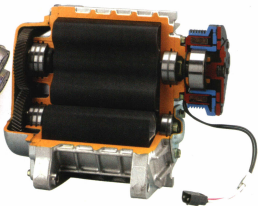


The internal rotor of the Ogura's supercharger series incorporates a roots-type blower that pumps extra air into the engine. This is designed to give the engine increased engine efficiency at both low and high speeds.



OGURA (SUPER)CHARGES INTO MARINE DIESEL MARKETS

Superchargers standard on Volvo Penta KAD43P marine engine; designed to provide higher torque at low speed for better acceleration

BY DAWN M. GESKE

Somers, N.J.-based Ogura Industrial Corp. has expanded its clutch and brake portfolio to include a series of superchargers from its Japanese parent company Ogura Clutch Corp. The superchargers have recently become standard components on Volvo Penta's KAD43P/DP diesel engine.

Adding the supercharger to an engine in marine, vehicular or stationary applications provides an additional boost of power to accelerate a machine from idle to full power without the turbo lag that often occurs dur-

ing the air and fuel mixing period, said Ogura. This, the company added, allows an engine to offer performance equivalent to a high-performance engine with a larger displacement. The supercharger is also designed to provide smoother acceleration while optimizing fuel usage.

The Ogura supercharger has an internal rotor assembly that incorporates a roots-type blower, which pumps additional air into the engine. It is able to spread the air seal over a larger surface to give high efficiency at both low and high speeds, Ogura

said, and the design features two low inertia rotors connected to each other through a gear drive and set 90° apart. The rotors turn in opposite directions, causing air to be trapped between the rotor face and the housing. At every revolution, a volume of air (determined by the size of the supercharger) is pumped from one side to the other.

The rotor itself has a Teflon coating that helps to reduce internal scoring against the casing and allows the supercharger to maintain high efficiency throughout the life of the



Ogura's supercharger is mounted to the front of Volvo Penta's KAD43P/DP diesel engine rated 360 hp at 3900 rpm. In this application, the supercharger supplies compressed air at low engine speeds and during acceleration so the engine is able to produce high torque at low speeds.

supercharger, Ogura said. Because the rotors have a low inertia design, less resistance and a lower torque, drag is produced and engagement/disengagement is provided by an electromagnetic clutch. This, Ogura said, prevents energy loss through parasitic drag and extends the life of the supercharger.

In the Volvo Penta KAD43P/DP engine, the supercharger is mounted to the front of the engine and complemented by a silencer, turbocharger, aftercooler and Duoprop drive — all key players in the performance of the engine. Details of the six-cylinder, direct-injected KAD43P/DP engine include a 3.6 L displacement on a 92 mm x 90 mm bore and stroke, an output of 360 hp at 3900 rpm and a dry weight of 1257 lb.

In this application, the Ogura supercharger is used to supply compressed air at low engine speeds and during acceleration so the engine is able to produce high torque at low speed. Once charging pressure has reached the proper level, the turbocharger takes over. Together, the supercharger and turbocharger are able to produce high torque over the whole speed range of the engine, which Ogura said provides cleaner exhaust gases and improves the fuel economy.

The aftercooler also plays a part in the fuel efficiency, as it cools the compressed air and raises the oxygen level so the engine can use the fuel more efficiently.

Currently, Ogura offers the superchargers in six displacements ranging from 20 to 2060 cc/rev at speeds of 9000 to 15,000 rpm. Maximum continuous pressure ratio is 1.8:1 and instantaneous pressure ratio is 2.0:1. The superchargers weigh 11.68 to 33.07 lb. and besides saving weight, the finned aluminum housing construction is also designed to improve heat dissipation.

Ogura said the supercharger is suitable for engines above 0.5 L and it is also recommended for fuel cell applications that require a high-efficiency blower. The company also said it can provide customized units for smaller applications and multiple fuel types. **dp**

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