

RE 30 040/11.02

Electric amplifiers Type VT-VRR A1

Series 2X



Type VT-VRR A1

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Features

- Suitable for actuating directly operated servo solenoid valves with non-linear curve (type 4WRPH, series 2X)
- Analog amplifiers in Eurocard format for installation in 19" rack
- Output stage with closed-loop control
- Enabling input
- Short-circuit-proof outputs
- Adjustment possibilities: valve zero
- Open-circuit detection for feedback signal cable
- Closed-loop position control with PID action
- Area ratio adjustment of differential cylinders
- Gain in weak signal range

Testing and service equipment

- Test box type VT-PE-TB2, see RE 30 064
- Test adapter type VT-PA-3, see RE 30 070



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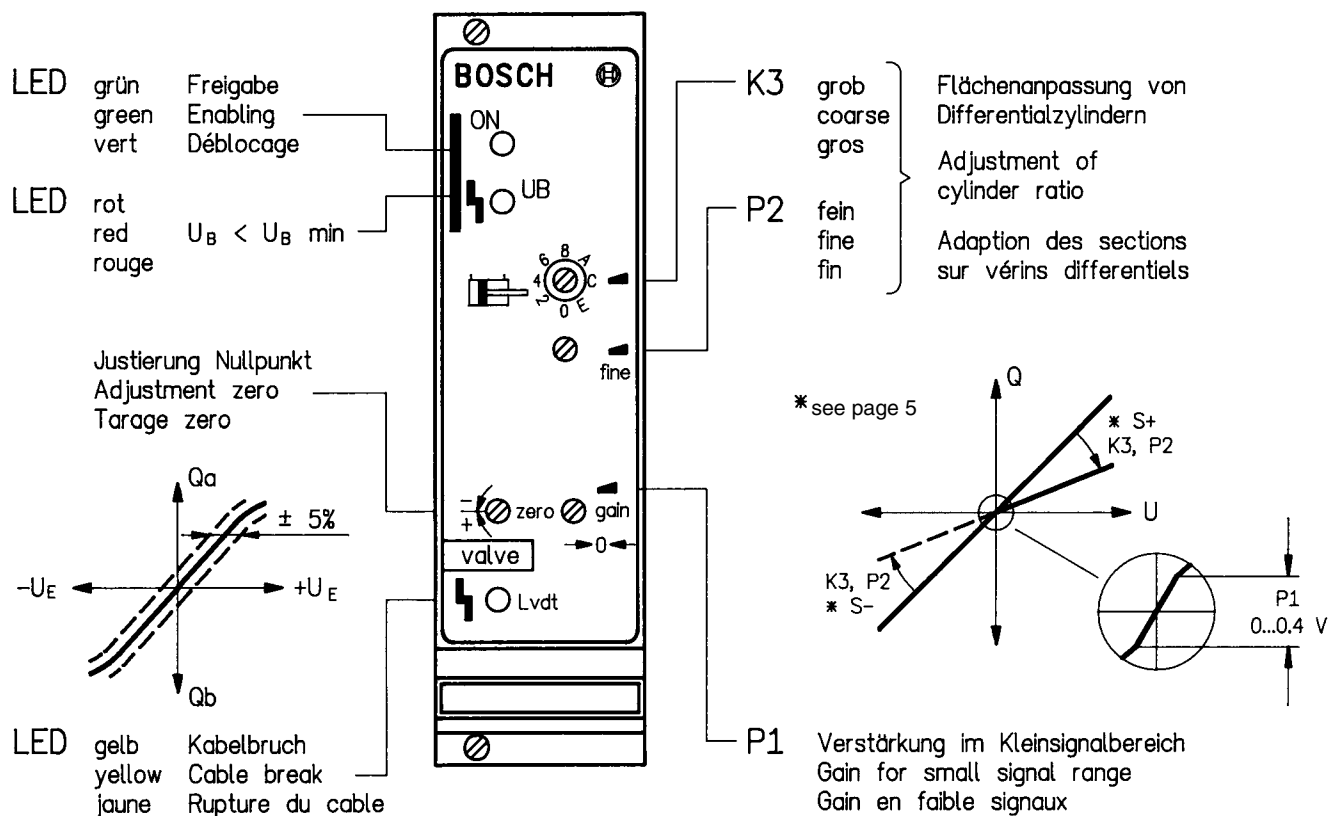
Ordering data

VT-	V	R	R	A	1	-	-	/	/	/	
Hydraulic component For valves with electrical feedback = R								Option K40-AGC= Servo solenoid valve with 40 % kink K60-AGC= Servo solenoid valve with 60 % kink			
Valve type Servo solenoid valve = R								Customer version Catalogue version V0 =			
Actuation Analog = A								Series Series 20 to 29 2X =			
								Serial numbers for types 527 = NG 6 537 = NG 10			

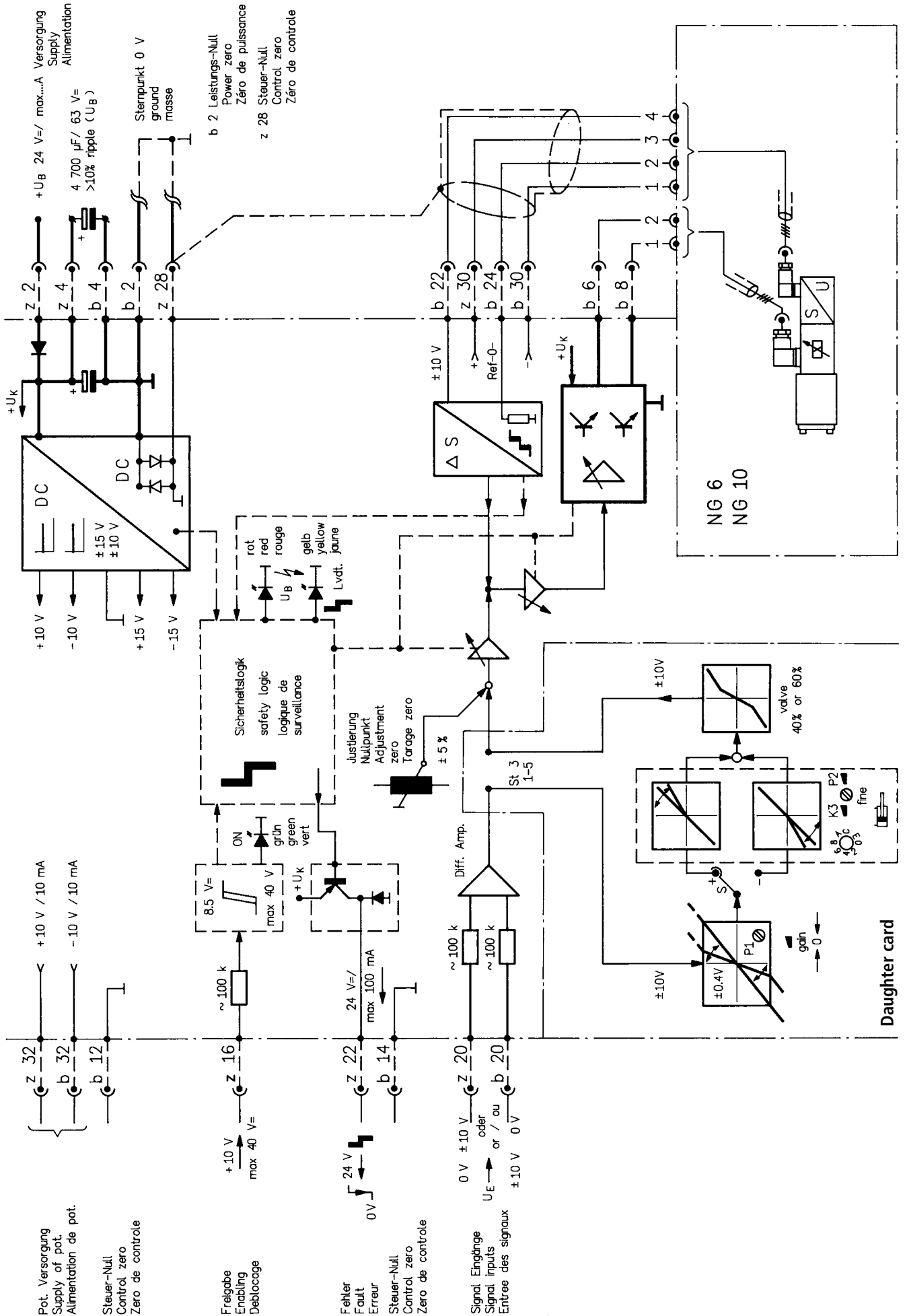
Preferred types (available at short notice)

Material no.	Type VT-VRRA1	For valve types
0 811 405 065	VT-VRRA1-527-20/V0/K40-AGC	4WRPH 6 ... P-2X
0 811 405 066	VT-VRRA1-527-20/V0/K60-AGC	4WRPH 6 ... P-2X
0 811 405 067	VT-VRRA1-537-20/V0/K40-AGC	4WRPH 10 ... P-2X

Front panel



Block diagram with terminal assignment



Technical data (For device applications beyond the stated values, please consult us!)


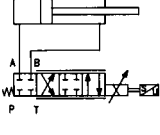
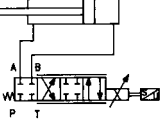
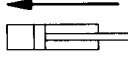
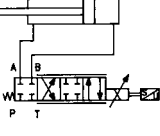
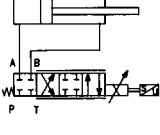
P.C.B. format	(100 x 160 x approx. 35) mm (B x L x H) Europe format with front panel (7 modular spacings)				
Plug connector	DIN 41 612 – F 32				
Ambient temperature	0 °C ... +70 °C, storage temperature min. –20 °C; max. +70 °C				
Weight <i>m</i>	0.25 kg				
Power supply <i>U_B</i> to <i>z₂</i> – <i>b₂</i>	24 V DC nominal Battery voltage 21...40 V Rectified AC voltage $U_{\text{eff}} = 21 \dots 28 \text{ V}$ (single-phase, full-wave rectification)				
Smoothing capacitor, separately to b 4, z 4	4,700 μF/63 V DC, only required if <i>U_B</i> ripple >10 %				
Valve solenoid A/VA max.	2.7/40 (NG 6)	3.7/60 (NG 10)			
Current rating	1.7 A	2.7 A			
	The current rating can rise at min. <i>U_B</i> and long cable length to control solenoid				
Power consumption (typical)	37 W	55 W			
Input signal (setpoint)	<table border="0"> <tr> <td>b 20: 0 ... ±10 V</td> <td rowspan="2">} Difference amplifier</td> </tr> <tr> <td>z 20: 0 ... ±10 V</td> </tr> </table> (<i>R_i</i> = 100 kΩ)		b 20: 0 ... ±10 V	} Difference amplifier	z 20: 0 ... ±10 V
b 20: 0 ... ±10 V	} Difference amplifier				
z 20: 0 ... ±10 V					
Signal source	Potentiometer 10 kΩ, ±10 V supply from b 32, z 32 (10 mA) or external signal source				
Output stage enable	To z 16, <i>U</i> = 8.5 ... 40 V, <i>R_i</i> = 100 kΩ, LED (green) on front panel lights up				
Position transducer Supply	b 30: –15 V z 30: +15 V				
	Feedback signal	b 22: 0 ... ±10 V, <i>R_i</i> = 20 kΩ			
	Feedback reference	b 24			
Solenoid output b 6 – b 8	Clacked current regulator				
	<i>I</i> _{max.} = 2.7 A	<i>I</i> _{max.} = 3.7 A			
Length of amplifier to valve cables	Solenoid cable: up to 20 m 1.5 mm ² 20 to 60 m 2.5 mm ²				
	Position transducer: 4 x 0.5 mm ² (screened)				
Special features	Open-circuit protection for feedback signal cable Closed-loop position control with PID action Clacked output stage Rapid energizing and de-energizing for fast response times Short-circuit-proof outputs Linearization of non-linear flow curve				
Adjustment	Zero via trimming potentiometer ±5 % Area ratio adjustment of differential cylinders Gain in weak signal range				
LED displays	Green: Enable Yellow: Feedback signal open circuit Red: Undervoltage (<i>U_B</i> too low)				
Fault signal – Feedback signal open circuit – <i>U_B</i> too low – ±15 V stabilization	z 22: Open collector output to + <i>U_K</i> max. 100 mA; no fault: + <i>U_K</i>				

Note

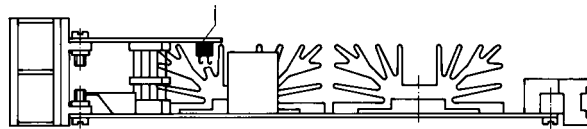
Connect power zero b 2 and control zero b 12, b 14 or z 28 separately to central ground (neutral point).

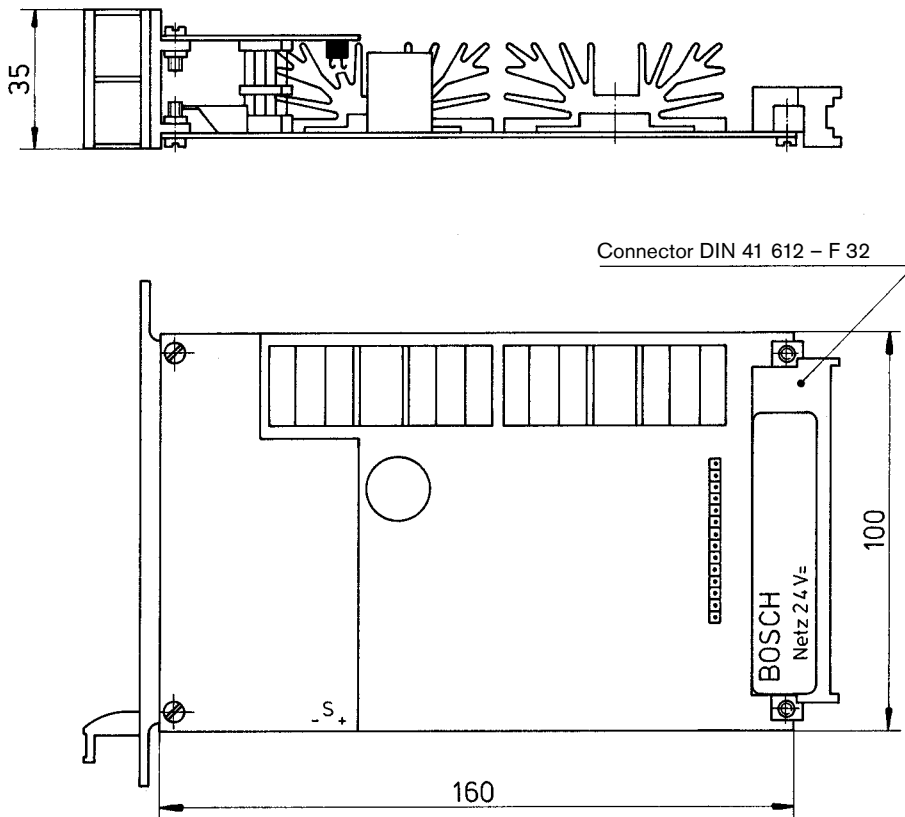
Commissioning

1. The electric and hydraulic zero is set with the "zero" potentiometer.
In a closed control loop, during this process the contouring error displayed by the CNC is compensated to 0.
2. Adjustment of differential cylinder
 - Adjust selector switch "S" on daughter card
 - Compensate direction-dependent contouring error at max. feedrate with step switch K 3 (coarse adjustment) and with potentiometer P 2 (fine adjustment)
3. Gain is optimized in the weak signal range with potentiometer P 1.

z 20 → b 20 →	U_E	Kolbenbewegung Piston direction Direction de piston	Ventil ↔ Zylinder Valve ↔ Cylinder Valve ↔ Vérin	"S" + -
z20 Sign. b20 = 0V	0...+10V 0...-10V			+ -
b20 Sign. z20 = 0V	0...+10V 0...-10V			- +
z20 Sign. b20 = 0V	0...+10V 0...-10V			- +
b20 Sign. z20 = 0V	0...+10V 0...-10V			+ -

Selector switch "S"
Position depends upon pipework
and signal polarity





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