PSI HEAVY-DUTY

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PSI Heavy-Duty Technical Standard 56300000B - Engine Rating Guidelines

All PSI Heavy-Duty engines are rated following the standards found in ISO 3046-1:2002 for gross power. When ambient conditions do not meet standard temperature, pressure and humidity the standard provides a set of equations to adjust power to ambient conditions. For turbo CAC engines the equations used for power adjustment take into account ambient temperature, pressure, charge temperature and relative humidity. For NA engine charge temperature is eliminated.

All PSI Heavy-Duty engines carry a rating tolerance of +/-5%.

When gross engine power is used to match an engine to equipment it is important to correct the power for typical engine losses. Because of the complexity of the equations used to calculate ISO power adjustments the approximations are provide for customer's convenience. If power is critical and on the bubble OEM should test complete system to guarantee performance.

Net Power = Gross Power* – Parasitic Losses – Ambient corrections – Induction losses

Net Power is the usable power generated at the flywheel of the engine after all engine parasitic losses and ambient derates are removed. This does not account for OE equipment losses such as electrical losses for generators or hydraulic losses on pump applications.

Parasitic Losses are losses taken off for the accessories required to run and cool the engine under normal conditions and can include battery charging alternator, engine driven water pump and cooling fan.

Ambient corrections are losses taken because PSI Heavy-Duty power ratings are corrected to a standard temperature of 77°F inlet air temperature and an altitude of 1200 feet above sea level. Temperatures and altitudes greater than this standard must be accounted for as follows:

- A derate of -1.5% for every 10°F over 77°F air inlet temperature must be applied.
- A derate of -2.5% for every 1000 feet above 1200 ft above sea level must be applied.

Induction Losses in the engine are caused by excessive restriction on either the intake or exhaust system. Intake losses of up to 6" on the intake side and 3 inches Hg on the exhaust side do not need to be removed from the gross power. Losses greater than this will have to be accounted for in Net power calculations as follows:

- A derate of -4% must be applied for every 3.4kPa (13 in of H_2O) air inlet restriction over 6 inches H_2O.
- A derate of 1% must be applied for every 1 in of Hg increase in exhaust restriction over 3 inches of Hg.

* Gross power assumes that fuel quality meet specifications outlined in 56300002.