

**DIRECTORATE GENERAL BORDER ROADS**  
**GENERAL MAINTENANCE INSTRUCTION NO.120**

**ON**

**MAINTENANCE OF CONCENTRIC VALVES ASSEMBLY HP AND LP PART NO**  
**0301000 AND 0302000 FITTED ON KGK PORTABLE DIESEL ENGINE DRIVEN**  
**250 CFM AIR COMPRESSOR**

**Introduction**

1. KGK Portable diesel engine driven 250 cfm Air Compressor fitted with Perkins P6 (I) 354 diesel engine were newly procured in 1971 and at present deployed with project DANTAK, SEWAK, PUSHPAK, VARTAK, BEACON and DEEPAK. Recently there have been excessive demands for concentric valves Assembly/ their components (part No 0301000 and 0302000). Manufacturers recommend examination and cleaning at regular intervals. It should be possible to maintain the equipment with examination and cleaning as recommended by the manufacturers and replacing the components where necessary.

**Aim**

2. The aim of this instruction is to lay down procedure for maintenance of concentric valves to ensure long and trouble free life.

**Action by**

3. (a) User unit All unit holding the equipment will send equipment to Field Workshop for examination and cleaning at regular intervals as mentioned below at Para 4.
- (b) Base Workshop (GREF) and Field Workshop Carry out and ensure compliance of instructions given in Paras 4 to 10.

**Details**

4. The air valves are the heart of the compressor and a little attention will given them a long life and ensure a trouble free service. It is advisable to examine them completely and clean then at regular intervals say after 250 working hours for a few months until it is seen how often they require cleaning. The most stressed parts such as valve plates and spring plates should be changed after certain intervals of running. It is recommended to replace these after 2500 hours. Examine all parts thoroughly when the vehicle is disassembled. If there is much dust in the air, valves will require more frequent cleaning than if the intake air is clean and free from dust. Whenever valve is found defective, the fault should be remedied immediately so that it will not aggravate. If running is continued with a broken valve plate, pieces of the plates, may drop in the cylinder and cause serious damage.

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### Removal

5. For the removal of the valve proceed as follows :-

- (a) Unscrew the screws connecting the pipe flanges with the Cylinder heads.
- (b) Remove the pressure air-pipe connections of decompressors on the low pressure and high pressure cylinders.
- (c) Unscrew the nuts and remove the cylinder heads. Care must be taken to prevent damaging the gaskets while removing the cylinder heads.
- (d) Remove the decompressor tables and take out the springs.
- (e) Take out complete valves.

**Caution :-** BEFORE OPENING PIPE CONNECTIONS (TO REMOVE CYLINDER HEAD) THE AIR STORAGE TANK SHOULD BE EMPTIED TO AVOID AN ACCIDENT DUE TO PRESSURE REMAINING IN THE CYLINDER HEAD.

### Disassembly of concentric valve

6. (a) Remove the split and unscrew the crown nut.
- (b) Separate the upper part.
- (c) Remove and separate spring plate and valve plate on the delivery side, and valve plate and spring plate on suction side and free rings or hub. It is advisable to clean the valves at regular intervals as referred already.

### Cleaning

7. Put the valve parts in paraffin or kerosene oil followed by a brushing with a brass wire brush, or light scrapping with sharp edge of a knife (but not with the point of knife) to remove any carbon formation. Take them out and DRY THEM THOROUGHLY BEFORE ASSEMBLY with clean cloth. Great care must be taken to avoid damage to the valve seating and the valve plates.

8. If any valve plate is worn out, replace it before it breaks. Irrespective whether these parts show sign of wear or not, renew them after 2500 hours.

**Caution :-** BEFORE REPLACING THE VALVE, BE ABSOLUTELY SURE THAT IT IS COMPLETELY DRY.

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### Reassembly of valve

09. While reassembling the valve, particular attention must be paid to the sequence of the valve parts. It suffices that the parts are tightly pressed together without any play at all. Over tightening of crown nut may cause bending or breaking of the central screw. Do not forget to put in the split pin after the crown nut has been tightened. Pins have been provided to prevent turning of valve and spring plates on the valve seat. The valves do not require lubrication while assembly is made.

Note :- When the valves are disassembled for cleaning purpose, the reassembly of the valve, should be kept well covered to prevent dust particles settling on the smooth surfaces. It is inadvisable to make disassembly and reassembly in the field as there is possibility of dirt entering the parts.

### Refitting

10. While fitting the valves back in the cylinder head follow the instructions as under :-

- (a) Put the copper packing on the cylinder and place the assembled concentric valve in correct position on the respective cylinders.
- (b) Arrange the decompressor tables in their respective places after putting the relevant springs.
- (c) Place the cylinder heads in position with gaskets.
- (d) Tighten the nut over the cylinder head and tighten them diagonally little by little with even pressure to **15 lbs. Ft.**, Torque.
- (e) Refit pressure air pipe connections to the compressors.
- (f) Tighten the screws on the flanges connecting the pressure pipe between the cylinder heads and inter cooler.