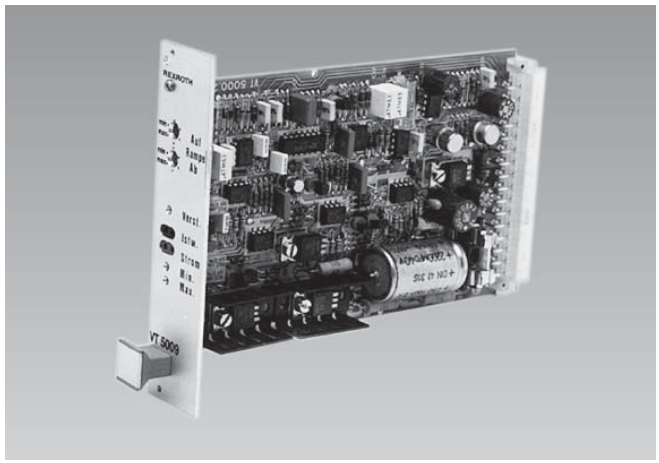
RE 29 923/07.03

Replaces: 06.90

Electronic Amplifier Type VT 5000 S2X and VT 5009 S1X for the control of vane pumps with electrical proportional control

Series 2X and 1X



R 85/17

Type VT 2009 S 1X

Overview of contents

Features

Amplifiers type VT 5000 and VT 5009 are used for the control of vane pumps with electrical proportional control.

They basically consist of:

- a smoothing circuit
- voltage stabiliser
- ramp generator
- 2 pulsed output stages
- oscillator and demodulator for inductive feedback
- PID regulator

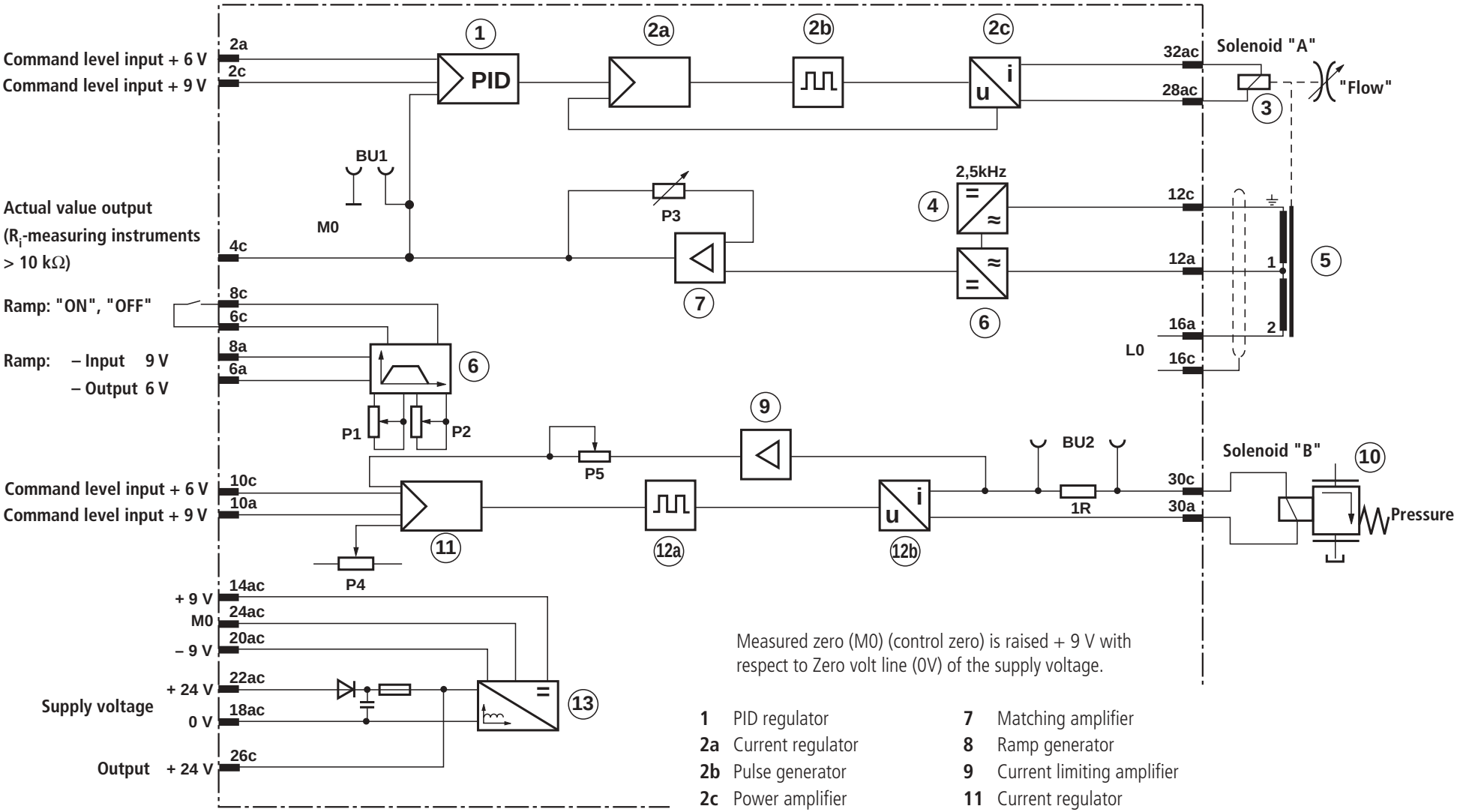
Suitable card holders:

- VT 3002-1X see RE 29 916
- VT 1516-1X see RE 29 915
- VT 1700-1X see RE 29 917

Technical data (For applications outside these stated values, please consult us!)

Supply voltage	U_{eff}:	
Full wave rectification		24 V ± 10 %
Rectified 3 phase supply		28 V to 35 V
Regulated voltage	U:	± 9 V with centre tapping
Max. load (min resistance) of controlled voltage	R:	≥ 500 Ω
Max. coil resistance, Sol. A	R:	10,0 Ω
Max. coil resistance, Sol. B	R:	19,5 Ω
Max. output current, Sol. A	I_{max}:	1,8 A
Max. output current, Sol. B	I_{max}:	800 mA
Min. output current, Sol. B	I_{min}:	100 mA
Oscillator frequency	f:	2 kHz
Frequency range (output stages)	f:	2 kHz
Power required	P:	75 VA
Fuse	I_S:	3,15 Ampere M
Space required, conductor side	:	1 TE
component side	:	5 TE
		1 TE ≙ 5,08 mm
Permissible ambient temp. range	t:	0 to 50 °C
Weight	m:	0,14 kg

Terminal Connections VT 5000 S2X and VT 5009 S1X

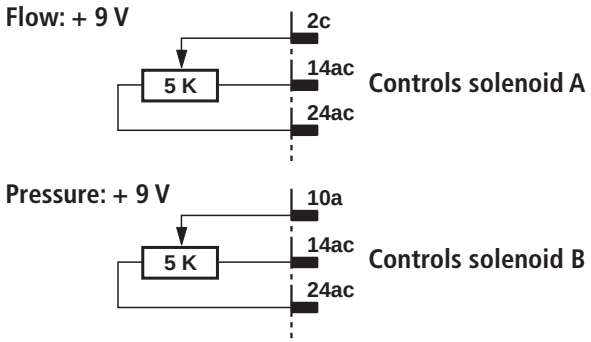


Measured zero (M0) (control zero) is raised + 9 V with respect to Zero volt line (0V) of the supply voltage.

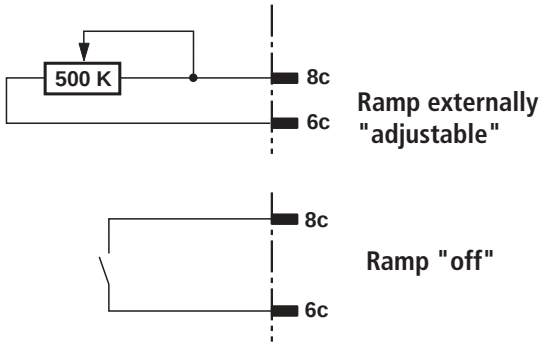
1 PID regulator
2a Current regulator
2b Pulse generator
2c Power amplifier
4 Oscillator
5 Inductive transducer
6 Demodulator
7 Matching amplifier
8 Ramp generator
9 Current limiting amplifier
11 Current regulator
12a Pulse generator
12b Power amplifier
13 Power supply

P1 = Ramp "Up"
P2 = Ramp "Down"
P3 = Sensitivity
P4 = Pilot current
P5 = Max. current limit

External Potentiometer



External Time Potentiometer



Note:

When using an external time potentiometer, the internal ramp time potentiometer must be set to maximum!

Description of function

Amplifier type VT 5000 and VT 5009 consist of two separate amplifiers, which work independently of each other.

A) The amplifier for solenoid A for flow control.

B) The amplifier for solenoid B for pressure control.

A) Flow control:

For the purpose of flow control, the card has two command level inputs, one for 6 V and one for 9 V (see control via external potentiometers).

The + 9 V command level input can be connected directly to the + 9 V measured voltage line of the power input section (13).

The input signal is compared with the feedback signal for valve setting in the PID regulator (1). The resultant difference is then used to control the pulsed output stage with its current regulator (2a), pulse generator (2b) and power amplifier (2c). The maximum current of the output stage transmitted to solenoid A is 1,8 A.

B) Pressure control:

For the purpose of pressure control, the card has two command level inputs, one for 6 V and one for 9 V (see control via external potentiometer).

The + 9 V command level input can be connected directly to the + 9 V measured voltage line of the power input section (13).

The current regulator (11) compares the input signal to the solenoid current, which is feedback via the limiting amplifier (9). The output signal of the current regulator(11) is passed to the output stage with its power amplifier (12b), and pulse generator (12a). The power amplifier controls solenoid B (10) with a maximum current of 800 mA.

This current can be limited by potentiometer P5. It is set at the factory at 800 mA.

C) Ramp function:

As an extra function, cards VT 5000 and VT 5009 can be equipped with a ramp generator (8). The output of the ramp generator can be used either for pressure control, or flow con-trol.

The ramp generator (8) converts a stepped input signal into a slowly increasing or decreasing output signal.

The rise time (gradient) of this ouput signal in the VT 5000 may be set via potentiometers P1 and P2. The ramp time of 1 or 5 s can only be achieved if the full voltage range of 0 to 9 V is used. If a smaller voltage than + 9 V is switched to the input of the ramp generator, the ramp time will be reduced.

In the VT 5009, a fixed ramp time of 0,3 s is available.

If the ramp function is not required, it may be switched out using terminals 6c and 8c.

Ordering code

VT 500		S	/		*

for vane pump, type V4, size 20 … 80 **= 0**
for vane pump, type V4, size 125 **= 9**

32 pin linear plug to DIN 41 612, Form D **= S**
(for installation in Euro-magazines, or cardholders)

Series 20 to 29 (VT 5000) **= 2X**
(20 to 29: install. and connect. dimens. remain unchanged)
Series 10 to 19 (VT 5009) **= 1X**
(10 to 19: install. and connect. dimens. reamin unchanged)

Further details in clear text

No desig. = German front plate
E = english front plate

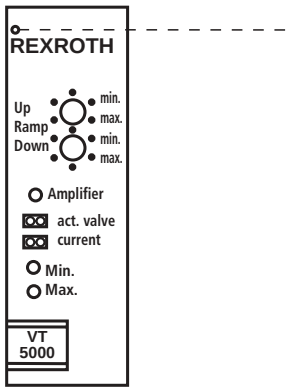
VT 5000:
No desig. = No ramp
R1 = Ramp time = 1 s
R5 = Ramp time = 5 s

VT 5009:
No desig. = Fixed ramp of 0,3 s

Additional Information

- The amplifier may only be unplugged when switched off!
- Measurements to be made with a high resistance meter set on the voltage range.
- Measured (control) zero (M0) is raised + 9 V with respect to 0 V of the power supply.
- M0 may NOT be connected to 0 V of the power supply.
- Do NOT connect the earth (ground) terminal of the inductive transducer to.
- Radio transmitters may not be placed within 1 m of this card.
- Command level inputs may only be switched with contacts suitable for current of < 1 mA.
- Screen all input lines. Leave one end of the screen open. Connect one end to 0 V of the supply line.
- Do not lay solenoid lines close to power lines.

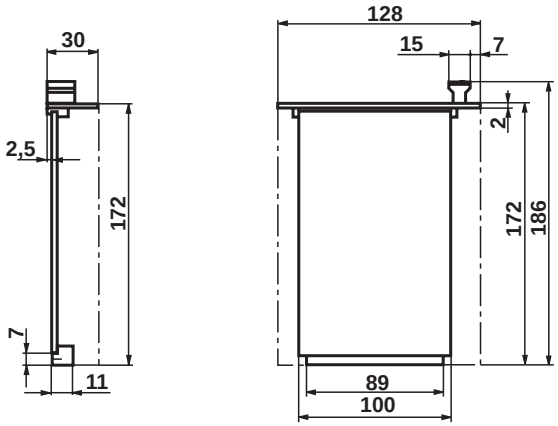
Unit Dimensions (Dimensions in mm)



Viewing window for card place number in Euro-card magazine.

Ramp time setting "up"
Ramp time sutting "down"

Setting of spool stroke (fixed in the factory)
Test point 1: Measurement of flow control feedback level
Test point 2: Measurement of solenoid current for pressure control
Pilot current setting
Max. current setting
Pressure side



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