MANUAL

Version: 5
Document No: S5276-GB

ExciControl TRC

Program version
Control unit: From 02.24 | **Display:** From 03.00.03

Index

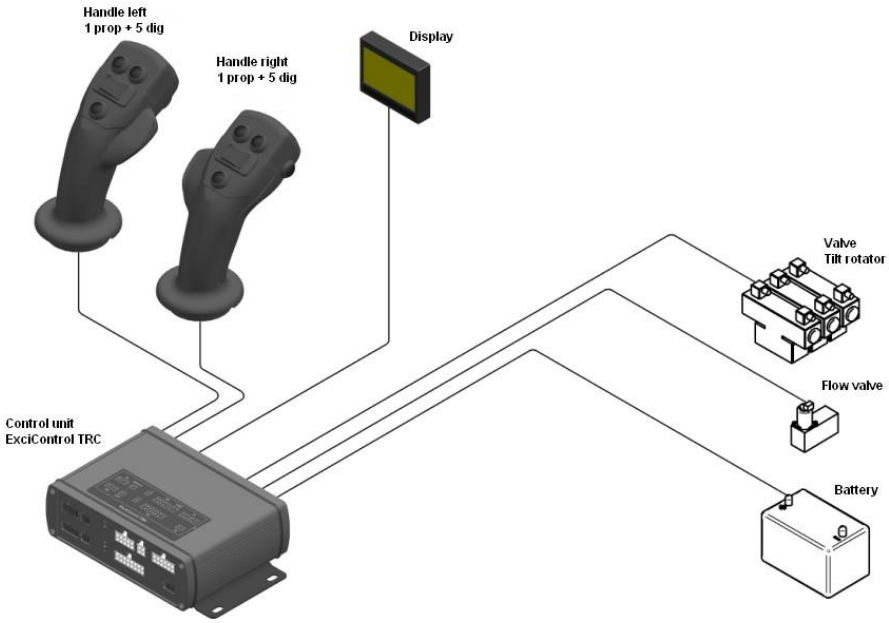
1. Introduction

This manual is primarily intended for manufacturer´s design, production and service personnel, but is even intended to be used during maintenance by the user.

This manual assumes that the reader has basic l knowledge in handling control and regulating equipment.

Sections about safety must be read and understood by anyone who operates or maintains or carrying out interventions in the system's hardware or software.

1.1. System overview



2. Safety regulations

2.1. General safety regulations

- Work at ExciControl TRC control system may only be carried out by personnel who have good knowledge of the control system, the machine and its safety regulations.
- Installation, modification, repairs and Maintenance must be made according to Excidor's specifications. Installation, modification, repairs and Maintenance is carried out on their own responsibility.
- The manufacturer is not responsible for accident or incident caused by incorrectly installed or improperly maintenance of the equipment. The manufacturer has no liability if the system is not used in a correct way for the application or if the system functions are used in a way that jeopardizes the functioning or safety systems.
  Damaged materials shall not be used.

- If the control system proves faulty or damaged wiring or connectors, the system shall not be used until technicians checked the system.
- Electronic control system in improper installation and in combination with strong electromagnetic interference fields may cause unintentional change of speed on actuated function.
- Welding works shall be performed before installing the system. If welding must be done after installing the system all the electrical connections must be disconnected from their equipment. Welder cables may never be placed next to electrical wires of the control system.

2.2. Design regulations

- The system shall be equipped with an emergency switch that breaks the power supply to the control system.
- The emergency switch must be easily reached from the operating position.
- The system shall be equipped with a main power switch that turns off the power supply when the control system is not in operating mode.
- The vehicle must be designed so that the power supply to the control system is cut off when the operator leaves the operating position.
- The system is EMC tested according to EN 13309:2000.

3. Installation

3.1. Installation instruction

When installing the control system ExciControl this installation instruction must be followed:

- Place the controller (1) and the display (2) in suitable places.
- The controller shall be installed with suitable screws into existing bracket holes (3). The display is mounted with suitable screws on the back of the display.
  (Measurements see *section 7.1*)
- The controller must be installed in cabin environment with good air ventilation is possible and it may not be exposed to moisture.
- There are no requirements for flywheel diodes in the valve caps, but it will not damage the controller if fitted.
- Emergency switch must exist and be placed so the operator can reach it easily.
- Main switch must be mounted.
- Safety switch must be fitted in a way that if the operator leaves the operating position the power supply to the system is automatically disconnected.
- A fuse maximum 7,5A must be mounted on the power supply to the controller.

3.2. Cable area

The following requirements of installation cables must be followed:

- Supply cable area, min 1,5 mm²
- Ground cable (GND) area, min 1,5 mm²
- Cables to valves area, min 0,5 mm²
- Analog och digital signal wiring area, min 0,25 mm²

The cables should be of good quality and the size recommended by Excidor AB.

4. Start-up

4.1. Safety at start-up

The vehicle's engine may not be started until the control system is mounted and its functions have been verified. Make sure nobody is in reaching distance to the vehicle that may be a risk at first start-up.

4.2. Before first start-up

Before first start-up following checks must be made:

- Check that the controller, display, actuators and cables are correctly installed.
- Check that the power supply is correctly installed.
- Check the function of the emergency switch.
- Make a lever calibration in accordance with *section 14* and appendix Startup quick guide.
- For all analog outputs that are to be used the speed settings must be made according to *section 12*.
- Then, check the output value on the analog outputs. (section *16.1.53 Trouble shooting analog out*). Check that the activated function shows a value (typically about 500-1000 units). If the value shows only a few units the valve is not correctly connected.

Once the checks are performed:

- Start the vehicle, pressurize the hydraulic system and turn on the electric power to the control system.
- Check that the hydraulic motions correspond with the levers.
- Adjustment of the control system is made using the display.
  (see *section 8 and beyond*)

5. Safety during maintenance and troubleshooting

Make sure that all following requirements are met before any work with the control system:

- The vehicle is turned off.
- The vehicle cannot begin to roll.

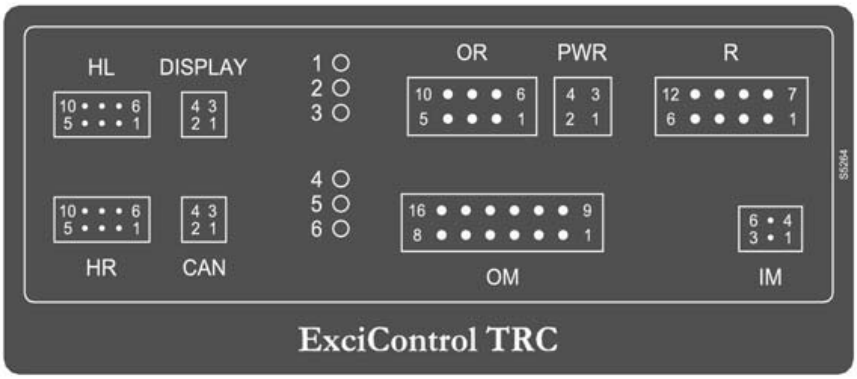
- The hydraulic system is unloaded.
- The power supply to the control system is turned off.

ExciControl TRC controller

Controller.

6. Description of connectors in the controller

The controller has nine contacts and six LED indicators. Each connector and LED indicator has a unique identifier (see sticker on the top of the unit).



6.1. Interface description

HL	Inputs from left handle	
	Molex MicroFit 10-pole	
Pin	Function	Cable color/No
1	Rotor analog input	White
2	Steering analog output	Brown
3	Digital input	Green
4	Digital input	Yellow
5	Digital input	Gray
6	Digital input	Pink
7	Digital input	Black
8	+5V	Violet
9	+10–30V	Red
10	Gnd	Blue

HR	Inputs from right handle	
	Molex MicroFit 10-pol	
Pin	Function	Cable color/No
1	Rotor analog input	White
2	Extra A/B analog output	Brown
3	Digital input	Green
4	Digital input	Yellow
5	Digital input	Gray
6	Digital input	Pink
7	Digital input	Black
8	+5V	Violet
9	+10–30V	Red
10	Gnd	Blue

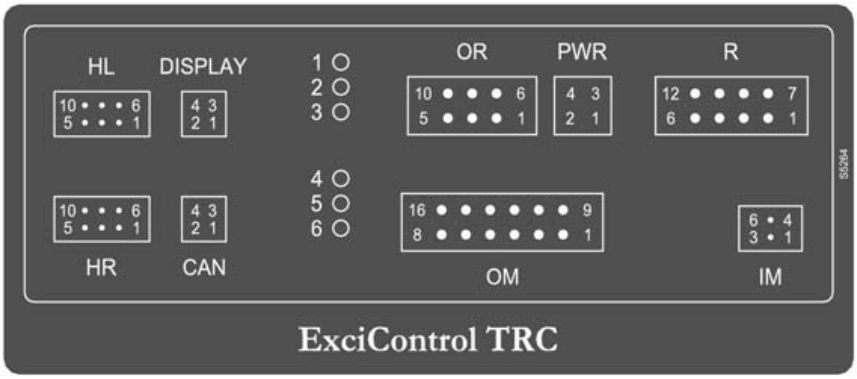
Display	Communication display	
	Molex MicroFit 4-pole	
Pin	Function	Cable color/No
1	Can Low	Green
2	+24V	Red
3	Gnd	Blue
4	Can High	Yellow

CAN	Extern CanBus	
	Molex MicroFit 4-pole	
Pin	Function	Cable color/No
1	Can Low	
2	+24V	
3	Gnd	
4	Can High	

LED	LED-indication (master)
	Function
1	Green, Power ok
2	Orange, CanBus ok
3	Röd, Error

LED	LED-indication (slave)
	Function
4	Green, Power ok
5	Orange, CanBus ok
6	Röd, Error

Interface description (continued)



OR	Outputs to rotor	
	Molex MiniFit 10-pole	
Pin	Function	Cable color/No
1	Rotor left	1
2	Rotor right	2
3	Tilt left	3
4	Tilt right	4
5	Extra A	5
6	Extra B	6
7	Quick lock	7
8	Gnd	8
9	Auto switch to grading mode	9
10	Auto switch to grading mode	10

PWR	Supply system	
	Molex MiniFit 4-pole	
Pin	Function	Kabelfärg/-nr
1	+10–30VDC	Red
2	+10–30VDC	Red
3	Gnd	Blue
4	Gnd	Blue

R	Relay functions in/out	
	Molex MiniFit 12-pole	
Pin	Funktion	Kabelfärg/-nr
1	Relay 1 IN	Black
2	Relay 1 OUT	Black
3	Relay 2 IN	White
4	Relay 2 OUT	White
5	Relay 3 IN	Gray
6	Relay 3 OUT	Gray
7	Relay 4 IN	Yellow
8	Relay 4 OUT	Yellow
9	Relay 5 IN	Green
10	Relay 5 OUT	Green
11	Relay 6 IN	Violet
12	Relay 6 OUT	Violet

OM	Outputs to machine	
	Molex MiniFit 16-pole	
Pin	Function	Cable color/No
1	Flow valve/Grading bucket	1
2	Grading bucket right	3
3	Grading bucket left	
4	Grading bucket right	
5	Steering left	
6	Steering right	
7	Digital 1	
8	Digital 2	
9	Digital 3	
10	Digital 4	
11	Digital 5	
12	Digital 6	
13	Digital 7	
14	Digital 8	
15	Gnd	2 & Yellowl/Green
16	Gnd	

IM	Inputs from machine	
	Molex MicroFit 6-pole	
Pin	Funktion	Kabelfärg/-nr
1	Quick lock switch to pin 2	Black
2	Quick lock switch to pin 1	White
3	Quick lock switch to pin 4	Gray
4	Quick lock switch to pin 3	Yellow
5	BuzzerLed indication quick lock	Green
6	Gnd	Blue

7. Technical specification

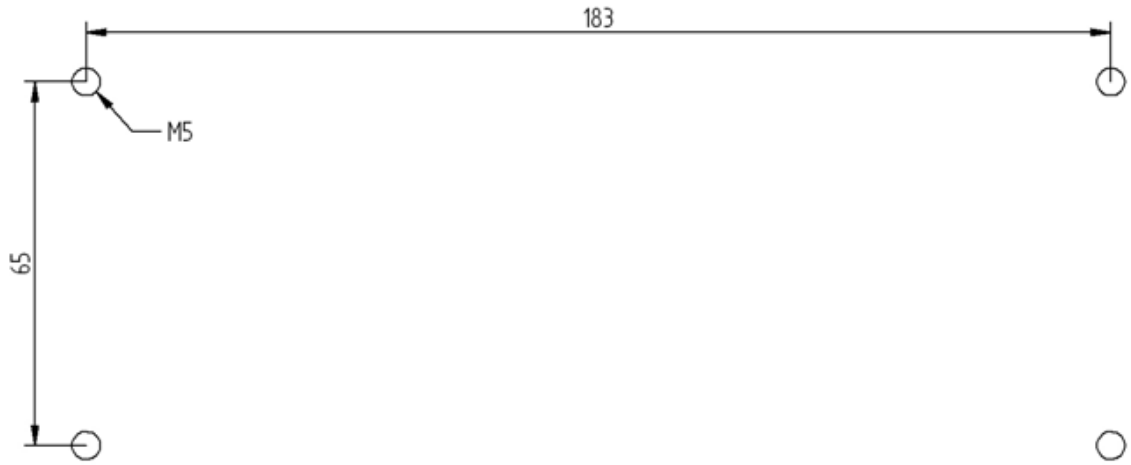
General		Specifications	
Weight	500g	Power supply	10–30V
Size (mm)	169 x 123 x 52 mm	Power consumption	<200 mA (own consump.)
Operating temperature	-25 till +65 °C	CanBus extern	J1939
Class of protection	IP 32	CanBus display	J1939 (modified)
Housing	Aluminium	Current control	Yes
		Voltage control	Yes
		Short-circuit protection	Yes

Analog inputs		Analog outputs	
Number	4 pcs	Number	11 pcs
Signal range	0–5000 mV	Current at 24V	0–3000 mA
Signal range	200–4800 mV	Frequencys	Adjustible 60–200 Hz
Dead zone	Adjustible	Min current	Adjustible
Max load	50 mA	Max current	Adjustible
		Ramp time	Adjustible

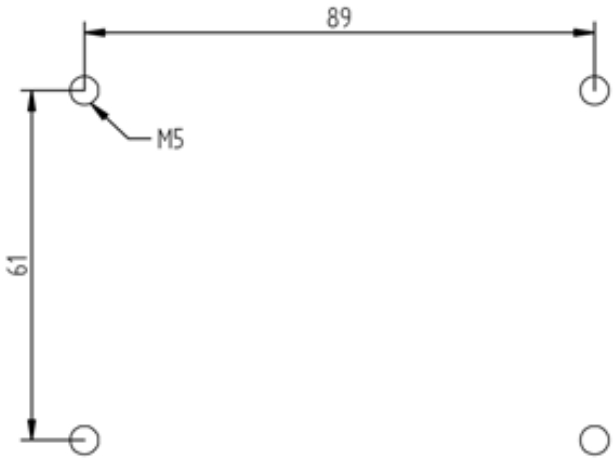
Digital inputs		Digital outputs	
Number	18 pcs	Number	0–16 pcs
Signal range	0–30V	Current at 24V	Max 2A
Active range	4–30V		
Number of relay inputs	6 pcs	Number of relay outputs	6 pcs
Number of pin to pin inputs	3 pcs	Number of pin to pin outputs	3 pcs

7.1. Attachment measures control unit and display

Attachment measures control unit. (mm)



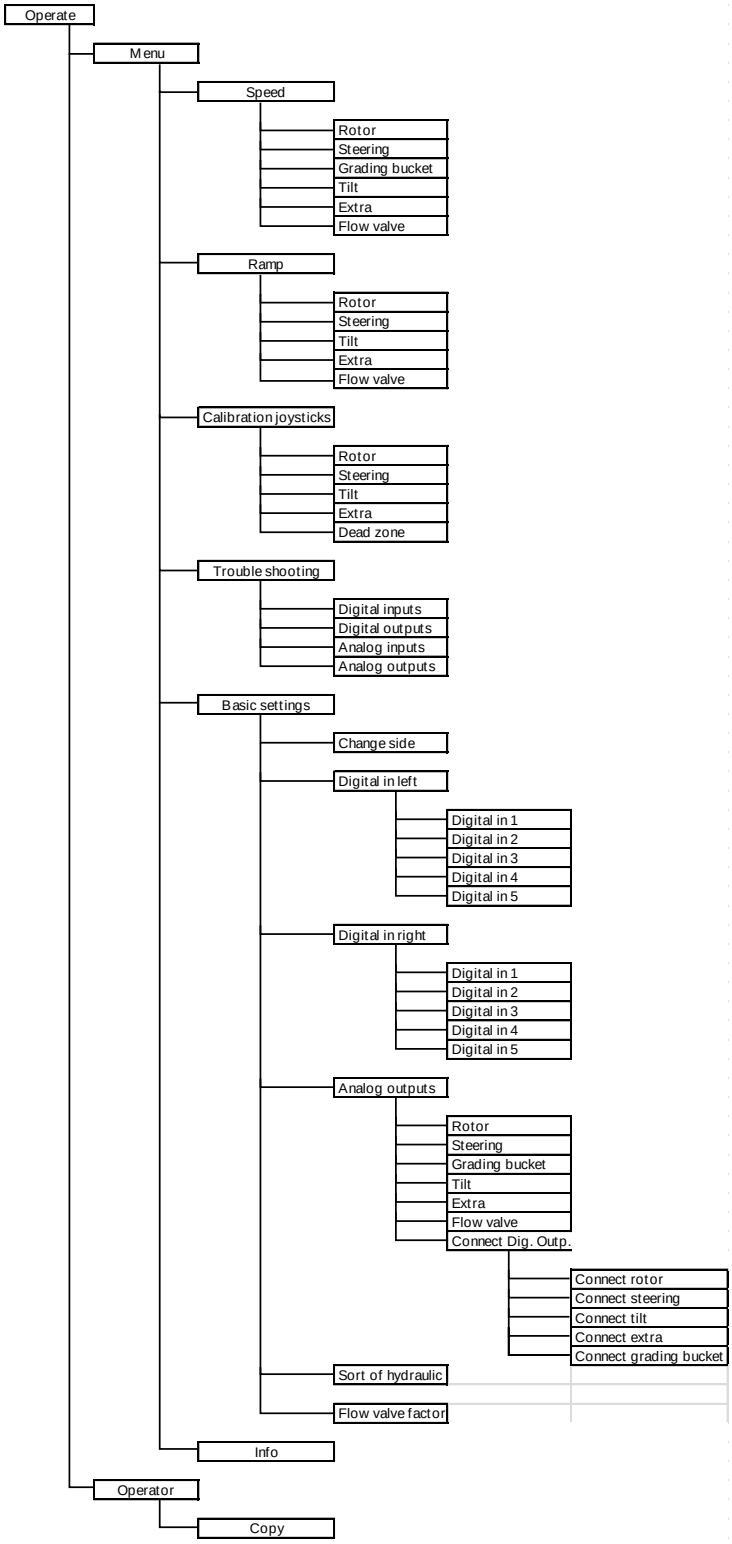
Attachment measures display



ExciControl TRC Display

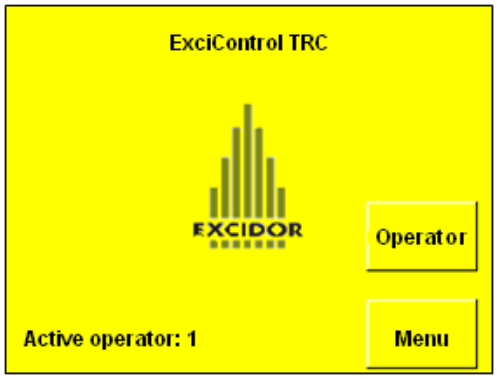
Display. Rev: 03.00.00

8. Menu structure overview



9. Description of menues

9.1. Operating mode



Operating mode is supposed to be the menu used in the operation of the machine. But the control system is also in active mode when you are in the other menus in the system. In operating mode, there are two menu choices, **Operator** and **Menu**. Clicking on these buttons will move the system to additional menus and settings.

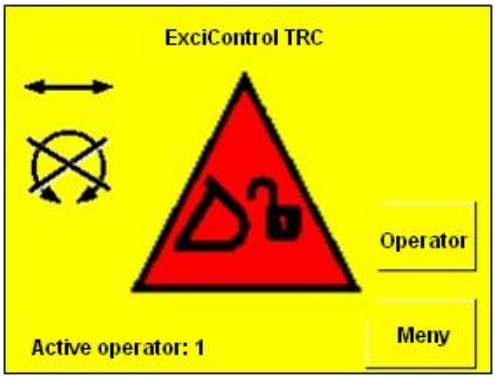
In the lower left corner shows the active operator.

Operator see *section 10*
Meny see settings *section 11*

Red warning triangle is displayed when the quick lock is open.

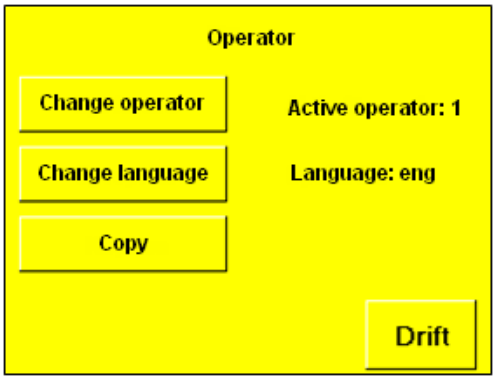
Double-arrow to the left shows that the rotor and tilt has shifted side of the right and left grip.

The crossed circle with arrows showing the grading bucket hydraulics is activated.



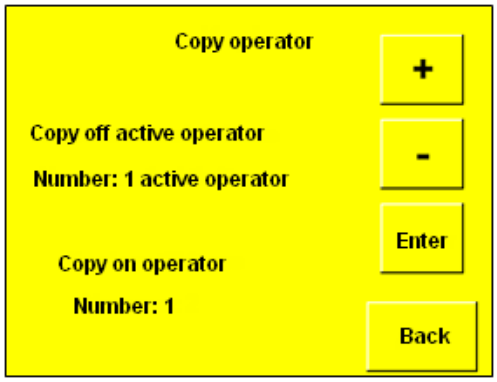
10. Operator

10.1. Operator



In the menu **Operator** following settings can be done: **Change operator** switches active operator 1-5. The active operator appear to the right of the button. **Change language** switches active language and moves between the languages available on your system. Active language appears to the right of the button. **Copy** button switches to the menu for the copy of a operator's preferences. Note that the parameters of the driver 5 cannot be changed from the display. Driver 5 is the factory settings and can be changed only by a service technician.

10.2. Copy operator



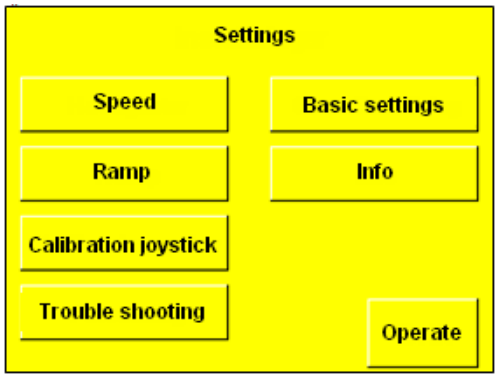
In this menu, an operator's settings are copied to another operator. Copying is always made from the active operator which you set in the previous menu (see *section10.1 Operator*). Active operator in the middle of this menu. Choose with the buttons **+ / -** to which the operator settings to be copied (shown at the bottom of this menu). When you made your choice, confirm with **Enter** button or return without copying with the **Back** button. Note that you **cannot** copy to operator 5 without performing special actions. You can, however, copy from operator 5 to operator 1-4.

Only service technicians.
To copy to operator 5, the digital output 8 must be activated. Then it is possible to

select "5" in the "Copy on operator" box.

11. Settings

11.1. Settings



Menu/Settings.
From the operating mode and choice of button **Menu** enters this menu **Settings**. The following pages describe these menus and how the settings are performed. At the beginning of each menu description also shows the way of touch it takes to get to the menu. (e.g. Menu/Speed/Rotor).

Speed see *section 12*

Ramp see section 13 *section 13*

Calibration joystick see *section 14*

Trouble shooting see *section 15*

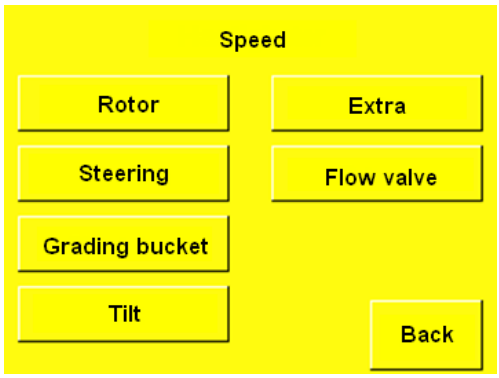
Basic settings see *section* ***Fel! Hittar inte referenskälla.***

Info see section 17 *section17*

Other features see *section 18*

12. Speed

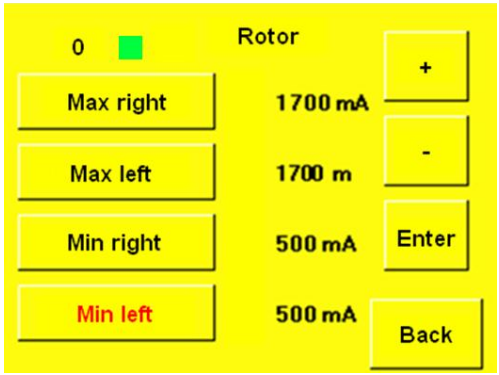
12.1. Speed



Menu/Speed.
The following menus are available in **Speed**: Click the button for the function you want to adjust rates. Speeds can be adjusted is the **Min** and **Max**, where min is the lowest possible speed and max the maximum possible speed.

Following pages describe how adjustments are made.

12.1.2. Rotor



Menu/Speed/Rotor.
The picture on the right side shows the menu for adjusting the speed of the **Rotor**. Description also applies to **Steering, Grading bucket, Tilt, Extra** and **Flow valve.**

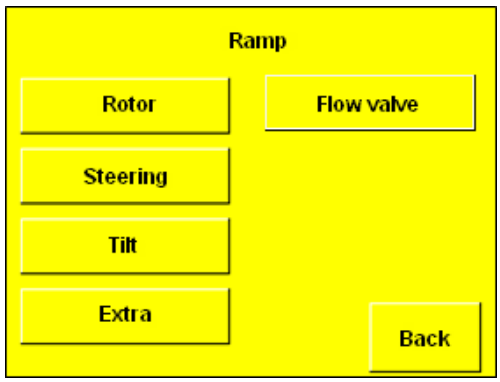
Choose with the buttons, **Max right, Max left, Min right, Min left**, the function to be adjusted. The selected function can then be adjusted with the **+ / -** while test-running the function.

In this mode, the selected function will not run proportionally. Only min or max value can be activated via the rollers in the handles

Other non-selected functions will work as in operating mode. Confirm by pressing **Enter** or return by pressing **Back**.

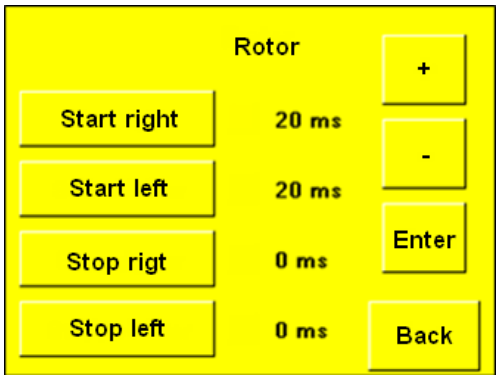
13. Ramp

13.1. Ramp



Menu/Ramp.
The following menus are available in **Ramp**: Click the button for the function you want to change the ramp times. Ramp times that you can adjust are **Start** and **Stop**, where start is a soft start of the function and the stop is a soft stop of the function. Following pages describe how adjustments are made.

13.1.2. Rotor

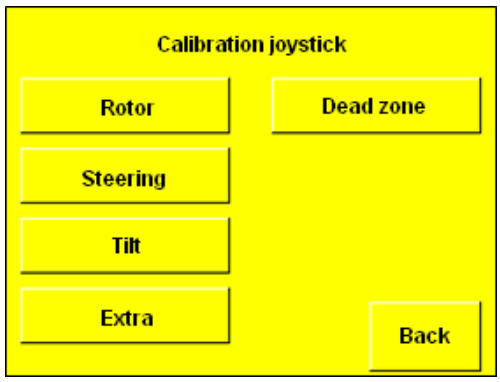


Menu/Ramp/Rotor.
The picture on the right side shows the menu for adjusting the **Ramp** on the **Rotor**. Description also applies to **Steering, Grading bucket, Tilt, Extra** and **Flow valve**. Choose the button, **Start right, Start left, Stop right, Stop left**, for the function to be adjusted. The selected function can then be adjusted with the **+ / -** while test-running the function.

Other non-selected functions will work as in operating mode. Displayed value to the right of the button is milliseconds. (1000 milliseconds = 1 second).
Confirm by pressing **Enter** or return by pressing **Back.**

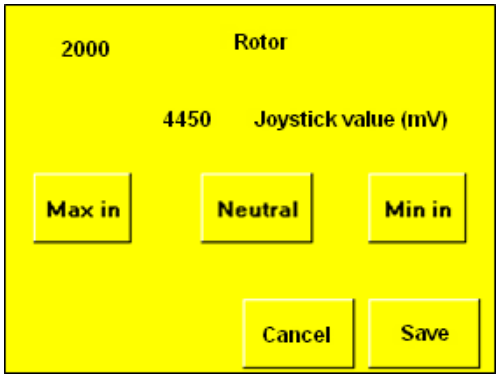
14. Calibration joystick

14.1. Calibration joystick



Menu/Calibration joystick.
The following menus are available in the **Calibration joystick:** Calibration can/must be performed on all analog (proportional) signals to the controller. The calibration is for the system to know the function's center position (unaffected) and max position in both directions. Click the button for the function you want to calibrate. Following pages describe how to make the calibrations.

14.2. Rotor



Menu/Calibration joystick /Rotor

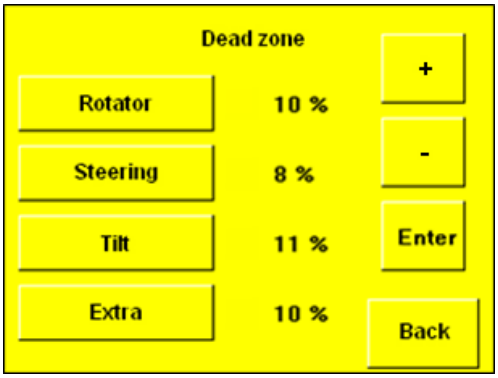
The picture on the right side shows the menu for calibrating **Rotor**. Description also applies to **Steering, Tilt and Extra.** Next to the text Joystick value the value is displayed in millivolts (2500mV = 2.5 V). The value shall in unaffected position be 2500 + / - 100. In the end positions of the rollers the value should be about 500 at Min in and 4500 at Max in.

The value in the upper left corner show the internal calibrated value. When the joystick is properly calibrated, the value is 2000 at the maximum stroke and -2000 at minimum. The neutral value is 0.

Setup is as follows: In unaffected position click on the **Neutral**. Thereafter, with the function is fully affected, you first click **Max in** and then in the opposite direction **Min in.**

Confirm with **Save** or **Cancel** to return.

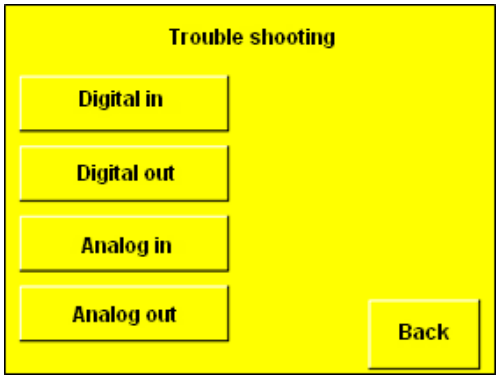
14.3. Dead zone



Menu/Calibration joystick /Dead zone
Dead zone function is used to create an area from the function inactivated position (center position) where the system thinks that you are not yet touched the function. The setting is adjusted as a percentage (%). To adjust the **dead zone** on each function, select the first button to the left of the function to be adjusted. The selected function can then be adjusted by ***+ / -*** buttons. Confirm with **Save** or **Cancel** to return.

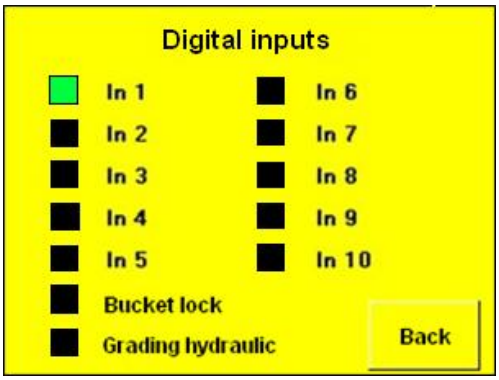
15. Trouble shooting

15.1. Trouble shooting



Menu/Troubleshooting
The following menus are available in **Trouble shooting.**

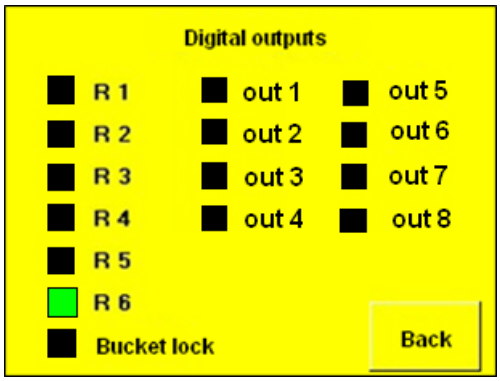
15.1.2. Digital inputs



Menu/Trouble shooting/Digital inputs
The **digital inputs** that can be debugged using the system is shown in this menu. In front of each function is a box that lights up green when the input is active.

If the box for the selected function is not lit up, the most likely error is that the supply to the key or the signal from the key has been lost or that the key is broken. Check the cable from the connector HL for the left handle or HR for the right handle. Which number in the contact or wire color of cable is found in the interface description, *section 6.1*

15.1.3. Digital outputs



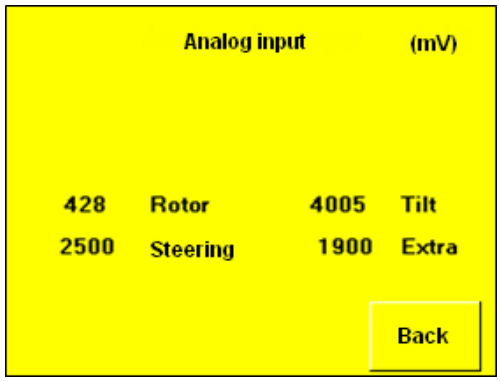
Menu/Trouble shooting/Digital outputs.

Relay and digital outputs that can be checked using the system is shown in this menu. In front of each function is a box that lights up green when output is active. If the box for the selected function is not lit, the likely error is that the key input is not working (see *section 6.1*)

If the box appears but the function still is not working it is probably the cable from the connector **R**, **OM** or **OR** that is broken. Which number in the contact or wire color of cable is found in the interface description, *section 6.1*

R1-R6 shows status of relay outputs.
Out 1-Out 8 shows status of digital outputs.

15.2. Analog inputs

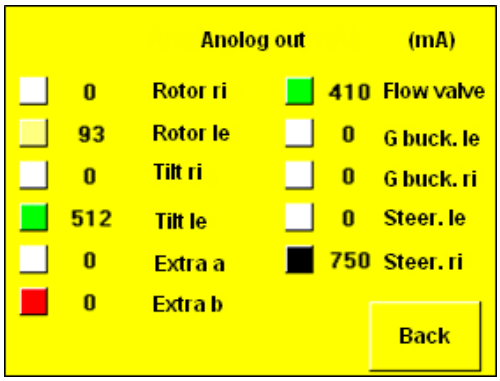


Menu/Trouble shooting/Analog inputs.

The **analog inputs** that can be checked using this controll system is shown in this menu. Next to each function the value is displayed
in millivolts (2500mV = 2,5V).
The value shall in unaffected position be 2500 + / - 100. In the end positions of the rollers the value should be about 500 at Min in and 4500 at Max in.

If the values are incorrect the most likely reasons are that the cables for the supply or ground to the lever/roller are disconnected or that the roller is broken. Check the cable from the connector HL for the left handle or HR for the right handle. Which number in the contact or wire color of cable is found in the interface description, *section 6.1*

15.2.2. Analog outputs



Menu/Trouble shooting/Analog outputs.
The **analog outputs** that can be checked using this control system is shown in this menu. On the left side of each function a box lights up when the output signal is active. Next to the box the value is displayed in mill ampere. (1000mA = 1A).

In normal operation, the color is **green**.
If there is a short circuit the color turns **red** when activated.
If the output cable is cut off or not connected (open circuit) the color turns **yellow**.
Check the cables from connector OM or OR . Which number in the contact or wire color of cable is found in the interface description

(see *section 6.1)*

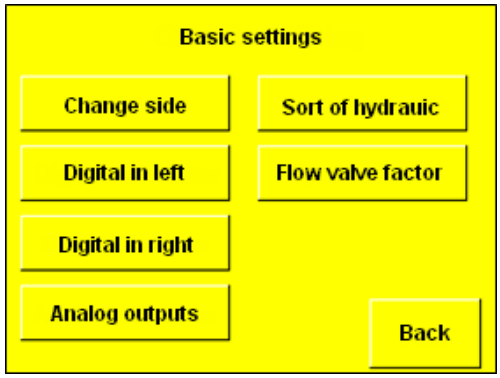
If the indication box for a function doesn´t lit up at all, check the digital or analog input. (see *section 15.1.2 and 15.2*).

16. Basic settingss

16.1. Basic settings

Menu/Basic settings

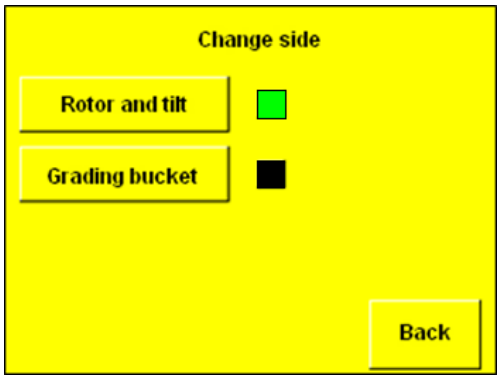
The following menus are available in **Basic settings.**



16.1.2. Change side

Menu/Basic settings/Change side.

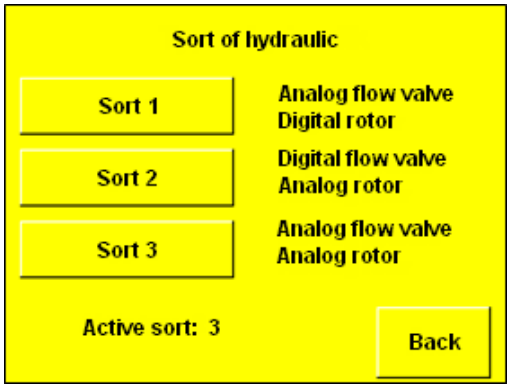
This menu allows you to, for active operator, change sides, from the left handle to the right handle on the Rotor and Tilt as well as for Grading bucket. If the change side feature is active the indication box turns green and a double-arrow symbol is visible on the operation mode menu.



(see section 9.1)

16.1.3. Sort of hydraulics

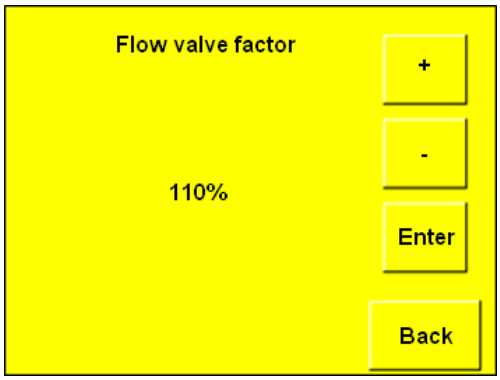
Menu/Basic settings/Sort of hydraulics.



There are three predefined applications in the system that can be used depending on the configuration of the hydraulic system on the machine and tilt-rotator. Select the hydraulic system by clicking on the sort 1, Sort 2, or Sort 3 button.
Note that the choice of hydraulic system affects the other settings in the system being possible or not possible to make. For example, when selection of the sort 1 is made no settings of analog outputs for the tilt-rotator is possible. If sort 2 is selected no analog settings of the Flow valve is possible.

16.1.4. Flow valve factor

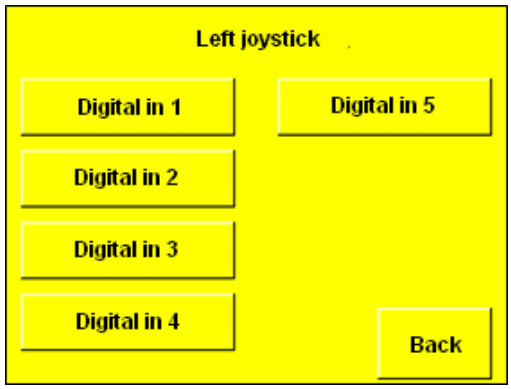
Menu/Basic settings/Flow valve.



In this menu you can choose the extra output value of the flow valve whwn two functions are run simultaneously.
The range is 100-130%
scription, *section 6.1*

16.1.5. Digital in left

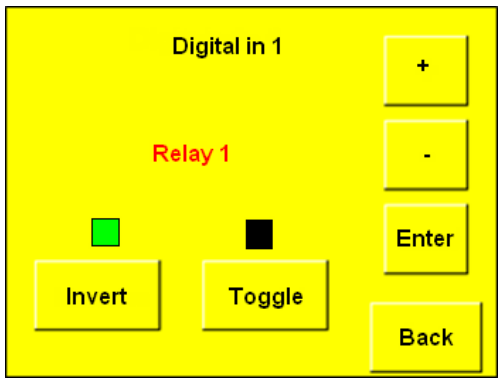
Menu/Basic settings/Digital in left.
The picture on the right shows the menu for the settings of Digital in left but the following description also applies to Digital in right.
The standard joysticks of Excidor are five digital (on/off) keys, on the left and right handle. These can be programmed to control each of the output of the system. Select the



key to be programmed by clicking the button.

16.1.5.2. Digital in 1

Menu/Basic settings/Digital in left/Digital in 1.
When selecting a digital key. It is possible to select which output the input shall affect. By ckicking on the +/- you can celect the output to control (text displayed in the middle of the display) as follows.



Relay 1-6 (built into the control unit), connector **R** pin 1-12.
Digital out 1-8, connector **OM** pin 7-14.
Shift key, shift Rotor to Steering.
Shift key, shift Tilt to Extra.
Steering right, connector **OM** pin6.
Steering left, connector **OM** pin5.
Extra A, connector **OR** pin 5
Extra B, connector **OR** pin 6
Flow valve, connector **OM** pin 1.

Inverted means that if the input is inactive then the output is active. If the input is active the output is inactive.
Toggle means that if the input is inactive the first time, the output becomes active and remains so even when you release the key. The next press on the same key will inactivate the output.

The following functions can be set invert and/or toggle as table below.

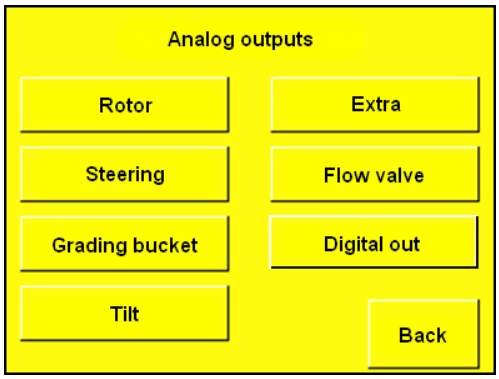
Function	Invert	Toggle
Relay 1-6	Yes	Yes
Digital out 1-8	Yes	Yes
Shift keys	No	Yes
Steering	No	No
Extra	No	No
Flow valve	No	Yes

The above settings apply to both **Digital in left** and **Digital in right.**

16.1.6. Analog outputs

Menu/Basic settings/Analog outputs.

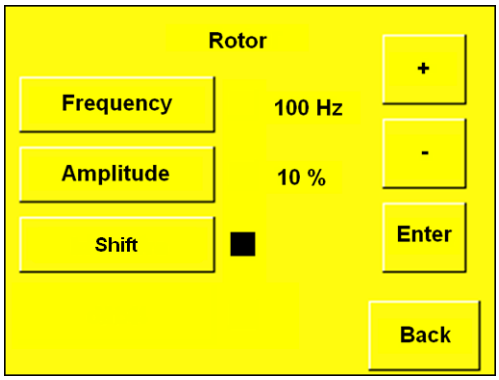
In this menu you can choose the settings for the analog outputs in the system. Select output by clicking button.



16.1.6.2. Rotor

Menu/Basic settings/Analog outputs/ Rotor.

To the right settings for **Rotor**. The following settings apply to all analog outputs of the system (except **Flow valve** that don´t have the **Shift button**).



Select the function to be changed by clicking on the respective button. Active function is shown by the box text to the button lights up green.

Frequency is adjustable ripple which causes the valve to vibrate and not get caught in its stationary position. The frequency is adjustable between 60-200 Hz and the normal value is 100Hz (see the valve manufacturer´s specification for the correct value).

Amplitute is an adjustable pulse duration of the current controlled output. The amplitude is adjustable between 0-30% and the normal value is 10% (see the valve manufacturer´s specification for the correct value).

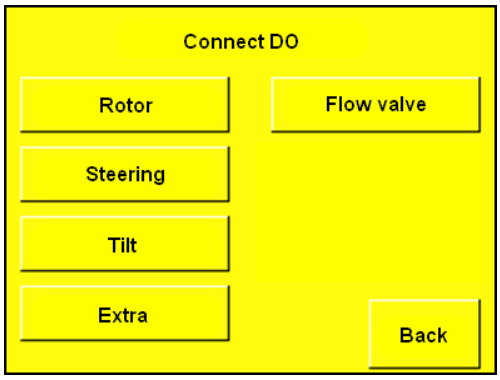
Shift means that the function shifts direction on outputs. That is, the output rotor

left is changed to output right and vice versa.

16.1.6.3. Digital out

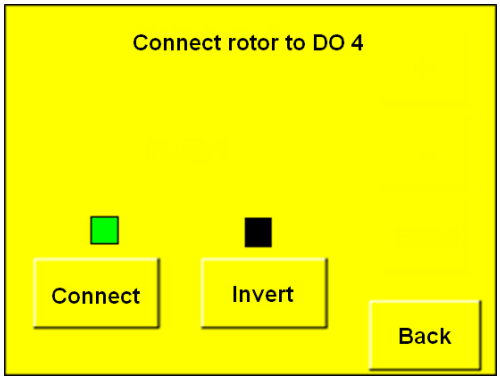
Menu/Basic settings/Analog outputs/
Digital out.

Digital outputs can be connected to analog outputs.
Select the function to be changed by clicking
on the respective button.



Menu/Basic settings/Analog outputs/
Digital out/Rotor.

This menu shows the setting for Rotor but apply to all analog outputs of the
system (except Flow valve that don´t have the
Invert button).
Active function is
shown by the box text to the button lights up
green.



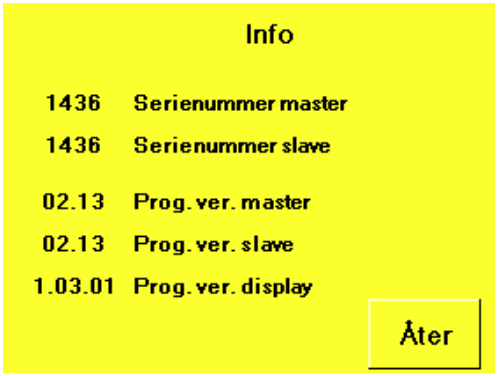
Connect means that means that the output Digital 4, connector OM pin 10 is activated together with the functions rotor left and rotor right.

Digital outputs 4-8 can be set to be active together with functions as in table.

Analog function	Digital out
Rotor	Out 4
Steering	Out 5
Tilt	Out 6
Extra	Out 7
Flow valve	Out 8

Invert means that the function is contrary to the normal function. That is, if the analog function is inactive the digital output is active.

17. Info



Info displays the current serial number and software version of the system. Serial number on the master and slave to the two circuit boards inside the controller.
In the lower half shows what software versions that each unit is loaded with.

When contacting a technician, this information can be useful to have available so the technician knows what version of ExciControl TRC that you have.

18. Other features

18.1. Switch for quick lock

To change buckets in the bucket attachment on the tilt rotator is required in the control system ExciControl TRC requires that switch for quick lock is plugged in (included in kit). This switch is connected to the IM contacts in the controller (see section 6.1) with double safety through 2 parallel pin to pin connections. This means that the activation of quick lock requires that both pins 1 and 2 and pins 3 and 4 in the IM contacts are connected to make it possible to loosen the bucket from the rotor. In the same connector, it is also possible that in pin 5 and 6 connect a light indicator or warning buzzer. When the quick lock is open, a warning triangle in the operating mode is visible in the display (see *section 9*).

18.2. Manual activation of the Flow valve.

To open the quick lock the flow valve must be activated. If the quick lock is to be opened without any of the functions of the rotor, tilt or extra is activated the flow valve can be activated by selectable digital key on the levers. (see *section 16.1.5*).

18.3. Auto switch to grading hydraulic mode.

The control system ExciControl TRC has the ability to combine function for rotor tilt and grading bucket hydraulics.

With tilt-rotator disconnected and the lid (included in kit) mounted in connector (the same connector as the tilt-rotator is connected to) pin 9 and 10 is fed back in the controller connector OR (see *section 6.1*). This then leads to that the handle rollers now instead of controlling only pin 1 (Flow valve) in contact OM alone control pins 1 and 2 in contact OM which then can be used for the machine's grading bucket hydraulic. For automated access to the machine quick lock function, see *section 18.4*.

18.4. Relay functions in the control unit.

In connector R in the controller (see *section 6.1*) is the possibility of six individual relay functions. These are intended to be used instead of loosely mounted relays that would otherwise occur at other installations on different machines. These relay functions can then, via the display, be programmed to be controlled by buttons in the handles (see *section 16.1.5.2)*

If, for example, a function of the machine, which already is minus controlled by a switch in the original grips, these two wires can instead be connected to pins 1 and 2 of the connector R and then controlled from a key in the new handles.

Note that the relay No. 6, pins 11-12 of connector R (see section *6.1*) has a special function for the machine quick lock function. If no key is programmed to control the relay No. 6 (see section 16.1.5.2), then the machine quick lock function can be connected via the relay, pin 11-12. With the tilt-rotator attached the machine quick lock connection will be disconnected by this relay. With tilt-rotator disconnected and the lid (included in kit) mounted in connector (the same connector as the tilt-rotator is connected to) pin 9 and 10 is fed back in the controller connector OR (see section *6.1*). and relay 6 is closed the machine quick lock is possible to activate.

18.5. Automatic activation of digital outputs

In connector OM in the controller (see *section 6.1*) are four digital outputs Digital 4 –8. These outputs can be selected to be active while an analog output is active according to table below.
(see *section 16.1.6.2)*

Digital 4 Rotor
Digital 5 Steering
Digital 6 Tilt
Digital 7 Extra
Digital 8 Flow valve

18.6. Quick lock function in “grading bucket hydraulic” mode.

The quick lock function can also be used in “grading bucket hydraulic” mode. Selection of this can only be done in the PC program. This setting means that the

quick lock switch activates DO1 when the machine is in “grading bucket hydraulics" mode.

18.7. Inversion of “jumper plug” function.

Inversion of jumper plug function can only be performed in the PC program. If the inversion is selected, it means that the machine goes to the grading bucket hydraulics mode when the pin 9-10 in the control box connector “OR” is closed.

18.8. PC-software

When using the PC software instead of the display it is also possible to save settings to file and to read from file to the control system. It is also possible to make adjustments on the 5th operator (default setting).

Update of firmware in the control box (valid from firmware 2.19).
When configuring the switch for quick lock feature in “grading bucket hydraulic” mode and inversion of “jumper plug” function.

The software is available for download from Excidors website. To use the program a Kvaser dongle (USB-CAN) is needed.