

**DIRECTOR GENERAL BORDER ROADS**  
**GENERALS MAINTENANCE INSTRUCTION NO. 92**  
**ON**  
**CARE AND MAINTENANCE**  
**OF**  
**AIR COMPRESSOR MAW INDIA 160 CFM**

Introduction :-

1. Regular servicing and preventive maintenance are essential to prolong its life of the equipment, ensure timely repairs to arrest defects from developing into major ones, work the equipment effectively at all times, minimize inopportune breakdowns and downtime losses.

**Aim** :-

2. (a) To enumerate the details of periodic and preventive maintenance and lubrication fo AIR COMPRESSOR MAW INDIA 160 CFM.
- (b) Issue CHECK CARD for use by Mobile Maintenance Team.

Action By :-

3. (a) User Units :- To carry out periodic inspection, regular servicing and preventive maintenance tasks as laid down.
- (b) Field Workshops (GREF) :-
  - (i) 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 and Lubrication schedules given in this instruction.
  - (ii) Advise user units in respect of any discrepancy noticed.

**Details** :-

4. Details of Maintenance and Lubrication alongwith the periodicity have been tabulated in Appendix 'A' to this instruction.

**PREVENTIVE MAINTENANCE – AIR COMPRESSOR MAW INDIA 160 CFM**

| S/No. | Item/Assys                     | Maintenance Instruction  | Lubrication | No of points |
|-------|--------------------------------|--|-------------|--------------|
| 1     | 2                              | 3  | 4           | 5            |
|       |                                | 08 HOURS TASK  |             |              |
| 1     | General                        | (a) Check oil, water or gas for leaks<br>(b) Check for exhaust smoke colour, noise or vibration<br>(c) Read all gauges & meters<br>(d) Check all bolts and nuts if loose or deficient        |             |              |
| 2     | <b>Engine</b><br>Oil level     | Check oil level in oil sump, top up to level if necessary and check oil pressure   | Engine oil  | 1            |
| 3     | Cooling system                 | (a) Check water level, top up if necessary<br>(b) Check radiator for leak<br>(c) Check radiator cap for proper tightening  |             | 1<br><br>1   |
| 4     | Fuel Tank                      | Fill fuel tank after finishing work in order to reduce condensation, Drain sediments and water from sediment trap if provided  |             |              |
| 5     | Fuel filter                    | Drain sediment and water from fuel filter drain plug   |             |              |
| 6     | Air cleaner                    | Check air filter in dirty condition daily.   |             |              |
| 7     | Dynamo                         | Check fan belt for correct tension and dynamo for correct function.  |             | 1            |
| 8     | Electrical system              | (a) Check wiring for discontinuity, short circuit, loose terminals etc.<br>(b) Check battery for security in its place, check electrolyte level and if necessary tip up with distilled water |             | Complete     |
| 9     | Compressor side<br>Crank shaft | Check the level of oil and top up if necessary to required level   | Engine oil  | 1            |
| 10    | Air filter                     | Clean air filter in dusty conditions daily, in normal conditions air cleaner must be cleaned on alternative day.   |             |              |
| 11    | Air storage tank               | (a) Open the air out let valve when the equipment is stopped.<br>(b) Check the leakage if any.   |             |              |
| 12    | Moisture trap                  | Drain off daily.   |             |              |
| 13    | Safety valve                   | Check the safety valve for function, blowing off manually once or twice  |             |              |

|    |                          |  |   |
|----|--------------------------|--|---|
| 14 | Pressure running machine | (a) Check for exhaust smoke colour, noise or vibration<br>(b) Read all gauges for proper readings after every hour.<br><br>(i) Engine oil pressure<br>(II) Temperature gauge<br>(III) Compressor low pressure gauge<br>(IV) Compressor high pressure gauge | 50 to 60 Psi (3.5 to 4.2 Kg/cm <sup>2</sup> )<br>190 F (88 C)<br>25/30 Psi (1.7 to 2.1 Kg/Cm <sup>2</sup> )<br>100 Psi (7.00 Kg/cm <sup>2</sup> ) |
|----|--------------------------|--|---|

Note :-

1. Engine and oil compressor – Oil Grades

|     |                        |   |               |
|-----|------------------------|---|---------------|
| (a) | Above 90 Degree        | - | Use SAE 40 HD |
| (b) | 90 Degree to 60 Degree | - | Use SAE 30 HD |
| (c) | Below 60 Degree F      | - | Use SAE 20 HD |

2. Grease :-

|     |                   |   |                  |
|-----|-------------------|---|------------------|
| (a) | Above 60 Degree F | - | Use Grease No. 2 |
| (b) | Below 60 Degree F | - | Use Grease No. 1 |

3. When the compressor is running idle i.e, without load the low pressure gauge should indicate 'ZERO' pressure.

4. Safety valve will open at 10% higher pressure than the maximum fixed for the normal operation of the compressor.

5. Never use PETROL or KEROSENE to clean or flush out the compressor crankcase as its use is dangerous and should be absolutely PROHIBITED. Use flushing oil only.

6. Before stopping the plant open all air delivery cocks and drains cocks on the air storage tank.

EVERY 50 HOURS MAINTENANCE TASKS

|    |                   |   |              |   |
|----|-------------------|---|--------------|---|
| 1  | -                 | Carry out 8 hours maintenance tasks.  |              |   |
| 2  | Engine sump       | Change engine oil after first 50 hours of run (Running in period). Second change after every 100 hours of operation, Subsequent change after 250 hours.       | Engine oil   | 1 |
| 3  | Fan belt          | Check fan belt adjustment   |              | 1 |
| 4  | Fuel feed pump    | Clean pre-filter with diesel  |              | 1 |
| 5  | Battery           | Clean battery terminal, apply mineral jelly, check for any leak, top up electrolyte level   |              |   |
| 6  | Grease points     |   |              |   |
|    | (a) water pump    | Grease the bearing of water pump  | Grease No. 1 | 1 |
|    | (b) Wheel bearing | Add grease  | Grease No. 2 | 1 |
|    | Compressor side   |   |              |   |
| 7. | Crank case        | Change engine oil after first 50 hours (Running in period). Second engine oil change after 100 hrs operation subsequent change after 150) hours of operation. | Engine oil   | 1 |

|   |                    |   |  |   |
|---|--------------------|---|--|---|
| 8 | Compressor oil     | Clean the oil strainer at every oil change      |  | 1 |
| 9 | Air suction filter | Remove and clean air suction filter by brushing |  | 1 |

Note :-

1. Engine and oil compressor – Oil Grades
  - (a) Above 90 Degree - Use SAE 40 HD
  - (b) 90 Degree to 60 Degree - Use SAE 30 HD
  - (c) Below 60 Degree F - Use SAE 20 HD
2. Grease :-
  - (a) Above 60 Degree F - Use Grease No. 2
  - (b) Below 60 Degree F - Use Grease No. 1

#### EVERY 100 HOURS MAINTENANCE TASKS

|   |            |   |            |   |
|---|------------|---|------------|---|
| 1 | General    | Carry out 8 hours and 50 hours maintenance tasks.   |            |   |
| 2 | Engine oil | Change engine oil   | Engine oil | 1 |
| 3 | Clutch     | Twiflex automatic clutch coupling require very little attention, Examine to ascertain the state of the wear of shoe linings and bushes, at periodic intervals |            |   |

Note :-

1. Engine and oil compressor – Oil Grades
  - (a) Above 90 Degree - Use SAE 40 HD
  - (b) 90 Degree to 60 Degree - Use SAE 30 HD
  - (c) Below 60 Degree F - Use SAE 20 HD
2. Grease :-
  - (a) Above 60 Degree F - Use Grease No. 2
  - (b) Below 60 Degree F - Use Grease No. 1
3. Change engine oil early under adverse working conditions.
4. Inspect drained engine oil for metal particles. If any found report to field Workshop. DO NOT RUN THE ENGINE TILL RECTIFIED.

#### EVERY 150 HOURS MAINTENANCE TASKS

|   |                      |  |            |   |
|---|----------------------|--|------------|---|
| 1 | General              | Carry out 8 hours, 50 hours and 100 hours maintenance tasks. |            |   |
| 2 | Oil filter           | Clear the lub oil filter element with diesel.                |            | 1 |
| 3 | Fuel filters         | Clean fuel oil coarse filter element                         |            | 1 |
| 4 | Fuel Injections pump | Fill fuel injection pump housing with engine oil if required | Engine oil | 1 |

|   |                       |   |            |   |
|---|-----------------------|---|------------|---|
| 5 | Cooling system        | Flush out radiator and water jackets, clean                     |            | 1 |
|   | Compressor side       |   |            |   |
| 6 | Compressor crank case | Change oil after every 150 hrs of operation                     | Engine oil | 1 |
| 7 | Moisture trap         | Clean the felt packing, if compressor working in humid climates |            | 1 |

Note :-

1. Engine and oil compressor – Oil Grades

- |     |                        |   |               |
|-----|------------------------|---|---------------|
| (a) | Above 90 Degree        | - | Use SAE 40 HD |
| (b) | 90 Degree to 60 Degree | - | Use SAE 30 HD |
| (c) | Below 60 Degree F      | - | Use SAE 20 HD |

2. Grease :-

- |     |                   |   |                  |
|-----|-------------------|---|------------------|
| (a) | Above 60 Degree F | - | Use Grease No. 2 |
| (b) | Below 60 Degree F | - | Use Grease No. 1 |

3. Change engine oil early under adverse working conditions.

4. Inspect drained engine oil for metal particles. If any found report to field Workshop. DO NOT RUN THE ENGINE TILL RECTIFIED.

EVERY 200 HOURS MAINTENANCE TASKS

|   |                         |  |            |   |
|---|-------------------------|--|------------|---|
| 5 |                         |  |            |   |
| 1 | General                 | Carry out 8 hours, 50 hours and 100 hours maintenance tasks.   |            |   |
| 2 | Battery                 | Check electrolyte level and specific gravity and if required send for recharging check the battery for corroded fittings, remove battery connections and clean terminal posts. Apply petroleum jelly. Vent plugs should be kept clean and tight. |            | 1 |
| 3 | Dynamo and self starter | Lubricate with one drop of oil in oil holes  | Engine oil | 1 |
|   | Compressor side         |  |            |   |
| 4 | Air storages tank       | Inspect and clean the air storage tank   |            |   |
| 5 | Air filter storage tank | Replace felt packing of air filter for air storage link  |            | 1 |

Note :-

1. Engine and oil compressor – Oil Grades

- |     |                        |   |               |
|-----|------------------------|---|---------------|
| (a) | Above 90 Degree        | - | Use SAE 40 HD |
| (b) | 90 Degree to 60 Degree | - | Use SAE 30 HD |
| (c) | Below 60 Degree F      | - | Use SAE 20 HD |

2. Grease :-

- |     |                   |   |                  |
|-----|-------------------|---|------------------|
| (a) | Above 60 Degree F | - | Use Grease No. 2 |
| (b) | Below 60 Degree F | - | Use Grease No. 1 |

3. Never keep your battery idle for periods exceeding 2 weeks. If this cannot be avoided, arrange that battery is removed and recharged every 2-3 weeks. Always maintain batteries in a charged state and do not allow the batteries to stand in discharged condition.

#### EVERY 500 HOURS MAINTENANCE TASKS

|    |                                   |  |            |    |
|----|-----------------------------------|--|------------|----|
| 1  | General                           | Carry out 8 hours, 50 hours, 100 hours and 200 hrs maintenance tasks.  |            |    |
| 2  | Oil sump                          | Flush the system. Remove oil sump, clean the sump and strainer and refit.  |            | 1  |
| 3  | Fuel injection pump               | Change oil and refill upto level   | Engine oil | 1  |
| 4  | Tappet clearance                  | Check valve clearance and adjust if required.<br>Valve clearance inlet 0.010" hot and exhaust 0.012" cold                |            | 12 |
| 5  | Injection                         | Remove injectors and test. Test injector pressure if necessary.  |            |    |
|    | Compressor side                   |  |            |    |
| 6  | Concentric valve                  | Check and clean  |            |    |
| 7  | Suction air filter                | Change the element   |            |    |
| 8  | Blow off valve                    | Check and clean blow off valve on the inter cooler   |            |    |
| 9  | Pressure Regulator                | Check and clean  |            |    |
| 10 | Main and big and bearings         | Check bearing for lift and side play, Examine the big end and bolt main bearings, check nuts and split pins for security |            |    |
| 11 | Connections fittings and controls | Tighten all loose nuts, bolts and screws   |            |    |

Note :-

1. Engine and oil compressor – Oil Grades

|     |                        |   |               |
|-----|------------------------|---|---------------|
| (a) | Above 90 Degree        | - | Use SAE 40 HD |
| (b) | 90 Degree to 60 Degree | - | Use SAE 30 HD |
| (c) | Below 60 Degree F      | - | Use SAE 20 HD |

2. Grease :-

|     |                   |   |                  |
|-----|-------------------|---|------------------|
| (a) | Above 60 Degree F | - | Use Grease No. 2 |
| (b) | Below 60 Degree F | - | Use Grease No. 1 |

3. Before removing cylinder head cover, the air receiver should be released to avoid an accident due to pressure remaining in the cylinder head.

#### EVERY 1000 HOURS MAINTENANCE TASKS

|   |         |   |
|---|---------|---|
| 1 | General | Carry out 8 hours, 50 hours, 100 hours 200 hrs and 500 hrs maintenance tasks.                                   |
| 2 | Engine  | (a) Carry out decarburising,<br>(b) Inspect main and big end bearing for wear and tear and replace if necessary |

- |   |            |  |
|---|------------|--|
| 3 | Fuel tank  | Remove and clean   |
| 4 | Gauges     | Check all gauges for proper functioning, Replace if required |
| 5 | Air cooler | Clean the air cooler   |

Note :-

1. Engine and oil compressor – Oil Grades

- |     |                        |   |               |
|-----|------------------------|---|---------------|
| (a) | Above 90 Degree        | - | Use SAE 40 HD |
| (b) | 90 Degree to 60 Degree | - | Use SAE 30 HD |
| (c) | Below 60 Degree F      | - | Use SAE 20 HD |

2. Grease :-

- |     |                   |   |                  |
|-----|-------------------|---|------------------|
| (a) | Above 60 Degree F | - | Use Grease No. 2 |
| (b) | Below 60 Degree F | - | Use Grease No. 1 |

EVERY 2000 HOURS MAINTENANCE TASKS

- |   |           |   |
|---|-----------|---|
| 1 | General   | Carry out 8 hours, 50 hours, 100 hours 200 hrs, 500 hrs and 1000 hrs maintenance tasks. |
| 2 | Fuel pump | Check fuel pump and calibrate FIP if required.  |

Note :-

1. Engine and oil compressor – Oil Grades

- |     |                        |   |               |
|-----|------------------------|---|---------------|
| (a) | Above 90 Degree        | - | Use SAE 40 HD |
| (b) | 90 Degree to 60 Degree | - | Use SAE 30 HD |
| (c) | Below 60 Degree F      | - | Use SAE 20 HD |

2. Grease :-

- |     |                   |   |                  |
|-----|-------------------|---|------------------|
| (a) | Above 60 Degree F | - | Use Grease No. 2 |
| (b) | Below 60 Degree F | - | Use Grease No. 1 |

**CHECK CARD : PREVENTIVE MAINTENANCE**  
**(ORIGINAL/DUPLICATE)**

1. Project ..... 4. Make & Type Air Compressor **Action**  
MAW INDIA 160 CFM After carrying out  
the preventative  
maintenance  
Task, IC  
Mobile
2. Task Force..... 5. BA/EM NO. ....
3. Unit ..... 6. Location .....  
maintenance team will enter its date in the month's column below and initial.

| Srl No. | Tasks      | J | F | M | A | M | J | J | A | S | O | N | D |
|---------|------------|---|---|---|---|---|---|---|---|---|---|---|---|
| 1       | 08 Hours   |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (a)        |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (b)        |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (c)        |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (d)        |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (e)        |   |   |   |   |   |   |   |   |   |   |   |   |
| 2       | 50 Hours   |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (a)        |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (b)        |   |   |   |   |   |   |   |   |   |   |   |   |
| 3       | 100 Hours  |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (a)        |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (b)        |   |   |   |   |   |   |   |   |   |   |   |   |
| 4       | 150 Hours  |   |   |   |   |   |   |   |   |   |   |   |   |
|         | (c)        |   |   |   |   |   |   |   |   |   |   |   |   |
| 5       | 200 Hours  |   |   |   |   |   |   |   |   |   |   |   |   |
| 6       | 500 Hours  |   |   |   |   |   |   |   |   |   |   |   |   |
| 7       | 1000 Hours |   |   |   |   |   |   |   |   |   |   |   |   |
| 8       | 2000 Hours |   |   |   |   |   |   |   |   |   |   |   |   |

Signature of SO1/SO2 EME Project .....

Date .....

Remarks .....

Note : Column 'J' to 'D' stands for months of the year.