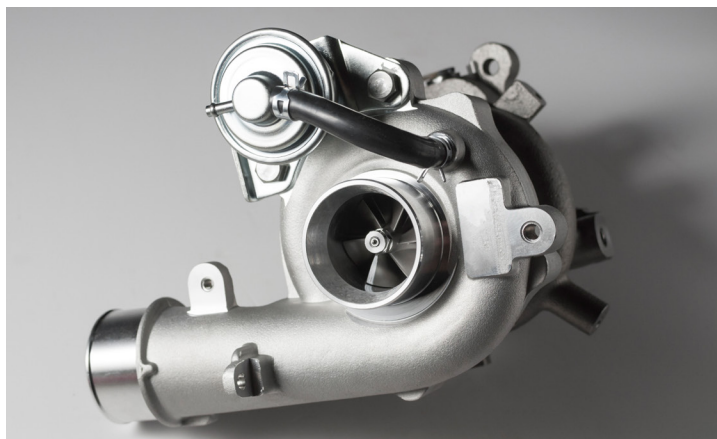


TURBOCHARGER BASICS

eLearning courses designed to increase productivity and profits



Learning Made Simple, Visual, and Interactive

The THORS *Turbocharger Basics* course introduces the learner to turbocharger components along with the design and operating variables that influence turbocharger operation. This course also provides the failure modes in a turbocharger and their preventive measures. Presented in the THORS' interactive style, the course also covers the different turbocharger types.

Credit Hours **2.5**

Learning Objectives

- Understand the working principle of a turbocharger.
- Identify the components of a turbocharger and their functions.
- Analyze the critical design and operating variables of a turbocharger.
- Recall the potential failure modes and their preventive measures.
- Differentiate between single, twin, electric, and twin scroll turbochargers.

Table of Contents

I. Turbocharger Components

- **Turbine**
 - Turbine Housing
 - Turbine Wheel
 - Wastegate
- **Shaft**
- **Compressor**
 - Compressor Housing
 - Compressor Wheel
- **Accessories**
 - Seals
 - Sensors
 - Actuators
 - Intercooler
 - Bearings

II. Turbocharger Operation

- **Design Variables**
 - Wheel Size
 - Blade Design
 - Blade Shape
 - Blade Count
 - Blade Height
 - Blade Angle
 - Blade Geometry
 - Wastegate Selection
 - Bearing Selection
 - Material Selection
- **Operating Variables**
- **Failure Modes**
 - Oil Starvation

(Continued)

- Bearing Seizure
- Overspeeding
- Sensor and Actuator Failure
- Wheel Damage
- Seal Leakage
- Wastegate Malfunction

III. Types of Turbochargers

- **Single Turbochargers**
- **Twin Turbochargers**
 - Parallel Twin Turbochargers
 - Sequential Twin Turbochargers
- **Electric Turbochargers**
- **Twin Scroll Turbochargers**

