



## WEIAND SUPERCHARGER INSTALLATION INSTRUCTIONS PART A

This set of instruction sheets applies to all WEIAND small block and big block Chevrolet supercharger installations. Note that throughout these instructions, there may be sections that only apply to certain supercharger models or certain engines. These sections will be clearly marked. If they do not apply to your particular installation, skip over them. Please carefully read through these instructions before you begin an installation. (For Marine applications, see Part B). You may find that you'll need certain additional parts to complete your installation, and it will make your job easier if you have all of these parts before you begin. Additionally, we suggest that you read the Weiland Supercharger Technical Manual before you begin. It will alert you to certain aspects of the installation that will make your finished installation as successful as possible. Should you need information or parts assistance, please do not return the unit to the store without first contacting Technical Service at 1-270-781-9741, Monday-Friday, 7 a.m. to 5 p.m. CST. Please have the part number on hand of the product you purchased when you call.

### PARTS SUPPLIED IN KIT

1. Supercharger assembly
2. Intake manifold
3. Drive Belt
4. Upper & lower drive pulley
5. Drive belt idler assembly
6. Stud kit or bolt kit (Supercharger to Intake manifold)
7. Gaskets  
Supercharger to Manifold  
Carburetor adapter to supercharger (671-871)
8. Hardware pack

### ADDITIONAL PARTS THAT MAY BE REQUIRED

1. Intake manifold gasket set  
Fel-Pro #1256 for small block Chevy  
Fel-Pro #1275 for big block Chevy w/ rectangular ports  
Fel-Pro #1251 Trim-to-fit for big block Chevy w/ oval ports
2. Valve cover gasket set
3. Thermostat housing gasket
4. Distributor to manifold gasket
5. 1/2"-NPT pipe plugs (2) required
6. Hi-temp non-hardening gasket sealer
7. Hi-temp silicone sealant
8. PTFE tape
9. Carburetor linkage kits
10. Thread locking compound

### SUGGESTED TOOL LIST

1. Socket wrench set with ratchet & extension
2. Box or open end wrenches 3/8" to 1"
3. Ignition wrench set
4. Torque wrench (lb./ft.)
5. Screwdrivers, standard & Phillips, various lengths
6. Gasket scraper
7. Flare-nut wrenches
8. Pliers, standard & needle nose
9. Drain pan
10. 3/8"-16 tap (for cleaning intake manifold threads in head)
11. Straight-edge
12. Allen wrench set to 3/8"
13. Timing light
14. Oil pressure gauge

### PLEASE READ THE FOLLOWING CAREFULLY BEFORE STARTING INSTALLATION:

These instructions cover the following Weiland Supercharger kits:

Application	Weiland Supercharger Kit Sizes
Small Block Chevy	177, 671-871
Big Block Chevy	177, 671-871

### DISASSEMBLY AND PREPARATION

#### STEP 1

Disconnect the battery. Drain the radiator and cooling system. Make sure the block is drained, as you will be removing the intake manifold. It may make the installation easier if you remove the radiator and fan shroud to gain better access. Remove the upper radiator hose from the thermostat housing. Remove the thermostat housing making note of the direction the outlet is pointing. If you are going to reuse the thermostat housing, make sure there is no leftover gasket material on the housing. Old gasket material can cause leaks. Remove the thermostat from the manifold. Disconnect the heater hoses (if present) from the manifold.

- a) Carefully remove the heater hoses from the manifold, as these are to be reused.
- b) It is usually a good idea to use new fittings and clamps.

#### STEP 2

Mark which ignition wire goes to which distributor cap terminal. Disconnect the ignition wires from the distributor cap. Disconnect the distributor primary wire or the plug for the HEI distributor.

Note the position of the distributor rotor to the distributor body and of the distributor body to the engine. You may want to place a mark on the distributor for reference. This will make reinstallation of the distributor much easier. Remove the distributor from the engine. Remove the ignition coil from the stock intake manifold, if so equipped.

#### STEP 3

Loosen and, if necessary, remove the accessory belts. Remove the A/C compressor, alternator, and other brackets and hardware from the intake manifold.

#### STEP 4

Remove the throttle linkage from the carburetor. Note how the linkage attaches. You may need to fabricate a new throttle linkage, depending upon your linkage configuration, or you may elect to use a Weiand linkage kit. If the vehicle is equipped with a cable type linkage, you may simply need a longer cable. Disconnect and remove the transmission kickdown and throttle pressure control linkage. If your vehicle is equipped with a 700-R4 transmission, note the distance between the carburetor throttle lever and the cable brackets, as this distance will need to be duplicated after the supercharger is installed. If the geometry of the throttle pressure linkage is improper, the transmission will not shift properly or may slip and overheat. Remove all old gasket material from the bottom of the existing carburetor, if it is to be reused. Set the carburetor aside and protect it from dirt and debris.

#### STEP 5

Remove the bolts that retain the stock intake manifold to the cylinder heads. There are 12 bolts on the small block and 16 bolts on the big block. (Note: You will only be reinstalling 12 bolts on the big block Chevy 177). You may find that removing one or both of the valve covers aids in the manifold installation.

**NOTE:** Valve cover gaskets are not included in the WEIAND supercharger kits.

Insert a screwdriver beneath the front or rear of the manifold to pry it away from the engine. AVOID damaging the sealing surface of the cylinder heads or block. AVOID getting water in the lifter valley of the engine.

#### STEP 6

After removing the manifold, remove any debris that may have fallen into the lifter valley. Insert clean rags into the intake ports and lifter valley to catch the gasket scrapings that may fall as you clean the cylinder head and block to manifold sealing surfaces. Use a 3/8"-16 tap to clean the manifold bolt holes in the cylinder heads. This provides for a better torque reading when installing the manifold bolts. Unless you are using new intake manifold bolts, be sure to clean the threads on the stock bolts.

#### STEP 7

Remove the three stock bolts holding the lower pulley on the harmonic damper. Remove the large center bolt and thick washer from the damper. **Do not remove the damper.**

#### Pro-Street 177:

Clean the stock stamped steel pulley's front surface, so that the supercharger drive pulley fits squarely. The WEIAND supercharger drive pulley must be installed flush against the stock V-belt drive pulley. Test fit the WEIAND pulley to the stock V-belt pulley. The small pilot on the rear of the WEIAND pulley should fit snugly into the center of the stock pulley. Some vehicles, particularly light trucks, use a cast iron pulley with a thicker center section and insufficient room for the supercharger pulley to fit inside. This pulley must be replaced with a similar stamped steel pulley, available at most wrecking yards or Chevrolet dealers.

**CAUTION: IF THE WEIAND SUPERCHARGER DRIVE PULLEY DOES NOT FIT SQUARELY AGAINST THE STOCK LOWER PULLEY, THE PULLEY WILL APPEAR TO WOBBLE ON THE CRANKSHAFT WHEN TURNED AND THE DRIVE SYSTEM WILL THROW DRIVE BELTS.**

#### STEP 8

#### Pro-Street 177:

Align the holes and place the V-belt pulley and the blower drive pulley assembly on the damper. Install the supplied crank bolt (7/16"-20 x 4" on the small block, 1/2"-20 x 4" on the big block) with the supplied thick washer into the center of the crankshaft. **Do not use the thick factory washer on the center bolt.** Install the supplied three 3/8" bolts and 3/8" flat washers and tighten them finger tight. Torque the supplied 7/16" center bolt to 60 lb./ft. Torque the 1/2" bolt to 80 lb./ft. Torque the three 3/8" bolts to 30 lb./ft.

#### WEIAND 671-871:

Install the supplied locating pilot for the V-belt accessory drive pulley using the bolt and washer provided. This bolt is threaded into the end of the crankshaft. Do not use the thick factory washer on the center bolt. Torque center bolt to 80 lb./ft. for the BBC – 60 lb./ft. for SBC.

Install the V-belt accessory drive pulley to the damper using the bolts provided. Torque to 20 lb./ft. Use blue Loctite®.

Install the WEIAND lower blower drive pulley to this assembly using the six bolts provided. Torque to 20 lb./ft. Use blue Loctite®.

#### STEP 9

The WEIAND Supercharger intake manifold should be thoroughly washed prior to installation. Be sure to remove any foreign matter, such as chips, dirt, polishing, dust, or packing material from both the intake runners and the exterior of the manifold.

#### Pro-Street 177:

**NOTE:** It is necessary to drill and tap the hole in the manifold for a boost gauge, if desired, before installing the manifold on the engine.

#### STEP 10

WEIAND does not include intake manifold gaskets in the kit, but recommends that you use a Fel-Pro intake manifold gasket set as follows:

Big Block Rectangular Port: #1275

Big Block Oval Port: #1251 Trim-to-fit

Small Block: #1256

The above gasket recommendations are for stock ports. If the ports in your heads and/or manifold have been enlarged, consult the Fel-Pro catalog or your engine builder for the correct gasket. WEIAND recommends these gaskets because of their exceptional sealing quality with aluminum manifolds.

Install the port gaskets per gasket kit instructions. **Do not use cork or rubber end gaskets.** Use a bead of silicone sealer both front and rear. Place the manifold on the engine, using a brass dowel or large Phillips screwdriver to align the bolt holes. DO NOT displace the gaskets when moving the manifold and do not damage the threads in the cylinder head. Install all the intake manifold bolts. Only hand-tighten at this time.

If the valve covers were removed earlier, you may reinstall them at this time. Fit-check valve covers before torquing manifold. Following the proper tightening sequence, as shown in a typical shop manual; torque the intake manifold bolts in two steps. First torque all bolts to 15 lb./ft. Then torque the intake manifold bolts to 30 lb./ft. It is advisable to use new gaskets to prevent any leakage.

Install the thermostat into the intake manifold. Make sure that the thermostat is pointing in the correct direction. If the thermostat is installed upside down, overheating will result. For most early applications, you can reuse the stock thermostat housing.

Install the thermostat housing on the manifold using a new gasket and stock bolts. Torque bolts to 15 lb./ft.

#### STEP 11

All WEIAND superchargers come equipped with the drive pulley best suited to produce a boost pressure of approximately 5 to 7 psi for most basic factory stock engines. See charts on page 6 for optional drive pulleys.

In order to remove the installed blower pulley or to install an upper pulley on the blower, remove the shipping cover from the top of the blower and insert a clean rag between the rotors. This will gently jam the rotors to allow removal or installation of the pulley bolt and washer from the front of the supercharger input shaft on the Pro-Street blowers.

On the 177, slide the pulley forward off the shaft. Slide the new pulley on the drive shaft. Be sure to keep the 3/16" key on the shaft when installing the new pulley. **Do not use a hammer to install the pulley on the shaft.** Place a drop of thread adhesive,

such as Loctite, on the pulley retaining bolt threads. Reinstall the pulley retaining bolt with washer into the drive shaft. Tighten this bolt to 30 lb./ft.

#### **Pro-Street 177:**

Install the supercharger to intake manifold mounting studs into the manifold. There are six 5/16" x 1-1/2" for the 177, eight 5/16" x 1-3/4" for the 256. Tighten to 10-12 lb./ft. NOTE: If you are using a WEIAND linkage kit, install the two extra long studs supplied with the linkage in place of the studs that came with your supercharger kit. See "Linkage Instructions" for location of these studs. Place the supercharger to manifold gasket (O-ring on the 256) on the manifold. The gasket or O-ring can be coated with talcum or baby powder to prevent sticking to manifold or supercharger. **Do not use any type of gasket sealant, as this will void your warranty.** If you have not already done so, remove the tape from the bottom of the supercharger. **Clean off any tape residue with solvent.** DO NOT let any foreign matter, dirt, or debris into the rotor housing, as this will cause **severe damage** to the rotors and housing. Set the supercharger on the manifold. Install the six or eight supercharger hold-down nuts (and WEIAND linkage bracket, if applicable) and tighten in sequence to **8-10 lb./ft.** using a criss-cross pattern.

#### **IMPORTANT NOTE FOR ALL WEIAND SUPERCHARGERS:**

While you are tightening the supercharger to the manifold, turn the supercharger driven pulley (which is the pulley attached to the supercharger) to make sure the supercharger does not bind up. Supercharger bind is caused by the blower case distorting when it is **OVER-TORQUED**. If the supercharger does bind, loosen the bolts or studs and retorqued, following the same procedure.

#### **IMPORTANT:**

**On the 177,** use the supplied feeler gauges to determine any changes in running clearances after you tighten down the supercharger. The proper way to check these clearances is as follows:

The two feeler gauges supplied in the kit represent the minimum clearance between the rotor and the case at the top. This clearance is preset at the factory. If the supercharger is **over-torqued** on the manifold, variation can occur, causing rotor to case interference (binding). If **under-torqued**, vacuum and boost leakage can result.

If you have not already done so, remove the tape covering from the top of the supercharger. Clean the surface of the supercharger so there is no excess glue.

Bringing the two feeler gauges together (.004" and .008"), insert the .012" combined feeler gauges into the supercharger no more than 1/2" past the edge of the opening. Check the rotor to case clearance all along both of the upper edges of the case, from front to back, making sure there is no bind along that edge. If the rotor binds against the feeler gauges, the supercharger should be loosened from the manifold, rechecked, and slowly retorqued, repeating the above step.

#### **STEP 12**

Install the air conditioning and alternator brackets on the manifold.

#### **Pro-Street 177 for Small Block Chevy:**

Use the stock accessory brackets. There are two similar, but distinctly different alternator brackets used on most long water pump applications. The WEIAND Pro-Street supercharger manifold will not accept the longer of the two brackets. The shorter bracket is available through most wrecking yards or from your Chevy dealer and is required on all long water pump applications. Note that the mounting bracket that bolts to one of the thermostat housing bolts will not work with this supercharger.

#### **Pro-Street 177 for Big Block Chevy:**

Check if any of your stock brackets will work. If not, you will have to use aftermarket accessory brackets that are available from a number of manufacturers. One company that offers a wide variety of accessory brackets specifically designed to work with WEIAND superchargers is Street & Performance (501-394-5711).

#### **STEP 13**

#### **Pro-Street 177:**

Install and tighten the accessory belts. Slip the WEIAND supercharger drive belt around the lower (drive) pulley and fan.

Pull the idler/tensioner arm down using a 3/4" box or socket wrench on the idler pulley nut. Slip the belt around the idler pulley and upper (driven) pulley, then release the tensioner arm. The supercharger drive belt now has the correct tension. Make sure the belt is aligned in the grooves of each pulley and is not touching or rubbing on any of the accessories or stock pulleys. In rare instances, some vehicles may require a smaller diameter water pump pulley to avoid interfering with the path of the supercharger belt.

#### **STEP 14**

Some installations may require a short fan spacer (available at most auto parts stores) that allows the fan to clear the supercharger drive belt. The supercharger belt should be 3/8 to 1/2" away from the fan. The fan should not be placed any closer than 3/8" from the radiator. We recommend using the original clutch fan, but there are several quality aftermarket flexible blade fans that are suitable. If there isn't enough room between the supercharger drive belt and the fan, and space is available in front of the radiator, an electric cooling fan mounted in front of the radiator may be an alternate solution.

Install the radiator, hoses, and coolant. Follow the coolant manufacturer's instructions to determine the proper water and antifreeze mix. Proper cooling is essential on a supercharged application. Every effort must be made to make the cooling system as efficient as possible; this includes the use of a fan shroud. If your vehicle comes equipped with a fan shroud from the factory, you should retain it.

#### **STEP 15**

Install the distributor. Be sure to use a new distributor gasket. Make sure the distributor sits all the way down on the manifold. Use the stock distributor hold down assembly. Install the distributor housing and rotor to the position noted prior to removal. Reconnect the spark plug wires in the order removed or refer to the factory service manual for correct firing order. Install the coil on the WEIAND manifold. The stock coil bracket will fit the WEIAND manifold in most applications.

#### **STEP 16**

Install the desired carburetor gasket on the supercharger. If you wish to use a Quadrajet or other spreadbore type carburetor, clearance between the large, secondary throttle blades and the supercharger housing will have to be checked (some spreadbore carburetors have larger secondary throttle blades than others). Using the gasket supplied, place the carburetor on the supercharger and open the secondary throttle blades fully. If the throttle blades hit the case, a carburetor base gasket of 1/8" thickness or more will have to be used. Holley carburetors using the 50cc REO accelerator pump may require using at least two regulator carburetor base gaskets, so the accelerator pump actuating arm will not hit the supercharger case. Make sure the carburetor throttle blades and linkage do not bind against anything or become jammed. Partial throttle will result in partial performance. A throttle jammed open can be an extremely dangerous condition.

#### **STEP 17**

Install the throttle linkage to the carburetor. Some later model applications may be able to use the stock type throttle cable or a similar longer cable. Rod and lever linkages may require a little modification to the carburetor lever and some linkage components to make the throttle lever work properly.

#### **REMEMBER: FULL THROTTLE IS ESSENTIAL FOR MAXIMUM PERFORMANCE.**

If you have an automatic transmission with a mechanical or electric kickdown, be sure that the kickdown is adjusted properly. The 700-R4 has a throttle pressure cable. This MUST be installed and adjusted properly or the transmission will slip under load and shift

erratically, possibly causing transmission overheating and failure. In addition, the throttle pressure cable must allow for full throttle movement or full throttle performance will be impaired. Note that very minor adjustments in this cable can make a huge difference in transmission performance. In all cases, refer to the factory service manual for proper adjustment procedure.

Install a longer fuel line to the carburetor. WEIAND recommends using a high flow in-line filter. Remove any screen type filter in the carburetor. **Minimum fuel pressure of 5 psig** is necessary at wide-open throttle.

Make sure the fuel line is well away from hot exhaust components or sharp edges. Use only an approved fuel line.

Connect the power brake vacuum line to the CARBURETOR BASE. **DO NOT** use a T-fitting to connect the power brake booster line to the same carburetor fitting as the PCV valve. This can lead to a low vacuum condition in the brake booster reservoir and may cause the brakes to need unnecessary pedal effort.

**DO NOT** connect the brake booster vacuum line to the intake manifold.

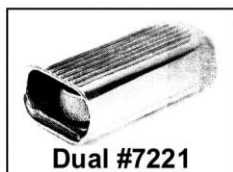
#### STEP 18

Install the desired air cleaner. Some stock air cleaners require a preheat tube from the exhaust to the inlet of the air cleaner housing. This tube permits faster warm-up. The supercharger's rotors provide good atomization of the fuel as it passes through the blower, meaning the choke and preheat tube may not be as functionally critical on a supercharged application. Make sure the air cleaner lid is not restricting the air flow into the carburetor opening. The lid should be at least 1" higher than the choke tower of the carburetor.

You should use as large an air cleaner as possible. Too small an air cleaner can result in poor performance due to insufficient flow capacity or by causing a full throttle restriction. Check out WEIAND's full line catalog for a complete listing of high performance air cleaners.

**DO NOT** drive the vehicle without an air cleaner. Foreign particles entering the supercharger will cause **severe damage** to the rotors and housing and **void the warranty**.

**To complete your supercharger installation consider WEIAND's Hiborn or Enderle style polished cast aluminum air scoops featuring a greater frontal area for increased air intake. Air scoops come with WEIAND's exclusive 3" air cleaner(s).  
Hilborn Style**



#### Enderle Style



#### STEP 19

After all the connections and fittings are in place, start the engine. Check carefully for coolant, oil, gasoline, or vacuum leaks. Adjust the idle.

Be sure to set the spark timing using a timing light. Setting the timing "by ear" is imprecise and can cause engine damage due to detonation or pre-ignition.

Do not run more than 34° of total timing. See the Weiland Supercharger Technical Manual for more details on setting the ignition timing.

#### STEP 20

The stock engine idle will not be affected by the installation of the supercharger. Under normal circumstances, there will be some noise generated by the supercharger. Should the noise seem excessive, immediately turn the engine off and investigate. If the noise is noticeable at idle, but goes away as the RPMs increase, this is normal.

#### MAINTENANCE SECTION

The WEIAND Supercharger is designed to provide a substantial increase in performance with a minimum of maintenance. Regular maintenance will provide many miles of trouble-free driving. The most critical aspect of your supercharger is oil level. The level should be checked each time you check the engine oil level. Oil levels on various Weiland blowers can be checked as follows:

#### Pro-Street 177:

The oil level should be in the center of the sight glass of the front cover when the vehicle is parked on a level surface. Oil can be added, if needed, by removing the plug in the top of the front cover.

You also should check the condition of the supercharger drive belt. Turn the belt so you can see the grooves or the teeth. The grooves or teeth should appear slightly rough, but have no missing or excessively worn ribs. The belt should not have oil or dirt on it. Make sure the belt is kept clean. The blower belts supplied in WEIAND Supercharger kits normally will last for extended periods of time before replacement. Belt breakage or failure in street applications is highly unlikely. **Carrying a spare belt normally is not required, because the vehicle will run adequately without a belt.**

#### TIMING AND CARBURETOR RECOMMENDATIONS

The worst enemy of a supercharged engine is detonation. Detonation combined with continued high RPM use can quickly damage a healthy engine. This condition **MUST** be eliminated. Detonation can be caused by overly advanced ignition timing, poor grade/quality of fuel, excessively high compression ratio, cylinder cross-firing, or too much boost relative to the static compression ratio.

We have found that a good starting point for the ignition timing is to run 6 to 10° of initial advance (static timing advance) with about 22 to 24° of mechanical advance in the distributor, for a total of 28 to 34° of advance, which should be all in by 2500 RPM. If uncertain as to what the initial ignition timing should be for a particular engine, set the timing to the lower figure for initial start-up. Once the engine has been started, the timing can then be adjusted for optimum performance. With too much advance, detonation may occur, which could lead to engine damage. If the ignition timing is set too retarded, the engine will tend to run hot, feel unresponsive, and use an excessive amount of fuel. Dwell should be set to factory specifications.

The correct carburetor for the engine is also dependent on a variety of conditions. We have had very good results with 750 to 850 CFM vacuum secondary carburetors. These carburetors are large enough to adequately feed the majority of supercharged installations and are versatile enough to adapt to most smaller engines. In any case, we recommend that you use a vacuum secondary carburetor for street applications. Here are some recommendations for street engines:

Supercharger	Engine	Carburetor(s) CFM
Pro-Street/Marine 177	Chevy SB 350	650-800
Pro-Street/Marine 177	Chevy BB 454	750-850

Note that larger engines may require larger carburetors. Higher boost setups will also require carburetor sizes at the upper end of the ranges given above.

If you use a mechanical secondary carburetor and your vehicle is equipped with an automatic transmission, you may need to install a higher than stock stall speed torque converter or a numerically high rear end ratio that the engine can respond to sudden full throttle operation, rather than the more gradual secondary carburetor provides.

If your vehicle is equipped with a standard transmission, rapid initial movement may require engaging the clutch at a higher RPM.

**NOTE: REFER TO THE WEIAND SUPERCHARGER TECHNICAL MANUAL FOR ADDITIONAL DETAILS.**

# WEIAND MARINE SUPERCHARGER INSTRUCTIONS PART B

When installing a WEIAND Supercharger (in a marine application), follow the basic installation instructions on the previous pages while incorporating the following unique marine characteristics.

## THERMOSTAT HOUSING

If needed, WEIAND offers P/N 6220 (Satin) & 6221WIN (Polished) that are special Offset Water Outlet Adapters that permit use of the stock Mercruiser thermostat housing, as well as similar aftermarket marine thermostat housings. These adapters often require the use of a spacer (WEIAND P/N 6231WIN).

When using various water outlet adapters, in some instances the stock water hoses will most likely need to be lengthened.

## CRANKSHAFT PULLEY ASSEMBLY

Mercruiser marine engines use two types of crankshaft V-belt pulleys. One is aluminum and one is steel. All of WEIAND's supercharger kits are supplied in two versions: one for the steel pulley and one for the aluminum pulley engine.

If your engine has the steel pulley, follow the instructions in the main part of this booklet.

If your engine uses an aluminum pulley, remove the stock aluminum accessory pulley and replace it with the supplied WEIAND 3V-belt accessory pulley mated to the WEIAND serpentine supercharger drive belt pulley. Loosely install the accessory V-belts and the 3V pulley and serpentine drive pulley using the supplied crankshaft bolt and thick washer into the center of the crankshaft. Then install the three supplied pulley bolts into the harmonic damper. Torque the center crankshaft bolt to 60 lb/ft. Torque the three pulley bolts to 30 lb/ft. Then adjust the three accessory belts to the proper tension.

## FUEL AND IGNITION SYSTEMS

Follow the carburetor size recommendations given in these instructions and also in the Weiland Supercharger Technical Manual. Since most pleasure marine applications are usually operated at RPMs below 5500, you can usually choose your carburetor from the low end of the recommended size range. Additionally, if your application calls for a Coast Guard approved carburetor and spark arrestor style air cleaner, make sure that you use Coast Guard certified products.

To avoid engine damage, your carburetor **must** be modified for marine use. We strongly recommend that you either have your carbs modified by, or purchase carbs from, a marine specialist who is experienced in supercharged applications. The most important modification is commonly called "boost referencing the power

valve." If you do not have this modification, here is what can happen:

At part throttle planing speed, your engine will be producing some boost, but the carburetor can still have a high amount of vacuum under it. In this condition, this high vacuum signal will not allow the power valve to operate properly and the correct amount of fuel will not be delivered for the boost provided by the blower. A lean condition can result with possible engine damage.

There are a number of carburetor specialists who have experience in supercharged marine applications. If you need help locating someone, please call the WEIAND Technical Service department for recommendations at (270) 781-9741.

We recommend that you utilize some type of detonation alert device to detect any spark knock. We do not recommend the use of a boost retard system. These systems are fine for street vehicle applications where the ignition typically is retarded for short periods of time. In marine use, where the blower is basically in the boost mode all the time, running the ignition constantly retarded under power will cause the engine to run hot and lead to exhaust valve failure.

The stock ignition system on most Mercruiser marine engines is not suitable for use with a blower. Replace the stock V-8 module with one of Mercruiser's V-6 modules that will provide the proper operating advance. We recommend a total of 28° of advance. Contact WEIAND Technical Service at (270) 781-9741 for additional information on marine ignition systems.

Fuel lines should be a minimum of 3/8" I.D. and fuel pump should provide 6 to 7 psi at wide-open throttle. Fuel pressure gauges may be mounted directly on the engine or on the dash using an isolator. Note that insufficient fuel flow is the single biggest contributor to engine failure on supercharged marine engines, so it is very important to make sure that your engine is receiving the proper amount of fuel at wide-open throttle.

It is possible that on certain stock marine installations, the existing fuel pump and fuel lines are inadequate. We recommend an electric pump that is rated at least 130 gph and it should be a Coast Guard approved marine rated pump. Additionally, stock fuel filters or water separators may be overly restrictive and may have to be replaced with units that provide more fuel flow in order to maintain a minimum of 6 psi fuel pressure at wide-open throttle.

If you incorporate a fuel pressure regulator into your fuel system, we recommend that you use a high-flow unit, such as Holley P/N 12-803 for single carb installation or Holley P/N 12-707 for a two carb installation.

Once you have your marine supercharger installed, we strongly recommend on your initial test run that you hook up a fuel pressure gauge where the boat operator or passenger can observe it while the boat is under full power. This could even be a temporary hookup just for test purposes.

When the boat is taken to wide-open throttle, you must maintain a minimum of 6 psi of fuel pressure at the carburetor. If you do not have at least 6 psi, do not continue to operate the boat until the proper fuel pressure is produced.

Inadequate fuel pressure can usually be traced to one or more of the following problems:

1. Fuel pump is too small. (Use 130 gph marine rated pump.)
2. Fuel lines are too small. (Use 1/2" lines and fittings.)
3. Restrictions in the system:
  - A. Water separator (Fram or Mercury Marine high flow units are required.)
  - B. Fuel pressure regulator (use a Holley P/N 12-803 for single carb or Holley P/N 12-707 for dual carbs.)
4. Inadequate vent in fuel tank. (Install a larger vent.)

**NOTE:** It is extremely important that proper fuel pressure is provided to a supercharged marine engine. Otherwise, severe engine damage can occur if the engine is run too lean.

While a 130 gph rated fuel pump is technically much larger than what is required in most applications, experience has shown that this is an area where it is advisable to incorporate a significant safety factor to avoid any fuel supply problems.

#### **PROP CHANGES**

With additional horsepower available from a blown engine, you can typically run a prop with more pitch. Assuming that you had the correct prop on your engine before the blower was installed; you can typically add 1/2" of prop pitch per additional 300 RPM increase achieved with the blower.

Additionally, you may find that performance is improved by going from the three blade prop to a four blade prop. This will reduce the tendency for prop cavitation caused by rapid throttle advancement at low boat speeds.

#### **BLOWER BOOST**

Weiland Pro-Marine supercharger kits can be installed on a stock engine as long as the static compression ratio is 8.5:1 or less. The engine speed should be limited to 5500 RPM. Most stock engines are equipped with cast pistons, cast crankshaft, two bolt main caps, and a small camshaft, requiring you to run very low boost pressure, 2 to 4 lbs. maximum. Higher boost levels **will** cause detonation and engine failure.

You may elect to run a different blower drive ratio than that supplied in your kit. If so, please consult the charts or the Weiland catalog for details on optional pulleys available. Also, be sure to read the section on boost in the Weiland Supercharger Technical Manual.

Note that marine applications should not get too aggressive on boost pressure. Because marine engines essentially are in boost all of the time (compared with street driven vehicles, which only see boost for short periods), it is preferable to keep the maximum amount of boost in the 4 to 7 psi range. If you attempt to run excessive amounts of boost on a marine engine, you may experience problems with burned valves or piston damage.

#### **CONCLUSION**

We recommend that you work with an experienced marine supercharger specialist when installing a WEIAND supercharger on your marine application. It is important to remember that marine installations are quite different from installation on street driven vehicles, since a marine engine is typically under boost 100% of the time, whereas a street driven blown engine is usually under boost for very limited periods. The requirements that the supercharger places on a marine engine are therefore quite different and you will find that working with an experienced marine specialist will provide you with a successful installation.

A properly installed and set up WEIAND supercharged engine can provide substantial performance improvements and still deliver a very high level of reliability.

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**W538**  
**Revision Date: 5-10-16**