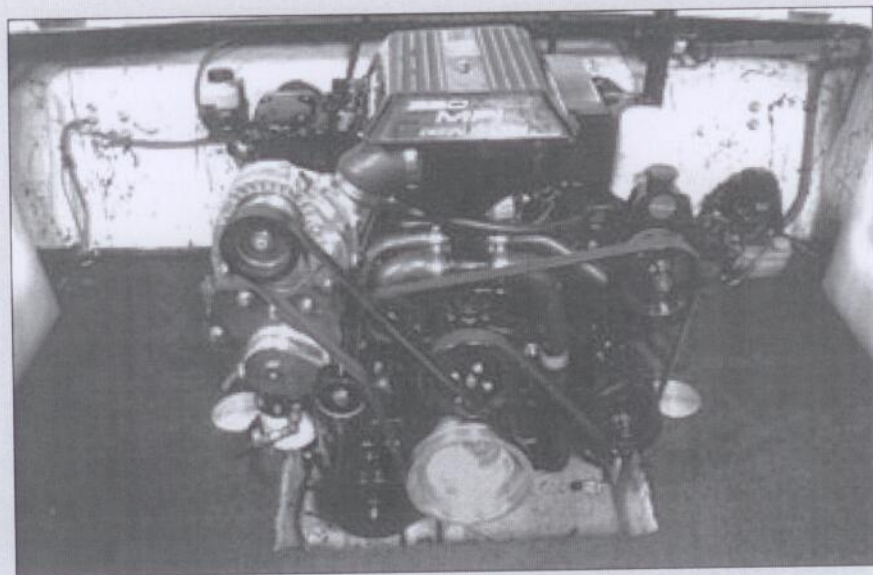


OWNER'S MANUAL

1997-2003 MERCUISER 350 MAG MPI

PROCHARGER[®] *Marine*

Centrifugal Supercharger Systems

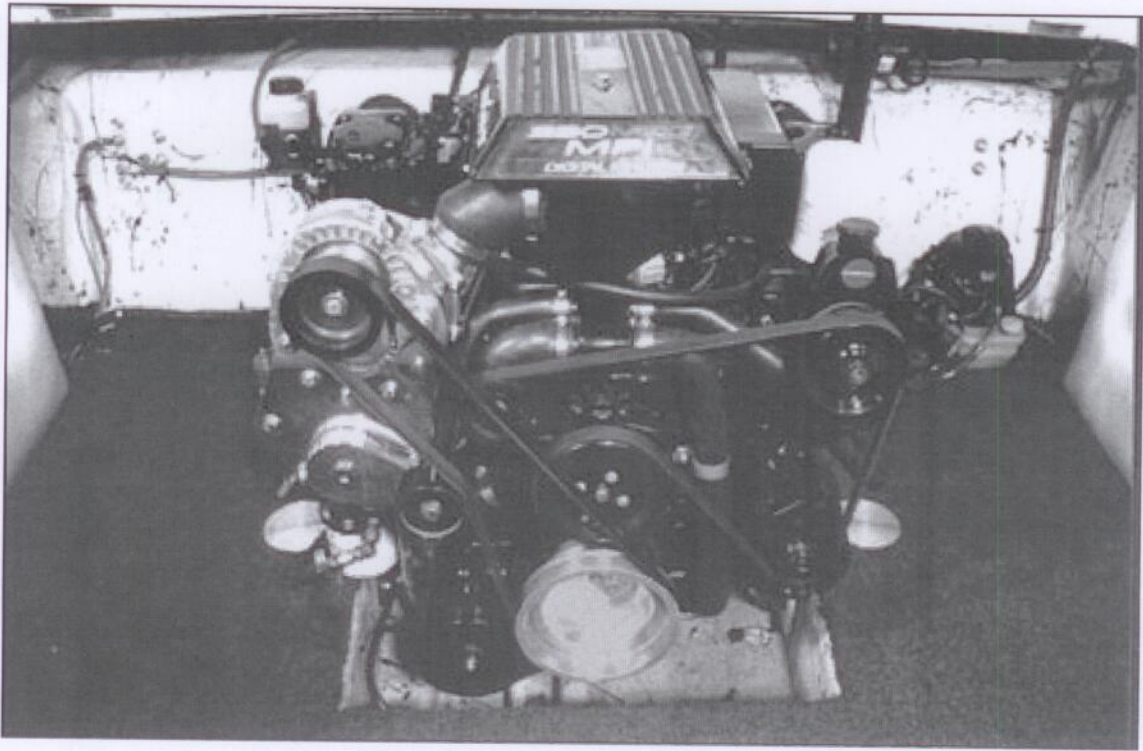
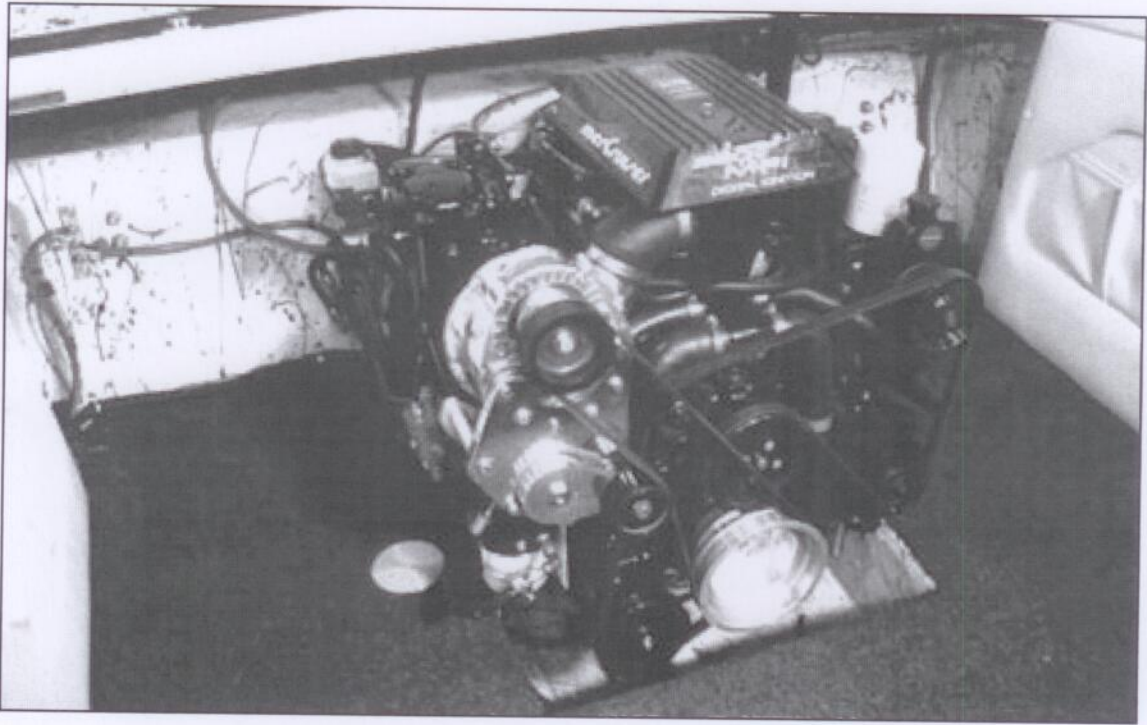


The Intercooled Supercharging Experts![®]



ACCESSIBLE TECHNOLOGIES, INC.
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1MF183-NN





INTRODUCTION

Congratulations on the purchase of your ProCharger® centrifugal supercharger system, and welcome to the world of centrifugal supercharging. You are now the owner of the most powerful and reliable supercharger system available, and the latest technology in supercharging!

If you are performing the installation of this system and this is your first ProCharger installation, you will likely benefit from reading the entire installation instructions prior to proceeding, and then reviewing each section as you go. If you are familiar with supercharging, remember that centrifugal supercharging is different from roots supercharging, and the same rules do not apply, primarily due to the unparalleled efficiency of the ProCharger, and the vastly cooler intake temperatures that result, especially when intercooled.



INSTALLATION OVERVIEW

- A. ENGINE PREPARATION**
- B. ENGINE ACCESSORY AND PROCHARGER INSTALLATION**
- C. AIR INLET AND INTERCOOLER INSTALLATION**
- D. FUEL SYSTEM INSTALLATION**
- E. PROCHARGER SC MAINTENANCE**
- F. INSTALLATION REVIEW AND SAFETY CHECK**
- G. GENERAL TUNING AND THEORY**

IMPORTANT INFORMATION FOR RELIABLE OPERATION!

USE MINIMUM 91 OCTANE FUEL AT ALL TIMES WITH 5 PSI

MERCUISER EFI/MPI REV LIMITER LIMITS RPM BY CUTTING OFF FUEL, WHICH CAN CAUSE A DANGEROUS LEAN CONDITION. ENSURE THAT BOAT IS PROPPED SO THAT MAXIMUM RPM IS BELOW FACTORY REV LIMITER. REPEATEDLY BUMPING/RIDING REV LIMITER CAN RESULT IN SERIOUS ENGINE DAMAGE.

Torque Specification Chart	 Grade 5 Torque (lb. ft.)			 Grade 8 Torque (lb.ft.)		
	Thread Size					
1/4-20	11	8	7	16	12	10
1/4-26	13	10	8	18	14	11
5/16-18	23	17	14	33	25	20
5/16-24	26	19	15	36	27	22
3/8-16	41	31	25	58	44	35
3/8-24	47	35	28	66	49	39
7/16-14	66	49	40	93	70	56
7/16-20	74	55	44	104	78	62
1/2-13	101	75	60	142	106	85
1/2-20	113	85	68	160	120	96

INSTALLATION OVERVIEW

For best results we recommend that you review the installation instructions beforehand, and follow the installation instructions closely and in sequence. A detailed packing list is provided (inside box) to help you identify the components of your ProCharger Marine system. The following tools will be required to install your ProCharger Marine supercharger system:

REQUIRED TOOLS & SUPPLIES

- 3/8" SOCKET SET (STANDARD & METRIC)
- SCREWDRIVER SET
- RAZOR BLADE OR CARPET KNIFE
- NUT DRIVER SET
- 8 SPARK PLUGS**
- SPARK PLUG SOCKET**
- 1/2" SOCKET SET (STANDARD & METRIC)
- OPEN END WRENCH SET
- ADJUSTABLE WRENCH
- PLIER SET
- WIRE CUTTERS

You should also have the following gauges available to properly check the finished installation and monitor your vessel's performance (especially for high performance applications):

- manifold pressure boost gauge (plumbed into any manifold vacuum source)
- fuel pressure gauge (0-100 psig) (plumbed into ATI fuel pressure regulator)

Both gauges should be of a type that can be read from the cockpit while performing a W.O.T. performance test. Cockpit-mounted gauges are preferable, although use of a shop fuel pressure gauge (connected to a hose long enough to be read during testing) is an option.

The motor on which the ProCharger is installed should retain the stock compression ratio. If your engine has been modified in any way, please check with ATI or your dealer before proceeding. This supercharger system is intended for use on strong, well maintained engines. Installation on a worn or troublesome engine should be reconsidered. **Accessible Technologies is not responsible for damage to an engine.**



Warning: Motor and propeller should be configured so that maximum speed does not exceed boat manufacturer's recommendations for your hull.



Warning: Read and understand all safety precautions in this manual before installation. Failure to comply with instructions in this manual could result in personal injury, property damage, and/or voiding your warranty.

Note: There are subtle variations in Mercruiser motors across model years (such as water hose routing for coolers) which may not *specifically* be addressed in these installation instructions. Please contact an ATI service technician should you have any questions.

**if current plugs have more than 100 hours, or are more than 1 year old

REVISED 03-12-01

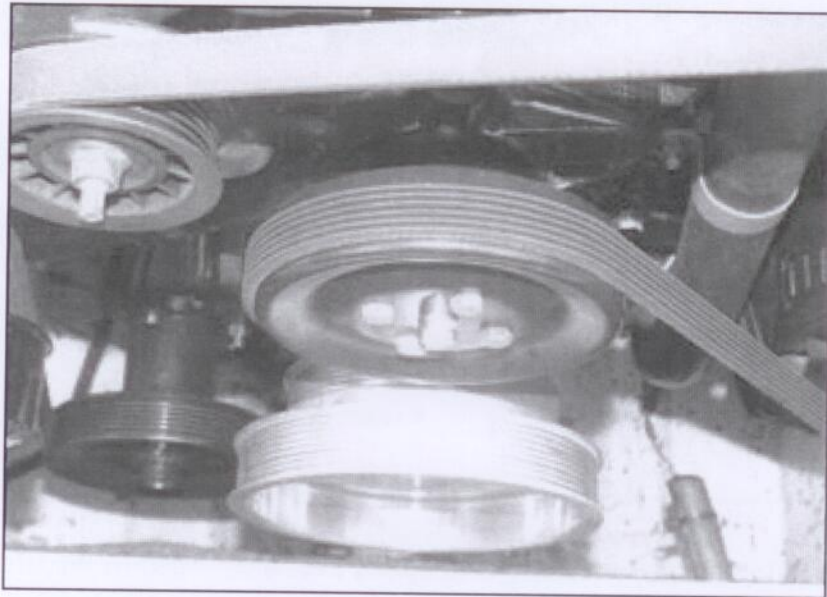


FIGURE A1
ATI CRANK PULLEY
(VIEWED FROM ABOVE)

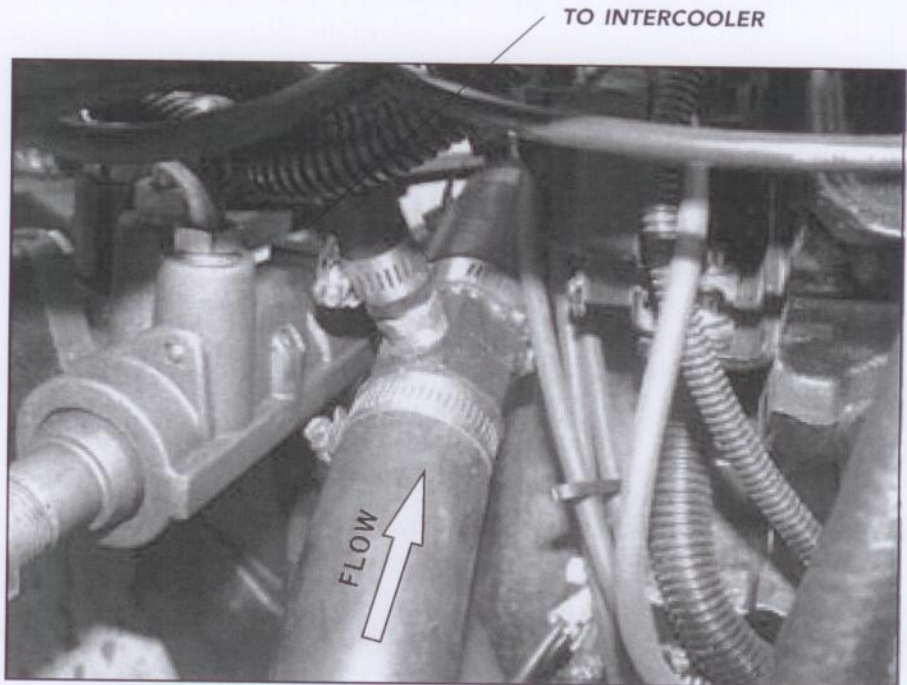


FIGURE A2
INTERCOOLER TEE (INSTALLED)

INSTALLATION INSTRUCTIONS

A. ENGINE PREPARATION

Completion of this section will configure the Mercruiser motor for installation of the ProCharger system components.

1. Remove the accessory drive belt and crankshaft pulley from the front of the engine.
2. Install the supplied crankshaft pulley using the supplied 3/8" x 1.5" bolts and reinstall and tighten the Mercruiser accessory drive belt.
3. Locate & follow the seawater pump outlet hose (routed to the fuel cooler) to the starboard rear of the engine. Splice the supplied intercooler "tee", 1/2" barb fitting installed into this line clamping with the provided hose clamps (see figures A-2, A-3), *Note: Attaching and clamping the (1/2" rubber) intercooler feed line prior to tee installation may simplify it's connection.*
4. Replace the factory thermostat with the ATI provided 120 degree thermostat.
5. On the intake manifold immediately behind the throttle body is a barb fitting attached to the PCV hose. Remove the hose from the fitting and the PCV valve. Replace the PCV valve with the provided plastic PCV adapter and route the hose to the port front of the engine (the final connection will be made after the ProCharger has been installed). Remove the barb fitting from the manifold and install supplied 1/8" npt pipe adapter.

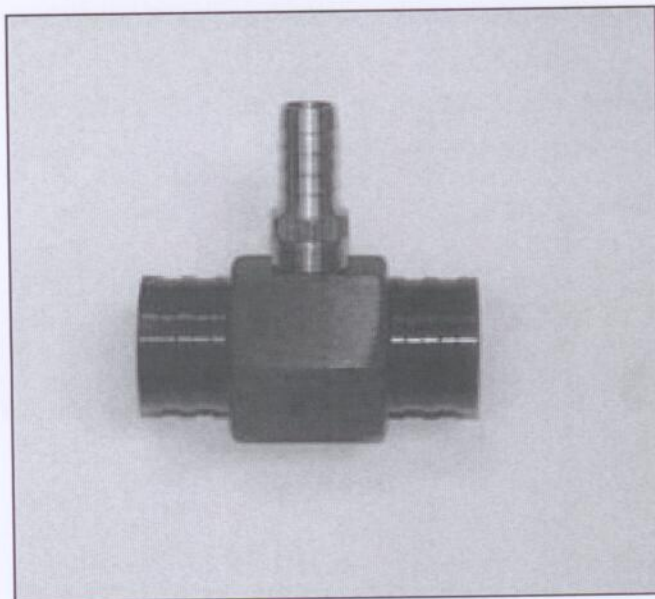


FIGURE A3
INTERCOOLER "TEE" FITTING

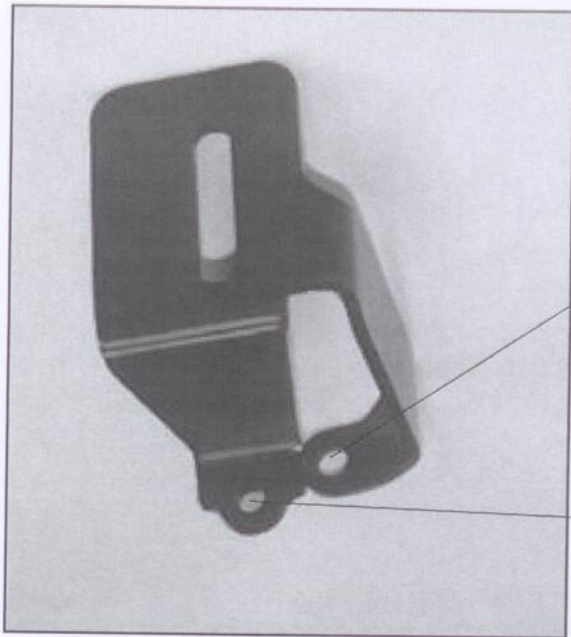


FIGURE A4
ATI TENSIONER BRACKET

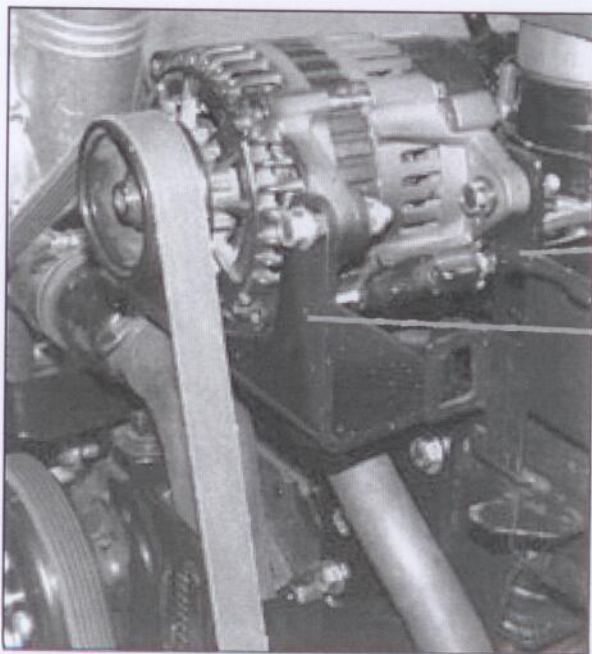
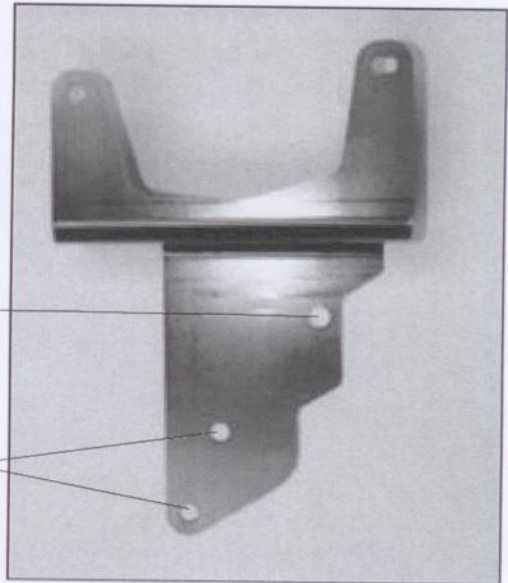
TO CYLINDER HEAD

TO WATER PUMP STUD

FIGURE A5
ATI ALTERNATOR BRACKET

BOLT THROUGH TO MERC BRACKET
AND REAR ALTERNATOR SUPPORT

TO CYLINDER HEAD



REAR SUPPORT

ATI ALTERNATOR BRACKET

FIGURE A6
ATI ALTERNATOR BRACKET INSTALLATION

6. Remove the cap and oil filler spout from the starboard valve cover and replace the cap (directly in the valve cover without the filler spout).
7. Remove the alternator mounting bracket from the face of the starboard cylinder head (2001 & up), On 2000 & earlier engines it will only be necessary to remove the bolt on the forward face of the starboard cylinder head used to retain the factory accessory drive tensioner.
8. (2001 & up) Remove the accessory drive tensioner from the port side of the engine and attach it to the provided drive tensioner bracket (see figure A4).
9. (2001 & up) Attach the provided alternator relocation bracket to the port side cylinder head using the two 3/8" x 1" bolts and lockwashers provided. Remove the alternator from the factory bracket and attach it to the new bracket re-using the factory hardware (see figures A5 & A6). Attach the rear alternator support to the rear mounting ear on the alternator at one end, and downward to the merc accessory bracket, aligning with the upwardmost hole on the ATI alternator bracket. Tie the rear support to the forward alternator bracket using the provided 3/8" x 1.25" bolt, locknut & flatwashers.
10. (2001 & up) Install the provided accessory drive belt, routing as indicated in figure A7 Care should be taken to over tighten the belt as it will not improve accessory belt traction.

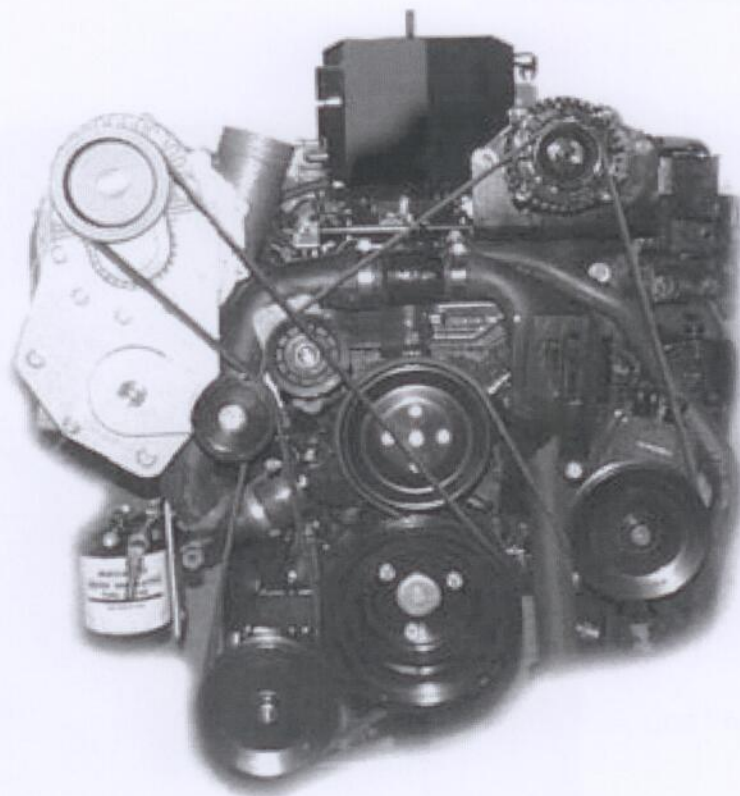
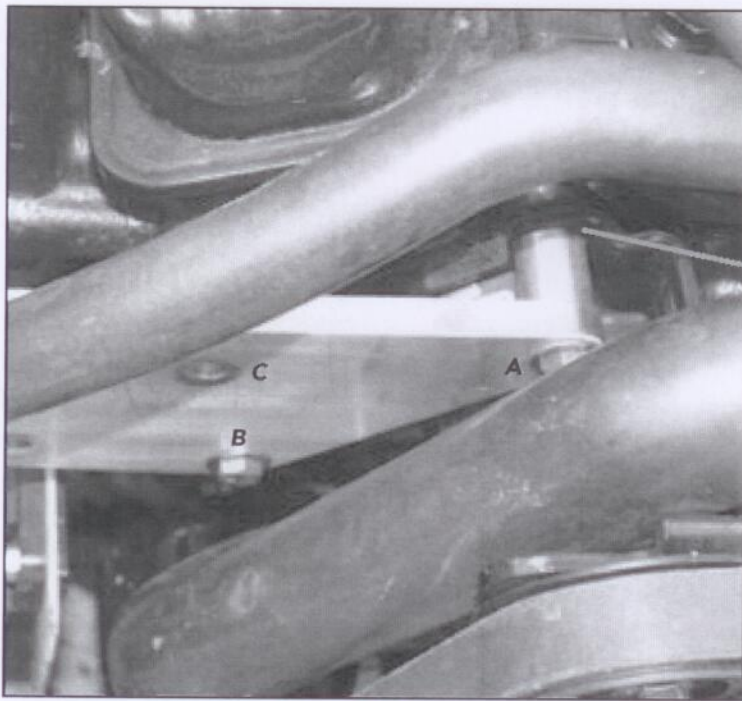
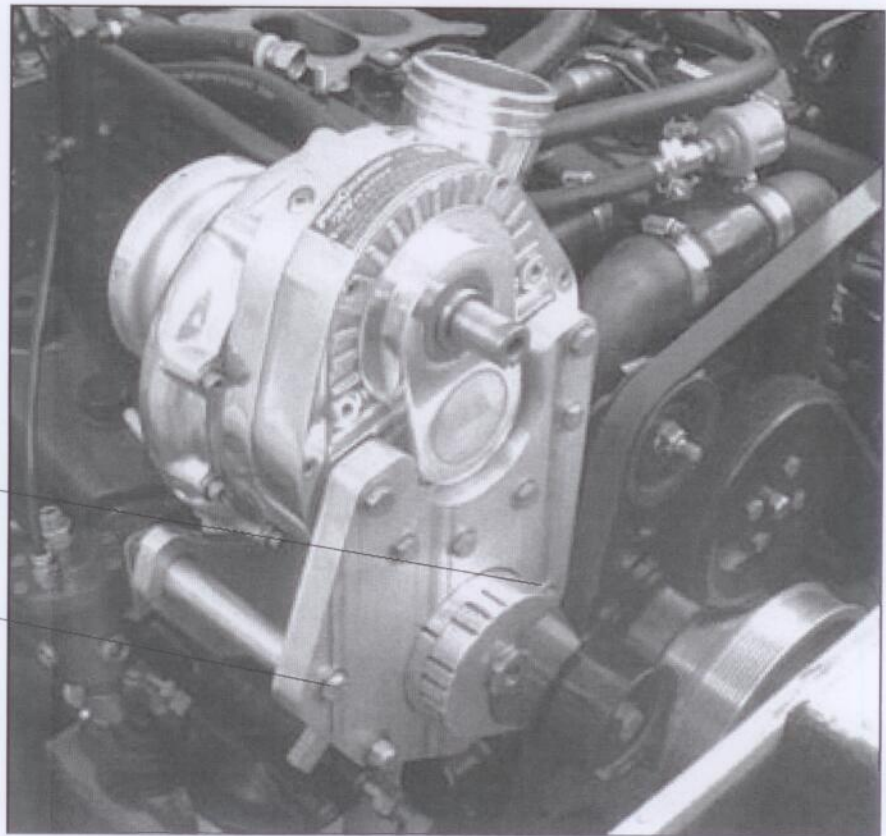


FIGURE A7
ACCESSORY BELT ROUTING (2001 & UP)



TENSIONER BRACKET REAR
MOUNTING POINT

FIGURE B1
SUB-BRACKET INSTALLATION



3/8" x 7" BOLT

3/8" x 6" BOLT

FIGURE B2
PROCHARGER AND MAIN BRACKET INSTALLATION

C. ENGINE ACCESSORIES AND PROCHARGER INSTALLATION

In this section you will install the ProCharger and connect all related air hoses

DESCRIPTION AND OPERATION

The main components of the ProCharger system are the ProCharger, ProCharger mounting bracket, The ProCharger is a gear-driven centrifugal compressor, driven by an 8 rib serpentine belt. It uses a billet aluminum impeller, super precision bearings and carburized gears. The impeller speed is dictated by engine rpm, crank pulley-to-driven pulley ratio and the final internal gear ratio. As engine speed is increased both airflow and boost (resulting from engine back-pressure) are increased. The quoted boost levels of the kit can be exceeded if the factory-set redline is surpassed. The mounting bracket is a flat billet aluminum type which utilizes a series of spacers to properly locate the ProCharger.

1. Using the two provided 2-1/2" long 3/8" bolts, and 1.25" spacer (hole "B") or 1.05" spacer (hole "A") attach the 1/2" billet sub bracket to the starboard cylinder head (refer to figure B1), placing the supplied tensioner bracket nearest the head at hole "A" (2001 & newer models only). The second hole in the tensioner bracket should align with the 5/16" stud on the uppermost water pump mounting bolt on the starboard side of the engine. Secure the bracket to this mounting stud using the provided 5/16" fine thread locknut and flatwasher (refer to figure A4 for orientation).
2. Attach the ProCharger mounting bracket (3/4" thick) to the engine, using the provided 3/8" x 7" long bolt routing it first through the main bracket, a 3.75" spacer, the sub bracket, a 1.25" spacer then into the outermost mounting hole ("C") on the starboard cylinder head. Next, align the brackets as indicated in figure B2 and tie the two brackets together using the provided 3/8" x 6" bolt and locknut, placing a 3.75" spacer between the two, do not tighten this locknut yet as it will need to be removed for the installation of the fuel pressure regulator in section D.
3. Using the provided 3/8" x 3" bolt and 2" billet spacer, attach the rear (1/2") bracket to the starboard exhaust manifold mounting boss. Do not tighten this bolt as it will need to be removed to install the fuel pressure regulator in section D.
4. With the main bracket fasteners to the cylinder head tightened, attach the ProCharger to the main bracket using the 3/8" (2 ea) and 5/16" (4 ea) bolts provided.
5. After torquing the blower mounting bolts, the supercharger drive belt may be installed and tensioned with the lower span of the belt placed above the tensioner pulley. *Note: the drive belt will stretch after the initial use and will likely require re-tensioning after the first period of extended operation.*

1/4" ALLEN HEAD SCREW
(USED AT ALL MOUNTING POINTS)

FIGURE C1
INTERCOOLER ADAPTER INSTALLATION
(1996-2000 SHOWN)

1/4" COUPLER NUT
(USED AT ALL THROTTLE BODY FLANGE MOUNTING POINTS)

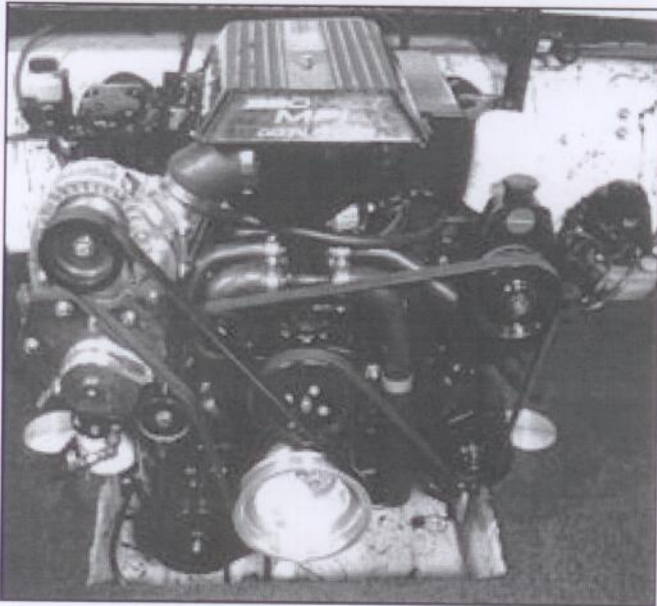
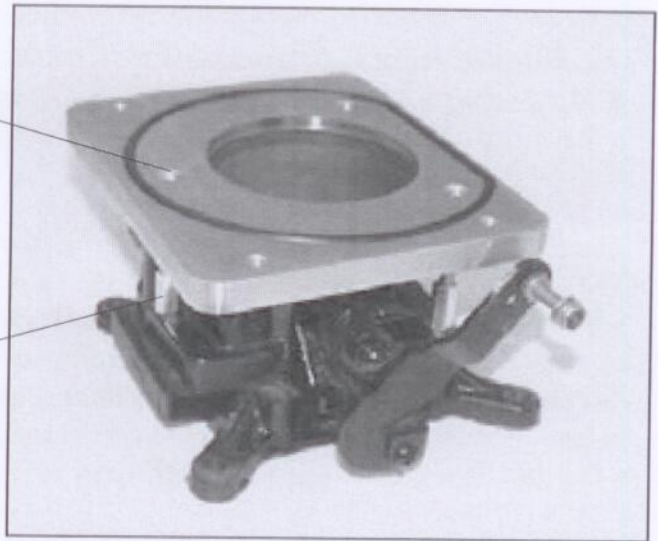


FIGURE C2
INTERCOOLER & DISCHARGE TUBE INSTALLATION
(1996-2000 SHOWN)

INTERCOOLER SUPPLY LINE (FROM TEE)

STARBOARD CRANKCASE VENT HOSE

PORT CRANKCASE VENT HOSE

INLET ADAPTER

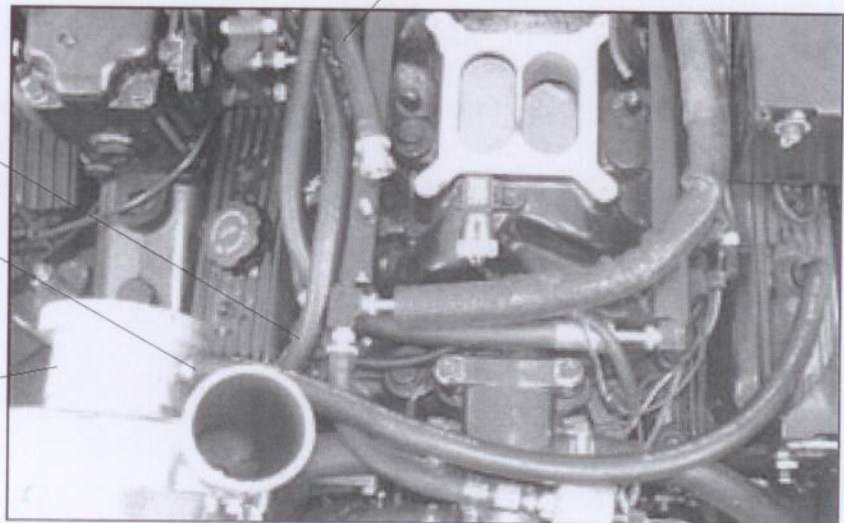


FIGURE C3
SUPERCHARGER INLET ORIENTATION

C. AIR INLET AND INTERCOOLER INSTALLATION

DESCRIPTION AND OPERATION

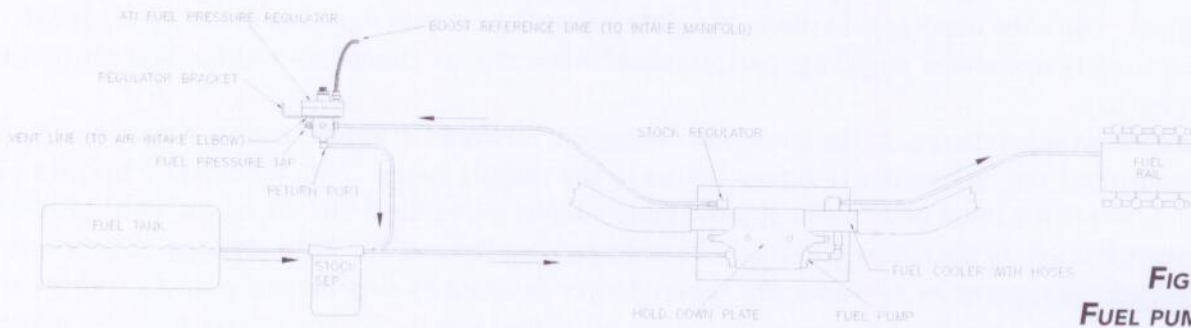
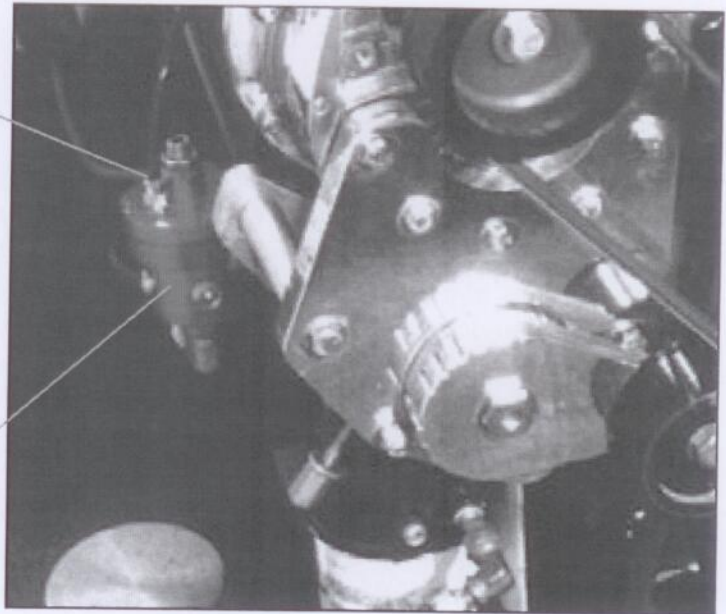
The intercooler system main components consist of the intercooler and tubing. The intercooler is a custom designed, bar & plate style, air-to-water heat exchanger. The charge air (compressed and therefore heated) discharged by the ProCharger enters the intercooler plenum, passes thru a series of passages and exits the opposite plenum. Fresh lake/seawater taken flows from the seawater pump, through the crossflow passages in the intercooler, thereby cooling the charge air. The cooled charge air is then routed to the throttle body where it enters the intake manifold. The air inlet system utilizes a screened "bell mouth" air inlet with provisions for the crankcase ventilation hose(s).

1. Remove the bolts clamping the throttle body to the manifold adapter flange and replace them with the 1/4" set screws provided. Use the 1/4" coupler nuts to re clamp the throttle body to the manifold adapter, using flatwashers beneath the nuts to prevent galling of the throttle body. Fasten the intercooler adapter flange and o-ring to the throttle body using the 1/4" allen head bolts provided. *Note: Care must be taken not to damage the o-ring which creates the seal between the neck of the throttle body and the intercooler adapter.* Lubricating the o-ring may ease the installation of the adapter. Once the adapter is in place, the o-ring should be firmly seated in the retainer groove. If the o-ring is not seated correctly, performance will suffer as charge air will be bled off into the engine bay.
2. Connect the supercharger to the intercooler using the provided 3" rubber elbow, not tightening the clamps until the intercooler is firmly bolted to the throttle body. With the adapter torqued into place, attach the intercooler to the throttle body adapter using the 5/16" allen head bolts provided. Some trimming of the elbow will likely be necessary for the best fit. *Note: In some circumstances it may be necessary to re-orient the supercharger housing to best accomodate the rubber discharge elbow. This may be done by loosening all of the bolts to the compressor housing, rotating the discharge to the desired position and re-torquing the compressor retaining bolts.*
3. Connect the water line from the intercooler "tee" fitting installed earlier to the fitting placed on the lower starboard side of the intercooler trimming to length and using the provided push lock hose end (refer to figure C3).
4. Install the intercooler discharge overboard fitting. This fitting may be located in either of two locations, above the drive unit for cooling (if not using drive shower) or on drivers' side of hull for water flow verification through intercooler. Drill a hole to match the size of the outer diameter of the supplied fitting. Where it contacts the hull, coat the outside diameter of the fitting with silicone and slide it through the hole with the barbed end to the inside. Tighten the nut on the fitting to secure it to the hull. Connect the intercooler water discharge (located high on the port side of the intercooler) with a push-on flare fitting at the intercooler and slipping it onto the barb end of the overboard fitting, trimming it to length, securing it with the hose clamp provided.
5. Attach the screened inlet adapter to the supercharger, slipping it onto the supercharger inlet and clamping with the provided band clamp once it is correctly oriented. Attach the PCV hose(s) to the inlet adapter using the provided 3/8" NPT x 1/2" barb fittings. (Refer to figure C3 for orientation and hose routing).

**REFERENCE LINE
(GOES TO MANIFOLD)**

**FIGURE D1
ATI REGULATOR INSTALLATION**

REGULATOR

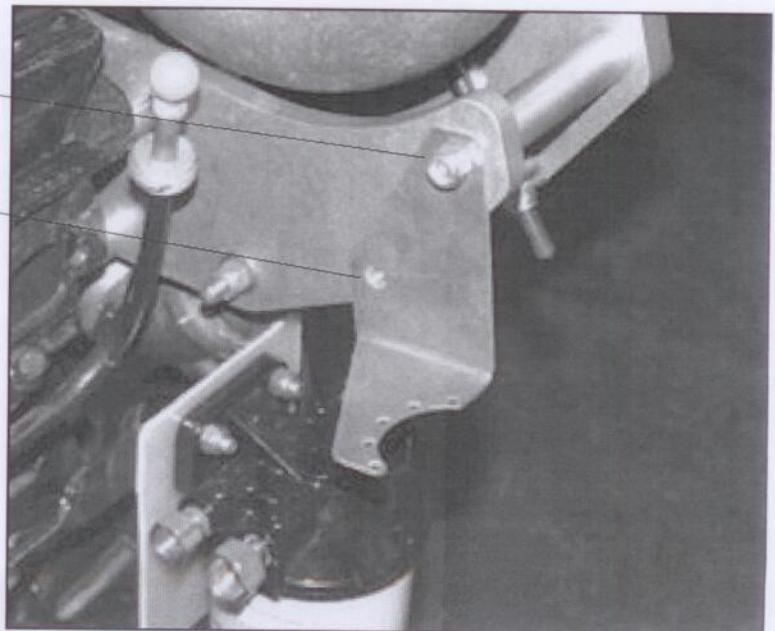


**FIGURE D2
FUEL PUMP SCHEMATIC**

3/8" X 6" BOLT

**3/8" X 3" BOLT
THROUGH FROM FRONT**

**FIGURE D4
ATI REGULATOR BRACKET INSTALLATION
(EXHAUST REMOVED TO REVEAL DETAIL)**



D. FUEL SYSTEM INSTALLATION

DESCRIPTION AND OPERATION

The Mercruiser fuel system has an electric fuel pump which draws fuel from the tank through the separator and pumps it to the fuel rail and through a fuel cooler. Returned fuel from the fuel pressure regulator is circulated back to the separator. ATI supplies a boost sensitive regulator to increase the fuel pressure when operating under boost. The fuel is pumped from the fuel pump to the fuel cooler where it is tee'd to the fuel rail and from the cooler to the ATI regulator and then back to the separator.



Warning/Caution: This is a high pressure EFI fuel system. When working on the fuel system, there will be a small amount of pressurized fuel discharged when opening the system. Proper precautions should be taken to contain or minimize spillage (i.e. catching fuel in a container and soaking up spilled fuel with a rag) and avoid exposure to spark or flame (i.e. disconnect battery, no smoking, etc.).

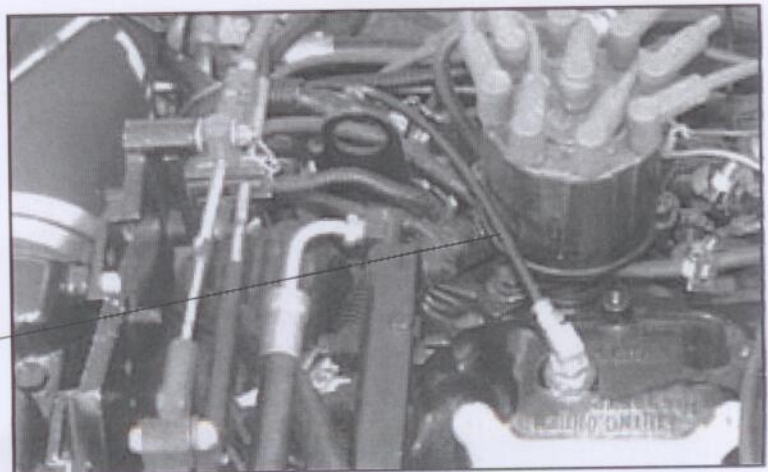


Warning/Caution: Ensure that all fuel lines are correctly sized for the supercharged horsepower rating of the engine. This includes the anti-siphon valve, fuel filters, etc. . Please contact an ATI service technician if you have any questions.

1. Attach the ATI supplied regulator to the rear mounting bracket using a 3/8" locknut on the 6" long 3/8" bolt in figure B2 (page 10). Align the second mounting hole with the rear bracket to exhaust bolt installed in section B.
2. Locate the fuel return line running from the fuel cooler to the fuel/water separator. Disconnect this line at the separator and connect it to the open port on the side of the ATI regulator (see figure D1).
3. Using the line provided connect the port on the regulator labeled "RET" to the separator.
4. Route the boost reference line from the top of the regulator (adjacent to the adjusting screw) to the manifold vacuum port immediately behind the throttle body (the provided adapter fittings must be installed, (see figure D3). Route the regulator vent line over to the supercharger inlet and connect to the 1/8" barb fitting. Although the regulator is preset at factory, fuel pressure must be checked upon completion of installation; if necessary, the regulator may be adjusted to either increase or decrease fuel pressure. See section G regarding regulator tuning.
5. Test your connections by turning the key to the "ON" position. You should hear the fuel pump momentarily run. Before operating the boat, start the engine and check again for fuel leaks.

FIGURE D3
REGULATOR REFERENCE LINE CONNECTION

TO REGULATOR



E. SUPERCHARGER MAINTENANCE

- **WARNING:**



ALL SC SUPERCHARGERS CONTAIN NO OIL FROM THE FACTORY. YOU MUST ADD THE SUPPLIED PROCHARGER OIL PRIOR TO USE.

Use only ATI supplied oil in your SC ProCharger. The ATI oil has been specially formulated for the bearings in the ProCharger and use of oil other than that supplied by ATI will void your warranty.

- **OIL CHANGE INTERVALS**

The first oil change should be performed at 15 hours and at 100 hour intervals thereafter. Clean drain plug after every oil change. Drain oil by removing the magnetic drain plug. Clean off the magnetic drain plug before reinstalling. See figure below, left

- **OIL LEVEL**

The oil level must be checked periodically (when cold) to ensure the proper oil level in the ProCharger. The dipstick can be loosened using a flat blade screwdriver or a coin. When installed, the oil level should be between the min and max levels (See fig. below). If the oil level falls below min, fill the ProCharger, through the dipstick hole, until the proper oil level is reached. **Warning: Filling the ProCharger higher than the "max" level on the dipstick will lead to bearing and/or seal damage.** The SC ProChargers are sealed units and normally will not require the addition of oil between service intervals. If excessive consumption is noted, the unit should be sent to ATI for inspection/repair. Disassembly of the supercharger will void your warranty.

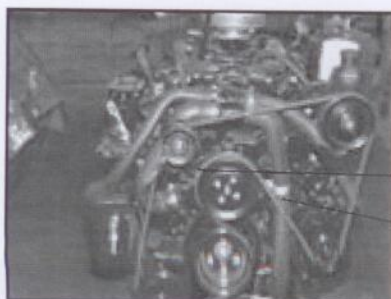
- **GENERAL**

When removing the dipstick, be sure to retain the nylon washer. A spare washer is provided with each box of SC oil (a box is included with each system). Do not remove or replace either the nylon washer on the dipstick, or the rubber o-ring on the drain plug with anything other than ATI supplied replacements. **Evidence of either case may void factory warranty.** A discoloration of the oil and residue on the drain plug will be noticed during initial oil changes. This is no cause for concern and will eventually diminish. The serial tag on your SC ProCharger must be pointing upwards for proper orientation. Installing the supercharger in another orientation will result in inadequate oiling and supercharger failure. If you have any questions about the maintenance of your SC ProCharger they should be directed to an ATI service technician or dealer.



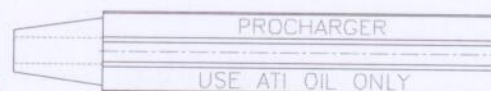
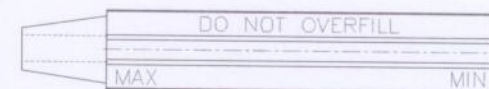
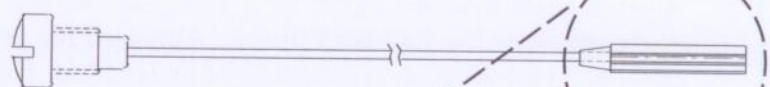
SEALED PLUG
(SOCKET HEAD)

MAGNETIC
DRAIN PLUG
(HEX HEAD)



SEALED PLUG
(SOCKET HEAD)

DIPSTICK
(FLAT HEAD)





F. INSTALLATION REVIEW AND SAFETY CHECK

1. Carefully review the entire installation, checking oil and fuel lines near moving parts and the exhaust system to ensure that these lines are safe, secure and not twisted or kinked. All wires and hoses should be firmly secured with clamps or wire ties. Also, confirm that the inlet screen is installed firmly secured to the ProCharger.
2. Check all fluid levels. Your tank should be filled with **91 octane** or higher fuel before hard running. **For SC ProCharger models, you must add oil to the supercharger before operation.**
3. Start engine and idle for a few minutes. You should be running stock Mercruiser timing. Check and adjust if necessary.
4. Shut off engine and check for fluid leakage, signs of rubbing parts, and other potential problems
5. Your motor should display a significant increase in performance when you are hard into the throttle, with no detonation. If this is not so, review your installation, then contact your dealer or ATI for assistance. Mercruiser EFI engines run slightly rich by design to provide maximum reliability.
6. For best performance and reliability, **always use premium grade fuel (91 octane or higher)** and listen for signs of detonation. Back off throttle should detonation occur. With a properly installed ProCharger and appropriate timing, detonation should not be an issue.
7. Never race your engine (and ProCharger) when the engine is cold. Allow water temperature to climb into operating range before revving above 2,500 rpm.
8. Be sure you have purchased and properly installed a fuel pressure gauge and/or fuel/air ratio meter to monitor fuel delivery. Installation of a boost pressure gauge is also recommended. The fuel pressure gauge should be plumbed into the ATI fuel pressure regulator (one of the ports is already reduced to 1/8" fpt for installation of a fuel pressure gauge). A boost gauge can be plumbed (tee'd) into any port on the intake runners.
9. **After the system is installed, fuel pressure at idle should be checked.** The idle fuel pressure should be 27-32 psi. Under full boost conditions (5-6 psi) fuel pressure should increase to 55-60 psi. Fuel pressure can be adjusted by tuning the regulator. Regulator tuning is accomplished by loosening the jam nut on the regulator with a 3/4" open end wrench, and then using a 1/4" allen wrench to adjust fuel pressure. Clockwise raises fuel pressure; counterclockwise reduces pressure. Remember that leaning the fuel pressure will increase HP but can create an extremely dangerous lean condition. **Be careful and ensure that you always maintain adequate fuel pressure!** Contact ATI for special applications requiring regulator modifications for higher rates of gain.
10. Mercruiser EFI/MPI rev limiters cut off fuel to limit rpm, which can cause a dangerous lean condition. Ensure that boat is propped so that maximum rpm is below factory rev limiter. **Repeatedly "bumping"/riding rev limiter can result in serious engine damage.**
11. It is very important that all fuel lines are sized according to the supercharged horsepower rating of the engine. This includes the anti-siphon valve, fuel filters, etc. . Please contact an ATI service technician if you have any questions.
12. Review the maintenance and warranty sections within this owner's manual.



G. TUNING

Fuel Pressure

On a fuel injected motor, adequate fuel pressure is the key factor in maintaining the correct fuel-air ratio. When supercharging a fuel injected motor, extra fuel beyond that supplied by the Mercruiser computer and fuel system is required, due to the additional oxygen present in the cylinder. This extra fuel is provided by increasing the fuel pressure when under boost. After the system is installed, fuel pressure should be checked. Refer to section F. for fuel pressure specifications and adjustments. It is extremely important to check the pressure as the motor may run seemingly fine, but due to insufficient pressure is running dangerously lean. Fuel pressure can be increased or decreased by adjusting the regulator. If your engine is not completely stock, check with ATI for fuel pressure recommendations prior to operation.

Timing

All motors may require subtly different timing for best tuning. However, as most motors are close to the same, we can give general guidelines. Most medium sized V Hulls, twin engine applications, and generally boats with 1.50 gear ratios or more (lower) that are able to plane with relative ease in a tall propped, high speed setup, will generally not need as much initial timing. Dyno results have shown that most moderate compression GM V-8's, such as Mercruiser types will not show significant variances in peak HP if total timing is between 29-32°. However, in the previously mentioned boat types which exhibit good planing & driveability characteristics, backing the timing down from the 8° Initial (not total) Merc. Stock setting can provide some additional margin for error in the event the boat is operated with insufficient octane fuel and/or other abuses. Large single engine boats, high speed tunnel cats, and other high performance and/or 1.36 geared boats may benefit from the more advanced Merc. total 8° specification, since this will essentially increase on-plane torque due to non-aggressive low RPM tuning. Although this aggressive timing will not allow as great a margin of error at WOT, this should not pose a problem, due to the fact that these high performance applications are only capable of short bursts of full throttle operation due to water speed and general safety conditions. Obviously, the manner in which the desired timing is set will ultimately influence the final jetting or fuel pressure.

Plugs

As to reading the plugs, the following information should help identify what to look for: What we want to focus on is the threads. The threads are directly connected to the cylinder, and so when the plug is removed, essentially part of the combustion chamber is removed. On almost all cases the appearance of the top of the plug threads is also what the chamber and pistons look like. We want the threads and the chamber to be blackened with soot deposits. This indicates a rich supercharged condition and therefore will see cooler exhaust temperatures. The ground strap should be clean and show no signs of blue discoloration. The electrode should be clean and white; this indicates good combustion. The following are signs of problems: If the negative ground is discolored, it indicates high temperatures. If the electrode is fuel soaked or black this indicates a misfire or fouled plug condition. If any of the 1st thread is not completely black, there is not enough fuel in the cylinder. Even if only a small part of the thread's circumference is clean, this condition may produce excellent power, but will likely produce excessive (unsafe) cylinder temperatures.

Note: ATI recommends AC Delco MR43LTS6 spark plugs or their equivalents.

OPERATION AND MAINTENANCE

- **COLD STARTING**

Never race your engine (and ProCharger) when your engine is cold. Allow the water temperature to climb into operating range before revving above 2,500 rpm.

- **FUEL QUALITY**

For best performance and reliability, **always use at least 89 octane fuel (91 octane with 7 psi)**. Always listen for signs of detonation after refueling, and after replacement or modification of any fuel system components. Back off of the throttle if detonation should occur. With a properly installed ProCharger intercooled supercharger system, detonation should not be an issue

- **IGNITION SYSTEM MAINTENANCE**

If your spark plugs are more than two years old or have more than 100 hours use, you should change your plugs before operating your boat under load. Additionally, spark plug wires should be changed every 200 hours of use, or whenever resistance exceeds factory specifications.

- **AIR INLET**

Your motor and ProCharger should never be run without an air inlet screen, failure to do so could result in serious personal injury!

- **BELT TENSIONING AND REPLACEMENT**

The belt which turns your ProCharger will stretch after initial run-in, and may need retightening after the first few hours, if not sooner. After possibly one more tightening of the belt with the tensioner, further stretching should not occur. Tighten the belt sufficiently to avoid slippage, but do not overtighten, as this could cause damage to the ProCharger's precision bearings. Should you throw a belt and find that it needs constant retightening, the belt is damaged and should be replaced. 8-rib belts can be bought from ATI or your local parts store. Gates Micro-V belts are recommended; these belts are available at CarQuest™, NAPA™ and other auto parts stores. Your nearest CarQuest store can be found by dialing 800-492-7278, the nearest NAPA store at 800-538-6272.

- **IMPELLER SPEED**

Maximum impeller speed should not exceed the 57,00 RPM redline stated for the M-1SCB ProCharger. Maximum impeller speed = crankshaft pulley diameter (N1) divided by supercharger pulley diameter (N2), multiplied by the step-up ratio stated in the table, multiplied by engine rpm at redline.

$$\text{Impeller RPM} = (N1/N2) \times 4.10 \times \text{engine RPM}$$

If you require technical support please contact us at (913) 338-3086 9:00-5:00 CST, Monday - Friday, or contact technical services via email at techserv@procharger.com

CHECKING YOUR EGT'S AND/OR READING YOUR PLUGS IS EXTREMELY IMPORTANT!

Many activities that are good for you are usually not too enjoyable. Fortunately, when it comes to your marine engine, the simple process of monitoring your exhaust gas temperatures (EGT's) or reading your plugs can save thousands of dollars of unnecessary engine repairs and provide many enjoyable hours of trouble free service.

Monitoring EGT's requires the installation of EGT probes and gauges. If you are not familiar with this process, contact your dealer or an ATI service technician. Reading your plugs is a relatively simple alternative to monitoring EGT's, but is not as precise.

As for reading plugs, we must first start by saying that **when** a plug is read is as important as **what** is observed. If a spark plug is removed & read at the wrong time, not only will a misdiagnosis occur, but in many cases the tuner may actually mistakenly tune the engine in the wrong direction and unintentionally create a lean engine-damaging condition. Therefore, the only real way to read plugs is to remove the spark plugs immediately following a wide open throttle, full power condition. This is done by accelerating the boat at wide open throttle to full operating range for a few seconds, or until it is clear that rapid acceleration has ceased (in most marine engines a good plug reading can be taken from 4500 to 5500 rpm) and then immediately shutting off engine and coasting to a stop. Although many spark plugs may only require less than 60 seconds each to be read & completely reinstalled, this previously described simple process provides a tremendous opportunity to literally take a snapshot of the combustion process and what is happening inside the engine.

If a hundred engine builders were asked to estimate what it would require to properly tune your engine there may be a hundred different answers since no two engines are exactly alike. It is called the cumulative tolerances theorem, a half a percent difference in total valve lift, a slight variance in piston ring gap, a small amount of unremoved casting flashing in a cooling passageway, and hundreds of other minute differences can lead to identical engines requiring some differences in fuel pressure to produce proper and uniform combustion. To properly read a spark plug we must first have the correct spark plug. Most Champion, AC & other GM spark plugs are easy to read; however, many Ford Motorcraft are black in color & therefore difficult to read. It is suggested for best results that a brand new set of spark plugs be installed before any attempts to gather information. Let us remind you the following tuning tips are based on unleaded pump gas operations in the stock compression ratio range. Since today's pump fuels register significantly lower octane ratings, and therefore are significantly more susceptible to engine knock or ping, than yesterdays high octane fuels, it is important that some additional fuel be placed in the cylinder - not intended to be burned, but just to act as a cooling medium. This simply means that a richer than "ideal" air fuel ratio is now highly desired for maximum performance on todays pump gas engines. After the system is installed, fuel pressure should be checked. Refer to section H. for specifications and adjustments. It is extremely important to check the fuel pressure as the motor may run seemingly fine, but due to insufficient pressure is running dangerously lean. Remember that leaning the fuel pressure will increase HP but can create an extremely dangerous lean condition. Contact ATI for special applications requiring regulators with higher rates of gain.

THE PROCHARGER® AND PROCHARGER INSTALLATION SYSTEM LIMITED WARRANTY

Accessible Technologies, Inc. ("ATI") is proud to offer a 12 month limited warranty on ProCharger supercharger systems.

ATI's warranty obligations are limited to the terms set below:

ATI warrants the ProCharger and ProCharger installation system (together "product") against defects in materials and workmanship for a period of TWELVE (12) months from the date of original purchase from your local dealer, or date of shipment from the factory if purchased directly from ATI. If the product is used in its intended manner, ATI will repair or replace any component found to be defective at no charge to the customer. **SHOULD THE CONSUMER ELECT TO USE A DRIVEN PULLEY OTHER THAN THE ORIGINAL PULLEY SHIPPED WITH THE SYSTEM, THIS LIMITED WARRANTY IS VOID.** This warranty coverage is extended only to the original consumer purchaser, and excludes hoses, sleeves and electronic support components manufactured by other companies.

To obtain service under this warranty you must do the following during the warranty period:

1. Phone ATI (913-338-3086) and provide us with the following information:
 - ProCharger serial number
 - vehicle year, make, model, engine modifications and other modifications
 - description of perceived problem
2. If no resolution to your problem can be found after the above phone conversation, you will be assigned a warranty claim number. You must then properly ship your product, at your expense, to the ATI factory. The product should be carefully packaged in a rugged box so that none of the components being shipped could strike each other or the side of the box during shipping. The box should be strong enough to safely contain the weight of the components being shipped.
3. Include the following information inside the box with your product:
 - copy of your original invoice or receipt
 - name, address and daytime telephone number
 - warranty claim number
 - vehicle year, make, model, engine modifications and other modifications
 - description of perceived problem
4. Clearly mark the warranty claim number on the top and one side of the box in characters no less than 2" tall. Ship the properly packaged product, prepaid and insured for the retail value of the component(s) being returned, to the following address:
Accessible Technologies, 14801 West 114th Terrace, Lenexa, Kansas 66215.

ATI agrees to honor a warranty claim at its sole discretion and only after inspection by engineers at the ATI factory. No warranty will be honored if any product subassembly is found to have been improperly installed, tampered with, mishandled or misused in any way. **DISASSEMBLY OF THE PROCHARGER OR REMOVAL OF THE PROCHARGER SERIAL PLATE VOIDS ALL WARRANTIES.** Claims for freight damages should be directed to the freight company.

If ATI's limited warranty applies, your product will be repaired or replaced at ATI's option and shipped back to you, freight prepaid, via 2nd day FEDEX service. If the limited warranty does not apply, we will advise you of the specific reason for denial, and advise you of repair expense and time. After advising you of this information we will, at your option, either proceed with repairs or return your product to you in the state in which it was received. In either case the product will be shipped to you COD, insured at replacement value. This means that you would pay the return shipping and insurance charges if ATI's limited warranty does not apply to your product.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, WHETHER ORAL OR WRITTEN, EXPRESSED OR IMPLIED. THE DURATION OF ANY AND ALL WARRANTIES ON THE PRODUCTS DISCUSSED ARE LIMITED TO TWELVE OR THIRTY-SIX MONTHS AS STATED ABOVE. ATI IS NOT RESPONSIBLE IN ANY EVENT FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. No ATI dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

THE PROCHARGER SC EXTENDED COVERAGE PROGRAM

DESCRIPTION

- The ProCharger Extended Coverage Program extends the warranty coverage for your M-1SCB ProCharger an additional TWENTY-FOUR (24) months, for a total of thirty-six months. This extended coverage applies to parts and labor for the ProCharger centrifugal supercharger unit only, and does not include other system components.
- Under the extended coverage program, ATI will repair or replace any component within the ProCharger which is found to be defective.
- Service under the extended coverage program is obtained through the same process as described in The ProCharger Twelve Month Limited Warranty.

QUALIFICATION

- Only the original consumer purchaser of the ProCharger is eligible, so long as this purchaser qualifies under the terms described below.
- Completion of the Extended Coverage Registration Form is required, along with a \$49 registration fee. In return for the \$49 registration fee, your system record will be updated to reflect the extended warranty and you will receive (6) additional bottles of ATI SC oil. This form must be completed in its entirety, and must be submitted along with payment within 30 days from the date of original purchase from your local dealer, or date of shipment from the factory if purchased directly from ATI.
- **PARTICIPANTS MUST HAVE ORDERED THE PROCHARGER WITH AN 8 RIB DRIVE SYSTEM WITH THE 5 PSI (OR LESS) PULLEY**, and must agree to maintain this original pulley, and not remove this pulley or disassemble or modify the ProCharger unit in any manner. With respect to the ProCharger itself, all terms and conditions within the ProCharger Twelve-Month Limited Warranty apply. Tampering with the driven pulley and any other modification of the ProCharger unit will disqualify an owner from participating in the Extended Coverage Program. Acts resulting in disqualification include but are not limited to the following:
 - Removal or attempted removal of the ProCharger driven pulley
 - Removal or attempted removal of the ProCharger serial plate
 - Removal or attempted removal of the compressor housing or transmission case
- **PARTICIPANTS MUST AGREE TO PROPERLY MAINTAIN THE PROCHARGER, AND PROVIDE PROOF OF COMPLIANCE WITH THE FOLLOWING REQUIRED MAINTENANCE:**
 - Only ATI supplied oil must be used in the ProCharger.
 - ProCharger oil level must always remain within the specified limits.
 - ProCharger oil change every 100 hours using the ATI supplied oil. (After initial oil change at 15 hours)
 - See special notes on SC applications page.

PROCHARGER® SC EXTENDED COVERAGE PROGRAM REGISTRATION FORM

(MUST BE RETURNED WITHIN 30 DAYS OF PURCHASE WITH \$49 CHECK)

Name: _____

Date of Purchase: _____

Address: _____

Purchased From: _____

City: _____

ProCharger Serial #: _____

State: _____ Zip: _____

Boat Year: _____

Daytime Phone: _____

Boat Make: _____

Evening Phone: _____

Boat Model: _____

Which information sources most influenced your decision to purchase a ProCharger system? Please rank in order of importance (1 = most important, 2 = second most important, etc.).

- ___ Magazine advertising
- ___ Dealer recommendation
- ___ ProCharger Brochures
- ___ Witnessed performance on a car
- ___ Test drive
- ___ Magazine editorials
- ___ Friends
- ___ Conversations with ATI technicians
- ___ Web Site (please specify) _____
- ___ Other (please specify) _____

What magazines do you read?

- Boating
- Family & Performance Boating
- Hot Boat
- Power & MotorYacht
- PowerBoat
- Sport Truck
- Street Truck
- Trailer Boats
- Truckin'
- Truck Trends

What issues most influenced your decision to purchase a ProCharger system? Please rank the following issues in order of importance.

- ___ Reliability
- ___ Standard warranty
- ___ Extended coverage warranty
- ___ Performance
- ___ Quiet operation
- ___ Removability (ability to return car to stock)
- ___ Cost
- ___ Ease of installation

(Optional)
Age 18 - 24 25 - 34 35 - 44
 45 - 54 55 and up

(Optional)
Income \$15,000 - \$29,000 \$30,000 - \$44,000
 \$45,000 - \$69,000 \$70,000 - \$99,000
 \$100,000 and up

Who installed your ProCharger system? Dealer Self Other

Have you owned a forced induction system previously? Yes No

Supercharger: Brand(s) _____ Vehicle(s) _____
Turbocharger: Brand(s) _____ Vehicle(s) _____

I have read and understand the terms and qualifications for the ProCharger Extended Coverage Program. I have not modified my ProCharger in any way and will not during my participation in the extended coverage program. I have read and answered all questions on this form. I have also enclosed my check for \$49, payable to ATI, for enrolling my ProCharger (serial # indicated above) in the extended coverage program for an additional 24 months beyond the standard limited warranty period of 12 months.

Signature: _____ Date: _____

Please mail completed registration form to ATI at: 14801 West 114th Terrace, Lenexa, KS 66215.

If you have any questions, please contact us at (913) 338-3086 9:00-5:00 CST, Monday - Friday

Or, contact technical services via email at techserv@procharger.com

cut along dotted line

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