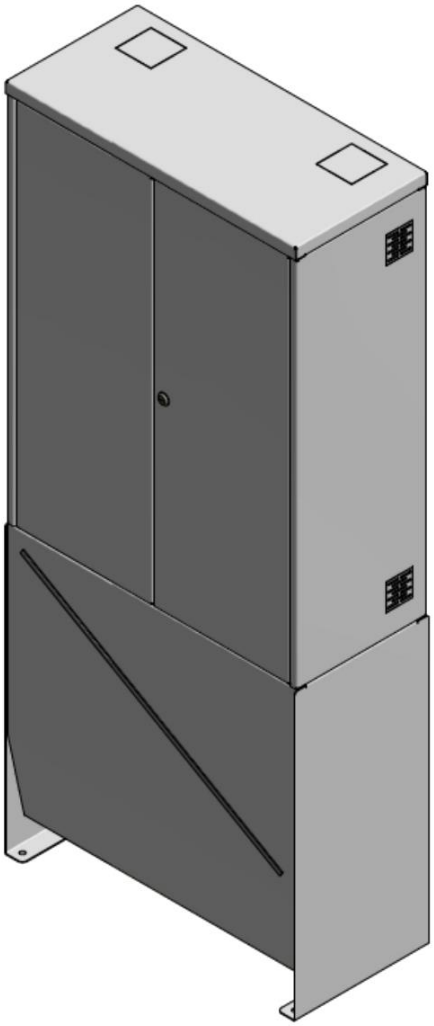
INSTRUCTION MANUAL
POWER UNITS HOME LIFT
BLAIN DISTRIBUTOR



morispain
hydraulics in motion

CONTENTS

1. SUMMARY OF MODIFICATIONS.

VERSION	DESCRIPTION
0	First edition.
1	Updated MS-A / MS-K

2. INTRODUCTION.

2.1 SCOPE

This document contains installation instructions, commissioning, operation manual, maintenance and repair. The design of this power unit has been made according to machinery directive 42/2006/CE and it is destined for vertical transport of people and goods.

The power unit must be installed by a competent company, always respecting the specifications in this manual, as well as the legal regulations of local country.

Previously to installation, it is compulsory to have knowledge of lift installing, safety rules of the country and have the ability to read technical drawings and the descriptions of this document.

Previously to the commissioning of the lift, it must be done all finals test indicated in the EN81-20 or EN81-2 standard according to the rules that applied.

The maintenance technician must be qualified and have specific knowledge to the activities mentioned in this Instruction Manual. In addition, maintenance and repair activities must be done respecting the technical specifications given in this document.

Before starting the installation Works, it is compulsory read the whole manual, which contains information about:

•Correct installation.

•Safety of technicians.

2.2 SYMBOLS USED.

WARNING: It points out that, during the described operation, non-compliance with safety rules may cause damages to the installation or serious physical injuries

2.3 SAFETY DURING THE INSTALLATION.

WARNING: Please read this manual. It contains very important information and notices regarding user safety and technicians.

3. GENERAL FEATURES.

3.1 DESCRIPTION OF DISTRIBUTORS

The power units are equipped with homelift family of distributors KV of Blain, these distributors are designed for homelift to 0.15m/s as marks the Machinery Directive and exceptionally outside the EC market up to 0.3m/s.

3.2 TYPE OF HYDRAULIC OIL.

WARNING: Power units always use hydraulic oil VESTA HM46 or another hydraulic oil with similar ISO degree.

GENERAL FEATURES OF HYDRAULIC OIL HM46	
ISO Degree	46
Viscosity Index	>150
Density at 15ºC (g/cc)	0,875
Freezing point (ºC)	< -35
Flash point (ºC)	>210
Viscosity (40ºC) (cSt)	42-50
Viscosity (100ºC) (cSt)	7,9-8,5

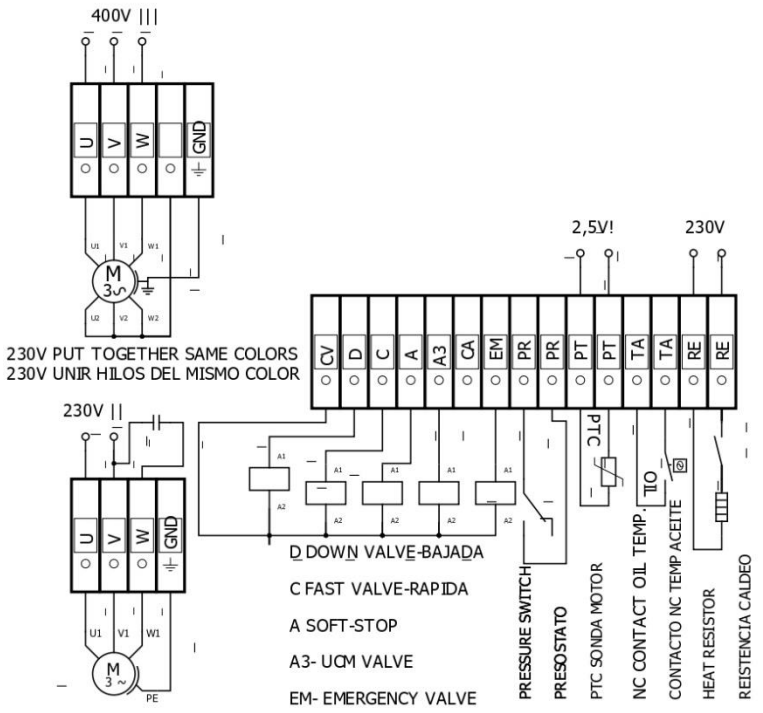
3.3 HYDRAULIC FEATURES

HYDRAULIC FEATURES	
Operation minimum pressure (bar)	3
Operation maximum pressure (bar)	100
Maximum speed (m/s)	0,15 -*0,30
Coil Voltages (Vdc)	12-196
Coil Voltages 50/60Hz (Vac)	24 – 230
Temperature limits (ºC)	5 - 70
Pump flows (l/min))	5 - 55

*outside of European community.

3.4 ELECTRICAL FEATURES.

ELECTRIC CONNECTIONS WITH ALL OPTIONS



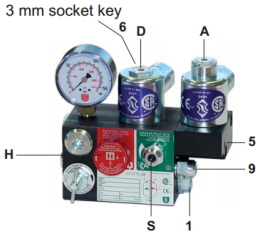
4. ADJUSTMENTS.

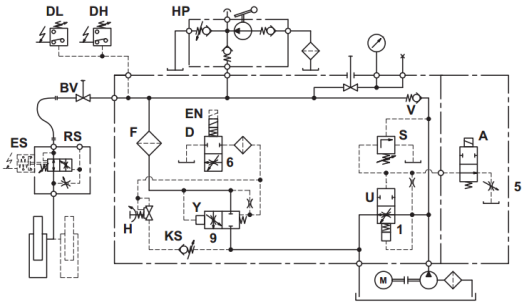
WARNING: All power units produced in MORISPAIN are regulated in our test towers with the parameters of the installation, so it is not necessary to regulate them. During installing process, some problems could appear, please check the electrical connections first before doing any adjustments

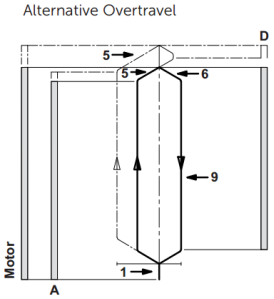
4.1 ADJUSTMENT OF KV1S.

KV1S

KV1S







Control Elements

A Solenoid 'Up Stop'
C Solenoid 'Down Deceleration'
D Solenoid 'Down Stop'
U Bypass Valve
H Manual Lowering
HA Manual Down Speed Adjuster
V Check Valve
X Down Valve
Y Down Level Valve
F Main Filter
S Relief Valve

Adjustments UP

1 Bypass
5 Up Soft Stop
Up Acceleration built-in

Adjustments DOWN

6 Down Acceleration
7 Down Full Speed
9 Down Levelling Speed
Down Deceleration built-in

For Options: BV, EN, HP, KS, DH, DL and HA see page 4.

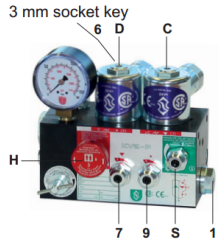
- Screw 1. Up Bypass, when the pump is started, the unloaded car should remain stationary at the floor for a period of about 1 second before starting upwards. The length of this delay is according to the setting of adjustment 1.'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay. Up Stop: At floor level, the pump-motor is de-energized.
- Screw 5. Up Stop, at floor level solenoid A is de-energized. Through a time relay the pump must run approx. 1/2 seconds longer to allow the car to stop smoothly by valve operation according to the setting of adjustment 5. 'In' (clockwise) provides a softer stop, 'out' (c-clockwise) a quicker stop. Pre-adjustment: With solenoid A disconnected and the pump running, 5 should be turned in until the car starts to move up, then slowly backed off again until the car stops.
- Screw 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
- Screw 6. Down Acceleration, when solenoid D is energized, 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. Pre-adjustment: 6 should be turned all the way in and then solenoid D energized. Turn 6 slowly back out until the car accelerates downwards.
- Screw 9. Down Speed, with solenoid D energized as above, the 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: At floor level, solenoid D is de-energized causing the car to stop. No adjustment necessary. H Manual Lowering: 'out' (c-clockwise) allows the car to be lowered by hand. Closes automatically on release.

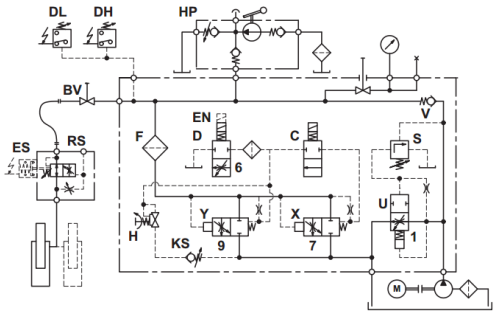
  *Note: In case of KV1P distributor is not available soft-stop system, screw 5 and valve A do not exist.

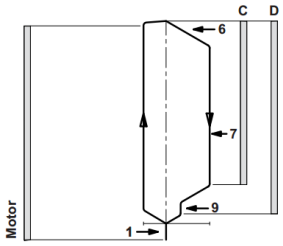
4.2 ADJUSTMENT OF KV2P

KV2P

KV2P







Control Elements

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U Bypass Valve
H Manual Lowering
HA Manual Down Speed Adjuster
V Check Valve
X Down Valve
Y Down Level Valve
F Main Filter
S Relief Valve

Adjustments UP

1 Bypass
5 Up Soft Stop
Up Acceleration built-in

Adjustments DOWN

6 Down Acceleration
7 Down Full Speed
9 Down Levelling Speed
Down Deceleration built-in

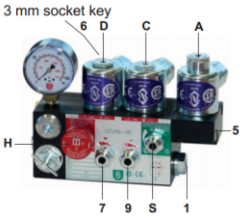
For Options: BV, EN, HP, KS, DH, DL and HA see page 4.

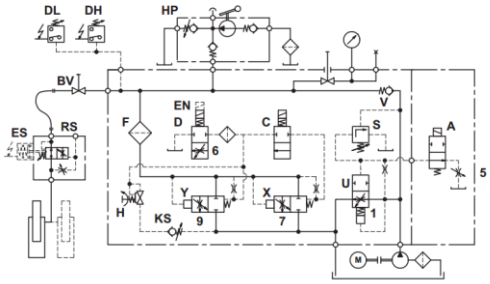
- Screw 1. Up Bypass, when the pump is started, the unloaded car should remain stationary at the floor for a period of about 1 second before starting upwards. The length of this delay is according to the setting of adjustment 1.'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay. Up Stop: At floor level, the pump-motor is de-energized. The stop may be abrupt depending on load and speed of approach. No adjustment possible.
- Screw 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
- Screw 6. Down Acceleration, when solenoid D is energized, 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. Pre-adjustment: 6 should be turned all the way in and then solenoid D energized. Turn 6 slowly back out until the car accelerates downwards.
- Screw 7. Down Speed, with solenoids C and D energized as above, the down speed of the car is according to the setting of adjustment 7.'In' (clockwise) provides a slower down speed, 'out' (c-clockwise) a faster down speed.
- Screw 9. Down Speed, with solenoid D energized as above, the 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: At floor level, solenoid D is de-energized causing the car to stop. No adjustment necessary. H Manual Lowering: 'out' (c-clockwise) allows the car to be lowered by hand. Closes automatically on release.

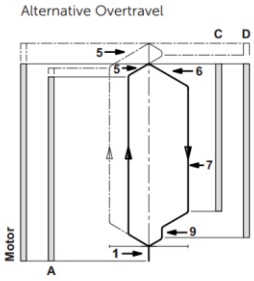
4.3 ADJUSTMENT OF KV2S

KV2S

KV2S







Control Elements

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C Solenoid 'Down Deceleration'
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U Bypass Valve
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HA Manual Down Speed Adjuster
V Check Valve
X Down Valve
Y Down Level Valve
F Main Filter
S Relief Valve

Adjustments UP

1 Bypass
5 Up Soft Stop
Up Acceleration built-in

Adjustments DOWN

6 Down Acceleration
7 Down Full Speed
9 Down Levelling Speed
Down Deceleration built-in

For Options: BV, EN, HP, KS, DH, DL and HA see page 4.

- Screw 1. Up Bypass, when the pump is started, the unloaded car should remain stationary at the floor for a period of about 1 second before starting upwards. The length of this delay is according to the setting of adjustment 1.'In' (clockwise) shortens the delay, 'out' (c-clockwise) lengthens the delay. Up Stop: At floor level, the pump-motor is de-energized.
- Screw 5. Up Stop, at floor level solenoid A is de-energized. Through a time relay the pump must run approx. 1/2 seconds longer to allow the car to stop smoothly by valve operation according to the setting of adjustment 5. 'In' (clockwise) provides a softer stop, 'out' (c-clockwise) a quicker stop. Pre-adjustment: With solenoid A disconnected and the pump running, 5 should be turned in until the car starts to move up, then slowly backed off again until the car stops.
- Screw 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
- Screw 6. Down Acceleration, when solenoid D is energized, 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. Pre-adjustment: 6 should be turned all the way in and then solenoid D energized. Turn 6 slowly back out until the car accelerates downwards.
- Screw 7. Down Speed, with solenoids C and D energized as above, the down speed of the car is according to the setting of adjustment 7.'In' (clockwise) provides a slower down speed, 'out' (c-clockwise) a faster down speed.
- Screw 9. Down Speed, with solenoid D energized as above, the 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: At floor level, solenoid D is de-energized causing the car to stop. No adjustment necessary. H Manual Lowering: 'out' (c-clockwise) allows the car to be lowered by hand. Closes automatically on release.

4.4 ADJUSTMENT OF KS SCREW (OPTIONAL).

The KS screw mission is to prevent slack rope when the emergency valve H is actuated in 2:1 installations. For adjustment should be done with cold oil. 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.

4.5 RUPTURE VALVE TEST FOR DISTRIBUTORS KV.

Do the next procedure to test the rupture valve:

1. Prepare the car fully charged and send the car to highest floor level.
2. Increase the downward speed. If you have distributors KV1P KV1S open the screw 9 completely (c-clockwise), with distributors KV2P o KV2S open the screw 7 completely (c-clockwise).
3. Set downward travel and check the rupture valve functions (manometer goes to 0 bar).
4. If the rupture valve works properly, set the screw 9 or 7 on the original position.
5. Check one more time fully charged that rupture valve doesn't cut the oil flow in downward travel.

In case of not having enough load in the car or the flow restrictor plunger does not allow its firing, proceed as follows:

1. Put the car to the upper level, close the shut valve and remove the pressure with the emergency valve.
2. Proceed to remove the set screw number 9 with KV1S or 7 with KV2P/S with an Allen key-3.
3. With an angled wrench 17, loosen the complete assembly of the screw 9 or 7 (see photography in KV2S, similar with KV1S).
4. Remove the spring and plunger with the help of the Allen-3 and turn the screw back on without them.
5. Open the shut valve and open emergency valve and check that the rupture valve is released and the manometer goes 0 bar.
6. Close the shut valve again, remove pressure and reassemble the screw 9 or 7 as before.

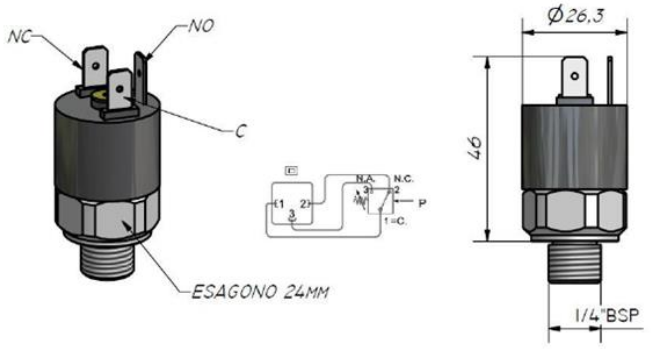
WARNING: All rupture valves supplied for Morispain have been calibrated in the test tower. In case of you need to adjust it, tight ¼ turn (clockwise) the adjustment screw of the rupture valve and repeat the test until it functions.

If you are using other rupture valve, read the instruction manual of that valve to adjust it.

4.6 ADJUST THE PRESSURE SWITCH.

All power units have a pressure switch which can be adjusted. The pressure switch has normal opened and normal closed connection.

The preset pressure is adjusted working on the central screw with a 2mm hexagonal key. Rotating clockwise the set point is increased and vice-versa is decreased.



4.7 L10 UCM SYSTEM (OPTIONAL).

As an option you can install a L10 Pressure Lock Valve to prevent UCM, in certain countries outside the European community may be a mandatory requirement.

If you have installed the L10 block is necessary to supply the solenoid in case of rescue for its descent.

If manual emergency descent is only necessary act key block L10.

4.8 HAND PUMP.

1. Before the first start it is necessary to extract the air in the hand pump circuit. Release the hose (see 1) and pump until you can see the oil. After the purge put the hose again.
2. The hand pump has a relief valve. Tighten the screw (see 2) increase the overpressure.

5. TROUBLES SHOOTING KV DISTRIBUTORS.

5.1 UP TRAVEL

Problem	Possible cause	Recommended
No Up-Start (Elevator remains at floor).	Test for KV1S and KV2S: Turn adjustment **5** all the way in, if the elevator now starts upwards the problem is at solenoid **A**.	
	Solenoid **A** not energised or voltage too low.	See Ⓐ below.
	Solenoid **A** tube not screwed down tight.	Tighten Solenoid **A** tube.
	Solenoid valve **A:** Dirt or damage between needle and seat.	Clean or change needle and seat.
	Orifice in bypass valve blocked.	Clean or change bypass valve **U**.
	Adjustment **1** too far back (open). Not enough pilot pressure (minimum 5 bar) or bypass flow guide too large (slots too wide). see*	With the pump running, turn adjustment **1** in, or if already too far in, insert smaller bypass flow guide (see the diagram in KV literature).
	Pressure relief valve **S** is set too low.	Set relief valve higher. Preadjustment all the way in and then 1½ turn out.
	Down valve **7** or **9** are open due to contamination in their orifices. (Especially if the elevator settles back on the buffers. Solenoid **D** is leaking.	Clean or replace down valves **7** (KV2 only) and **9**. Clean solenoid **D**.
	Pump running in the wrong direction.	Check motor direction and install the pump correctly.
	The pump connection flange is leaking excessively.	Seal the pump connection.
	The pump is undersize, worn or crack in the housing.	Select a bigger pump or replace the pump.
	* Test: If by turning adjustment **1** with the pump running the pressure does not rise above 5 bar, even with a smaller bypass valve inserted, the problem should be sought at the pump.	
Up-Start too hard.	Adjustment **1** turned in too far.	Turn out adjustment **1**.
	Bypass flow guide **U** too small (slots too narrow).	Change to flow guide with wider slots.
	Star to delta motor switch period is too long.	0.2-0.3 sec. is sufficient.
	O-ring **UO** on the bypass valve **U** is leaking.	Change O-Ring → see KV Spare Parts List.
	Excessive friction on the guide rails or in the cylinder head.	Can not be eliminated through valve adjustment.
Elevator slows down but over travels the floor level.	Solenoid **A** (Up-stop) is de-energised too late.	See Ⓐ below.
	Adjustment **5** (Soft Stop) not far enough open (KV1S and KV2S).	Open further out.
	Adjustment **1** Bypass not far enough open and pump flow does not completely by-pass.	Open adjustment **1** two turns further out.
Relief-Valve not adjustable to lower value.	Adjustment **1** too far in.	Open adjustment **1** further out.
	½" pipe thread connection in return line **T** should not exceed 14 mm.	With tape threads, 4-6 threads of engagement is sufficient.
Elevator doesn't reach full speed.	By-pass piston doesn't close. Dirt/foreign particles in by-pass piston orifice.	Clean the dirt / foreign particles in the by-pass piston orifice or change the piston and turn adjustment **1** out.

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.

Ⓐ For checking the operation of the solenoids, remove the top nuts. By lifting the coils a few millimeters, the magnetic pull of the coil can be felt. For testing, the operation of the elevator car can also be controlled by lifting and replacing the coil.

If the coil gets too hot, the coil has to be mounted onto the solenoid and the following adjustments have to be carried out on normal travels from floor to floor.

Standard settings: Adjustment **1** level with flange faces. Adjustment **5** (KV1S & KV2S) level with flange faces.

5.2 DOWN TRAVEL

Problem	Possible cause	Recommended
No Down Start (Elevator remains at floor).	Solenoid **D** not energised or voltage too low.	Lift coil to check magnetic pull. See Ⓐ below.
	Adjustment **6** turned in too far.	Turn out adjustment **6**.
	O-ring **XO** on down valve, leaking.	Replace O-ring **XO**.
KV2 only: Down start but no full speed	Solenoid **C** not energised or voltage too low.	Lift coil to check magnetic pull. See Ⓐ below.
	Adjustment **7** (Full speed down) turned in too far.	Turn out adjustment **7**.
KV2 only: Down full speed but no down leveling.	Solenoids **C** and **D** reversed.	See Ⓐ below. Swap solenoid **C** and **D**.
	Adjustment **9** (Down leveling speed) turned in too far.	Turn out adjustment **9**.
Elevator travels through the floor level.	Down flow guide too small (slots too narrow).	Change flow guide (use next bigger insert size).
	Down leveling speed **9** too fast.	Adjust to 0.05 m/s.
	Solenoid Valve **D** leaking at the needle.	Clean or change needle and seat.
	Orifice in flow guide contaminated.	Replace flow guide.
Leakage (Elevator sinks away from floor).	Leak at **N6**, **S6**, **XO**, **VO**, **WO** or **HO**.	Replace and test in sequence.
	Other valves (ex. handpump) in the system, leaking.	Where possible, isolate and check.
	Contraction of oil during cooling, especially from 35°C or above.	Consider oil cooler to keep oil temperatures 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.

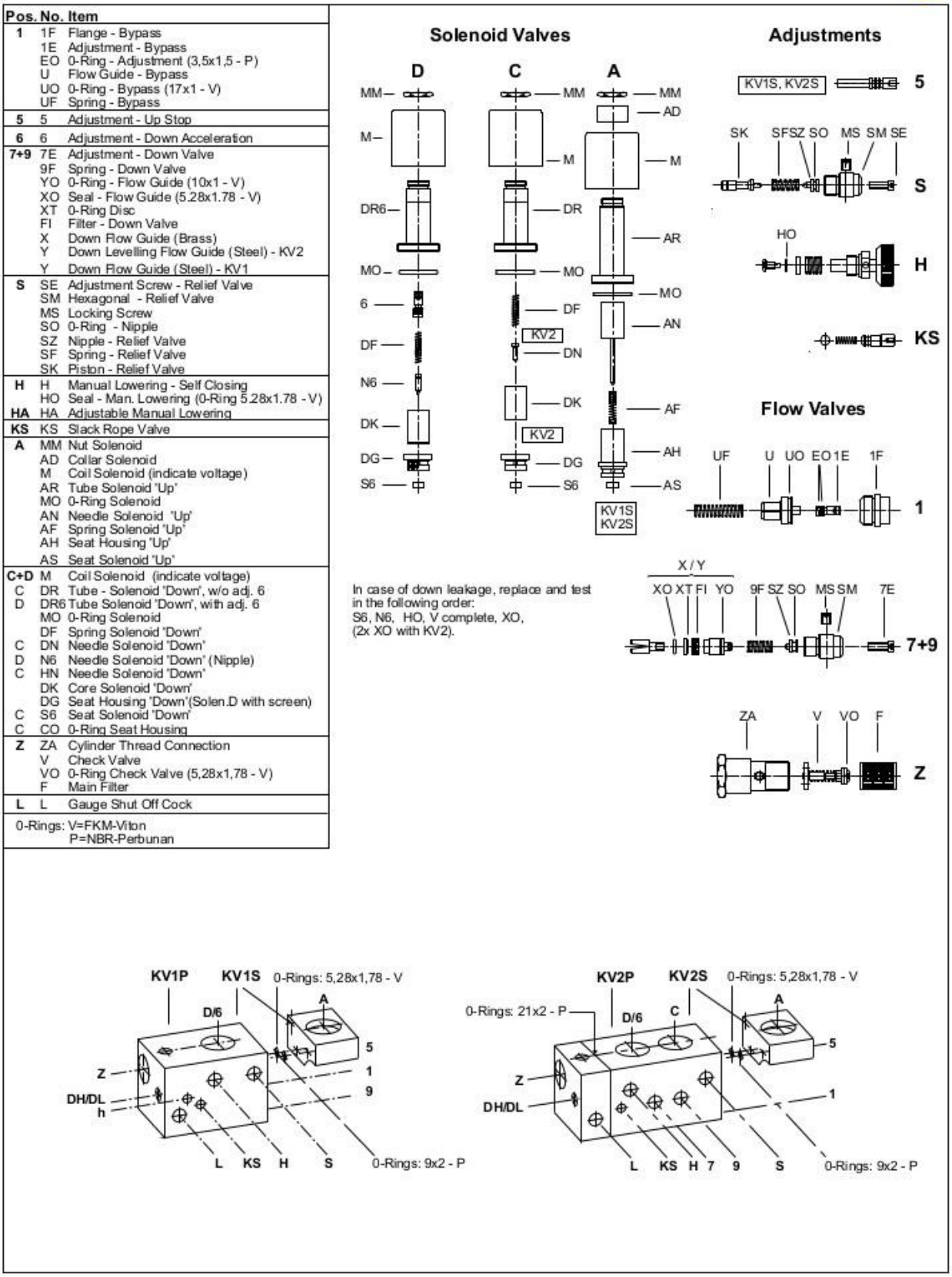
Ⓐ For checking the operation of the solenoids, remove the top nuts. By lifting the coils a few millimeters, the magnetic pull of the coil can be felt. For testing, the operation of the elevator car can also be controlled by lifting and replacing the coil.

If the coil gets too hot, the coil has to be mounted onto the solenoid and the following adjustments have to be carried out on normal travels from floor to floor.

Standard settings: Adjustments **7 & 9**, screwheads level with the hexagon heads.

5.3 KV SPARE PARTS LIST.

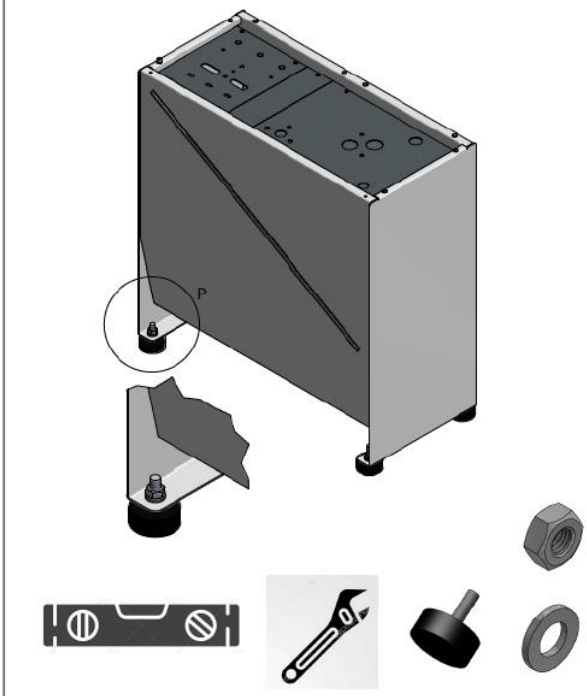
Pos.	No.	Item
1	1F	Flange - Bypass
	1E	Adjustment - Bypass
	EO	0-Ring - Adjustment (3,5x1,5 - P)
	U	Flow Guide - Bypass
	UO	0-Ring - Bypass (17x1 - V)
	UF	Spring - Bypass
5	5	Adjustment - Up Stop
6	6	Adjustment - Down Acceleration
7+9	7E	Adjustment - Down Valve
	9F	Spring - Down Valve
	YO	0-Ring - Flow Guide (10x1 - V)
	XO	Seal - Flow Guide (5.28x1.78 - V)
	XT	0-Ring Disc
	FI	Filter - Down Valve
	X	Down Flow Guide (Brass)
	Y	Down Levelling Flow Guide (Steel) - KV2
	Y	Down Flow Guide (Steel) - KV1
S	SE	Adjustment Screw - Relief Valve
	SM	Hexagonal - Relief Valve
	MS	Locking Screw
	SO	0-Ring - Nipple
	SZ	Nipple - Relief Valve
	SF	Spring - Relief Valve
	SK	Piston - Relief Valve
H	H	Manual Lowering - Self Closing
	HO	Seal - Man. Lowering (0-Ring 5.28x1.78 - V)
HA	HA	Adjustable Manual Lowering
KS	KS	Slack Rope Valve
A	MM	Nut Solenoid
	AD	Collar Solenoid
	M	Coil Solenoid (indicate voltage)
	AR	Tube Solenoid 'Up'
	MO	0-Ring Solenoid
	AN	Needle Solenoid 'Up'
	AF	Spring Solenoid 'Up'
	AH	Seat Housing 'Up'
	AS	Seat Solenoid 'Up'
C+D	M	Coil Solenoid (indicate voltage)
C	DR	Tube - Solenoid 'Down', w/o adj. 6
D	DR6	Tube Solenoid 'Down', with adj. 6
	MO	0-Ring Solenoid
	DF	Spring Solenoid 'Down'
C	DN	Needle Solenoid 'Down'
D	N6	Needle Solenoid 'Down' (Nipple)
C	HN	Needle Solenoid 'Down'
	DK	Core Solenoid 'Down'
	DG	Seat Housing 'Down'(Solen.D with screen)
C	S6	Seat Solenoid 'Down'
C	CO	0-Ring Seat Housing
Z	ZA	Cylinder Thread Connection
	V	Check Valve
	VO	0-Ring Check Valve (5,28x1,78 - V)
	F	Main Filter
L	L	Gauge Shut Off Cock
0-Rings:	V=FKM-Viton	
	P=NBR-Perbunan	



6. *INSTRUCCIONES MONTAJE DE ARMARIO (OPTIONAL).*

	**4x**		**4x**
	**24x** (DIN.912.M6x16)		**4x** (DIN.125-M10)
	**16x** (DIN.934-M6)		**4x** (DIN.934-M10)
	**4x** (DIN.7991-M4x20)		**1x**
	**4x** (DIN.1587-M4)		**1x**
	**2x**		**4x**

1



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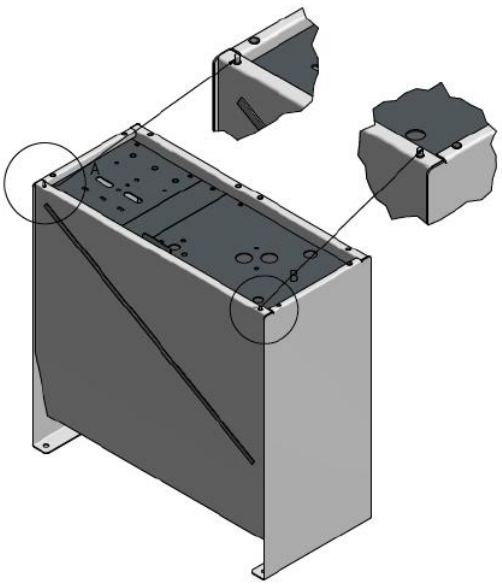

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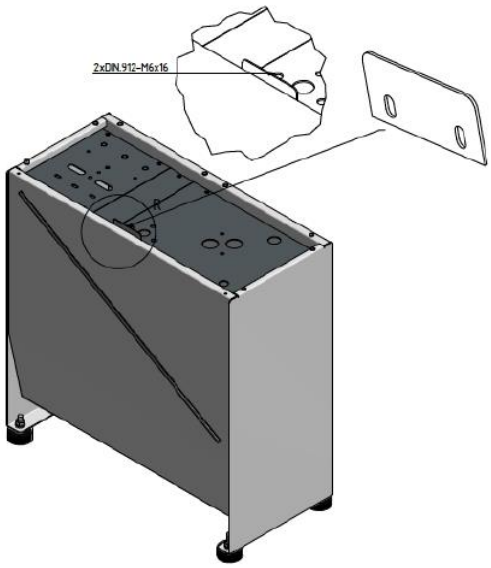

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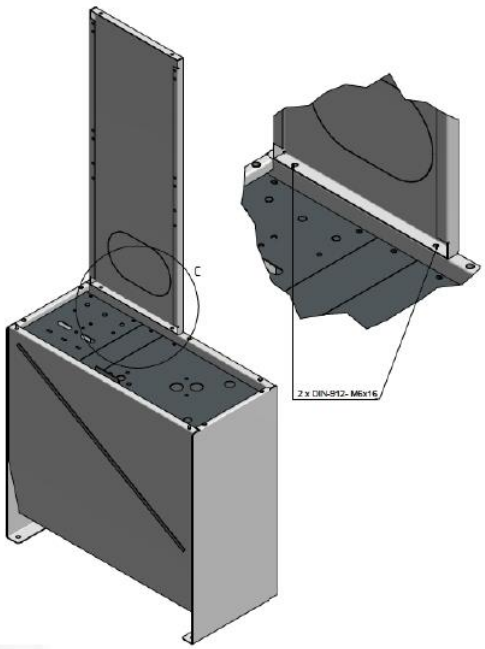

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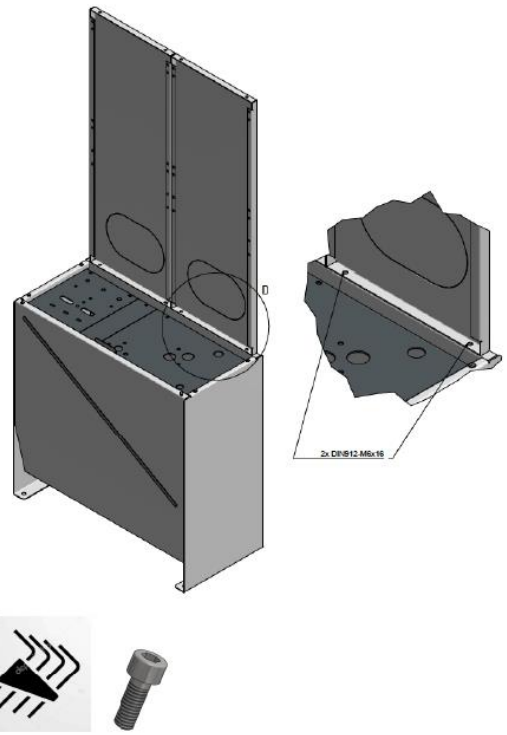

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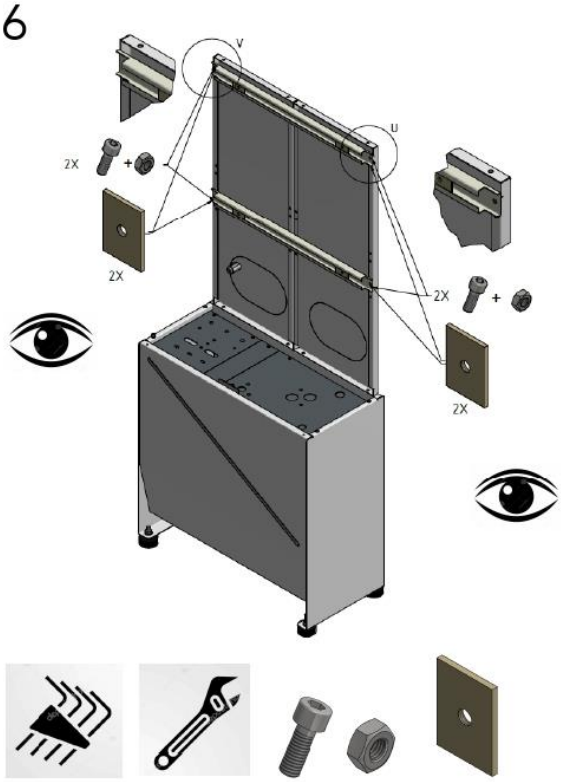

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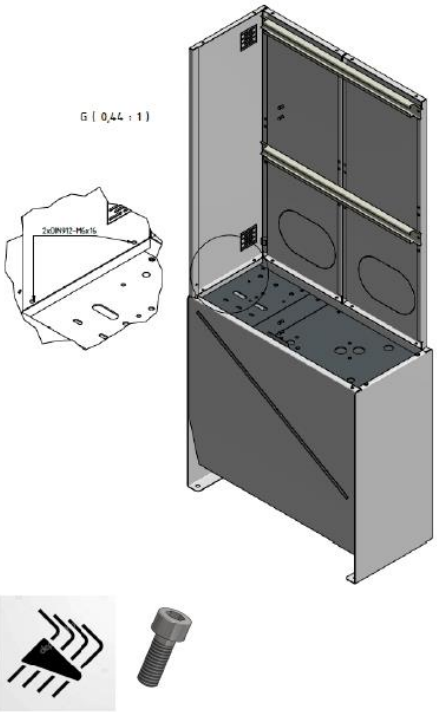

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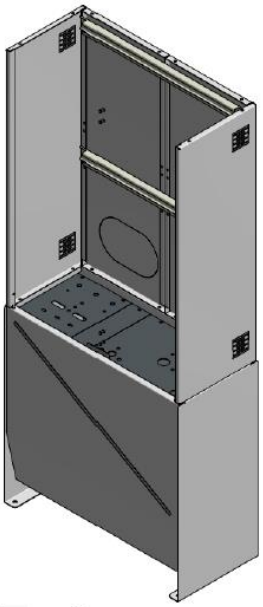

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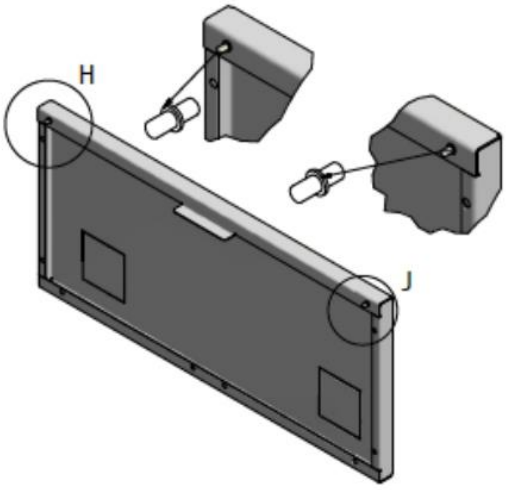

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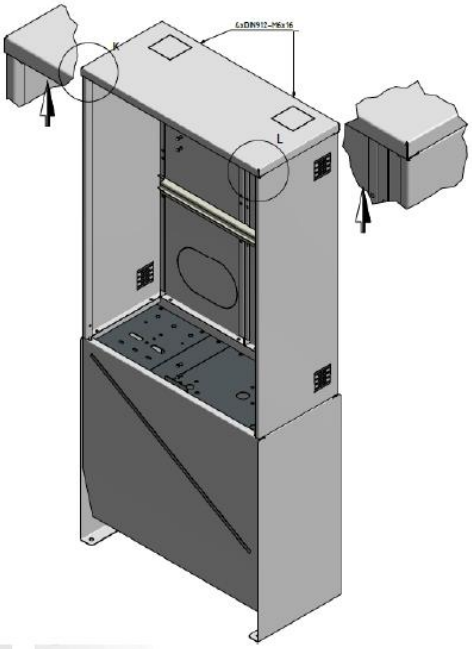

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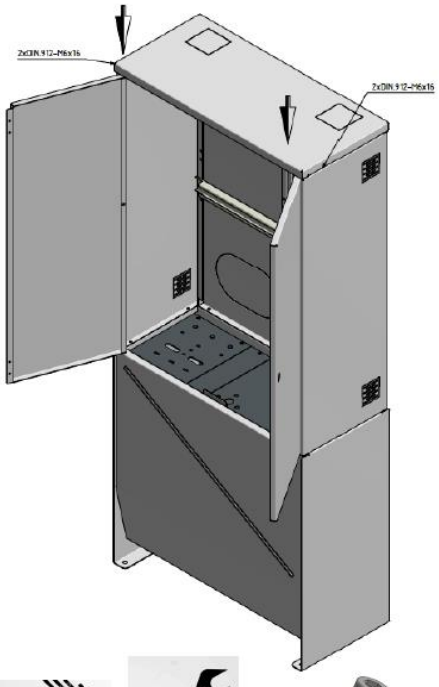

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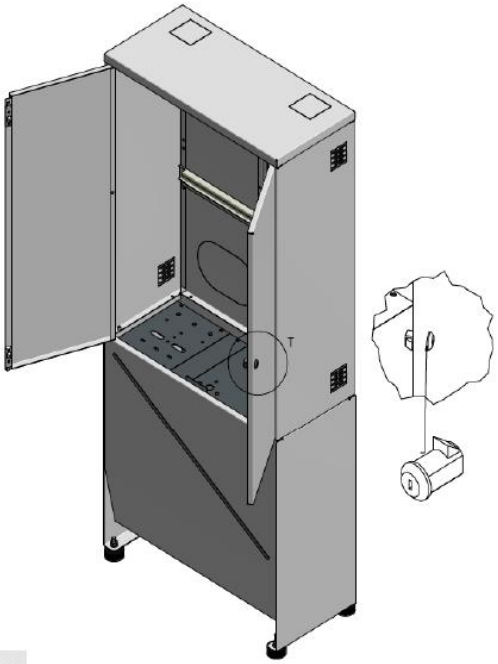

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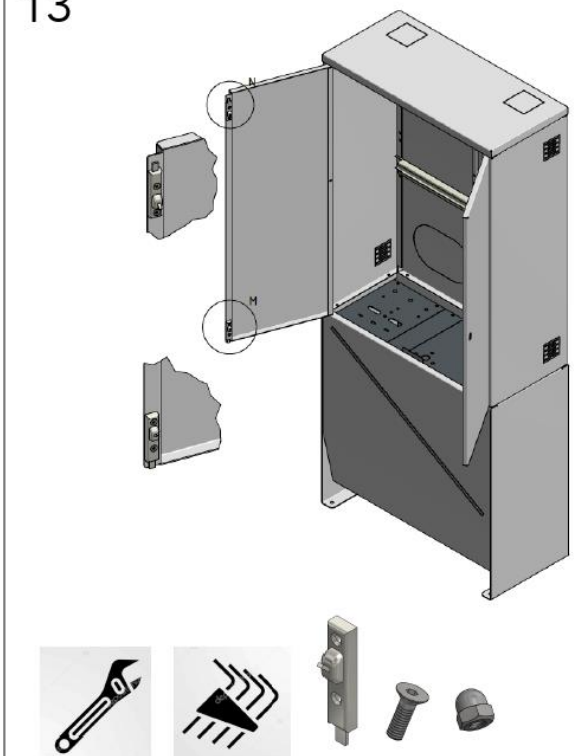

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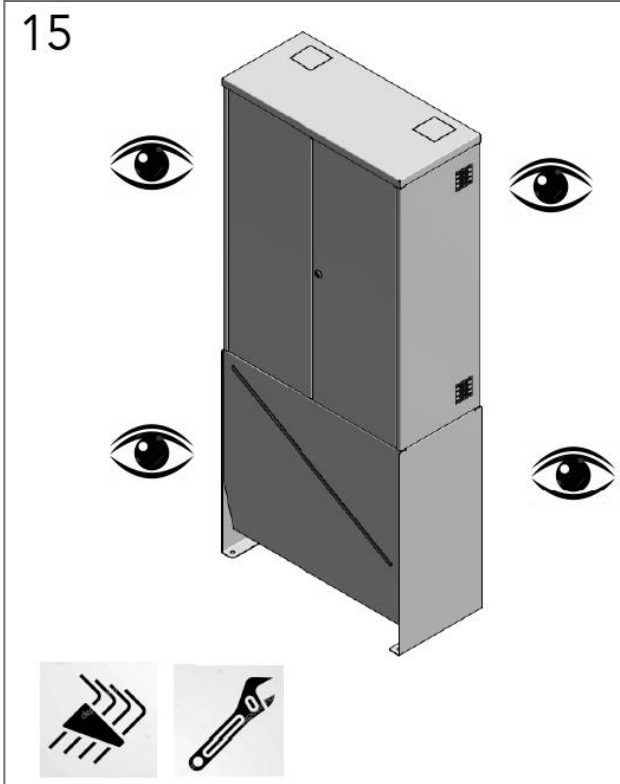

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