



## **Testing and commissioning recommendations**

### **On compressor side**

Make sure that the following is observed during the test operation and the commissioning of series engines:

1. The suction area in front of the silencer and the air intake casing must be free from foreign objects.
2. The introduction of foreign objects into the suction area of the compressor has to be prevented.
3. The operation of the turbocharger is allowed only with a correctly assembled and undamaged filter fleece.
4. Due to surging of the turbocharger foreign particles, which may stay in the charge air cooler, can enter the suction area of the compressor. After a surging incident the engine must be stopped and the check- and clean-procedure 1.-3. shall be carried out before a re-start of the engine.
5. For all works in the area of the turbocharger, the silencer has to be covered so that foreign objects cannot get into the silencer.
6. The opening at the silencer and the opening in the compressor volute has to be covered when the silencer is disassembled.
7. The surrounding of the turbocharger has to be cleared from foreign objects before re-commissioning after engine stop.
8. The silencer must be protected against mechanical damages and it is not allowed to step on the silencer.

### **On turbine side**

Make sure that the following is observed during the test operation and the commissioning of series engines:

1. The inlet area (exhaust pipe) in front of the turbine must be free from foreign objects.
2. The introduction of foreign objects into the inlet area of the turbine has to be prevented.

### **Further measures**

1. We recommend to prohibit all persons to access the danger zone of the turbocharger (within a 30m radius) at least during the first 2 hours of operation (run-in period) of the engine in case the engine operates with more than 60% load.
2. The compressor wheel has to be visually checked for damages directly after conclusion of the run-in period which is described in 1.
3. In our assessment, the risk of a critical compressor wheel damage decreases after the run-in period if the above measures reducing the risk of foreign object damage are observed, so that MAN will, for its own testing and commissioning activities, allow access to the danger zone to personnel that has been properly and fully instructed about the prevailing dangers and is voluntarily accepting that risk.

**By carrying out the above mentioned measures, you substantially decrease the risk that the compressor wheel and turbine wheel of the turbocharger are damaged during testing and commissioning. As soon as the engine enters regular service, the necessary cleanliness is under the responsibility of the operating personnel.**