

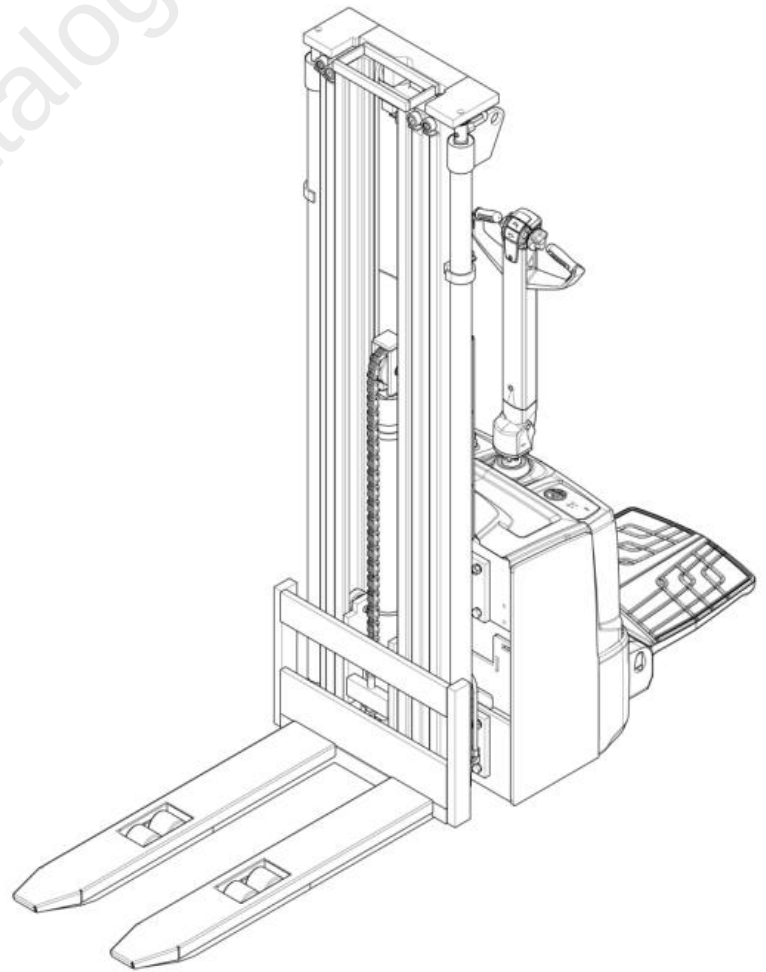
SERVICE MANUAL

NSP

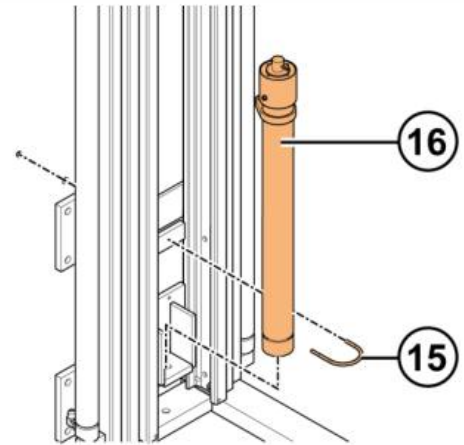
10N2R/12N2R/12N2IR/

14N2R/14N2IR/

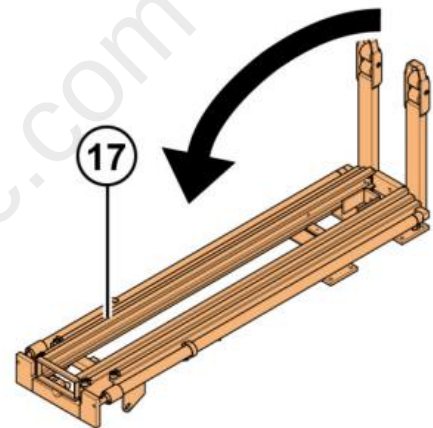
16N2R/16N2IR/16N2SR



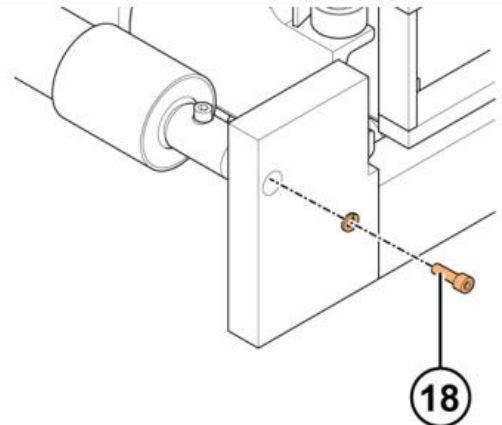
- 15.** Remove the free lift cylinder collar.
16. Remove the free lift cylinder.

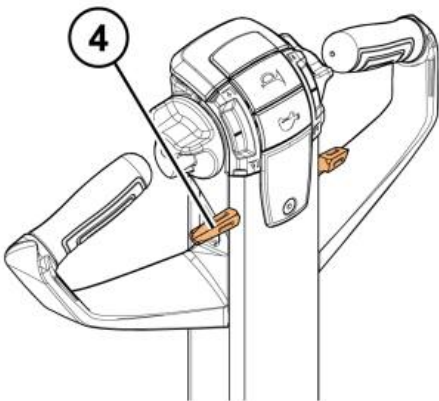
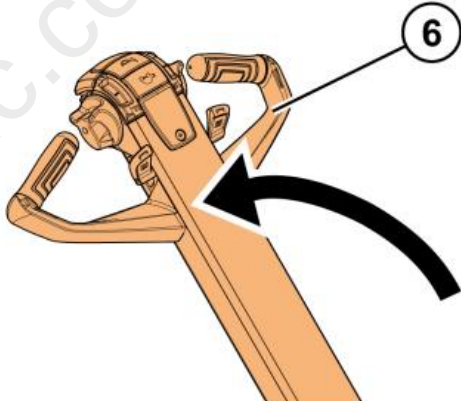


- 17.** Lay the mast unit down onto a pallet or a strong table.



- 18.** Remove the screws attaching the side cylinders to the top of the internal mast.



4. Make sure that the truck's lever for lifting and lowering is in the middle position.	
5. In TruckTool, click Start in the Wizard popup window.	
6. Pull the truck's tiller to the driving position and move the lever for lifting and lowering to one end position and then to the other end position.	
7. In TruckTool, check that the displayed values are acceptable and click Stop.	

If the process fails, update the firmware on the controller and try again.

9.3 Insulation resistance test

9.3.1 Test voltage

The insulation resistance of the truck and the traction battery is checked separately. The test voltage is greater than the nominal voltage but no more than 100 V or three times the nominal voltage:

NOMINAL VOLTAGE	TEST VOLTAGE
Up to 24 V	50 V
Over 36 V	100 V

CODE	TRUCKTOOL AND DISPLAY DESCRIPTION		
189	Battery lock not closed BATTERY LOCK	(Alarm)	
	This alarm indicates that the battery lock is not closed. In such a case, check the battery lock state from the tester menu. If the lock is stated to be open while the battery is mechanically locked, check the battery lock sensor operation and wiring.		
190	Motor braking error BRK TIMEOUT	(Alarm)	Stored
	One possible cause for this alarm is too steep braking ramp (parameter). Try to lower the braking ramps from the parameters. Also braking at a slope when the truck is loaded can cause this error.		
192	Waiting for EPS EPS RELAY OPEN	(Alarm)	Stored
	This alarm indicates that there is some problem in the steering and the steering has frozen.		
193	Sideguard inputs illegal state SIDEGUARD INPUTS	(Alarm)	
	This alarm is caused by an invalid combination of side guard inputs. If both the side guards are in the correct position (both open or both closed), check from the tester menu if the logic inputs are the same. Check the correct positioning and operation of the side guard sensors. Also check the wiring of the sensors.		
194	Platform inputs illegal state PLATFORM INPUTS	(Alarm)	Stored
	This alarm is caused by an invalid combination of operator's platform inputs. When the operator's platform is either down with a driver standing on it or up, check from the tester menu that the logic inputs are correct. Check the correct positioning and operation of the platform sensors. Also check the sensor wiring.		
195	Platform inputs inactive WAITING DRIVER	(Warning)	
	This is a general warning indicating only that the truck is waiting for an operator.		
196	Invalid motor resistance MISMATCHED RM	(Alarm)	Stored
	This alarm occurs if the motor resistance is different than the value of the parameter MOTOR RESIST. In such a case, teach the new motor resistance value by setting the parameter MOTOR RESIST to 0 and saving the value while holding the tiller arm in the drive position. Restart the truck after the main contactor is opened. The new settings are active after the restart.		

IDENTIFIER	DESCRIPTION
M#	Motor
V#	Diode
A#	Controllers and displays
K#	Contactors and relays
X#	Connector. Contact numbers are marked on individual wires.
XX#	Splice. Multiple wires are connected together at this point.

Figure 85 shows the reference to which Figure 84 referred.

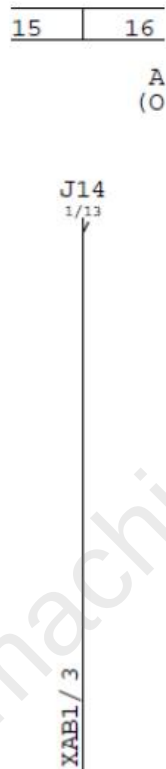


Figure 85. Page 8, zone 16, wiring reference J14

Once again, note the numbers below the wiring reference J14. These numbers (1/13) direct you back to the page (and zone) shown in Figure 84.

INPUTS & OUTPUTS	4 / 9	REV H
	3-7109	

Figure 86. Page numbers (4/9), circuit diagram number (3-7109) and revision letter (H)

11 TruckTool Diagnostics

Software maintenance can be performed with a diagnostics application called TruckTool. This program runs on a laptop PC and connects to the truck's data bus (CAN) via a special adapter and wire harness.

TruckTool can be used to receive, display and modify settings, update (flash) controller firmware, reset settings to hardware defaults, review and clear alarms, perform calibrations, execute a quick truck setup and monitor digital and analogue inputs and outputs.

The TruckTool program's usage instructions are available in the application itself. Additional training is required to use the program.



Figure 129. TruckTool Diagnostics

Full Version Available

Caterpillar NSP16N2R Stacker Service and Operator Manual (616843)

Caterpillar NSP16N2R Stacker service manual, covers hydraulics, drive unit, wiring, alarms, and maintenance. Downloadable PDF format.

[VIEW THE FULL MANUAL](#)