Installation guide

Electric Proportional Regulator ePPR400-2

altek

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Installation Guide for electric proportional regulator ePPR400-2

Installation Guide for the Switching Unit of the Electric Proportional Regulator

ePPR400-2

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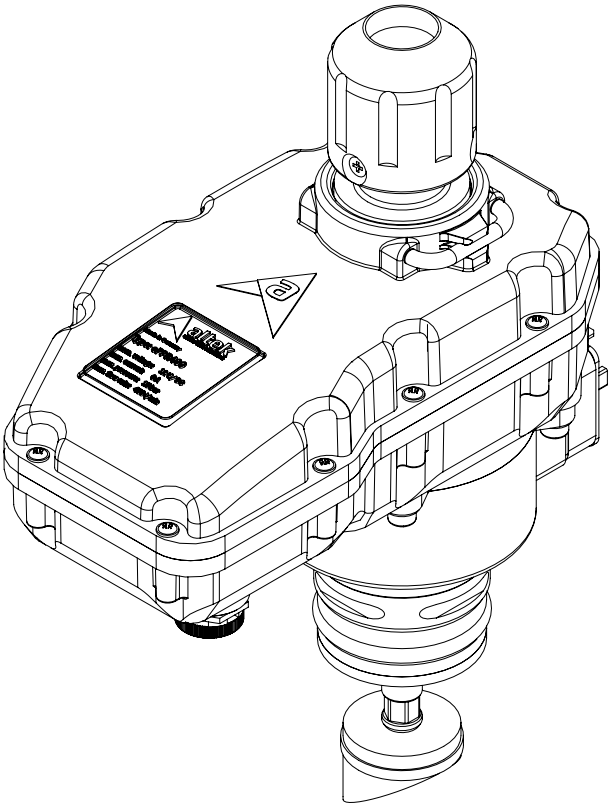

This guide can be ordered with the article number 84575, Version (0)

1. Contents

1. General Information

1.1. Intended Use

The *altek* electric regulator ePPR400-2 is intended to be installed in agricultural machines for spraying of crop protection products and in communal vehicles. It is designed solely for the adjustment of the pressure of water, liquid fertilizer and crop protection products as well as liquid de-icing agents in municipal and airport use. The observance of this installation guide is also part of the intended use of this machine. Other applications and operation conditions are — unless otherwise agreed — considered as improper use.

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The ePPR400-2 is designed for use up to pump outputs of 450 l / min. The permissible pressure in the return hose should be ≤ 1 bar.

Intended use also includes compliance with good professional practice and the use of approved plant protection products, as well as compliance with the operating, maintenance and repair conditions prescribed by the manufacturer.

The proportional regulator must be installed and controlled according to the specifications in the installation instructions. Deviations from this apply — unless otherwise agreed — are considered as improper and exclude

the liability of the company *altek* GmbH for resulting damages. Not intended are:

– Regulation of liquid fertilizers, pesticides and de-icing agents used other than as prescribed by the manufacturer or not authorized;

– Use of the proportional regulator without pressure protection and also

– permanent use of pump flow higher than 450 l / min.

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1.2. Characteristics of the Material to Be Processed

The ePPR400-2 was developed exclusively for the pressure setting of:

– water,

– liquid fertilizers and pesticides as well

– liquid de-icing agents in municipal and airport use.

The use of unauthorized pesticides or mixtures, as well as corrosive or alkaline liquids, is not envisaged. The pH range is set between 5.5 and 7.5.

1.3. Staff Requirements

*Operator*s are trained farmers, employees in agricultural businesses with certificate of competence.

Technical staff are trained (agricultural machinery) mechanics, employees of specialized workshops.

1.4. Protection of the Hydraulic System

When operating fluid-carrying systems, all protective and safety devices, such as pressure relief valves, must be present and functioning. The intended use is described in the installation instructions, see „1.1. Intended Use“.

1.5. Personal Protective Equipment

Personal protective equipment should be used when handling pesticides and liquid chemicals. The German Federal Office of Consumer Protection and Food Safety issues the guideline „Personal Protective Equipment for the Handling of Plant Protection Products“, from which references to standards, directives and ordinances can be taken.

DIN ISO 7000, Symbol 3126

1.6. Installation and Test

The installation of ePPR400-2 may only be performed by trained installation staff.

Operation only if the machine complies with all determinations of the Machinery Directive 2006/42 /EC.

During the preliminary electric check of the regulator, there is a danger of crushing in moving control piston.

Liquid circuits must be depressurized before disassembly.

In addition, both service and operating personnel must ensure that personal protective equipment (safety goggles, protective gloves, etc.) is worn.

1.7. Maintenance

Following the working of the pumped liquid, a general cleaning with clear water is provided in the liquid-carrying system.

In addition, the regulator should be precleaned when it is removed for maintenance work.

An annual inspection of the wearing parts is recommended.

The *operating personnel* may carry out the following maintenance work on the ePPR400-2 proportional regulator:

– Replace the seals on the drive housing and control piston;

– Loosen the electric connection cable, inspect the silicone seal and the contact lugs (corrosion, moisture) on the base connection in the event of a malfunction;

– Measurement of the internal motor resistance at the contact lugs in the event of a malfunction;

– Dismantling of the upper part of the motor housing for diagnostic purposes (water ingress);

– Replacement of the moulded seal (Article 84362);

– Replacement of the complete switching unit.

Furthermore the *service personnel* can also carry out the following maintenance work on the ePPR400-2 proportional regulator:

– Replacement of the complete electric motor;

– Replacement of the piston skirt or actuator housing with microswitch;

– Replace the groove and sliding ring as well as the O-rings in the guide adapter.

2. Technical Specifications

2.1. Scope of Delivery, Exemplary

altek no.	*Description*	*Quantity*
80818	Cross piece AS40	1
05241	Safety pin AS40	4
84360	Switchgear unit ePPR400-Typ2	1

The switchgear unit and the cross piece AS40 form the *altek* electric proportional regulator ePPR400-2. Various connections can be made via the crosspiece.

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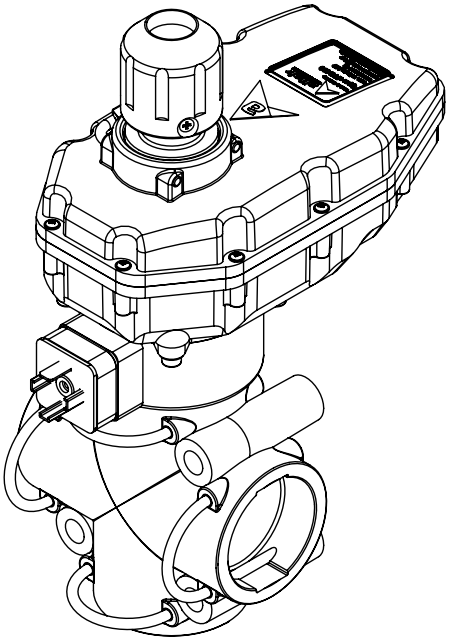
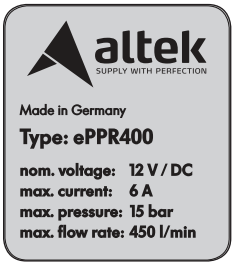
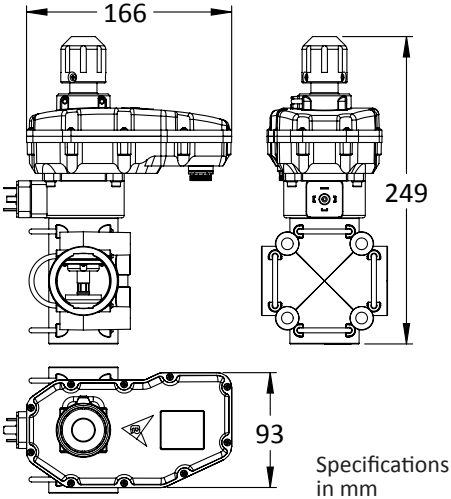


2.2. Type Label



2.3. Dimensions of the Product



Specifications in mm

2.4. Mechanical

Flow rate	*max*	450 l/min
Pressure	*max*	15 bar
Response time	*pitch 1.5mm*	9 s
	pitch 1.0mm	14 s

2.5. Environmental

IP Code (ISO 20653)	IP5K6K
Working temperature	–5 .. 50 °C
Storage temperature	–20 .. 85 °C

2.6. Electric

Voltage	
12 V	DC ± 10%
Motor supply line	1.5 mm²
Protection	
thermal	in motor included
from short-circuit	by the costumer
Power supply	
Connector	acc. EN 175301-803
	Form A, IP67

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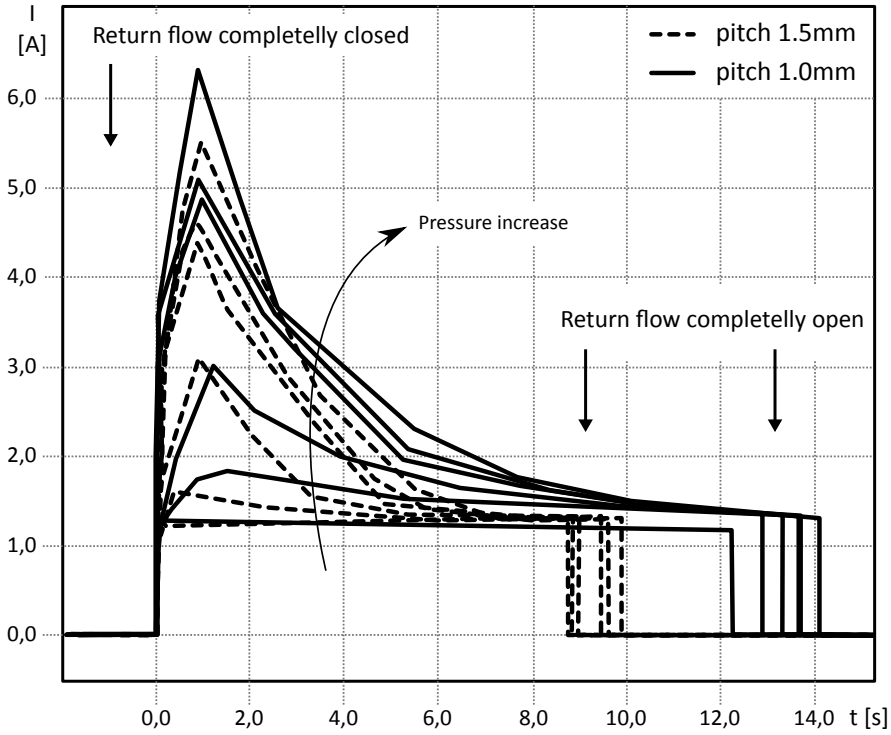
Motor current consumption	measured at 0, 2, 5, 10, 12, 15bar



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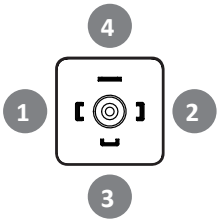
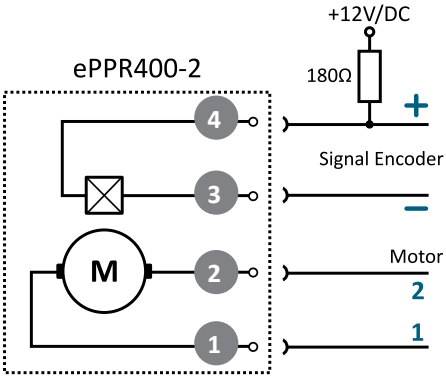
Pin configuration	
1	Motor Pin 1
2	Motor Pin 2
3	Signal Encoder (–)
4	Signal Encoder (+)



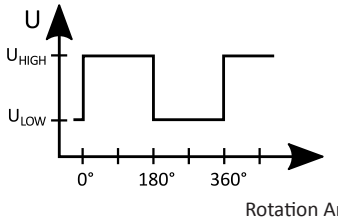
Cubic plug according to DIN EN 175 301-803-A



To evaluate the Hall sensor signal, it is necessary to connect a pull-up resistor (180Ω), see illustration left.

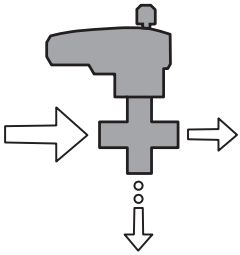
Return flow	*closed*	*open*
1	(+)	(–)
2	(–)	(+)

Signal Hall sensor — 3 *and* 4		
High signal	U_{HIGH}	12 V
Low signal	U_{LOW}	8 V
Switch current, max	I_{MAX}	25 mA

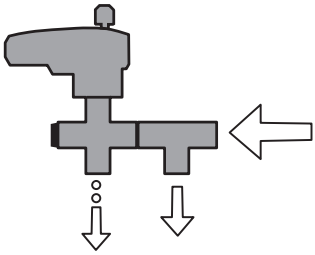


3. Installation Position

The regulator can assume any arbitrary position.



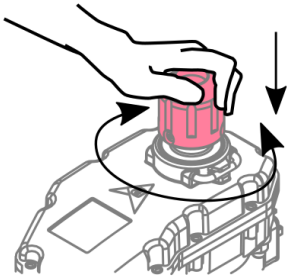
in main flow



in bypass

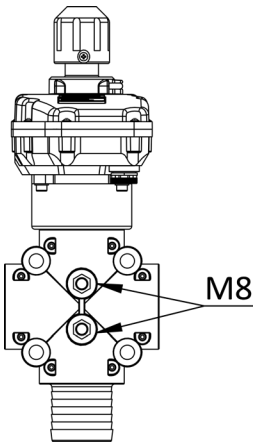
4. Emergency Manual Control

In case of emergency or power failure the regulator can be operated manually. First push the emergency knob and then turn it: clockwise the return flow will decrease.



5. Mounting

There are two attachment points on the AS40 cross piece (M8 insert nuts). Connect properly the hose connections to the proportional controller.



6. Spare Parts

For the part drawing suitable for your product, please contact *altek* GmbH.

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7. Declaration of Incorporation According to the Directive 2006/42/EC Annex VII, B

The company altek GmbH, Boschstraße 1 in D-72108 Rottenburg, declares in sole responsibility that the electric proportional regulator of type ePPR400-2 is in accordance with the safety and health requirements of the Machinery Directive 2006/42/EG.

Furthermore, we declare agreement with further, likewise for the product valid directive: Directive 2014/30/EU relating to electromagnetic compatibility.

The following harmonized standards and/or technical specifications have been used for the proper implementation of safety and health requirements:

- Appendix I, articles: 1.1.2; 1.1.3; 1.1.5; 1.1.6; 1.2.1; 1.2.2; 1.2.3; 1.2.6; 1.3.2; 1.3.4; 1.3.7; 1.5.1; 1.6.3
- DIN EN ISO 14982;
- ISO 15003
- ISO 16750-2, Paragraph 4.3;
- DIN EN 60068-2-14, Paragraph 8;
- ISO 20653.

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The special technical documentation has been drawn up in accordance with Appendix VII B, for „incomplete machinery“ as defined in Directive 2006/42/EC. These may be communicated electronically or in writing to national authorities or surveillance authorities on justified reasons. The documentation is to be requested of

altek GmbH, Boschstraße 1, D-72108 Rottenburg, Department for Research & Development.

Note: The installation and use of the electric proportional regulator ePPR400-2 is only permitted if the specified conditions are met for the intended use. Furthermore, operation is only permitted if the entire machine (field sprayer, machines for communal engineering) complies with the provisions of the Machinery Directive 2006/42/EC or other applicable directives.

Rottenburg, 3rd of December 2018

R&D Manager, Rudolf Tigges

Impressum

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