

# Instruction

Software ExciControl Admin  
attached to  
Control Unit ExciControl 16-16





ExciControl 16-16 serial no:	0040-
ExciControl Admin version:	02.07
Manual version:	2006-01



# ExciControl

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## ExciControl 16-16 Control unit



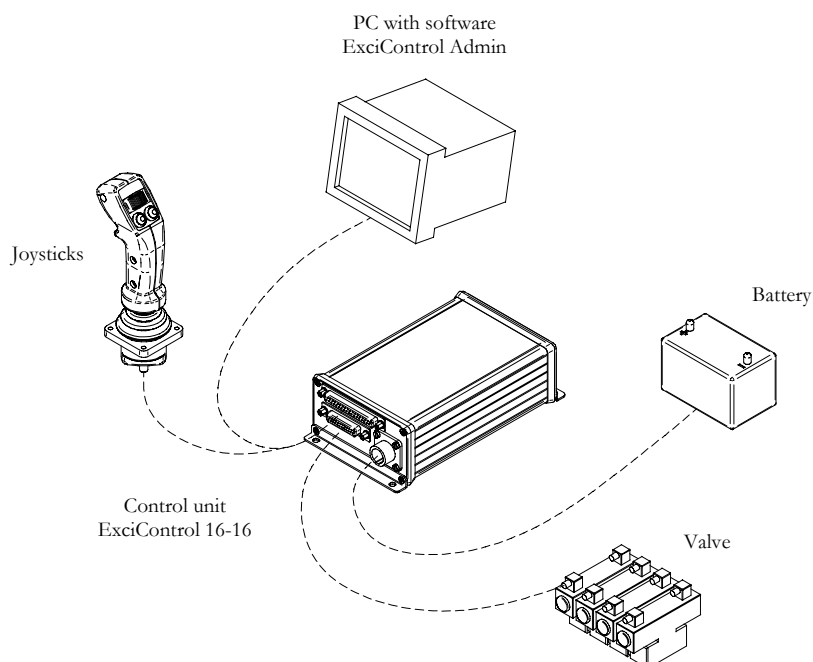
### 1 Introduction

The manual is not only made for the manufacturers development-, production-, and service personnel, but also to be used for the end user at maintenance and trouble shooting.

The manual assume that the reader have some sort of basic knowledge in maintenance of electrical and hydraulic devices.

The part of the manual that describes safety prescriptions must be understood and read by all personnel who will work with maintenance of the system.

#### 1.1 System overview



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## 2 Safety prescriptions

### 2.1 General safety prescriptions.

Maintenance of ExciControl units is only allowed by personnel that have good knowledge about the system and its safety prescriptions.

Attaching, modifying, repairing and maintenance must be performed according to the prescriptions of this manual. The personnel, who attach, modify, repair or maintain the system is always responsibility of the effect of that work.

Excidor is not, under any circumstances, responsible for any accident or narrow escape that depends on attachments or maintenance not made as described in this manual. Excidor is neither responsible for how the system is used by the operator or other personnel nor if they neglect the safety prescriptions. If any of the components of the system is broken it should immediately be replaced.

If the system in any way shows errors, or if wiring/connectors is damaged, the system should be powered off and not be used until authorized personnel have checked the system.

If the system is attached inappropriate and in combination with powerful electromagnetic fields, it could cause unintended change of speed in activated analogue outputs. Welding on a machine should be, if possible, made before attaching the ExciControl system into the machine. If welding has to be done with the system attached to the machine, all connectors to the Control unit should be disconnected. The wires to the welding equipment should never be connected near the Control unit or their wiring.

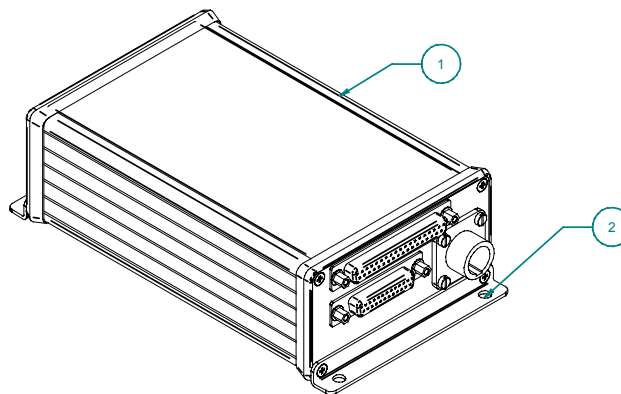
### 2.2 Attachment prescriptions

The system should always be equipped with a emergency switch that breaks the power supply to the Control unit. The emergency switch should be reachable for the operator from his normal working area (e.g. Seat or cabin).

The system should also be equipped with a main switch that breaks the power supply to the Control unit when the system is not in use.

The vehicle should be manufactured in a way that all power supply automatically will be switched off when the operator leaves his normal working area (e.g. Seat or cabin).

## 3 Installation



### 3.1 Installation in general

When attaching a ExciControl unit to a system this instruction should be used as a guideline.

- Attache the Control unit (1) in a proper place.
- The Control unit should be attached by suitable screws in its foundation (2).
- The Control unit should be placed in environment with good possibility of air change and where it's not exposed to water.
- There is no demand of diodes attached to the outputs/solenoids, but if there is, it will not damage the Control unit.
- Emergency switch should be attached in a way where the operator reaches it easy.
- Main switch should be attached to the system.
- A safety switch should be attached to the system in a way where all power supply automatically will be switched off when the operator leaves his normal working area (e.g. Seat or cabin).
- A fuse should be attached to the power supply to the Control unit. 6-16A depending on the application.

### 3.2 Wire specification

Following wires should be used for the system:

- Power supply, min 1,5 mm<sup>2</sup>
- Ground (-), min 1,5 mm<sup>2</sup>
- Wire to valves/solenoids, min 0,5 mm<sup>2</sup>
- Analogue and digital inputs, min 0,25 mm<sup>2</sup>

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## 4 Start up procedure

### 4.1 Safety at start up procedure

The vehicle should not be started before the Control unit/system is attached and all functions have been verified. No personnel should be in reach of danger when the vehicle is started for the first time.

### 4.2 Before first start up

Before the first start up procedure, go through following check list before you start the vehicle:

- Control that all Control unit, joysticks, switches and wiring is connected correct.
- Control that power supply to the system is correct.
- Control that the emergence switch is ok.

When all controls above is ok:

- Start the vehicle, pressurize the hydraulic system and switch on the power to the Control unit.
- Make sure that all hydraulic functions/movements is correct to what you expect it to be compared to your joysticks/switches.
- All needed adjustment is then made through ExciControl Admin software.

## 5 Safety at maintenance and trouble shooting

Before maintenance or trouble shooting take place be sure that:

- The vehicle is stopped.
- The vehicle not is able to move by it self.
- The hydraulic system not is pressurized.
- The power supply to the system is off.

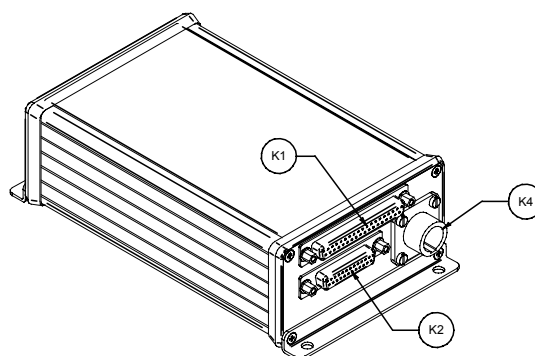


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## 6 Specification connectors in Control unit

On the Control unit there are three connectors (could be different for some applications). In electrical schematics they are named K1, K2 and K4.



K1=Inputs and communication, K2=Outputs to solenoids, K4=Power supply.

Although the Control unit ExciControl 16-16 are used in different systems and together with different software's you will find documentation of each pin and function for all connectors in section 20, "Specification for program...", in the end of this manual.

## 7 Technical specification

General		Technical data	
Weight	0,500 kg	Power supply	12/24 VDC
Size	167 x 106 x 55 mm	Amp consumption	<200 mA (Controlunit)
Working temperature	-25°C till +65°C	Data communication	RS 232
Classification	IP 32	Amp control	Yes (depend of software)
Cover	Aluminum	Voltage control	Yes
		Short cut protected	Yes

Analogue inputs		Analogue outputs	
No of	0-16	No of	0-8
Signal area	+0-5VDC	Max amp at 24VDC	2000 mA
Active area	0,25-4,75VDC	Frequency	Adjustable 83-125 Hz
Dead zone	Adjustable	Start amp	Adjustable
Max load	50 mA	Max amp	Adjustable

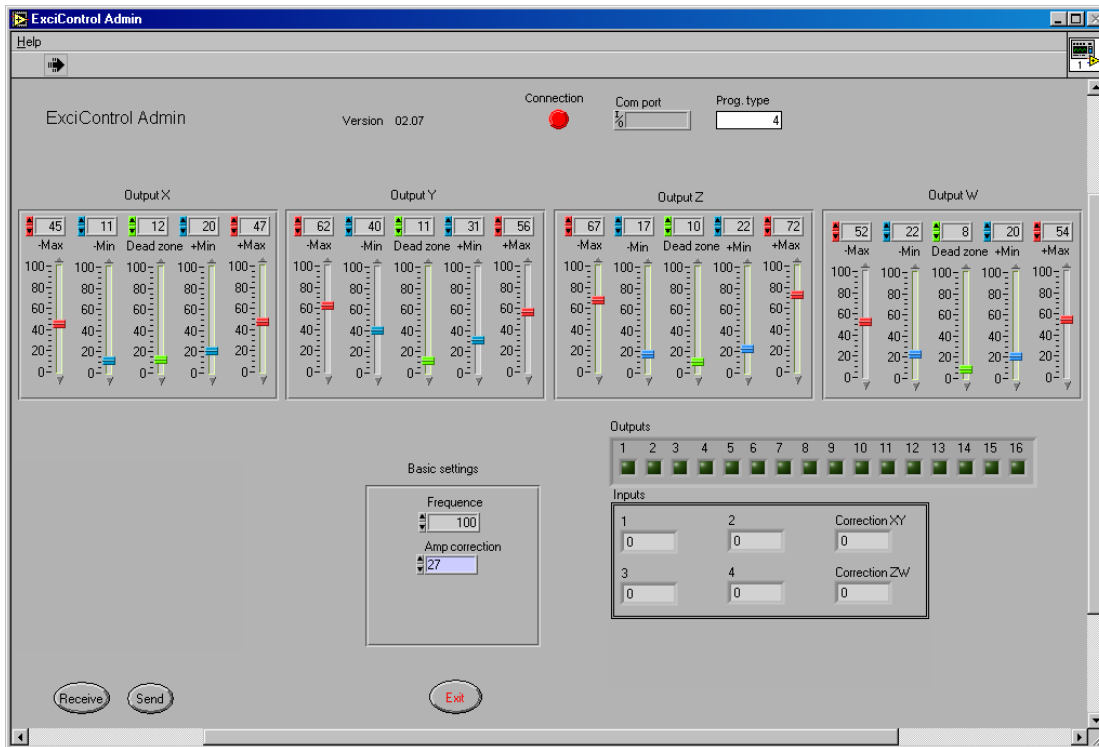
Digital inputs		Digital outputs	
No of	0-16	No of	0-16
Signal area	0-30VDC	Max amp at 24VDC	2000 mA
Active area	4,0 – 30VDC		

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## ExciControl Admin

### 10 General



ExciControl Admin is made to work in Windows environment and demand Windows 95 or higher. The program is using different Windows commands. The Windows commands are not described in this manual though this manual assumes that the user have basic knowledge for Windows operating system

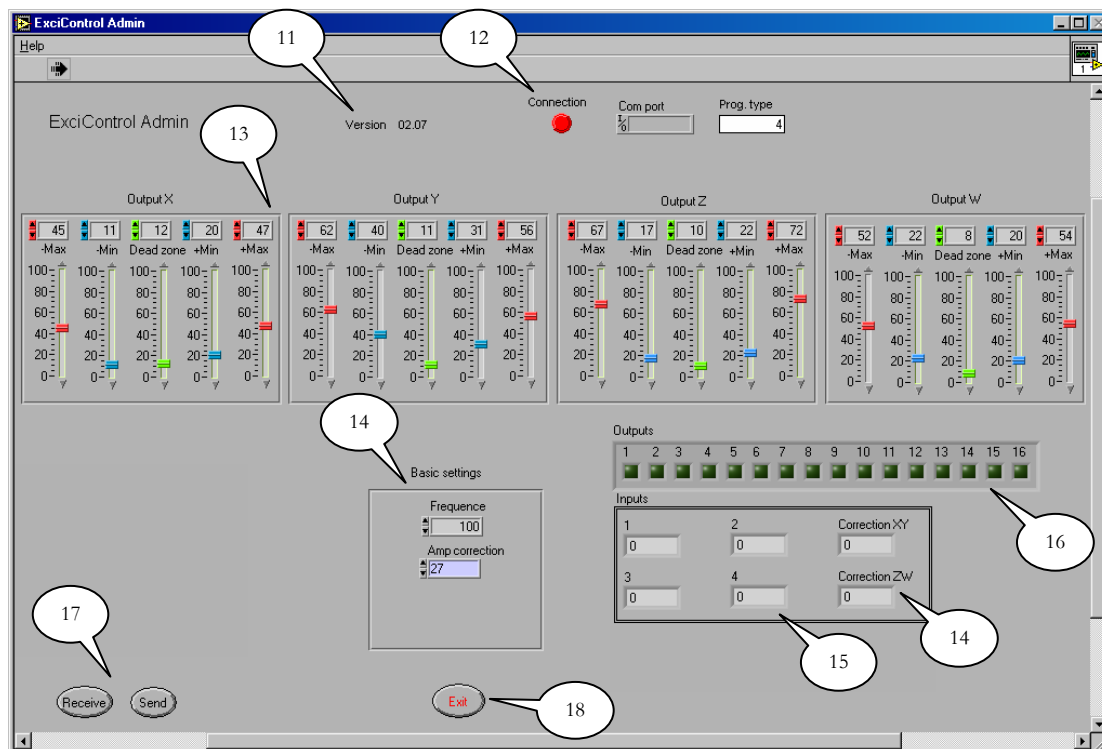
ExciControl Admin is a tool to make changes in Control unit ExciControl 16-16.

In this manual all commands, buttons and texts, witch are visible in the program, is marked with *italic style*.

## 10 General

The ExciControl 16-16 Control unit can be delivered with different software and ExciControl Admin will adapt automatically to each of them. The automatic detection will be made as soon as you connect your PC by wire to the Control unit and the Power supply is on. If you start the program, and no Control unit is detected, the program will start in a “general mode”. In general mode most of the functions in the program will be visible even if your specific application don’t use all of them. This “general mode” will be described in this chapter. For description when a Control unit is attached look in chapter 20 “Specification for program...” in the end of this manual.

Below you will find an overview with references to each chapter.



11. Program version
12. Communication
13. Analogue outputs min/max/dead zone
14. Analogue outputs amp control
15. Analogue inputs
16. Analogue and digital outputs
17. Receive and Send to/from Control unit
18. Exit program

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## 11 Program version

The version of the program is shown with four numbers after the text *Version*. Make sure that the program version is the same as the version of your manual. The version of the manual you will find in the upper left corner on each page.

## 12 Communication

To communicate between PC and ExciControl 16-16 you will need a special wire (can be purchased at the same place where you purchased the Control unit) connected to you PC and to the Control unit. The Control unit also needs to have the power supply on.

The program will automatically find what communication port on your PC that is connected to the Control unit and will be shown in the field *Com Port*. If the connection is ok it will be shown by the green indication on the button *Connection*.

In the field *Prog. type* it will be shown (by a number) what kind of program the Control unit have installed. If no Control unit is detected by the program it will start in general mode and show number 4.

## 13 Analogue outputs min/max/dead zone

The analogue outputs are called axel X, Y, Z and W. Each axel consists of two outputs, one negative and one positive (X-/X+). Each axel (two outputs) is driven by one analogue input.

For each output there is possible to adjust the level of output (amp) by *Min* (blue slide) and *Max* (red slide). For each axel you can define a *dead zone* (green slide). The value is defined in percent (%) of the maximum possible output range (approx. 2000mA at +24V)

### *Dead zone*

*Dead zone* defines how far you will need to move your joystick before the output starts to react. *Dead zone* can only be defined with one value for each axel and not for each output. Observe that the value for *Dead zone* never should be adjusted to 0 (zero) for any of the axels (even if their not in use).

### *Min*

The *Min* adjustment is used to make it possible to get a smooth reaction on the analogue output. The value sets the minimum possible amp for the output when it's active. When the analogue input just go outside of the *Dead zone* the output jumps to *Min* value. Observe that the value for *Min* never should be adjusted to 0 (zero) for any of the outputs (even if their not in use).

### *Max*

The *Max* adjustment is used to set the maximum amp for each output. The value also depends of the total working area for each analogue input. Therefore the normal procedure is to just try a number of times until you find a proper value. Observe that the value for *Max* never should be adjusted to 0 (zero) for any of the outputs (even if their not in use).

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## 14 Analogue outputs general settings

To make it possible to control proportional solenoids there are an amp control built into the system. One amp control is for axel X/Y and one is for axel Z/W. Therefore it should be same kind of proportional solenoids on all proportional outputs in each system. The Control unit is delivered with a general setting for amp control and can be needed to change depending of type of used solenoid.

### *Frequency*

Frequency is adjusted in Hertz (Hz). Look in the specification for the solenoid that you use to find the accurate value. The value can be set between 83-125 Hz.

### *Correction XY*

When analogue input X and/or Y is used it will be shown with a negative and positive value (max -19/19) how much amp correction the system need to do to achieve the proper amp setting to solenoids.

### *Correction ZW*

When analogue input Z and/or W is used it will be shown with a negative and positive value (max -19/19) how much amp correction the system need to do to achieve the proper amp setting to solenoids.

### *Amp correction*

When making a basic setting for an application this value should be set so amp correction in *Correction XY* and *Correction ZW* will be the same on negative as for positive. The variable *Amp correction* is set on 27 as default. In most applications this value will is ok and will not need to be adjusted.

## 15 Analogue inputs

To ExciControl 16-16 it's possible to connect 4 analogue inputs (e.g. potentiometers in joysticks). *Input 1, 2, 3 and 4* will show the incoming value from each potentiometer. The analogue potentiometers is powered by +5V and the incoming signal, with the joystick in center position, should be +2,5V. A signal of +2,5V will be shown by the value 0 (zero), +5V will be shown by the value 468 and +0V will be shown by the value -468.

## 16 Analogue and digital outputs

16 square shaped indicators respond to each of the 16 possible outputs from the Control unit. When an output is activated it will be shown with a green light in each square. Analogue outputs will be green as soon as the output has been activated by going outside the *Dead zone* (see chapter 13 Analogue outputs min/max/dead zone).

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### **17 Receive and Send to/from Control unit**

By using the button *Receive*, actual settings will be downloaded from the Control unit into the PC program. When you connect a Control unit to the PC the normal procedure is to start by receive information.

By using the button *Send* you will upload alls settings from the PC program into the Control unit. To adjust a Control unit the normal procedure is to make small changes at a time, send them and test if they made the change that you expected.

### **18 Exit program**

To exit the program, just click on the button *Exit*.

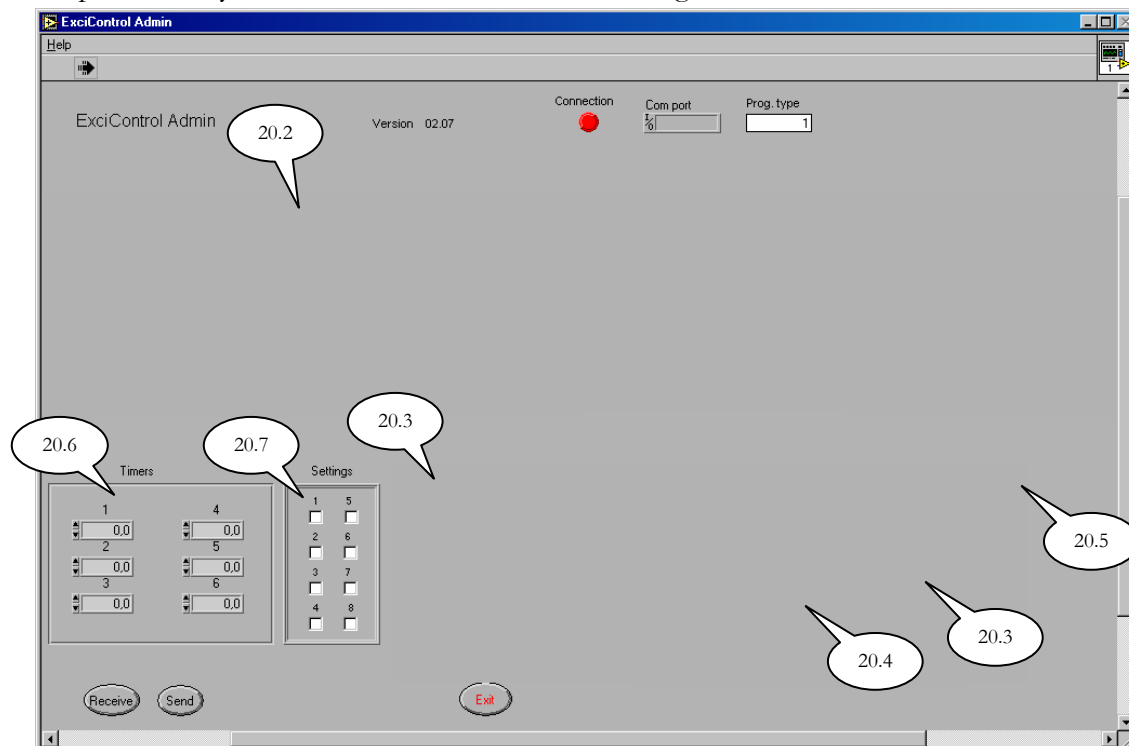
## ExciControl Admin

### 20 Specification for program in Control unit, part no S6360-6

The following chapter will describe the unique settings for the program in ExciControl 16-16 with the part number S6360-6. The ExciControl 16-16 Control unit can be delivered with different software and ExciControl Admin will adapt automatically to each of them. The automatic detection will be made as soon as you connect your PC by wire to the Control unit and the Power supply is on. If you start the program, and no Control unit is detected, the program will start in a “general mode”. In general mode most of the functions in the program will be visible even if your specific application don't use all of them. This “general mode” is described in chapter 10 to 18 in this manual. In this chapter 20, and where the settings not are different to the general mode we refer you to look in the chapters where general mode is described.

#### 20.1 Unique settings for program.

Below you will find an overview over the unique settings for this program and refer to the chapter where you can learn more about each setting.



- 20.2 Analogue outputs min/max/dead zone
- 20.3 Analogue outputs amp control
- 20.4 Analogue inputs
- 20.5 Analogue and digital outputs
- 20.6 Timers
- 20.7 Settings On/Off
- 20.8 Specification connectors in Control unit

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## **20.2 Analogue outputs min/max/dead zone**

No analogue outputs in this program version.

## **20.3 Analogue outputs amp control**

No analogue outputs with amp control in this program version.

## **20.4 Analogue inputs**

No analogue inputs in this program version.

## **20.5 Analogue and digital outputs**

No showed analogue or digital outputs in this program version.

## **20.6 Timers**

1. Detect Feed fwd/rev  
A delay time to be able to detect the pulse wide modulated signal from Maxi system for feed fwd/rev and detect that feeding are activated.  
Recommended value 0,1 sec.
2. Not in use!  
OBS! Must be set on 0,0 sec.
3. Delay time grapple close.  
If you activate grapple close on your mini joystick shorter then this value you will be able to open and close the head momentary. If you activate grapple close longer then this value, grapple close will go in to mode "Grapple close permanent". This setting is used together with variable 20.7.2.  
  
Recommended value 0,6 sec.
4. Delay time tilt up  
If you activate grapple open on your mini joystick shorter then this value you will be able to open and close the head momentary. If you activate grapple open longer then this value, tilt up will be activated and the program will go in to mode "Felling".  
  
Recommended value 0,3 sec.



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5. Not in use!  
OBS! Must be set on 0,0 sec.
6. Delay time felling  
When you activate grapple close on your mini joystick and are in mode “Felling” this value will set the time it will take before the saw will be activated and fell the tree.

Recommended value 1,0 sec.

### **20.7 Settings On/Off**

1. Not in use.  
OBS! Should be set ON
2. Permanent grapple close  
The variable sets if grapple close will be permanent or not after you have closed the head. The variable is used together with variable 20.6.3.

Recommended value ON.

## 20.8 Specification connectors in Control unit.

In one of the ends of the Control unit you will find 2 wires with connectors named K1 and K2. In the tables below you will find a specification of these connectors.

### *K1 (From joystick to MJU)*

Pin	Function	Pin	Function
1	Grapple close to MJU	7	Potentiometer Z to MJU
2	Tilt up from joystick	8	Tilt up to MJU
3	Start function to MJU	9	Head open to MJU
4	+ 10VDC from MJU	10	
5	Potentiometer Z from joystick	11	
6	(-) Ground from MJU	12	

### *K2 (From Head / Machine)*

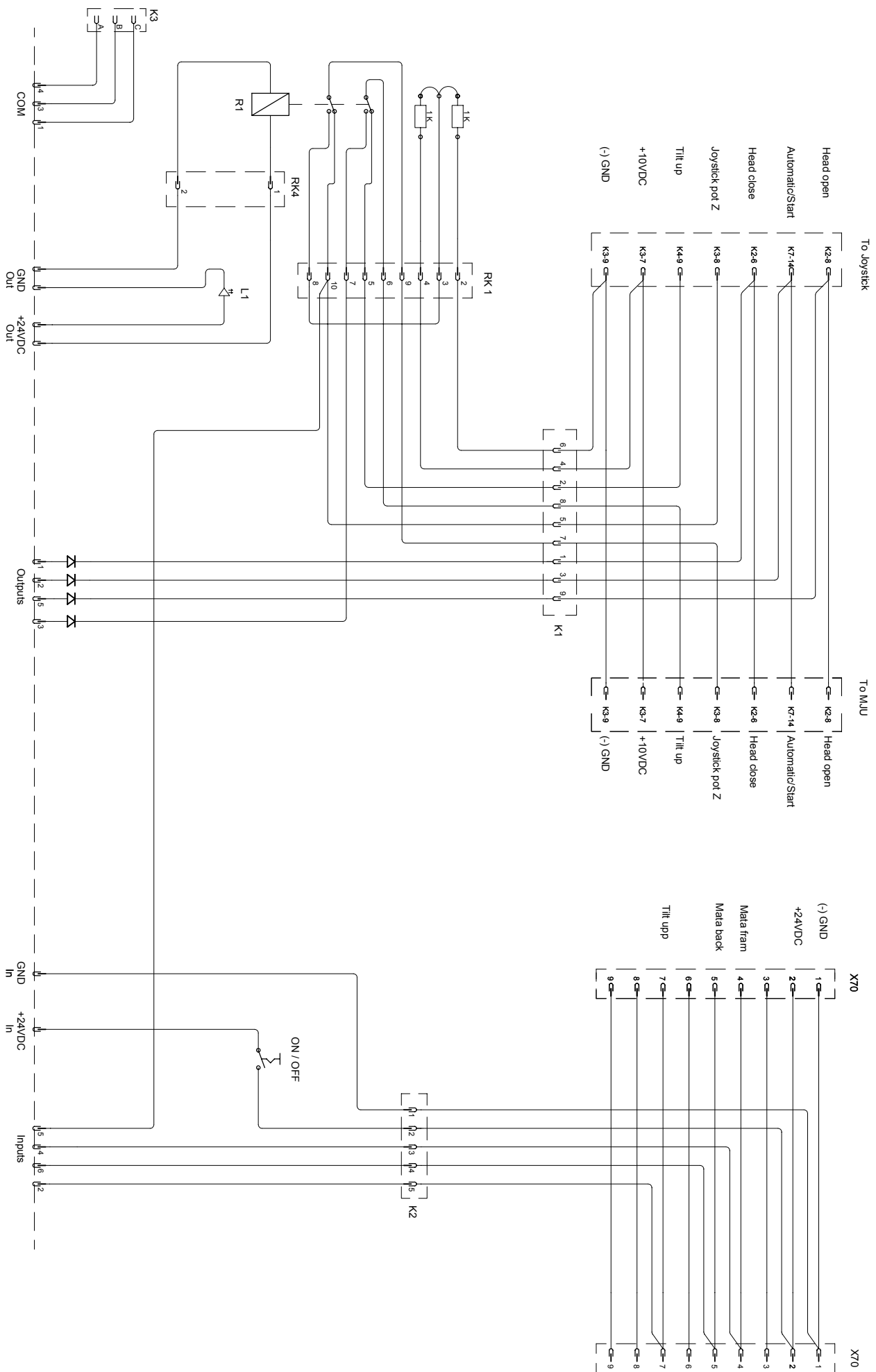
Pin	Function	Pin	Function
1	(-) Ground	5	Tilt up
2	+24VDC	6	
3	Feed forward	7	
4	Feed reverse	8	

### *L1 (LED Grön)*

Pin	Function	Pin	Function
	Active when +24V and Control unit is ON		



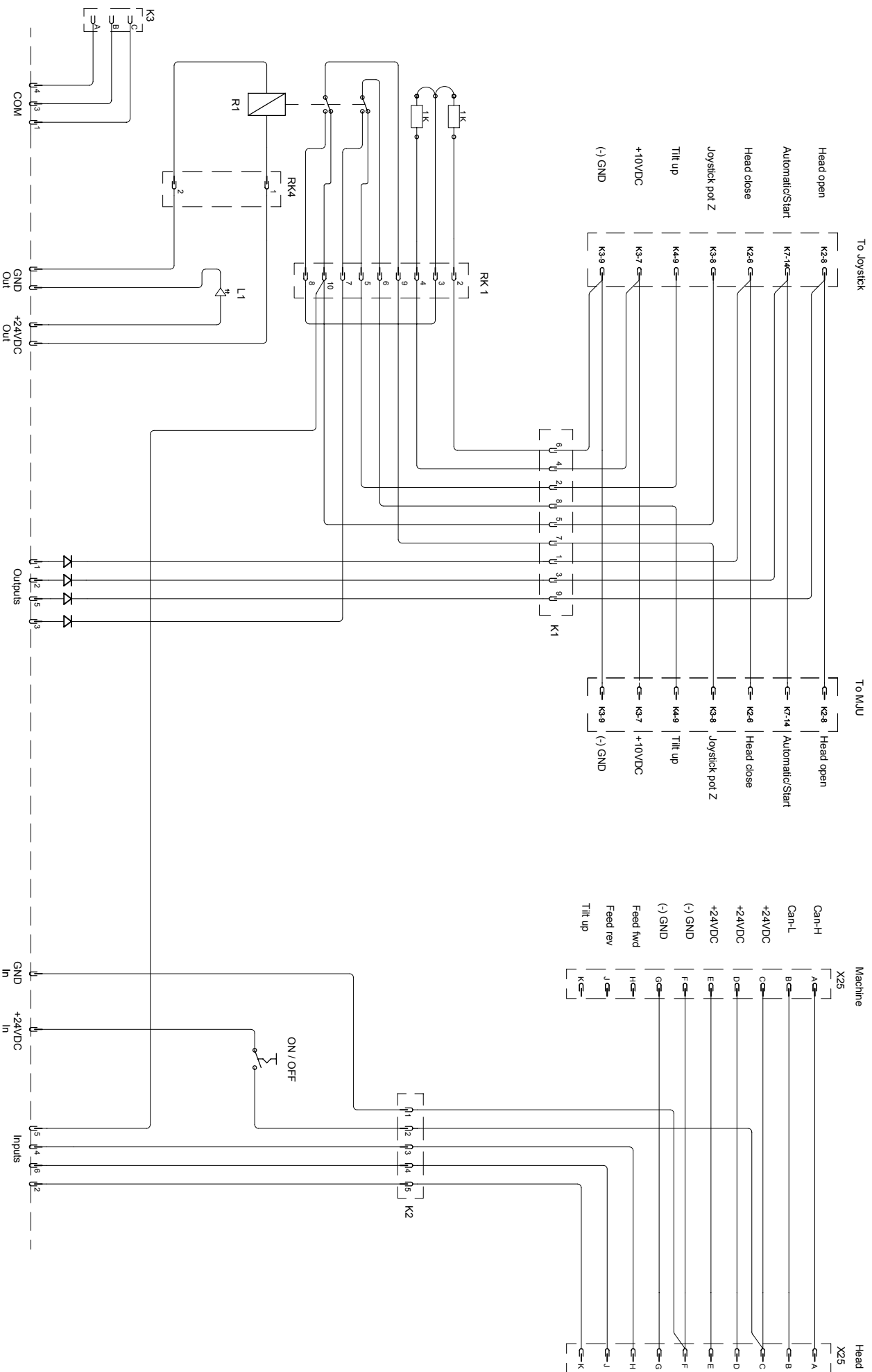




Control unit ExcControl 16-16

Skala 1:1 om annat ej anges		WIP 05-02-14		Schematic ExcControl 16-16	
För ej loberasssilla mät galler +/- 1mm		WIP 05-04-12		Sequences program komstisu	
Material		WIP 3024		Serie 800 head	
2	Uppskallningar X70 kontakt	1	3024	Excitecom	
1	Fos Ånding	1			
Denna ritning är ej utlämnad medgivande utåt eller till tredje person					
		Sida 1 av 1		S6360-6B	





Control unit ExcControl 16-16

Skala 1:1 om annat ej anges		2
För ej loberasssilla med galler +/- 1mm		1
Material		Ändring
Denna ritning är ej uttänkt medgivande uttänns till tredje person		Sign
Datum		1
3024		07-05-18
Schemat ExcControl 16-16		3024
Sequense program komstus		EXCICON
Head 300, Machine 941		