



Operation & Maintenance Manual

NSV12K

NSV12KI

NSV16K

NSV16KI

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CAT
Controller: NSP16K/KI, NSV16K/KI
Program version: Zapi CombiSEM 24V 300A+300A
Zapi's serial number from: COMBI RO 1.23-1.25
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Calibration instructions for accelerator and lift/lower potentiometer:

1. Program all the parameters and options of CombiSEM controller.
2. Check that SLOW LIFT is not activated (Zapi Console/Main Menu/Tester/).
3. Check that SLOW LOW is not activated (Zapi Console/Main Menu/Tester/).
4. Turn key switch off.
5. Locate connector J1 in Zapi Serial Tiller Card and close it with jumper.
6. Turn key switch on.
7. Rotate accelerator slowly fully forward.
8. Wait 2 seconds.
9. Release accelerator slowly to the neutral position.
10. Wait 2 seconds.
11. Rotate accelerator slowly fully backward.
12. Wait 2 seconds.
13. Release accelerator slowly to the neutral position.
14. Wait 2 seconds.
15. Push lift lever slowly fully forward.
16. Wait 2 seconds.
17. Release lever slowly to the neutral position.
18. Wait 2 seconds.
19. Pull lift lever slowly fully backward.
20. Wait 2 seconds.
21. Release lever slowly to the neutral position.
22. Wait 2 seconds.
23. Open J1.
24. Wait 5...10 seconds.
25. Turn key switch off.
26. Turn key switch on.
27. Check acceleration forward and backward.
28. Check lifting and lowering.

B13	PMC	Positive of the main contactor.
B14	KEY OUT	Output of the Key switch signal.
B15	NOT USED	Free.
B16	PEB	Positive of the electromechanical brake.
B17	PEVP	Positive of the proportional electrovalve.
B18	PEV2	Positive of the electrovalve 2.
B19	PEV1	Positive of the electrovalve 1.
B20	PEV4	Positive of the electrovalve 4.
B21	PEV3	Positive of the electrovalve 3.
B22	PEV5	Positive of the electrovalve 5.

Note:

Proportional valve can be programmed by console as proportional or ON/OFF: if proportional the valve has an acceleration and deceleration ramp and its current is controlled by the lifting potentiometer.

If ON/OFF the valve is completely opened/closed without ramps.

The positive supply to the main contactor is provided from the key (pin 12) through a diode against polarity inversion. The positive supply for the electrobrake is available in the pin 16 only if the tiller switch is closed.

The positive for the brake and all the other ON/OFF valves comes from the main contactor, so these loads do not affect the key input but only the auxiliary fuse.

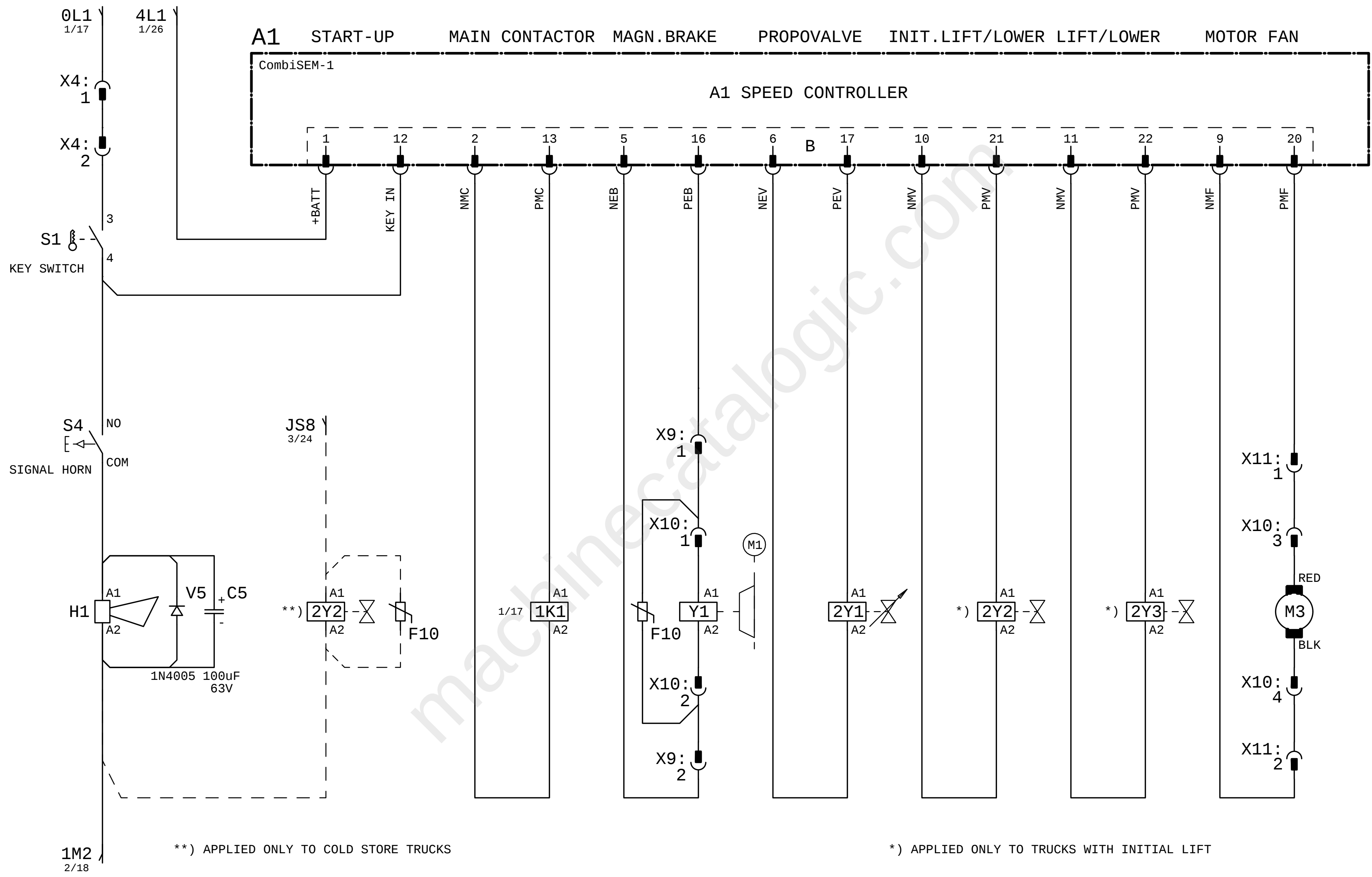
3.3.3 Connector "C" description

The "C" connector manages the serial link of the tiller card.

C1	-BATT	Negative free for the customer.
C2	BELLY	Quick inversion microswitch input. This signal is directly connected with the Combi for safety reason.
C3	SNAIL + T	Snail microswitch input. It is necessary that the tiller microswitch is cabled in the serial tiller card; in this case it is possible to run the truck also with the handle released at a slow speed.
C4	TILLER	Tiller microswitch input. In this case the tiller is directly connected with the Combi.
C5	DRFT	Data from the serial tiller
C6	-BATT	Negative for the serial tiller card.
C7	KEY OUT	Positive for the serial tiller card (is a key switch signal).
C8	KEY OUT	Positive for the tiller microswitch (is a key switch signal).

Note:

The tiller microswitch can be cabled in the serial tiller (see 'serial tiller' drawing) or directly in the controller (PIN 4 and 8 for the key in the serial tiller).



CIRCUIT DIAGRAM TS910801

NSV16K/NSV16Ki
CONTROL DEVICES 2

Full Version Available

Caterpillar NSV16KI Stacker Operator Manual (WHOMM0011)

Caterpillar NSV16KI operator manual, covers safe stacking, controls, battery care, and daily checks. Downloadable PDF format.

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