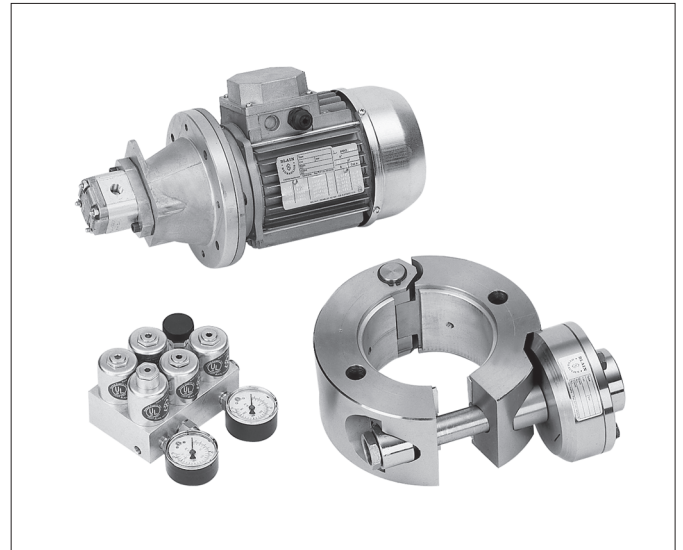


General: During loading or unloading, a hydraulic elevator can sink or rise by several centimetres due to compression or expansion of the oil in the cylinder pressure system.

The Blain Ramloc limits the movement of the ram to 2-3 mm in either direction by hydraulically clamping the ram between mechanical limits, while still ensuring that the full weight of the car and payload is carried by the main ram following a levelling correction lasting 1 to 2 secs. The car is then ready to travel in either the up or down direction.

The Ramloc is activated and closes when the elevator stops and the doors begin to open. It is de-activated and opens when the doors begin to close.

Any movement of the car caused by the mechanical elasticity of the car frame or roping if applied, is not effected by the Ramloc.



Safety: The RL system does not detract from the safety features of the elevator or interfere with their standard operation.

Loading: When a load is added to the car, compression of the oil causes the ram to sink 2-3 mm until the under surface of the closed RL clamp rests against the cylinder head; mechanically preventing the ram from sinking further. Just before this position is reached, the 'up' contacts of the RL microswitch are actuated to operate the Ramloc fine up levelling system and raise the car 2-3 mm returning it to its previous neutral position fully supported by main cylinder pressure, where the micro-switch opens, stopping the car.

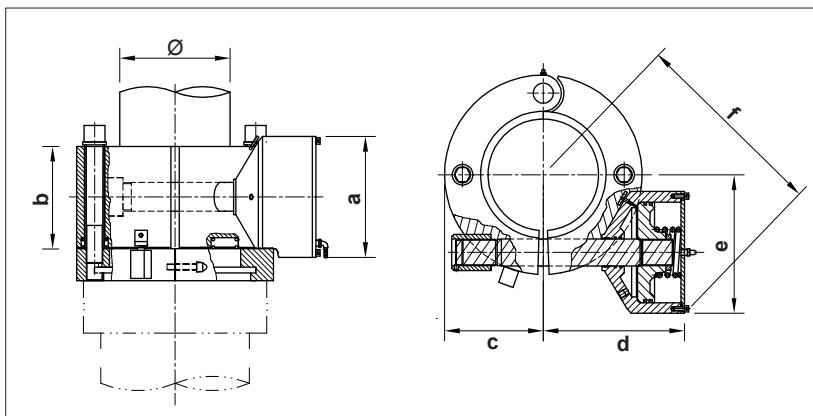
Unloading: When a load is removed from the car causing the ram to rise 2-3 mm, the upper surface of the RL clamp presses up against the underside of the limiting RL bolt heads, these bolts being fixed to the main cylinder head. The 'down' contacts of the RL microswitch are actuated just before the bolt heads are contacted, so that the Ramloc fine down levelling system is activated to lower the car 2-3 mm returning it to its neutral position, where the microswitch opens, stopping the car.

Power Failure: In the case of electrical power failure, the closed Ramloc automatically opens, allowing the car to be lowered through standard emergency procedures. Because the main cylinder was already carrying the full load, opening the Ramloc does not cause the elevator to move.

Installation: RL - motor-pump and valve equipment should be mounted in or on the main elevator power unit using the same oil source. The installation of the clamp on the cylinder head may require an adaptor flange.



Warning: Only qualified personal should adjust or service valves. Unauthorised manipulation may result in injury 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.



Measurements							
Ram Ø	a	b	c	d	e	f	kg
40 - 60	85	60	70	105	85	130	8
61 - 80	100	75	80	125	105	166	12
81 - 100	120	90	100	150	130	200	16
101 - 120	140	105	110	170	155	230	22
121 - 140	160	120	125	195	180	270	32
141 - 160	180	135	145	215	205	300	50
161 - 180	200	150	165	240	230	340	70
181 - 200	220	160	185	260	255	370	90
201 - 220	240	170	205	280	280	400	120
221 - 250	270	190	235	310	315	450	160
251 - 280	300	210	265	340	350	500	220

Approximate Dimensions

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GmbH

**Manufacturers of the Highest Quality:**  
 Control Valves for Elevators  
 Tank Heaters - Hand Pumps  
 Pipe Rupture Valves - Ball Valves



# Ramloc® Electrical Operation

- 1) Elevator stops:** As the elevator stops level with the floor, the Ramloc system (RL) is energised through the door controller **DR** or other command.

The **RL** pump driven by motor **RM** starts simultaneously with the energising of solenoids **LC** and **LO**. The Ramloc system pressure builds up to the setting of the pressure switch **PS**, normally 1.5 times the maximum static pressure of the elevator main cylinder. The Ramloc closes.

As long as the Ramloc pressure is maintained, solenoid **LC** and pump/motor drive **RM** remains de-energised. As the Ramloc pressure falls back, the **RL** pump drive and solenoid **LC** are briefly energised until the pressure is built back up. Solenoid **LO** remains energised until the elevator car doors close.

Relief valve **RS** should be adjusted to 20 bar above the setting of the Ramloc pressure switch **PS**.

- 2) Loading:** As the car is loaded, sinking of the ram **MR** due to compression of the oil in the cylinder **MC** system; is limited to 2-3 mm by the Ramloc. Through the movement of the trip finger **TF**, the microswitch contact **SA** is closed, starting the pump drive and energising solenoid **ZA**, to raise the main ram together with the Ramloc back 2-3 mm into its neutral position where the microswitch opens to de-energise the pump drive and solenoid **ZA**.
- 3) Unloading:** As the car is unloaded, upward movement of the car due to expansion of the oil in the cylinder system is limited to 2-3 mm by the bolt heads **DB** of the Ramloc. Simultaneously the microswitch **SD** contact is made, energising solenoids **ZA** and **ZD**, to lower the main ram 2-3 mm returning it into its neutral position where the microswitch opens to de-energise solenoids **ZA** and **ZD**.
- 4) Elevator starts:** As the command to travel is given and the doors start to close, opening the door controller relays **DR**, the Ramloc system is de-energised, allowing the car to move in the direction selected, as soon as the doors are fully closed.
- 5) Elevator standing:** When the elevator is standing at floor level with the doors closed, the Ramloc system should be de-energised to avoid it being in continuous operation unnecessarily.
- 6) Standard releveling:** Should the standard re-leveling system of the elevator be actuated, the Ramloc system de-energises so that the **RL** clamp opens, allowing the main power unit to drive the car. (\*see below).

## Switch Sequence (brief)

- 1) Elevator stops:** As the elevator doors begin to open or through other command, the Ramloc controller is energised, Solenoids **LO**, **LC** and pump/motor **RM** are energised, the Ramloc closes. When the pressure setting at **PS** is reached, solenoid **LC** is de-energised and pump/motor **RM** stops. Solenoid **LO** remains energised until the Ramloc controller is completely de-energised as the doors close.
- 2) Loading:** The elevator sinks, microswitch contact **SA** closes, solenoid **ZA** is energised, **LO** remains energised, pump/motor **RM** runs, the elevator relevels, microswitch opens, **ZA** is deenergised, pump/motor **RM** stops.
- 3) Unloading:** The elevator rises, microswitch contact **SD** closes, solenoids **ZA** and **ZD** are energised, **LO** remains energised, the elevator relevels back down, the microswitch opens, **ZA** and **ZD** are de-energised.
- 4) Elevator starts:** As the doors close the Ramloc controller is completely deenergised and opens. The elevator travels.
- 5) Elevator standing:** When the elevator stands with closed doors, the Ramloc controller is completely de-energised and the Ramloc open.
- 6) Standard re-leveling:**  
Standard re-leveling switch 'up' must activate 1 cm to 2 cm below stop position.  
Standard re-leveling switch 'down' must activate 1 cm to 2 cm above stop position.

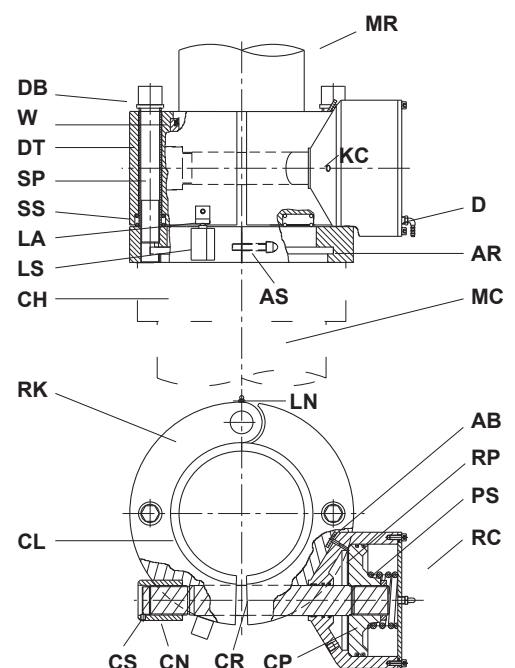
The Ramloc can be placed over the top or around the ram as follows:

## Around the Ram

- 1) Remove 2 distance bolts **DB** to separate Ramloc from adaptor ring **AR**.
- 2) Adaptor Ring **AR** halves to be removed from the Ramloc and fitted around the main cylinder head **ZH** securing with adaptor screws **AS**.
- 3) Remove the Ramloc cylinder **RC** from the Ramloc by first relieving the grub screw **CS** and removing the knurled nut **CN**.
- 4) Swivel open the Ramloc and remove the wiper ring **W**.
- 5) Place the wiper ring **W** around the ram **MR**.
- 6) Set the open Ramloc on the adaptor ring and around the ram **MR**.
- 7) Close the Ramloc, moving the wiper ring into the intended groove.
- 8) Fit the Ramloc cylinder back into the Ramloc clamp and screw on the clamp nut **CN** clamping the Ramloc firmly around the main ram **MR**, then back off the nut one complete turn. Secure the clamp nut with the **M8** side grub-screw **CS**.  
**Warning: Do not back off this nut by more than 2 turns, otherwise the clamp rod end can be hydraulically forced against cover RC.**
- 9) Insert distance bolts **DB**, pulling up tight.
- 10) If necessary, loosen adaptor screws **AS** and rotate Ramloc assembly to required position before retightening screws **AS**.
- 11) Using a 6 mm I.D., 100 bar operating pressure hose, connect Ramloc cylinder connection '**K CYL**' to the connection **KR** of the valve, (see page 4 Hydraulic Connections).
- 12) Install 6 mm I.D. plastic tube from '**DRAIN**' **D** to tank.
- 13) Run return lines **TR** from Ramloc valve into tank.
- 14) Wire the Micro Switch **LS** into the Ramloc control box, (see page 4 Electrical Connections).
- 15) Connect Ramloc control box L1, L2, L3 to Motor, (normally 400 V / 3 phase).
- 16) Connect elevator up/down command relays to terminal 1 of the Ramloc control box to supply 220 V AC when the car doors begin to open, and to cut the 220 V supply when the car doors begin to close.

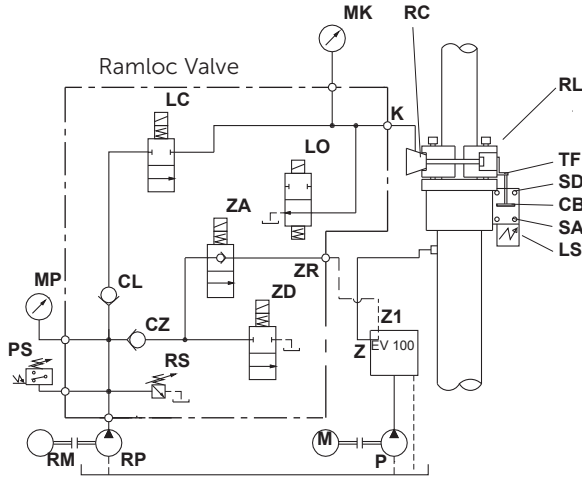
### Clamp Parts

<b>AB</b> Air Bleed	<b>LA</b> Limit Adjustment
<b>AR</b> Adaptor Ring	<b>LN</b> Lubricating Nipple
<b>AS</b> Adaptor Screw	<b>LS</b> Micro Switch
<b>CH</b> Cylinder Head	<b>MC</b> Main Cylinder
<b>CL</b> Clamp Liner	<b>MR</b> Main Ram
<b>CN</b> Clamp Nut	<b>PS</b> Piston Spring
<b>CP</b> Clamp Piston	<b>RC</b> Ramloc Cylinder
<b>CR</b> Clamp Rod	<b>RK</b> Clamp
<b>CS</b> Grub Screw	<b>RP</b> Ramloc Piston
<b>D</b> Drain Connection	<b>SP</b> Swivel Pin
<b>DB</b> Distance Bolt	<b>SS</b> Support Spring
<b>DT</b> Distance Tube	<b>W</b> Ramloc Wiper
<b>KC</b> Ramloc Pressure Connection	





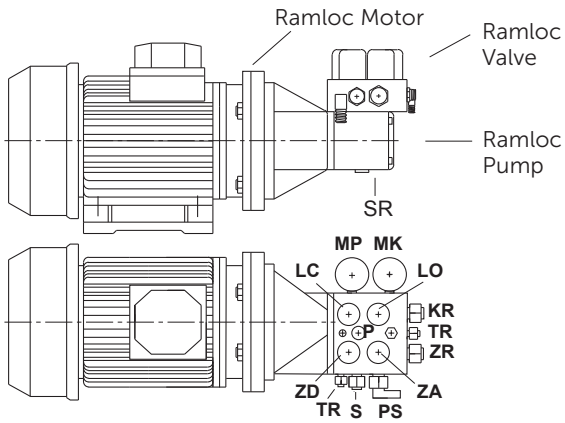
Hydraulic Circuit



Control Elements

- RM Ramloc Motor
- RP Ramloc Pump
- LC Solenoid - close RL
- LO Solenoid - open RL
- ZA Solenoid - raise ram
- ZD Solenoid - lower ram
- ZR Solenoid - lower ram
- Z1 Solenoid - lower ram
- CL Check Valve - Ramloc
- CZ Check Valve - Cylinder
- MP Pressure Gauge - RL Pump
- MK Pressure Gauge - RL Clamp
- PS Pressure Switch 1/4"
- RL Ramloc
- TF Trip Finger
- LS Micro Switch
- SA Contact - up
- SD Contact - down
- CB Contact Bridge
- M Elevator Motor
- P Elevator Pump
- RS Relief Valve

Hydraulic Connections

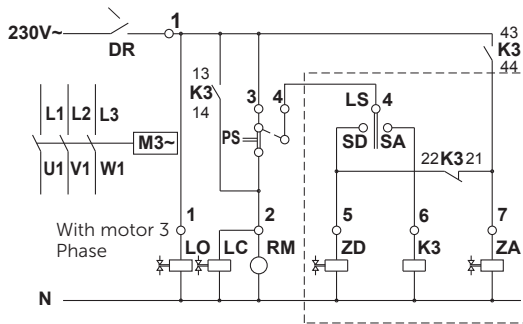


Hydraulic Connections

- SR G 3/8" Suction Ramloc
- KR G 1/4" Ramloc Cylinder Connection
- TR G 1/8" Tank Return Connection
- ZR G 1/4" Main Cylinder Connection (EV 100-Z1)

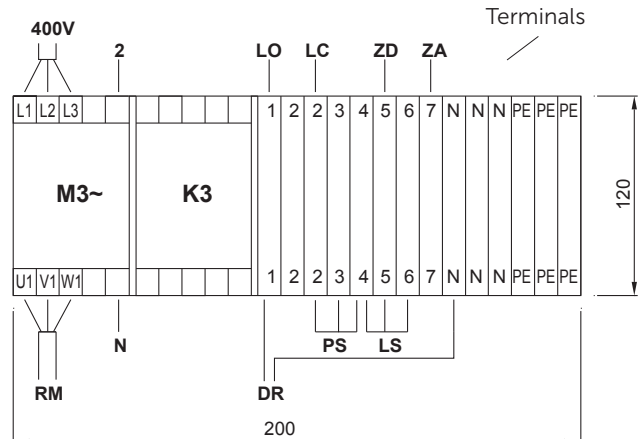
Electrical Circuit

Control Line (Ramloc closes when doors open)



- RM Ramloc Motor
- LC Solenoid - close RL
- LO Solenoid - open RL
- ZA Solenoid - raise ram
- ZD Solenoid - lower ram
- PS Pressure Switch
- LS Micro Switch
- SA Contact - up
- SD Contact - down
- K3 Relais 'Up'
- N Common
- PE Ground
- M3~ With Ramloc-Motor (400V) - 3 Phase

Ramloc Controller



Electrical Connections

- Terminal 1:** DR Control Line
- LO Solenoid
- Terminal 2:** LC Solenoid
- PS Contact 2
- With Ramloc-Motor 230V~
- Terminal 3:** PS Contact 1
- Terminal 4:** PS Contact 4
- LS Contact 13 and 21
- Terminal 5:** ZD Solenoid
- LS Contact 22 (SD)
- Terminal 6:** LS Contact 14 (SA)
- Terminal 7:** ZA Solenoid