

USER GUIDE

TOUCHSCREEN INTERFACE

Model(s): MD4-7

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Touchscreen Interface - User Guide

REVISION HISTORY

Revision	Date	Description
0	2022-03-10	Initial release



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H. WARRANTY TERMS

EQUIPMENT
TRUCK MOUNTED RECOVERY EQUIPMENT
SLIDING SYSTEM COMPONENTS
TOWING ACCESSORIES MANUFACTURED BY INDUSTRIES NRC
ACCESSORIES MANUFACTURED BY A THIRD PARTY

TERMS

12 MONTHS FROM "IN SERVICE" DATE. NO MORE THAN 24 MONTHS.10 YEARS FROM DATE OF MANUFACTURING.12 MONTHS FROM DATE OF MANUFACTURING.THIRD PARTY WARRANTY APPLIES.

1 ABOUT THIS MANUAL

This manual will teach you how to use the touchscreen interface.

It contains the following sections, which you should read and follow in the order they are presented:

- Chapter 2 Home screen and navigation
- Chapter 3 Switching between touchscreens
- Chapter 4 Switching between 50% and 100% speed
- Chapter 5 Switching between the remote control and control panel
- · Chapter 6 Switching between outrigger and underlift mode
- Chapter 7 Controlling the underlift
- · Chapter 8 Viewing the main wrecker measurements
- Chapter 9 Controlling the wrecker functions
- Chapter 10 Viewing the levelling and anti-twist calibrations
- Chapter 11 Viewing the operating time
- Chapter 12 Viewing the hydraulic information
- Chapter 13 Viewing the engine information
- Chapter 14 Viewing the system info, modules and logs
- Chapter 15 Viewing the sensor measurements
- Chapter 16 Viewing and editing the settings
- Chapter 17 Editing the touchscreen preferences

Document conventions

The following conventions are used throughout this document:

NOTE: We highly recommend that you read this manual in full before using your NRC equipment.

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Disclaimer

This manual, including the equipment specifications, is subject to change without notice. Ensure that you have the latest version of this manual before using your equipment.

Applicable models and serial numbers

This manual is intended for use with the following models with serial numbers within the following ranges only:

- CSR50-001 to ...
- CSR65-001 to ...
- CSR85-001 to ...

2 HOME SCREEN AND NAVIGATION

The touchscreen interface is used to operate, adjust and troubleshoot the wrecker.

The home screen of the touchscreen interface (Figure 1 for the CSR50 and CSR65, and Figure 2 for the CSR85) allows you to select different control modes and displays information about some of the operational settings of the wrecker. The buttons at the bottom of the screen are used to access different menus and screens.

NOTE: A PIN is required to perform calibrations and adjust most of the settings.



FIGURE 1 – HOME SCREEN OF THE CSR50 AND CSR65





FIGURE 2 – HOME SCREEN OF THE CSR85



TABLE 1 – HOME SCREEN DESCRIPTION

Component	Description
1	Displays the following information:
	• Job 0 psi : Pump pressure (CSR50 and CSR65)
	• dia ^{0 psi} • · · · · · · · · · · · · · · · · · · ·
	 O psi : CW/CCW swing motor pressure
	• Orpm: Engine RPM
	 ⁰ % ⁰ L/min Pump actuation percentage and flow rate The normal values for the pumps are as follows:
	• CSR50: 3,000 psi max. (loaded)
	CSR65: 3,500 psi max. (loaded)
	 CSR85: 3,770 psi max. (loaded) Note that the CSR85 model has only one pump (P1). The normal value for the swing motor is 2,000 psi max. (loaded).
2	Indicates the following:
	• • 0.00 % : Fuel level
	• 273 °C: External temperature
	• Colored -40 °C : Engine coolant temperature
	• 🔯 • • C : Hydraulic oil temperature

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Component	Description
3	Displays the following options for the wrecker, as well as the outriggers and underlift:
	 Sets the maximum speed of each function to 50% (^{50%}) or 100% (^{100%}). This option is available on both the control panel and the remote control, but can only be used in the current control mode (for example, when the wrecker is in remote control mode, this setting can only be adjusted using the remote control).
	 Selects whether to control the wrecker using the control panel (2) or remote control (1).
	 Selects whether to control the outriggers (

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Component	Description	
4	Accesses the operating functions of the wrecker:	
	• Controls the outriggers and the auto-levelling and anti-twist systems of the wrecker. See Section 9.2.	
	Controls the winches. See Section 9.3.	
	 Controls the operation of various wrecker functions. See Section 9.4: Switches between control of the slide and the drag winch Controls the speed of the boom rotation and the main winches Controls the locking systems of the boom rotation and slide 	
	 Displays the main wrecker measurements. See Section 8: The boom lift angle (0° to X°, 0° meaning completely down) The boom extension (0" to X", 0" meaning completely retracted) The estimated hook load The estimated allowable load and load ratio for this angle/extension when loading from behind The estimated allowable load and load ratio for this angle/extension when loading from the side Controls the lights. See Section 9.5. 	
5	Buttons used to:	
	 Navigate to the calibration screen. See Section Changing the slide lubrication mode, Calibrating the system, and 11. 	
	• D: Navigate to the information screen. See Sections 12 and 13.	
	• E: Navigate to the main menu screen. See Sections 14, 15, 16, and 17.	

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Description	
Displays illuminated icons to indicate when:	
• The boom is centered and can be locked.	
• The boom enters the area over the truck cab where it is unsafe to operate. When this icon is flashing, you must tap the icon to confirm that you wish to operate the boom over the cab.	
• 👫: The power take-off (PTO) is disengaged.	
• In power take-off (PTO) is engaged.	
Displays the options for the operating functions (see Sections 9.2 and 9.1).	

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3 SWITCHING BETWEEN TOUCHSCREENS

There are two touchscreen interfaces, with one on each side of the wrecker. To prevent improper operation, you can only operate one touchscreen interface at a time.

The touchscreen interface that is inactive appears as follows:



FIGURE 3 – INACTIVE TOUCHSCREEN INTERFACE

To switch to the currently inactive touchscreen interface, tap anywhere on the inactive touchscreen interface or on the vehicle display controller, as shown below.

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FIGURE 4 – VEHICLE DISPLAY CONTROLLER



SWITCHING BETWEEN 50% AND 100% SPEED 4

To select 50% or 100% speed, on the home screen of the touchscreen, tap $\frac{50\%}{100\%}$.



When the 50% indicator is illuminated, the speed is 50%.

When the 100% indicator is illuminated, the speed is 100%.

NOTE: When the wrecker is set to remote control mode, this setting can only be adjusted using the remote control. See Chapter 5.



5 SWITCHING BETWEEN THE REMOTE CONTROL AND CONTROL PANEL

To select whether to control the wrecker with the remote control or with the control panel, on the home screen of the touchscreen, tap

When the indicator is illuminated, the wrecker is being controlled with the control panel.

When the *with the remote control* is illuminated, the wrecker is being controlled with the remote control.

NOTE: When the wrecker is set to remote control mode, some settings can only be adjusted using the remote control.



SWITCHING BETWEEN OUTRIGGER AND 6 **UNDERLIFT MODE**

The secondary control panel uses the same levers to control both the outriggers and the underlift. To select whether to control the outriggers or the underlift, on the home screen of the touchscreen, tap

When the **bar** indicator is illuminated, the secondary control panel is controlling the outriggers.

When the *indicator* is illuminated, the secondary control panel is controlling the underlift.

NOTE: To enter underlift mode, you must select Yes in the pop-up confirmation window.



7 CONTROLLING THE UNDERLIFT

In addition to being controlled by the main control panel, the underlift can also be controlled by both the touchscreen and the secondary control panel.

To control the underlift with the secondary control panel:

- 1. On the home screen, tap \swarrow to select underlift mode (\checkmark).
- 2. Tap **YES** in the pop-up confirmation window.
- 3. On the secondary control panel, use the levers to retract or extend the underlift, or fold or unfold the underlift stinger.



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8 VIEWING THE MAIN WRECKER MEASUREMENTS

To display the main wrecker measurements, tap in the home screen.



FIGURE 5 - MAIN WRECKER MEASUREMENTS SCREEN

TABLE 2 - MAIN WRECKER MEASUREMENTS SCREEN DESCRIPTION

Element	Description
	Adjusts the algorithm for calculating the estimated hook load based on how the cable has been set up:
QD	 Tap 2 to set the calculation algorithm to single-part tackle Tap 2 to set the calculation algorithm to two-part tackle Tap 2 to set the calculation algorithm to four-part tackle
0 °	The boom lift angle (0° to X°, 0° meaning completely down)
0	The boom extension (0" to X", 0" meaning completely retracted)

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Element	Description
🗘 0 lbs	The estimated hook load
0 lbs	The estimated allowable load and load ratio for this angle/extension when loading from behind
0 lbs	The estimated allowable load and load ratio for this angle/extension when loading from the side

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9 CONTROLLING THE WRECKER FUNCTIONS

The touchscreen is used to control various wrecker functions.

9.1 Activating the auto-levelling and anti-twist systems

The wrecker is equipped with auto-levelling and anti-twist systems, which level the wrecker along the left-to-right axis at the front and rear of the chassis. For optimal operation, the chassis must be level and not twisted.

9.1.1 Activating the auto-levelling system

To activate the auto-levelling system:

- 1. On the home screen, tap 🔁 to display the auto-levelling and anti-twist options.
- 2. Tap and then tap **Yes** in the pop-up confirmation window. The **confirmation** icon is displayed to indicate that the auto-levelling system is activated.

To deactivate the auto-levelling system, tap again.

9.1.2 Activating the anti-twist system

To activate the anti-twist system:

- 1. On the home screen, tap it to display the auto-levelling and anti-twist options.
- 2. Tap (and then tap **Yes** in the pop-up confirmation window. The (icon is displayed to indicate that the anti-twist system is activated.

To deactivate the anti-twist system, tap 2 again.

9.2 Controlling the outriggers

The outriggers are controlled by both the touchscreen and secondary control panel.

9.2.1 Retracting or extending the outriggers

To retract/extend the outriggers:

- 1. On the home screen, tap it to display the outriggers/underlift screen.
- 2. Tap **to** select outrigger mode (
- 3. If needed, tap to set the direction of movement to horizontal (
- 4. On the secondary control panel, use the levers to retract or extend the outriggers.

Raising or lowering the outriggers 9.2.2

To raise/lower the outriggers:

- 1. On the home screen, tap it to display the outriggers/underlift screen.
- 2. Tap to select outrigger mode (
- 3. If needed, tap 📩 to set the direction of movement to vertical (
- 4. On the secondary control panel, use the levers to raise or lower the outriggers.

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9.3 Controlling the winches

The winches are controlled by both the touchscreen and main control panel. The touchscreen free spools the winches, while the main control panel winds and unwinds the winches.

9.3.1 Free spooling a winch

To free spool a winch:

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- 1. On the home screen, tap to display the winch control screen.
- 2. Tap an icon to free spool the associated winch.
 - ' 💆: Left main winch
 - ' 💾: Right main winch
 - Left auxiliary winch
 - Right auxiliary winch
 - : Drag winch
- 3. Tap **YES** in the pop-up confirmation window. Above the selected winch icon on the touchscreen will be a similar icon to indicate that the winch is in free spool mode.
- 4. To turn off free spool mode, tap the lower icon. The top icon will disappear.

9.4 Selecting and controlling various functions

The touchscreen is used to select the wrecker functions that will be controlled by the main control panel.

9.4.1 Switching between control of the slide and drag winch

To select whether the main control panel should control either the slide or the drag winch:

- 1. On the home screen, tap 😥 to display the various control functions.
- 2. Tap $\mathbf{\overline{M}}$ to select whether to control the slide ($\mathbf{\overline{M}}$) or drag winch ($\mathbf{\overline{M}}$).
- 3. Use the main control panel lever to control the slide or drag winch.

9.4.2 Controlling the speed of the boom rotation and main winches

To select the speed at which the main control panel should operate the boom rotation and main winches:

- 1. On the home screen, tap 🚱 to display the various control functions.
- 2. Tap **Solution** to select low speed () or high speed ().
- 3. Use the main control panel lever to control the boom rotation and main winches.

9.4.3 Locking or unlocking the boom rotation

To lock or unlock the boom rotation:

- 1. On the home screen, tap 😨 to display the various control functions.
- 2. Tap to lock () or unlock () the boom rotation.

9.4.4 Locking or unlocking the slide

To lock or unlock the slide:

- NRC 🖻
- 1. On the home screen, tap 😨 to display the various control functions.
- 2. Tap 🔛 to lock (

9.5 Controlling the lights

The touchscreen can be used to turn the various lights on your wrecker on and off, as well as adjust the backlighting on the wrecker control panels.


9.5.1 Turning the lights on and off

To turn the lights on and off:

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- 1. On the home screen, tap is to display the lighting control screen.
- 2. Tap an icon to turn on the associated light(s). The boxes at the top of the icon(s) will turn orange when the light is on.
 - 1. 🔛: All lights
 - 2. The second se
 - 3. 11: Strobe (STB)
 - 4. Lower side work lights (LWL)
 - 5. Soom work lights (BWL)
 - 6. E: Winch cover work lights (WC-WL)
 - 7. E : Rear work lights (RWL)
 - 8. AUX: Upper work lights (UWL) or custom
- 3. Tap the icon again to turn the light(s) off. The boxes will turn to black.

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9.5.2 Adjusting the backlighting on the control panels

To adjust the backlighting on the control panels:

- 1. On the home screen, tap is to display the lighting control screen.
- 2. Move the slider up or down to adjust the backlighting.



10 VIEWING THE LEVELLING AND ANTI-TWIST CALIBRATIONS

The wrecker is equipped with auto-levelling and anti-twist systems, which level the wrecker along the left-to-right axis at the front and rear of the chassis. For optimal operation, the chassis must be level and not twisted.

The wrecker is also equipped with a calibrating scale system for adjusting the minimum and maximum boom length and angle values to ensure that the truck remains stable during operation.

The wrecker is also equipped with wireless remote 50/100% settings for adjusting the maximum speed of each remote control function when the remote control is set to 50%. See Section 16.2 for more information about these adjustments.

The anti-twist, levelling, scale system and wireless remote 50/100% settings are calibrated at NRC Industries. With the exception of troubleshooting the wrecker, they should not have to be recalibrated.

NOTE: A PIN is required to access the scale system calibration screen and to perform all calibrations. For more information on calibration, please contact your dealer.

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To view the levelling and anti-twist calibrations:

1. On the home screen, tap 🕐 to display the calibration screen.

50/100% CALIBRATION	
• () 😑 Ø	SLIDE LUBRICATION

2. On the calibration screen, tap the level image _____ to display the levelling and anti-twist calibration screen.

	LEVELLING CALIBRATION	BODY FRONT LEVEL -10.00 ° FRONT OUTRIGGER LEVEL 0.00 °
	\checkmark	BODY REAR LEVEL -10.00 ° REAR OUTRIGGER LEVEL 0.00 °
REAR LEVEL	ANTI-TWIST CALIBRATION anti-twist alarm	
$\left(\begin{array}{c} 4 \\ \hline 4 \end{array} \right)$		

For questions about calibrating your wrecker, please contact your dealer.

11 VIEWING THE OPERATING TIME

On the operating time screen, you can view the current operating time of the power take-off (PTO) and truck.

To view the operating time screen:

- 1. On the home screen, tap 🖉 to display the calibration screen.
- 2. On the calibration screen, tap 🖾 to display the operating time screen.





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12 VIEWING THE HYDRAULIC INFORMATION

To view the hydraulic information:

1. On the home screen, tap 0 to display the information screen.



2. On the information screen, tap δ^{2} to display the hydraulic information.



FIGURE 6 - HYDRAULIC INFORMATION SCREEN (CSR85 SHOWN)

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TABLE 3 - HYDRAULIC INFORMATION SCREEN DESCRIPTION

Element	Description
orpm 0 rpm	Engine RPM
	Pump actuation percentage and flow rate
<mark>, إن</mark> ₀0 psi x 0 psi	Pump pressure
U 0 psi	CW/CCW swing motor pressure
0 °C	Hydraulic oil temperature
-273 °C	External temperature
0 lbs	Estimated hook load
	Length (") and angle (°) of the boom, and pressure (psi) of the lift cylinders $% f(x)=0$
()-3 ⁻²⁻²	Indicates that the touchscreen is on the hydraulic information page
0 psi- 0 psi-	Pressure of the up/down stabilizer cylinders (CSR85 only)
• 270-	Boom position

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13 VIEWING THE ENGINE INFORMATION

To view the truck engine information:

1. On the home screen, tap 0 to display the information screen.



2. On the information screen, tap *w* to display the truck engine information.

(4) TOTAL I ENGINE AVERAGI INSTAN	UEL RATE 0.0 L/h IDLE FUEL USED 0 L TOTAL FUEL USED 0.0 L NE TRIP FUEL 0.0 L E FUEL ECONOMY 0.0 km/L 0.0 km/L	0.00V	TOTAL VEHICLE DIS 0.0 km TRIP DISTANC 0.0 km ENGINE TOTAL REVO 0 r TOTAL IDLE HOL 0.00 h GINE TOTAL HOURS OF 0.00 h 0 ENGAGED HOURS OF 0.00 h	TANCE E LUTION JRS F OPERATION F OPERATION
-273 °C	-40 °C	-40 °C	-273 °C	Ø.
▶ <mark>}})</mark> 0 %	⊳ 0 %		n/min 0 rpm	0 %

FIGURE 7 - TRUCK ENGINE INFORMATION SCREEN

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TABLE 4 - TRUCK ENGINE INFORMATION SCREEN DESCRIPTION

Component	Description
FUEL RATE	Rate of fuel use
TOTAL IDLE FUEL USED	All-time total of idle fuel used
ENGINE TOTAL FUEL USED	All-time total of engine fuel used
ENGINE TRIP FUEL	Engine fuel used for the current trip
AVERAGE FUEL ECONOMY	All-time average fuel economy
INSTANT FUEL ECONOMY	Fuel economy for the current trip
TOTAL VEHICLE DISTANCE	Total distance that the vehicle has travelled
TRIP DISTANCE	Distance of the current trip
ENGINE TOTAL REVOLUTION	All-time total engine revolutions
TOTAL IDLE HOURS	Total hours spent idling
ENGINE TOTAL HOURS OF OPERATION	Total hours of engine operation
P.T.O. ENGAGED HOURS OF OPERATION	Total hours of wrecker operation (PTO engaged)
-273 °C	External temperature
-40 °C	Engine intake air temperature
-40 °C	Engine coolant temperature
-273 °C	Engine oil temperature
	Transmission fluid temperature (automatic only)

Component	Description
▶ <mark>₽₽</mark> 0 %	Fuel level
▶	Engine coolant level
<mark>⊲⊘</mark> ⊳ ⊎γ8à	Engine oil pressure
n min Orpm	Engine speed
0 %	Engine load
- + 0.00 V	Vehicle battery voltage
	Indicates that the touchscreen is on the engine information page



14 VIEWING THE SYSTEM INFO, MODULES AND LOGS

The System screen displays general information about the system, such as the software name and version number. It also displays general information about each installed module, as well as all the operation logs of those modules. This information may be helpful when troubleshooting the wrecker.

14.1 Viewing the system info

To view the system info:

- 1. On the home screen, tap to display the main menu screen, then tap **System** to display the System screen.
- 2. On the System screen, tap Info to display the System Info screen.



14.2 Viewing the modules

Modules are the electronic components connected to the touchscreen interface. They capture sensor readings, transmit the values to the touchscreen interface and allow you to adjust the settings.

The possible values for the modules are:

- OK: The module is operating normally.
- NO CONTACT: The module cannot communicate with the touchscreen interface, and you will not be able to view information from this module. This is caused by a network or power problem with the module.

To view the modules:

- 1. On the home screen, tap to display the main menu screen, then tap **System** to display the System screen.
- 2. On the System screen, tap **Modules** to display the Modules screen.

NOTE: You may need to scroll down to see all the installed modules.

\bigcirc	(i) Modules		X
	MAIN_MD4_7 MD4-7[0]	ОК	
	MAST MC42[2]	ОК	
	SECONDARY_MD4_7 MD4-7[1]	ОК	
	LEFT_MC43[3] MC43[3]	ОК	
	RIGHT_MC43[4] MC43[4]	ОК	

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3. Tap on a submodule to see more.

NOTE: Submodules that say <no info> have no more information.

(i) MAIN_MD4_7	X
MAIN_MD4_7 MD4-7[0]	ок
SCANRECO REMOTE; <no info=""> Generic[255]</no>	ок
BODY OUTPUT 1-8; <no info=""> Generic[255]</no>	ок
BODY OUTPUT 9-16; <no info=""> Generic[255]</no>	ОК
BODY OUTPUT 17-24; <no info=""> Generic[255]</no>	ОК

4. Tap on a module to display its specifications.

NOTE: You may need to scroll down to see all the information about the module.

$(\)$	ĺ) MAIN_MD4_7	X
	Production date	15/09/21	
	SW Version	6.06.7.6078	
	Bios Version	1.00	
	Serial number	137010001	
	Temperature [°C]	49	
	VRefA	5.00	
	VBB	12.40	
	Capabilities	-	
	IP address 0	0.0.0.0	
	MAC address 0	00-00-00-00-00	
	IP address 1	0.0.0.0	
	MAC address 1	00-00-00-00-00-00-00-00-00-00-00-00-00-	

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The table below describes the information that is provided for each module. Some elements may not be available for all modules.

Element	Description
Production date	Date the module was produced.
SW Version	Software version of the module.
Bios Version	BIOS version of the module.
Serial number	Serial number of the module.
Temperature [°C]	Internal temperature of the module.
VRefA	Reference voltage for all sensors.
VBB	Supply voltage of the module.
Capabilities	-
IP address 0	IP address of the module.
MAC address 0	MAC address of the module.
IP address 1	IP address of the module.
MAC address 1	MAC address of the module.
IQANconnect key	Connect key of the module.

TABLE 5 – MODULE INFORMATION DESCRIPTION

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14.3 Viewing the logs

To view the logs of a module:

- 1. On the home screen, tap to display the main menu screen, then tap **System** to display the System screen.
- 2. On the System screen, tap Logs to display the Logs screen.

NOTE: Only modules with recorded logs are displayed.

4	(i) Logs	X
	MAIN_MD4_7 log	5 records
	MAST log	21 records
	SECONDARY_MD4_7 log	15 records
	LEFT_MC43[3] log	37 records
	RIGHT_MC43[4] log	26 records
	A AN TEND ATA IN	



3. Tap a log to display its records.

NOTE: You may need to scroll down to see all the elements.



15 VIEWING THE SENSOR MEASUREMENTS

The display shows readings from the many sensors on the wrecker to assist with troubleshooting. This function allows you to view sensor readings, not to modify them.

NOTE: Sensors may vary depending on your wrecker model.

To view the sensor measurements:

1. On the home screen, tap to display the main menu screen, then tap **Measure** to display the Measure screen.

NOTE: You may need to scroll down to see all the elements.

\bigcirc	Measure	X
	WIRELESS INPUTS	
	WIRELESS PADDLE]
	POCKET REMOTE]
	LEFT SIDE JOYSTICKS]
	RIGHT SIDE JOYSTICK	

2. Tap an element to display the sensor measurements. Table 6 to Table 22 describe the sensor functions.



The tables below describe the various sensors.



TABLE 6 - WIRELESS INPUT DESCRIPTIONS

The wireless inputs indicate the status of the various remote control switches.

Input	Description
IN LCD UP [T/F]	Not used.
IN 50% [T/F]	The 50%/100% switch is in 50% position (T) or 100% position (F).

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Input	Description
IN SWING/WINCH [T/F]	The high speed switch is active (T) or inactive (F).
IN Under Lift [T/F]	The underlift switch is active (T) or inactive (F).
IN Engine Start [T/F]	The engine start switch is active (T) or inactive (F).
IN Engine Stop [T/F]	The engine stop switch is active (T) or inactive (F).
IN Left Aux. Winch [T/F]	The left auxiliary winch switch is active (T) or inactive (F).
In Power/Horn [T/F]	The power/horn switch is active (T) or inactive (F).
IN Right Aux. Winch [T/F]	The right auxiliary winch switch is active (T) or inactive (F).
IN Left Main Winch [T/F]	The left main winch switch is active (T) or inactive (F).
IN Right Main Winch [T/F]	The right main winch switch is active (T) or inactive (F).
IN Rabbit [T/F]	The slow speed switch is in fast position (T) or slow position (F). This value should always be the opposite of the value of the In Turtle setting.
IN LCD F3 [T/F]	Not used.
remote 360 [T/F]	The remote control 360° rotation switch is active (T) or inactive (F).
IN LCD F2 [T/F]	Not used.
IN LCD ESC [T/F]	Not used.

Input	Description
IN Disconnected [T/F]	The emergency stop command switch is active (T) or inactive (F).
SP2 [T/F]	The SP2 switch is active (T) or inactive (F). Currently unused.
IN LCD F4 [T/F]	The IN LCD F4 switch is active (T) or inactive (F). Currently unused.
IN LCD DOWN [T/F]	The IN LCD DOWN switch is active (T) or inactive (F). Currently unused.
IN LCD ENTER [T/F]	The IN LCD ENTER switch is active (T) or inactive (F). Currently unused.
SP1 [T/F]	The SP1 switch is active (T) or inactive (F). Currently unused.
In Turtle [T/F]	The slow speed switch is in fast position (F) or slow position (T). This value should always be the opposite of the value of the In Rabbit setting.
IN 100% [T/F]	The 100% speed switch is active (T) or inactive (F).
SP3 [T/F]	The SP3 switch is active (T) or inactive (F). Currently unused.
SP4 [T/F]	The SP4 switch is active (T) or inactive (F). Currently unused.

TABLE 7 – WIRELESS PADDLE DESCRIPTIONS

The wireless joystick inputs indicate the position of the various wireless paddles, which are numbered in sequential order from left to right.

The values decrease when the joystick is moved downward and increase when the joystick is moved upward. The reference values are:

- Min: 1
- Mid: 127
- Max: 254

Paddle	Description
Paddle 0	The paddle 0 input.
Paddle 1	The paddle 1 input.
Paddle 2	The paddle 2 input.
Paddle 3	The paddle 3 input.
Paddle 4	The paddle 4 input.
Paddle 5	The paddle 5 input.
Paddle 6	The paddle 6 input.
Paddle 7	The paddle 7 input.

TABLE 8 – POCKET REMOTE DESCRIPTIONS

The pocket remote inputs detect the status of the pocket remote functions.

Input	Description
boom up [T/F]	The boom up input is active (T) or inactive (F).
boom down [T/F]	The boom down input is active (T) or inactive (F).
boom in [T/F]	The boom in input is active (T) or inactive (F).
boom out [T/F]	The boom out input is active (T) or inactive (F).
underlift in [V]	The underlift in input is active over 12 V.
underlift out [V]	The underlift out input is active over 12 V.

TABLE 9 - LEFT SIDE JOYSTICK SENSOR DESCRIPTIONS

The left side joystick sensors measure the movement of the left side joysticks.

The normal ranges are:

- Min: approximately -100%
- Mid: approximately 0%
- Max: approximately 100%

Sensor reading	Description
L.JS.SWING [%]	The left side joystick movement for the boom rotation.
L.JS.R. AUX WINCH [%]	The left side joystick movement for the right auxiliary winch.
L.JS.FOLD UP/DOWN [%]	The left side joystick movement for folding up/down.
L.JS.UNDERLIFT.EXT [%]	The left side joystick movement for the underlift extension.
L.JS.BOOM IN/OUT [%]	The left side joystick movement for the boom in/out.
L.JS.BOOM UP/DN [%]	The left side joystick movement for the boom up/down.
L.JS.RIGHT WINCH [%]	The left side joystick movement for the right winch.
L.JS.LEFT WINCH [%]	The left side joystick movement for the left winch.
L.JS.LF.LEG.OUT. [%]	The left side joystick movement for the left front outrigger.
L.JS.L. AUX WINCH [%]	The left side joystick movement for the left auxiliary winch.
L.JS.SLIDE/DRAG IN/OUT [%]	The left side joystick movement for the slide in/out (forward/reverse) or drag winch in/out (unwind/wind).
L.JS.LR.LEG.OUT. [%]	The left side joystick movement for the left rear outrigger.
L.JS.RF.LEG.OUT. [%]	The left side joystick movement for the right front outrigger.
L.JS.RR.LEG.OUT. [%]	The left side joystick movement for the right rear outrigger

TABLE 10 - RIGHT SIDE JOYSTICK SENSOR DESCRIPTIONS

The right side joystick sensors measure the movement of the right side joysticks.

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The normal ranges are:

- Min: approximately -100%
- Mid: approximately 0%
- Max: approximately 100%

Sensor reading	Description
R.JS.SWING [%]	The right side joystick movement for the boom rotation.
R.JS.LF.LEG.OUT. [%]	The right side joystick movement for the left front outrigger.
R.JS.LR.LEG.OUT. [%]	The right side joystick movement for the left rear outrigger.
R.JS.RF.LEG.OUT. [%]	The right side joystick movement for the right front outrigger.
R.JS.UNDERLIFT.EXT [%]	The right side joystick movement for the underlift extension.
R.JS.FOLD UP/DOWN [%]	The right side joystick movement for folding up/down.
R.JS.RR.LEG.OUT. [%]	The right side joystick movement for the right rear outrigger.
R.JS.SLIDE/DRAG IN/OUT [%]	The right side joystick movement for the slide in/out (forward/reverse) or drag winch in/out (unwind/wind).
R.JS.BOOM UP/DN [%]	The right side joystick movement for the boom up/down.
R.JS.BOOM IN/OUT [%]	The right side joystick movement for the boom in/out.
R.JS.LEFT AUX WINCH [%]	The right side joystick movement for the left auxiliary winch.
R.JS.R. AUX WINCH [%]	The right side joystick movement for the right auxiliary winch.
R.JS.LEFT WINCH [%]	The right side joystick movement for the left winch.
R.JS.RIGHT WINCH [%]	The right side joystick movement for the right winch.

TABLE 11 – VALVE BANK DESCRIPTIONS

For each wrecker body control, these sensors measure the position of the valve (in mA) when the function is activated.

Sensor	Description
UP/DN_R.R.LEG [mA]	Position of the up/down right rear outrigger valve.
UP/DN_R.F.LEG [mA]	Position of the up/down right front outrigger valve.
UP/DN_L.R.LEG [mA]	Position of the up/down left rear outrigger valve.
UP/DN_L.F.LEG [mA]	Position of the up/down left front outrigger valve.
IN/OUT_R.R.LEG [mA]	Position of the in/out right rear outrigger valve.
IN/OUT_R.F.LEG [mA]	Position of the in/out right front outrigger valve.
IN/OUT_L.R.LEG [mA]	Position of the in/out left rear outrigger valve.
IN/OUT_L.F.LEG [mA]	Position of the in/out left front outrigger valve.
UP/DN_FOLD UNDERLIFT [mA]	Position of the underlift fold/unfold valve.
IN/OUT_AXEL LIFT [mA]	Position of the underlift in/out valve.
IN/OUT_SLIDE [mA]	Position of the slide in/out valve.
CW/CCW_SWING [mA]	Position of the boom valve for clockwise and counterclockwise rotation.
right winch [mA]	Position of the main right winch valve.
right aux. winch [mA]	Position of the auxiliary right winch valve.
left winch [mA]	Position of the main left winch valve.
left aux. winch [mA]	Position of the auxiliary left winch valve.

Sensor	Description
DRAG WINCH [mA]	Position of the drag winch valve.
up/down boom [mA]	Position of the boom up/down valve.
in/out boom [mA]	Position of the boom in/out valve.

TABLE 12 - SCALE SYSTEM DESCRIPTIONS

The scale system sensors measure the hydraulic pressure of the elevating cylinders.

Sensor	Description
L	Varies by model.
D.cyl	Unused.
Rp	Unused.
Хр	Unused.
Үр	Varies by model.
Xt	Unused.
Yt	Unused.
masse mât	Unused.
PENTE	Varies by model.
ORDONNÉE	Varies by model.
PENTE_2	Varies by model.
d (4 falls)	Varies by model.
LIFT CYLINDER PRESSURE [psi]	The hydraulic pressure in the elevating cylinders. The heavier the load on the boom, the higher the pressure.

Sensor	Description
B.length corrector	Varies by model.
BOOM LENGTH "	Varies by model.
BOOM ANGLE [°]	Varies by model.
??? 1	Varies by model.
??? 2	Varies by model.
??? 3	Varies by model.
L	Unused.

TABLE 13 – SENSOR DESCRIPTIONS

The sensors take the oil temperature and various pressure measurements on the wrecker.

Sensor	Description
OIL TEMP. [ºC]	The hydraulic oil temperature.
RIGHT_PUMP PRESS [psi]	The hydraulic pressure in the right pump.
CW SWING PRESSURE [psi]	The hydraulic pressure for clockwise rotation of the boom.
CCW SWING PRESSURE [psi]	The hydraulic pressure for counterclockwise rotation of the boom.
L.R.UP.PRESSURE [psi]	The hydraulic pressure for the left rear up stabilizer cylinder.
L.R.DN.PRESSURE [psi]	The hydraulic pressure for the left rear down stabilizer cylinder.
L.F.UP.PRESSURE [psi]	The hydraulic pressure for the left front up stabilizer cylinder.
L.F.DN.PRESSURE [psi]	The hydraulic pressure for the left front down stabilizer cylinder.

Sensor	Description
R.F.UP.PRESSURE [psi]	The hydraulic pressure for the right front up stabilizer cylinder.
R.F.DN.PRESSURE [psi]	The hydraulic pressure for the right front down stabilizer cylinder.
R.R.UP.PRESSURE [psi]	The hydraulic pressure for the right rear up stabilizer cylinder.
R.R.DN.PRESSURE [psi]	The hydraulic pressure for the right rear down stabilizer cylinder.
RMT DOCKING LEFT [T/F]	The remote control is present in the driver-side docking station (T) or not present (F). Available only for wreckers equipped with a driver-side docking station.
RMF DOCKING RIGHT [T/F]	The remote control is present in the passenger-side docking station (T) or not present (F). Available only for wreckers equipped with a passenger-side docking station.
DOOR AJAR [T/F]	A roll-up door is open (T) or all roll-up doors are closed (F).
P1 PUMP PRESSURE [psi]	The hydraulic pressure in the P1 pump.
P2 PUMP PRESSURE [psi]	The hydraulic pressure in the P2 pump. For the CSR50 and CSR65 only.

TABLE 14 – LEVELLING/ANTI-TWIST SENSOR DESCRIPTIONS

The levelling and anti-twist sensors report various measurements and statuses during calibration.

Sensor	Description
FRONT LEVEL [U]	The front left/right levelling angle.
REAR LEVEL [U]	The rear left/right levelling angle.

TABLE 15 – PROXIMITY SWITCH DESCRIPTIONS

The proximity switches detect the position of the mast on the wrecker.

Switch	Description
BASE CENTER [T/F]	The mast is centered (T) or not centered (F).
ROT.LIMIT RIGHT [T/F]	The mast has reached (T) or has not reached (F) its right rotation limit.
ROT.LIMIT LEFT [T/F]	The mast has reached (T) or has not reached (F) its left rotation limit.

TABLE 16 - INPUT CTRL DESCRIPTIONS

The input controls detect the status of various control sensors.

Sensor	Description
ROT.LIMIT RIGHT [T/F]	The right rotation limit of the sensor has been reached (T) or not (F).
PTO ENGAGED [T/F]	The PTO is engaged (T) or disengaged (F).
ROT.LIMIT LEFT [T/F]	The left rotation limit of the sensor has been reached (T) or not (F).

TABLE 17 – CAB OUTPUT DESCRIPTIONS

The cab control sensors detect the status of various cab commands.

Sensor	Description
ENGINE START [T/F]	The start engine command is active (T) or inactive (F).
HORN [T/F]	The truck horn is active (T) or inactive (F).
ENGINE STOP [T/F]	The stop engine command is active (T) or inactive (F).

TABLE 18 – BODY POWER OUTPUT DESCRIPTIONS

These settings indicate the status of various electrical outputs.

ON: 241. OFF: 242

Output	Description
EML-1	Emergency lights circuit 1.
+PROX	Proximity switch circuit.
STB	Strobe circuit.
SWL	Side work lights circuit.
TBL-1	Toolbox lights circuit 1.
FSPL-DRAG	Free spool drag winch circuit.
2ND-DRAG	High speed drag winch circuit.
+REM	Remote control transceiver circuit.
RWL	Rear work lights circuit.
EML-2	Emergency lights circuit 2.
UWL	Upper work lights circuit.
LWL	Lower work lights circuit.
RLK	Rotation lock circuit.
SLK	Slide lock circuit.
TBL-2	Toolbox lights circuit 2.
OUT1C	Light bar spare 1.
OUT2C	Light bar spare 2.
OUT3C	Lube CTRL.
OUT4C	Spare out JP4-8.
OUT5C	Extra STB right.

Output	Description
OUT6C	Extra UWL right.
OUT7C	Extra LWL right.
OUT8C	Extra STB left.

TABLE 19 – MAST POWER OUTPUT DESCRIPTIONS

These settings indicate the status of various mast electrical outputs.

ON: 241. OFF: 242

Output	Description
BWL	Boom work lights.
WC-WL	Winch cover work lights circuit.
STB	Strobe circuit.
SML-TL	Side marker lights and tail lights circuit.
+POCKET	Pocket remote control circuit.
2ND-SP	High speed for the main winches and swing circuit.
SPARE-7A	Optional emergency lights (10A).
SPARE-8A	Optional winch camera.
FSPL-MWL	Free spool left main winch circuit.
FSPL-MWR	Free spool right main winch circuit.
FSPL-AWL	Free spool left auxiliary winch circuit.
FSPL-AWR	Free spool right auxiliary winch circuit.
SPARE-5B	Optional emergency lights (10A).

Output	Description
SPARE-6B	Custom output.
SPARE-7B	Extra boom lights (10A).
SPARE-8B	Unused.

TABLE 20 – CAB KEYPAD DESCRIPTIONS

These settings indicate the status of the keypad buttons.

Inactive: 0. Active: 1

Кеу	Description
b1cab	Button 1 status.
b2cab	Button 2 status.
b3cab	Button 3 status.
b4cab	Button 4 status.
b5cab	Button 5 status.
b6cab	Button 6 status.
b7cab	Button 7 status.
b8cab	Button 8 status.
L1-L	Button 1 light status.
L2-L	Button 2 light status.
L3-L	Button 3 light status.
L4-L	Button 4 light status.
L5-L	Button 5 light status.

Кеу	Description
L6-L	Button 6 light status.
L7-L	Button 7 light status.
L8-L	Button 8 light status.

TABLE 21 – MAIN VDC DESCRIPTIONS

These settings indicate the status of the buttons on the main navigation wheel (VDC).

B1 - B6: Inactive: 0. Active: 1

Encodeur: 0 to 254

VDC	Description
B1	Button 1 status.
B2	Button 2 status.
В3	Button 3 status.
B4	Button 4 status.
В5	Button 5 status.
B6	Button 6 (push button) status.
ENCODEUR	Wheel status.

TABLE 22 - SECONDARY VDC DESCRIPTIONS

These settings indicate the status of the buttons on the secondary navigation wheel (VDC).

B1 - B6: Inactive: 0. Active: 1

Encodeur: 0 to 254

VDC	Description
B1_2	Button 1 status.
B2_2	Button 2 status.
B3_2	Button 3 status.
B4_2	Button 4 status.
B5_2	Button 5 status.
B6_2	Button 6 (push button) status.
ENCODEUR_2	Wheel status.


16 VIEWING AND EDITING THE SETTINGS

The wrecker is equipped with many sensors and measuring devices to ensure optimal performance.

The device settings are calibrated at NRC Industries. With the exception of troubleshooting the wrecker, they should not have to be modified.

NOTE: A PIN is required to view and modify all settings, except for PTO Bypass and Bluetooth. For more information on those elements, contact your dealer.

16.1 Viewing the settings

To view the settings:

1. On the home screen, tap to display the main menu screen, then tap **Adjust** to display the Adjust screen.

NOTE: You may need to scroll down to see all the elements.

NOTE: A PIN is required to access the elements with a **6**. For more information on these elements and their functions, contact your dealer.

2. Tap an element to see its settings. The settings are defined in Section 16.2.

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16.2 Adjusting the settings

To adjust a setting:

1. On the home screen, tap to display the main menu screen, then tap **Adjust** to display the Adjust screen.

NOTE: You may need to scroll down to see all the elements.

NOTE: A PIN is required to access the elements with a **6**. For more information on these elements and their functions, contact your dealer.

		J
2.	On the Adjust screen, tap an element to display its settings screen, and	tap on a setting to
	edit it. 16.2 describes the settings that can be modified.	

3. At any time, you can tap and tap **Reset...** to reset all values on the current screen to their default values.

(4)	Adjust	X
	PTO BYPASS	
	6 LEVELLING	
	6 ANTI-TWIST	
	6 JOYSTICK	
	VALVE (BODY)	
	A second to prove the	

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TABLE 23 – OTHER SETTINGS

Setting	Description
MAST CENTER [°]	When the boom is in its locked-centred position, this value should be set to the SWING POSITION value.
FILTER OIL MIN.TEMP. [°C] (CSR85 only)	The minimum filter oil temperature at which the clogging alarm can occur.
CLOGGING ALARM [ON/OFF] (CSR85 only)	Sets the filter clogging alarm to ON or OFF.
SWING POSITION [°]	The position of the rotation as detected by the sensor.
STAB_ SAFE_ BYPASS [T/F] (CSR85 only)	Bypasses the outrigger level safety (T). When the safety is bypassed, you can lower or raise each outrigger independently. You should never bypass this safety without the help of NRC or one of its distributors. Bypassing this safety will allow you to move the outriggers independently with no restrictions. The outriggers could come into contact with the wrecker body and cause permanent damage.



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17 EDITING THE TOUCHSCREEN PREFERENCES

The Preferences screen is used to set the date and time, as well as edit your display preferences.

17.1 Editing the display preferences

To edit the display preferences:

1. On the home screen, tap to display the main menu screen, then tap **Preferences** to display the Preferences screen.

Preferences	X
Display	
Date/Time	
Language	

2. On the Preferences screen, tap **Display** to display the Display screen.





3. Use the 🖪 and 🔄 buttons to adjust the backlight and turn the screen saver on or off.

]11	Display	X
Backlight				
Backlight		70	+	
Screen saver	_	Off	+	

4. Tap to save your changes or tap to close the setting without saving your changes.

		X		
Backlight Backlight	-	(70) 70	+ (x) (x)	
Screen saver		Off	+	

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17.2 Editing the date and time preferences

To edit the date and time preferences:

1. On the home screen, tap to display the main menu screen, then tap **Preferences** to display the Preferences screen.

\bigcirc	Preferences	X
	Display	
	Date/Time	
	Language	

2. On the Preferences screen, tap **Date/Time** to display the Date/Time screen.





3. Tap a date field or the time field to display the 📑 and 🔄 buttons for each value, which can be used to modify the values.

(\triangleleft)		Date/Time	(\mathbf{x})
Date			
Year	- 2021	+	
Month	- 9	+	
Day	15	+	
Time		0 39	

4. Tap to save your changes or tap to exit the setting without saving your changes.



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17.3 Editing the language preferences

To edit the language preferences:

1. On the home screen, tap to display the main menu screen, then tap **Preferences** to display the Preferences screen.

\bigcirc	Preferences	X
	Display]
	Date/Time	
	Language	

2. On the Preferences screen, tap Language to display the Language screen.





3. Select the language of your choice. Your change will take effect immediately.



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