PREVENTATIVE MAINTENANCE

PAVER AND ROLLER
THANKS TO BRUCE BARBARIK  ASAP PAVING

Sound playing theme from 2001  Also Sprach Zafrathustra
What are we maintaining?

• EVERY roller has 3 circuits that require YOUR attention
  
  – PROPEL
  
  – WATER
  
  – COMPACTION
What are we maintaining?

• Those 3 circuits (propel, water, compaction) require 2 forms of power
  – Engine Power
  – Fluid Power
What are we maintaining?

• These 2 power sources need daily attention to function

  • **Engine**
    - Air
    - Fuel
    - Cooling/Lubrication

  • **Fluid Power**
    - Pumps
    - Motors
    - Filters
What are we maintaining?

Gramma told me:

“Boy if you don’t know where you are going then any road’ll get you there”

You need an Equipment Management Program
What are we maintaining?

What is an “Equipment Management Program….”

✓ Software programs
✓ Fuel usage intervals
✓ Hour meter or calendar intervals
✓ Technology (Komtrax, ProductLink)
✓ Oil Analysis
✓ DAILY PRESTART CHECKLIST
# USE A CHECKLIST FOR EACH MACHINE

## JAS. W. Glover, LTD
### DAILY MAINTENANCE CHECK LIST

<table>
<thead>
<tr>
<th>PAVER</th>
<th>ROLLERS DRUMS &amp; PNEUMATIC</th>
<th>MTV</th>
<th>ENGINE</th>
<th>SAFETY</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUSH ROLLERS</td>
<td>WATER SYSTEM</td>
<td>HOPPER RUBBER</td>
<td>GAUGES</td>
<td>BEAT</td>
<td>MECHANIC:</td>
</tr>
<tr>
<td>HOPPER RUBBER</td>
<td>BACKUP WATER SYSTEM</td>
<td>C-1 HOPPER</td>
<td>HOSES &amp; BELTS</td>
<td>BEAT BELTS</td>
<td>DATE:</td>
</tr>
</tbody>
</table>
| HOPPER CONDITION | NOZZLE CONDITION | C-1 AUGERS | COOLING SYSTEM | BEACON LIGHT | TIME ASSIGNED: \_
| FLOW GATES | WATER FILTERS | C-1 CONTROLS L & R | LEAKS | RACKUP ALARM | \_
| CONVEYOR CHAINS & DECKING | COCOA MAT FRONT & REAR | SKID PLATES | FIRE EXTINGUISHER | HORN | AM \_
| UNDER CARRIAGE | SCRAPER BARS FRONT & REAR | VIBRATOR | FUME EXCLUDER | | PM | |
| PADS | STEERING CYL. & PINS | C-1 WEAR PLATES | | | |
| TOWPOINT | FRAME "CRACKS" | C-1 BEARINGS | | | |
| CHAINS DRIVE & FEEDER | FORWARD / REVERSE CONTROLS | C-2 HOPPER | | | |
| AUGER CONDITIONS "1/6in DIA." | GAUGES SPEED & VPM | C-2 AUGERS | | | |
| FEEDER CONTROLS | ROLLER GAP "STATIC" & NICKEL | C-2 CHAINS & SPROCKETS | | | |
| SCREED | DRUM COND. (FLAT & GROOVED) | C-2 BEARING | | | |
| THICKNESS | VIBRATOR AUTO & MANUAL | C-2 WEAR PLATES | | | |
| LIFT CYLINDER | AMPLITUDE HI & LOW | C-3 CHAIN & SPROCKETS | | | |
| SCREED PIVOT POINT PINS | FREQUENCY | C-3 WEAR PLATES | | | |
| MAT THICKNESS SCREWS | ISOLATORS RUBBER & TIRE 35psi | C-3 BEARINGS | | | |
| PRE STROKE OFF CONDITION | TIRES | C-3 SWING | | | |
| EXTENSION PIVOT PINS | AIR CONTROL SYSTEM | TIRES "110 psi" | | | |
| EXTENSION Tubes | BRAKES | BRAKES | | | |
| EXTENSION ADJ. MECHANISMS | WASH DOWN SYSTEM | STEERING | | | |
| CROWN CONTROL | | | | | |
| END GATES | | | | | |
| SLOPE BAR | | | | | |
| ELECTRONICS CONDITION | | | | | |
| GAUGE & PANELS | | | | | |
| WASH DOWN SYSTEM | | | | | |
| BURNERS | | | | | |
| VIBRATOR | | | | | |

### OPERATOR / FOREMAN COMMENTS

---

OPERATOR: | MECHANIC: | DATE: | TIME ASSIGNED: |
---|---|---|---|
--- | | | AM PM |

ACCEPTED BY:
This checklist is available from
Vince.egan@terex.com
COMPACTION IS ACHIEVED BY

- **Static Roller**
- **Rubber Tired Roller**
- **Vibratory Roller**

**Static Pressure**  **Manipulation**  **Impact**  **Vibration**
<table>
<thead>
<tr>
<th>Item</th>
<th>Repair</th>
<th>Good</th>
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</thead>
<tbody>
<tr>
<td>Water System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backup Water System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nozzle Condition</td>
<td></td>
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<tr>
<td>Water Filters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocoa Mats Front &amp; Rear</td>
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<td></td>
</tr>
<tr>
<td>Scrapers Front and Rear</td>
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<td></td>
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<tr>
<td>Steering Cylinder and Pins</td>
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<td></td>
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<tr>
<td>Frame &quot;Cracks&quot;</td>
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<td></td>
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<tr>
<td>FNR Controls</td>
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<td></td>
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<tr>
<td>Gauges Speed and VPM</td>
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<td></td>
</tr>
<tr>
<td>Roller Gap Static and Nickel</td>
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<td></td>
</tr>
<tr>
<td>Drum Condition Flat/Grooved</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibes (auto/manual)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amplitude (High &amp; Low)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolators (block or tire)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Controls (Air on the Go)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brakes (Park &amp; Dynamic)</td>
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</tr>
</tbody>
</table>
Water System

Water Spray Nozzles

MAT

SCRAPERS
Remember your nozzles are sized to your water pump
Keep the restrictors in the nozzles
Water expands 1770X’s its volume when changing to a gas this
Can create bumps in OGFC or SMA mixes costing dollars
Water System

FILTERS AND STRAINERS

MATS AND SCRAPERS
Forces of Compaction

• Static
  – Split drum check gap
  – EMPTY drums in winter refill summer
  – Check weight bolts
TANDEM STATIC

- Split Drums
  - Look at centerline for correct alignment
  - Cocoa mats and scrapers
  - Look for worn mats and drum grooves from hog rings
  - Replace old steel scrapers with urethane

- Steering yoke
  - Look for cracks and slop that happens when loading unloading and
- Look for cuts, bulges and bruises on the side wall
- Look for tears in the tread area
- Check tire pressures
- Inspect front and rear rim for dings and dents
- Insure correct center or alignment tire adjustment, should be straight up and down when loaded
- Be sure it is ballasted
- GREASE the drivelines
- PLEASE keep wheel nuts properly torqued
Static Pneumatic Force

- Pneumatic force is weight at tire divided by tire contact area
- Expressed as PSI
- Vary PSI by varying tire pressure / ballast
- Low tire pressure - low force
- High tire pressure - high force
DOUBLE DRUM VIBRATORY

- All vibratory rollers have isolators
- Check ‘em
- Can cause a loss of vibe force
Vibratory Amplitude

- Spinning eccentric weight causes drum movement
- Falling drum adds to compactive force
- Distance drum moves is called amplitude
- Amplitude determines impact force


Vibratory Frequency

- **Frequency is drum impacts per minute**
- **Working speed must match frequency**
- **Best results when impact spacing is 10-14 per foot**
• Loss of 1 engine RPM causes loss of 1 VPM
• Drops in VPM results in inadequate impact spacing, mat marking and a loss of density
• This RPM drop can be caused by air filter, fuel filter, bad fuel, broken isolator
• If your hammer has a broken handle fix it BEFORE you drive the nail!!!
Reed Tach to check VPM’s
## 778 – 78 IN. WIDE DRUM

<table>
<thead>
<tr>
<th>VPM</th>
<th>LO AMP .020</th>
<th>HI AMP .030</th>
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<tr>
<td></td>
<td>C.F.</td>
<td>H.P.</td>
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<tr>
<td>2800</td>
<td>16,487</td>
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<td>3000</td>
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<td>3200</td>
<td>21,534</td>
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<tr>
<td>3600</td>
<td>27,254</td>
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<tr>
<td>3800</td>
<td>30,368</td>
<td>11.65</td>
</tr>
</tbody>
</table>

\[
\text{HP} = \frac{\text{VPM} \times \text{AMP} \times 2 \times \text{C.F.}}{12 \times 33,000}
\]
TREAT IT AS IF IT WERE YOUR OWN. IT IS.
KEEP ALL AREAS FREE OF HAZARDS SUCH AS SHOVELS, LUTES, RAKES, LUCHBOXES, MILKCRATES AND BREAD OVENS
KEEP CATWALKS CLEAN AND GREASE FREE
ALWAYS SHUT DOWN THE ENGINE & LOCK IT OUT BEFORE ATTEMPTING ANY INSPECTIONS OR MOVING AROUND THE PAVER OR ROLLER

A
PAVER MAINTENANCE
Rubber Tire or Rubber Track

- Look for cuts, bulges and bruises on the side wall
- Look for tears in the tread area
- Check tire pressures
- Inspect front and rear rim for dings and dents
- Insure correct center or alignment tire adjustment, should be straight up and down when loaded
- Be sure it is ballasted IF NEEDED
- GREASE the drivelines
- PLEASE keep wheel nuts properly torqued

- PLEASE do not use petroleum based solvents. They can soften the rubber.
- Adjust as needed. Follow manufacturers instructions for adjusting non Smartrac belts
- KEEP IT CLEAN. Keep asphalt build up from track and components, idlers, drives, rails.
- If not self adjusting keep track tensioned
- Follow correct operating procedures
- Ensure DeTrack, if equipped, is functioning
What are we maintaining?

- EVERY PAVER, RUBBER TIRE, STEEL TRACK OR RUBBER TRACK, has 3 circuits that require YOUR attention
  - PROPEL
  - DELIVERY
  - SPREADING
RUBBER TRACK DESIGN

DESIGN AND CONSTRUCTION OF PAVER TRACKS

CONSTRUCTION

- Tread
- Steel Ply Cords
- Steel Ply Cords
- Steel Main Cords
- Steel Ply Cords

ADVANCED RUBBER COMPOUNDS

- Tread Rubber developed for high weight loading and to prevent cuts and gouges.
- Proven to survive the high heat conditions of an asphalt paver

- Guide Lug
  - An extreme, high density, anti-gouge Guide Lug Rubber Compound has been utilized which will allow the guide lug to remain steadfast to the main body of the track, even in paving work that includes frequent turns.

- Main Carcass
  - The construction of the main carcass, which contains multiple layers of steel cords, provides superior torsional and transverse strength during operation.

- Reinforced Roller Path
  - For longer life
  - Bridgestone Engineers focused on maximizing track life by minimizing roller path wear. Bridgestone’s global R&D Group was utilized to formulate a Rubber Compound which has created an industry benchmark.

FEATURES
RUBBER TRACK CARE

PROPEL

- Do not operate the machine with the operator in the front or rear of the machine.
- Do not operate the machine in reverse without the operator in the front.
IS THIS YOUR PAVER?

PROPEL
Check steering linkage rod ends, bushings, bearings and steering cylinder.

Check and adjust steering wheel alignment and toe-in.
FLASHING AND PUSH ROLLERS

DELIVERY
Slat Chains

Look under the paver. The top of the chain should be even with frame bottom. Too much droop indicates skate or chain wear.

If they appear to operate at uneven speeds or jerkily it could indicate worn drive sprockets, chains or poor adjustment.

DELIVERY
Conveyor Chain Adjustment

The conveyor chain should be adjusted when 1 inch (2.5mm) of sag below the bottom of the paver frame is noted. Adjust the chain so the top of the chain is even with the bottom of the frame. Over-tightening the chain introduces added wear to the chain, front idlers, drive sprockets and all bearings.

Conveyor Chain Skates

Conveyor chain skates are heat treated to a depth of 1/4 inch (6.35mm). They should be checked several times during the swing season. If wear is allowed to proceed past the heat treated area, the rate of wear will be very high. Replace when worn as illustrated below.
Some manufacturers utilize flat headed capscrews for sectional floors as a wear indicator. If they are worn, then you have a weakening liner prone to cracks and failure. Look for dents and minor cracks. They get bigger.

Check these areas when washing off and before startup. Notify your mechanics if they look worn.

DELIVERY
DELIVERY
LIFT OR TOW ARMS

Check tow arm cylinders for scoring or asphalt build up. If they are not clean and smooth they'll trash the cylinder seal causing uneven tow arm operation creating poor mat quality.

DELIVERY
VIBE SHAFT

• Lube when warm
• When heating screed run the vibe shaft to heat the bearings so it can slide

DELIVERY
EDGER PLATES

- Keep them clean so they float free to provide a sharp mat edge
- Check all screed pivot points for tightness, e.g., depth screws and U-joints
- Keep the screed free of build up, clean screed bottom and look for wear marks

DELIVERY
FUME RECOVERY

- Oil leaks at the fan housing indicate leaking shaft seal
- Check for build up of material in intake tubes. This could indicate high head of material running too high
- PLEASE Do NOT operate the fume recovery system while spraying down the augers. Diesel mist will collect in the tubes and eventually plug them up.
SCREED CROWNING

- Grease
  - When components are hot, grease is flexible and grease can move contaminents out of the bearing area.
  - Inspect components when lubing for seal leakage, bearing wear, dry bearings.
  - Look for wobble, indicative of bearing failure. STOP if wobble is evident.
SCREEDS

• Tube Extensions
  – Keep chrome tubes clean. Usually operation is enough
  – Do NOT use petroluem based lubes. they can collect dirt etc causing premature bushing failure and screed drag
  – Check tube bushings – Check tubes for scoring

• Screed extensions that have been used for joint matching may have the outer few inches more worn than the rest. Check and adjust or reverse the screeed plate
SCREED

- Burners
  - Keep extra fuel nozzles on hand.
  - Adjust vent for proper air/fuel ratio for clean burn.
  - Use on/off cycling for even heating.
  - Keep the area around burners free from asphalt buildup.

Stops Fires.
LEAD TRAIL CROWN

- Too much lead crown wears out the center of the screed.
- Too little wears out the edges.
- Keep your screed plate flat.
- Shim on units that have no external adjustment.
Skirt Boards
Weld wear strips on as needed

**Screed**

- **New**
  - 1/2 inch

- **Normal Wear Pattern**
  - 1/4 inch

- **Leading Edge**

- **Abnormal Wear Pattern**

- **Leading Edge**

- **New**
  - 3/8 inch

- **Replace**
  - 1/8 inch
Contacting Grade Sensor

Matching a Joint

Running Off a Wire
GRADE SENSORS

TopCon w-w/o SAS
• PLEASE.....DO NOT scrape sonic pick ups. Clean with contact cleaner or parts solvent.

• PLEASE.....DO NOT put electronics away wet. Moisture can collect inside the unit and zap....... bye bye.

• PLEASE.....DO NOT over stretch the bail on sonic pick ups
When properly adjusted, the chain should move slightly under thumb pressure.
HYDRAULIC

HYDRAULIC FLUID’S PRIMARY PURPOSES

POWER TRANSMISSION

LUBRICATION

SEALING

COOLING
Check Air Cleaner Indicator Daily
Do Not Beat or Bang Element
Do Not Use High Pressure Air on Element
Radiator and Oil Cooler Should be Checked Daily

Check not only the exposed areas but the area between the radiator and oil cooler
Hydraulic Tank(s)

The hydraulic fluid should be drained and replaced with the correct fluid seasonally. Check all hose and tube connections, to ensure tight connection. There are suction screens, suction filters and return filters on various models that should be cleaned or replaced.