

Litens Product Guidance

Litens High Performance has and will continue to push the envelope on all our products. We are always available to answer questions and offer advice to anyone that reaches out to our team.

After months of returned product review and market feedback, we felt it necessary to offer guidance on the use of the HellRaiser supercharger pulleys. Improper installation or reinstallation is the cause of 95% of all pulley failures, OEM and HellRaiser products.

Drive dynamics need to be considered anytime a pulley change is performed:

- 1) Belt size and type needs to be taken into consideration and confirmed due to changes in axial load and torque load transfer to pulley and snout
- 2) Blower spacers change the entire geometry of the supercharger drive system. Many hours of engineering and validation have gone into the geometry of the drive assembly system and any change could affect the reliability, operation and functionality of the various components.
Changing the parameters can result in unexpected results including catastrophic failure of the supercharger and/or the drive assembly.
- 3) Overdriven lower pulleys will increase the torque transfer to the upper pulley and snout assembly and ultimately the supercharger itself, some lower pulley assemblies have rubber damping systems, some use a wet clutch assembly, and some have no damping assemblies

The following are drive torque requirements (the amount of torque required to turn the supercharger at 14,500rpm) of the various IHI superchargers

2.4L is 48Nm, 2.7L 54Nm, 3.0L 59Nm, HellRaiser pulleys can sustain 75Nm of torque, over 20% more than the required amount of torque to drive the largest supercharger. Some of the affects of aggressive drive ratios:

- 1) Overspinning the supercharger will result in increased heat and wear on both the supercharger and the snout/drive assembly
- 2) Along with increased heat will come changes in various tolerances in the supercharger and drive assembly which increase drive torque requirements, lessening the efficiency of the supercharger and may cause contact of various internal components

Tuning is another critical consideration, with new tuning techniques and abilities that have come about in the last year, the maximum RPM on the supercharger needs to be respected, as does the engine RPM which is directly proportional to the supercharger RPM.

Please keep in mind that our cars weigh 4,600 pounds and that mass needs to be respected as well.

The below items will increase the torque transfer to the supercharger drive assembly and ultimately the supercharger beyond the superchargers design parameters

- 1) Shift parameters such as shortened shift points
- 2) Increased rev limits
- 3) Engaging the rev limiter (bouncing off of it) continuously
- 4) Sustained WOT pulls at the increased rev limits

We, as racers, take our chances when chasing a quicker number and we need to be aware that with modifications there can be failures and we will break parts on our cars.