

# Turbo Chargers

*OPERATING GUIDELINES*

# TURBO ENERGY LIMITED

## Company Overview:

- ✓ Turbo Energy Limited (TEL) incorporated in 1982.
- ✓ Turbo Energy Limited (TEL) is a technical & financial joint venture company between BorgWarner Turbo Systems (formerly KKK – Germany) Brakes India and Sundaram Finance.
- ✓ TEL manufacturing plants are located at Pulivalam village in vellore district, and at Paiyanoor (near Mahabalipuram), Tamilnadu.
- ✓ TEL manufactures turbocharger range from KP 35 to K 37 (from 60 hp to 400 hp)
- ✓ TEL exports turbochargers and turbocharger components to BorgWarner Turbo Systems GmbH.
- ✓ TEL is a TS 16949 : 2000 certified company.

## TEL / BorgWarner Customers

- ✓ Ashok Leyland Ltd
- ✓ Bharat Earth Movers
- ✓ Eicher Volvo Motors Ltd
- ✓ Escorts JCB
- ✓ Fiat India Automobiles Ltd
- ✓ Ford India Ltd
- ✓ Force Motors Ltd
- ✓ General Motors India
- ✓ Greaves Cotton Limited
- ✓ International Cars & Motors Ltd
- ✓ Simpson & Co.
- ✓ SML Isuzu Ltd (Swaraj Mazda)
- ✓ TATA Motors Ltd
- ✓ Renault Nissan Automotive Ltd
- ✓ Volvo
- ✓ Volkswagen India
- ✓ Audi India
- ✓ Skoda India
- ✓ Hindustan Motors
- ✓ Kirloskar Oil Engines Ltd
- ✓ Mahindra & Mahindra
- ✓ Mahindra Navistar
- ✓ Premier Automobiles Ltd
- ✓ Maruti Suzuki



## Company Overview:

- ✓ Service Centre for TEL turbochargers since 2003
- ✓ ISO 9001:2000 certified by TUV SUD, South Asia for all service centers
- ✓ Experience of servicing more than 10,000 turbochargers till date.
- ✓ Full fledged Service centers' in Palakkad , Kozhikode & Kochi
- ✓ Collection centers in Kannur and Trivandrum

# Turbochargers

## Operating Guidelines

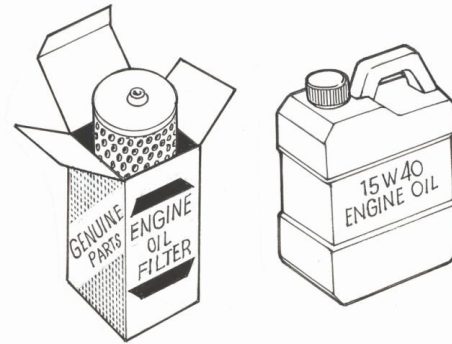


## NEEDS OF A TURBOCHARGER

Turbocharger components are made from special materials, processes and are precision built to work under extreme operating conditions.

However a turbocharger needs

- ❑ ADEQUATE CLEAN ENGINE OIL



- ❑ CLEAN AIR



for it's proper performance and extended life.

Why does a Turbocharger need them?

## Why a Turbocharger needs them

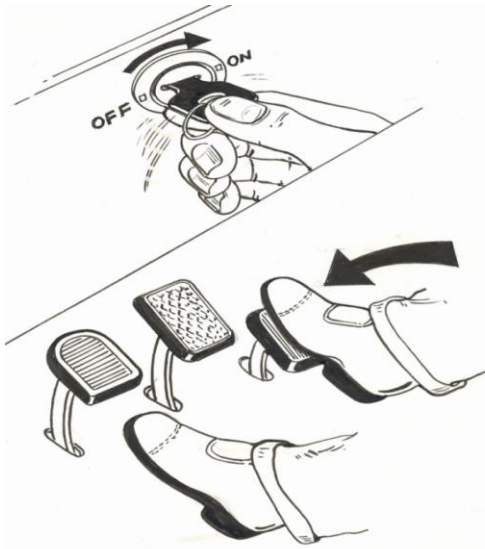
- The clearances between the rotor and the journal are extremely small and the parts are machined to very close tolerances.
- Turbocharger rotor-assembly rotates at extremely high speeds.
- Turbocharger uses fully floating journals and will rotate at less than half the speed of the rotor.
- The turbocharger components are balanced to very fine balancing limits.
- The air / gas entering the compressor and turbine housing travels at very high speeds.
- Adequate clean oil supply to the journals is a must to stabilize, lubricate and cool.
- Oil supply to the turbocharger immediately after the start of the engine and minimum oil pressure during it's operation, ensures proper functioning of the journals.
- Oil contaminated with dirt or foreign material will wear the journals and journal seating area of the shaft.
- Dirt in the oil blocks the oil holes in the journals and central housing leading to oil starvation to the turbocharger.
- Dust, sand or any foreign particle entering into the turbocharger compressor housing will damage the aluminum compressor wheel blades, thus leading to turbocharger failure.

# Guidelines for Turbocharger use

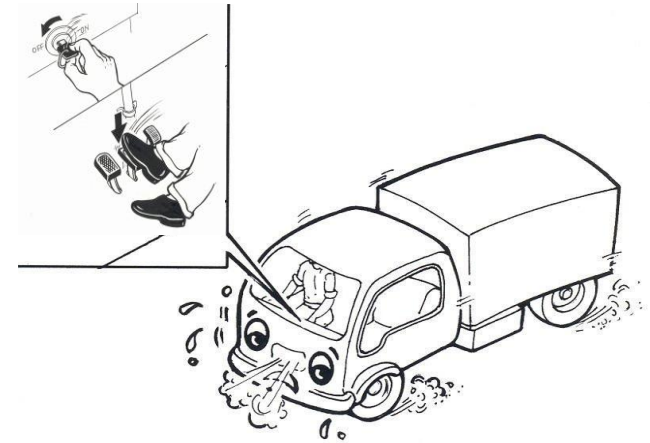
**The engine manufacturer's recommendations for operation and maintenance shall be authoritative for the operation of turbocharged engines. Special attention should be paid to:**



## Operating Guidelines



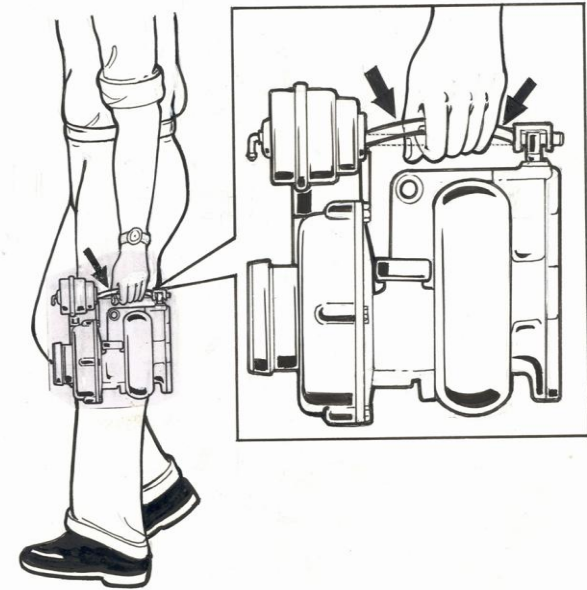
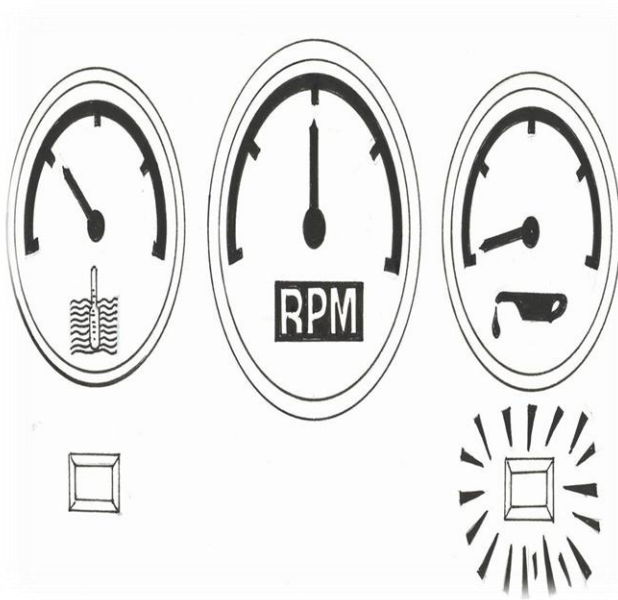
**Do not accelerate the engine immediately after start**



**Idle the engine for few minutes before stopping**

- ✓ The engine should not be put under full load immediately after start. We recommend the engine to be run at idling speed for a short time (60 seconds). Accelerating the engine immediately after start can force the turbocharger to operate at very high speeds with inadequate lubrication.
- ✓ Run the engine without load at high idle for few minutes before the engine is shutoff. Idling will reduce operating temperature and speed.

## Operating Guidelines



**Do not run the engine with low engine oil pressure**

**Do not carry the turbocharger by holding the actuator rod**

- ✓ Check the engine oil pressure. Do not run the engine, if oil pressure is found less than that recommended by the engine manufacturer.
- ✓ Check if the flap assembly inside the turbine housing is in closed position. If found open, contact your TEL authorized dealer for rectification before fitment.

## Service Recommendations for Turbocharger maintenance

- ✓ Check the engine breather system and oil separator. Blocked breather will restrict the free flow of oil from turbocharger. This will result in seepage of oil from the turbocharger into the air intake as well as exhaust system.
- ✓ Fill the oil inlet hole of the turbocharger with clean engine oil, when the engine is started after long storage. After the oil change, prime (dead crank) the engine before starting and before starting the engine in during cold ambient conditions.
- ✓ The turbocharger is designed such that it will usually last as long as the engine. It does not require any special maintenance.
- ✓ Checks have to be made on oil feed pipes, return pipes, air intake and exhaust piping for leakages & restriction. The connections & joints should be checked to ensure that they are still tight and no damage has occurred.
- ✓ Turbocharger and boost pressure control valve do not require any special maintenance. However check the boost pressure pipe for its proper fitment, damage, wither etc.





**Do not open the turbocharger yourself**



✓ **Contact PARAMOUNT AUTOZONE for Quality Service**

If the TC engine does not work as it should, check the engine first as you check for a naturally aspirate engine before suspecting the TC. After checking other parameters check the TC visually.

**PREMATURE TURBOCHARGER FAILURES CAN BE AVOIDED BY INSTALLING IT CORRECTLY FIRST TIME, EVERY TIME.**

## Service Recommendations

- ❑ The turbocharger has to be serviced using overhaul kit and other parts at suitable intervals before any damage that can occur by rubbing of either the compressor or turbine wheel with the housings.
- ❑ This interval depends on proper maintenance of the engine as well as the nature of duty and the severity to which the engine is subjected. Recommendations regarding this will have to be given by the engine manufacturers.

***Servicing turbocharger is a task for trained specialists and should only be done in TEL authorized service center.***



## Service Centers:

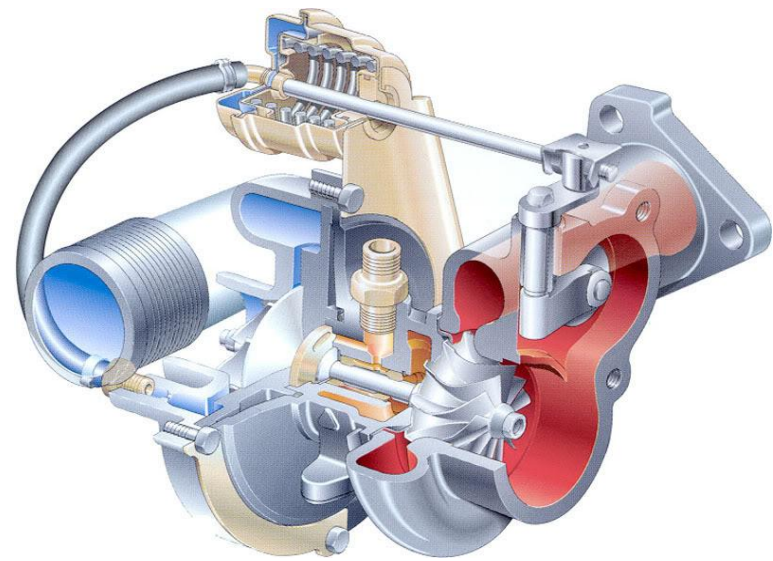
**Palakkad**  
17/550(9),KTV Tower,  
West Fort Road, Palakkad – 678 001  
Phone : 0491 – 3260808, 3208000

**Kochi**  
40/618, Bhagavathy Parambil Building,  
Near Federal Bank, Palarivattom, Kochi – 682 025  
Phone : 0848 -3114333

**Kozhikode**  
3/165-A,Nano Building,  
Major Santhosh Road, Behind Co-Op Urban Bank,  
Vandipetta, West Nadakkavu, Kozhikode – 673 011  
Phone : 0495 3104333

**Service Helpline : +91 491 3208000**  
**Technical Assistance : +91 93491 27136**

**Website : [www.paramountautozone.com](http://www.paramountautozone.com)**  
**[www.paramountgrp.net](http://www.paramountgrp.net)**



## Collection Centers:

**Kannur**  
EP III/178, EVES Arcade,  
Opposite Technical High School, Thottada,  
Kannur – 670 007  
Phone : 0497 – 3268785

**Thiruvananthapuram**  
TC 36/1090(9), Narayan Nilayam,  
Eanchakkal Junction, Vallakadavu P.O.,  
Thiruvananthapuram – 695 008  
Phone : 0471 – 3198785





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