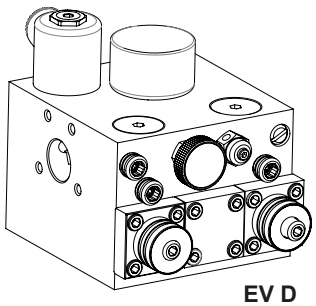
EVD

Elevator Control Valves

EN ISO 9001

The BLAIN EVD program includes the widest range of options offered to the elevator industry for high performance passenger service. Easy to install, EVD's are smooth, reliable and precise in operation throughout extreme load and temperature variations.

¾“ EV



EV D

1 ½“ EV

Picture not available

EV D

2 ½“ EV

Picture not available

EV D

Description

Available port sizes are ¾“, 1 ½“, 2“ and 2 ½“ pipe threads, depending on flow. EVD's start on less than minimum load and can be used for across the line or wye-delta starting. According to customers' information, valves are factory adjusted ready for operation and very simple to readjust if so desired.

B44.1
C US
ASME-A17.1

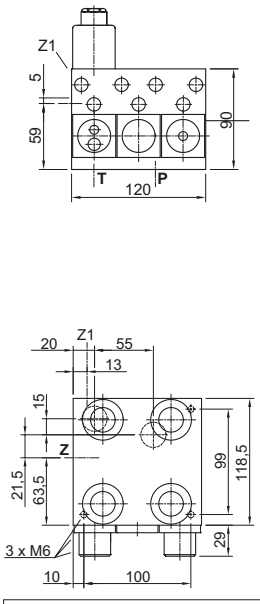
CE

- Simple Responsive Adjustment
- Temperature and Pressure Compensation
- Solenoid with Connecting Cables
- Pressure Gauge and Shut Off Cock
- Self Closing Manual Lowering
- Self Cleaning Pilot Line Filters
- Self Cleaning Main Line Filter (Z-T)
- Built-in Turbulence Suppressors
- 70 HRc Rockwell Hardened Bore Surfaces
- 100% Continuous Duty Solenoids

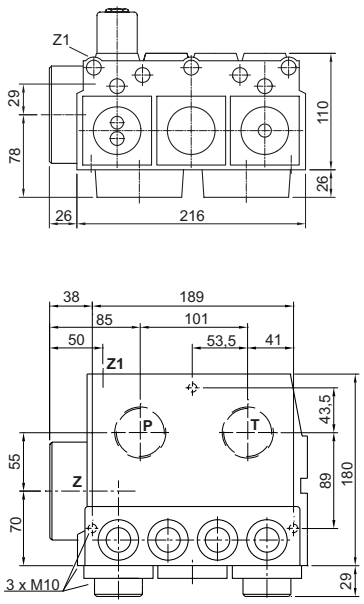
Technical Data:		**¾“ EVD**	**1 ½“ & 2“ EVD**	**2 ½“ EVD**
Flow Range:	l/min	10-125 (2-33 USgpm)	30-800 (8-208 USgpm)	500-1530 (130-400 USgpm)
Pressure Range:	bar	5-55 (74-797 psi)	3-55 (44-797 psi)	3-55 (44-797 psi)
Press. Range CSA:	bar	5-55 (74-797 psi)	3-55 (44-797 psi)	3-55 (44-797 psi)
Burst Pressure Z:	bar	575 (8450 psi)	505 (7420 psi)	340 (5000 psi)
Pressure Drop P–Z:	bar	6 (88 psi) at 125 lpm	4 (58 psi) at 800 lpm	4 (58 psi) at 1530 lpm
Weight:	kg	5 (11 lbs)	10 (22 lbs)	14 (31 lbs)

Oil Viscosity: 25-75 cSt. at 40°C (104°F). **Max. Oil Temperature:** 70°C (158°F)
Solenoids AC: 24 V/1.8 A, 42 V/1.0 A, 110 V/0.43 A, 230 V/0.18 A, 50/60 Hz. **Insulation Class, AC and DC:** IP 68
Solenoids DC: 12 V/2.0 A, 24 V/1.1 A, 42 V/0.5 A, 48 V/0.6 A, 80 V/0.3 A, 110 V/0.25 A, 196 V/0.14 A.

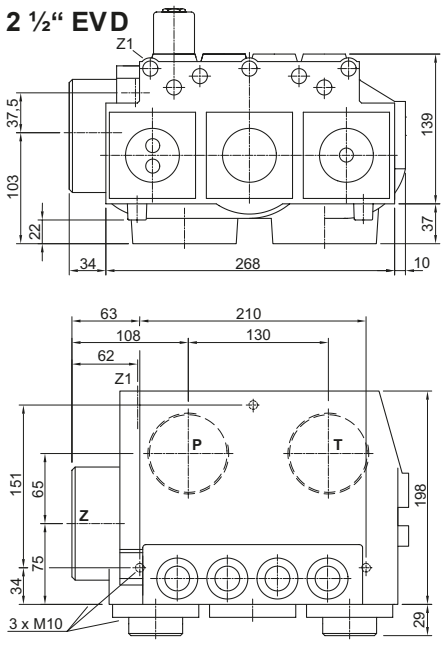
¾“ EVD



1 ½“ & 2“ EVD



2 ½“ EVD



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BLAIN HYDRAULICS GmbH

Designer and Manufacturer of the highest quality control valves & safety components for hydraulic elevators

Optional Equipment

EN	Emergency Power Solenoid	**DH**	High Pressure Switch
CSA	CSA Solenoids	**DL**	Low Pressure Switch
KS	Slack Rope Valve	**CX**	Pressure Compensated Down
BV	Main Shut-Off Valve	**MX**	Auxiliary Down
HP	Hand Pump		

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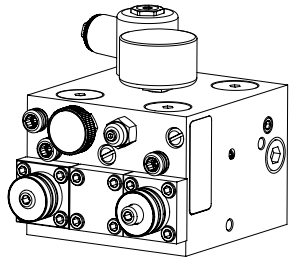
CE

EV D

¾"



1 ½" and 2"

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2 ½"

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Up Up to 0.16 m/s (32 fpm). 1 Up Speed.
Up Start is smooth and adjustable.
Up Stop by de-energising the pump-motor.

Down Up to 0.16 m/s (32 fpm). 1 Down Speed.
All down functions are smooth and adjustable.

USA Patent No. 4,601,366
Pats & Pats Pend: France, Germany, Italy, Japan, Switzerland & U.K.

Control Elements

- **D** Solenoid (Down Stop)
- **H** Manual Lowering
- **S** Relief Valve
- **U** By Pass Valve
- **V** Check Valve
- **W** Levelling Valve (Up)
- **X** Full Speed Valve (Down)
- **Y** Levelling Valve (Down)
- **F** Filter

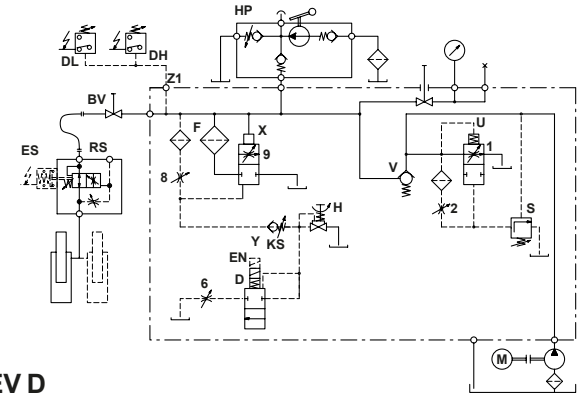
Adjustments UP

- **1** By Pass
- **2** Up Acceleration

Adjustments DOWN

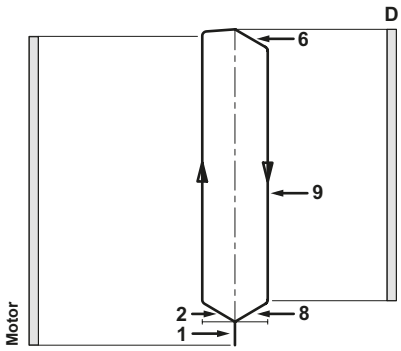
- **6** Down Acceleration
- **8** Down Deceleration
- **9** Down Levelling Speed

Hydraulic Circuit



EV D

Electrical Sequence



Warning: Only qualified personell should adjust or service valves. Unauthorised manipulation may result in injury, loss of life or damage to equipment. Prior to servicing internal parts, ensure that the electrical power is switched off and residual pressure in the valve is reduced to zero.

Adjustments UP

Valves are already adjusted and tested. Check electrical operation before changing valve settings.
Test that the correct solenoid is energised, by removing nut and raising solenoid slighty to feel pull.

Nominal Settings: Adjustments **1** approx. level with flange faces. Up to two turns in either direction may then be necessary.
Adjustments **2** all the way 'in' (clockwise) then two turns 'out' (c-clockwise). A small final adjustment may be necessary.

EV D

1. **By Pass:** When the pump is started, the unloaded car should remain stationary at the floor for a period of 1 to 2 seconds before starting upwards. The length of this delay is determined by the setting of adjustment **1**. 'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay.
2. **Up Acceleration:** With the pump running, the car will accelerate according to the setting of adjustment **2**. 'In' (clockwise) provides a softer acceleration, 'out' (c-clockwise) a quicker acceleration.

   Up Stop: The pump-motor is de-energised. There is no adjustment.

   Alternative Up Stop with Over-travel: The motor is de-energised at floor level. Through the flywheelaction of the pump-motor drive the car will travel to just above floor level. In overtravelling the floor, down levelling solenoid **D** is energised, lowering the car smoothly back down to floor level where **D** is de-energised.

S Relief Valve: 'In' (clockwise) produces a higher, 'out' (c-clockwise) a lower maximum pressure setting. After turning 'out', open manual lowering **H** for an instant.
Important: When testing relief valve, do not close ball valve sharply.

Warning: Only qualified personnel should adjust or service valves. Unauthorised manipulation may result in injury, loss of life or damage to equipment. Prior to servicing internal parts, ensure that the electrical controller is switched off and residual pressure in the valve is reduced to zero.

Adjustments DOWN

Valves are already adjusted and tested. Check electrical operation before changing valve settings. Test that the correct solenoid is energised, by removing nut and raising solenoid slightly to feel pull.
Nominal Settings: Adjustment **9** approx. level with flange face. Two turns in either direction may then be necessary.
Adjustments **6** & **8** turn all the way 'in' (clockwise), then 1.5 turns 'out' (c-clockwise). One final turn in either direction may be necessary.

6. Down Acceleration: When solenoid **D** is energised, the car will accelerate downwards according to the setting of adjustment **6**. 'In' (clockwise) provides a softer down acceleration, 'out' (c-clockwise) a quicker acceleration.

8. Down Deceleration: When solenoid **D** is de-energised, the car will decelerate according to the setting of adjustment **8**. 'In' (clockwise) provides a softer deceleration, 'out' (c-clockwise) a quicker deceleration. **Attention: Do not close all the way in! Closing adjustment 8 completely (clockwise) may cause the car to fall on the buffers.**

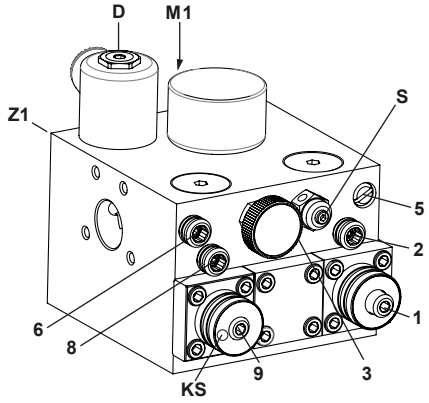
9. Down Speed: With solenoid **D** energised as in **6** above, the full down speed of the car is according to the setting of adjustment **9**. 'In' (clockwise) provides a slower down speed, 'out' (c-clockwise) a faster down speed.

Down Stop: When solenoid **D** is de-energised, the car will stop according to the setting of adjustment **8** and no further adjustment will be required.

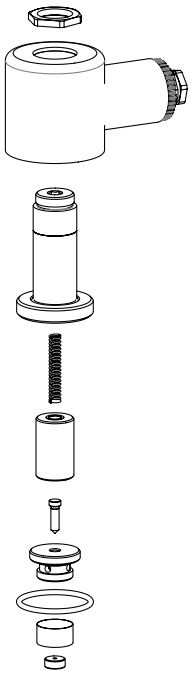
KS Slack Rope Valve: Solenoid **D** must be de-energised! The KS is adjusted with a 3 mm Allan Key by turning the screw **K** 'in' for higher pressure and 'out' for lower pressure. With **K** turned all the way 'in', then half a turn back out, the unloaded car should descend when Manual Lowering **H** is opened. Should the car not descend, **K** must be backed off until the car just begins to descend, then backed off a further half turn to ensure that with cold oil, the car can be lowered as required.

Positions of Adjustments

Important: Length of ¾" thread on pump connections should not be longer than 17 mm!



M1 Second pressure gauge connection, ½"
Z1 Pressure switch connection, ¼"



Control Elements

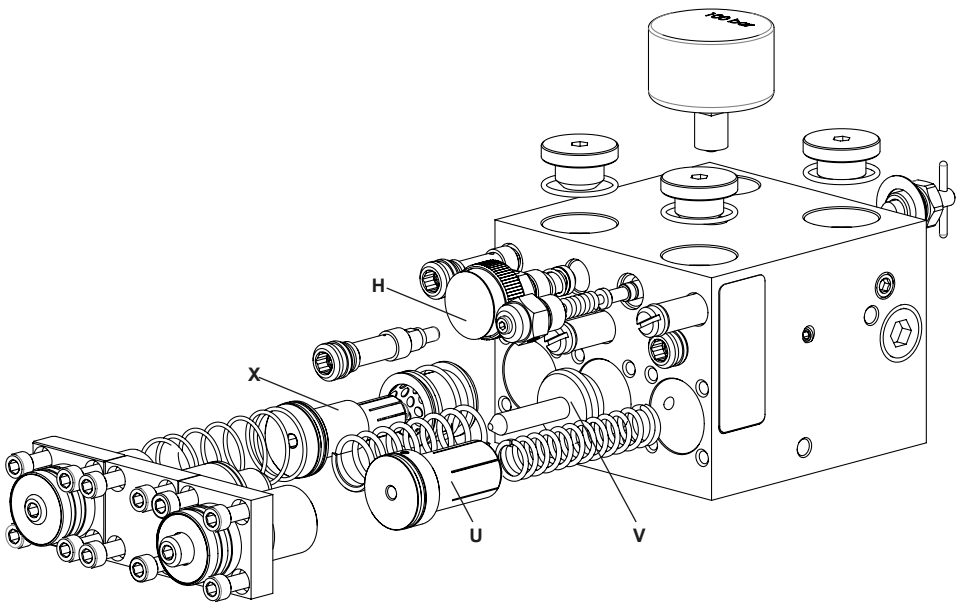
A Plug
B Plug
C Plug
D Solenoid (Down Stop)
H Manual Lowering
S Relief Valve
U By Pass Valve
V Check Valve
X Full Speed Valve (Down)

Adjustments UP

1 By Pass
2 Up Acceleration
3 Pug
5 Plug

Adjustments DOWN

6 Down Acceleration
8 Down Deceleration
9 Down Full Speed



EVD Spare Parts List

Pos.	No.	Item
1	FS	Lock Screw - Flange
	FO	O-Ring - Flange
	1F	Flange - By Pass
	EO	0-Ring - Adjustment
	1E	Adjustment - By Pass
	UO	0-Ring - By Pass Valve
	U	By Pass Valve
	UD	Noise Suppressor
	UF	Spring - By Pass
2	2	Adjustment - Up Acceleration
3	3	Plug
4	4F	Flange - Check Valve
	FO	0-Ring - Flange
	VF	Spring - Check Valve
	VO	Seal - Check Valve
	V	Check Valve
	W6	Screw - Check Valve
5	3	Plug
6	3	Adjustment - Down Acceleration
9	7FD	Flange - Down Valve
	FD	Spring
	UO	0-Ring - Down Valve
	XO	Seal - Down Valve
	X	Down Valve
	XD	Noise Suppressor
	F	Main Filter
8	8	Adjustment - Down Deceleration
H	H	Manual Lowering - Self Closing
	HO	Seal - Manual Lowering
S	SE	Adjustment - Screw
	SM	Hexagonal
	MS	Grub Screw
	SO	0-Ring - Nipple
	SZ	Nipple
	SF	Spring
	SK	Piston
D	MM	Nut - Solenoid
	M	Coil - Solenoid (indicate voltage)
	DR	Tube - Solenoid 'Down'
	MO	0-Ring - Solenoid
	DF	Spring - Solenoid 'Down'
	DN	Needle - 'Down'
	DK	Core - Solenoid
	DG	Seat Housing with Screen-'Down'
	FD	Filter Solenoid
	DS	Seat - Solenoid 'Down'

Some parts occur more than once in different positions of the valve.

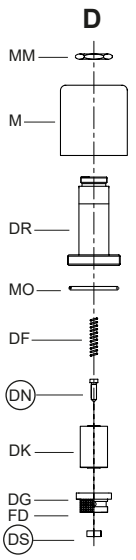
0-Ring-Size

No.	¾"	1 ½"	2 ½"
FO	26x2P	47x2.5P	58x3P *
EO	9x2P	9x2P	9x2P
UO	26x2V	39.34x2.62V	58x3V
WO	5.28x1.78V	5.28x1.78V	5.28x1.78V
VO	23x2,5V	42x3V	60x3V **
7O	5.28x1.78P	9x2P	9x2P
XO	13x2V	30x3V	47x3V
HO	5.28x1.78V	5.28x1.78V	5.28x1.78V
SO	5.28x1.78P	5.28x1.78P	5.28x1.78P
MO	26x2P	26x2P	26x2P

* FO by 4F 2½" is 67x2.5P
** 90 Shore

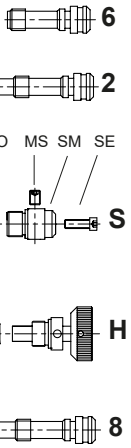
O-Ring: V - Viton, P - Perbunan

Solenoid Valves

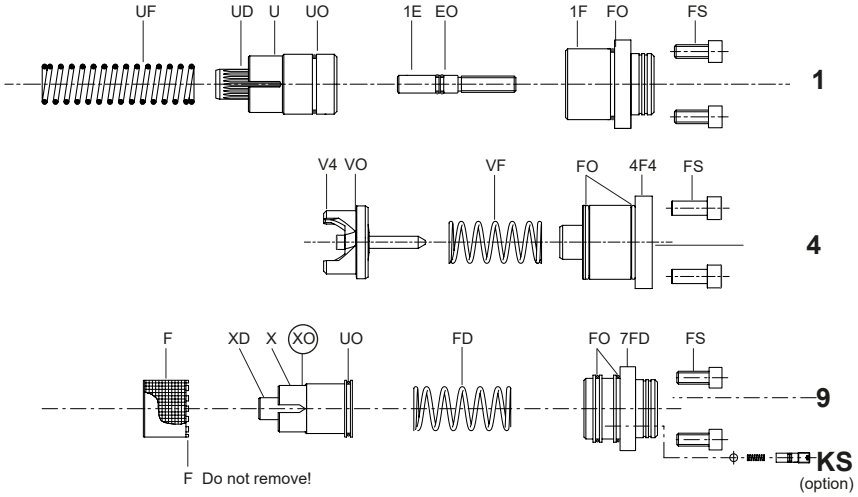


Plug

Adjustments

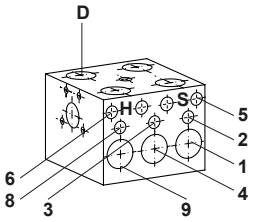


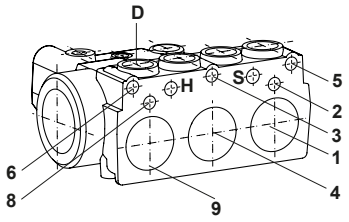
Flow Valves

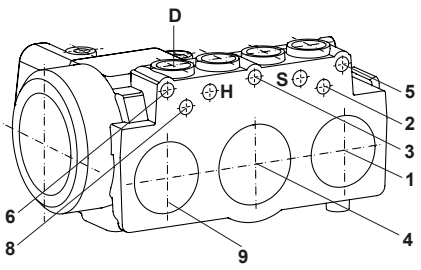


In case of down leakage, replace and test in the following order: (DS) & (DN), (XO), (VO), (WO), (FO) + (HO).

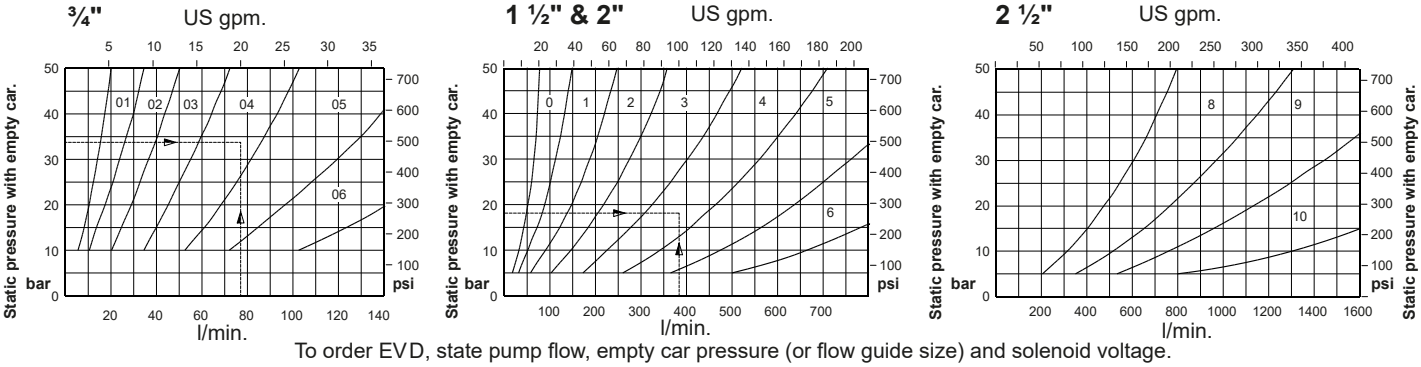
Taper threads: Do not exceed 8 turns of piping into the valve connections.







Flow Guide Selection Charts for Down Direction



To order EVD, state pump flow, empty car pressure (or flow guide size) and solenoid voltage.
Example order: EVD, 380lpm, 18 bar (empty), 110 AC ≡ EV 100/4/110AC