# Installation Notes

***Though considerable time and effort has been invested in producing what we believe to be the best superchargers available, carefully reading and following the recommendations outlined in this document will ensure that you are able to maximize the durability and service life of your Centrifugal Specialties supercharger.***


**Best practices for a successful installation:**

- When installing drive hubs or pulleys to the input shaft of your supercharger, use heat to expand the hub, or make use of a damper installation tool to drive the hub onto the supercharger input shaft. A hammer should never be used to drive a hub or pulley onto the input shaft doing so may result in damage to the input shaft support bearings and result in subsequent failure of your supercharger. The same care should also be taken when removing hubs and

pulleys. We also suggest making use of a damper removal tool to remove a drive hub or pulley from your supercharger. In general, we suggest treating input hub/pulley removal and installation with the same care taken when installing or removing the damper from your engine.

- If operating at lower than usual temperatures, be mindful of the effects that this may have on your supercharger. In particular cold weather results in a tighter fit of the supercharger's aluminum transmission case to impeller and input shaft bearings. In general, we suggest a brief supercharger warmup period prior to operation at racing speeds. This will ensure all of the internal clearances are within their intended range and able to provide the most favorable operating conditions for your supercharger.

- If your supercharger installation includes connection of the supercharger to anything other than the engine (intercooler, etc.) we highly recommend the use of dual-seal type connectors or "hump" hoses to prevent the application of external loads to the supercharger. Application of external loads via the compressor housing can result in unintended loading of the supercharger transmission and its high precision bearings.

- Always use a bypass valve of adequate capacity to prevent compressor surge. Note that installation of bypass valves alone is not sufficient. Any installed valves should be configured and adjusted to provide rapid action upon the closing of the throttle. We recommend the use of 3/8" i.d. (-6) hose and fittings. Use of smaller hose sizes may result in a delayed response by the bypass valve. As of the writing of this guide, we suggest the use of Motion Raceworks ICON, ProCharger "Pro Race" or Vortech Engineering BV-57 bypass valves. Note that some installations may require multiple valves to provide adequate protection against compressor surge.

- Use fasteners of appropriate length, and also be sure that you do not leave out any fasteners when securing the compressor to mounting brackets. Use of the appropriate fasteners in all locations will ensure even load distribution on the transmission cover and prevent overload of the individual fasteners and cover bosses.

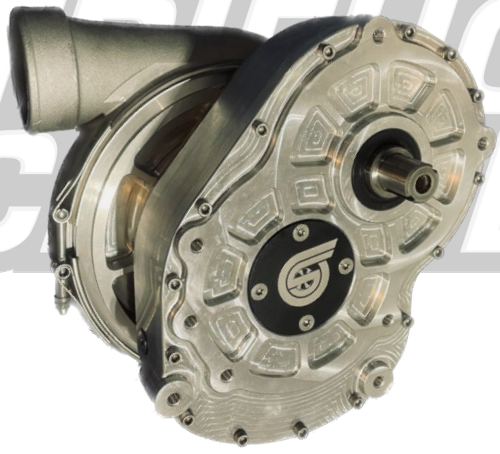
- Prior to operation, fill your supercharger with 12oz of Centrifugal Specialties supercharger oil. Use of oils intended for use with other supercharger brands may result in diminished performance and/or durability.

- Never use motor oil in your Centrifugal Specialties supercharger. The oil provided with your Centrifugal Specialties Supercharger has been specifically formulated for use with gears, ball bearings and operation at the extreme speeds encountered in centrifugal supercharger applications.

- Do not overfill your supercharger's oil level. Centrifugal Specialties superchargers feature high-capacity oil reservoirs and should be filled from empty using the pre-measured 12oz (or 2ea 6oz) bottles of oil provided by Centrifugal Specialties. Overfilling above the intended level will result in unintended oil windage and aeration that may diminish the ability of the oil to provide adequate bearing cooling and lubrication.

- The supercharger's compressor housing may be "re-clocked" by loosening of the v-band clamp securing the compressor housing to the supercharger. Be sure to fully seat the clamp and tighten the retaining nut once the housing has been located in the desired orientation.

- Note that centrifugal specialties superchargers are intended for use in a specific orientation and rotation more than 20° from the desired position may result in diminished performance of the supercharger's gravity assisted internal oiling system.



**Recommendations for successful operation:**

Centrifugal superchargers operate at combined loads and speeds not encountered in other forced induction power-adders. In typical race applications, the

outside diameter of the impeller may be traveling nearly Mach 2, (twice the speed of sound - around 1,500 mph). During a gear change, the speed of the supercharger impeller is abruptly reduced, and this abrupt deceleration produces heavy shock loads in the supercharger's internal gears and bearings as well as other items in the load path of the supercharger. Similar heavy loading also takes place when rev limiters are used to limit engine speeds; these loads become particularly severe during high-rpm burnouts and in the event of transmission input shaft and/or torque converter failures that allow the engine to hit a max rpm limiter that abruptly halts an accelerating supercharger. That said, use of max RPM rev limiters that may produce such loads is necessary to protect your supercharger, drive and engine components from severe overspeed that are capable of resulting in damage to your supercharger, drive and engine.

Compressor surge is another situation capable of producing damaging supercharger loads – while you may have heard the term, you may not be familiar with the actual phenomenon. Compressor surge takes place when a centrifugal compressor (the supercharger in this case) attempts to deliver a greater charge of air than the engine is capable of ingesting. As such the compressor enters a cycle of violent pressure fluctuation and in some cases reversal of airflow within the compressor as pressurized air attempts to travel back to the compressor inlet where lower pressures are present.

Generally speaking, all of the aforementioned scenarios should be avoided when possible. Regarding the use of rev limiters, it is understood that some rev limiter use is inherent in racing applications and Centrifugal Specialties superchargers have been designed with the use of rev-limiters in mind. That said, avoiding the unnecessary use of rev limiters will reduce loads on your Centrifugal Specialties supercharger and can be expected to improve a centrifugal supercharger's longevity.

Regarding the avoidance of surge, this is best accomplished by the use of adequately sized and configured surge/bypass valves. Another scenario where surge may take place is when a car is abruptly pedaled as the throttle is abruptly open and shut, in some case more rapidly than surge/bypass valves may be able to react. As such, remember that a less violent chopping of the throttle when pedaling your car or lifting off at the end of the racetrack will result in less violent loading of your supercharger.

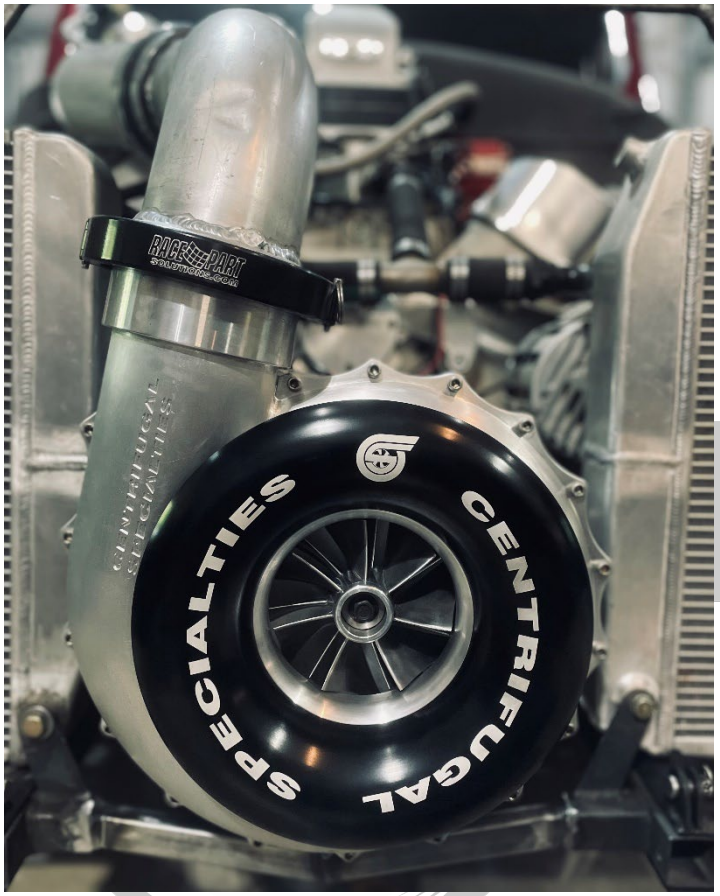
**Supercharger Maintenance**

In general, we recommend the change of supercharger oil following your first track outing or 10 dyno/track pulls. This will allow the removal of any accumulated gear and/or bearing break-in particles inherent to the application. Following the initial break-

in, we suggest that oil be changed every 20-25 passes. That said, it may be possible to extend this interval for less severe applications, while it may prove beneficial to change the oil following every race weekend/event on applications operating nearer to maximum suggested supercharger operating speeds.

**Supercharger Repair:**

Given the number of specialized tools and custom-made components used to build your Centrifugal Specialties supercharger, it is recommended that you send in our supercharger for inspection if you have reason to believe that it may have been damaged or is nearing the end of its usable life. In general, you may find unusually large accumulations of wear particles on your supercharger's magnetic plug or notice an unusual appearance or smell of the oil or detect a difference in the sound of your supercharger. Rather than continuing to operate the supercharger, returning it for inspection and service may allow us to make minor repairs to an otherwise healthy supercharger. Continued operation following the identification of the aforementioned minor issues may result in catastrophic damage to a supercharger that is not repairable.

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Centrifugal Specialties compressor housings are not rated for burst containment – as such, the use of Supercharger safety blankets is necessary for all applications. These safety blankets may be obtained from Stroud Safety: https://stroudsafety.com/ https://stroudsafety.com/procharger-supercharger-containment-blanket/