Maintenance Manual



WP2300S Series

Printed in Germany • Revision Level B

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Replacing the Safety Valve

- Remove the hydraulic unit as described in the previous section "*Removing the Hydraulic Unit*".
- Remove the locking mechanism (4, Fig. MS1723-007) and unscrew the safety valve (3).
- Remove the O-ring and the filter from the valve seat if they are still located there.
- Apply a thin coat of hydraulic oil to the new O-ring and position it together with the filter in the valve seat.
- Apply a thin coat of hydraulic oil to the safety valve and screw it in securely to the valve seat. Insert the new locking mechanism.
- Re-fit the hydraulic unit and **adjust the safety valve.**

Safety Valve Setting

The safety valve (15, Fig. M1542 previous page and 1 to 3, Fig. MS1723-007) protects the hydraulic system and the lifting mechanisms against overloading.

WARNING

Do not run the pump unit unless it is fixed to the chassis

- *The torque is so great that the unit will twist. This may result in short circuits and cause damage.*

The safety valve is not accessible when the pump unit is installed. First remove the pump unit before making adjustments.

Safety Valve Test and Setting

- With the truck at operating temperature raise a test load positioned in the centre of the forks which corresponds to 110% of the rated capacity (= minimum load). See capacity data plate for this value. It should be possible to raise this load safely.

Model	Rated Capacity	Minimum Load	Maximum Load
WP2330S	2.000 kg	2.200 kg	2.300 kg
WP2335S	2.000 kg	2.200 kg	2.300 kg

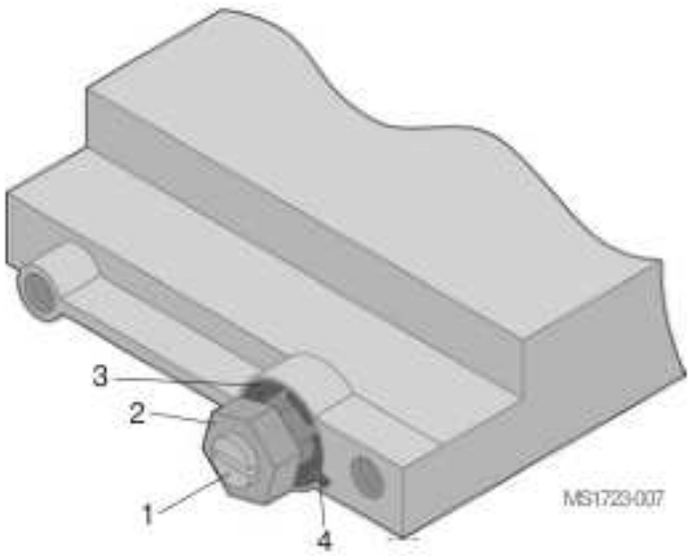
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- Now raise a test load which corresponds to 110% of the rated capacity + 100 kg (= maximum load). It should not be possible to raise this load (safety valve opens).

If necessary adjust the safety valve so that it opens within the above-mentioned tolerance range:

- Remove the hydraulic unit as described in the previous section *"Removing the Hydraulic Unit"*.
- Using a large screwdriver hold the setscrew securely (1, Fig. MS1723-007) and with a fork wrench undo the jam nut (2, Fig. MS1723-007): Turn the setscrew clockwise to increase the limit at which the valve opens, turn it anticlockwise to reduce the limit.

  Note: 1/8 turn ~ 200 kg
- Fix the setscrew (1) again using the nut (2).
- Refit the hydraulic unit and repeat the test. Repeat the setting until the safety valve opens within the tolerance range.



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SEM1 Traction Controller

DANGER

Jack up the truck before carrying out any repair work or troubleshooting the electrical system.

General



M1531

The programmable SEM1 impulse controller provides effective control over the driving behaviour of the truck.

The truck is powered by a separate excited motor (SEM). This version has two variables for governing the motor output: field and armature current.

Precautionary Measures

- Do not attach the controller to a battery with a different rated voltage to that of the controller (24 - 36 VDC).
  A higher battery voltage may destroy the MOSFETs, while a lower power supply will result in system failure.
- Only operate the controller with special traction batteries. Do not connect to a rectifier or mains components.
- When commissioning jack up the truck to prevent it from starting suddenly if there is a wiring error.
- When the key switch has been turned off the filter capacitors in the controller remain charged for a few minutes. If work is performed on the controller during this time it must be disconnected from the battery (disconnect battery). Finally, to discharge the capacitors short-circuit the positive and negative terminals of the power part together over a resistance (10 - 100 Ohm, min. 5 W) for a few seconds.

Operational Features

Speed Control

Infinately variable handset programmable speed control in both directions.

Reduced Speed Ranges

There are several interdependent travel ranges with reduced speed available: slow travel (via a rotary switch contained in the tiller handle HSS), slow travel when the platform is not folded out (via the GCSR, GCSL and PLS switches) in walkie mode and an automatically reduced travel speed for loads in excess of 1.000 kg.

Downhill Speed Control

When travelling downhill the controller monitors the motor anchor speed via the drive signal from the traction potentiometer. When the set speed is exceeded, electrical braking with energy retention is introduced.

Regenerative Braking

Three forms of regenerative braking are available:

- Release braking (travel switch or multitask handle return to neutral)
- Inversion braking (travel switch set in opposite direction)
- Braking by reducing speed on a slope: the controller constantly regulates the engine speed according to the set value prescribed by the travel switch. Braking is automatically activated when the set value is exceeded.

Anti - Roll Down Function

This function prevents the truck from accidentally rolling down a slope. When the key switch is on the controller monitors the engine speed. If it detects a turning movement without a travel command, braking is automatically activated.

If the truck automatically starts to move on a slope, it therefore brakes after a short period. When the truck stops braking is released causing the truck to move again, followed by further braking. If the brake is not applied the truck will therefore move down the slope very slowly.

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Notes to overall wiring diagram, Standard Version, Fixed platform WP2335S

Key:

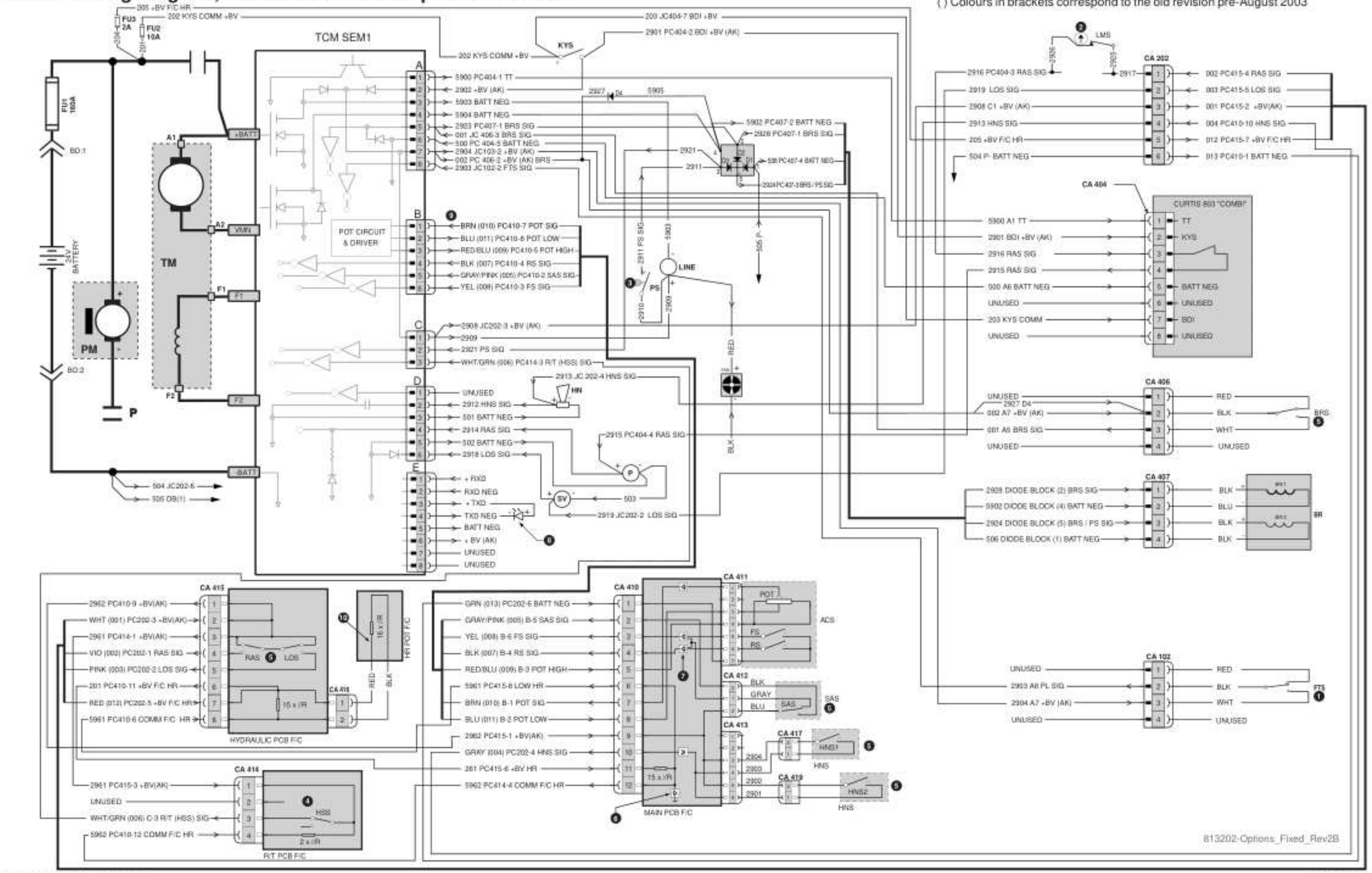
1. No drive:
   FTS open
2. Forks above 130 mm, LMS open
3. Load < 1000 kg PS closed, 2/3 brake
4. Reduce speed: HSS open
5. Active: RAS, BRS, SAS, HNS & LOS closed
6. An SAS signal is required for a travel signal from the FS and RS drivers.
7. Diagnostic LED. Remove to connect the programmer.
8. Voltage between B1 and B2 (traction controller)
   10 v = Full speed
   0 v = No command

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Overall Wiring Diagram, Fixed Platform with Options WP2335S

( ) Colours in brackets correspond to the old revision pre-August 2003



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