

**DIRECTOR GENERAL BORDER ROADS**  
**GENERAL MAINTENANCE INSTRUCTION NO- 230**  
**OF**  
**SWARAJ FORK LIFTER**

**Introduction**

1. Strict adherence to correct periodic lubrication and maintenance will minimize trouble and extend machine life. Machine not employed in a bad working environment. It is necessary to perform inspection and maintenance at intervals.

This GMI describes for its operation, handling lubrication, maintenance checking and adjusting. It will help the operator realize peak performance through effective, economical and safe machine operation. Please read this GMI carefully before operating the machine to providing its service life.

**AIM:-**

The instruction are issued as guide lines for schedule of preventive maintenance, lubrication of SWARAJ FORK LIFTER manufactured by SWARAJ Co. Ltd for regular attention to keep the Machine in good mechanical condition and it must be strictly followed.

**Action by**

(a) **User Unit:**

To carry out periodic inspection and monitor regular/periodical maintenance as laid down in this instruction and record the tasks done in the log book.

(b) **Field Wksp (GREF)**

(i) To carry out and monitor, maintenance schedule and oil changes as per periodical maintenance laid down in the maintenance instructions and to check the record of maintenance including lubrication.

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

(c) **Mobile maintenance team:**

To ensure that proper maintenance is carried out and report accordingly to Task Force Commander and OC Fd Wksp for necessary action.

4. **Details:** The details of maintenance and lubrication with their periodicity are as under :-

- |     |                                     |            |
|-----|-------------------------------------|------------|
| (a) | Safety practices for the operator   | - Appx 'A' |
| (b) | Operating instruction & Maintenance | - Appx 'B' |
| (c) | Periodic maintenance chart          | - Appx 'C' |

5. Please ack receipt.

(Hari Prakash)  
SE (E&M) FS  
Dir (Tech)  
for Dir Gen Border

**Distribution**

Roads  
Normal

**Safety practices for the operators**

1. Only trained person shall drive or operate the power machine.
2. Operator should not allow any person to travel on the machine/fork, attachment or trailers.
3. Operator should look in the direction of travel and keep a clear view of the path along which he is traveling.
4. Operation on main roads out side the workshop premises should be permitted only with proper authorization of local Authority.
5. The operator should avoid making fact starts, sudden stop and quick's turns and keep Machine under control at all times.
6. The operator should carry loads which are safely arranged and when handling off centre load which can not be centered, the machine should be operated with caution.
7. The operator should operate the loaded machine within the prescribed gradients of machine. He should also not turn his machine on gradient.
8. To prevent an accumulation of fumes and gases in enclosed or semi enclosed areas, operator should avoid unnecessary period of idling.
9. When leaving machine unattended, operator should ensure that controls are in neutral, power about off, breaks applied key or connector plus removed if on an incline, the wheels should not be checked/ wedged.
10. Unless specifically required to do so, operator should not make repairs, alterations or adjust to the equipments.
11. Operator should not operate the machine with a leak in the fuel system until the leak has been corrected.
12. Operator under all conditions should operate the machine at a speed which will permit him to be brought to a stop in a safe manner. He should adopt the speed to the road surface, visibility and load. He should slow down for wet and slippery floors.
13. When the operator leaves the machine, he should ensure that the forks are left on the ground.
14. Operator should not allow any one to stand or walk under elevated forks or attachments, whether loaded or empty.
15. Operator should always work within the limit of the rated capacity of the machine and its attachments.
16. To ensure stability of the load the operator should set the forks sufficiently for apart and insert them as for as possible under the load.
17. Operator should carry the load as low as possible, consistent with safe Operation, with the mast filled back ward.
18. Operator should use forward or back ward tilting of the mast load with the utmost care. The mast/ upright should not be tilted forward with the carriage elevated except to pick or deposit a load on the stick. Tilting of mast/uprights should be avoided when the machine is moving.
19. On incline and ramps, the machine should be driven slowly. The load should always face up till both while ascending and descending except that on unloaded non-counterbalanced machine should be operated with the loading and facing down hill.
20. Machine should not run over loose objects which are likely to damage the machine or affect the persons nearby.

21. Avoid abrupt starting acceleration, unnecessarily abrupt breaking and sharp turning.
22. At the 50 hours of operation, replace the engine oil and new filters, and clean the interior of the hydraulic tank.
23. Ensure to period periodical maintenance and checking as indicated in the manual.
24. Ensure to use recommended fuel and lubricants.

**APPX 'B'**

### **Operating instruction/periodic maintenance**

During the 100hrs of operations, the following cautions should be adhered to:-

1. Warm up the engine at low speed, before starting
2. Avoid sudden start, full acceleration and sudden braking.
3. Change lubrication oil and grease; also maintain the oil at prescribed level.
4. Ensure use of fuel and lubricants as recommended by manufacturer.
5. If engine fails to start, try after 20 seconds to again start.
6. Stop engine, if pointer enters red range of water temperature gauge. Allow engine to cool till oil unit pointer enters working range.
7. Check parking brake; never adjust operating force of parking brake less than 20 kg.
8. Don't put your foot on brake pedal or inching pedal except for actual operation.
9. On idling speed the engine oil pressure should not be less than 1 kg/cm<sup>2</sup>, at full throttle the maximum engine oil pressure should not exceed 5.0 kg/cm<sup>2</sup>.
10. Check water oil level and leakage if any.
11. Check the Tyre pressure. Front - 7 kg/cm<sup>2</sup>  
Rear – 7kg/ cm<sup>2</sup>
12. Check oil level in hydraulic tank.
13. Check working pedal is not stuck or not depressed.
14. Check brake fluid level. Top up if necessary.
15. After starting of engine, check abnormal noise or vibration in engine.
16. Check brakes work properly.
17. Check fan belt tension.
18. Check coolant level.

**For operation safety, never fail to perform periodic maintenance or make periodic replacement of the consumable parts listed at right**

1. Master cylinder & wheel cylinder caps, dust seal - Replace every 1 year.
2. Brake hose and tube - Change every 1 or 2 yrs.
3. Power steering hose - Change every 2 yrs.
4. Fuel hose - Change every 2 to 4 yrs
5. Rubber part of power steering - Change every 2 yrs.
6. Lift chain - Change every 2 to 4 yrs
7. Hose for load handling - Change every 1 or 2 yrs

**Fuel filter** – Don't replace both micro and pre filter insert together.

**Fuel pump** – Clean the preliminary filter service by unscrewing the banjo bolt at bottom of fuel pump.

**PERIODICAL MAINTENANCE CHART**

ITEM	SERVICE	Hours					
		50	200	600	750	1200	2400
Air cleaner	Clean, Change oil						
	-Very dusty condition	√					
	-Normal conditions		√				
Engine oil	Change	*	√				
Engine oil filter	Clean		√				
Crank case breather	Clean		√				
Fuel Injecting Pump	-Lubricate; Clean strainer			√			
	-Change oil						√
Nozzle	Clean				√		
Fuel filters	Clean Bowls		√				
Primary	Change			√			
Secondary	Change				√		
Tappet clearance	Adjust	*			√		
Radiator	Drain & clean		√			√	
Battery terminals	Clean	√					
Brushes, commutator of starter & Dynamo	Check				√		
Dynamo C,E Bearing	Lubricate with SAE 30 oil				√		
Regulator contact point	Clean				√		
Torqflow transmission oil	Change oil & clean strainer		*			√	
Differential gear case	Change		*			√	
Brake oil	Change					√	
Fuel tank	Clean	*				√	
Hydraulic tank	Clean filter & strainer	*					
	Change oil					√	
Brake pedal linkage	Apply SAE 90 oil		√				
Hoist and till control linkage	Apply SAE 90 oil		√				
Inching pedal linkage	Apply SAE 90 oil		√				
Accelerator linkage	Apply SAE 90 oil		√				
Hand brake linkage	Apply SAE 90 oil		√				
Mast clamp	Grease		√				
Tilt cylinder end pin	Apply SAE 90 oil		√				
Tie rod end& steer axle	Apply SAE 90 oil	√	√				
Lift chain	Apply SAE 90 oil	√					
Nut & bolts	Tighten	√					
Propeller shaft,king pin & centre pin	Greasing						

Note : \* Indicates First change