

# TURBO PROTECTION



## bogaard turbo timer

### REASONS FOR FITTING A TURBO TIMER

- Lubricates turbo bearings until temperature is safe
- Extends the periods between turbo overhauls
  - Cuts vehicle down time
- Drivers may forget - a timer never does

### REASONS FOR FITTING BOGAARD

- Modern digital circuitry
- Push button idle time set - 6 periods from 0.5 to 5 minutes
  - Instant push button cancel & stop
- Attractive through or under dash mounting
- Plug-in fittings for most popular vehicles
  - Peace of mind whoever drives

### FACTS ABOUT BOGAARD

- Designed, manufactured & serviced in Australia
- Specialists in turbo protection products since 1984
  - Guaranteed for 24 months unlimited kilometres
- Fitted on their production lines by our largest truck manufacturers

### ADDITIONAL BOGAARD FEATURES

- Park brake connection allowing the timer to operate only when the vehicle park brake is applied
- Lockable preferred idle period preventing the vehicle operator from changing the time selection
- Sealed control module membrane reducing dust & moisture entry

**Lifetime protection for a fraction of the cost of a single turbo repair**

## What is a Turbocharger?

- A turbocharger is a combination Turbine & Compressor joined by a common shaft
- Super-hot exhaust gases from the engine pass through the Turbine, causing it (and the Compressor) to spin at high speeds
- The Compressor draws air through the air cleaner, compresses and feeds it to the engine for mixing with fuel
- The result of these events is greater volumes of air/fuel mixture entering the cylinders
  - The engine, as a direct result, delivers considerably more power and torque than an identical capacity engine taking in air at normal atmospheric pressure

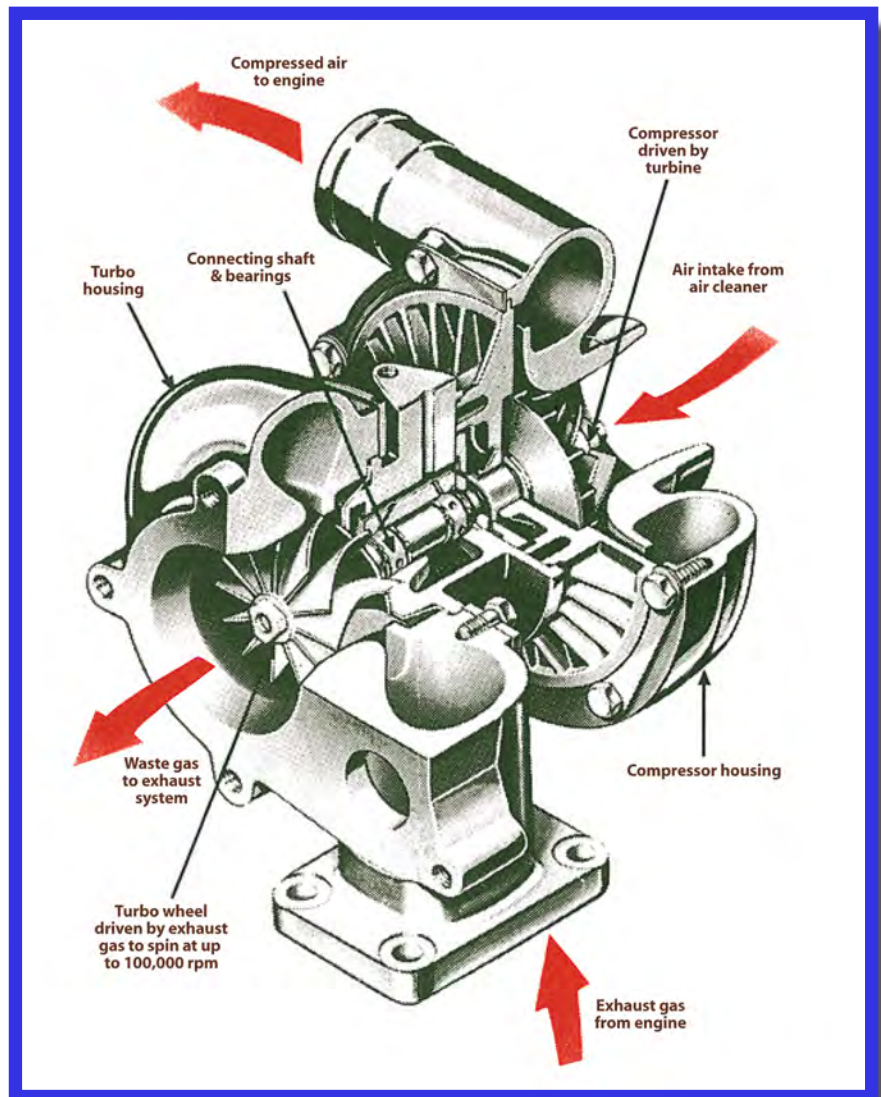
## Why Turbochargers need Protection

- The waste gases which drive the Turbine come direct from the combustion chambers via the exhaust manifold at temperatures which can lift the Turbine to over 700° C
- The Turbine spins at up to 100,000 RPM
- The Turbo shaft and bearings and the oil which lubricates them must withstand these conditions on a daily basis for long periods at a time
- At switch-off, Turbo temperature is high & lubrication to the bearings stops instantly
- Unless special precautions are taken, this may result in thermal distortions, the varnishing of oil on the shaft and bearings and premature Turbo failure

## How to Protect your Turbocharger

Turbo engine manufacturers recommend that, after a brisk run, their engines be idled for a few minutes to allow the Turbocharger to slow down, cool and normalise while maintaining a flow of fresh engine oil to its bearings.

This routine, if followed at **every** switch-off, will extend Turbo life and significantly reduce the likelihood of premature Turbocharger failure.



Watercooling of turbochargers does not remove the need to idle down. The following is an extract from the Owner's Manual for a car with a water cooled Turbocharger produced by one of Australia's biggest manufacturers:

*It is essential to maintain a clean supply of oil flowing through the turbocharger system as a sudden interruption of oil supply may cause a malfunction to the turbocharger. Therefore, if the engine has been operating at high load or at high RPM for an extended period of time, let it idle for a few minutes prior to shutdown.*

## Automatic Turbo Protection

The most popular and foolproof method of guaranteeing that the engine manufacturer's recommendation is carried out every time you switch off is to fit a **BOGAARD Turbo Timer**.

Many thousands are fitted to vehicles as diverse as Subaru, Land Cruisers and Kenworth trucks. Some of Australia's largest and most respected truck manufacturers fit **BOGAARD Turbo Timers** on their assembly lines.

**BOGAARD Turbo Timers** are inexpensive, foolproof & fail-safe. They are easy to fit, with plug-in models for many popular passenger & off-road vehicles

Bogaard Turbo Timers are distributed world wide by:

## BOGAARD DISTRIBUTORS

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