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"For All Your Hydraulic Needs"

**Controller**  
ELSK 103










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## 1 Overview Controller

<p>ELSK 103 compact amplifier</p> 	<p><b>Description</b></p> <p>Makrolon® enclosure with front panel, Demand-signal potentiometer with indicator knob On/Off switch, Green status LED</p> <p>See chapter 3</p>
<p>ELSK 103-13*** compact amplifier</p> 	<p><b>Description</b></p> <p>Makrolon® enclosure with front panel, Demand-signal potentiometer with indicator knob, 2 switches (detending/nondetending) (forward/backward), On/Off switch, 6-pin solder socket insert Sta 6F, Green status LED,</p> <p>See chapter 4</p>
<p>ELSK 103-16*** compact amplifier</p> 	<p><b>Description</b></p> <p>Makrolon® enclosure with front panel, Demand-signal potentiometer with indicator knob, On/Off switch, Switch 100% / 50 % demand signal, Switches (detending/nondetending) (forward/backward), 6-pin solder socket insert Sta 6F, Green status LED,</p> <p>See chapter 5</p>
<p>ELSK 103-17*** compact amplifier</p> 	<p><b>Description</b></p> <p>Makrolon® enclosure with front panel, Demand-signal potentiometer with indicator knob, On/Off switch, Switch 100% / 50 % demand signal, 6-pin solder socket insert Sta 6F Green status LED,</p> <p>See chapter 6</p>
<p>ELSK 103-18*** compact amplifier</p> 	<p><b>Description</b></p> <p>Makrolon® enclosure with front panel, Demand-signal potentiometer with indicator knob, Switches (detending/detending) (forward/backward) On/off switch, 6-pin solder socket insert Sta 6F Green status LED,</p> <p>See chapter 7</p>

## 2 General



### 2.1 Advantages

- Solid-state electronics; no wear-prone contacts
- Stepless adjustment
- Ergonomic design
- Tough, heavy-duty housing

### 2.2 Description

The ELSK 103 proportional amplifier is used to control the solenoid of a hydraulic valve. The current compensation feature ensures that changes in the coil temperature or fluctuations in the supply voltage do not affect the coil current level.

The proportional amplifier has an input for a voltage control signal. The control signal terminal has a high input impedance and - for safety reasons - the control signal source should always remain connected. The current at the power

output varies linearly with the voltage at the control signal input. With the aid of two trimming potentiometers, both minimum and maximum current values can be set. The amplifier switches off automatically for the duration of any short circuit at the load terminals.

Within the amplifier, a quenching diode is connected in parallel with the power output.

The ELSK 103 is available in the following enclosures with numerous additional features.

### 2.3 Application examples

- Agricultural and forestry equipment
  - Fertiliser spreader
  - Dung spreader
  - Fodder mix and cast wagon
- Construction equipment
  - Road rollers
  - Ground drilling rigs
- Municipal equipment
  - Snow and ice cleaning equipment
  - Sweeper
- General
  - Speed and pressure control
  - Materials handling
  - Belt and spinner drive
  - Scraper floor drive

### 2.4 Technical data

General characteristics	Unit	Description, value
Power supply ( $U_b$ )	V DC	12 ... 30 smoothed. Ripple < 10%
Reference voltage	V	4,7 ... 5,1
Max. output from reference voltage	mA	10
Demand signal voltage	V	0 - 5
Minimum current (adjustable)	A	$(0 \dots 0,5) \times I_{max}$ (with 2,2 kW control signal potentiometer)
Maximum current (adjustable)	A	$(0 \dots 0,68) \times I_{max}$ (with 1 kW control signal potentiometer)
Maximum permissible output current	A	0,5 ... 2,5
Dither frequency	Hz	Factory set at 40 Hz (square wave form); (if required, can alternatively be set at 120 Hz)
Enclosure protection		IP00 (non-encapsulated, without housing)
Operating temperature	°C	-20 ... +50

General characteristics	Unit	Description, value
Notable features		- The power supply input is reverse-polarity protected - The amplifier switches off automatically for the duration of excessive coil current (coil short circuit)
Dimensions	mm	Approx. 100 x 98 x 20
Weight	g	Approx. 80g non-encapsulated, 180g encapsulated
connection		Options: connector DIN 41617-S31M or screw terminals
Cable length and section		For 1 mm <sup>2</sup> section wire, max. cable length is 10 metres

## 2.5 Related documents

Document	Purpose
Technical data sheet ESK 103 100-P-700004	Technical documentation with all relevant descriptions, data characteristic lines and measurements.

## 3 Controller ELSK 103-\*\*\*\*\*



### 3.1 Description

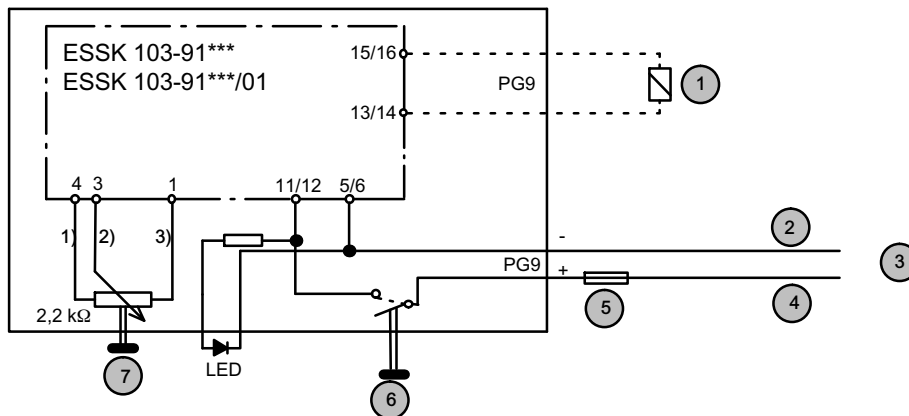
The ELSK 103-\*\*\*\*\* unit is used to control a proportional solenoid. It consists of the ESSK 103-91\*\*\* card, fitted in a plastic enclosure. The enclosure is provided with a front plate with an On/Off switch, a green LED and a demand signal potentiometer with indicator knob.

The output current varies linearly with the angle of rotation of the demand signal potentiometer. The green LED lights as soon as the unit is switched on.

### 3.2 Technical data

General characteristics	Unit	Description, value
Dimensions	mm	160 x 120 x 55 (L x B x H)
Protection class		IP41

### 3.3 Connection diagram



1	Solenoid	5	3 A - 5 A fast-acting fuse (not supplied)
2	Black 2 (-)	6	On/Off switch
3	Power supply 12 V ... 30 V / cable 1x1mm <sup>2</sup> ; two metres long	7	Potentiometer
4	Black 1 (+)		



### 3.4 Ordering code

Description	Type Type	Bestell-Nr. Ordering code
Controller	ELSK 103-***	100015402
Accessories see chapter 8		

## 4 Controller ELSK 103-13\*\*\*



### 4.1 Description

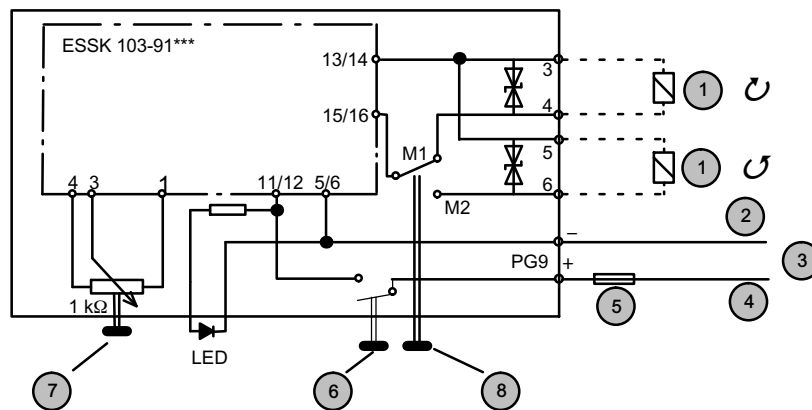
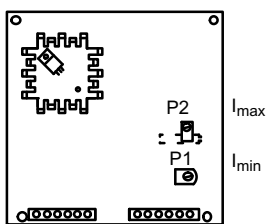
The ELSK103-13\*\*\* unit is used to control one or other of two proportional solenoids. It consists of the ESK 103-91\*\*\* card, fitted in a plastic enclosure. The enclosure is provided with a front panel with a three position switch, a green LED and control signal potentiometer with indicator knob. With the On/Off switch in the neutral position, there is no power supply to the amplifier. In the two working positions   the respective power output is active. The output current varies linearly with the angle of rotation of the control signal potentiometer. The green LED lights when the switch is in either of the two working positions.

### 4.2 Technical data

General characteristics	Unit	Description, value
Dimensions	mm	160 x 120 x 55
Protection class		IP41

### 4.3 Connection diagram

Location of potentiometer P1 and P2 on the card



1	Solenoid	5	3 A ... 5 A fast-acting fuse (not supplied)
2	Black 2 (-)	6	On/Off switch
3	Power supply 12 V ... 30 V / cable 2 x 1 mm <sup>2</sup> ; two metres long	7	Potentiometer
4	Black 1 (+)	8	Switch M1=continuous function M2=momentary function

### 4.4 Ordering code


Description	Type	Ordering code
Controller	ELSK 103-13***	100018265
Accessories see chapter 8		

## 5 Controller ELSK 103-16\*\*\*



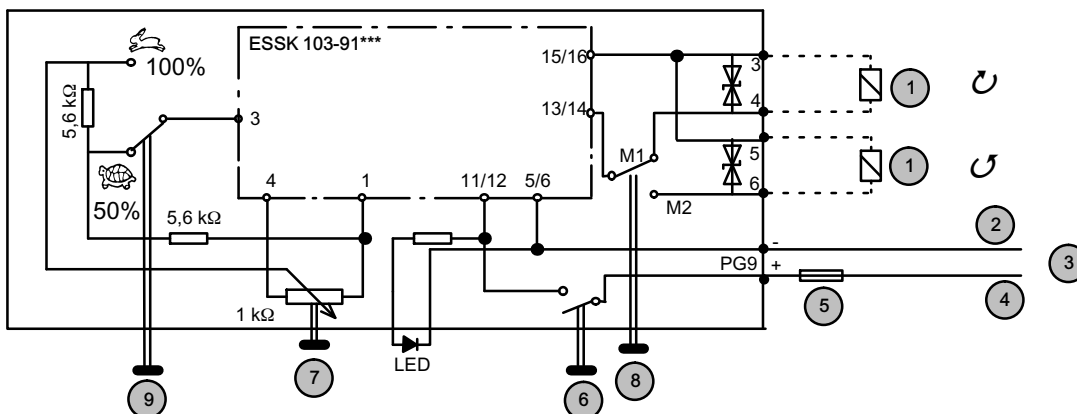
### 5.1 Description

The ELSK 103-16\*\*\* unit is used to control one or other of two proportional solenoids. It consists of the ESK 103-91\*\*\* card, fitted in a plastic enclosure. The enclosure is provided with a front panel with an On/Off switch, a green status LED, a switch (Hare 0-100%, Tortoise 0-50%), and a demand-signal potentiometer with indicator knob.

In each of the two working positions , the corresponding output is energised. The output current varies linearly with the angle of rotation of the demand-signal potentiometer. The green LED lights as soon as the unit is switched on.

Electrical characteristics	Unit	Description, value
Dimensions	mm	160 x 120 x 55
Protection class		IP41

### 5.2 Connection diagram



1	Solenoid	6	On/Off switch
2	Black 2 (-)	7	Potentiometer
3	Power supply 12 V ... 30 V / cable 2x1mm <sup>2</sup> ; two metres long	8	Switch M1 normal function M2 actuated function
4	Black 1 (+)	9	Switch (Hare 0-100% - Tortoise 0-50%)
5	3 A ... 5 A fast-acting fuse (not supplied)		

### 5.3 Ordering code

Description	Type	Ordering code
Controller	ELSK 103-16***	100023613
Accessories see chapter 8		

## 6 Controller ELSK 103-17\*\*\*



### 6.1 Description

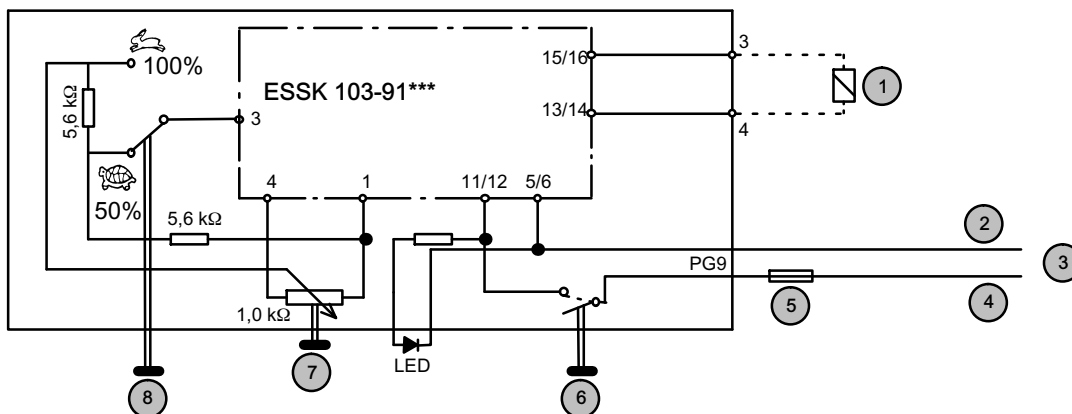
The ELSK 103-17\*\*\* is used to control a proportional solenoid. It consists of the ESSK 103-91\*\*\* card, fitted in a plastic enclosure. The enclosure is provided with a front panel with an On/Off switch, a green status LED, a switch (Hare 0-100%, Tortoise 0-50%), and a demand-signal potentiometer with indicator knob.

The output current varies linearly with the angle of rotation of the demand-signal potentiometer. The green LED lights as soon as the unit is switched on.

### 6.2 Technical data

Electrical characteristics	Unit	Description, value
Dimensions	mm	160 x 120 x 55
Protection class		IP41

### 6.3 Connection diagram



1	Solenoid	5	3 A ... 5 A fast-acting fuse (not supplied)
2	Black 2 (-)	6	On/Off switch
3	Power supply 12 V ... 30 V / cable 2x1mm <sup>2</sup> ; two metres long	7	Potentiometer
4	Black 1 (+)	8	Switch (Hare 0-100% - Tortoise 0-50%)

### 6.4 Ordering code

Description	Type	Ordering code
Controller	ELSK 103-17***	100024935
Accessories see chapter 8		

## 7 Controller ELSK 103-18\*\*\*



### 7.1 Description

The ELSK103-18\*\*\* units are used to control one or other of two proportional solenoids. It consists of the ESK 103-91\*\*\* card, fitted in a plastic enclosing. The enclosing is provided with a front plate with a three-position switch, a green LED and control signal potentiometer with indicator knob. With the On/Off switch in the neutral position, there is no power supply to the amplifier.

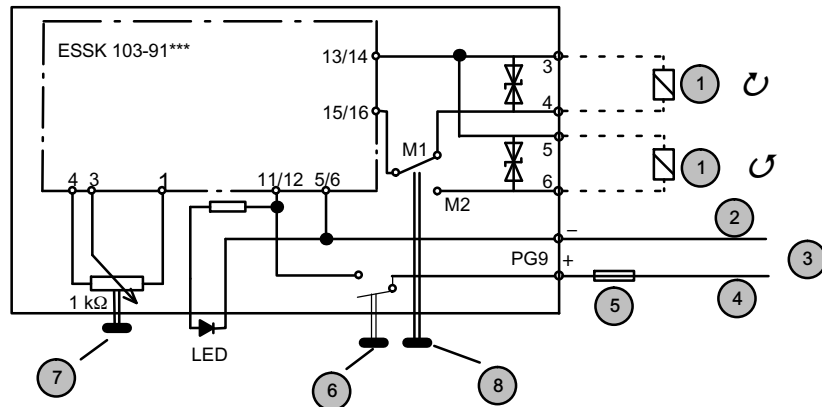
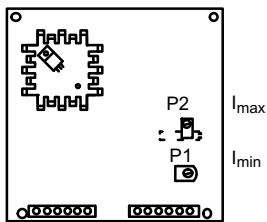
In the two working positions  $\curvearrowright$   $\curvearrowleft$ , the respective power output is active. The output current varies linearly with the angle of rotation of the control signal potentiometer. The green LED lights when the switch is in either of the two working positions.

### 7.2 Technical data

General characteristics	Unit	Description, value
Dimensions	mm	160 x 120 x 55
Protection class		IP41

### 7.3 Connection diagram

Location of potentiometer P1 and P2 on the card



1	Solenoid	5	3 A - 5 A fast-acting fuse (not supplied)
2	Black 2 (-)	6	On/Off switch
3	Power supply 12 V - 30 V / cable 2 x 1 mm <sup>2</sup> ; two metres long	7	Potentiometer
4	Black 1 (+)	8	Switch M1 = continuous function M2 = continuous function

### 7.4 Ordering code

Description	Type	Ordering code
Controller	ELSK 103-18***	100031605
Accessories see chapter 8		

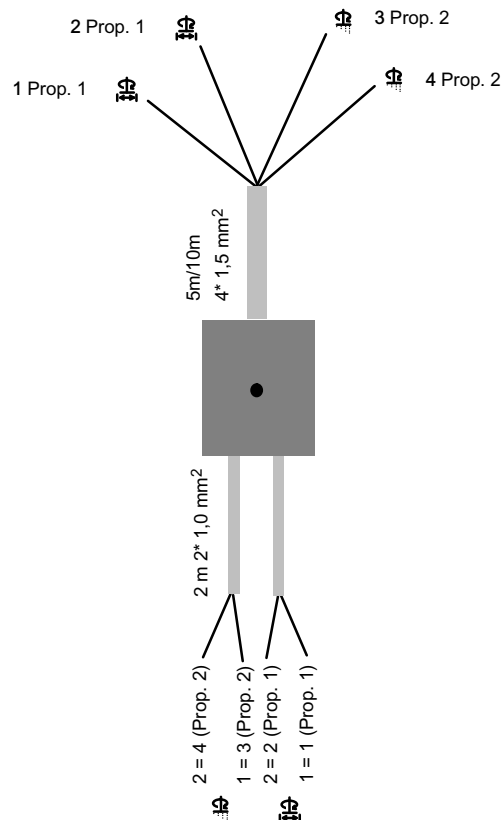
## 8 Accessories

To connect the solenoid, a GDM 309 connector plug can be supplied. In the event of proportional valve malfunctions

that are caused by long power leads, use GDM 209D solenoid plug.

Description	ELSK 103-****	ELSK 103-13***	ELSK 103-16***	ELSK 103-17***	ELSK 103-18***	Part No.
Cable for power supply 2x1mm <sup>2</sup> (lengths in meters)	X	X	X	X	X	100604380
Coil connector plug GDM 309	X	X	X	X	X	100064970
Coil connector plug GDM 209D	X	X	X	X	X	100014130
Fuse, 5 A	X	X	X	X	X	100606938
Fuse holder (line mounting)	X	X	X	X	X	100607349
Plug insert (solder), Sta 6F		X	X	X	X	100209336
Line housing, H-A3 Tgv, for plug insert		X	X	X	X	100209472

## 9 Wiring loom



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