Mobile Hydraulics

# Rexroth **Bosch Group**

# Electro-hydraulic pressure control ED

RE 92 707/05.01 1/8 Replaces: 04.97



A10VO...ED / 3

A10VO...ED / 5

for the A10V(S)O variable displacement pump Series 3 for the A10VO variable displacement pump Series 5

#### Contents

Ordering code/standard range A10V(S)O...ED Series 3 Ordering code/standard range A10VO...ED Series 5 Description, technical data A10V(S)O...ED Series 3 Unit dimensions A10V(S)O...ED Series 3 Description, technical data A10VO...ED Series 5 Unit dimensions A10VO...ED Series 5 Connector options and electronic controls

#### **Features**

2

6

8

- Current dependent, electro-proportional pressure control \_
- 3 \_ High control accuracy
- 4 Failsafe characteristic, e.g. ED for fan drive \_ 5
  - \_ The same ED-valve for both pump series and applicable sizes
- 7 \_ Use of standard proportional-amplifiers is possible

#### Further information:

Variable displacement pump A10VSO/3 Size 18 RE 92712 Variable displacement pump A10VSO/3 Sizes 28...140 RE 92711 Variable displacement pump A10VO/3 Sizes 28...140 RE 92701 Variable displacement pump A10VO/5 Sizes 28...85 RE 92703

# Ordering code/standard range A10V(S)O...ED Series 3

				A1	0V(	S)	0		/	31		_					Г
Fluid Mineral oil (no prefix) Axial piston unit Variable displacement, swashplate de Nominal pressure 280 bar, peak press Operating mode Pump, open circuits Size ≙ displacement V <sub>g max</sub> (cm <sup>3</sup> ) A10VO / Series 31 A10VSO / Series 31	esign ssure 3	350 b	par	A10V	(S) 71 71	0	140		<b>a</b>		Direction of rotation	indivic	- Shaft end	Mounting flange	Service line connections	Through drive	
Control devices							1.10				A10	) VSO 2	8 - R 8 1	E 92 40 -	713 RF 9	711	
Electro-hydraulic pressure control inverse proportional	ED	•	•	•	•	•	0	ED			A10	)VO 28	310	10 - F	RE 92	701	
Electro-hydraulic pressure control inverse proportional with hydraulic load-sensing control	EDS	0	0	0	0	0	0	EDS									
Electro-hydraulic pressure control proportional	ER	0	0	0	0	0	0	ER									
Electro-hydraulic pressure control proportional with hydraulic load-sensing control	ERS	0	0	0	0	0	0	ERS									
Nominal voltage (V) N	lomir	nal ci	urren	t I <sub>N</sub> (A	)												
12		1.2						71									
24		0.6	)					72									
Series																	
								31									
Connector design		18	28	45	71	100	140										
Hirschmann plug / DIN plug	hla						$\left  \begin{array}{c} 0 \\ 0 \end{array} \right $	H									
Deutsch plug DT 04-2P, connected by Ca	uldad							D I									
Deutsch plug Di 04-2P, permanently mo	uided					$\cup$		Р									

ullet = available

 $\mathbf{O} = in preparation$ 

- = not available

# Ordering code/standard range A10VO...ED Series 5

				,		-	_	-					_	-		_
		Α.	10V		0			/	5X		-					
Fluid																
Mineral oil (no prefix)														su		
Axial piston unit														ctio		
Variable displacement, swashp	late design		A10	V						ומו			ge	nne		
Nominal pressure 250 bar, pea	ak pressure 315 bar												lan	e co	ive	
Operating mode												pu	ing f	e lin	Jh dr	
Pump, open circuits				0						Lect	Sle	afte	unt	rvic	ĵno,	
Size					_				i	5	Sei	Sh	Ы	Se	Thi	
		28	45	60	85					<b>5</b>	in divin	اميا	المغما			
Control devices		_				_				For A10	inaivic IVO/5	iuai d - RE	92 7	s see 03		
Electro-hydraulic pressure continuerse proportional	trol ED	•	•	•	0	ED										
Electro-hydraulic pressure con- inverse proportional with hydraulic load-sensing co	trol EDS ntrol	0	0	0	0	EDS										
Electro-hydraulic pressure com proportional	trol ER	0	0	0	0	ER										
Electro-hydraulic pressure com proportional with hydraulic load-sensing co	trol ERS ntrol	0	0	0	0	ERS										
Nominal voltage (V)	Nominal currer	nt I <sub>N</sub> (	A)													
12	1.2					71										
24	0.6					72										
Series																
						5X										
Connector design		28	45	60	85											
Hirschmann plug / DIN plug					0	Н										;
Deutsch plug DT 04-2P, conne	ected by cable			٠	Ο	Т										
Deutsch plug DT 04-2P, perma	anently moulded	0	0	0	0	Р										

# ED Electro-hydraulic pressure control for A10V(S)O Series 3

The max. pump output pressure depends on the current to the valve **Circuit diagram** A10VO/3 solenoid.

If pump pressure drops below this set pressure the pump will try to increase its displacement, hence the flow to satisfy system demand.

If the pressure reaches the set pressure the pump will adjust its displacement to match the required system flow. (No excess)

With the inverse proportional control max. pump pressure level will go to standby at max. solenoid current, and to max. pressure at zero current. (Fail safe in case of fan drives)

Overriding the current signal is an adjustable hydromechanical setting of max. pressure.

#### Static current-pressure characteristic (inverse proportional control)



Hysteresis of static current-pressure characteristic < 3 bar

#### Static flow - pressure characteristic

(at n = 1500 rpm;  $t_{oil} = 50^{\circ}C$ )



**Controller data** 

Standby setting 20 bar	
Hysteresis and pressure rise $\Delta p$	< 4 bar

#### Technical data – electrical

Version	71	72		
Operating voltage	12V±20%	24V±20%		
Adjustment range	100 – 1200 mA	50 – 600 mA		
Impedance at 20°C	5.5Ω	22.7Ω		
Limit current	1.54 A	0.77A		
Max. duty cycle	100 %			
Temperature range	-30°C to + 115°C			
Dither frequency	100 – 200 Hz			
Enclosure protection class	lass see connector versions			



#### Ports

В Pressure port

- S Inlet port
- L, L, Case drain (L<sub>1</sub> closed)

#### **Dynamic characteristics**

These characteristics are measured average values under test conditions.

Conditions: 
$$n = 1500 \text{ rpm}$$
  
 $t_{oil} = 50^{\circ}\text{C}$ 

Pressure cut-out at 350 bar

The sudden load change is generated by sudden opening and closing of a pressure line with a pressure-relief valve as load valve 1 m downstream of the pump outlet port.



Control time - values available on request

# Unit dimensions ED Electro-hydraulic pressure control for A10V(S)O Series 3



Ports on side – subplates 12 and 62



#### **Unit dimensions**

Size	<b>A</b> <sub>1</sub>	<b>A</b> <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>
18	_	_	126	140
28	225	143	136	140
45	244	140	146	140
71	278	140	160	140
100	344	140	165	140

For detailed unit dimensions and technical details of the variable displacement pump, see the main brochures A10VSO 18 RE 92712, A10VSO 28...140 RE 92711 and A10VO 28...140 RE 92701.

\* Connector direction (cable outlet) infinitely variable by rotation through 360°;

after turning the coil, please retighten the plastic screw with 5<sup>+1</sup> Nm.

# ED Electro-hydraulic pressure control for A10VO Series 5

The max. pump output pressure depends on the current to the valve solenoid.

If pump pressure drops below this set pressure the pump will try to increase its displacement, hence the flow to satisfy system demand.

If the pressure reaches the set pressure the pump will adjust its displacement to match the required system flow. (No excess)

With the inverse proportional control max. pump pressure level will go to standby at max. solenoid current, and to max. pressure at zero current. (Fail safe in case of fan drives)

Overriding the current signal is an adjustable hydromechanical setting of max. pressure.

# Static current-pressure characteristic (inverse proportional control)



Hysteresis of static current-pressure characteristic < 3 bar

#### Static flow – pressure characteristic

(at n = 1500 rpm;  $t_{oil} = 50^{\circ}C$ )



#### **Controller data**

Standby setting 20 bar

Hysteresis and pressure rise  $\Delta p$  \_\_\_\_\_ < 4 bar

#### Technical data – electrical

Version	71	72		
Operating voltage	12V±20%	24V±20%		
Adjustment range	100 – 1200 mA	50 – 600 mA		
Impedance at 20°C	5.5Ω	22.7Ω		
Limit current	1.54 A	0.77A		
Max. duty cycle	100 %			
Temperature range	-30°C to + 115°C			
Dither frequency	100 – 200 Hz			
Enclosure protection class	ass see connector versions			

Circuit diagram A10V0/5



### Ports

B Pressure port

S Inlet port

**L**, **L**<sub>1</sub> Case drain (L<sub>1</sub> closed)

#### Dynamic characteristics

These characteristics are measured average values under test conditions.

Conditions:	n = 1500 rpm
	t <sub>oil</sub> = 50°C
	Pressure cut-out at 315 bar

The sudden load change is generated by sudden opening and closing of a pressure line with a pressure-relief valve as load valve 1 m downstream of the pump outlet port.



#### Control time

(please contact us if you have high dynamic requirements)

Size	t <sub>sa</sub> (ms) against 50 bar	t <sub>sa</sub> (ms) against 220 bar	t <sub>se</sub> (ms) Zero stroke 250 bar
28	90	65	25
45	100	75	25
60	110	85	30

# Unit dimensions **ED** Electro-hydraulic pressure control for A10VO Series 5

#### A10VO...ED/5







#### Unit dimensions

Size	A <sub>1</sub>	A <sub>2</sub>	
28	240	124	
45	250	132	
60	250	137	

For detailed unit dimensions and technical details of the variable displacement pump, see the main brochure A10VO 28...85 RE 92703.

with cable approx. 360

\* Connector direction (cable outlet) infinitely variable by rotation through 360°;

after turning the coil, please retighten the plastic screw with 5<sup>+1</sup> Nm.

### **Connector options and electronic controls**

#### Connectors

#### **Option T** Deutsch plug DT 04-2P on cable Protection class IP 69K Preferred: mobile applications

#### Option H

Hirschmann plug DIN plug connector Protect class IP 65 Preferred: stationary applications

#### **Option P**

Deutsch plug DT 04-2P, moulded Protection class IP 69K in preparation

#### Electronic controls

Controller	Electronic function	Electror	nic unit	Further information		
Electric pressure control	Regulated current output	PV	analog	RE 95 023		
		VT2000	analog	RE 29 904		
		RC2-1*)	digital	RE 95 051		
Temperature control	Input from temperature sensors, closed- loop control, regulated current output	MHVDL2-1**)		RE 29 885		

\*) Current outputs for 2 valves, separately controllable

\*\*) Option: current outputs for 2 valves, separately controllable

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