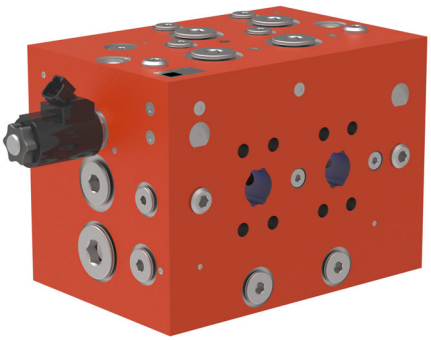
Differential Lock Valve

DL14 (for 4 motors)



- Excellent traction at the lowest travel speeds
- Differential lock can be activated with low pressure (50 bar max.)
- Anti-shock and make-up valves can be incorporated to protect the system and prevent cavitation
- 4 bi-directional flow dividers (dividing and adding/combining)
- Minimal pressure losses when lock is active

1 Description

1.1 General

The DL14 differential lock valve is a further development of our current product, with a focus on energy optimization and extended flow control range.
This lock valve is intended for use in hydrostatic drives with parallel-connected hydraulic motors in either open- or closed-loop mode. When the lock valve is switched off, the hydraulic flow can divide itself among the hydraulic motors in any required ratio, and with minimal pressure losses. When the lock valve is switched on, the hydraulic motors are compelled to operate in parallel, and the lock valve supplies load-independent flows from its 4 outlet ports. This arrangement prevents the wheel from spinning in unfavorable ground conditions.

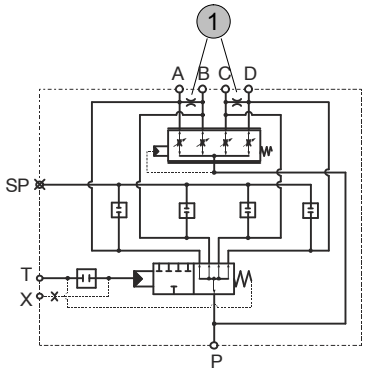
1.2 Application examples

- Agricultural equipment
- Construction equipment
- Forestry machines
- Municipal equipment

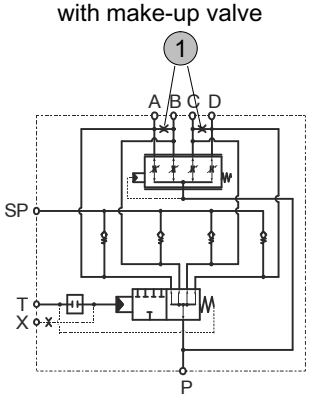
2 Symbols

2.1 Hydraulic actuation

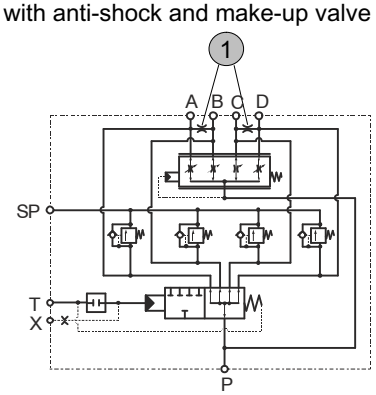
without anti-shock and make-up valve



with make-up valve



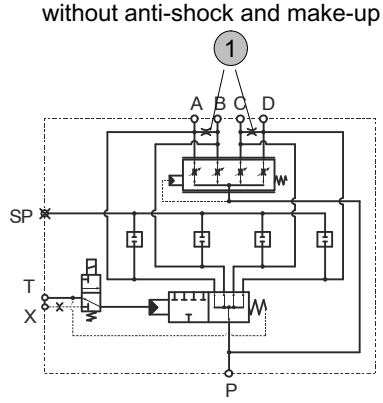
with anti-shock and make-up valve



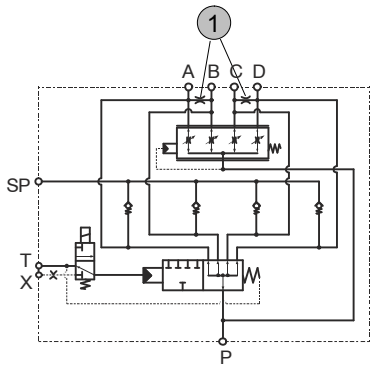
1	Balancing orifice can be fitted

2.2 Electrohydraulic actuation

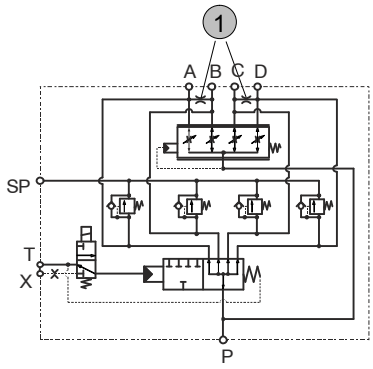
without anti-shock and make-up valve



with make-up valve



with anti-shock and make-up valve



1	Balancing orifice can be fitted

3 Technical data

Hydraulical characteristics	Unit	Description, Value
Mounting attitude		Unrestricted; preferably horizontal
Q_{max} with switched valve [1)]	l/min	600
Nominal flow rate with connected valve	l/min	300
Q_{max} per output [1)]	l/min	3 … 150
Nominal flow rate per output	l/min	3 … 75
Operating pressure p_{max}	bar	450
Peak pressure (max. 100000 duty cycles)	bar	520
Pilot pressure $p_{p\ min.}$- $p_{p\ max.}$	bar	10 ... 50
Viscosity range	mm^2/s	10 ... 300
Max. admissible level of contamination of the hydraulic fluid		ISO 4406 code 20/18/15, achievable with a filter rating of $ß_{10} \geqq 75$
Fluid temperature range	°C	-20 ... +80
Fluids		HL/HLP mineral oils DIN 51524; other fluids consult Bucher Hydraulics
Connection types		SAE NG 25 M14x1,5
Electrical characteristics	**Unit**	**Description, Value**
Nominal voltage	V DC	12 or 24
Power consumption	W	27
Nitrile seals		NBR
Duty cycle		100 ED %
Ambient temperature	°C	max. +60
Coil temperature	°C	max. +180 (insulation class H)

Electrical characteristics	Unit	Description, Value
Enclosure protection (with properly mounted plug)		AMP Junior Timer (2-pole) IP65 Deutsch-plug, DT04-2P-EP04 IP67 (DIN EN 60529)
Electrical connection		AMP Junior Timer (2-pole) Deutsch-plug, DT04-2P-EP04

1) Extended working range see chapter 4.1.1 and 4.2.1.

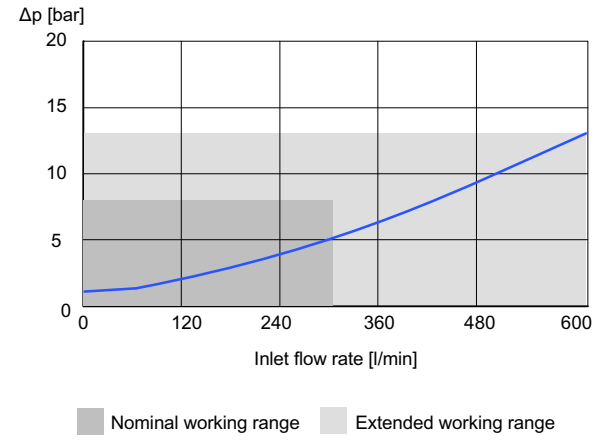
Surface protection of the DL14: black priming (RAL 9004).

4 Performance graphs

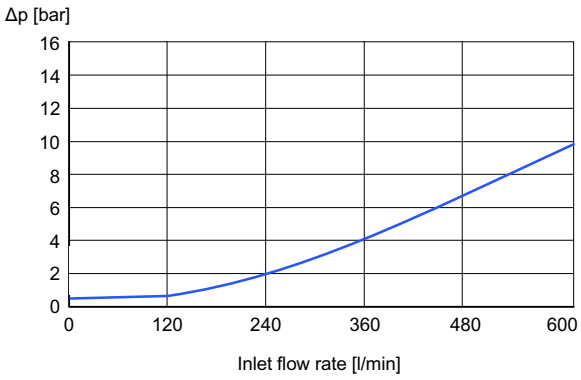
Measured with viscosity 35 mm^2/s.

4.1 Pressure drop of 4-fold differential lock valve

4.1.1 Pressure losses when dividing and adding

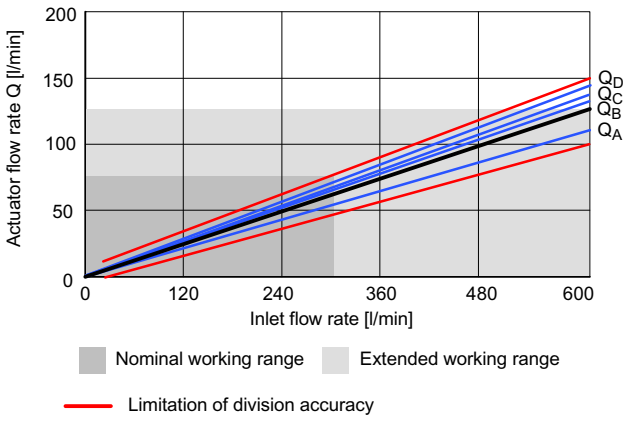


4.1.2 Pressure losses when switched off

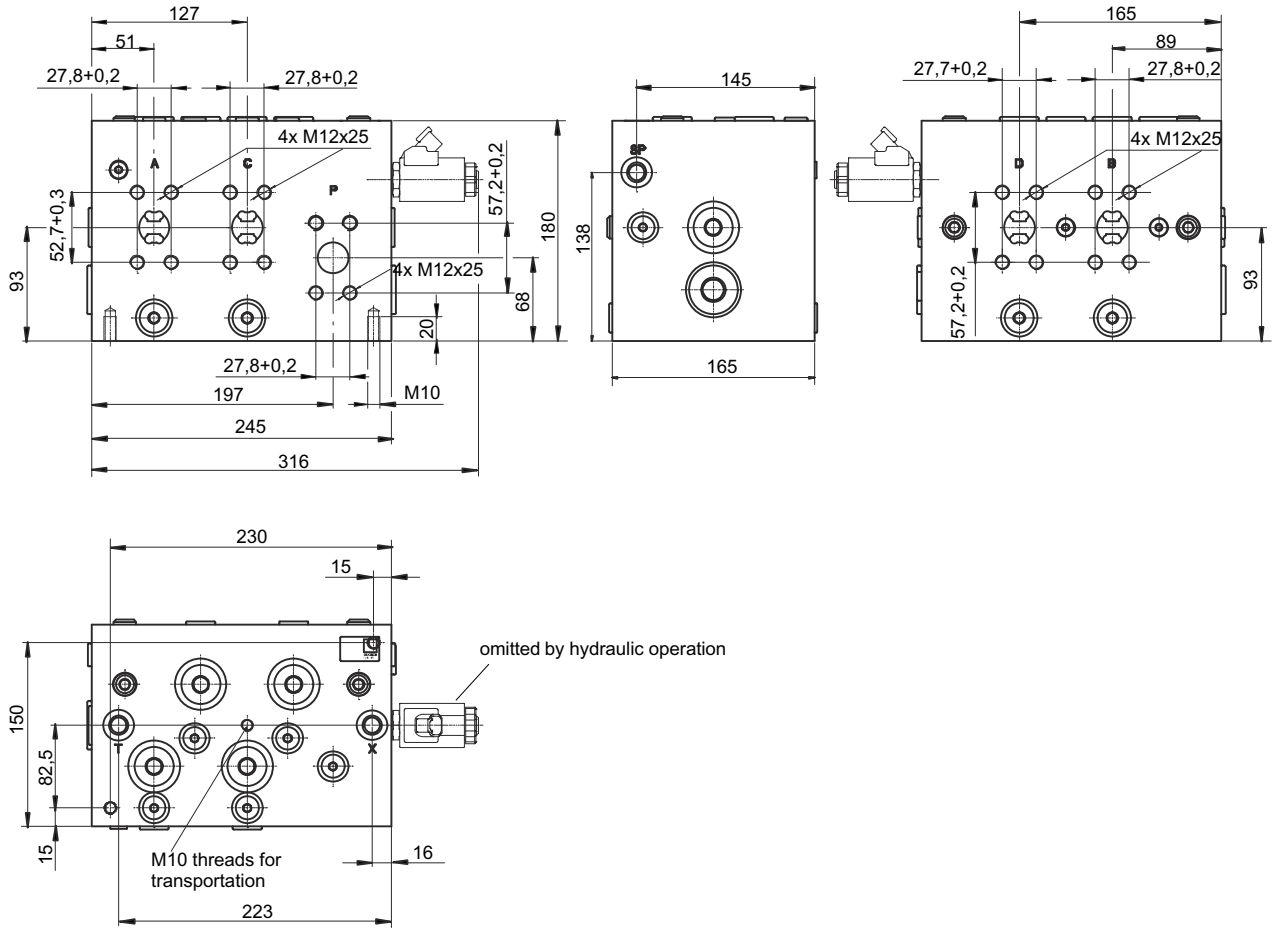


4.2 Division accuracy

4.2.1 Division accuracy up to maximium flow rate



5 Dimensions

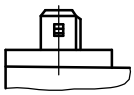
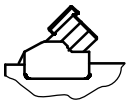


5.1 Connection sizes

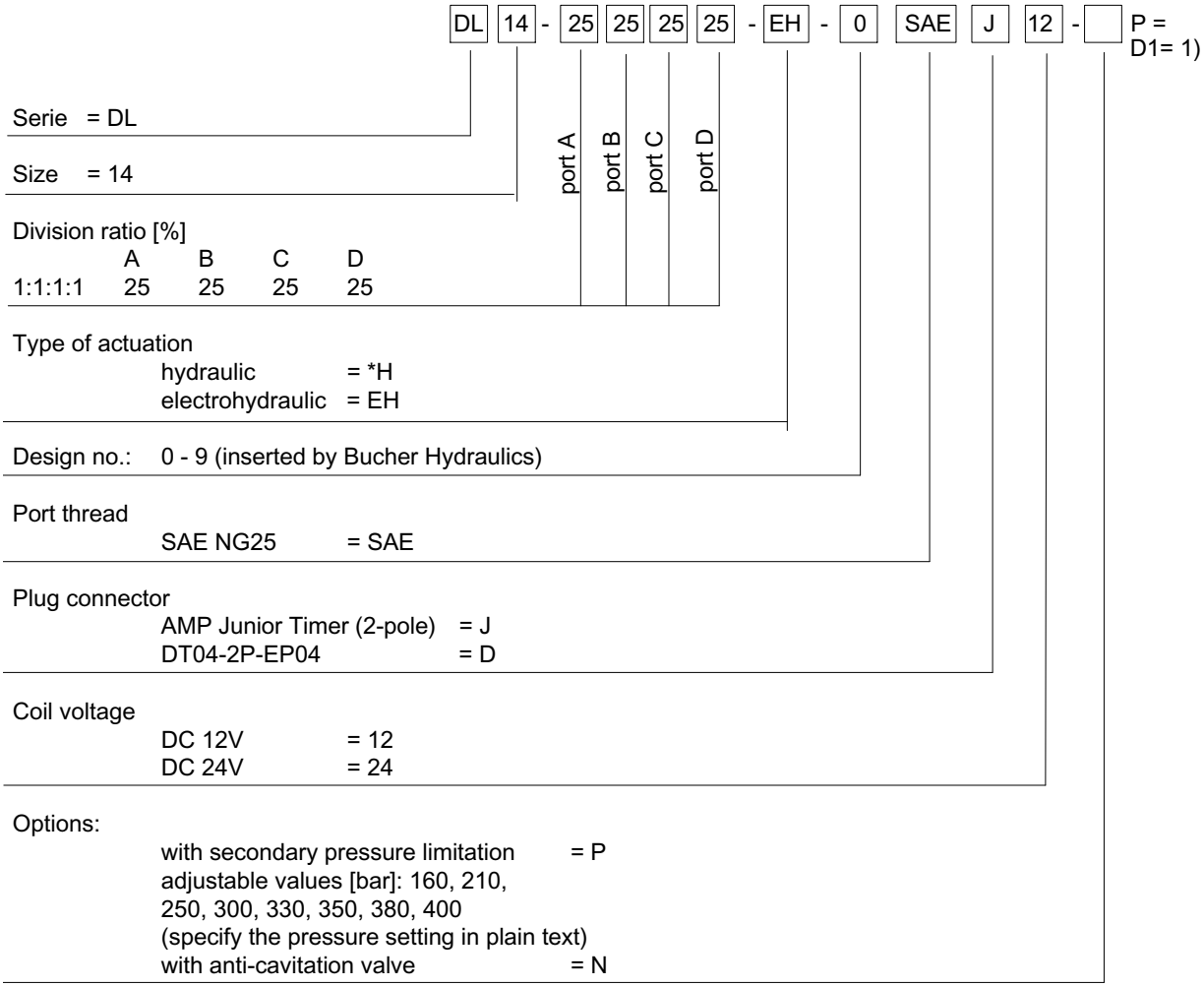
Port	Port sizes
P, A, B, C, D	SAE NG 25
T, X, SP	M14 x 1,5

6 Versions

6.1 Plug bases

AMP Junior Timer J	DT04-2P-EP04 D
	

7 Ordering code



1) Size of balancing orifices must be plainly stated (see also sect. 2) Ø0.6 / 0.8 / 1.0 e.g. if balancing orifice D1 is to be 0.8 mm, then D1 = 08

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Classification: 430.310.335.310.