

EN



Operation & Maintenance Manual

NR14
NR16
NR16C
NR20
NR20H
NR25H

MCFE
Hefbrugweg 77,
1332 AM Almere,
The Netherlands

- 17) **PUMP IMAX (p)** = defines the maximum current of the pump controller. All the adjustment of the pump are defined in percentage of this value. The adjustment range is from 50% (level 0) to 100% (level 9).
- 18) **SLOW LIFT SPEED (p)** = pump speed reduction set by the potentiometer, the speed is put on scale for the programmed coefficient. The function is activated only when the option SLOW LIFT OPTION is selected ON.
- 19) **HYD SPEED COARSE (p)** = coarse power steering speed (from 0% to 100% Vbatt on the motor). The parameter is activated if the option PUMP MODE is programmed STANDARD PUMP.
- 20) **HYD SPEED FINE (p)** = fine power steering speed (it is added a value from 0% to 10% Vbatt to the coarse speed). The parameter is activated if the option PUMP MODE is programmed STANDARD PUMP.
- 21) **HYDRO COMPENS (p)** = compensation for power steering. The parameter is activated if the option PUMP MODE is programmed STANDARD PUMP.
- 22) **4TH SPEED COARSE (p)** = n° 4 pump speed coarse regulation. The parameter is activated if the option CUTBACK INPUT #1 is programmed OFF.
- 23) **4TH SPEED FINE (p)** = n° 4 pump speed fine regulation. The parameter is activated if the option CUTBACK INPUT #1 is programmed OFF.
- 24) **4TH SPEED COMP. (p)** = n° 4 pump speed compensation. The parameter is activated if the option CUTBACK INPUT #1 is programmed OFF.
- 25) **3RD SPEED COARSE (p)** = n° 3 pump speed coarse regulation. The parameter is activated if the option CUTBACK INPUT #2 is programmed OFF.
- 26) **3RD SPEED FINE (p)** = n° 3 pump speed fine regulation. The parameter is activated if the option CUTBACK INPUT #2 is programmed OFF.
- 27) **3RD SPEED COMP. (p)** = n° 3 pump speed compensation. The parameter is activated if the option CUTBACK INPUT #2 is programmed OFF.
- 28) **2ND SPEED COARSE (p)** = n° 2 pump speed coarse regulation.
- 29) **2ND SPEED FINE (p)** = n° 2 pump speed fine regulation.
- 30) **2ND SPEED COMP. (p)** = n° 2 pump speed compensation.
- 31) **1ST SPEED COARSE (p)** = n° 1 pump speed coarse regulation.
- 32) **1ST SPEED FINE (p)** = n° 1 pump speed fine regulation.
- 33) **1ST SPEED COMP. (p)** = n° 1 pump speed compensation.

2.12 OPERATION ENVIRONMENT

Temperature:

Operation	-35°C - +55°C
Storage	-40°C - +70°C

Humidity	100% condensing according to IEC 68-2-30, Db
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2.13 COOLING

External cooling	Contact cooling to metal plate or frame
Isolation	500VAC according to prEN 1175-1

2.14 EMC

Immunity: According to prEN50081-2

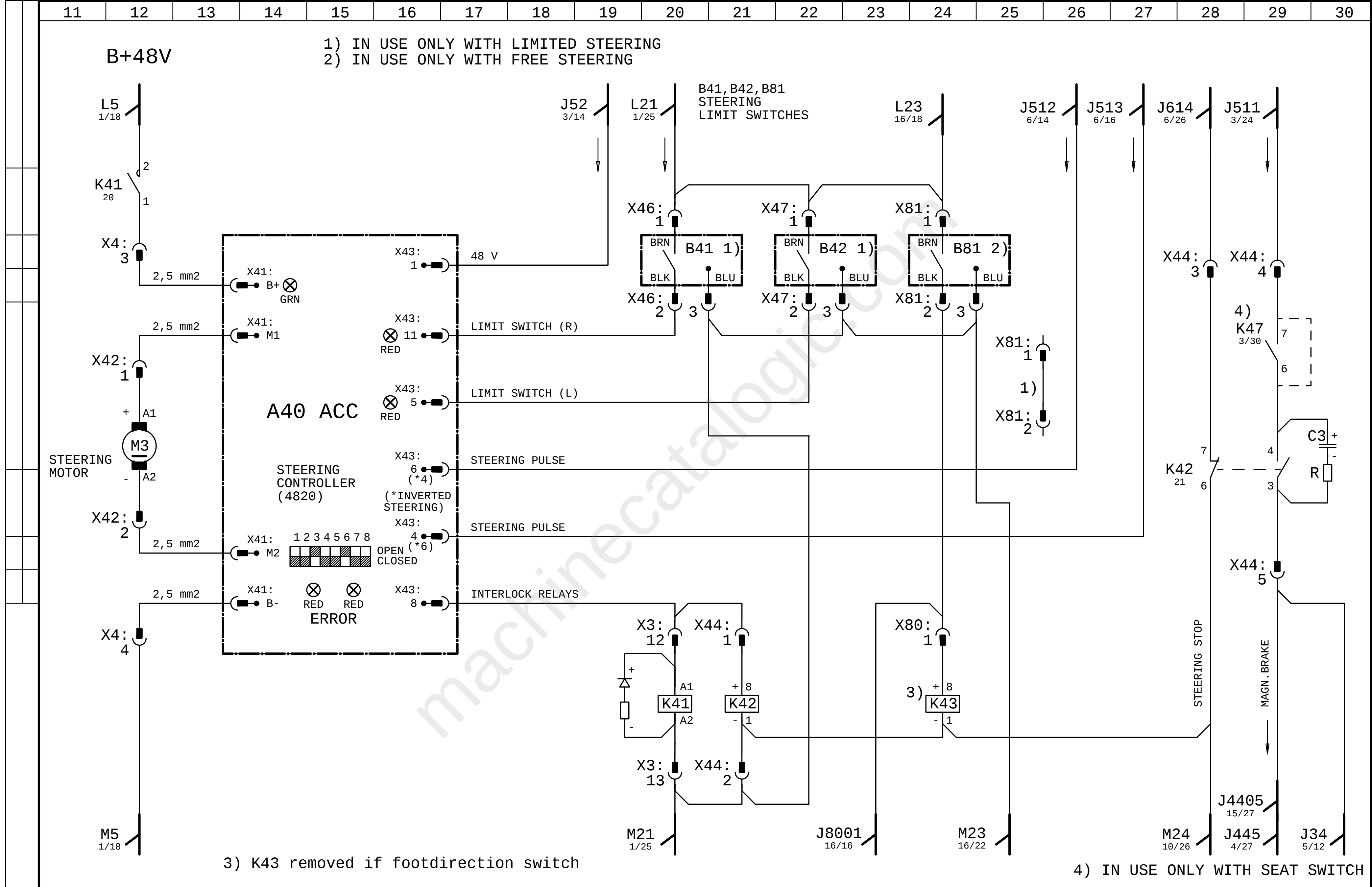
Emmission: According to prEN50082-2

CAT

Controller: Zapi C1 Combi 48V 350A+350A
 Program version: C1S RO1.13
 Zapi's serial number from: 9190 1067

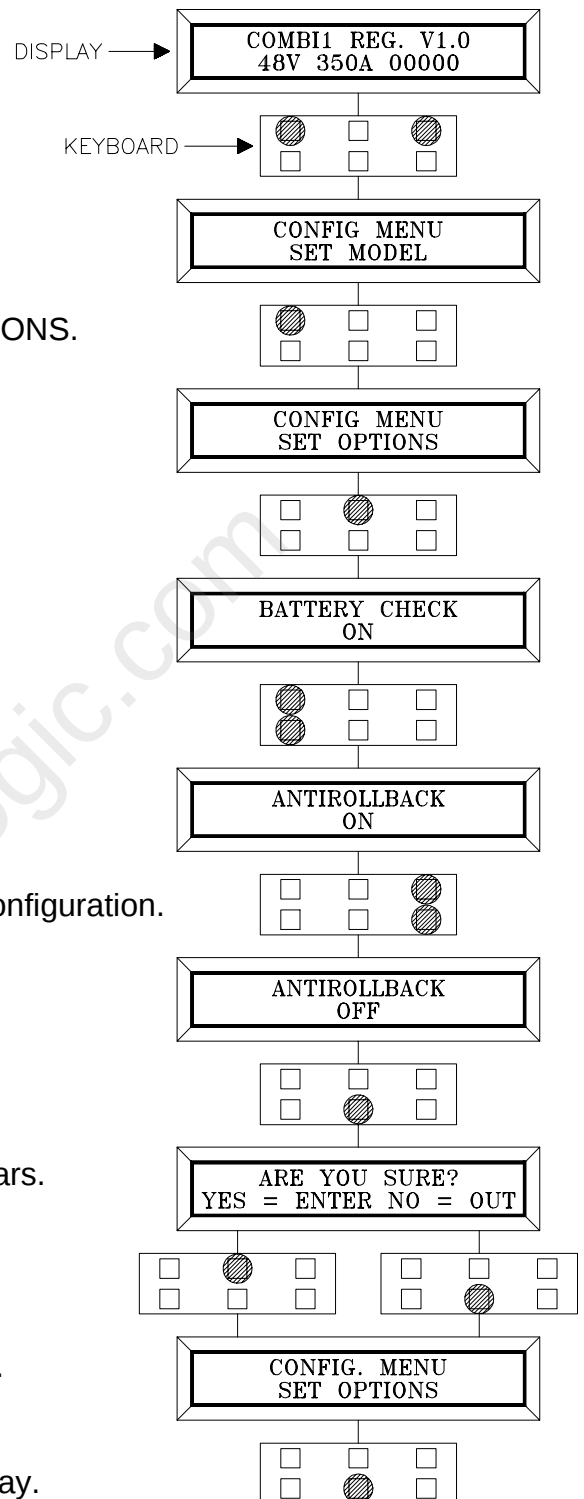
Rev. 1
 Date 7.12.2001

	TRUCK TYPES:											NOTE
	NR16C/NR16/NR20H/ NR20/NR25/NR25H	NR14 HYDR.BRAKE	NR14 NO BRAKE		NT12				SLOW SPEED			
MAIN MENU/ PARAMETER CHANGE:												
ACCELERATION	8	8	8		8							
CUTBACK SPEED 1	0	0	0		0							
CUTBACK SPEED 2	0	0	0		0				1			
BRAKE CUTBACK	0	0	0		0							
TRACTION IMAX	9	9	9		9							do not change
INVERS. BRAKING	4	4	7		6							
RELEASE BRAKING	5	4	4		6							
PEDAL BRAKING	4	4	9		9							
HYDRO TIME	0	0	0		0							
WEAK DROPOUT	5	5	5		5							
CREEP SPEED	1	0	0		1							
PLUG CURRENT	5	5	5		5							
BRAKING MODUL	4	4	4		4							
COMPENSATION	5	5	5		5							not used
PUMP ACCELER. DELAY	3	3	3		3							
PUMP DECELER. DELAY	3	3	3		3							
PUMP IMAX	9	9	9		9							do not change
SLOW LIFT SPEED	9	9	9		5							
HYD. SPEED COARSE	0	0	0		0							
HYD. SPEED FINE	0	0	0		0							
HYDRO COMPENS.	0	0	0		0							
4TH SPEED COARSE	0	0	0		0							
4TH SPEED FINE	0	0	0		0							
4TH SPEED COMP.	0	0	0		0							
3RD SPEED COARSE	0	0	0		0							
3RD SPEED FINE	0	0	0		0							
3RD SPEED COMP.	0	0	0		0							
2ND SPEED COARSE	0	0	0		0							
2ND SPEED FINE	0	0	0		0							
2ND SPEED COMP.	0	0	0		0							
1ST SPEED COARSE	0	0	0		0							
1ST SPEED FINE	0	0	0		0							
1ST SPEED COMP.	0	0	0		0							
CONFIG MENU/ SET OPTIONS:												
HOUR COUNTER	RUN	RUN	RUN		RUN							do not change
BATTERY CHECK	ON	ON	ON		ON							do not change
RELEASE BRAKING	ON	ON	ON		ON							do not change
ANTI ROLLBACK	ON	ON	ON		ON							do not change
MAIN CONTACTOR	PRE	PRE	PRE		PRE							do not change
CUTBACK INPUT #1	OFF	OFF	OFF		ON							do not change
SLOW LIFT INPUT	ON	ON	ON		OFF							do not change
CUTBACK INPUT #2	OFF	OFF	OFF		OFF				ON			do not change
HYDRO INPUT	OFF	OFF	OFF		OFF							do not change
PUMP MODE	STA	STA	STA		STA							do not change
ADJUSTMENTS:												
SET LIFT MIN./ MAX.	0/5V	0/5V	0/5V		0/5V							volts
BATTERY VOLTAGE	Ubat	Ubat	Ubat		Ubat							do not change



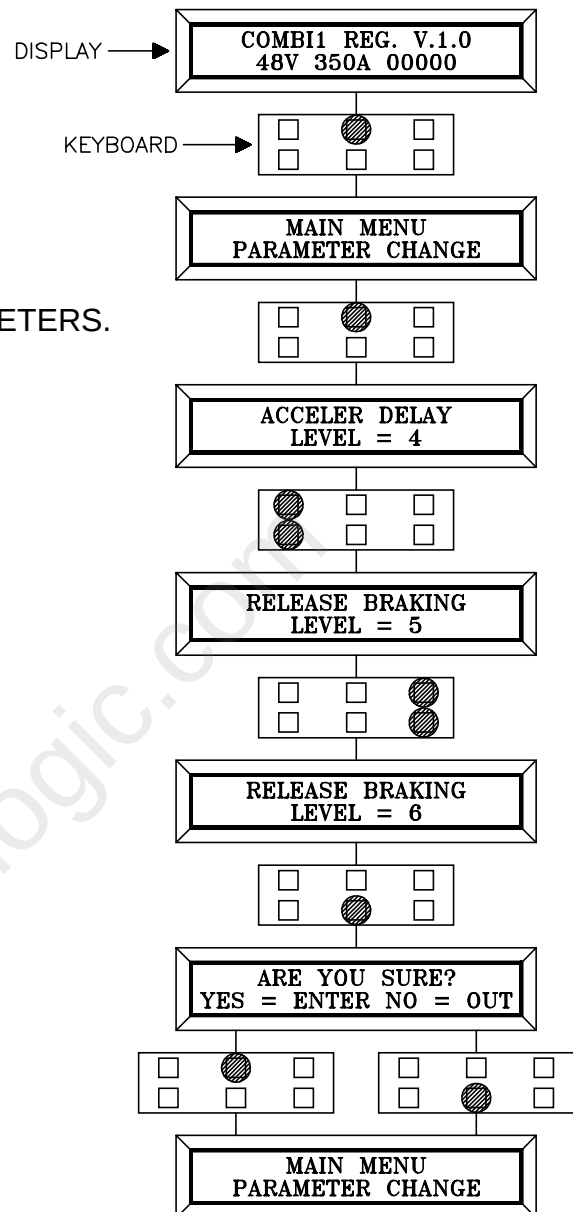
Programming "options", using the console:

- 1) Opening Display
- 2) Press ROLL UP + SET UP to simultaneously enter the menu SET.
- 3) Headline of the menu SEL MODEL.
- 4) Press ROLL UP to select the menu SET OPTIONS.
- 5) Headline of the menu SEL OPTIONS.
- 6) Press ENTER to entering in the menu.
- 7) The first item of the menu appears.
- 8) Press ROLL UP or ROLL DOWN to scroll the different items.
- 9) A new item appears.
- 10) Press SET UP or SET DOWN to modify the configuration.
- 11) The new configuration appears.
- 12) Press OUT to come out of the menu.
- 13) Confirmation of the modification request appears.
- 14) Press ENTER to confirm the modifications or press OUT to cancel.
- 15) Headline of the menu SEL OPTIONS appears.
- 16) Press OUT to return back to the opening display.



How make the programming operations with the console:

- 1) Opening display.
- 2) Press ENTER to enter the main menu .
- 3) The headline of the first item, PARAMETER CHANGE appears.
- 4) Press ENTER to enter to the function PARAMETERS.
- 5) The first parameter of the list appears.
- 6) Scroll the list of the parameters with the buttons ROLL UP and ROLL DOWN.
- 7) The item of the parameters appear.
- 8) Change the programmed level with the buttons SET UP and SET DOWN.
- 9) The new value adjusted appears.
- 10) Press OUT when programming is finished.
- 11) The confirmation request appears.
- 12) Press ENTER to confirm the modifications or OUT to cancel.
- 13) The headline of the item PARAMETER CHANGE appears.
- 14) Press ROLL UP or ROLL DOWN for scrolling the other items, or press OUT for coming back to the opening display.

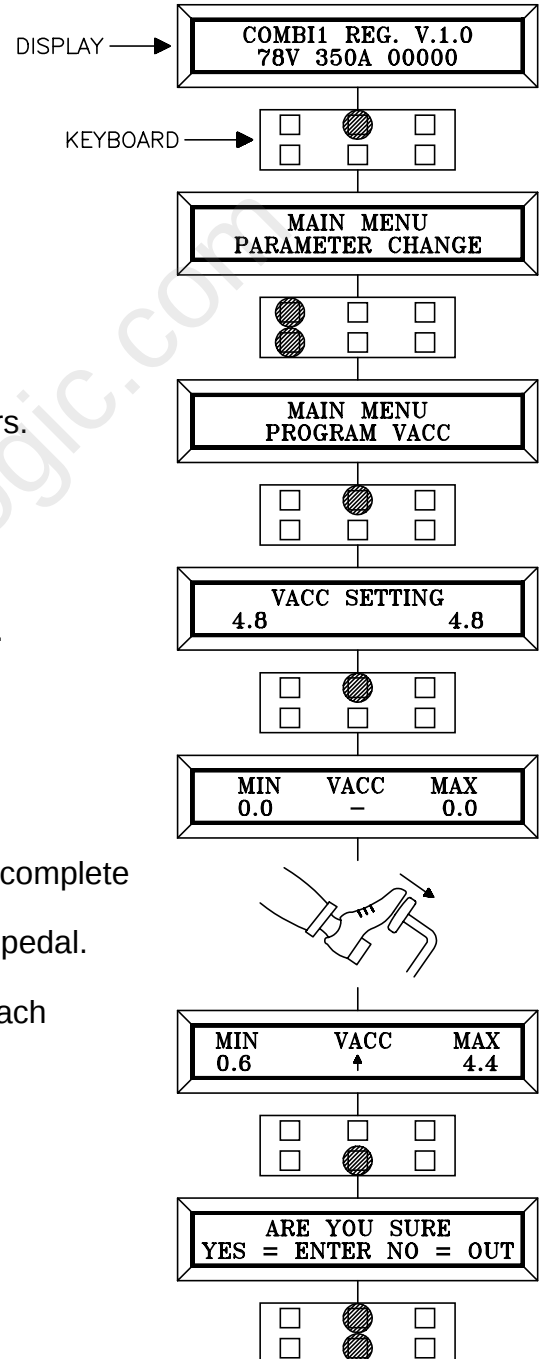


4.11 PROGRAM VACC: DESCRIPTION

This function allows storing of the minimum and maximum values for the accelerator signal in each running direction. This is necessary to compensate for the asymmetry in the mechanical operation of the potentiometer. This operation is made using the pedal. After entering the menu PROGRAM VACC, the following the operations are described below.

How to enter in the menu PROGRAM VACC and carry out the operations:

- 1) Opening display.
- 2) Press ENTER to enter in the main menu.
- 3) The first item of the list appears.
- 4) Scroll the list with the buttons ROLL UP or ROLL DOWN. Select PROGRAM VACC.
- 5) The selected item (PROGRAM VACC) appears.
- 6) Press ENTER to enter the function PROGRAM VACC.
- 7) The maximum current values matched to the forward and backward running appears.
- 8) Press ENTER.
- 9) The controller is now ready to record the minimum and the maximum value of the potentiometer signal.
- 10) Press the pedal. Move slowly at the start and complete the stroke.
N.B. : select the direction before pressing the pedal.
- 11) The new maximum and minimum values for each running direction appears.
The arrow indicates the direction selected.
- 12) Press OUT.
- 13) The confirmation request for storing new values appears.
- 14) Press ENTER to confirm or OUT to cancel.



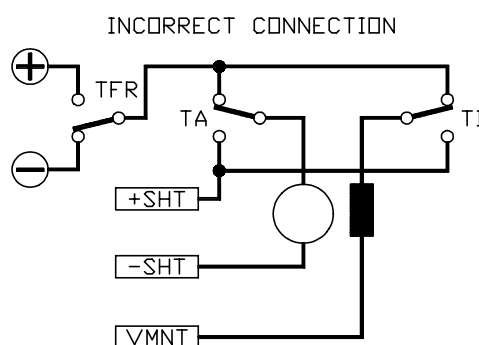
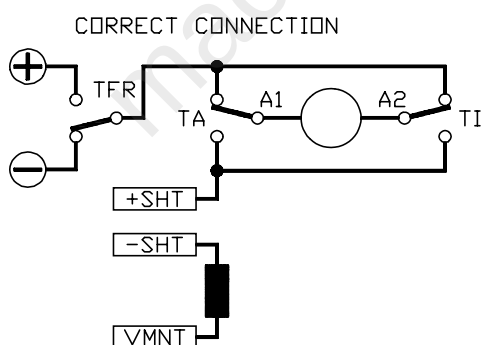
CONDITIONS UNDER WHICH FAULTS IS DETECTED	1° TEST	RESULT	2° TEST	RESULT	3° TEST	RESULT	FAULT DESCRIPTION POINT:
AT THE KEY ON	DISCONNECT THE MOTOR CABLE CONNECTED TO THE BATTERY AND THEN VERIFY IF THE ALARM STILL PRESENT	YES	→	→	→	→	C5
		NO	A RUNNING CONTACTOR IS LOCKED IN WORKING POSITION	YES	THE LOCKED CONTACTOR COIL IS SUPPLIED?	YES	B7
				NO		B8	
				NO		D1 D2 D3	
RUNNING WITH CONTACTORS ON RUNNING POSITIONS	→	→	→	→	→	C5	
AS SOON AS THE ACCELERATOR PEDAL IS COMPLETELY RELEASED FOR DOING A RELEASE BRAKING	IS IT PRESENT THE BYPASS OR THE WEAKENING CONTACTOR?	YES	→	→	→	→	E1
		NO	→	→	→	→	C5

B7) If the running contactor remains locked, verify:

- 1) if the wire going from NTA to NTI is sometimes shorted to a metallic part connected to the battery negative;
- 2) disconnecting the contactor wire always excited from board connector if the contactor is no longer excited, replace the logic board.

B8) A direction contactor is locked in the working position, unlock the contact. It may be necessary to replace the contactor.

D1) Incorrect connection of the motor cables. The stator and the armature are crossed.



D2) There is a current leakage in the motor between the stator winding and the armature. Otherwise there are some electric parts of the windings that make contact inside the motor.

D3) Check that there are no metallic parts inside the contactor board that cause a short toward negative in the points connected to -SHT and +SHT.

Full Version Available

Caterpillar NR16C Reach Truck Operator Manual (WHOMM0031)

Caterpillar NR16C Reach Truck operator manual, covers safety, controls, inspections and battery care. Searchable PDF download.

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