



**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS**

**MAINTENANCE SCHEDULES  
FOR  
PLASSER'S QUICK RELAYING SYSTEM  
(PQRS)**

**REPORT NO.TM --101**

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**RESEARCH DESIGNS & STANDARDS ORGANISATION  
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## PREFACE

Maintenance of On-Track Machines is a challenging task. Maintenance of these machines is being done by zonal railways with the assistance of local trade available, zonal track machine workshops, CPOH / Allahabad and RDSO / Lucknow. With experience over the years, the railway engineers have developed adequate expertise in the maintenance of these machines. However, in absence of approved maintenance instructions, different maintenance practices have come into vogue. Therefore, it has become imperative to have a uniform maintenance standard throughout the Indian Railways. Provisional maintenance schedule manuals for Points and Crossings Changing Machine (T-28), Track Relaying Train (TRT) and final maintenance schedule manuals of CSM (09-32), BCM (RM-80), FRM-80, Unimat, Duomatic machine (DUO), Unomatic machine (UNO), Ballast Regulating Machine (BRM 66-4), Tamping Express (09-3X), Dynamic Track Stabilizer (DGS 62N), Multi purpose track tamping machine (Unimat Compact--M) and draft maintenance schedule of FRM-85-F have been issued by RDSO.

Provisional maintenance schedule manual of PQRS was earlier issued vide letter no. TM/HM/15 dated 28-11-2002. Maintenance schedule manual of Plasser Quick Relaying System (PQRS) have been prepared after necessary amendment in provisional manual on the basis of experience and suggestions received from railways.

It is hoped that this manual will be quite useful for the staff maintaining the machines in field.

While every care have been taken to make the maintenance schedules quite exhaustive, there is always scope for further improvement. Suggestions from the railways in this regard will be welcome and may be sent to the undersigned.

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## EXPLANATORY NOTES

While preparing the text of maintenance schedule manual of PQRS, the terms used and their meanings are explained below:

- CHECK - Ensure a specific condition does (or does not) exist.
  
- INSPECT - Look for damage and defects including breakage, distortion cracks, corrosion and wear, check for leaks, security and that all items are completed.
  
- CHANGE Remove old parts by substituting a new or overhauled or reconditioned part. Fit new or overhauled or reconditioned part in place of missing part.
  
- OVERHAUL - Dismantle, examine, recondition or renew parts as necessary against given specifications, reassemble, inspect and test.

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**SCHEDULE -- I**  
**(TO BE DONE DAILY)**  
**Duration-One hour**

**1. ENGINE ---**

- a) Check level of lube oil and top up if required
- b) Check and correct the tension of all V- belts
- c) Check fuel level and top up if required
- d) Record maximum engine temperature of the day
- e) Check for any leakage from fuel pump, injectors, filters and fuel pipes
- f) Check engine oil pressure
  - Rated Actual
  - i) 1.5kg/sq.cm. at idle
  - ii) 2.5kg/sq.cm. on load at rated RPM after two hrs working
- g) Check the level of electrolyte of batteries
- h) Check all engine parameter monitoring gauges after starting the engine.
- i) Check working of flasher light.
- j) Clean the engine and its premises.

**2. MACHINE GENERAL.**

- a) Check the level of hydraulic oil in tank
- b) Check the condition of links of duplex chain
- c) Check the condition of links of synchronizing chain
- d) Check the condition of locks of duplex and synchronizing chain by physical inspection
- e) Check the leakage in hoses, valves and joints. Replace if required.
- f) Check the leakage of hydraulic Cylinders. Replace the seal if required by giving the location of cylinder
- g) Check greasing of the following parts.
  - i) Pipe pulleys
  - ii) Driving motors
  - iii) Turn table
  - iv) Sprocket gears
  - v) Lateral movement trellises
- h) Check the brake application
- i) Check the chain tension and adjust if required.
- j) Adjust the tension by tensioning sprockets
- k) Inspect the complete crane for any visual crack in main frame
- l) Check all functions of portal in base depot.

## **SCHEDULE-II**

**( TO BE DONE AFTER 50 HOURS OF ENGINE RUNNING)  
DURATION- TWO HOURS**

### **1. ENGINE-**

- a) Check the gravity of batteries
- b) Check the oil bath air cleaner and change the oil if required.
- c) Check battery terminals.

### **2. MACHINE GENERAL-**

- a) Check the condition of duplex chain
- b) Check the condition of synchronizing chain
- c) Check the tension of duplex chain
- d) Check the tension of synchronizing chain
- e) Check lubrication of duplex chain
- f) Check the condition of eye bolts
- g) Check the tightness of eye bolts
- h) Check the oil cooler fan bearing
- i) Check the tightness of top plate bolts
- j) Check the tightness of bottom plate bolts
- k) Check the tightness of bolts of synchronizing shaft
- l) Check the brake system
  - i. Brake pressure should be 30 bar.
  - ii. Clearance between brake blocks and running wheel should be within 3 to 5mm.

### **SCHEDULE-III**

**(TO BE DONE AFTER 100 HOURS OF ENGINE RUNNING)  
DURATION- ONE DAY**

#### **1. ENGINE-**

- a) Change lube oil filter
- b) Change fuel filter
- c) Change the engine oil
- d) Check the engine and surroundings
- e) Check the condition of smoke

#### **2. MACHINE GENERAL-**

- a) Inspect the rollers for side frames
- b) Inspect the synchronizing shaft for any bend or crack
- c) Check the leakage from bridge lifting cylinders and change the seal on condition basis.
- d) Check the hydraulic return filter.

### **SCHEDULE-IV**

**( TO BE DONE AFTER 200 HRS. OF ENGINE RUNNING)  
DURATION-TWO DAYS**

#### **1. ENGINE-**

- a) Clean the oil bath air cleaner and change the oil.
- b) Clean diesel tank.
- c) Adjust the tappet clearance

Note: Item no. (b) and (c) will be done at 500 hrs.

#### **2. MACHINE GENERAL-**

- a) Lubricate the wheel bearing with soft grease.
- b) Change the return line filter
- c) Change the seal of bridge lifting cylinders on condition basis.
- d) Check the teeth of adopter plate shaft.
- e) Change the suction line filter.
- f) Check all the limit switch.
- g) Clean the complete machine.
- h) Lubricate the turn table with grease

Note: Item no. (a), (b) and (e) will be done at 500 hrs.

## **SCHEDULE-V**

**(TO BE DONE AFTER 1000,3000 and 5000 Hrs. OF ENGINE RUNNING)  
DURATION- 7 DAYS**

### **1. ENGINE-**

- a) Overhaul the engine on condition basis
- b) Check the alternator for proper working, Get overhauled if required.
- c) Check the self starter for proper working, Get overhauled if required.
- d) Calibrate the fuel Injectors.
- e) Calibrate the fuel injection pump.
- f) Clean the fuel tank.

### **2. MACHINE GENERAL-**

- a) Clean the hydraulic. oil with porta. filter of 10  $\mu$ .
- b) Change the side rollers with bearings.
- c) Replace the duplex chain.
- d) Replace the synchronizing chain.
- e) Clean the complete machine.
- f) All driving wheels to be reprofile on condition basis.
- g) Clean the hydraulic tank.
- h) Inspect the complete crane for any damage.



## **SCHEDULE- VI**

**(TO BE DONE AFTER 2000 and 4000 Hrs. OF ENGINE RUNNING)  
DURATION-45 DAYS**

### **1. ENGINE-**

- a) Engine is to be overhauled if there is a lack of compression otherwise not.

### **2. MACHINE GENERAL-**

- a) All the roller guide to be taken out and built up by welding the profile.
- b) All hydraulic hoses to be replaced.
- c) Pumps to be checked and replace if required.
- d) Motors to be checked and replace if required.

## **SCHEDULE-VII**

**(TO BE DONE AFTER 6000 Hrs. OF ENGINE RUNNING)  
DURATION - 60 DAYS**

### **1. ENGINE-**

- a) Overhaul or replace the engine.
- b) Overhaul the self starter.
- c) Overhaul the alternator.
- d) Change the engine mounting pads.
- e) Change oil bath air cleaner element.
- f) Change all V-belts.
- g) Replace the batteries.

### **2. MACHINE GENERAL-**

- a) Replace seals of all hydraulic cylinders.
- b) Change all hydraulic pumps.
- c) Change all hydraulic motors.
- d) Replace all hydraulic hoses.
- e) Clean the hydraulic tank.
- f) Replace the hydraulic oil.
- g) Replace all hydraulic filters
- h) Clean hydraulic oil cooler along with required repairs.
- i) Change all D.C. valves.
- j) Change all pilot operated valves.
- k) Duplex chain to be replaced.
- l) Synchronizing chain to be replaced.
- m) Bearings of all wheels to be replaced.
- n) All rollers to be replaced.
- o) Contact surface of side frame with rollers should be checked. For any dips and wear, welding should be done.
- p) Side frame should be attended for any cracks.
- q) Replace all defective lights.
- r) Replace the brake blocks.
- s) Check the condition of sleeper gripper and strengthen it if required.
- t) Change the cables and wires of electrical circuit on condition basis.
- u) Paint the complete crane.
- v) Check the proper functioning of portal in all respect.

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