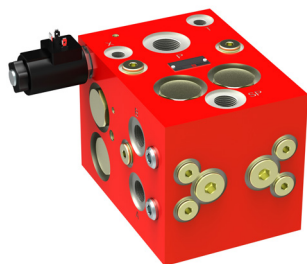


Differential Lock Valve

Series MT..DVV (for 4 motors)



- robust and reliable
- energy-optimised over the whole flow range
- simple control
- compact design offers space-saving installation
- reliable, uniform motion of the wheel-drives being controlled

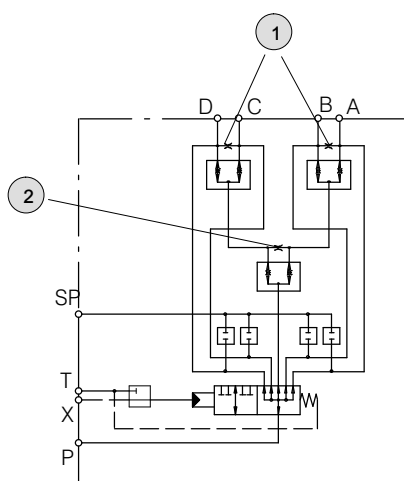
1 Description

The differential lock valve consists essentially of three bi-directional flow dividers (dividing and combining) and a directional valve for optionally bypassing the flow dividers. It is intended for use in either open- or closed-loop hydrostatic drives with parallel-connected hydraulic motors. When the lock valve is switched OFF, the inlet flow can divide itself among the motors in any required manner. When the lock valve is switched ON, however, the inlet flow is divided into four pressure compensated portions in accordance with the division ratio of the lock valve. The motors are

thus driven at fixed speeds, regardless of their respective loads. This arrangement prevents any hydraulic wheel motor from spinning in conditions of poor traction. Three balancing orifices can optionally be arranged between the outlets A, B, C and D. These allow some redistribution of flow and prevent unwanted torque build-up between wheels in these circumstances, and when turning. The differential lock valves can be supplied with either hydraulic, or electrohydraulic, actuation.

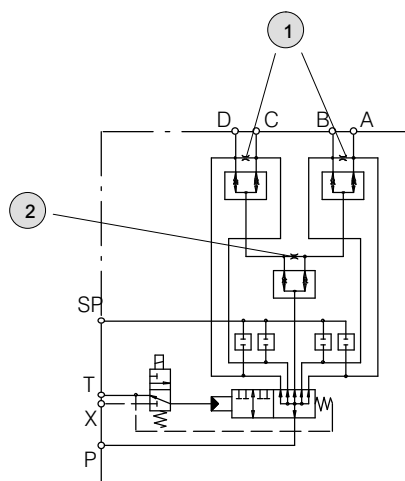
2 Symbols

2.1 Hydraulic actuation



1 Balancing orifice D2 can be fitted

2.2 Electrohydraulic actuation



2 Balancing orifice D1 can be fitted

3 Technical data

Hydraulic characteristics	Unit	Description, value	
		Size 08	Size 16
Nominal flow rate Q_{max}	l/min	100	250
Flow range ^{1) 2)}	l/min	25, 50, 75, 100	120, 160, 200, 250
Operating pressure p_{max}	bar	420	
Pilot pressure $p_{p \text{ min.}} - p_{p \text{ max.}}$	bar	10 ... 30	
Viscosity range	mm ² /s	10 ... 300	
Maximum fluid cleanliness		ISO 4406, class 20/18/15 (NAS 1638 class 9); achievable with a filter rating of $\beta_{10} \geq 75$	
Fluid temperature range	°C	-20 ... +80	
Division ratio (for others, contact Bucher Hydraulics)		1:1:1	
Fluids		HL/HLP mineral oils DIN 51524; other fluids consult Bucher Hydraulics	
Electrical characteristics (type of actuation: EH)	Unit	Description, value	
Voltage	Volt DC	12 / 24	
Power consumption	W	18	
Nitrile seals		NBR	
Duty cycle		100 ED %	
Ambient temperature	°C	max. +60	
Coil temperature	°C	max. +180 (insulation class H)	
Enclosure protection DIN 40050		IP65	
Electrical connection		Connector DIN 43650	

1) State the application's effective nominal flow when ordering

2) Observe minimum flow rate in accordance with section 4.2

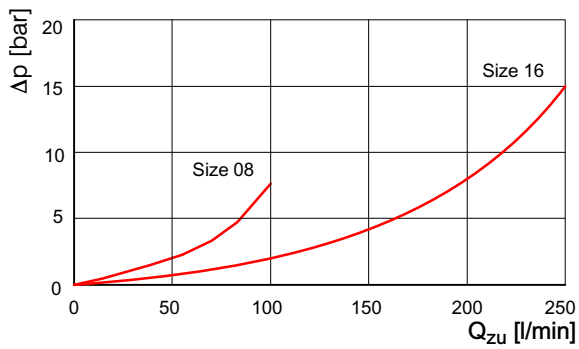
4 Performance graphs

Measured with viscosity 35 mm²/s.

4.1 Flow resistance

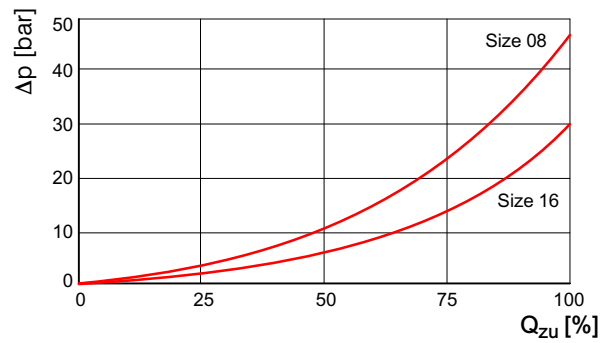
4.1.1 Dividing function switched OFF

(in relation to the input Q_{zu} volume flow rate)



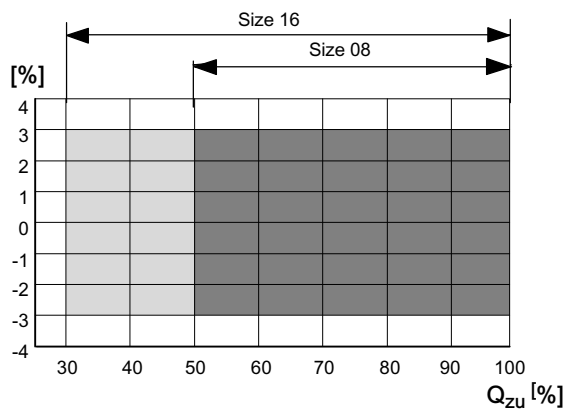
4.1.2 Dividing function switched ON

(in relation to the flow range)



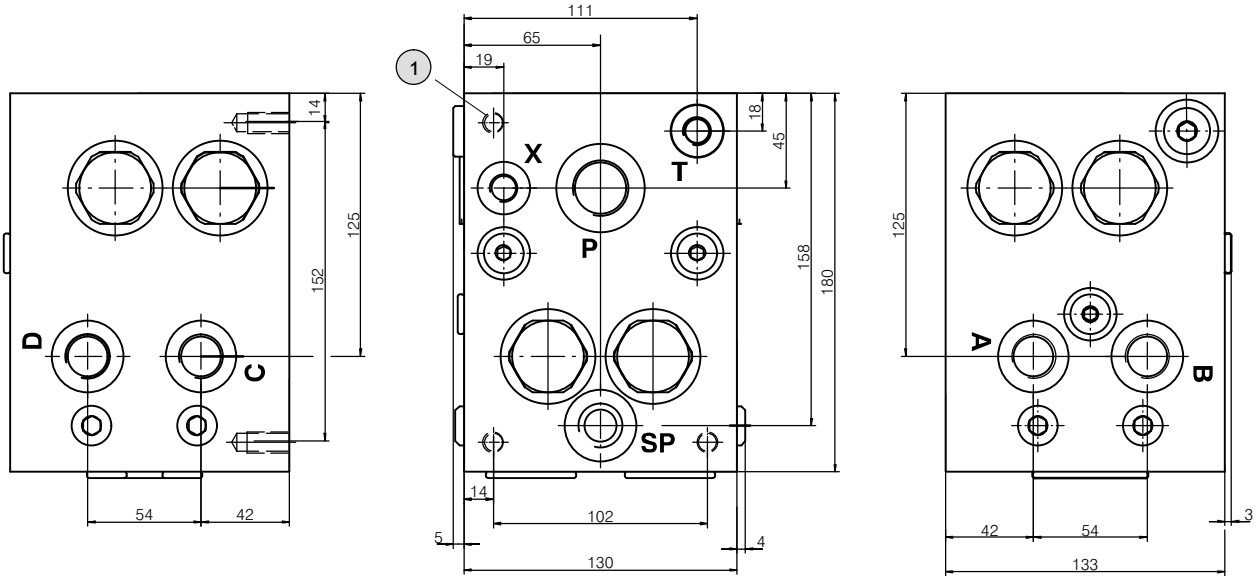
4.2 Division accuracy

Percentage of the applicable nominal flow without a balancing orifice between A and B (hole plugged)



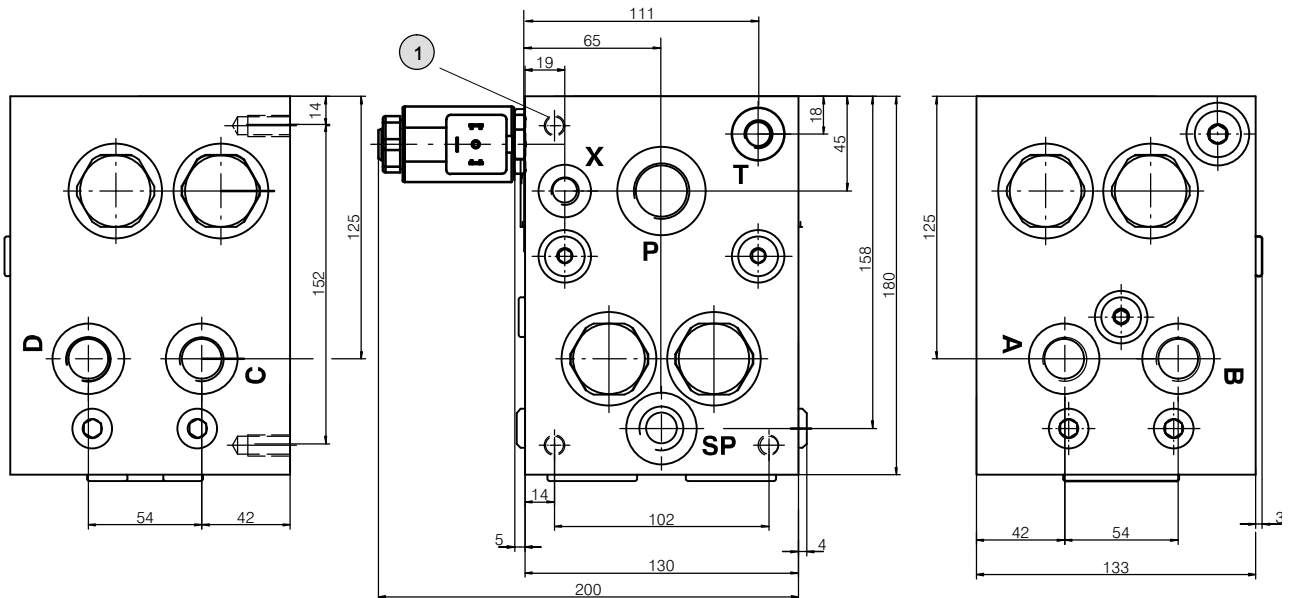
5 Dimensions

5.1 MT08DVV...-H-0*** (hydraulic actuation)



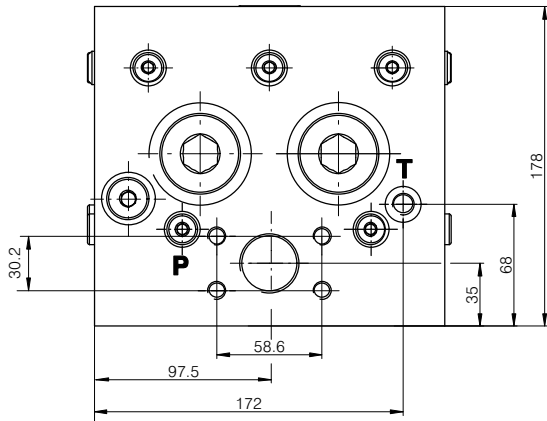
1 4x Mounting thread M10 - 20mm deep

5.2 MT08DVV...-EH-0G... (elektrohydraulic actuation)

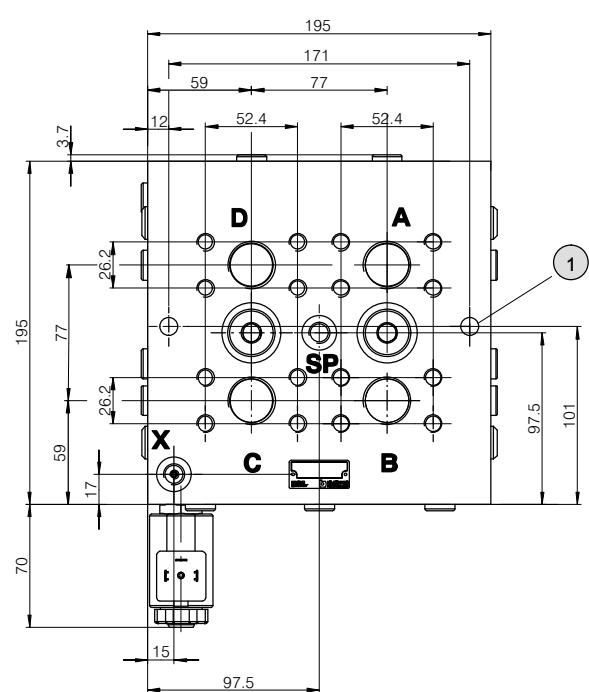
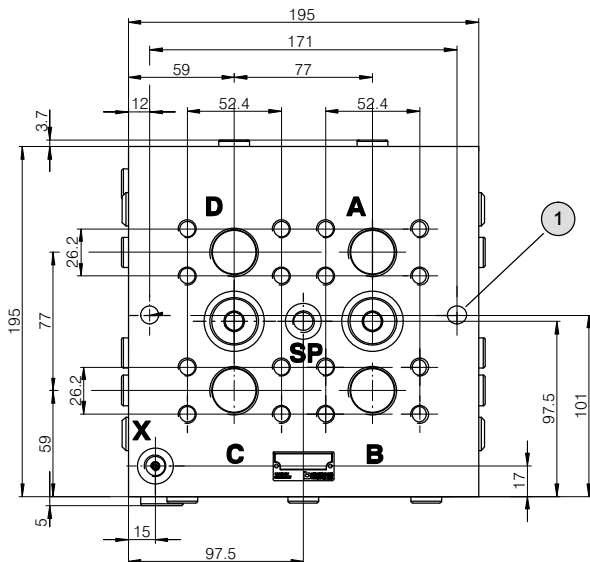
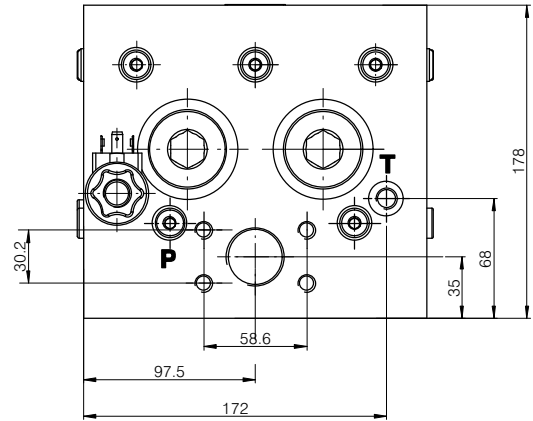


1 4x Mounting thread M10 - 20mm deep

5.3 MT16DVV...-H-0*
(hydraulic actuation)**



**5.4 MT16DVV...-EH-0G...
(elektro-hydraulic actuation)**



1 Clearance holes for M8 mounting cap screws to DIN 912

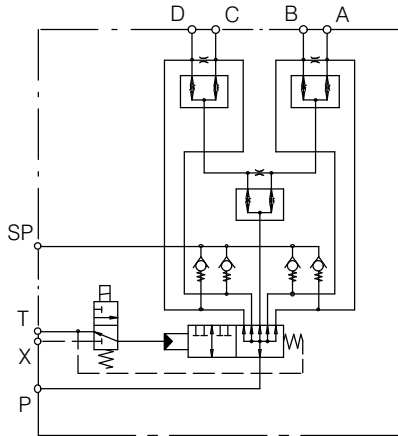
5.5 Connection size

MT08DVV		MT16DVV	
Port	Port threads	Port	Port threads
P	G 3/4"	P	M33 x 2 and SAE 11/4" (3000 PSI) 1)
A, B, C, D, SP	G 1/2"	A, B, C, D	M27 x 2 and SAE 1" (3000 PSI) 1)
T, X	G 1/4"	T, X, SP	M12 x 1,5

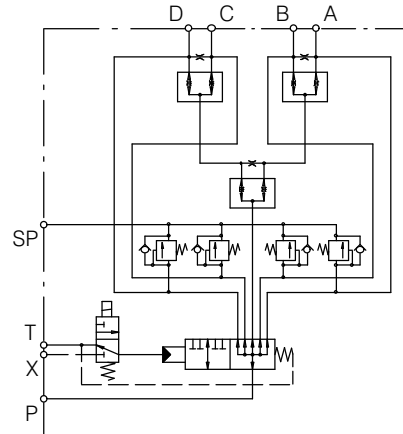
1) SAE flanges see data sheet 100-P-000049

7.2 Examples

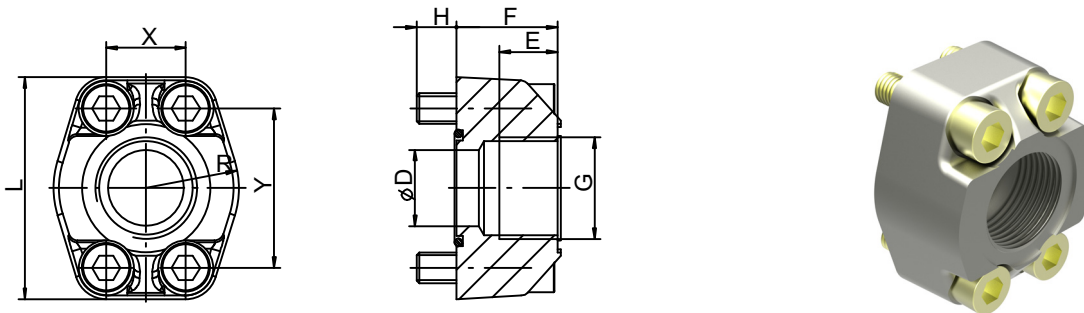
7.2.1 MT..DVV.....-EH-0G../01 With make-up valve



7.2.2 MT..DVV.....-EH-0G../02 With anti-shock valves (pressure-relief+make-up valves)



8 Pipe flanges - high pressure type (thread flange)



- Max. operating pressure 420 bar
- Flange size SAE J518 code 61 / ISO 6162-1

Threaded pipe flanges are spot-faced for DIN 2353 pipe fittings
Material: ST37 / for Viton seals, contact Bucher Hydraulics GmbH

Ordering-number	Ordering code	Size	D \varnothing	E	F	H	L	R	X	Y	Viton seal 90 Shore A	Retaining screws DIN912-12.9 / [Nm]
100037020	RF 03-R11	G 1"	25	20	34	13	70	29	26,2	52,4	32,99x2,62	M10x35 60
100037030	RF 04-R12	G 1 1/4"	32	22	38	14	80	36	30,2	58,6	40,86x3,53	M10x40 60

Other pipe flanges on request

9 Installation

Horizontal mounting is recommended. Do not bolt the valve body onto an uneven mounting surface.

10 Fluid

Differential lock valves require fluid with a minimum cleanliness level of NAS 1638, Class 9 or ISO 4406, code 0/18/15.

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 Brügger DIN 51347-2.

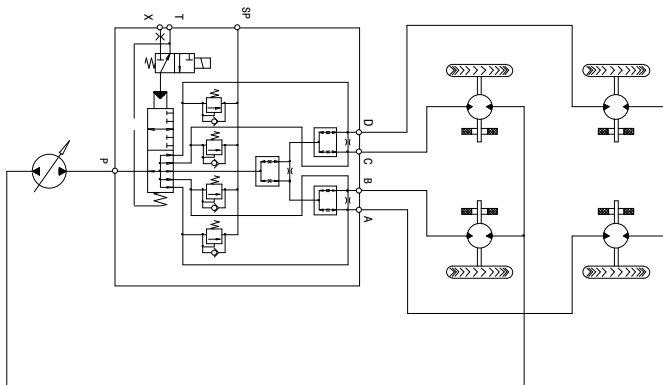
11 Fluid cleanliness class

Cleanliness class (RK) onto ISO 4406 and NAS 1638

Code ISO 4406	Number of particles / 100 ml			NAS 1638
	≤ 4 μm	≤ 6 μm	≤ 14 μm	
23/21/18	800000	200000	250000	12
22/20/18	400000	100000	250000	-
22/20/17	400000	100000	130000	11
22/20/16	400000	100000	64000	-
21/19/16	200000	50000	64000	10
20/18/15	100000	25000	32000	9
19/17/14	50000	13000	16000	8
18/16/13	25000	6400	8000	7
17/15/12	13000	3200	4000	6
16/14/12	6400	1600	4000	-
16/14/11	6400	1600	2000	5
15/13/10	3200	800	1000	4
14/12/9	1600	400	500	3
13/11/8	800	200	250	2

12 Application example

12.1 4-wheel drive with the same flow rates at all 4 wheel motors.



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