition System - Check timing and adjust, if necessary		•	
Crankcase Oil and Oil Filter - Change		•	

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Maintenance Schedule

NOTE: Refer to the end of this chart for explanation of lettered references (A, B, C) and "NOTES".

⚠WARNING

Always disconnect battery cables from battery BEFORE working around electrical system componenets to prevent injury to yourself or damage to electrical system should a wire be accidentally shorted.

Location and Service	When Starting Engine Each Day	After First 20 Hours of Operation	Every 50 Hours of Operation	Every 100 Hours of Operation	At Least Once Each Year
Closed Cooling Models Only - Check coolant level.	●				
Engine Crankcase Oil - Check level	●				
Power Package (Entire) - Observe for obvious leaks (water, fuel, oil, exhaust, etc.)	●				
Remote Control and Steering System - Check for proper operation	●				
Transmission oil level (if equipped) (A)	●				
Cooling System Hose Clamps - Check tightness.		●		● Note 1	●
Drive Belts (All) - Inspect condition and check tension.		●		●	●
Exhaust System - Inspect condition. Check hose clamps for adequate tightness.		●		● Note 1	●
Ignition System - Clean and inspect condition		●		● Note 1	●
Power Package (Entire) - Check for loose, missing or damaged parts, (especially engine mount fasteners and starter, and alternator mounting fasteners).		●		●	●
Crankcase Oil and Oil Filter - Change		●	Refer to Page		●
Engine Alignment - Check		●			●
Ignition System - Check timing and adjust, if necessary.		●			●
Battery - Check electrolyte level and specific gravity. Inspect case for damage.			●		●
Electrical System (Entire) - Check loose or dirty connections or damaged wiring (especially battery cables).			● Note 2		●
Fuel Pump Sight Tube (or Glass) - Check for evidence of fuel.			●		●
Flame Arrestor and Crankcase Ventilation System - Clean and inspect				●	●
Hoses (All) - Inspect for cracks, swelling, weather checking or other signs of deterioration. Check connections for adequate tightness.				●	●

Location and Service	When Starting Engine Each Day	After First 20 Hours of Operation	Every 50 Hours of Operation	Every 100 Hours of Operation	At Least Once Each Year
Shift and Throttle Cable and Linkage - Lubricate and inspect. (B)				● Note 1	●
Lubricate starter motor (C)				● Note 1	●
Fuel Filters - Replace					●
Carburetor/EFI adjust	As Required				
Closed Cooling Models Only - Clean closed cooling section	As Required NOTE 3				
Closed Cooling Models Only - Check coolant for alkalinity	At Least Once A Year				
Power Package Exterior Surfaces - Spray with rust preventive. (D)	Fresh Water Areas - Every 6 Weeks Salt Water Areas - Every 2-3 Weeks				
Seawater Cooling System - Flush (CORROSIVE AREAS ONLY)	After Use Each Day				

(A) Use Automatic Transmission Fluid (ATF), Type F, Dexron or Dexron II.
(B) Use SAE 30 engine oil.
(C) Use Lubriplate Extra-Heavy Gear Shield or its equivalent.
(D) Use Quicksilver Corrosion and Rust Preventive Type II.

NOTES: (1) In fresh water areas, every 100 hours of operation or 120 days (whichever comes first). In saltwater areas, every 50 hours of operation or 60 days (whichever comes first).
(2) In fresh water areas, every 50 hours of operation or 60 days (whichever comes first). In saltwater areas, every 25 hours of operation or 30 days (whichever comes first).
(3) Requires more frequent attention, if used in extremely salty, polluted or mineral-laden waters.

Tune-Up Specifications

MODEL	MCM 200, 5.0 Litre	MCM 230, 5.0 Litre LX	MCM 260/350 Magnum/5.7 Litre
Horsepower (Kilowatts)	200 (149)	230 (172)	260 (194)
Number of Cylinders	V-8		
Displacement	305 CID (5L)		350 CID (5.7L)
Bore/Stroke	3.74 In./3.48 In. (98/88.4mm)		4.00 In./3.48 In. (101.6/88.4mm)
Compression Ratio	8.5:1		
Compression Pressure	150 PSI (1035 kPa)	155 PSI (1069 kPa)	150 PSI (1035 kPa)
Idle RPM (In Forward Gear)	650-700		
Max. RPM (At W.O.T.)	3800-4200	4200-4600	
Oil PSI (At 2000 RPM)	30-55 PSI (207-379 kPa)		
Min. Oil PSI (At Idle)	4 PSI (28 kPa)		
Fuel Pump PSI (At 1800 RPM)	5-1/2 - 7 PSI (38 - 48 kPa)		
Electrical System	12 Volt Negative (-) Ground		
Min. Battery Cold Cranking Amps	305		350
Firing Order	1-8-4-3-6-5-7-2		
Spark Plug Type	AC-MR43T Champion - RV8C Autolite-144 NGK-BR6FS		
Spark Plug Gap	.035 In. (.9mm)		
Timing (At Idle RPM)	8° BTDC		
Preliminary Idle Mixture	1-1/4 Turns	2-3 Turns	
Thermostat	143°F (62°C)		

Tune-Up Specifications

MODEL	7.4 Litre, MCM 330 B/W 454 Magnum	MCM 370TRS (S.N. 6721528 and Above)	MCM 370TRS (S.N. 6721527 and Below)/400TRS	454 Magnum (1988)
Horsepower (Kilowatts)	330 (246)	370 (276)		365 (272)
Number of Cylinders	V-8			
Displacement	454 Cubic Inches (7.4L)			
Bore/Stroke	4.25 In./4.00 In. (108mm/102mm)			
Compression Ratio	8.5:1	8.6:1		
Compression Pressure	150 P.S.I. (1035 kPa)			
Idle RPM (In Forward Gear)	650-700	800-850		650-700
Max. RPM (At W.O.T.)	4200-4600	4800-5200		4600-5000
Oil PSI (At 2000 RPM)	35-70 P.S.I. (241-483 kPa)			
Min. Oil PSI (At Idle)	4 P.S.I. (28 kPa)	5 P.S.I. (34 kPa)		
Fuel Pump PSI (At 1800 RPM)	5.5-7 P.S.I. (38-48 kPa)	3-5 P.S.I. (21-34 kPa)	5.25-6.5 P.S.I. (36-45 kPa)	3-7 P.S.I. (21-48 kPa)
Electrical System	12-Volt Negative (-) Ground			
Min. Battery Cold Cranking Amps	450			
Firing Order	1-8-4-3-6-5-7-2			
Spark Plug Type	AC-M43T, Champion RV8C, Autolite-144, NGK-BR6FS			
Spark Plug Gap	.035 In. (0.9mm)			
Breaker Point Gap			.016 - .019 In. (0.40 - 0.48mm)	
Dwell			26° - 31°	
Breaker Point Spring Tension			25 - 30 Oz. (709 - 850g)	
Timing (At Idle RPM)	8° BTDC	10° BTDC		8° BTDC
Preliminary Idle Mixture	2-3 Turns			
Thermostat	143° F (62° C)			

Tune-Up Specifications

MODEL	MCM 300 Tempest All Drives	MCM 320 EFI All Drives
Horsepower (Kilowatts)	300 (224)	320 (239)
Number of Cylinders	V-8	
Displacement	350 Cu. In. (5.7 L)	
Bore/Stroke	4.00 In./3.48 In. (102/88mm)	
Compression Ratio	9:1	
Compression Pressure	150 P.S.I. (1035 kPa)	
Idle RPM (In Forward Gear)	750-800	
Max. RPM (At W.O.T.)	4800 - 5200	
Oil PSI (At 2000 RPM)	30 - 60 P.S.I. (207 - 414 kPa)	
Min. Oil Pressure (At Idle)	5 P.S.I. (34 kPa)	
Fuel Pump Pressure	3-7 P.S.I. (21-48 kPa)	29 P.S.I. (269 kPa) Above Intake Manifold Pressure
Electrical System	12-Volt Negative (-) Ground	
Min. Battery Cold Cranking Amps	350	
Firing Order	1-8-4-3-6-5-7-2	
Spark Plug Type	AC-MR43T, Champion RV8C, Autolite 144, NGK-BR6FS	
Spark Plug Gap	.032 In. (0.8mm)	
Timing (At Idle RPM)	8° BTDC	12° BTDC
Preliminary Idle Mixture	2-3 Turns	
Thermostat	143° (62° F)	

Tune-Up Specifications

MODEL	MCM 230TR	MCM 260 TR 5.7 Litre
Horsepower (Kilowatts)	230 (172)	260 (194)
Number of Cylinders	V-8	
Displacement	305 Cu. In. (5L)	350 Cu. In. (5.7L)
Bore/Stroke	3.74/3.48 In. (95/88mm)	4.00/3.48 In. (102/88mm)
Compression Ratio	8.5:1	
Compression Pressure	155 P.S.I. (1069 kPa)	150 P.S.I. (1035 kPa)
Idle RPM (In Forward Gear)	650-700	
Max. RPM (At W.O.T.)	4000-4400	
Oil Pressure (At 2000 RPM)	30-55 P.S.I. (207-379 kPa)	
Min. Oil Pressure (At Idle)	4 P.S.I. (28 kPa)	
Fuel Pump Pressure	5.5-7 P.S.I. (38-48 kPa)	
Electrical System	12-Volt Negative (-) Ground	
Min. Battery Cold Cranking Amps	305	350
Firing Order	1-8-4-3-6-5-7-2	
Spark Plug Type	AC-MR43T Autolite-144	Champion RV8C, NGK-BR6FS
Spark Plug Gap	.035 In. (0.9mm)	
Timing (At Idle RPM)	8° BTDC	
Preliminary Idle Mixture	2-3 Turns	
Thermostat	143° F (62° C)	

Tune-Up Specifications

MODEL	MCM 420 HP 420	MCM 400 CYCLONE	MCM 440 CYCLONE	MCM 460 CYCLONE	MCM 575 HP 575
Horsepower (kilowatts)	420 (313)	400 (298)	440 (328)	460 (343)	575 (429)
Number of Cylinders	V-8				
Displacement	454 CID (7.4L)			482 CID (7.9L)	540 CID (8.9L)
Bore/Stroke	4.25 In./4.00 In. (108mm/102mm)			4.25 In./4.25 In. (108/108mm)	4.440 In./ 4.375 In. (113/111mm)
Compression Ratio	8.6:1			9.2:1	8.75:1
Compression Pressure	150 PSI (1035 kPa)			160 PSI (1103 kPa)	150 PSI (1035 kPa)
Idle RPM (In Forward Gear)	800-850				950
Max. RPM (At W.O.T.)	4800-5200			4800-5400	4800-5200
Oil PSI (At 2000 RPM)	35-70 PSI (241-483 kPa)				
Min. Oil PSI (At Idle)	5 PSI (35 kPa)				
Fuel Pump PSI (At 1800 RPM)	5-7 PSI (35-48 kPa)				
Electrical System	12-Volt Negative (-) Ground				
Min. Battery Cold Cranking Amps	450				
Firing Order	1-8-4-3-6-5-7-2				
Spark Plug Type	AC-MR 43T Autolite-144		Champion RV8C NGK-BR6FS	AC-MR41T	
Spark Plug Gap	.035 In. (.9mm)				
Breaker Point Gap		.016-.019 In. (0.40-0.45mm)			
Dwell		28°-31°			
Breaker Point Spring Tension		25-30 Oz. (709-850g)			
Timing (At Idle RPM)	10° BTDC		15° BTDC		10° BTDC
Preliminary Idle Mixture	2-3 Turns				1-1/4 Turns
Thermostat	143° F (62° C)				
Valve Lash	0				.025 In. (.65mm)

Tune-Up Specifications

MODEL	MIE 230/ 5.0 LITRE	MIE 260/ 5.7 LITRE	MIE 340/ 7.4 LITRE
Horsepower (Kilowatts)	230 (172)	260 (194)	340 (254)
Number of Cylinders	V-8		
Displacement	305 CID (5L)	350 CID (5.7L)	454 CID (7.5L)
Bore/Stroke	3.74 In./3.48 In. (95/88mm)	4.00 In./3.48 In. (102/88mm)	4.25 In./4.00 In.) (108/102mm)
Compression Ratio	8.5:1		
Compression Pressure	155 PSI (1069 kPa)	150 PSI (1035 kPa)	
Idle RPM (In Forward Gear)	650-700		
Max. RPM (At W.O.T.)	4000-4400		
Oil PSI (At 2000 RPM)	30-50 PSI (207-379 kPa)		30-70 PSI (207-483 kPa)
Min. Oil PSI (At Idle)	4 PSI (28 kPa)		
Fuel Pump PSI (At 1800 RPM)	5-1/2-7 PSI (38-48 kPa)		
Electrical System	12-Volt Negative (-) Ground		
Min. Battery Cold Cranking Amps	305	350	450
Firing Order	L.H. Rot. 1-8-4-3-6-5-7-2	R.H. 1-2-7-5-6-3-4-8	
Spark Plug Type	AC-MR43T Autolite-144	Champion RV8C NGK-BR6FS	
Spark Plug Gap	.035 In. (0.9mm)		
Timing (At Idle RPM)	8° BTDC		
Preliminary Idle Mixture	2-3 Turns		
Thermostat	143° F (62° C)		

Tune-Up Specifications

MODEL	MIE 5.7 Ski/5.7 Litre Comp Ski
Horsepower (Kilowatts)	260 (194)
Number of Cylinders	V-8
Displacement	350 Cu. In. (5.7L)
Bore/Stroke	4.00/3.48 In. (102/88mm)
Compression Ratio	9:1
Compression Pressure	150 P.S.I. (1035 kPa)
Idle RPM (In Forward Gear)	650-700
Max. RPM (At W.O.T.)	4000-4400
Oil Pressure (At 2000 RPM)	30-55 P.S.I. (207-379 kPa)
Min. Oil Pressure (At Idle)	4 P.S.I. (28 kPa)
Fuel Pump Pressure	3-7 P.S.I. (21-48 kPa)
Electrical System	12-Volt Negative (-) Ground
Min. Battery Cold Cranking Amps	350
Firing Order	L.H. Rot. 1-8-4-3-6-5-7-2 R.H. Rot. 1-2-7-5-6-3-4-8
Spark Plug Type	AC-MR43T Champion RV8C, Autolite-144 NGK-BR6FS
Spark Plug Gap	.035 In. (0.9mm)
Breaker Point Gap	.016-.019 In. (0.40-0.48mm)
Dwell	28° - 31°
Breaker Point Spring Tension	25-30 Oz. (709-850g)
Timing (At Idle RPM)	10° BTDC
Preliminary Idle Mixture	2-3 Turns
Thermostat	143° F (62° C)