Flow Control Valve

Series SRCB..

- plug-in solenoid for easy coil change
- flow rates are unaffected by temperature change or when the higher load pressure alternates between the outlet ports
- energy - optimised in open center
- robust, durable and reliable

1 Descriptions

1.1 Generals

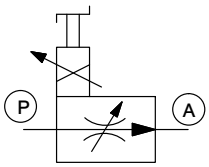
Flow control valves SRCB are used to set the working speed of hydraulic actuators, the setting is load independent and pressure compensated. The flow rate is set by an adjustable slit-type orifice. When used as a 3-way valve, the higher pressure can be either at the A or B port. For a 2-way flow control function please ask Bucher Hydraulics. The special orifice design ensures that the flow setting is largely independent of the viscosity of the fluid. The valve's cartridge construction allows to design a hydraulic system that meets the client's precise requirements.

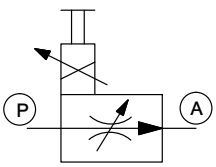
1.2 Application examples

- Harvesters
- Sweepers
- Refuse collection vehicles
- Fertiliser spreaders
- Snow and ice clearing equipment
- Mowers
- Road rollers
- Municipal vehicles
- Forestry machines
- Wood chippers

2 Symbols

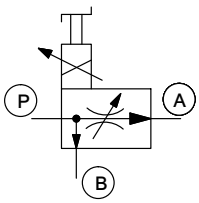
2.1 2-way flow control

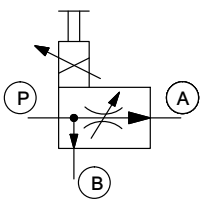




For 2-way flow control functions please contact Bucher Hydraulics.

2.2 3-way flow control





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3 Technical data

General characteristics	Unit	Description, value
Design		screw-in cartridge
Flow direction		P → A controlled P → B surplus flow discharge (can be pressurised)
Seals		Viton (FPM)
De-energised position		normally closed
Mounting attitude		unrestricted; preferably with coil at bottom end (automatic air bleed)
Commissioning		bleed all air from the system (if possible, operate valve several times without load)

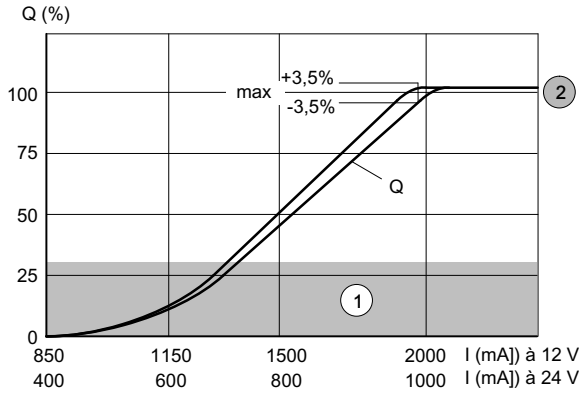
Electrical characteristics	Unit	Description, value
Design		high pressure; wet armature
Supply voltage	V DC	12 or 24 from an electronic controller
Power consumption	W	27.6 with 12 V coil and Imax. = 2,3 A 27,6 with 24 V coil and Imax. = 1,15 A
Dither frequency required	Hz	100 (observe $I_{max.}$)
Relative duty cycle		100 % at $I_{max.}$
Protection class (with a properly-fitted plug)		DIN plug - IP54 AMP Junior Timer - IP65 Deutsch plug - IP67
Electrical connection		plug-base with pins to DIN 43650 AMP Junior Timer plug connector (2-pole) Deutsch plug DT04-2P-EP04

Hydraulic characteristics	Unit	Description, value
Constant flow range	l/min	10, 16, 25, 32, 40, 50, 63, 80 [1]
Inlet flow	l/min	max. 100 [1]
Operating pressure	bar	max. 315 [2]
Leakage	cm^3/min	max. 100 cm^3/min at 100 bar [1]
Min. pressure difference (pressure compensator)	bar	7
Control accuracy (as a % of the nominal flow): Load-dependency when under pressure Hysteresis when operated		 max ± 2,5 % [3] max ± 3,5 % [3]
Fluids		mineral oil to DIN 51524 and DIN 51525 [4]
Fluid temperature range	°C	-20 ... +80
Viscosity range	mm^2/s	10 ... 300
Filtration		NAS 1638 class 9, ISO 4406 class 20/18/15; achievable with a filter rating of $ß_{10} \geqq 75$

1) Values refer to an oil viscosity of 35 mm^2/s (cSt).
2) For higher pressures, consult Bucher Hydraulics
3) Values refer to the selected flow range.
4) for other fluids, consult Bucher Hydraulics.

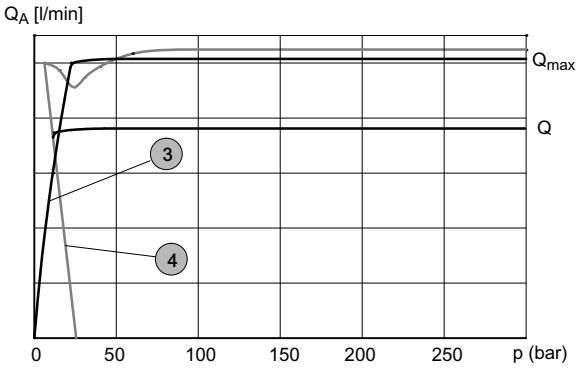
4 Performance graphs

4.1 Q / I characteristics



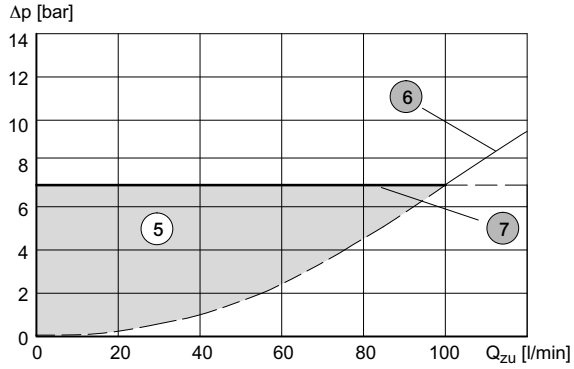
1	Fine control range
2	100% = 2000 ± 200 mA at 12 V = 1000 ± 100 mA at 24 V (100%- values vary with nominal flow rate)

4.2 Variation in flow



3	Q_A - constant flow pressurised
4	Q_A - surplus flow pressurised

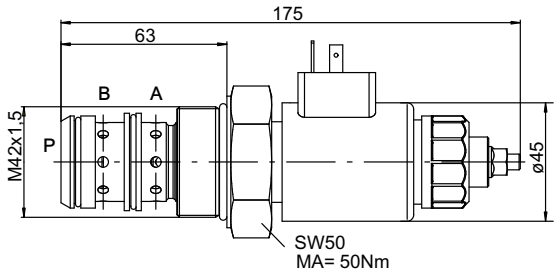
4.3 Pressure drop during vented bypass P → B



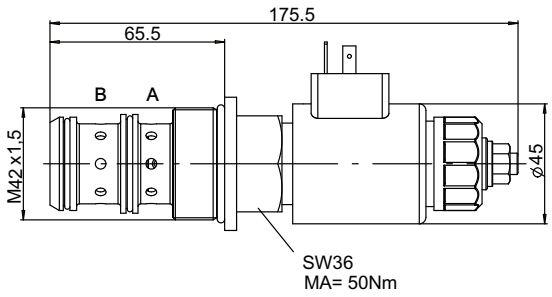
5	Pressure loss area (The actual pressure-loss characteristic is dependent on the tank pressure at port B)
6	Control valve throtting curve (Dependent on applied body)
7	Control - Δp - characteristic 7 bar

5 Dimensions

5.1 Revision status 0



5.2 Revision status 01



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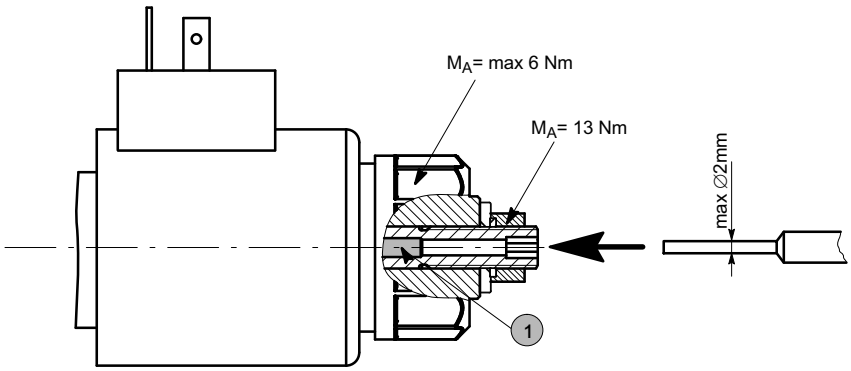
6 Models

6.1 Manual override

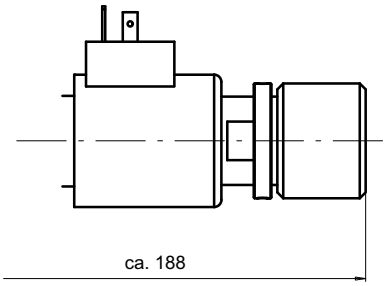
Emergency pin, SRC....S..



IMPORTANT : By pressing the solenoid pin (1), you operate the valve ON/OFF

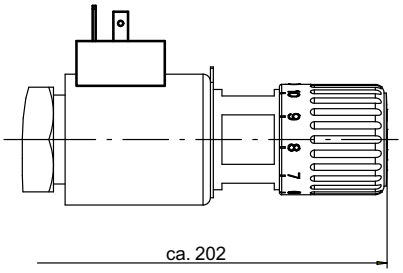
Basic manual override, SRC....N..

Q_0 to $Q_{max.}$ = of approx. 3,5 turns at the handle

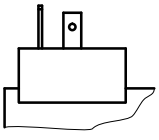
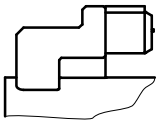
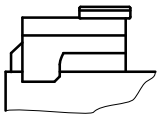


Basic manual override, SRC....T..

Q_0 to $Q_{max.}$ = of about one turn at the handle



6.2 Sockets

GDM plug to DIN 43650 -G..-	AMP Junior Timer -J..-	Deutsch plug DT04-2P-EP04 -T..-
		

7 Ordering code

S	R	C	B	0	5	0	S	3	-	0	G	1	2	/	

Flow control valve SR

Cartridge

Size

Constant flow range (10, 16, 25, 32, 40, 50, 63, 80 l/min)
e.g. 0...50l/min = 050

Type of operator
solenoid + emergency pin = S
solenoid + basic manual override = N
solenoid + deluxe manual override = T

3-way = 3
2-way (for this function please ask Bucher Hydraulics) = 2

Design number
= 0 = stop of production by 31.12.2013
= 01

Plug connector
GDM plug (DIN) = G
AMP Junior Timer = J
Deutsch plug = T

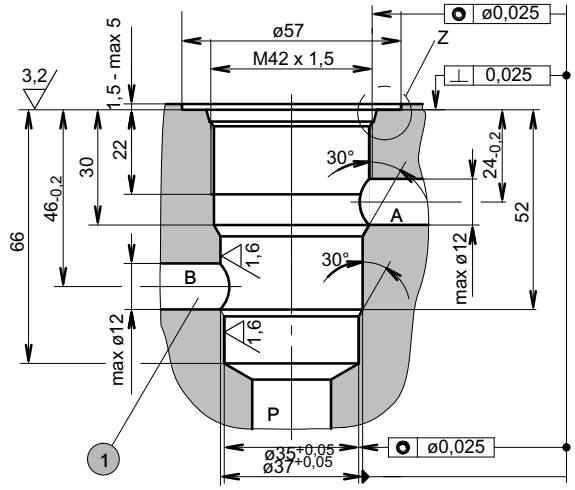
Proportional solenoid supply voltage
DC 12 Volt = 12
DC 24 Volt = 24

Options (to be inserted by the factory)

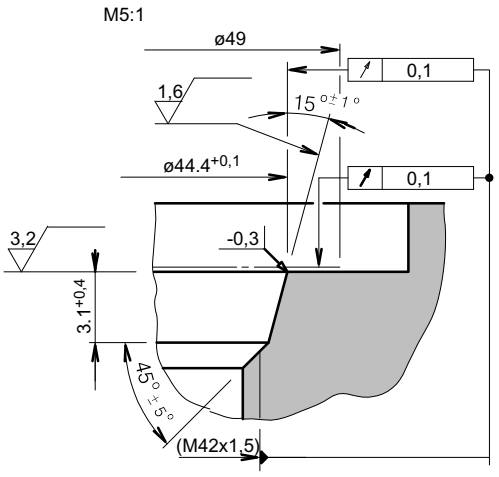
IMPORTANT : The design number 0 may not be used for new projects. This version will be stopped by 31.12.2013.

8 Hub housing

8.1 Shape of bore CSRCB3 for 3-way flow control valves



8.2 Processing for detail “Z”



1	The drilling is not required for 2-way flow controls

Form tools for customers who wish to machine their own cartridge cavities are available (Artikel Nr.: 100.609209).

IMPORTANT : The fixing holes are identical with the hub housing SR3CVM.

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8.3 Ordering code

S	R	C	B	V	M	2	-	2	*	*	2	-	0	M	2	2	*	*	*	/	

Mounting body for SRCBV cartridge valve

Type			
	Separate unit	single = M1, double	= M2
	Motor mtg. (RS29)	single = R1, double	= R2
	Inlet section		= E*
	Intermediate section		= Z*
	End section		= A*
	Bolt-on section		= AP

Service line relief for 1st controller			in P	in A
None			= *	= *
Pressure range	3 - 30	bar [1]	= 0	= 4
Pressure range	30 - 70	bar [2]	= 1	= 5
Pressure range	70 - 200	bar	= 2	= 6
Pressure range	200 - 300	bar	= 3	= 7

Service line relief for 2nd controller			in P	in A
None			= *	= *
Pressure range	3 - 30	bar [1]	= 0	= 4
Pressure range	30 - 70	bar [2]	= 1	= 5
Pressure range	70 - 200	bar	= 2	= 6
Pressure range	200 - 300	bar	= 3	= 7

Service line relief for 3rd controller			in P	in A
None			= *	= *
Pressure range	3 - 30	bar [1]	= 0	= 4
Pressure range	30 - 70	bar [2]	= 1	= 5
Pressure range	70 - 200	bar	= 2	= 6
Pressure range	200 - 300	bar	= 3	= 7

Additional functions	
None	= *
For use with LS pump	= L
With bypass check valve	= R
With anti-cavitation for 1st controller	= 1
2nd controller	= 2
3rd controller	= 3
1st and 2nd controller	= 4
1st and 3rd controller	= 5
2nd and 3rd controller	= 6
1st, 2nd and 3rd controller	= 7

Design no. (to be insert by the factory)

Port threads DIN 3852 - M22 x 1,5 = M22
(other threads - contact Bucher Hydraulics)

Nominal voltage of proportional solenoid (for bodies with solenoid operated valves)

DC 12 Volt	= G12
DC 24 Volt	= G24
None	= ***

Variants / special features (to be insert by the factory)

1) only up to Q_{max} = 25 l/min

2) only up to Q_{max} = 40 l/min

IMPORTANT : The flow control valves must be ordered separately as detailed in section 6.
Existing mounting body SR3CVM could also be used.

9 Installation information

10 Fluid

Flow control valves require fluid with a minimum cleanliness level of NAS 1638, Class 9 or ISO 4406, code 20/18/15.
We recommend the use of fluids that contain anti-wear additives for mixed-friction operating conditions. Fluids without appropriate additives can reduce the service life of pumps and motors.
The user is responsible for maintaining, and regularly checking the fluid quality. Bucher Hydraulics recommends a load capacity of > 30 N/mm2 to Brugger DIN 51347-2.

11 Fluid cleanliness class

Cleanliness class (RK) onto ISO 4406 and NAS 1638

IMPORTANT!
When mounting the valve, ensure that the body is not subjected to any distorting forces. If necessary use shims to equalise the level of the mounting points. Do not use any pipe fittings with tapered-threads!

Code ISO 4406	Number of particles / 100 ml			
	≤ 4 µm	≤ 6 µm	≤ 14 µm	NAS 1638
23/21/18	8000000	2000000	250000	12
22/20/18	4000000	1000000	250000	-
22/20/17	4000000	1000000	130000	11
22/20/16	4000000	1000000	64000	-
21/19/16	2000000	500000	64000	10
20/18/15	1000000	250000	32000	9
19/17/14	500000	130000	16000	8
18/16/13	250000	64000	8000	7
17/15/12	130000	32000	4000	6
16/14/12	64000	16000	4000	-
16/14/11	64000	16000	2000	5
15/13/10	32000	8000	1000	4
14/12/9	16000	4000	500	3
13/11/8	8000	2000	250	2

12 Electronics

For controlling SR... flow control valves, we recommend the ELSK 106 series of control units and plug-in cards. These are used to control 1 or 2 proportional solenoids and can also operate on/off solenoids and other auxiliary functions.

Plug-in cards are available, and control units can be supplied. The folowing table contains a small selection of the extensive range of accessories and electronics from Bucher Hydraulics.

Picture	Type	Description	Order-No.
	ELSK106-01***/11 Data sheet: 100-P-700008	Makrolon® housing with magnetic clamp, rotary potentiometer, indicator knob; LED	100026578
	ELSK106-02***/11 Data sheet: 100-P-700008	Makrolon® housing with magnetic clamp, rotary potentiometer, indicator knob, ON/OFF switch, LED	100026579
	ELSK106-09*** Data sheet: 100-P-700008	Robust aluminium housing with 2 set-point potentiometer, 3 toggle switches,a LED and socket insert STAF 14	100032782
	ELSK106-10*** Data sheet: 100-P-700008	Robust aluminium housing with 2 set-point potentiometer, 3 toggle switches,a LED and socket insert STAF 14	100032531
	ELSK106-14*** Data sheet: 100-P-700008	Robust aluminium housing with 2 set-point potentiometer, 3 toggle switches,a LED, a key switch (starter) and socket insert STAF 14	100032159

13 Specification sheet flow control valve, series SRC

Order q Enquiry q

Company:		Customer No.	
Address:		Phone number:	
Code/Location:		Fax number:	
Country:		E-mail address	

Ordering code (see Sect. 6)

		Quantity
SRCB	- 0	
SRCB	- 0	
SRCB	- 0	
SRCB	- 0	

13.1 Details of the application

Operating pressure (bar):		Max. intermittent pressure (bar):	
Inlet flow (l/min):		Controlled flow rate (l/min):	

Fluids: q Mineral oil q Biodegradable oil q Other
q HFA q HFC q HFD

Fluid temperature range (5°): Viscosity range (mm^2/s) (cSt):

Supply system: q Fixed-disp. pump q Constant-pressure pump
q Var.-disp. pump, LS q Variable-displacement pump, power-limited

Name Date Signature

info.kl@bucherhydraulics.com www.bucherhydraulics.com

Classification: 430.310.310.330.305