

**DIRECTOR GENERAL BORDER ROADS**  
**GENERAL MAINTENANCE INSTRUCTION NO. 170**  
**ON**  
**MAINTENANCE SCHEDULE**

**'KHOSLA' MODEL TD-35, PORTABLE DIESEL ENGINE DRIVEN**  
**RECIPROCATING, AIR COMPRESSOR (250 CFM) AND TD-13**  
**(170 CFM) FITTED WITH PERKINS P6 354 ENGINE**

**INTRODUCTION**

This instruction is published to lay down the detailed instructions for the regular and periodic maintenance of air compressor P-6 engine model 354 engine to keep in good mechanical condition.

**ACTION BY**

1. User Unit - Carry out regular/periodic maintenance as laid down.
2. Enter the weekly task in log book.

Field Wksps : To check the record of maintenance and lubrication in the log book of the eqpt during its inspection and repairs if carried out as per maintenance schedule given in the instruction. If not, this should be brought to the notice of OC user unit, TF Commander and CE Projects.

**DETAILS**

Details of maintenance and lubrication along with periodicity have been tabulated in Appendix 'A' to this instruction.

**GENERAL MAINTENANCE**

1. **KEEP THE UNIT CLEAN**

More compressor break down are caused by dirt introduced directly or indirectly than by any other factor. Any machine should be kept clean, if for no other reason than that in cleaning, all parts are inspected for in sufficient lubrication, loose bolts, nuts or key etc, and parts requiring adjustments are there by always discovered in time prevent troubles.

Make sure that all joints in air lines tight. If a leak develops repair it at once. Leaks are costly.

Clean the machine each day thoroughly before starting and occasional, when the machine is working. Take compressed air from its air storage tank with a rubber pipe. Clean the air passage of the grill tubes of the engine, radiator and inter cooler by blowing through with compressed air.

The entire unit diesel engine and compressor should receive a regular cleaning with oil and clean cloth at regular intervals and a weekly wash down of the body, causes and wheels will give protection against metal points erosion.

The fuel tank filter cap removed for refueling must be replaced immediately. Instruction for cleaning concentric valves, a safety valve has been given in GMI No. 120 but it is emphasized here that benches where work is to be done should be scrupulously clean. When servicing the units, keep components off the floor by placing them immediately into a tray for cleaning.

NOTE 01 : At the end days operation, clean the units once again and close the side panel doors to avoid any thing getting on the mechanic wash the same is not in operation.

NOTE 02 : When the machine is in operation, please note that the side panel doors must be kept open for cooling compressor unit by the fan blast and natural draught.

NOTE 03 : When operating in a dust laden atmosphere or used on work causing a considerable amount of dust ie, near a stone crusher etc; the unit should, if possible, be placed so that the dust is not carried towards it by the wind.

## 2. INSTALLATION AND GENERAL MAINTENANCE OF THE BATTERIES

- (a) Always ensure that the batteries are fully charged before these are put into service.
- (b) These must be fitted firmly in the battery box so that no undue vibration or straining occurs.
- (c) Terminals should be cleaned from oxide and dirt before connecting coat them immediately afterwards with pure petroleum jelly (Vaseline). Not grease.
- (d) Check that voltage regulator setting and generator output are normal for the battery, the specific gravity of the acid in the battery remains between 1,200 and 1,230.
- (e) Vent plugs should be kept clean and tight.
- (f) Level of acid should be kept about 10 mm above separator tops. Add regularly approved distilled water only to each cell to restore level. Never add acid.
- (g) Never keep your battery idle for period exceeding 2 weeks. If this cannot be avoided, arrange that the battery is removed and recharged every 2-3 weeks.
- (h) Strength of electrolyte should never be allowed to exceed 1,230.
- (i) Always maintain batteries in a charged state and do not allow the batteries to stand in discharged conditions.

## MAINTENANCE SCHEDULE

### CAUTION

BEFORE ATTEMPTING TO CHECK OF LEVEL OR DISMANTLE ANY PARTS OF THE UNIT :-

- (a) Shut the engine.
- (b) Be certain there is no pressure in the compressor as indicated by the panel gauge

### EVERY DAY

- (a) Maintain correct oil level and check oil pressure of engine.
- (b) Fill fuel oil tank after finishing work in order to reduce condensation. Always use a clean can for filling.
- (c) Check water level in engine radiator.
- (d) Clean suction air filter and air dusty condition daily.
- (e) Check fan belt tension.
- (f) Drain air receiver after each run, during continuous operation. The drain cock must be opened at least twice daily.
- (g) Blow inter-cooler and engine radiator with air under pressure from air reserve tank.

### EVERY WEEK OR 50 HOURS

- (a) Remove the compressor and suction filter element and clean it as per instructions.
- (b) Remove engine air cleaner, fill pan and wash it with petrol or diesel oil. Dry it and fill it with fresh lubricants oil up to the mark. Replace it at the proper portion.

Contd---P/4

- (c) Grease wheel hubs
- (d) Lubricants the hubs.
- (e) Check tightness of foundation bolts.

**EVERY FORTNIGHT OR 150 HOURS**

- (a) Drain oil and refill to proper level correct grade of oil in compressor crank case. Fix oil filter cap securely.
- (b) Flush out radiator and filter jackets of diesel engine.

**EVERY ONE MONTH OR 250 HOURS**

- (a) Check the battery for corroded fittings. Remove battery connections and clear smear with petroleum jelly before replacing.
- (b) Lubricates with a few drops of oil in oil hole of the self starter motor.
- (c) Check and tighten all the nuts and bolts.
- (d) The bolts and nuts of flywheel housing for the engine and the Compressore should be tightened.
- (e) Check and clean the concentric valves. (Please refer GMI No.

120)

**EVERY SIX MONTH OR 1000 HOURS**

- (a) Check blow off valve on the intercooler.
- (b) Check and clean pressure regulator.
- (c) Check connections, fitting and controls, tighten all loose nuts, bolts and screws.

- (d) Tightened loose nuts and screws of canopy.
- (e) Change fuel filter element (Diesel Engine).
- (f) Examine the big end (Needle bearings) and both main bearings. Oil dipper for serurity.
- (g) Check the main end and big end bearing for lift and side play.
- (h) Check and clean the pressure regulator.
- (i) Replace left packing of the moisture trap.

**NOTE:**

1. It is desired to make the disassembly in a neat and clean place, where as we do not advice to carry it out in the field.

**EVERY 2500 HOURS**

- (a) Change concentric valves plates and spring plates, if necessary.
- (b) Check all gauge for proper reading and change if necessary.
- (c) Check the piston rings, gap and change if necessary.

**EVERY 8000 HOURS**

- (a) Dismantle and check the big end bearing clearance and replace the bearing if necessary.
- (b) Change counter weight boles.
- (c) Change piston and oil rings.
- (d) Check centrifugal clutch, shoe lining and rubber bonded bush ad change if necessary.

**Lubrication system for Khosla Compressor KG-3 Series-250 Cfm TD-35 model and TD-38 (170 Cfm ) fitted with Perkins P-6 Engine**

**LUBRICATION**

The Compressor is splash and must lubricated. The lubrication oil is taken away from the sump by one dipper fitted at the bottom of the connecting rod and it converted into a fine mist by the whirling action of the moving parts, lubricating the cylinder piston, gudgeon pin and all other surfaces.

(a) Change the following oil in the air compressore :-

1<sup>st</sup> change after 50 hours.

2<sup>nd</sup> change after 100 hours.

3<sup>rd</sup> and subsequent change after every 150 hours of earlier under orderous conditions change earlier.

(b) The oil is taken out at the bottom of the crank case by opening the oil plug.

(c) For filling oil in the crank case there is a filter pipe fixed at the top of crankcase.

(d) For diesel engine see manufacturer operator manual for instructions and recommendations. Please refer GMI No. 45.

(e) The oil should be changed when the engine and compressor are still hot after a long gap, so that all decomposition of oil leave the sump together with the old used oil.

(f) Grease fan bearing after every 50 hours. A nipple is provided on the fan housing.

(i) Use proper grade of best quality lubricating oil of reputed oil companies. Use of unsuitable oil will cause troubles, directly valves, over heating.

Contd---P/7

- (ii) Do not mix oils of different brands or grades.
- (iii) Prolong use of dirty lubricating oil will cause early wear of the bearing and cylinders hoses.
- (iv) The engine and compressor crank case must be full of oil to the top notch of the dip stick. Do not over fill which would result in excessive oil consumption as well as too much oil in certain places is just as bad as none at all. Therefore, carefully follow the instructions.
- (v) Never use petrol or kerosens to clean or flush out the compressor crankcase its use is dangerous and should be absolutely prohibited. Use Compressor crank case oil which has been allowed to settle.
- (vi) Never use cotton waste for cleaning oil sump, clean cloth should be used.

### LUBRICANTS

#### Recommended grade for lubricating oil for Air Compressor.

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	Summer Temp above 90 <sup>0</sup> F or 32 <sup>0</sup> C	Winter Temp above 60 <sup>0</sup> F or 150 <sup>0</sup> C	Extreme winter Temp above 60 <sup>0</sup> F or 150 <sup>0</sup> C
1. ESSO / Hind stan petroleum	HP Oil (SAE40)	HP Oil (SAE30)	HP Oil (SAE30)
2. Bharat Petroleum	Shell Rotella Oil 40	Shell Rotella Oil 30	Shell Rotella Oil 20
3. Caltax	RPM Delo Spl SAE-40	RPM Delo Spl SAE-30	RPM Delo Spl SAE-20
4. Indian Oil	Servo Engine oil 40	Servo Engine oil 30	Servo Engine oil 20

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