

DIRECTOR GENERAL BORDER ROADS
GENERAL MAINTANANCE INSTRUCTION NO.208
ON
BOMAG PNEUMATIC TYRED ROAD ROLLER
88 20R

1. **INTRODUCTION**

Bomang BW 20R Pneumatic tyred roller operating weight 12.5 Ton is self propelled compaction equipment designed for compaction of bituminous road bases etc. It is fitted with 4 cylinder 4 BT 3.9 C Cummins diesel engine developing 68 (92) KM (PS) at 2500 RPM. It is having hydro-dynamic drive system and pressurized water sprinkler system.

These instructions are issued as guidelines for general and scheduled maintenance, lubrication and safety precautions to be taken when operating these road rollers.

2. **ACTION BY**

a) **USER UNIT :-** To carry out maintenance schedule and oil change etc, as periodicity laid down by this maintenance instruction and also follow safety precautions for optimum utilization.

b) **FIELD WKSP (GREF)**

i) To carry out and monitor, maintenance schedule and oil changes etc as per periodicity laid down vide these instruction.

(ii) To advise user unit in respect of any lapses noticed.

3. **DETAILS**

The details of maintenance, fuel, lubricants and safety precautions are as under :-

a) General & periodical maintenance, fuel, lubricants and safety precautions. - Appx 'A'

b) Fuel oils and lubricants with their capacities at ambient temperatures - Appx 'B'

4. Please ack receipt.

Sd/xxxxxxx
(Bans Raj)
SE (E&M), SG
Director (Tech)
For Dir General Border Roads

Dated : 03 Aug 1999

Distribution :-

Normal

GENERAL MAINTENANCE INSTRUCTIONS

1. **GENERAL**

- (i) Careful maintenance of the machine, ensures maximum reliability and prolong the service life of important components. The work involved is small compared to the problems which may occur if these instructions are not observed.
- (ii) Clean the machine and engine thoroughly before all maintenance work.
- (iii) Carry out maintenance work on a flat base ground
- (iv) Only perform maintenance work with the engine shut down
- (v) Depressurize hydraulic hoses before performing work on them (secure machine with hand brake and shut down engine)
- (vi) Before performing work on electrical components of the machine disconnect the battery and cover with insulating material or remove.
- (vii) The term “ right/left” are always referred to the direction of travel.

PERIODICAL MAINTENANCE INSTRUCTIONS

2. **Every 10 operating hours or daily maintenance task**

- (i) Check the engine oil level and replenish it up to level, if required
- (ii) Check the fuel procleaner and clean it, if required
- (iii) Check the fuel level and replenish it, if required
- (iv) Check the compressed air tank and drain it, if required
- (v) Operate the antifreeze agent pump
- (vi) Check the water level in the sprinkler system and fill the water tank up
- (vii) Check the oil level in the steering oil container/transmission oil level/brake fluid level and replenish it up to level
- (viii) Check the coolant level and replenish it up to level, if required
- (ix) Check the water separator for correct functioning

3. **Every 50 operating hours**

- (i) Retighten the screws on air intake and exhaust tube, oil sump and engine mouth.
- (ii) Change the engine oil in the power shift transmission
- (iii) Change the transmission oil filter for the power shift transmission
- (iv) Retighten nut and bolt connections on the suction and exhaust tubes and on the oil sump engine mountings
- (v) Retighten nut and bolt connections on the machine.
- (vi) Change drive axle oil
- (vii) Change planetary gear oil
- (viii) The engine oil level must be checked twice per day for approximately the first 250 operating hours.

4. **Every 250 operating hours**

- (i) Carry out the task of cleaning the engine cooling system
- (ii) Filling the antifreeze agent pump
- (iii) Check the condition of battery, grease the poles
- (iv) Checking the parking brake and adjust it if required
- (v) Check the front wheel bearings and listen to any abnormal sound. Report to Wksp if abnormal sound found coming from bearings
- (vi) Following parts should be greased :-
 - (a) Axle mounting
 - (b) Wheel bearings and the rotor
 - (c) Propeller shaft
 - (d) Steering device
 - (e) Hinges of doors and windows and flaps.
- (vii) Change the engine oil. It should be carried out at 250 hours or at least 1 X every year

5. **Every 500 operating hours**

- (i) The following should be changed :-
 - (a) Oil filter cartridge of transmission system
 - (b) Fuel filter cartridge
 - (c) Draining the fuel tank sludge

6. **Every 1000 operating hours**

- (i) Change the transmission oil (Power shift trans)
- (ii) Clean, change the filter in the steering oil container
- (iii) Check, clean the pressure relief valve for the water tank
- (iv) Check the following: -
 - (a) Check V bolts, tightening pulley and blower hub
 - (b) Valve clearance should as under :- when engine is cold :-

Intake	= 0.25 mm
Exhaust	= 0.50 mm

It should be get checked by maintaining field wksp.

7. **Every 2000 operating hours**

The 2000 hourly maintenance schedule should be carried out at either 2000 hours of continuous operation or at least 1 X every year: -

- (i) Change the oil in the gear boxes
- (ii) Change the differential oil
- (iii) Check the brake system
- (iv) Change the oil in the steering system and the coolant of radiator on above said operating hours of at least every 2 years.

8. **The under mentioned tasks may be carried out as required**

- (i) Water sprinkler system, drain the water, maintenance in case of frost
- (ii) Clean the scraper brushes
- (iii) Cleaning, changing the dry air filter at least 1 X every year, safety cartridge at least every two years.
- (iv) Change the coolant
- (v) Check and flush the cooling system
- (vi) Bleed the low/pressure fuel lines and the fuel filter
- (vii) Check the pressure in the brake system
- (viii) Bleed the injection pump
- (ix) Bleed the high pressure fuel lines

SAFETY PRECAUTIONS

General

- (i) Make sure that you are familiar with all the eqpt of your machine
- (ii) Do not drive the roller until you are fully familiar with all the operating and control elements and know precisely how your machine works.
- (iii) Wear protective clothing such as safety helmet, safety shoes and fleves and ear protection
- (iv) Familiarize yourself with the area where you will be working
- (v) Note where the fire extinguishers and first old box are located and how they are used
- (vi) Only use the roller for the purpose it is intended.

PRIOR TO START

- (i) Refer the operating instructions before starting the machine
- (ii) Check the machine for any obvious faults
- (iii) Do not drive the machine if any instruments control lights or control elements are defective
- (iv) All protective devices must be properly occurred
- (v) Do not take any loose objects with you or, if you do, secure these to the machine or the cab
- (vi) Clean the cab windows and check windscreen wipers
- (vii) Keep the machine free of all oily or combustive materials
- (viii) Before climbing in to the machine make sure that there are no person under the machine
- (ix) Taking care when climbing onto the machine (use the steps and hand rails)
- (x) Adjust your seat and safety belt before starting the engine

9. **STARTING**

- (i) All control levers must be at “neutral” when starting the engine.
- (ii) Only start the Engine from the operator’s seat
- (iii) Check all indicators after the start to make sure that everything is functioning correctly
- (iv) Do not leave the machine unattended with the engine running
- (v) When starting with a jump lead cables, connect positive-to-positive and negative to negative. Always connect the earth wire (negative) last and disconnect it first

10. **CAUTION**

Exhaust gases are toxic, Always ensure an adequate supply for fresh air when starting the engine indoor.

11. **OPERATION**

- (i) Before setting off check that the controls, lighting and horn are working properly.
- (ii) Match the dopped of the engine to the operating conditions
- (iii) Keep away from edges and slops
- (iv) Switch on the lighting is visibility is poor
- (v) Always drive extremely carefully on slopes and always directly up or down the slope (never at an angle). Always shift to the lower travel speed range when approaching the slope
- (vi) Only change the direction of travel when the machine is at rest
- (vii) When driving in reverse, ensure that there are no persons or obstacles in the way.
- (viii) Do not climb on to the machine when in traveling
- (ix) Do not use the machine to transport persons
- (x) Watch out for unusual noises or smoke when operating the machine
- (xi) Trace the cause and have the fault correct

- (xii) Do not switch on the vibration when the machine is on highly compacted material such as asphalt or concrete.

12. **PARKING**

- (i) Before leaving the machine, switch the control lever to “neutral” apply the parking brake and shut down the engine
- (ii) If possible park the machine on level firm ground
- (iii) If you have to park on a gradient, position your machine at a right angle to the slope and put wedges under the drums or wheels
- (iv) Never jump from the machine, but always use the access step & hand rails

Appendix 'B' to GMI No. 208

FUELS, LUBRICANTS AND CAPACITIES FOR BOMAG BW 208

Srl No	Make & Type	Assy	Capacity in periodicity of oil change Ltrs	Ambient Temp⁰ C	Multi grade Lub oil of IOG Ltd	Remarks	
01.	Bomang Pneumatic tyred roller BW 20R	Engine	11 Ltrs	I st change 50 hours 2 nd change 250 hours	- 10 to 40 ⁰ C +5 to +30 ⁰ C + 25 to 40 ⁰ C - 5 to - 20 ⁰ C + 10 to - 10 ⁰ C	SAE 15W/40 SAE 30 SAE 40 SAE 10W SAE 20W/20	
		Transmission	14 Ltrs	Ist change 25 hrs	0 to 60 ⁰ C	SAE 30	
		Differential	9 Ltrs	Ist change 50 hours	All Temp	Multi purpose gear oil SAE 90	
		Gear Box	5 Ltrs (each)	Thereafter 2000 hrs every Ist change 50 hrs Thereafter 2000 hrs every	All Temp	Gear oil SAE 140	
		Steering Hydraulics	6 Ltrs	Every 2000 hrs	All Temp	Hyd Oil HLP 32	
		Leveling Cylinders	7 Ltrs	-	All Temp	Hyd Oil HLP 32	
		Fuel :- For Summer - Diesel (Gasoil) For Winter - Winter diesel fuel (down to - 12 ⁰ C)					
