*General procedure for replacing a turbocharger

All turbocharger types except DV6 engines

Preparations

1) Oil circuit :

- Make sure the oil supply line is not clogged; replace it if necessary. Remove the break-in pre-filter on engines equipped with one. Make sure the oil return to the engine sump/crankcase flows freely (no restriction, no back pressure caused by a clogged breather, or resulting from damaged piston rings).
- Check the oil pump flow rate (no interruption in flow). If insufficient, drain the engine, remove the oil pan, then check whether the suction strainer is clogged; replace it if necessary. During this operation, also inspect the condition of the oil on the walls.
- If the oil is thick or degraded, clean the engine completely before going any further:

Step 1 :

- Remove the drain plug, the oil filler cap, and the manual dipstick.
- Remove the oil filter.
- Let it drain for at least 15 minutes.
- Refit the drain plug.
- Install a new oil filter.
- Refill with new oil compatible with the engine.
- Add 1 dose (300 ml) of flushing cleaner (see manufacturer recommendations).
- Refit the filler cap and the oil dipstick.
- Make sure the oil level and additive remain below the maximum mark on the dipstick.
- Start the engine and keep it at 2000 rpm for 10 minutes.
- Return to idle for about 1 minute, then stop the engine.

Step 2 :

- Drain the engine.
- Remove the oil filter.
- Let it drain for at least 15 minutes.
- Refit the drain plug.
- Install a new oil filter.
- Refill with new oil compatible with the engine.
- Add 1 dose (300 ml) of flushing cleaner (see manufacturer recommendations).
- Refit the filler cap and the oil dipstick.
- Make sure the oil level and additive remain below the maximum mark on the dipstick.

- Start the engine and keep it at 2000 rpm for 10 minutes.
- Return to idle for about 1 minute, then stop the engine.

At the end of this step, the oil flow rate at the turbocharger inlet must be greater than 30 centiliters after 1 minute at idle.
If not, engine removal must be considered.

2) Air circuit :

- Check the condition and cleanliness of the air filter; replace it if necessary.
- Clean the air filter box.
- Make sure there is no foreign object whatsoever in the ducts upstream or downstream of the turbocharger.
- Make sure the ducts upstream and downstream of the turbocharger are not blocked, pinched, or perforated (pressure leak test on the hose).
- Check the condition and cleanliness of the breather line from the valve cover outlet (oil vapor ventilation circuit).
- Remove the air-to-air intercooler, then turn it over so that the air inlet is in the lower position. After 10 minutes, check whether oil or impurities are draining out from the inside. If so, clean the intercooler until it is clean.

Note : If the nut from the original turbocharger is no longer present at the end of the turbine shaft, it must absolutely be found to prevent it from destroying the replacement turbocharger.

3) Gas circuit :

- Check the intake manifold (no cracking, no flaking inside, no distortion or flatness defect causing a gas leak). Replace defective components.
- Check correct operation of the EGR valve; replace it if necessary.
- Check the entire exhaust line downstream of the turbocharger (no oil traces, no gas leaks). If it is clogged, replace the components concerned.

Handling the turbocharger before and during installation

- Hold the turbocharger by the side housings to remove it from its packaging and to install it on the vehicle.

- **Warning: it is strictly forbidden to:**
  - grip the turbocharger by the actuator/regulator or by the actuator rod, whether it is a pneumatic, electrical, or electronic model;
  - loosen the assembly screws of the side housings to alter the various orientations;
  - modify the factory settings of the actuator rod and/or the gas flow adjustment screw;
  - manually operate the actuator rod on electrically or electronically controlled applications;
  - place the turbocharger resting on the actuator/regulator.

- Make sure the rotor turns freely (no tight spots).
- Remove the drain plug, the oil filler cap, and the manual dipstick.
- Remove the oil filter and let it drain for at least 15 minutes.
- Replace the oil filter cartridge.
- Refit the drain plug with a new seal.
- Fill the engine with new oil recommended by the manufacturer.
- Refit: the filler cap and the manual oil dipstick.
- Make sure the oil level does not exceed the maximum mark.
- Install the replacement turbocharger using new seals/gaskets for the air, oil, and gas circuits.
  - Check their installation direction beforehand: under no circumstances must they obstruct the flow of gas or oil. The use of sealing paste is prohibited.