



Marine Engine Turbocharger

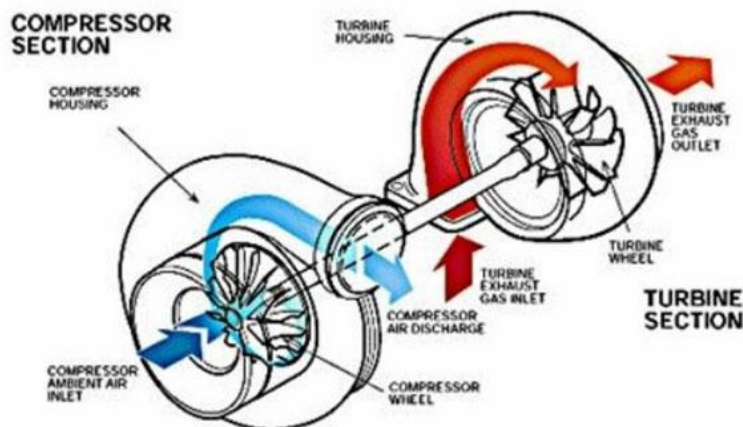
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Marine Diesel Engine Turbocharger

A turbocharger is a kind of mechanism for marine diesel engines forced induction. Marine turbochargers force the induction system and place it into the [engine cylinders](#) of compressed air to make a lot of fuel into the engine. Turbocharger engines not only gain more power but also improve the engine's power to weight ratio.





Engine Turbocharger Pictures:



Two turbochargers for marine engines

- constant pressure turbo
- pulse turbo-charging

Constant pressure turbo

This type of Turbo, the exhaust gas from each [cylinder](#), leads to the common manifold. From the manifold, it enters the turbine at constant pressure. When emissions through the turbine nozzle and vanes, using exhaust heat to work. Exhaust manifold space must be big enough to accommodate the emissions from all [cylinders](#) without any pressure rising. Constant pressure turbocharging is typically used in two-stroke marine diesel engines.

1. Advantages of constant pressure turbocharging

- Outstanding performance under a constant load
- Good turbo efficiency due to constant exhaust flow
- No need to group

2. Disadvantages of constant pressure turbocharging

- If constant load fluctuations persist is not good
- Need for additional blowers on startup

Requires a large manifold to accommodate the exhaust gas

Pulse Turbocharging



This type of turbocharging, where the exhaust gas from each cylinder, goes directly to the turbo intake, and uses pressure pulses or waves to do work. A high-speed pressure pulse does the job when the exhaust valve opens and the exhaust is blown through small pipes to the turbocharger nozzles and vanes.

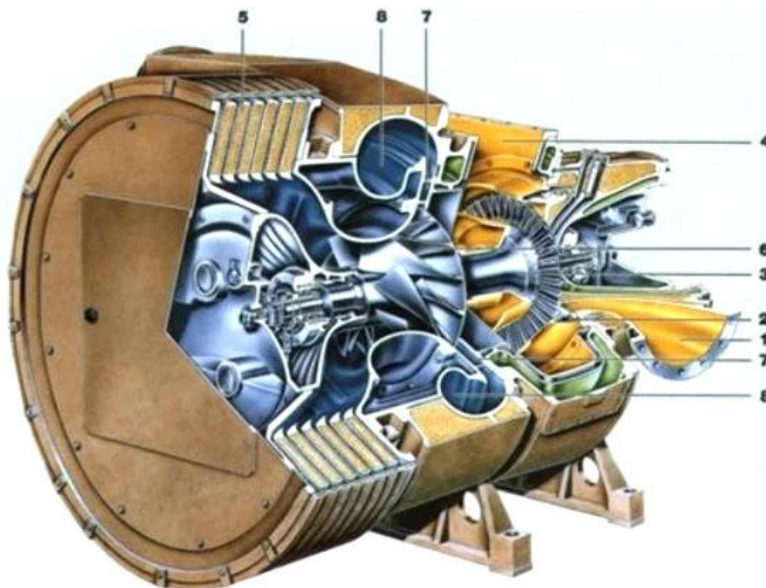
Pulse turbo-charging is typically used for four-stroke engines.

Advantages of Pulse turbo-charging

- Outstanding performance with frequent load changes
- Turbine speed up good at startup
- No need for an additional blower
- Without exhaust manifold

Disadvantages of Pulse turbo-charging

- Complex exhaust pipe
- Need exhaust group
- Possible recoil, which leads to inefficiency



- | | |
|----------------------|--------------------|
| 1. Gas Inlet Casing | 5. Silencer Filter |
| 2. Turbine Nozzles | 6. Compressor |
| 3. Turbine Wheel | 7. Diffuser |
| 4. Gas Outlet Casing | 8. Volute Casing |

Structure and Working of single Parts



The turbocharger consists of two main components, a turbine, and a compressor, installed on the same shaft. Typically, axial turbines are used for large land-based plants and marine vessels.

1. Turbine

High-speed exhaust gases from the nozzle ring are booting to the rotor blades. The nozzle ring is used to produce the kinetic energy in the exhaust gas, and the rotor blades are fixed tightly by the roots of the fir tree structure. They prevent vibrations by the ropes running through them.

Heat-resistant nickel-chromium steel is used for turbine blades, wheel nozzles, and shafts. Adequate cooling water space arrangement is also carried out on its cast iron housing

2. Compressor / Blower

Compressors or blowers in the turbocharger inlet side are equipped with a silencer and set filters.

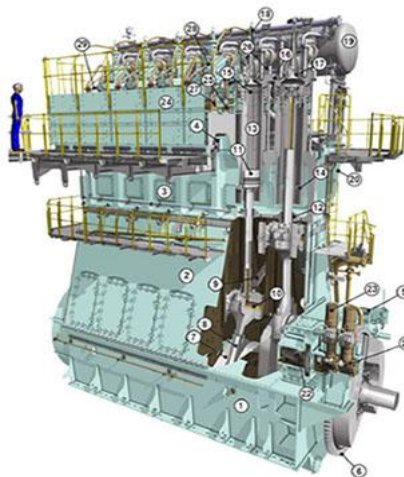
In order to direct the fresh air to the center, before the impeller installed a deflector made of light-alloy aluminum alloy. The impeller inhales fresh air in the axial direction while delivering fresh air radially with the volute.

A volute is placed after the impeller which can convert all the kinetic energy of the fresh air into pressure energy. Compressed air is then fed into the cylinders through an intercooler to cool the compressed air

3. Bearings & Seals

Separate bearings are mounted on both parts of the turbocharger. Ball and roller or plain sleeve bearings are commonly used.

Marine Diesel Engine Turbocharger Spares:



- | | |
|--------------------------|---------------------------|
| 1. Bedplate | 16. Cylinder cover |
| 2. Column | 17. Exhaust valve |
| 3. Cylinder block | 18. Exhaust valve drive |
| 4. Tie rods | 19. Exhaust manifold |
| 5. Turning gear | 20. Scavenge air receiver |
| 6. Flywheel | 21. Supply unit |
| 7. Crankshaft | 22. Gearwheel supply unit |
| 8. Connecting rod | 23. Fuel pumps |
| 9. Knee lever | 24. Rail unit |
| 10. Crosshead | 25. Fuel common rail |
| 11. Piston | 26. Fuel Injector |
| 12. Gland box piston rod | 27. Servo Oil Rail |
| 13. Cylinder liner | 28. High pressure pipes |
| 14. Scavenge air ports | 29. Starting air valve |

Marine Diesel Engine Turbocharger Brands



We offer the Brands and Spear parts:

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