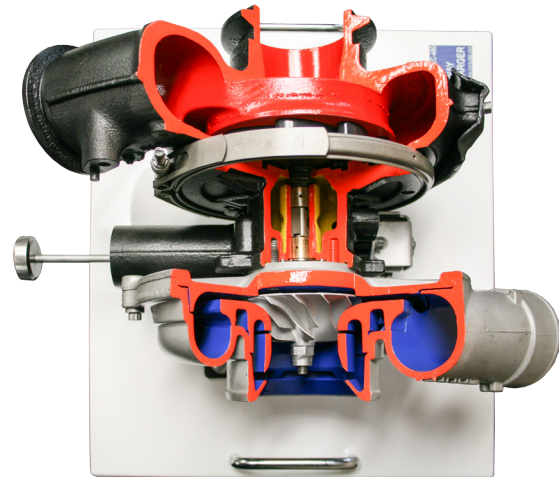


### CUTAWAY TURBOCHARGER



#### NON CONTRACTUAL PICTURES

The EC-480 cutaway turbocharger is used to demonstrate the operation of a variable displacement turbocharger. It is based on the platform of a 2005-2015 GM Duramax. This component utilizes a variable output displacement by using variable vane technology (VVT). The trainer is cutaway in such a manner as to clearly show the operation of internal parts that provide the variable displacement.

#### Educational Advantages

- Students can observe the movement of the variable-vane turbine
- Fully functional vacuum diaphragm that moves turbo plate
- All internal components are visible for better understanding of turbo operation

#### Main Features

- Variable vane technology (VVT)
- Operational vacuum diaphragm
- Clear demonstration of all internal turbocharger components
- 2005-2015 GM Duramax engine

#### Operational Description

This product is from a 2005-2015 GM Duramax diesel engine. It features variable displacement turbocharger based on variable vane technology (VVT). Turbocharger boost is controlled by a vacuum diaphragm connected to a linkage rod which moves a plate containing vanes that are able to change the angle at which exhaust gas leaves the turbocharger. A vacuum hose is connected to the intake manifold and uses engine vacuum as a measurement of engine load. A higher blade angle results in a higher turbo boost situation. Lower angles reduces boost and thus, lowers developed power. A high vacuum condition (low load) results in a much shallower blade angle resulting in less boost. As the load increases (low vacuum), a spring inside the diaphragm moves the plate in an opposite direction which causes the vanes to increase the angle at which exhaust gas flows past them resulting in a higher boost level (more developed power).

The primary advantage of this system is for significantly reducing a common operating characteristic of turbocharged engines called "turbo lag" which is described as a temporary lag in time that engine power is increased until a volume of air flow is fast enough to create more power.