



Operation & Maintenance Manual

NSS15N

NSS15NI

NSS20N

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13	EEPROM KO	(Warning)	Stored
It's due to a hardware or software defect of the non-volatile embedded memory supporting the controller parameters. This alarm does not inhibit the truck operations, but the truck will work with the default values. Try to execute a CLEAR EEPROM operation. Switch the key off and on to check the result. If the alarm occurs permanently, it is necessary to replace the Combiac1 controller. If the alarm disappears, the previously stored parameters will have been replaced by the default.			
19	LOGIC FAILURE #1	(Alarm)	Stored
This fault is displayed when the controller detects an overvoltage or undervoltage condition. Overvoltage threshold is 45V; undervoltage threshold is 9V in the 24V controller. If fault displayed at startup or in standby; in this case it is due to an undervoltage, so it is important to check following: a) Key input signal down going pulses (below undervoltage threshold) due external loads, like DC/DC converters starting up, relays or contactors energizing/ denenergizing. b) If no voltage transient is detected on the supply line and the alarm is present every time the key is switched ON, the fault is in the Combiac1 controller. If fault is displayed during motor driving; in this case due to an undervoltage or an overvoltage condition. a) If the alarm happens during traction acceleration or driving hydraulic functions, the fault is an undervoltage condition; check battery charge level and power cable connections. b) If the alarm happens during release braking, the fault is an overvoltage condition; check line contactor tips and battery power cable connections.			
28	PUMP VMN LOW	(Alarm)	Stored
Cause: The pump motor output is lower than expected, considering the pulswidthmodulation applied.			

controlled safety switch to close. Therefore, traction is disabled.
ABSENT: Inhibit supervisor microprocessor functions (Not in use!).
PRESENT: Enable diagnostic interaction between the main and supervisor microprocessors.
Factory default is "PRESENT". Do not change the default value!

ENCODER CONTROL

This parameter is not used in this application. Factory default value is "OFF". Do not change the default value!

FEEDBACK DEVICE

This parameter controls what kind of feed back device is used.
Factory default value is "OP #4". Do not change the default value!

AUTOCENTERING

This parameter controls the automatic steering centring at key-on. Value range setting:
ON: The steering centring is activated at key-on.
OFF: The steering centring is not activated at key-on.

RECOVERY AT REST

This parameter controls the steering recovery at rest, which is not used in this application. Factory default is "OFF". Do not change the default value!

AUX FUNCTION 1

This parameter sets the steering mode after the feedback signals has reached the final position. The steering motor is turned on when a travel demand is active. Factory default setting is "0". Do not change the default value!

DIAG MOTOR TEMP

This parameter controls the steering motor overheating alarm (MOTOR TEMPERAT) enabling or disabling. ON: the detection of the alarm. OFF: Disables the detection of the alarm. Factory default setting is "ON". Do not change the default value!

SUBMENU: SET MODEL

SYSTEM CONFIG

0,1: Fastest
5,0 Slow

EVP CLOSE DELAY

This parameter controls the proportional valve closing delay ramp. Value range setting:

0,1: Fastest
5,0 Slow

EVP CL. DEL RED

This parameter controls the proportional valve closing delay ramp. It is used when the lower reduction is active during MAST transition.

EVP1 OPEN DELAY

This parameter is not used in our application.

EVP1 CLOSE DELAY

This parameter is not used in our application.

START LOWER RED.

This parameter defines the starting point (height value) when lower speed reduction is active. It is used during mast transition.

DUAL PUMP DELAY

This parameter controls the delay for the full current when the second pump is dropped out. Value range setting:
Use level 2

SUBMENU: CONFIG MENU / SET MODEL

MODEL TYPE

Use this parameter to select the controller to access with the console. You can access any controller that is connected to the CAN bus. If there is a CAN BUS KO alarm active, you cannot select another controller. In this case, you must connect the console directly to the controller you wish to access. In normal circumstances, you can choose the controller from the following options:

- 2: Traction motor controller
- 5: Pump motor controller

HEIGHT REDUCTION

This parameter controls the speed reduction depending on lifting height. It means the height point when truck speed is linearly reduced to 2,5Km/h.
[40*encoder pulses7rev]
The pulses vs. mm ratio will be indicated by truck manufacturer.
0-255

AUX FUNCTION #7

This parameter controls the electric magnetic brake time delay when driving on a ramp. Value range setting:
0 – 9

SUBMENU: SET OPTIONS

TILLER SWITCH

This parameter controls the pedal switch operation. Value range setting:
Use always “HANDLE” setting!

HOOR COUNTER

This parameter controls how the operating time counter in the controller is activated. Value range setting:
RUNNING: The counter registers drive time only.
KEY ON: The counter registers when the “key switch is closed.

BATTERY CHECK

This parameter controls the specification of low battery charge detection. Value range setting:
0: Nothing happens, the battery charge level is calculated but no action is taken when the battery is discharged.
1: Lift cut out when the alarm “BATTERY LOW” is activated.
2: Traction speed reduction to 24% when the alarm “BATTERY LOW” is activated.

STOP ON RAMP

This parameter controls the behaviour of the truck when it is on a ramp depending on the setting of the parameter “AUXILIARY TIME”. Value range setting:
ON: The stop on ramp feature is active for a period determined by the “AUXILIARY TIME” parameter.

		Truck types						
	NSR12N	NSS15N / NSR16N	NSS20N, NSR20N I-Mast			Default	Adjustment range	NOTE
EV1 OPEN DELAY	1	1	1			1	0,1-5	Not in use.
EV1 CLOSE DELAY	2	2	2			2	0,1-5	Not in use.
START LOWER RED.	-	-	10			10	1-100	Height for mast shift reduction.
DUAL PUMP DELAY	LEVEL = 2	LEVEL = 2	LEVEL = 2			LEVEL= 2	0	Controller drives full current to dual pump. Delay when second pump is dropped out.
CONFIG MENU/ SET MODEL:								
MODEL TYPE	5	5	5			5	5	2 = traction controller, 5 = pump controller, 6 = steering controller, 10 = encoder card
SET OPTIONS:								
SET OPTIONS:						0		
HOURLY COUNTER	RUNNING	RUNNING	RUNNING			RUNNING		Factory setting
EVP TYPE	ANALOG	ANALOG	ANALOG			ANALOG		Proportional valve output type, analog = proportional, digital = on/off
EV1 TYPE	DIGITAL	DIGITAL	DIGITAL			DIGITAL		Proportional valve output type, analog = proportional, digital = on/off
SET TEMPERATURE	NONE	NONE	NONE			NONE		Factory setting
SIDE STABILIZER	ABSENT	ABSENT	ABSENT			ABSENT	ABSENT / PRESENT	ABSENT = Side stabilizers not in use, PRESENT = Sidestabilizers in use
AUX OUTPUT #6	7	7	7			3		Output XA1/14 0 = disabled 1 = Drive Forward active 2 = Drive Backward active 3 = Drive Forward OR Backward active 4 = Lift active 5 = Lower active 6 = Lift OR Lower active 7 = Forward OR Backward OR Lift OR Lower active
AUX OUTPUT #5	9	9	9			9		Output XA1/32 0 = disabled 1 = Drive Forward active 2 = Drive Backward active 3 = Drive Forward OR Backward active 4 = Lift active 5 = Lower active 6 = Lift OR Lower active 7 = Forward OR Backward OR Lift OR Lower active 8 = multipurpose input 1 active / fixed hydraulic speed 9 = Fan control
DUAL PUMP	ABSENT	PRESENT	PRESENT			ABSENT	ABSENT / PRESENT	PRESENT = Dual pump in use, ABSENT = Dual pump not in use
SET INPUT #2 (***)	OFF	OFF	OFF			OFF	ON / OFF	XA1/11 INPUT. ON = Driving speed 2,5 km/h, OFF = Driving speed 2,5 km/h + lift stop until side stabilizers are down.

AUTO REQ TYPE	0	0	0	0							0		Factory setting
CONNECTED TO	EPS	EPS	EPS	EPS							EPS		2 = traction controller, 5 = pump controller, 6 = steering controller, 10 = encoder card
MODEL TYPE	x	x	x	x							x		
ADJUSTMENTS:											0		
ADJUSTMENT #01	0	0	0	0							0		Factory setting
SET CURRENT	0	0	0	0							0		Factory setting
ADJUSTMENT #02	x	x	x	x							90		Factory setting
ADJUSTMENT #03	x	x	x	x							x		Factory setting
ADJUSTMENT #04	x	x	x	x							x		Factory setting
SET BATTERY TYPE	24V	24V	24V	24V							24V		Factory setting
SET SAT. FREQ.	90 Hz	90 Hz	90 Hz	90 Hz							90Hz		Factory setting
OVERSAT FREQ.	1 Hz	1 Hz	1 Hz	1 Hz							1Hz		Factory setting
MAXIMUM SLIP	5,00 Hz	5,00 Hz	5,00 Hz	5,00 Hz							5Hz		Factory setting
AUX VOLTAGE #1	x	x	x	x							x		Factory setting
AUX VOLTAGE #2	x	x	x	x							x		Factory setting
NO LOAD CURRENT	24 A	24 A	24 A	24 A							24A		Factory setting
ZERO SP POT	x	x	x	x							x		Factory setting
SET STEER 0-POS.	x	x	x	x							x		Straight ahead steering position adjustment
SET STEER 180	x	x	x	x							x		Factory setting
SET ENC AT 180	x	x	x	x							x		Autoteaching sets this parameter. Value is about 1,6 - 1,7V
SET ENC AT 360	x	x	x	x							x		Autoteaching sets this parameter. Value is about 3,3 - 3,4V
SPECIAL ADJUST:											0		
SET TEMPERATURE	x	x	x	x							x		Factory setting
HIGH ADDRESS	0	0	0	0							0		Factory setting
DEBUG OUTPUT	15	15	15	15							15		Factory setting
HARDWARE SETTINGS:											0		
MAXIMUM CURRENT	50 A	50 A	50 A	50 A							50A		Factory setting
CAN BUS	PRESENT	PRESENT	PRESENT	PRESENT							PRESENT		Factory setting
SET HI RESOL AD	1	1	1	1							1		Factory setting
AUTOTEACHING	OFF	OFF	OFF	OFF							OFF	ON / OFF	OFF = Automatic teaching for steering disabled. ON = Automatic steer teaching activated on next truck startup.
AUX FUNCTION 11	5	3	5	5							x		Defines steering motor and feedback sensors positions

Full Version Available

Caterpillar NSS20N Stacker Operator Manual (SWHSU-00311)

Caterpillar NSS20N Stacker operator manual, covers controls, safety, inspections, and scheduled maintenance. Downloadable PDF format.

VIEW THE FULL MANUAL