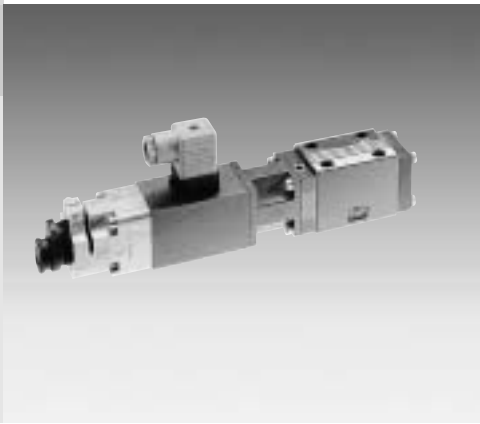
Proportional pressure reducing valve, pilot operated, with inductive position transducer

RE 29182/07.05 1/10

Type DREB6X



Nominal size 6
Unit series 1X
Maximum working pressure P 315 bar, T 250 bar
Maximum flow rate 40 l/min

List of Contents

Features

- Pilot operated valves for reducing system pressure at the consumer (pilot oil internal only)
- 3-way version (P–A /A–T), $p_{min} = p_T$
- Adjustable through the position of the armature against the compression spring
- Position-controlled, minimal hysteresis < 1 %, rapid response times, see Technical data
- Pressure limitation to a safe level even with faulty electronics (solenoid current $I > I_{max}$)
- For subplate attachment, mounting hole configuration to ISO 4401-03-02-0-94
  Subplates as per catalog sheet RE 45053 (order separately)
- Plug-in connector to DIN 43650-AM2 for the solenoid and plug-in connector for the position transducer, included in scope of delivery
- Data for the external trigger electronics
  - $U_B = 24\ V_{nom}$ DC
  - Adjustment of valve curve Np and gain with and without ramp generator
  - Europe card format, setpoint 0...+10 V (order separately)

Ordering data

DREB6	X	-1X/		M	G24	-	25	Z4	M	*

Proportional 3-way pressure reducing valve with inductive position transducer, NG6, pilot operated

Mounting hole configuration to ISO 4401-03-02-0-94 **= X**

Unit series 10 to 19 (10 to 19: installation and connection dimensions unchanged) **= 1X**

Max. pressure stage
up to 75 bar **= 75**
up to 175 bar **= 175**
up to 310 bar **= 310**

Without non-return valve **= M**

Voltage supply of trigger electronics 24 V DC **= G24**

25 = **Solenoid type (current)**
Solenoid current 2.5 A max.

Z4 = **Electrical connection**
Unit plug to DIN 43650-AM2
Plug-in connector included in scope of delivery

M = NBR seals, suitable for mineral oils (HL, HLP) to DIN 51524

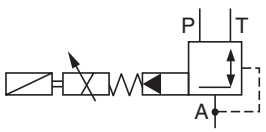
Further information in plain text

Preferred types

Solenoid 2.5 A	
Type	**Material Number**
DREB6X–1X/75MG24–25Z4M	0 811 402 050
DREB6X–1X/175MG24–25Z4M	0 811 402 051
DREB6X–1X/310MG24–25Z4M	0 811 402 052

Symbol

For external trigger electronics



Function, sectional diagram

General

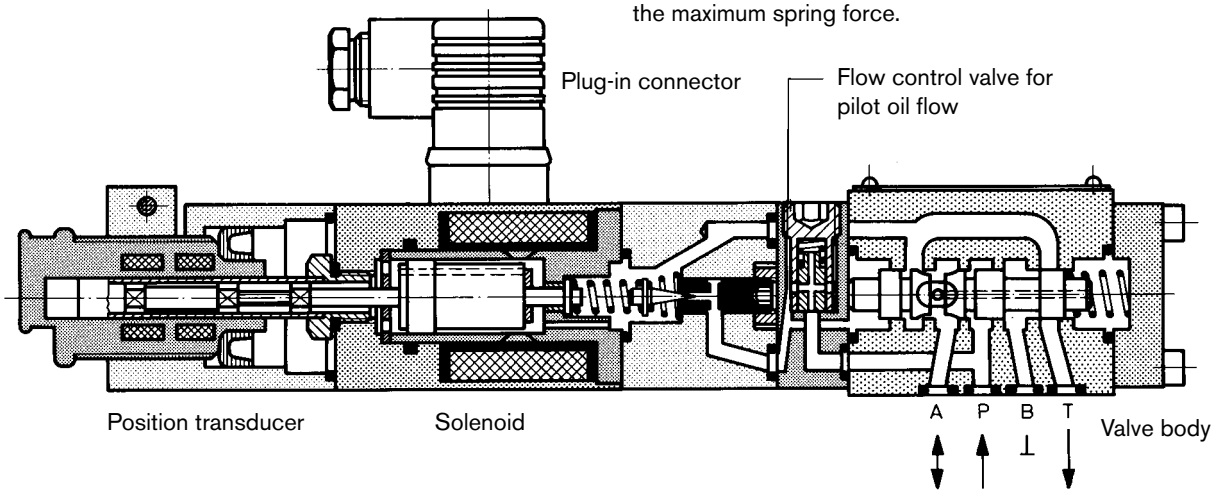
Type DREB6X proportional pressure reducing valves are pilot operated, with a 3-way main stage.
The pilot valve (pressure relief valve pilot stage) is supplied internally with a controlled flow of pilot oil via P.
The valves are actuated by a proportional solenoid, which is position-controlled against a spring. This ensures rapid response times and minimal hysteresis.
With these valves, the pressure in A (consumer) can be infinitely adjusted and reduced in relation to the solenoid current.

Basic principle

To adjust the system pressure in A, a setpoint is set in the trigger electronics. Based on this setpoint, the electronics control the solenoid coil with regulated PWM (pulse-width-modulated) current.
The proportional solenoid is positioned precisely on the spring characteristic curve. The pilot stage is supplied with oil from P at a flow rate of < 0.6 l/min via a flow control valve. The pilot pressure is compared with the consumer pressure (plus spring) in A and regulated (P–A/A–T).
The spring results in $p_{Amin} = p$ in T.

Pressure limitation for maximum safety

If a fault occurs in the electronics, so that the solenoid current (I_{max}) would exceed its specified level in an uncontrolled manner, the pressure cannot rise above the level determined by the maximum spring force.



Accessories

Type			Material Number
(4 x) ISO 4762-M5 x 30-10.9	Cheese-head bolts		2 910 151 166
Europe card 	VT-VRPA1-527-10/V0/PV	RE 30052	0 811 405 096
Europe card 	VT-VRPA1-527-10/V0/PV-RTP	RE 30054	0 811 405 101
Europe card 	VT-VRPA1-527-10/V0/PV-RTS	RE 30056	0 811 405 176
Plug-in connectors  2P+PE	Plug-in connector 2P+PE (M16x1.5) for the solenoid and plug-in connector for the position transducer, included in scope of delivery, see also RE 08008		

Testing and service equipment

Test box type VT-PE-TB1, see RE 30063
Test adapter for Europe cards type VT-PA-3, see RE 30070

Technical data

General

Construction	Pilot stage		Poppet valve
	Main stage		Spool valve
Actuation			Proportional solenoid with position control, external amplifier
Connection type			Subplate, mounting hole configuration NG6 (ISO 4401-03-02-0-94)
Mounting position			Optional
Ambient temperature range		°C	–20...+50
Weight		kg	2.4
Vibration resistance, test condition			max. 25 g, shaken in 3 dimensions (24 h)

Hydraulic (measured with HLP 46, $\vartheta_{oil} = 40\,°C \pm 5\,°C$)

Pressure fluid			Hydraulic oil to DIN 51524...535, other fluids after prior consultation		
Viscosity range	recommended	mm^2/s	20...100		
	max. permitted	mm^2/s	10...800		
Pressure fluid temperature range		°C	–20...+80		
Maximum permitted degree of contamination of pressure fluid Purity class to ISO 4406 (c)			Class 18/16/13 [1]		
Direction of flow			See symbol		
Max. set pressure in A (at $Q_{min} = 1$ l/min)		bar	75	175	310
Minimum pressure in A		bar	0 (relative) or pressure in T		
Min. inlet pressure in P		bar	$p_P = p_A + \geq 5$		
Max. working pressure		bar	Port P: 315		
Max. pressure		bar	Port T: 250 (B sealed)		
Internal pilot oil flow		l/min	approx. 0.6 (with closed-loop control)		
Max. flow		l/min	40		

Electrical

Cyclic duration factor	%	100
Degree of protection		IP 65 to DIN 40050 and IEC 14434/5
Solenoid connection		Unit plug DIN 43650/ISO 4400, M16 x 1.5 (2P+PE)
Position transducer connection		Special plug
Max. solenoid current	I_{max}	2.5 A
Coil resistance R_{20}	Ω	3
Max. power consumption at 100% load and operating temperature	VA	30

Static/Dynamic [2]

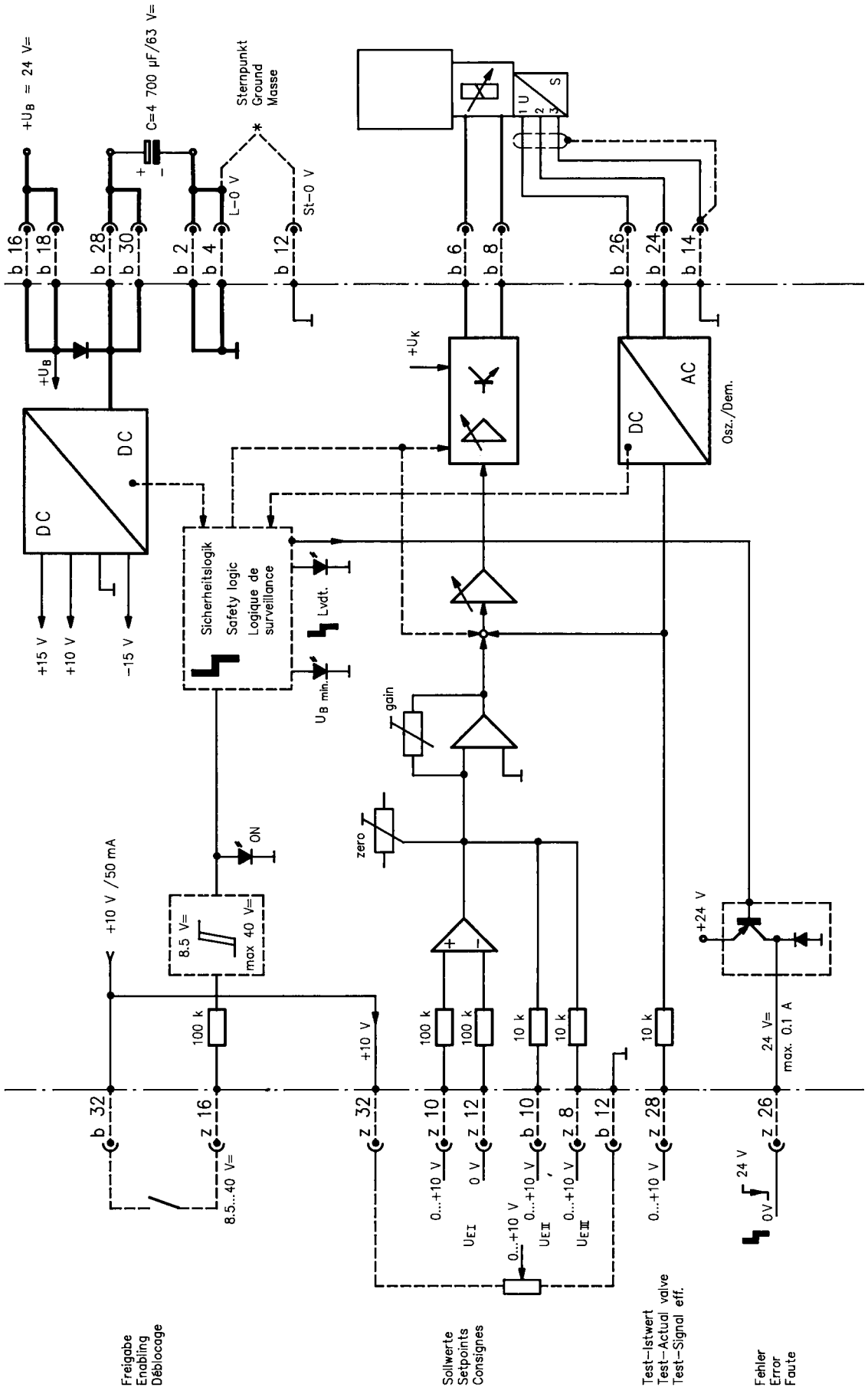
Hysteresis	%	≤ 1		
Manufacturing tolerance for p_{max}	%	≤ 10		
Response time 100 % signal change	ms	On < 50	Response time at: $Q = 10$ l/min (values depend on the dead volume)	
		Off < 20		

[1] The purity classes stated for the components must be complied with in hydraulic systems. Effective filtration prevents problems and also extends the service life of components. For a selection of filters, see catalog sheets RE 50070, RE 50076 and RE 50081.

[2] All characteristic values ascertained using amplifier 0 811 405 096 (without ramp).

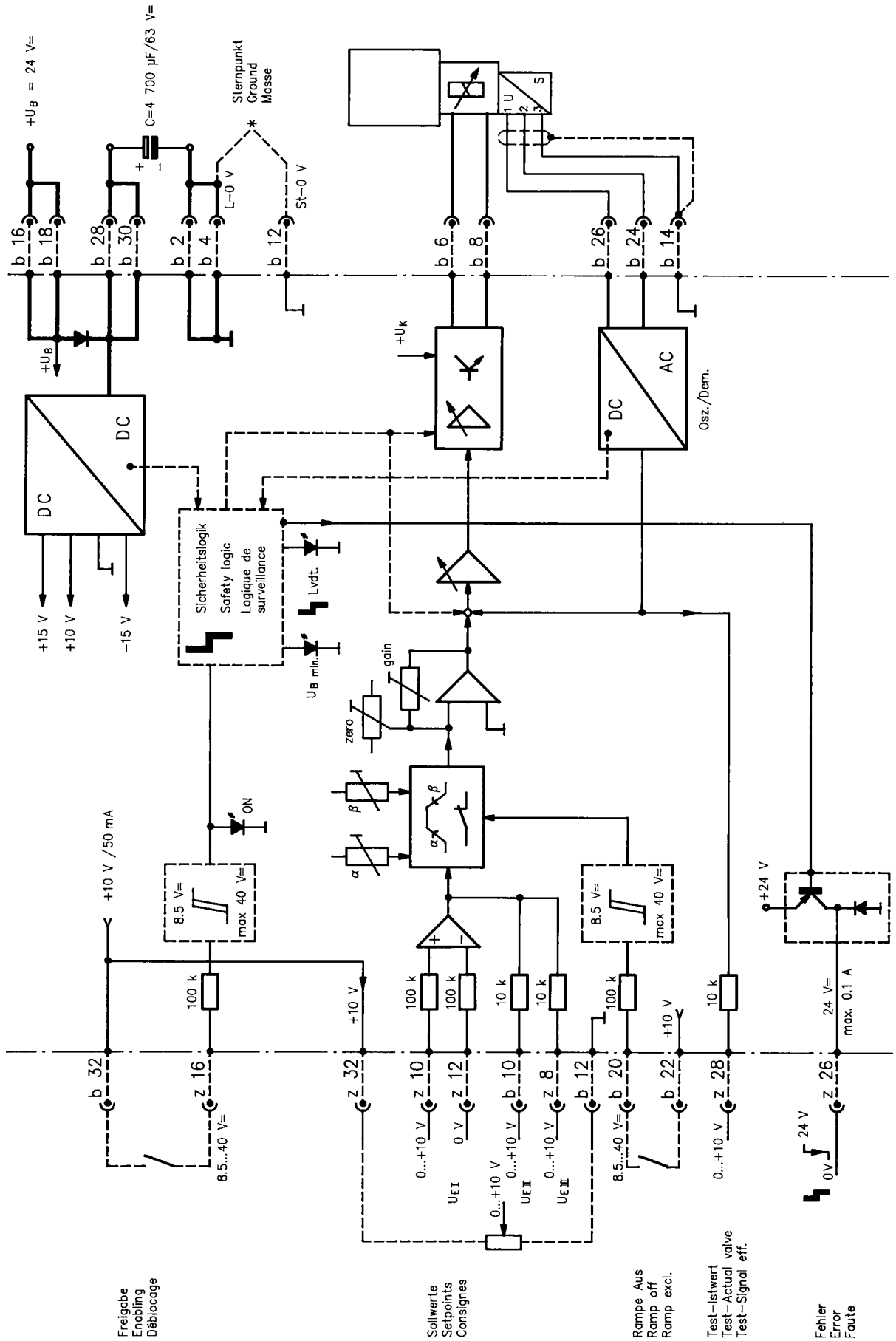
Valve with external trigger electronics (europe card without ramp, RE 30052)

Circuit diagram/pin assignment



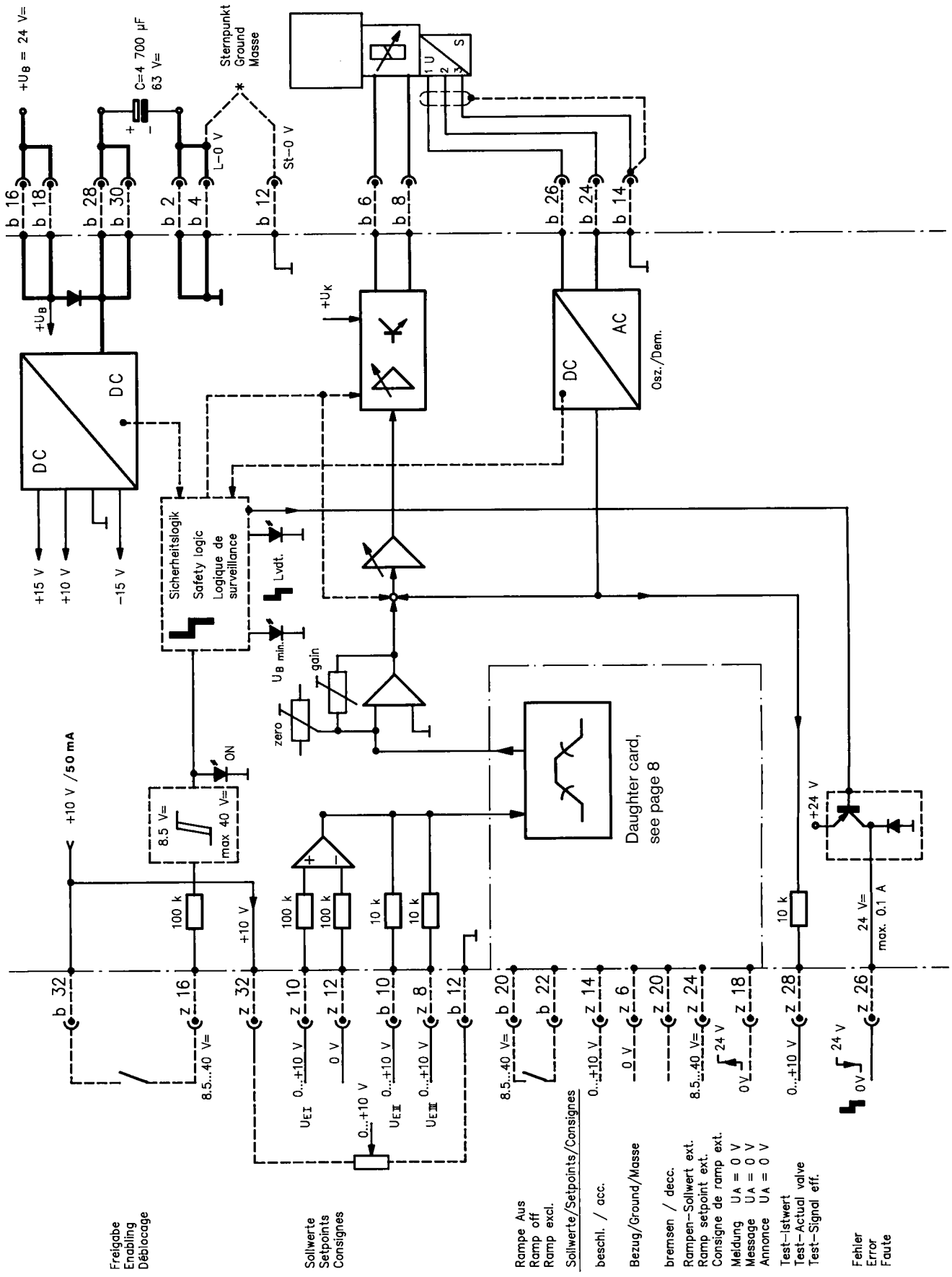
Valve with external trigger electronics (europe card without ramp, RE 30054)

Circuit diagram/pin assignment



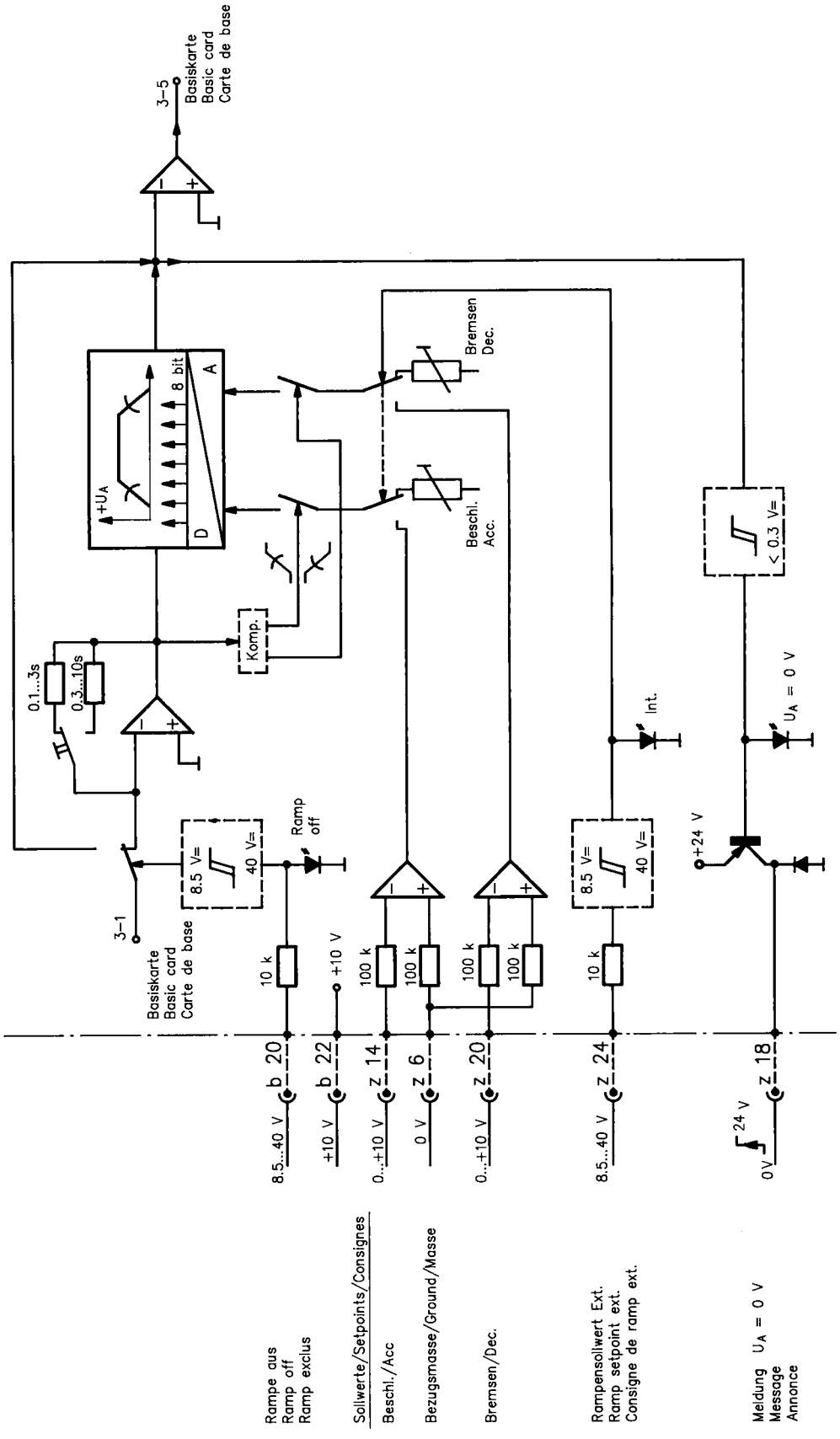
Valve with external trigger electronics (europe card without ramp, RE 30056)

Circuit diagram/pin assignment



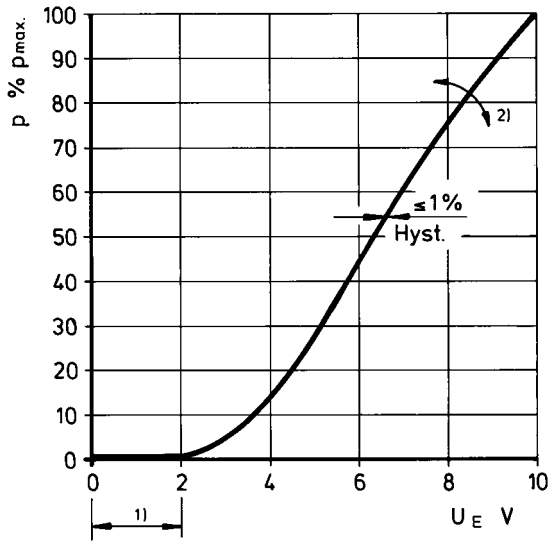
Valve with external trigger electronics (europe card without ramp, RE 30056)

Circuit diagram/pin assignment **Daughter card**



Characteristic curves (measured with HLP 46, $\vartheta_{oil} = 40\,°C \pm 5\,°C$)

Pressure in port A as a function of the setpoint

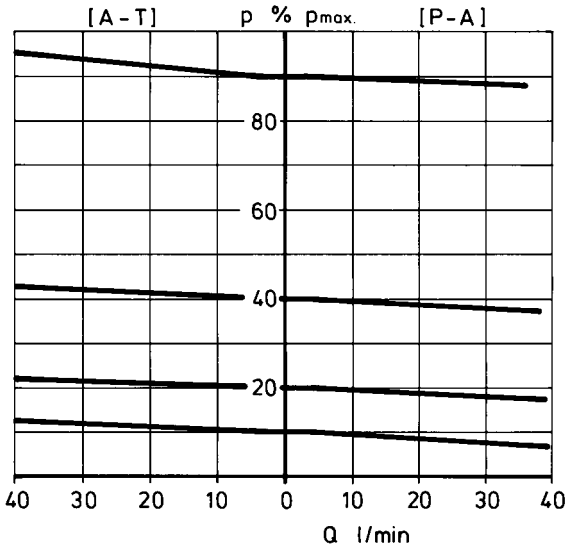


Valve amplifier

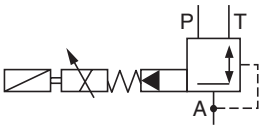
1) Zero adjustment

2) Sensitivity adjustment

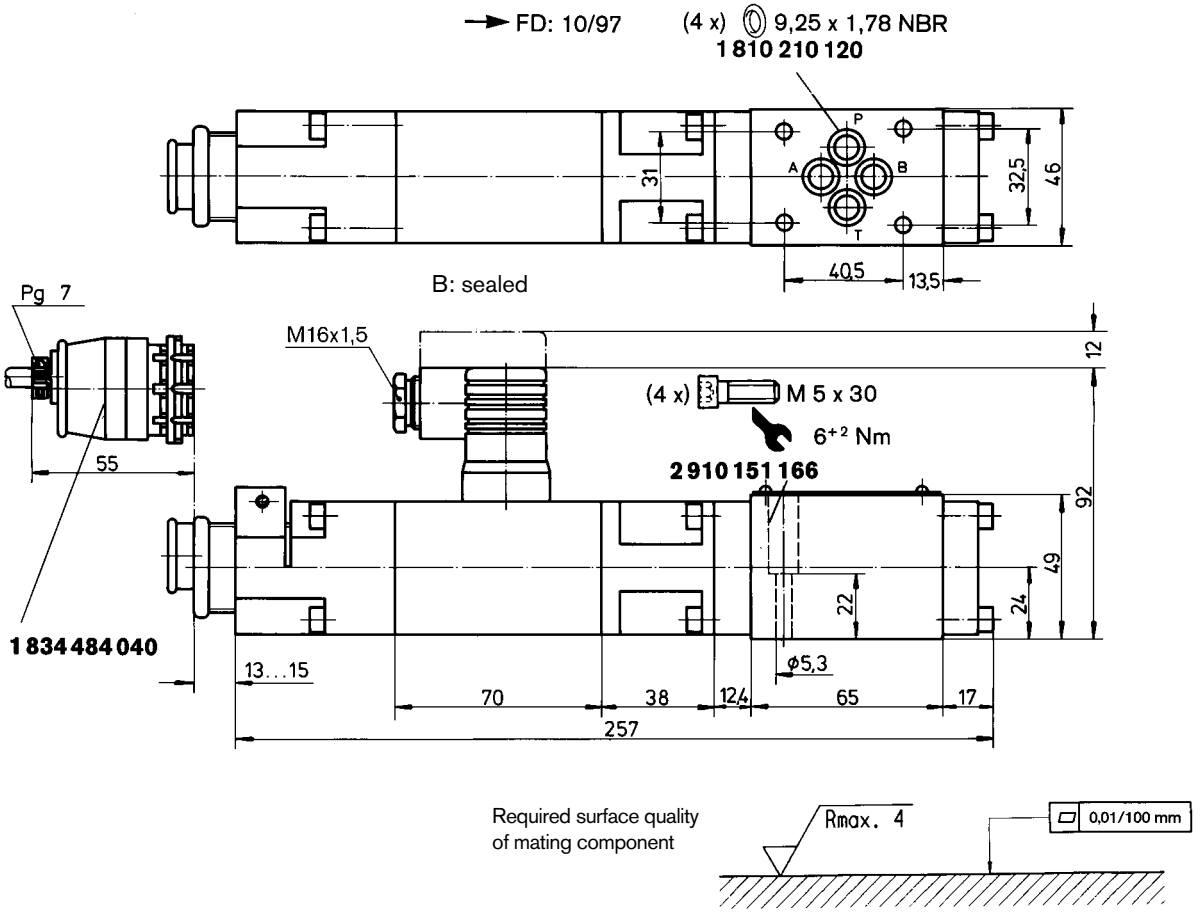
Pressure in port A proportionate to the maximum flow rate of the main stage



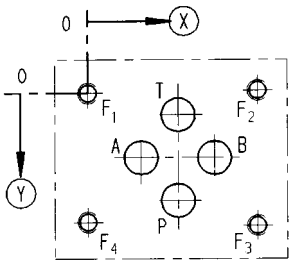
Set pressure
$p\,\%\,p_{max} = f\,(Q_{P-A}/Q_{A-T})$



Unit dimensions (nominal dimensions in mm)



Mounting hole configuration: NG6 (ISO 4401-03-02-0-94)
For subplates, see catalog sheet RE 45053



[1] Deviates from standard
[2] Thread depth:
Ferrous metal 1.5 x Ø
Non-ferrous 2 x Ø

	P	A	T	B	F_1	F_2	F_3	F_4
Ⓧ	21.5	12.5	21.5	30.2	0	40.5	40.5	0
Ⓨ	25.9	15.5	5.1	15.5	0	–0.75	31.75	31
∅	8 [1]	8 [1]	8 [1]	8 [1]	M5 [2]	M5 [2]	M5 [2]	M5 [2]

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Notes

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