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# Planned Maintenance Inspection Checklist

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**NORDCO PYKE Model 80-18 RAIL CRANE**  
**(Nordco Rebug)**

Revised July 2010

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## Safety

Machine Operators **shall not** perform any repair, maintenance, testing or adjustments of their machinery or equipment unless they are “qualified”. For these purposes a Machine Operator is deemed to be “qualified” if he/she has the necessary knowledge, experience and training, both in the theory and in the practical, to perform the specific task safely and properly. For tasks beyond his/her capabilities, the Machine Operator must seek assistance through the Foreman or Supervisor for the services of a Work Equipment Maintainer (Traveling Mechanic in the USA) or other “qualified” person.

If you are unsure of any of the tasks listed in this document, please consult your Supervisor and always refer to the operation/maintenance manual for this equipment.

Prior to performing any maintenance function, ensure the proper steps have been completed to ensure the safe execution of your work. This should include task briefings with any additional persons involved.

Ensure operators manual & machine parts book, including those for any optional or auxiliary equipment, are stored on the machine and are in good legible condition.

Ensure all safety compliance decals and related instructions, including those indicating an unacceptable operating parameter is located appropriately and in good order.

**Ensure machine is equipped with “Lock-Out Tag-Out” instructions, lock-out tag, clasp and lock.**

***Remember that no job on our Railway will ever be so important that we can't take the time to do it safely.***

## Daily Lubrication

Complete scheduled lubrication as per chart: Appendix A

Note: Appendix A, Supersedes all other scheduled lubrication documentation.

Machine Nordco/Pyke Model 80-18 Rail crane Unit # \_\_\_\_\_ - \_\_\_\_\_

Hour meter \_\_\_\_\_.

When to Service	Component	Operation (s) to be Performed. (8)* Denotes number of fittings.	What to Use
Daily	Engine	Check oil level and add oil if necessary; Keep Full.	SAE:15-40
Daily	Engine	Check cooling system level and add 50% and 50% anti freeze mixture if necessary; Keep full.	Ethylene glycol base anti-freeze

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Daily	Engine	Check fuel tank level and add fuel if necessary; Keep above ¼ full.	ASTM Grade 2-D climatized fuel. Use of diesel fuel with sulfur content less than 0.10% (1000 ppm) is recommended. Cetane number of 50 or greater is recommended, especially in low temps or high elevations (>5000 ft.).
Daily	Transmission Charge Pump	Verify no oil at breather. (Early warning of pump failure.) Note: Breather located under lower deck air tank.	
Daily	Transmission	Check transmission oil level.	
Daily	Hydraulic	Check hydraulic oil level; Ensure level is within range on level indicator.	Esso Univis Extra. Petro Can Harmony Plus. Petro-Can Hydrex XV.
Daily	Air	Drain air tanks; After machine has been shut down; Open drain cock and allow air pressure to deplete. Leave drain cock open until next start-up.	
Every 5 Hrs. of Operation	Main Boom	Grease main boom heel pivot pin. (2). Two Shots.	Grease EXP Grade-2.
Every 5 Hrs. of Operation	Slewing Ring	Grease slewing ring. (3) Six shots. NOTE: Rotate deck 360 degree's, while lubricating.	Grease EXP Grade-2. or Mobil Lux EP 2
Every 40 hours of operation	Air Compressor	Check air compressor lubricating oil; Add as required; Keep full.	Atlas Copco Recip Oil
First 20 Hrs. of Operation	Transmission	Change oil and filter. Change filter ever 200 hours thereafter. Change oil every 600 hours thereafter.	Funk does not recommend use of any fluid that uses an EP additive. Depending on temperature, Fluid Type C-4, or C-4 grade 30. They also do not

			recommend use of Multi-viscosity oil. See Page 15-1 of the Transmission manual.
Every 20 Hrs. of Operation	Drive Train	Grease Drive Shafts & Universal Joints. (6) Single shot	Grease EXP Grade-2.
Every 20 Hrs. of Operation	Drive Train	Check Differential lube oil level; Add as necessary; Keep full.	EP 75-W90.
Every 40 Hrs. of Operation	Pump Drive	Check pump drive lube oil level; Add as necessary; Keep full.	EP 75-W90.
Every 40 Hrs. of Operation	Swing Drive	Lubricate deck rotation gear. Apply liberally to pinion & ring gear drive surface.	Cling-Type open face gear lubricant. Bowman 19464. or  Mobil tac 375NC open gear spray
Every 50 Hrs. of Operation	Winch (Boom, Hoist & Auxillary)	Change lubricating oil after initial 50hrs of operation (on new, rebuilt or serviced units.)	EP 75-W90.
Every 120 Hrs. of Operation	Wire Rope (Boom, hoist & Aux)	Lubricate wire rope; Boom, Hoist, Auxiliary & Pendant. Apply liberally to surface.	Open cable lubricant.  Bowman 19452
Every 120 Hrs. of Operation	Stabilizer Tubes	Lubricate slide surfaces of stabilizer tubes.	Bowman Graphite 19437.
Every 120 Hrs. of Operation	Tag Winder	Check tag winder lube/damping oil level; Add as necessary.	EP 75W-90
Every 200 Hrs. of Operation	Transmission	Change Filter	
Every 320 Hrs. of Operation	Air Compressor	Replace compressor lube oil & filter if equipped.	Atlas Copco Recip Oil
Every 320 hrs. of Operation	Engine	Perform engine service; Replace oil and oil filter; Replace fuel filters & Water separator.	SAE:15-40

Every 500 Hrs. of Operation	Winch (s)	Replace winch lubricating oil.	EP 75W90
Every 640 hrs. of Operation	Transmission	Change Oil and Filter	Funk does not recommend use of any fluid that uses an EP additive. Depending on temperature, Fluid Type C-4, or C-4 grade 30. They also do not recommend use of Multi-viscosity oil. See Page 15-1 of the Transmission manual.
Every 1000 Hrs. of Operation	Differential	Replace differential lubricating oil.	EP 75W90

## 40 Engine Hours (Max)

### Task A

#### Engine Components

- A1. Check engine RPM, must obtain 2100 full throttle, no load.
- A2. Check air filter indicator. Change primary & secondary filters when tripped Red.
- A3. Check air intake piping and connections. Clamps must be sufficiently tight.
- A4. Check condition of exhaust piping, muffler & support mounts.
- A5. Check condition of radiator. Inspect for leaks, dirt build-up and condition of support mounts.
- A6. Check condition of fuel pump, primary & secondary filter and fuel delivery lines for leaks.

#### Hydraulic Components

- A7. Check hydraulic pumps for oil leaks.
- A8. Check hydraulic oil cooler for leaks and dirt build-up.
- A9. Check hydraulic suction hoses. Hose clamps must be sufficiently tight.
- A10. Check center shaft swivel manifold for oil leaks.
- A11. Check hydraulic return filter indicators.

#### Air Components

- A12. Check air psi build time, 50-90 psi should not exceed 3 min @ 1500 rpm.
- A13. Check air compressor governor cut-in 115 psi min, cut-out 125 psi. max.
- A14. Check air system leak down, with engine stopped should not exceed 5 psi in 15 min.

## Drive Train

- A15. Check transmission & differential for oil leaks..
- A16. Check condition of drive shafts. Ensure flange / Universal cross bolts are sufficiently tight. .

## Boom, Cable & Lifting Components

- A17. Check condition & location of pin & keepers, main boom heel.
- A18. Check condition & location of pin & keepers, Boom, Hoist & Auxiliary Sheaves.
- A19. Check condition of Boom, Hoist, Auxiliary & Pendant Cables.
- A20. Check condition of boom section connectors. Pins sufficiently tight & keepers in place.
- A21. Check condition of boom stringers and lattice members for damage.
- A22. Check condition & operation of Cranesmart Max Angle Cutout. 85 degree cutout.
- A23. Check condition & location of inner stabilizer stop clamp.
- A24. Check condition & location of stabilizer tube retention pins & keepers.
- A25. Check condition of magnet lift chains, ring and hook block.
- A26. Check condition & operation of tag line winder and cable sheaves.
- A27. Check generator output voltage. Adjust to conditions 230 V DC.
- A28. Check condition of magnet cable and plug type connections.

80 Engine hours (Max) Includes completion of 40 hour inspection.

## Task B

### Engine Components

- B1. Check A/C bracket and drive belt. Must be sufficiently tight.
- B2. Check battery, fluid level (if serviceable), terminal post connections are clean and tight.
- B3. Check electrical wiring and connections within engine comp. Including starter terminal.
- B4. Check condition & tightness of V- belt.

### Hydraulic Components

- B5. Check hyd. Tank inspection cover, condition of retainers, gaskets & breather.

- B6. Check main control valve for oil leaks.
- B7. Check condition of deck swing motor and hold down bolts. Must be sufficiently tight. 375 ft. lb. Dry.

#### Air Components

- B8. Check air dryer. Does dryer leak air? Does dryer cycle & exhaust condensation?
- B9. Check air compressor air intake filter. Clean or replace as required.

#### Brake Components

- B10. Check condition of brake shoes. Replace when worn to condemn limit.
- B11. Check brake shoe adjustment.  $\frac{3}{4}$  in. from wheel when released. Max
- B12. Check operation of hand brake. Ensure adequate pressure can be applied to withstand unintended movement.

#### Drive Train Components

- B13. Check condition of drive motor mounting bolts. Must be sufficiently tight.
- B14. Check condition of transmission mounting bolts. Must be sufficiently tight. 265 ft lb. Dry.

#### Swing

B15. Check condition of slewing ring retention bolts. Bolts must be sufficiently tight. 225 FT – LB. Slewing Ring Mfr recommends this every 2000 hours. Also: If one or more bolts have lost 20% or more of the prescribed preload, then the actual bolt(s) as well as the two adjacent ones, should be replaced. If 20% or more of the total number bolts of a single ring are found to have less than 80% of the prescribed preload, all the bolts should be replaced.

- B16. Check condition of swing pinion and retaining bolt. Must be sufficiently tight.
- B17. Check operation of swing brake control.

#### Cab Components

- B18. Check air conditioner filter and condenser for dirt build-up.
- B19. Check cabin for positive pressurization.



160 ENGINE HRS (MAX) Includes completion of 40 and 80 hour PM inspection tasks.

## Task C

### Engine Components

- C1. Check engine coolant protection level. (-30 DEG. F) min value.
- C2. Check engine mount condition.
- C3. Check engine cooling system hoses and connections.
- C4. Does engine start easily, operate and maintain power as desired?

### Hydraulic Components

- C5. Does Hydraulic circuit activate all boom, swing and travel functions as desired?
- C6. Check condition of generator drive coupler.
- C7. Observe track drive suction filter indicator.
- C8. Observe high pressure filter indicators.
- C9. Observe return line filter indicators.
- C10. Observe control circuit filter indicator.

### Air Components

- C11. Check air compressor discharge line for oil contamination. Perform air build-up test.
- C12. Check air compressor mounts.
- C13. Check air compressor drive coupler.
- C14. Does air circuit develop adequate air pressure to maintain all functions during operation?

### Drive Train

- C15. Does drive train operate as desired in work and travel modes?
- C16. Check differential torque arm. Must limit movement. Ball bushings and pins sufficiently tight.

### Boom, Cable & Lifting Components

- C17. Does boom facilitate handling of rail and material handling as desired?

- ❑ C18. Does crane swing smoothly?
- ❑ C19. Check condition of tag winder contacts & slipper ring.

#### Cab Components

- ❑ C20. Check Air conditioner output. Ensure cooling to (21 DEG C.) can be maintained.

#### Lubrication Audit

- ❑ C21. Maintainer to complete lubrication audit. See Appendix L.

320 ENGINE HRS (MAX) Includes completion of 40,80,and 160 PM Inspection tasks.

This inspection to be performed by a Work Equipment Maintainer or authorized/qualified employee.

### Task D

#### Engine

- D1. Take engine oil sample. Label as per instructions and forward to PMC for analysis.
- D2. Replace engine oil and fuel filters.

#### Hydraulic Components

- ❑ D3. Take Hydraulic oil sample. Label as per instructions and forward to PMC for analysis.

#### General

- ❑ D4. Steam clean / power wash entire machine.

#### Engine Components

- ❑ D5. Complete engine service.

#### Hydraulic Components

- ❑ D6. Check hydraulic oil pressures. Refer to Sheet 1 of the Hydraulic Schematic.
- ❑ D7. Check transmission clutch pressure. 270 psi.
- ❑ D8. Check lube flushing pressure. 20 psi.
- ❑ D9. Check operation of hyd. Emergency pump.
- ❑ D10. Check condition of hyd. Oil fill pump, filter & sterile tube.

## Drive Train

- D11. Check wheel wear. Use gauge for this purpose.
- D 12 Change Transmission filter.

## 12 WEEK PM (TASK MP) 3 Month

- MP1. Complete air gauge test in accordance with MP661. Record on MP661.

## 16 WEEK PM (TASK E) 640 ENGINE HRS (MAX)

640 ENGINE HRS (MAX) Includes completion of 40.80.160 and 320 PM inspection tasks.

This inspection to be performed by a Work Equipment Maintainer or authorized/qualified employee.

## Task E

### Engine sampling and maintenance

- E1. Take engine oil sample. Label as per instructions and forward to PMC for analysis
- E2. Change engine oil. Change oil and fuel filters
- E3. Complete engine top end scheduled maintenance. Complete valve lash adjustment. Inspect turbo charger.
- E4. Replace coolant filter and perform DCA analyses.

### Hydraulic sampling and Components

- E5. Take Hydraulic oil sample. Label as per instructions and forward to PMC for analysis.
- E6. Flow test pumps. Enter flow results in the notification general text.

### Hydraulic Components

- E7. Complete Hydraulic circuit & component evaluation.
- E8. Replace high-pressure filter elements.

- E9. Replace return filter elements.
- E10. Replace traction filter element.
- E11. Replace reservoir breather filter.
- E12. Replace filter elements on pre-fill circuit.
- See winch and transmission instructions

Recommended technical tolerances shown are provided as a guide and must be combined with practical performance criteria to establish overall results. See Appendix F.

## Boom & Lift Components

### Boom

- E13. Check clearance, pin, heel to main boom bushing. Max .035 in. combined.
- Individual pin to deck boss. Max .025 in. combined.
- Lubrication: Adequate\_\_\_\_\_. Needs Improvement\_\_\_\_\_. Poor\_\_\_\_\_.

### Stationery Sheave Block

- E14. Check condition of stationary sheave block retention bolts. Must be sufficiently tight.
- E15. Check condition of sealed bearings on stationary sheave block. Bmgs Roll smooth, no play.
- E16. Check condition of sheave cable groove.
- E17. Check condition of stationary cable retention pin, thimble and cable clamps.

### Hoist Sheave Block

- E18. Check condition of hoist sheave block. Bmgs roll smooth, no play.
- E19. Check condition of hoist sheave block sheave cable groove.

### Pendant Cable

- E20. Check condition of pendant cable connections. .040" combined clearance. Max.
- 1.\_\_\_\_\_. 2.\_\_\_\_\_. 3.\_\_\_\_\_. 4.\_\_\_\_\_.
- E21. Check condition of pendant cable. Remove cable end and separate cable twist.

### Secondary Hoist Sheave

- E22. Check condition of secondary boom hoist sheave. Bearings roll smooth, no play.

- E23. Check condition of secondary boom hoist sheave cable groove. .
- E24. Check condition of hook block sheave. Bearings roll smooth, no play.

#### Tag Winder

- E25. Check tag winder shaft endplay. Max .035 in.\_\_\_\_\_.
- E26. Check tag winder shaft side play. Mac .025 in.\_\_\_\_\_.
- E27. Check tag winder spring tension. Must be adequate to fully retract cable.\_\_\_\_\_
- E28. Check tag winder contact & slipper thickness. \_\_\_\_\_.

#### Winch

- E29. Check boom, hoist & auxiliary winch mounting bolts. Must be sufficiently tight.
- E30. Check boom, hoist & auxiliary winch operation.
- Boom\_\_\_\_\_. Hoist\_\_\_\_\_. Auxiliary\_\_\_\_\_.
- E 31 Change winch Lubricating oil.

#### Deck Rotate & Slewing Ring

- E32. Check condition of slewing ring retaining bolts to car body. Must be sufficiently tight, evidence of moving ? 230 ft lb.\_\_\_\_\_.
- E33. Check condition & clearance of slewing ring bearing. Max .060 in.\_\_\_\_\_.
- E34. In combination with E16, Observe ability to install house lock pins.\_\_\_\_\_.
- E35. Check condition of swivel valve. Identify any hydraulic leaks (external/internal). Noise.\_\_\_\_\_.
- E36. Check condition of slewing ring sprocket teeth.\_\_\_\_\_.
- E37. Check condition of turntable sprocket attaching bolts to house. Must be sufficiently tight.\_\_\_\_\_.
- E38. Check condition of rotoversal mounting bolts. Must be sufficiently tight, evidence of turning?\_\_\_\_\_.
- E39. Check condition of rotoversal pinion sprocket & retention bolt. Must be sufficiently tight.\_\_\_\_\_.
- Lubrication: Adequate\_\_\_\_\_. Needs Improvement\_\_\_\_\_. Poor\_\_\_\_\_.

#### Differential

- E40. Check drive shaft universal joint cross bearing condition.
- E41. Check drive shaft flange condition.

- E42. Check drive shaft splined slip joint condition.
- E43. Observe condition of differential axle seals.
- E44. Check condition of torque arm link & ball bushing. .025 in. Max, combined wear.
- E45. Check condition of coil springs.
- A End\_\_\_\_\_. B End\_\_\_\_\_.
- Lubrication: Adequate\_\_\_\_\_. Needs Improvement\_\_\_\_\_. Poor\_\_\_\_\_.

## Transmission

- E46. Check transmission mounting bolts. Must be sufficiently tight and locking tabs in place.
- E47. Check transmission output shaft endplay. Max .010 in. Max.
- E48. Check general operation of transmission, up shift – down shift.
- E 49 Change transmission oil and filter.

## Brake Linkage

- E50. Check clearance Shoe bracket pin to bracket boss. .035 in. Max
- E51. Check clearance shoe bracket pin to Swing bracket. .035 in. combined. Max
- E52. Check clearance shoe bracket pin to link plate. .035 in. combined. Max
- E53. Check clearance pivot bracket pins to pivot bracket. .035 in combined. Max
- E54. Check clearance pivot bracket pin to upper link plate. .035 in. combined. Max
- E55. Check clearance upper link plate to control bracket. .035 in. combined. Max
- E56. Check clearance upper link plate pin to turnbuckle. .035 in. combined. Max
- A End\_\_\_\_\_. B End\_\_\_\_\_.
- Lubrication: Adequate\_\_\_\_\_. Needs Improvement\_\_\_\_\_. Poor\_\_\_\_\_.

## Electrical Components (12V)

- E57. Complete DC electrical evaluation. See Appendix E.

## Master Control System

- E58. Check pushbutton switch(s) operation.\_\_\_\_\_
- E59. Check terminal strip connections.\_\_\_\_\_.
- E60. Check general wiring.\_\_\_\_\_.

- E61. Check circuit breaker connections\_\_\_\_\_.

#### Operational Checks

- E62. Perform operational checks.
- Boom Up\_\_\_\_\_. Boom Down\_\_\_\_\_. Hoist Cable Out\_\_\_\_\_. Hoist Cable Rewind\_\_\_\_\_.
- Auxiliary Cable Out\_\_\_\_\_. Auxiliary Cable Rewind\_\_\_\_\_.
- Swing Left\_\_\_\_\_. Swing Right\_\_\_\_\_. Outriggers Extend\_\_\_\_\_. Outriggers Down\_\_\_\_\_.
- Travel Forward\_\_\_\_\_. Travel Reverse\_\_\_\_\_. Two Speed\_\_\_\_\_.

#### Air Components

- E63. Complete air dryer service. Replace desiccant cartridge

#### Drive Train

- E64. Check lower frame assembly, bearing housing clearance. .300 in. Max.
- A End L.\_\_\_\_\_. A End R.\_\_\_\_\_. B End L.\_\_\_\_\_. B End R.\_\_\_\_\_.

#### Coupler

- E65. Check coupler knuckle wear. Use gauge provided for this purpose.
- E66. Check drawbar retention keeper wear.
- E67. Check drawbar free travel.
- A End.\_\_\_\_\_. B End\_\_\_\_\_.

#### TASK MP 6 Month

- MP2. Complete air compressor orifice & governor test in accordance with MP661. Record on MP661.

#### TASK MP 12 Month

- MP3. Complete 12 month air brake checks in accordance with MP661. Record on MP661.

#### Regulatory Requirements

#### 52 WEEK PM (TASK G) 12 Month Regulatory Requirement

- G1. Arrange for annual boom inspection by certified inspector. Inspection is to be performed in accordance with CSA standard Z150-98 Safety Code on mobile cranes. Section 4.3.5 Annual Inspection. Record Inspection in crane logbook and in record of regulatory or special tests section at the end of the Roadway Machine Daily Inspection & Planned Maintenance Record. Copy of Inspectors certification to remain with crane, additional copy to be filed with Supervisor Equipment Maintenance for applicable SA.

- G2. Complete One Year or 500 Hour Scheduled service to Main, Hoist and Auxiliary winch (s).

#### 104 WEEK PM (TASK MP) 24 Month

- MP4. Complete 24 month air brake checks in accordance with MP661. Record on MP661.
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