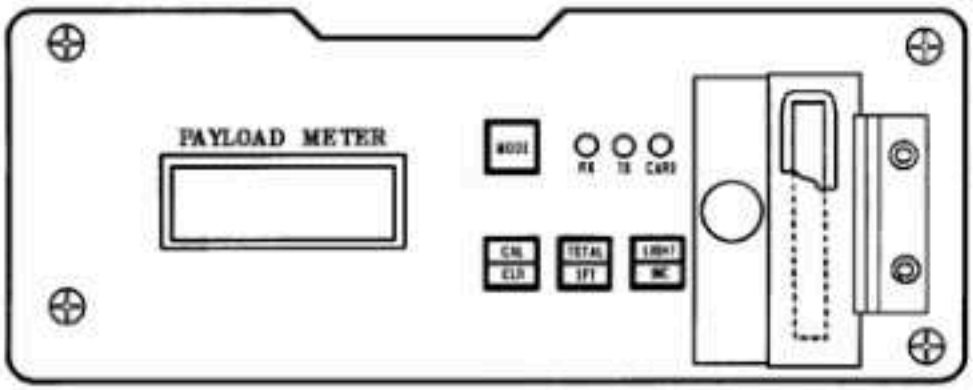
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# Operation & Maintenance Manual



# PAYLOAD METER II™




KOMATSU®

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# PAYLOAD METER II™
## ON BOARD WEIGHING SYSTEM (OBWS)
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### Gain Factor

Gain factor is part of the formula the payload meter uses to calculate the payload. The gain factor is a tool that compensates for variations between actual weight of the payload and the calculated weight from the payload meter. The gain factor should only be adjusted after several payloads have been weighed on a scale. The gain should never be adjusted based only on one payload. It takes at least 10 scale weigh-ins to determine an average variation. A worksheet is located at the end of this chapter to assist in calculating the necessary gain adjustment.

There are two types of gain adjustments, $G_t$ gain and UP factor. It is recommended that only the $G_t$ gain be adjusted. This adjustment is made using the potentiometer on the side of the payload meter. Refer to "Adjusting the Gain".

### Brake Lock

The Brake Lock only applies the rear brakes. This allows the front wheels to rotate slightly as the truck is being loaded. This is important because the payload meter assumes that the front wheels can rotate freely. As the truck is being loaded, it will begin to squat down on the suspensions. This will change the wheel base dimension of the truck. This freedom of movement prevents additional binding and friction in the front suspensions.

The incline of the grade on which the truck is loading is measured by the inclinometer. This helps determine the incline factors that are applied to the front and rear sprung weights. The tire forces on the road surface that hold the truck on grade affect the suspension pressures. If the front and rear brakes are locked, the effect on the suspension pressures cannot be determined. If only the rear brakes are applied the effect is predictable and the incline factors accurately account for the forces on the tires.

If the service brake or park brake is used and depending on the incline and other factors, the payload meter can overestimate or underestimate the load. **It is important that only the brake lock be used while loading the truck. (Parking brake on 330M/HD785).**

### Sources of Error

Poorly charged suspensions can lead to systematic error in the calculation of payload. The error is most obvious when the oil level is low. When there is too little oil in the suspensions, the cylinder may compress completely under a load. The weight of the truck will be carried by the metal to metal contact within the suspension. Not only will the ride of the truck and the life of the tires, and other components be affected, but the pressure in the cylinder will not truly represent the load on the truck. Under-charged suspensions typically cause the payload calculations from the payload meter to be lower than the actual payload.

### Typical Data From Service Check Mode

A sample data set is shown in Figure 20-4. This data was taken in the laboratory and is used in Figure 20-5 to calculate the final load. Note that the front suspension pressures were converted into the front sprung weight using the formulas above Figure 20-5. The front sprung weight is then multiplied by the front incline factor and the front linkage factor. The same is done with the rear sprung weight. The front and rear sprung weights are then summed. This number is multiplied by the $G_t$ gain potentiometer value. The calibration load is subtracted from the total to produce the final load. The load displayed on the meter is this final load (item #15) multiplied by the UP gain factor.

| Number | Data | Description |
|---|---|---|
| 1 | 13:09 | Current Time |
| 2 | 749.4 | Front Left Pressure (Psi) |
| 3 | 848.9 | Front Right Pressure (Psi) |
| 4 | 863.2 | Rear Left Pressure (Psi) |
| 5 | 1049.0 | Rear Right Pressure (Psi) |
| 6 | 106.0 | Front Weight (Tons) |
| 7 | 75.1 | Rear Weight (Tons) |
| 8 | -1.85 | Inclinometer (Degrees) |
| 9 | 0.95 | Incline Factor - Front Wheels |
| 10 | 0.984 | Incline Factor - Rear Wheels |
| 11 | 1 | Link Factor - Front Wheels |
| 12 | 1.539 | Link Factor - Rear Wheels |
| 13 | 70.6 | Calibration Sprung Weight (Tons) |
| 14 | 1.000 | Gain Adjustment |
| 15 | 143.8 | Current Load (Tons) |
| 16 | 3.9 | Battery Backup Voltage (Volts) |

Figure 20-4.



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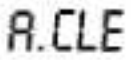
## SETUP AND MAINTENANCE

### Speed Limit

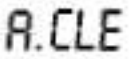
A warning can be displayed if the machine exceeds a preset speed.

The available range is: 10 - 99 km/h (6 - 62 mph). It is recommended to set the speed limit to 99 km/h (62 mph).

### Setting The Speed Limit

1. Press and hold the MODE switch until "Cd:dP" is flashing. 
2. Press the MODE switch once. The display will show: 
3. Press the MODE switch once. The display will show: 
4. Press the MODE switch repeatedly until "SP.XX" is displayed. 
5. Press the LIGHT/INC switch to change the "unit digit" to the desired number.
6. Press the TOTAL/SFT switch and the display will then indicate: 
7. Press the LIGHT/INC switch to change the "tens digit" to the desired number.
8. Press MODE switch to return to normal operation.

### Setting the Option Code

1. Press and hold the MODE switch until "Cd:dP" is displayed. 
2. Press the MODE switch once. The display will show: 
3. Press the MODE switch once. The display will show: 
4. Press the MODE switch repeatedly until "OP.XX" is displayed. 
5. Press the LIGHT/INC switch to change the "unit digit" to the desired number.
6. Press the TOTAL/SFT switch and the display will then indicate: 
7. Press the LIGHT/INC switch to change the "tens digit" to the desired number.
8. Press the MODE switch to return to normal operation.
9. The Option Code selects the PLM communication mode as follows:

| Option Code | COMMUNICATION MODE |
|---|---|
| 0 | Stand Alone |
| 10 | PMC Mode (530M/HD1500 only) |
| 12 | Modular Mining Mode, Scoreboard and User Data Commmunication Mode |

**NOTES:**

1. The Option Code is set to "0" for trucks not equipped with Modular Mining System (MMS) (Except 530M/HD1500).
2. The 530M/HD1500 with Powertrain Management Control (PMC) system uses "10" as the setting for the Option Code.
3. For trucks with Modular Mining System (MMS) or Scoreboard, the Option Code is "12".



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### Monitoring Input Signals

This procedure can be used to monitor the current input signals to the payload meter.

1. Press and hold the LIGHT/INC and MODE switches until "CHEC" is flashing.
2. Press and hold the CAL/CLR and TOTAL/SFT switches until "S.CHE" is flashing.
3. Press the CAL/CLR switch to cycle through the following information :

| | | |
|---|---|---|
| C1 | Mechanical Trucks | C1:oo - Shift Selector in "N"<br>C1:-- - Shift Selector not in "N" |
| C1 | Electric Trucks | C1:oo - Brake Lock On<br>C1:-- - Brake Lock Off |
| C2 | Body Up | C2:oo - Body Down<br>C2:-- - Body Up |
| C3 | Engine Oil Pressure | C3:oo - Engine Run<br>C3:-- - Engine Stopped |
| C4 | Alternator R Terminal | C4:oo -Alternator Charging<br>C4:-- - Alternator Stopped |
| C5 | Analog 1 - Not Used | |
| C6 | Analog 2 - Not Used | |
| C7 | Digital 1 - Not Used | |
| C8 | Digital 2 - Not Used | |
| C9 | Speed | Vehicle Speed |
| C10 | Travel Distance - under the current loaded or empty state | xx.xx Miles |
| C11 | Current Status<br>Note:<br>Sample values are shown. | 03:01 - Empty Stopped<br>01:02 - Empty Traveling<br>06:03 - Loading<br>02:04 - Loaded Traveling<br>04:05 - Loaded Stopped<br>05:06 - Dumping |
| C12(a)* | Time Empty Travel | S1:xx - Minutes*10 |
| C12(b) | Time Empty Stopped | S2:xx - Minutes*10 |
| C12(c) | Time Loaded Travel | S3:xx - Minutes*10 |
| C12(d) | Time Loaded Stop | S4:xx - Minutes*10 |

4. Press the MODE switch once and "CHEC" will flash.
5. Press the MODE switch once and the meter will return to normal operation.

### Service Check Mode

1. Press and hold the LIGHT/INC and MODE switches until "CHEC" is flashing.
2. Press and hold the LIGHT/INC switch until "ALL0" is flashing. "A.FUL" may also be displayed.
3. Press the LIGHT/INC switch to cycle through the following data. The sequence repeats.

| Item and Description | Units |
|---|---|
| 1. Current Time | Hours:Minutes |
| 2. Pressure Front Left | Psi |
| 3. Pressure Front Right | Psi |
| 4. Pressure Rear Left | Psi |
| 5. Pressure Rear Right | Psi |
| 6. Front Weight | Tons |
| 7. Rear Weight | Tons |
| 8. Degree of Incline | ±° Nose Up Positive |
| 9. Incline Factor - Front Axle | |
| 10. Incline Factor - Rear Axle | |
| 11. Link Factor - Front Axle | |
| 12. Link Factor - Rear Axle | |
| 13. Calibration Weight | Tons |
| 14. $G_t$ Gain | |
| 15. Current Load | Tons |
| 16. Backup Battery Voltage | Volts |

4. Press MODE once and "CHEC" will flash on the display.
5. Press MODE once and the meter will return to normal operation.



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