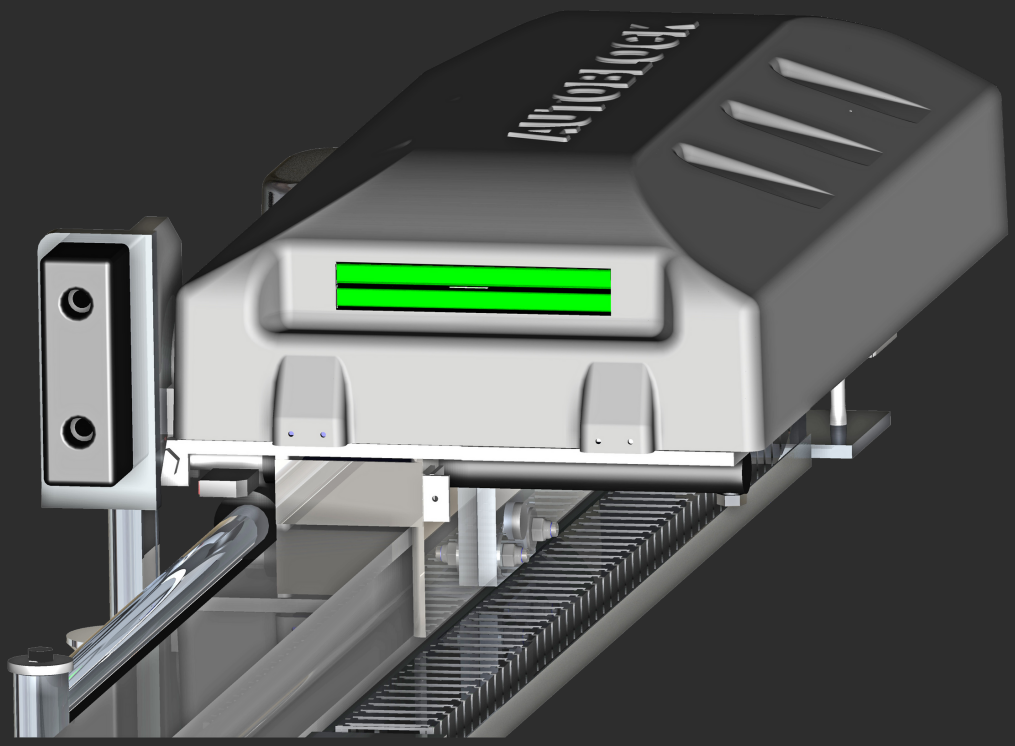
Semi-automatic restraint system

AUTOBLOCK

Technical manual



ASA systems

SUMMARY

Part 1
Installation manual

BEFORE ORDERING AND INSTALLING AUTOBLOCKS, A TECHNICAL-SALES PERSON MUST BE ENSURED THAT THE MACHINE CAN BE INSTALLED ON THE AFFECTED SITE.

INSTALLATION DIAGRAMS ARE AVAILABLE ACCORDING TO THE INSTALLATION'S ATMOSPHERE.

Installation on the dock's left or right, steel or concrete wheel-guides, installation with or without tunnel... The installation procedure must be carried out by trained technicians.

Autoblock is a semi-automatic machine. During installation or reparation, only installation or maintenance technicians and authorized staff are allowed to be present in the operating area.

Technicians must consider the machines semi-automatic operations, especially when the hood is lifted. It's dangerous to work on the carriage with the hood open, when the machine under voltage.

The hood protects from certain crushing or shearing risks.

The electrical operating part is under low voltage 24 volts direct current and protected: it does not present any risks. However, the motor's power supply is in 220 V or 380 V, so must be handled by trained technicians only.

While installing, technicians must take all necessary measures to guarantee the security of people nearby, and their own.

The equipment and tooling must be in compliance with applicable safety regulations and used in accordance with Labour Code rules.

NECESSARY INSTALLATION EQUIPMENT:

- 6 dowel anchors 16 x 125 or 150 mm
- 2 cable slings 3T each. 1 L = 2000 – 1 L =3000
- Hammer drill, special drill bits for concrete 16 (and 35 mm in case sheaths have not been done)
- Drill with steel with 6 to 13 mm bits and one 18 mm bit
- Flat spanner 7 to 32 mm, socket wrench 7 to 32 mm
- Wrench, hammer, screwdriver (flat and crossheaded).

RECOMMENDED:

Hoover, dustpan, and in case of several installations, a hammer drill for sinking dowel anchors.

APPROXIMATE INSTALLATION TIME:

(Installation time depends on sites, weather, atmosphere and working constraints on site).

For a 2 technician team (correctly trained), with respected reservations: 4 hours minimum for several machines, 6 hours for only one machine.

PACKING

The Autoblocks packed in a wooden structure.
Dimension: 5,12 x 1,20 x 0,73 m H – Weight : 800 kg (Autoblock included).

- 1 pre-assembled Autoblock with a hydraulic unit containing oil, hoses and a plastic cover (green/red traffic light integrated in the plastic cover);
- 1 package containing: 1 distribution box with connectors (cables : power supply, magnetic sensors, solenoid valves, twilight led lights and detector, beeper) – The whole lot is assembled and cabled.
- 1 package containing the control box, maintenance key (1), photoelectric sensors, fuses, precabled cables (2) with connectors for the sensors.
- 1 package containing the twilight detector (1), magnetic sensors (2), photoelectric sensors (2), motor power supply cable (1)

In case several Autoblocks are transported and delivered with unloading tool, the wooden structure contains 2 Autoblocks. This structure will then weigh 1800 kg. Starting from 2 units, the packages containing the control units are delivered on a separate pallet measuring 1,20 x 0,80 mts.

UNLOADING:

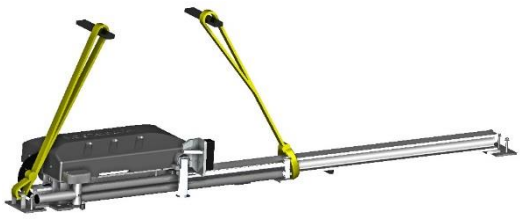
The unloading procedure must be done with a forklift or a « Manuscopic ».

DELIVERY WITH WOODEN STRUCTURE:

One Autoblock must be unloaded at a time. Do not unload more than 1 Autoblock at once. Remove each wooden structure from the bottom. Once it has been unloaded, remove each Autoblock like indicated below:

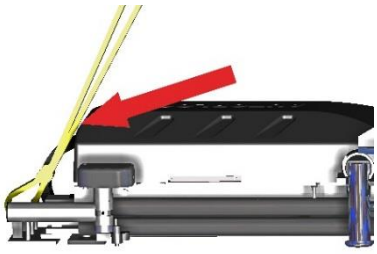
LIFTING THE AUTOBLOCK:

(instructions to be followed also in case of an special delivery without wooden structure)



To remove the machine from the structure, remove the bolts that have been fixed to the structure.
Follow the following instructions **"STRAPPING AND LIFTING PROCEDURE"**.

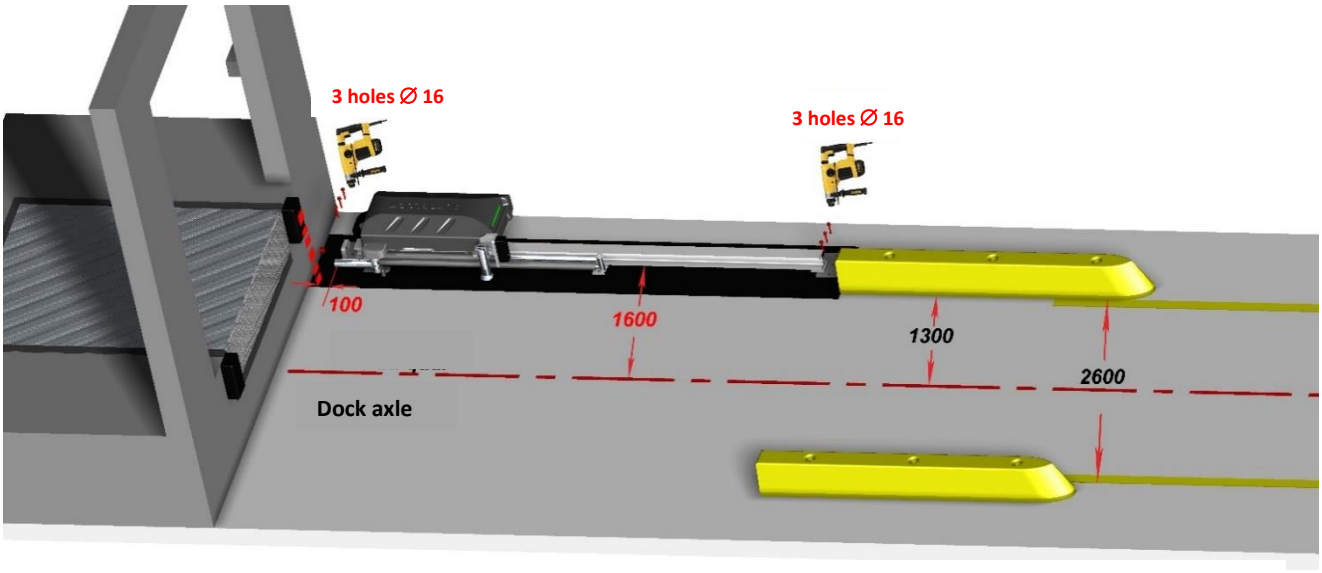
STRAPPING AND LIFTING PROCEDURE:



Pass 2 loop slings – minimum capacity 3T, one L=2000 and one L=3000 in each part and on each blade.
Pass the L=2000 sling in the unloading part (loop) and on the forklift's blade. With the L=3000 sling, make a loop around the guidance rail and around the forklift's second blade. The sling must be positioned as near as possible to the central fixation plate.
Caution: move apart each blade so that the plastic cover does not get crushed by the slings while lifting the machine.
Lift the Autoblock gently from the ground to have balance control.

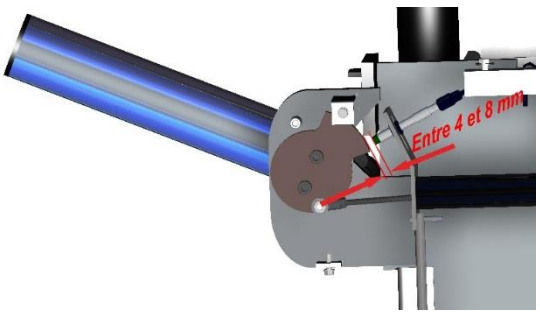
CAUTION: MAKE SURE THAT THE SLINGS ARE NOT MAKING PRESSURE ON THE PLASTIC COVER.

Installation must be done on concrete (slab or stub). Check the flatness, camber and electrical reservations with necessary sheaths – see installation plans.



Autoblock installation :
100 mm from the bumper's front side – 1600 mm from the guidance rail to the dock axle, perpendicular installation to the dock. Installed on concrete. If there is a bitumen ground, make a concrete stub (ask for a plan) or ask our technical service.

- Place the Autoblock on the ground while making sure to respect the installation plan.
- The important dimensions are 1600 mm from the dock axle to the beginning of the guidance rail, and 100 mm from the bumper's front side.
- (the X* dimension is the bumper's front side to the dock's front side)
- Check the squarness in regards to the dock and peg with sleeper screws diameter 16x150 mm.
- Lift the cover (caution: make sure the kickstand is in place. If the weather is windy, make sure the cover is fixed) and check the front sensor and it's tightening. Detection distance between 4 and 8 mm, between the welded part located on the rail, and the sensor.



- Remove the small cover and check the detection arm's sensor (detection distance between 4 and 8 mm, see picture), location on oblong hole. The oblong hole's adjustment allows a more or less quick detection, to calibrate the wheel-stop's output distance regarding the wheel. When the detector is positioned to the left (carriage's rear), the detection is quick. When it's positioned to the right, the detection arm's run is more loose, which slows down the detection (the wheel-stop comes out further than the wheel). Check it's tightness.
- Check the solenoid's correct positioning and their tightness.
- Check the hydraulic hose's tightness on the distributors and the cylinders.
- Run the power supply cable with the connector and the motor cable in the sheath to the control unit inside the building.
- Check the oil level: over roughly 2cm from the aluminium part (pump body)
- Close the cover and fix it with the 2 screws.
- Position and fix the control unit inside the building.

- Connect by screwing the connector(s) on the female plugs under the control unit. Avoid forcing: the plugs contain coded pins and in the case of 2 plugs, they are different colours.
-
- Connect the motor cable (screwless terminal)
- Install and connect the dock sensor under the dock: we recommend to assemble this sensor by drilling the vertical reinforcement located under the dock's hinges (drilling ∅ 18 mm).
- Install and connect the door sensor on the door's rail so that it can detect when the door is in down position (this sensor can be installed up to 60 cm from the ground if the client asks for a low ventilation by slightly opening the door).
- Make the connection between the control unit and the dock (preferably on the press button, or on the dock's emergency stop button)
- Make the same connection between the control unit and the door – if motorized – on the open push button.
- SUPPLY THE CONTROL UNIT WITH 380 V + GROUND

TESTING:

- Turn the switch to ON position
- Make sure that the emergency stop fully unlocked
- Press the blue LED push button (REARME) which should then switch off.
- Turn the maintenance key, check the motor's rotation direction, reverse the phases if needed.
- With the maintenance key, make the Autoblock run fully, forwards and backwards, to check that it's working correctly.
- POSITION THE CARRIAGE IN REAR POSITION (against the dock): this is its position for initialization.
- THE AUTOBLOCK IS READY TO OPERATE.

CAUTION:
Operating the Autoblock with the maintenance key short-circuits the door and dock sensors. To do this simulation or an automatic operation, make sure that the dock is in resting position and close the door (otherwise the operation will not happen, the beeper and the PLC will signal failure).
The operator must imperatively be able to see the Autoblock's carriage, otherwise the presence of 2 people is necessary.

VEHICLE SIMULATION:

2 people are needed for a simulation.
One person on dock side (A) will simulate the vehicle, and activate the detection arm.
The person inside the building will simulate the operator.

Blocking

1. B presses the **BLOCK** button. The Autoblock will try to find the first wheel train.
2. After a 1 or 2 meter run, A will shift the detection arm to the rear (pass in front of the sensor), then let go. The carriage will slightly come back (against the wheel), then goes forward again for roughly 4 cm (leaves a slight gap from the wheel allowing a little play).
This operation represents vehicle blockage.

Note: the 50 cm are calculated to take in charge wheels from diameter 50 mm to 1200 mm, when the wheel-stop finds the wheel, the carriage stops while making pressure on the wheel then comes back a little (the pressure time on the wheel depends on its diameter).

Releasing

3. B presses the **RELEASE** button: the carriage moves forwards.
4. A shifts the detection arm to the rear (pass in front of the sensor) then let's go. The carriage stops, temporizes for about 3 seconds, then comes back to its initial position, near the dock.

OTHER SIMULATIONS :

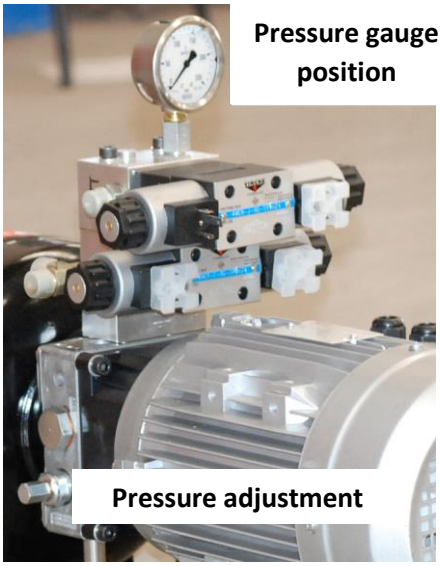
If someone presses the blocking button even if no vehicle is parked, the carriage will move to the end of the guidance rail, temporize, and come back to its initial position.
The "open door and dock" simulation can also be done: restart blocking and releasing cycle with door open or dock lifted. In pre-blocking position, the door and dock cannot be manoeuvred.
Once the blocking is done, if the door is not closed or the dock is still lifted, the Autoblocks carriage will not be able to be manoeuvred.

Note: If the Autoblock's run is irregular, jerky, even after a few runs, check the oil level (not enough oil in the beggining). Refill if necessary.

PUMP PRESSURE ADJUSTEMENT (if necessary):

The adjustment is made in the factory. However, if needed, it's possible to adjust pressure directly on the hydraulic unit. This adjustment must be made by a certified technician.
This operation must be done by 2 people (1 technician and 1 person near the control unit).

Technician:
Unscrew and lift the cover. On the distributor's exterior side (see photo), unscrew the locking nut. Ask the operator to start.



Operator:
Put the pump into servlce (maintenance key), carriage towards initial position. The pump is running, the carriage stays in place).

Technician:
Screw the cruciform screw: the unit will tend to stall. Immediately unscrew by 2 turns, the motor restart correctly (without forcing). Rescrew the locking nut.

Operator:
As soon as the unit runs normally, the operator can stop the functioning. This operation must be done quickly.
CAUTION: never force pressure : it must not be over 60 bars maximum.

Technician:
Close the cover, ask the operator to make the unit run for 4 or 5 seconds.
The motor must run normally without blocking at the beginning. Lastly, do a no-load test (see "vehicle simulation).

WITH A PRESSURE GAUGE

With a gauge, the pressure is 55 bars. The gauge's plug socket is on the top of the distributors. Make the unit run manually with the maintenance key and adjust pressure, see above section.

PRESSURE GAUGE: 0 to 100 bars mini, 1/8 male nozzle.

ADDITIONAL INFORMATION

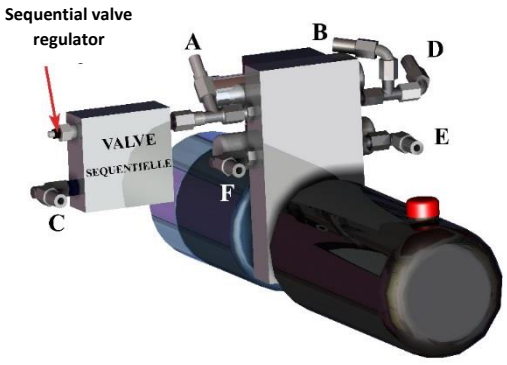
CONTROL UNIT:

- **White** light = Undervoltage
- Blue « **REARM** » light off = System working
- Green light = Possibility to open the door and use the dock (red on the contrary)
- Green « **BLOCK** » light = Pending blocking *
- Red « **RELEASE** » light = End of transhipment, possibility to release**
- Blue light on if the control unit is under voltage, but emergency stop engaged, or electrical problem (press the button to rearm the system)

* The light is on when the Autoblock is in initial position (near the dock) and turns off as soon as it is in action. In case of a vehicle detection option, the light turns on in the presence of a vehicle and turns off when the Autoblock is in action.

** The light turns on when the transhipment is acheived, dock back into initial position and door closed.

HOSES:



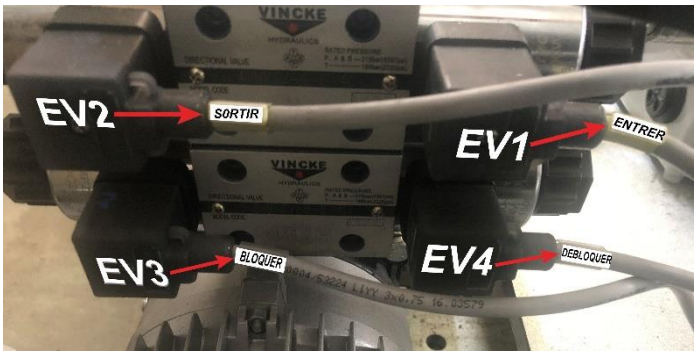
A: Front hose – 2000 mm cylinder (carriage return)
B: Rear hose – 2000 mm cylinder (carriage advance)
C: Front hose – 1000 mm cylinder (carriage advance)
D: Rear hose – 1000 mm cylinder (carriage return)
E: Front hose – Blocking cylinder (block)
F: Rear hose – Blocking cylinder (release)

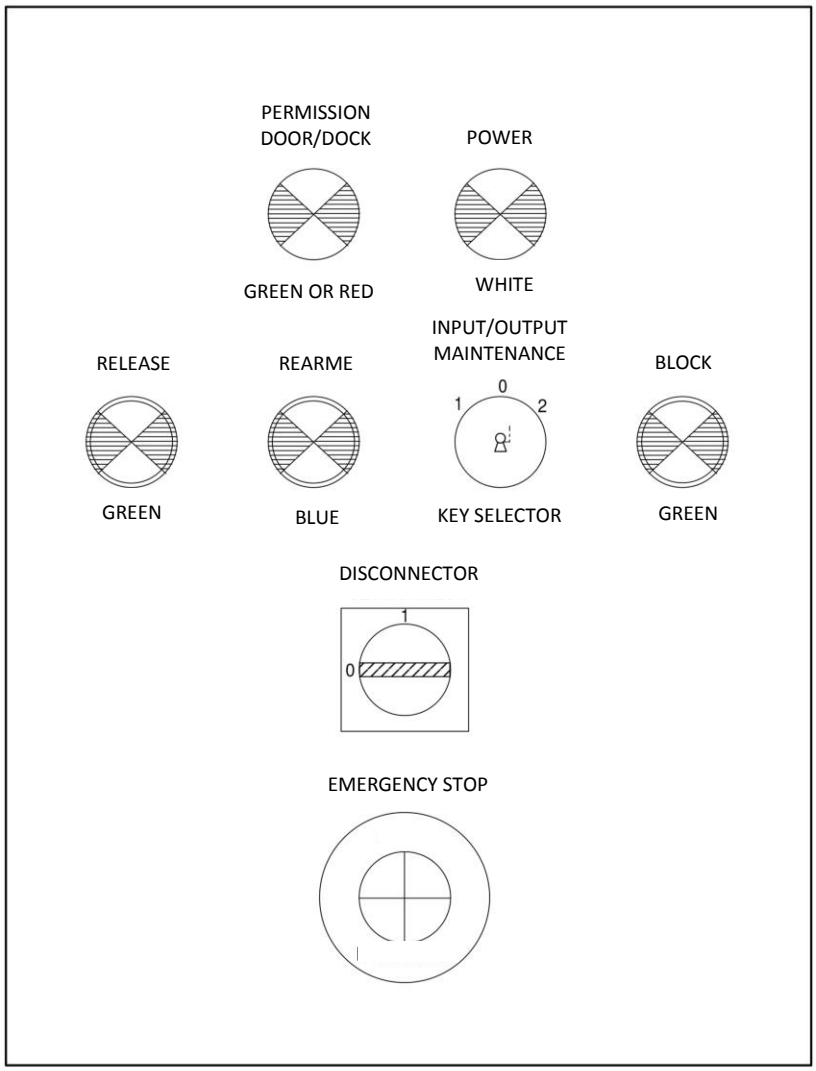
The sequential valve must be adjusted between 20 and 25 bars.

MOUNTING SOLENOID VALVE CONNECTORS:

The high solenoid valves correspond to the carriage's return run to the dock (right) and the carriage's advancement (left)

The bottom solenoid valves corresponds to blocking procedure (bottom left hand side) and releasing (bottom right hand side)





LEGEND

Permission door/dock: GREEN = permission to open the door and lift the dock.
RED = forbidden to open the door or lift the dock.

Power: WHITE (lit) = the control unit is power supplied.

Release: GREEN (lit) = permission to release the truck (if the led light is off, le push button is inactive).

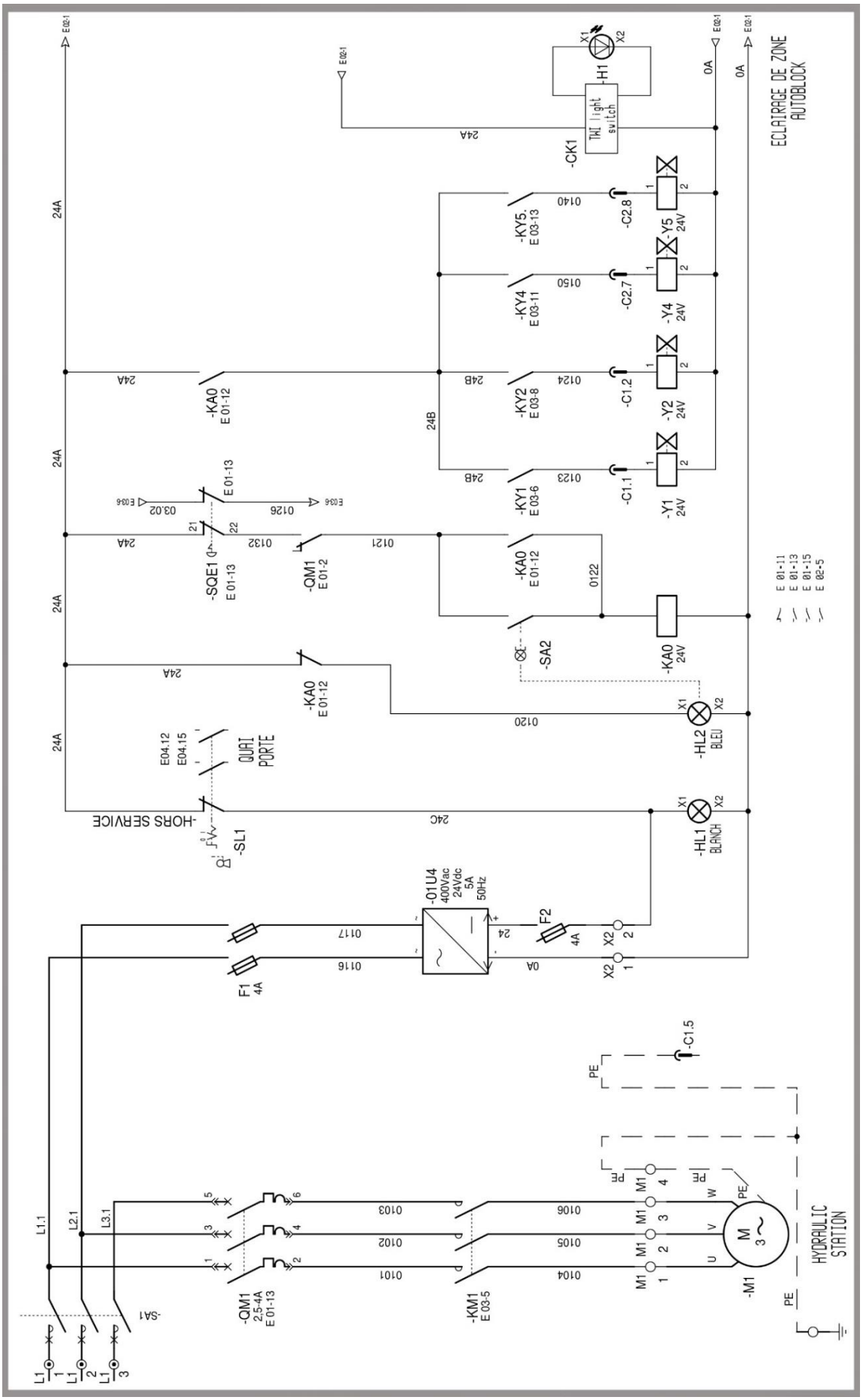
Rearme: Press the push button to reinitialize the control unit (if emergency stop is engaged or if the thermal relay is triggered, le led light will stay blue which means that it is inactive).

Maintenance: Key selector to be used only by trained technicians, allowing the Autoblock to be manoeuvred forced-march) - Sustained action manoeuver.

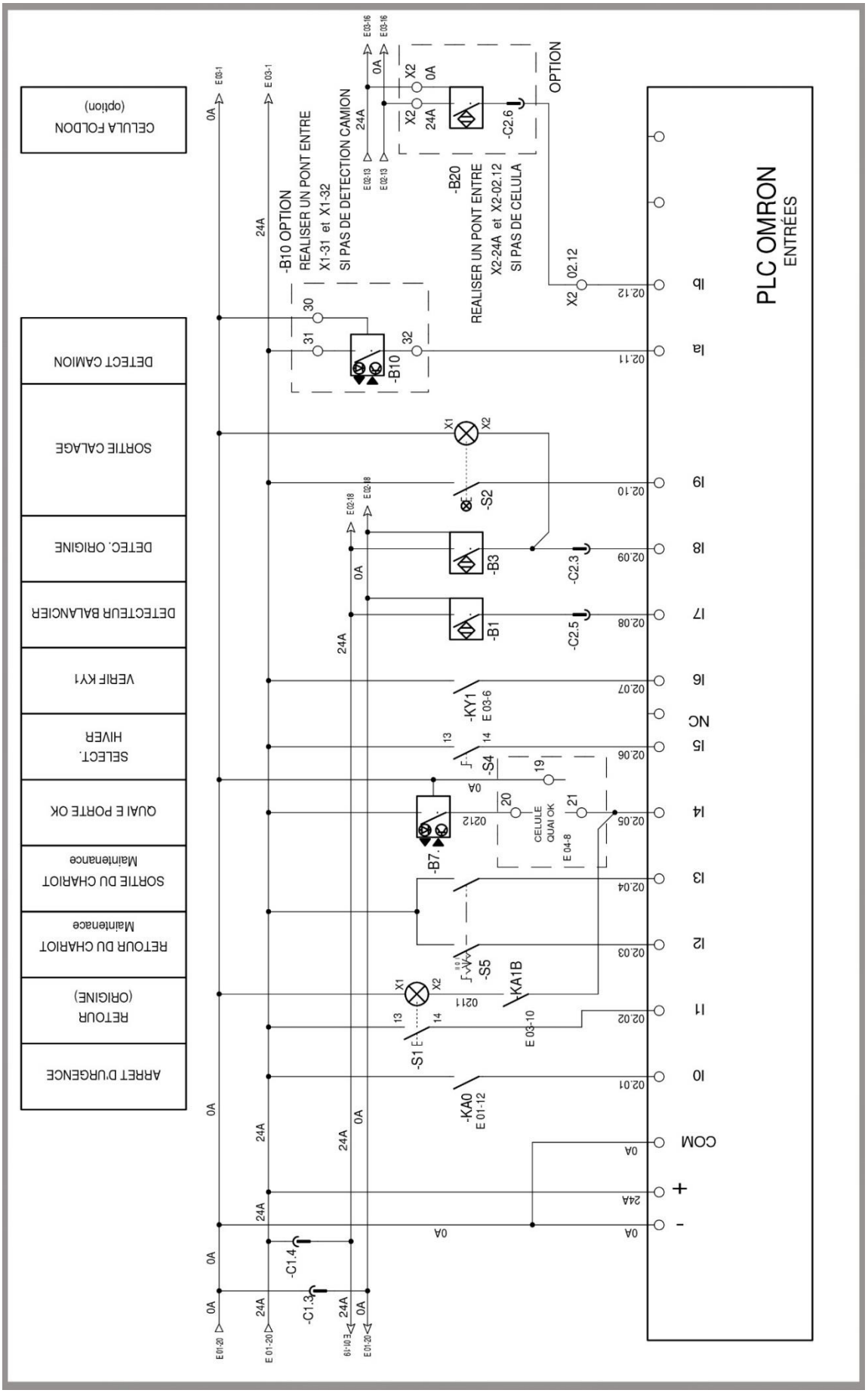
Block: GREEN (lit) = permission to block the truck (if the led light is off, the push button is inactive).

Disconnector: Disconnects Autoblock's general power supply (possible to put a padlock on it to block tension

POWER SUPPLY



PLC IMPUT


PLC OMRON
ENTRÉES
ARRET D'URGENCE
RETOUR (ORIGINE)
RETOUR DU CHARIOT Maintenance
SORTIE DU CHARIOT Maintenance
QUAI E PORTE OK
SELECT. HIVER
VERIF KY1
DETECTEUR BALANCIER
DETEC. ORIGINE
SORTIE CALAGE
DETECT CAMION
CELULA FOLDON (option)
OPTION
-B10 OPTION
REALISER UN PONT ENTRE X1-31 et X1-32
SI PAS DE DETECTION CAMION
REALISER UN PONT ENTRE X2-24A et X2-02.12
SI PAS DE CELULA
-B10
-B20
-B1
-B3
-B7
-S1
-S2
-S4
-S5
-KY1
-KA0
-KA1B
-C1.3
-C1.4
-C2.3
-C2.5
-C2.6
CELULE QUAI OK
COM
+
-
Ia
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NC
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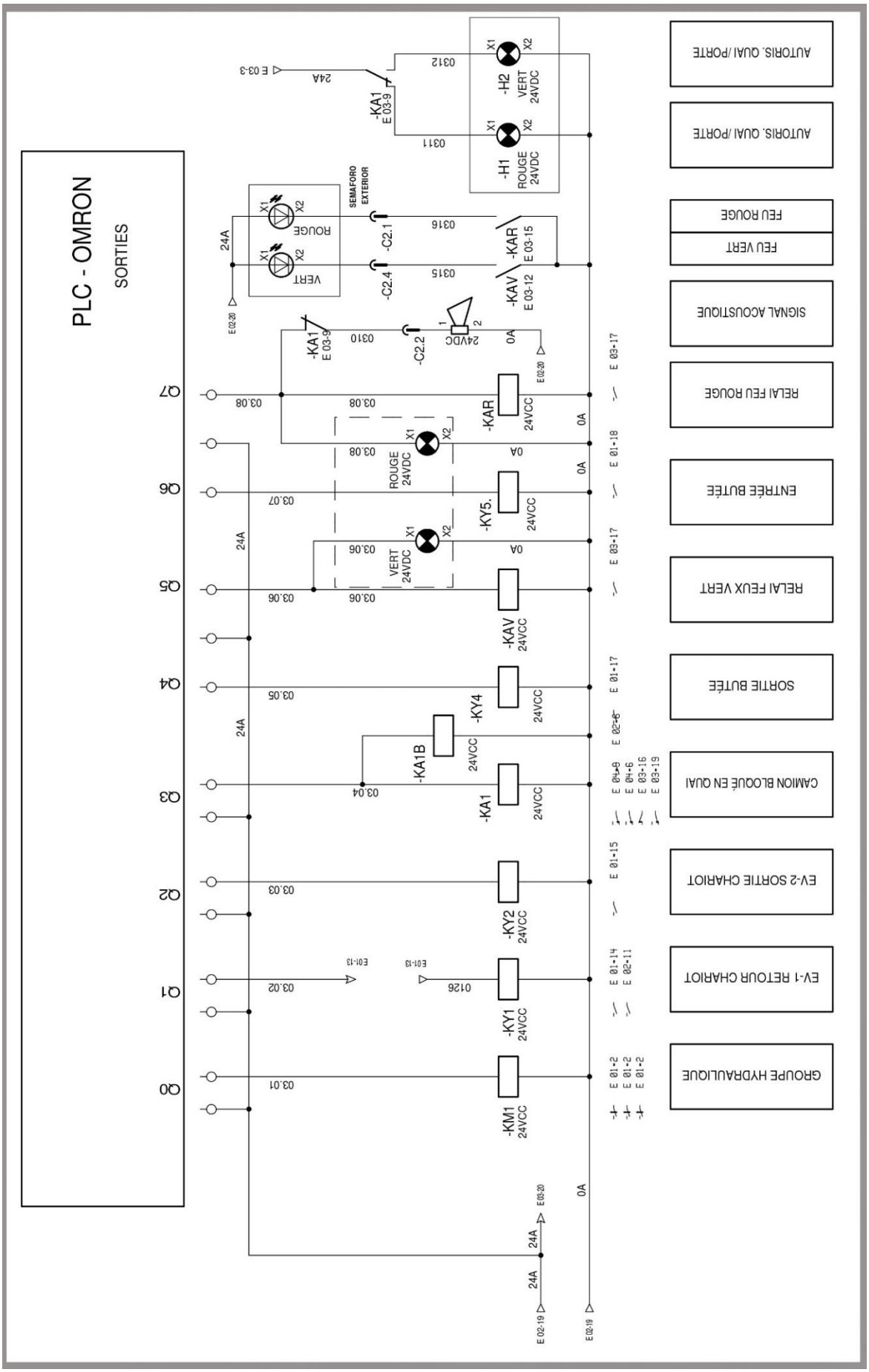
I7
I8
I9
I10
I11

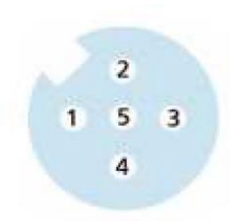
PLC OUTPUT


PLC - OMRON
SORTIES
Q7
Q6
Q5
Q4
Q3
Q2
Q1
Q0
AUTORIS. QUAI /PORTE
AUTORIS. QUAI /PORTE
FEU ROUGE
FEU VERT
SIGNAL ACOUSTIQUE
RELAI FEU ROUGE
ENTRÉE BUTÉE
RELAI FEUX VERT
SORTIE BUTÉE
CAMION BLOQUÉ EN QUAI
EV-2 SORTIE CHARIOT
EV-1 RETOUR CHARIOT
GROUPE HYDRAULIQUE
-H2 VERT 24VDC
-H1 ROUGE 24VDC
SEMAFORO EXTERIOR
-KA1
-KAR
-KAV
-C2.1
-C2.4
-C2.2
24VDC
-KAR 24VCC
-KY5. 24VCC
-KAV 24VCC
-KY4 24VCC
-KA1B 24VCC
-KA1 24VCC
-KY2 24VCC
-KY1 24VCC
-KM1 24VCC
24A
0A

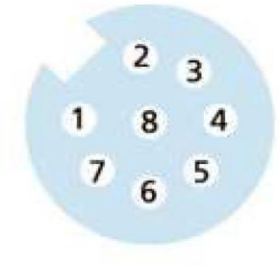
CODIFICATION OF BOTH CONNECTORS

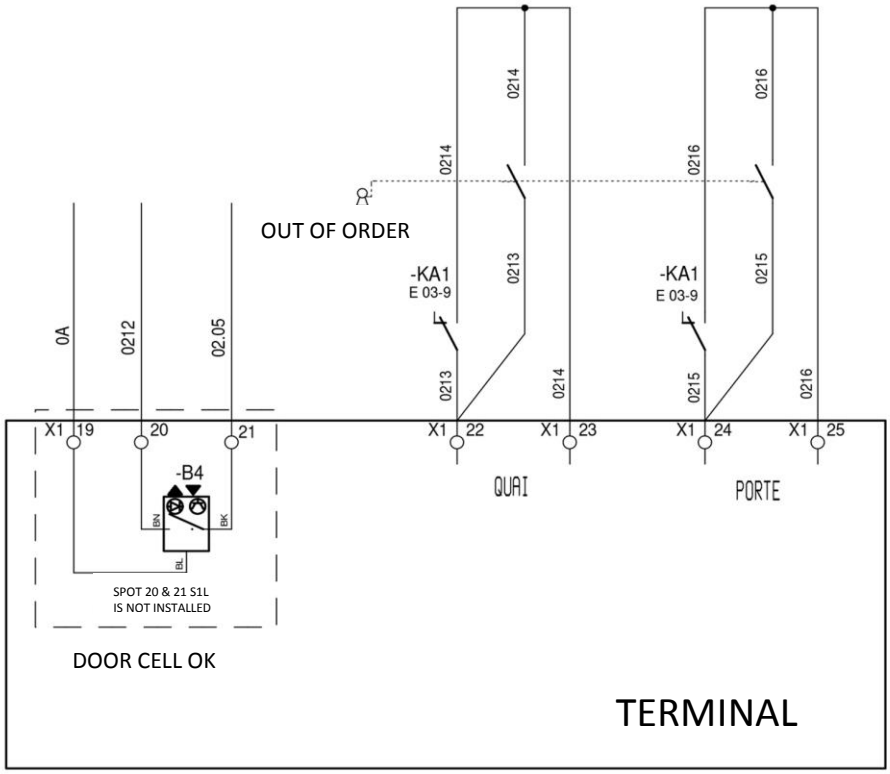
See colour codes and signalization lights

0123	1/BN	0123
0124	2/WH	0124
0A	3/BU	0A
24A	4/BK	24A
PE	5/GN-YE	PE



0316	1/WH	0316
0310	2/BN	0310
02.09	3/GN	02.09
0315	4/YE	0315
02.08	5/GY	02.08
02.12	6/PK	02.12
0150	7/BU	0150
0140	8/RD	0140





24 A = BLACK = COMMUN

0315 = GREEN/YELLOW = GREEN

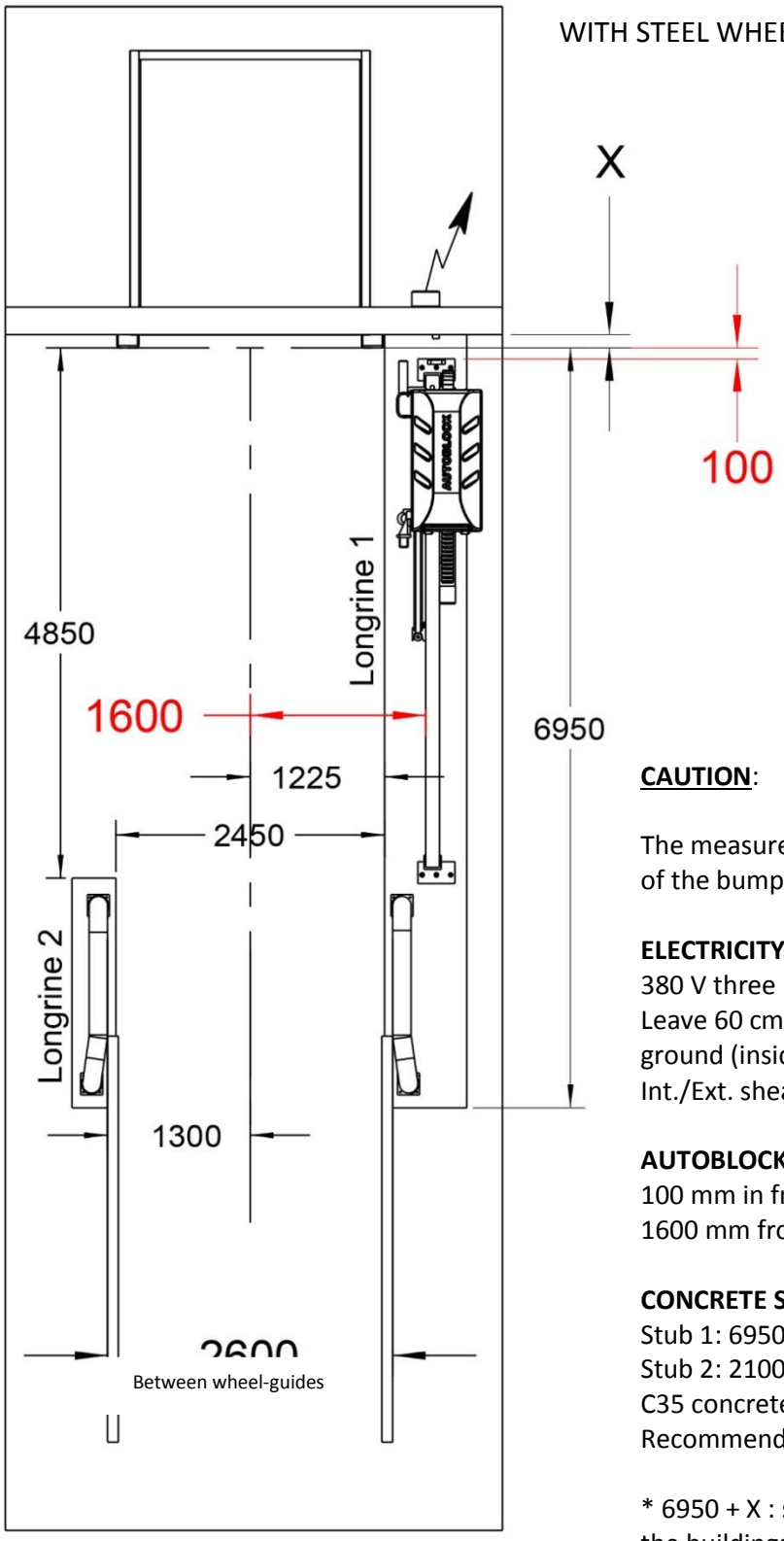
0316 = BROWN = RED

BLUE = NOT CONNECTED

RED LIGHT – GREEN LIGHT

AUTOBLOCK 2019 RESERVATIONS
EUROPEAN SIDE (RIGHT)

WITH STEEL WHEEL-GUIDES



CAUTION:

The measurement is made from the front of the bumpers.

ELECTRICITY:
380 V three phased + ground (10 A)
Leave 60 cm of cable at 1100 from the ground (inside building)
Int./Ext. sheath ∅ 50

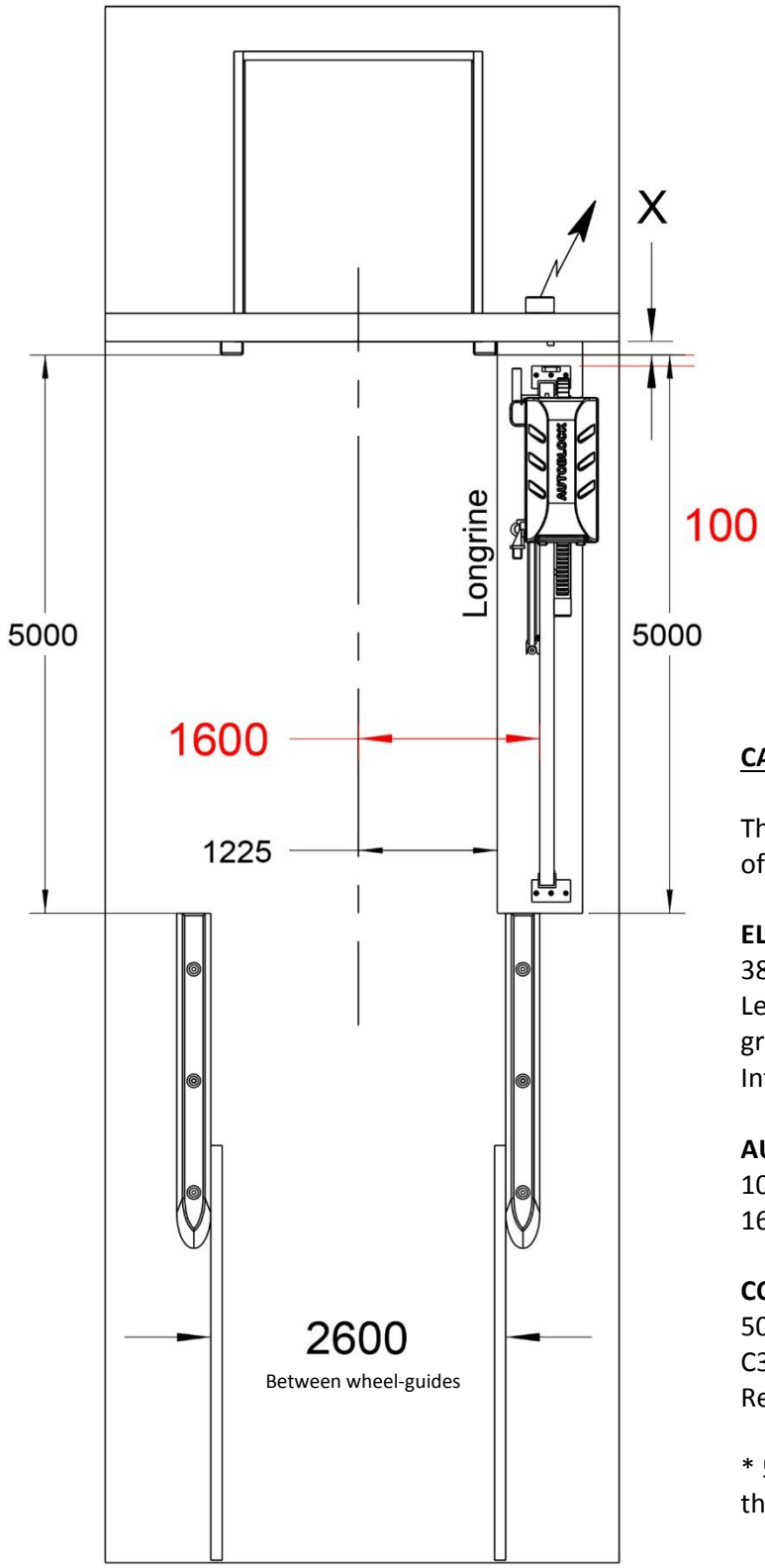
AUTOBLOCK (in red):
100 mm in front of the bumper
1600 mm from dock axle to rail

CONCRETE STUBS (if no concrete base):
Stub 1: 6950* x 750 x 500 deep
Stub 2: 2100 x 400 x 500 deep
C35 concrete (350 kg/m3)
Recommendation EN 206-01

* 6950 + X : so that the stub starts from the buildings wall

AUTOBLOCK 2019 RESERVATIONS EUROPEAN SIDE (RIGHT)

WITH CONCRETE WHEEL-GUIDES



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ELECTRICITY:
380 V three phased + ground (10 A)
Leave 60 cm of cable at 1100 from the ground (inside building)
Int./Ext. sheath ∅ 50

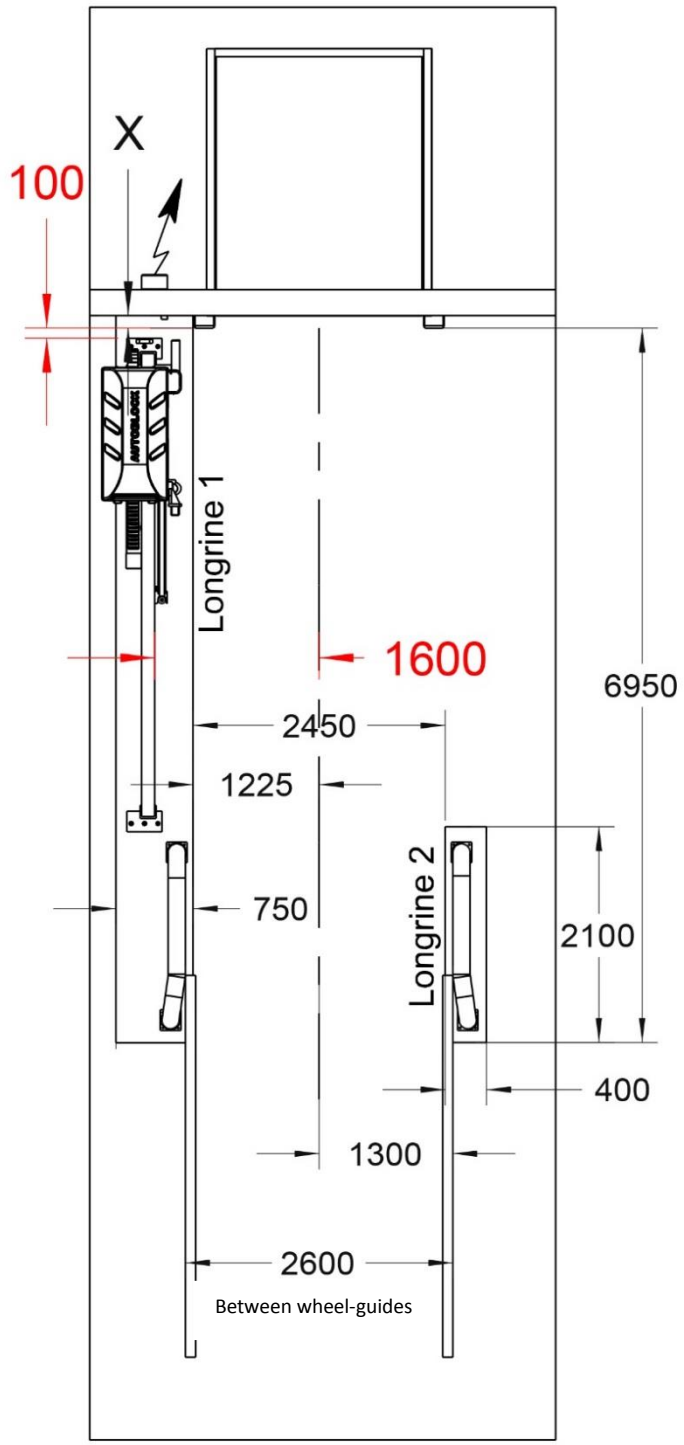
AUTOBLOCK (in red):
100 mm in front of the bumper
1600 mm from dock axle to rail

CONCRETE STUB (if no concrete base):
5000* x 750 x 500 deep
C35 concrete (350/kg/m3)
Recommendation EN 206-01

* 5000 + X: so that the stub starts from the buildings wall.

AUTOBLOCK 2019 RESERVATIONS UK SIDE (LEFT)

WITH STEEL WHEEL-GUIDES



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C35 concrete (350 kg/m3)
Recommendation EN 206-01

* 6950 + X : so that the stub starts from the buildings wall

SUMMARY

Part 2
Service & Maintenance

Autoblock is a machine designed to secure docking procedures and merchandise transhipment by immobilizing the truck's trailer while the loading / unloading procedure takes place.

Like all machines, it must remain clean and in good working condition.

It is forbidden to bridge its security or control elements, which could cause severe accidents.

It is forbidden to use this machine (or one of its components) for other purposes than those intended.

Its maintenance includes 2 annual visits.
These visits should be made by trained technicians, previously approved by the manufacturer.
These visits must be reported on the maintenance booklet.

In case malfunctions are noted or after an impact, if the machine's functioning seems unusual (grinding, squeaking, carriage not parallel, jerky cylinder movement, oil leakage, etc), each detail must be reported on the maintenance report and, depending on seriousness, mention the urgency to make a necessary reparation, or immediately disable the Autoblock while pending its rehabilitation.

The non-compliance of the previously mentioned points will automatically void all warranties.

MAINTENANCE KEY

(on front of the control unit)

IMPORTANT:
Manoeuvres made with this key may cause dangerous situations if they are not made by a trained and approved technician.
During the manoeuvre, the person must have a view on the machine or must be accompanied.
Only trained technicians and maintenance employees can intervene on the Autoblock, during these manoeuvres, while taking all required precautions during an intervention on a semi-automatic machine.

This key manoeuvres the Autoblock and is in sustained action.
This key will put out of circuit the detection sensors.
The forward and return phase (blocking and releasing) is independently put in forced-march.

IMPERATIVE:
At the end of the manoevre, the Autoblocks carriage must be repositioned in its starting position, against the dock (the control unit's red light and the exterior green light will both turn on). If the carriage is not back to starting position, accident or deterioration risks may occur.

Autoblock includes 3 parts:

- Electrical
- Hydraulic
- Mechanical

The technician's competence must be based on these three parts and he must be approved to intervene on low-voltage currents.
Before maintenance, the intervention zone must be marked-out inside and outside the building.
We recommend the docking area to be secured by orange cones. During an intervention on the mechanical part, the electrical part must be closed off to avoid the machines uncontrolled movement.
During maintenance, the machine does not necessarily have to be under voltage to intervene on the mechanical part.

In the first place, make the Autoblock move with the maintenance key by making it go forward and backwards (the technician must control the operations from the control unit, otherwise, additional persons presence is neccessary.

Once this cycle is accomplished, the dock and door's securitly elements must be controlled by making a full back and forward manoeuver (in automatic mode), by simulating a truck at dock (this operation requires 2 people).

These manoeuvers are intended to control Autoblock's securities, hard points and looseness.

The electrical part is composed of a control unit (generally installed inside the building), a distribution box inside the carriage, a hydraulic unit, security and position control elements.

Check the correct functioning of the position sensors.
A) Front sensor, magnetic;
B) Wheel sensor (retractable detection arm), magnetic;
C) Dock lip, photoelectric infrared (magnetic option for telescopic dock);
D) Door sensor, photoelectric infrared

→ Check correct functioning the control unit – dock – door link
→ Check the connector and hydraulic solenoids state (screw tightening and cleanliness of it all)
→ Check the cables state in the guidance chain
→ Check the beeper and led light's functioning, as well as the control unit's lights

AUTOMATON ERROR CODES

ALARM	MEANING
Alarme 2	Emergency stop engaged or thermal protection tripped
Alarme 3	Dock not put back into resting position or door not closed Door and dock sensors must also be checked
Alarme 4	Carriage not in resting position : Make it come back against the dock with the maintenance key
Alarme 5	Dock incorrectly positioned or defective dock sensor (if both of these elements are correct, check the cabling)
Alarme 6	Check the truck detection sensor (option) If there is no sensor in place, check the bridge
Alarme 7	Defective carriage position sensor : Check its operation, the gap and the cabling

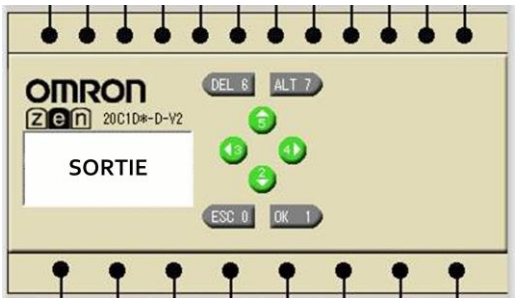
OTHER MESSAGES

ATTENTE :

The Autoblock is back into resting position and waiting for a truck.

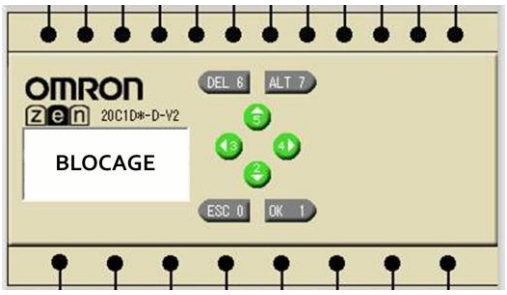
SORTIE :

The Autoblock is moving to block a vehicle.



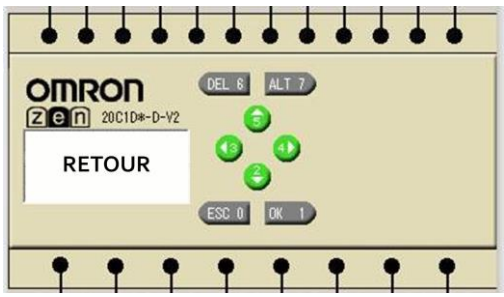
BLOCAGE or EN QUAI :

The Autoblock is blocking a vehicle (the wheel-stop is out).



RETOUR :

The Autoblock is coming back to resting position, after releasing the vehicle.



IDENTIFICATION CODES ACCORDING TO STANDARD EN 61082

CODE	ITEM
ARx	Control unit
BOTx	Distribution box (on Autoblock)
B	Inductive sensors
C	Condenser
E	Special items
EL	Lighting
F	Protective items (fuses)
G	Power supply
H	Signage items (ex. beeper ...)
K	Contactors and relays
KT	Temporized relays
L	Coils
M	Motor
P	Screen and indicators
Q	Circuit breaker and switch
R	Resistance and potentiometer
S	Position sensors
T	Transformer
U	Reverses and frequency converter
V	Semiconductor
X	Electrical terminal, connector and power socket
Y	Electrovalves, brake

GENERAL INFORMATION

POWER SUPPLY: 380 TRI + EARTH
CONTROL VOLTAGE: 24 V VDC
FUSE INTENSITY: 4A
CONTROL UNIT LEVEL OF PROTECTION: IP 65
STANDARD: EN 60434-1

Cable colour codes:

Power circuit: BLACK
Neutral: LIGHT BLUE
Earth: YELLOW / GREEN

Interconnect circuit
AC/DC exterior : ORANGE

Control circuit higher than 50 V
AC : RED

Control circuit lower than 50 V
Positive : DARK BLUE
Négative : GREY

Hydraulic oil must be changed during third year.
Beyond 3 years, depending on frequency of use, we recommend it to be replaced every 5 years.

Reference: BESLUX HIDRO-BAT 32 - More than 95% biodegradable

- → Check the oil level in the tank and top up if necessary ;
- → Check the connections to the distributor and cylinders. In case of a leak, even a small one, check the tightening or change the joints (3/8 joints) ;
- → Check the hydraulic systems general impermeability and cleanliness ;
- → Contrôler l'état des flexibles. Dans le cas d'usure ou de craquelure, prévoir leur remplacement.

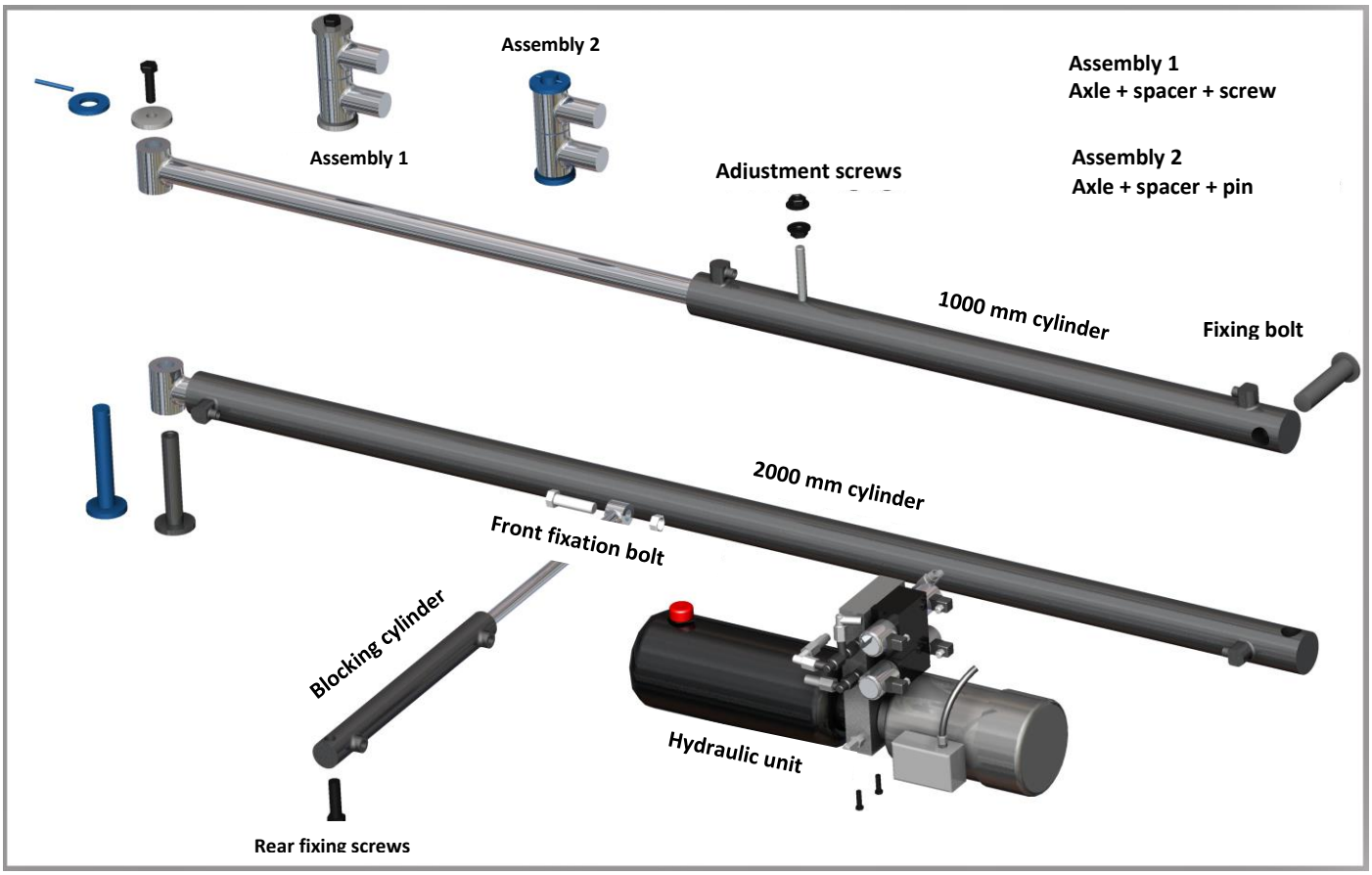
The hydraulic hoses durability depends on the atmosphere and usage.
However, we require their replacement every 6 years (in normal conditions), with a non-aggressive exposure (exposure to bad weather, non-corrosive atmosphere, respected cleanliness and maintenance).

Hydraulic part :

→ Hydraulic unit including a motor, a pump, a tank and a distribution block with 2 dual effect distributors, a sequential valve and connectors.
→ 1 dual effect blocking cylinder
→ 1 dual effect cylinder (1000 mm)
→ 1 dual effect cylinder (2000 mm)
→ 6 hoses (A : B 2000 mm cylinder - C : D 1000 mm cylinder - E : F blocking cylinder)

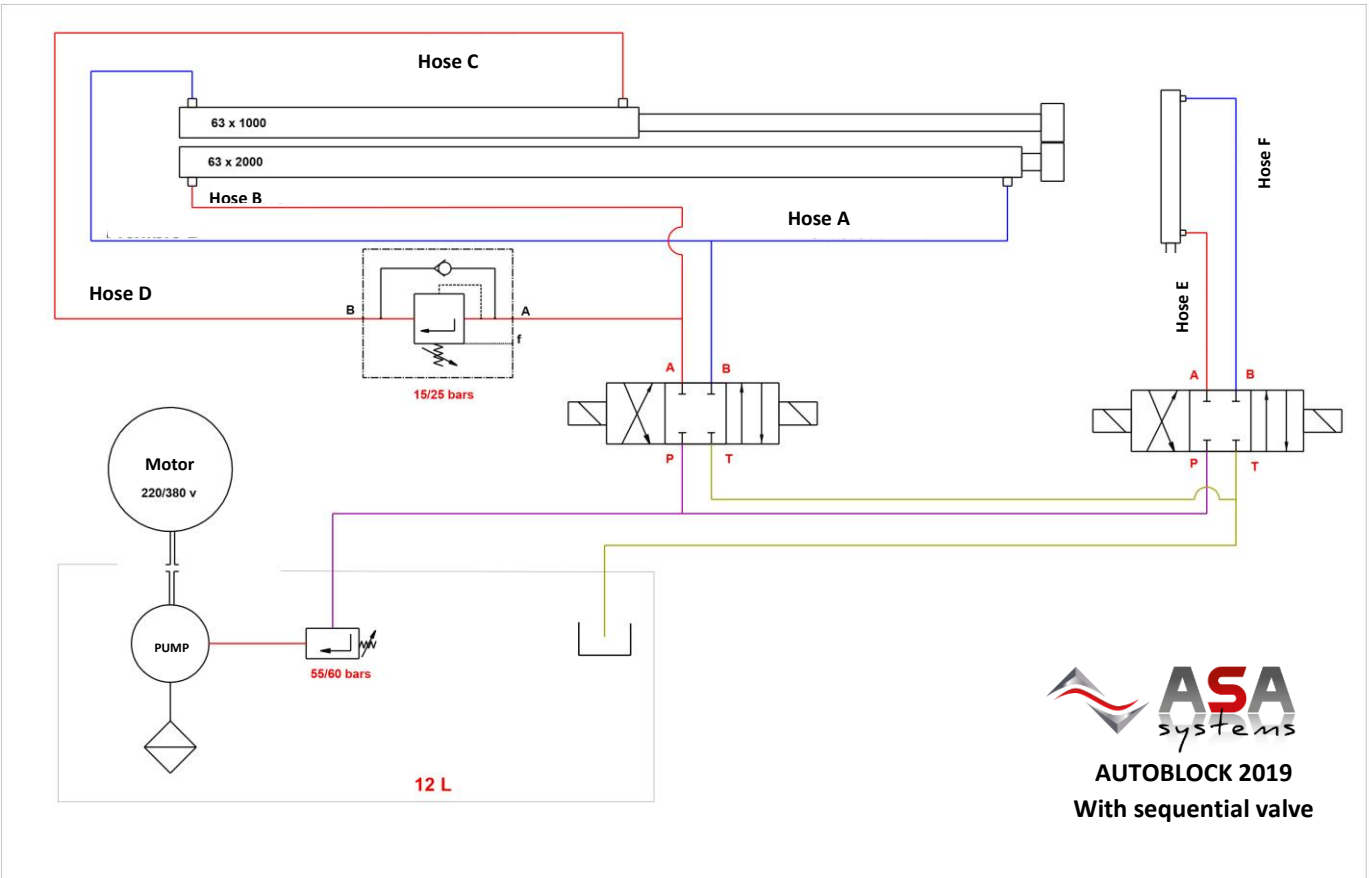
Note: A, C, E are prior cylinder outputs (rod exit)

SPLIT VIEW



HYDRAULIC DIAGRAM

With sequential valve



The hydraulic part includes a hydraulic unit tared to 60 bars.
The pressure adjustment is made by a regulator placed on the bottom of the distribution box (see following page - Pressure adjustment).
This unit supplies both dual effect distributors.

The bottom distributor controls the blocking cylinder. One coil controls the blocking arm exit, and the second coil orders it's re-entry.
The top distributor controls the cylinders which allow the carriage move.
One coil controls the carriage's exit, the other coil controls it's return.

The driving cylinders are reverse assembled and the cylinder output power supplies the back of the bottom cylinder and the front of the top cylinder with a sequential valve, which is tared to 25 bars.

The cycle is following: the bottom cylinder is power supplied and makes the carriage go forwards. The thrust that moves the carriage forward is below 15 bars so only the bottom cylinder exits. Once the cylinder's run is complete, pressure rises and exceeds 25 bars (a few milliseconds). At this moment, the top cylinder retracts and makes the carriage's run continue. For the return, it's the opposite, except that we do not need the sequential valve, because the return takes place without meeting any obstacles (wheel).

HYDRAULIC UNIT REPLACEMENT

SIMPLIFIED METHOD:

When replacing a hydraulic unit, we advise not to change the distributors. The operation is therefore simplified and reduces considerably potential oil leakage problems.

PREPARATION:

For this operation, the technician needs cloths and / or some oil absorber.
Remove the distribution block on the new hydraulic unit.
In order to do this, remove both of the Allen head-set screws (1 and 2), located on top of the distributor. Remove them carefully, making sure to keep the o-ring seals that are under the mounting base.

REPLACING THE UNIT:

- → Disconnect the 380 V power from the motor (keep the cables to avoid rotating phases while reassembling).
- → Unscrew both black Allen screws on top of the distributor without removing the distributor.
- → Unscrew both screws under the unit which maintain the unit on the support plate.
- → Rmove the distribution block and lay it carefully on the carriage (without removing the hoses).

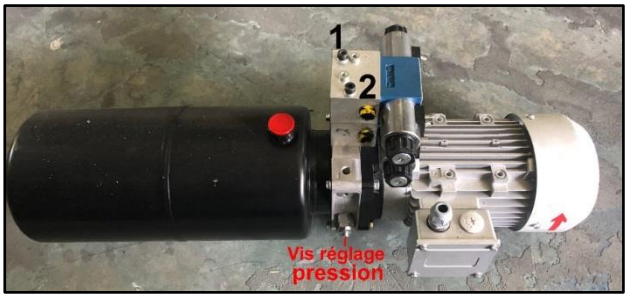
CAUTION: with the o-ring seals : they need to be put back during the reassembling procedure.

- → Remove the whole hydraulic unit and replace it by the new one (fix it on to the support plate with the 2 screws removed previously)
- → Remount the distributor block making sure that the o-ring seals are correctly positioned.
- → Reconnect the motor to the power terminals. Position the cables on the terminal block according to the labelling made before dismantling.

TO FINISH:

On the defective unit, remount the distributor block whilst making sure that the o-ring seals are correctly positioned.

GROUPE HYDRAULIQUE



DISTRIBUTION BLOCK

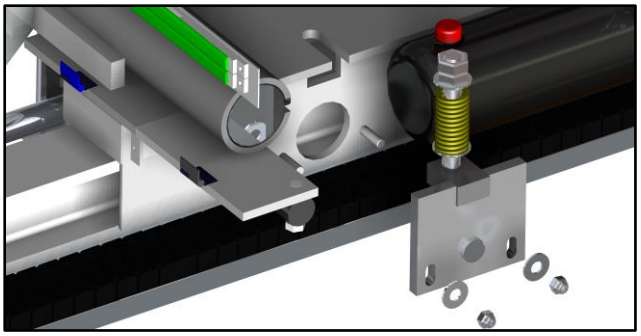
Without connectors or hoses

ROLLER GREASING

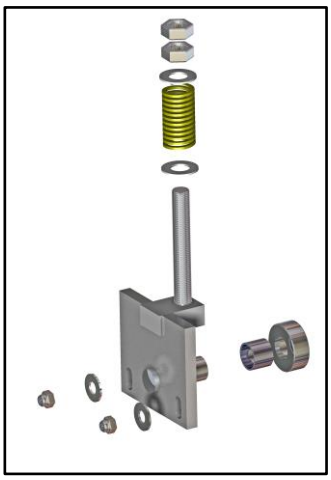
Grease the carriage's top and bottom rollers (pictures below)
This operation requires the carriage to be slightly lifted, so that the rollers are not making pressure on the guidance rail.
To lift the carriage, the bottom roller needs to be removed, and should also be greased.

a) Unscrew the lateral screws that lock the axles
b) Remove both axles, grease them with a stringy type of grease (quite thick) and remount them immediately, taking care to respect the parts mounting order.

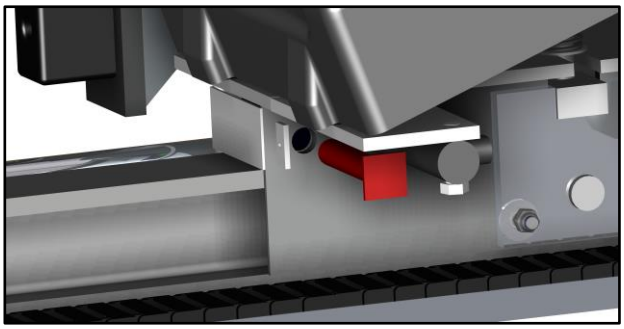
Remove the bottom roller :



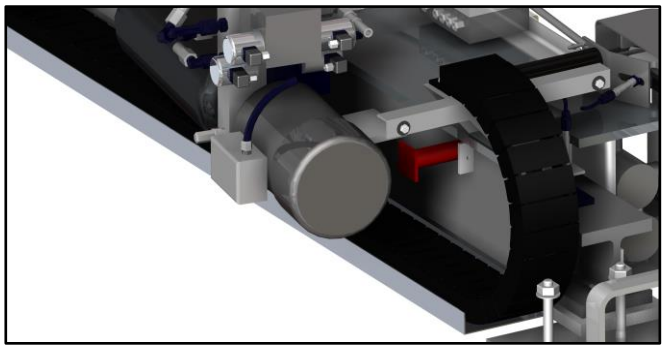
SPLIT VIEW
(the spring is an option)



FRONT AXLE



REAR AXLE

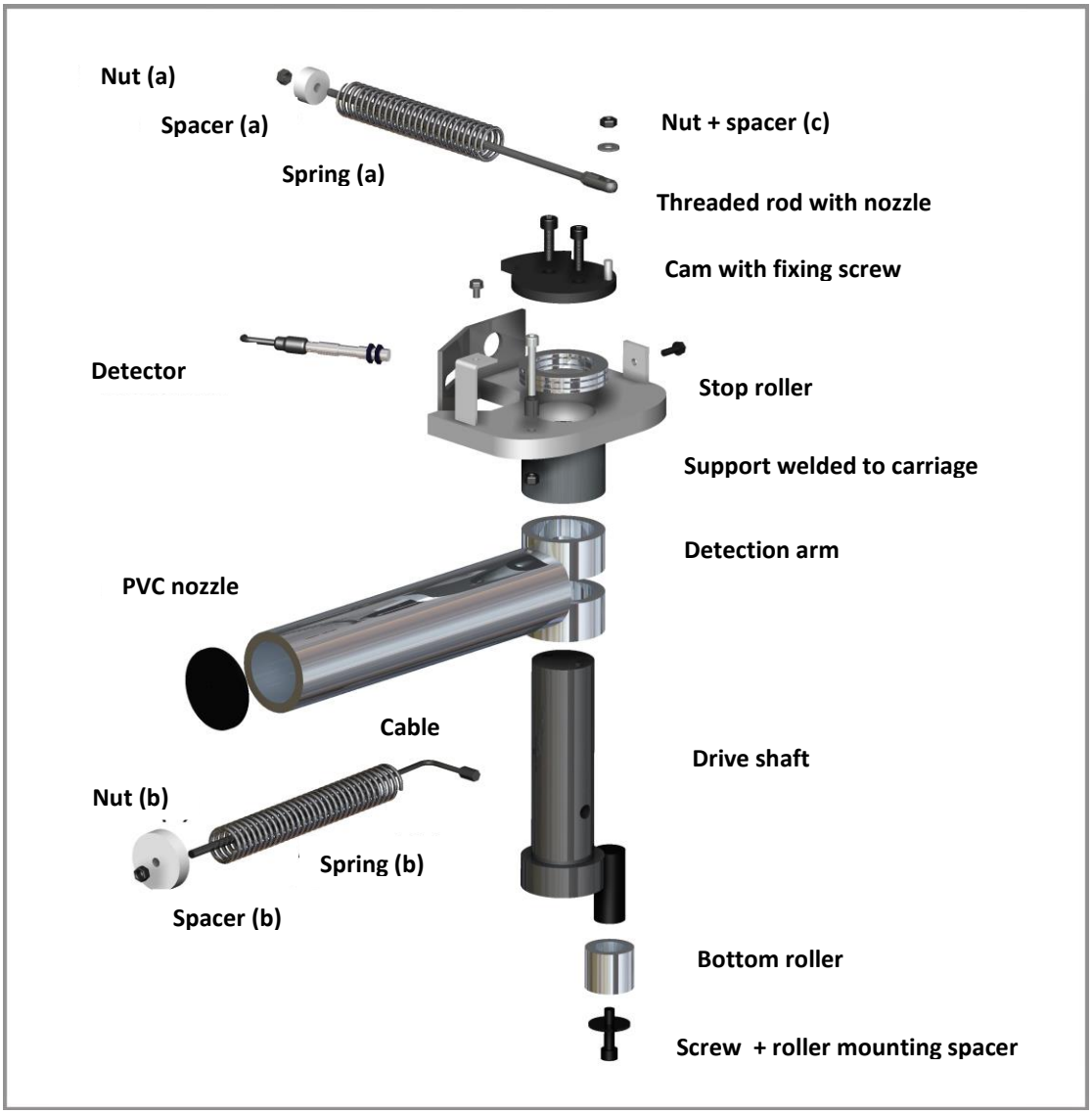


Note: The hydraulic unit must be moved (2 screws under the block) to be able to remove the rear axle.

When the axle is being removed, another axle on the opposite side must be inserted, gradually, to prevent the roller and the 2 spacers from falling. This operation must be carried out by a trained technician.

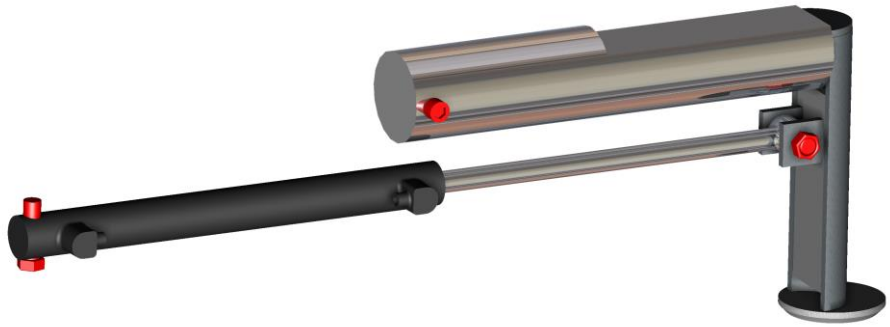
RETRACTABLE DETECTION ARM GREASING

- → Grease the top spring with a brush or grease spray
- → Grease the axle through the 6 mm diameter hole located on the detection arm's sheath with grease spray
- → Grease the spring located in the detection arm
- → Check the steel cable, change it if necessary and grease the part that rolls round the axle.



WHEEL-STOP GREASING

Remove the bolt that links the front part of the cylinder to the wheel-stop, push the wheel-stop forward and grease it slightly but evenly. If the wheel-stop does not slide correctly, remove the Allen screw used as a thrust and remove the wheel-stop (be careful: a wheel-stop weighs more than 40 kgs).
Thouroughly clean the sheath and the wheel-stop with a degreaser, then regrease, slightly but evenly, the wheel-stop and the sheath and remount it all again. Make the wheel-stop go forwards and backwards a few times in the sheath, then refasten the wheel-stop on the cylinder.



Note: 2 screws and 1 bolt (in red)
The bolt links the cylinder to the wheel-stop's reinforcement leg
The cylinder's rear screw links the cylinder to the carriage
The Allen screw on the wheel-stop is used as a mechanical blockage in end position before the wheel-stop.
To remove the wheel-stop by withdrawing it by the reinforcement leg, the bolt and the wheel-stop screw need to be removed.
If the wheel-stop is blocked (does not re-enter), to remove it, the cylinder fixing screw needs to be removed and then pull the cylinder.
Caution: all operations or work on the mechanical part must be done by a trained technician and in most cases (like the one above), with power supply turned off.

CHECK THE GROUND BOLTING
Check guidance rail's fixings and tightening on the ground (6 dowels).

CHECK THE GUIDANCE RAIL, BUFFER, HOOD AND WHEEL-GUIDES
The rail's state, check top rollers, check if any eventual impacts could have effected the carriage's rolling.
Check the buffer and change it if necessary (it considerably reduces damage on the carriage in case of impact).
Check the plastic hood, its fixings and eventual impacts.
Check the wheel-guides, their spacing and fixings. An excessive gap between the wheel-guides (2600 mm to 2650 mm required), or improper fixings, for example, can make the wheel-guides inefficient.
Even though wheel-guides are not part of the machine in itself, they are primordial.
Inefficient wheel-guides can be a source of damage on the Autoblock.
Their poor condition must imperatively be mentioned and can cause the dock to be momentarily closed.
Leur mauvais état doit être signalé impérativement, et peut entrainer l'arrêt du quai.

MANUAL WHEEL-STOP REMOVAL

Caution: This operation must be done by a trained technican. All operations on the machine and in the loading area must be marked out and secured.

METHOD 1

1) DISCONNECT POWER SUPPLY ON THE CONTROL UNIT
2) LIFT UP THE HOOD AND BLOCK IT IN OPEN POSITION BY USING THE ROD
3) UNSCREW AND REMOVE THE BOLT THAT HOLDS BACK THE SMALL CYLINDER'S REAR END (photo 1)
4) TAKE THE CYLINDER IN BOTH HANDS AND PULL IT (the wheel-stop will follow: photo 2)

If the vehicles wheel rubs on the wheel-stop, we advise to make the vehicle reverse slightly.
To put it back into place, perform this procedure in reverse order (4 to 1).

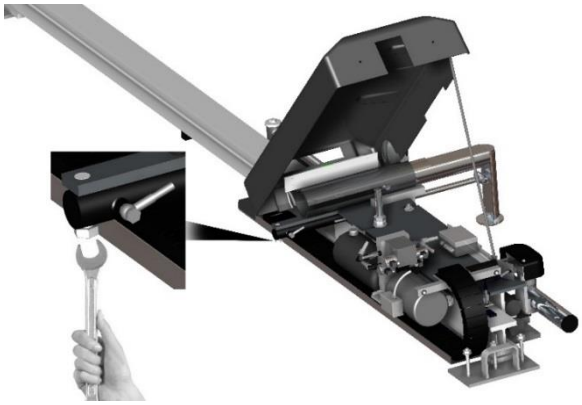


PHOTO 1

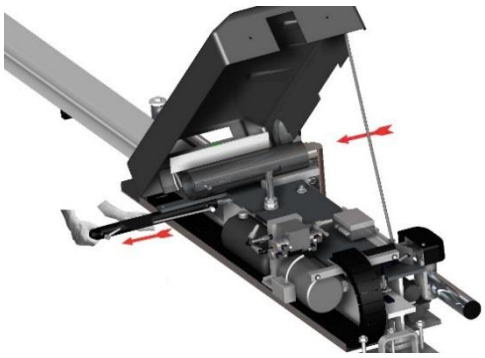
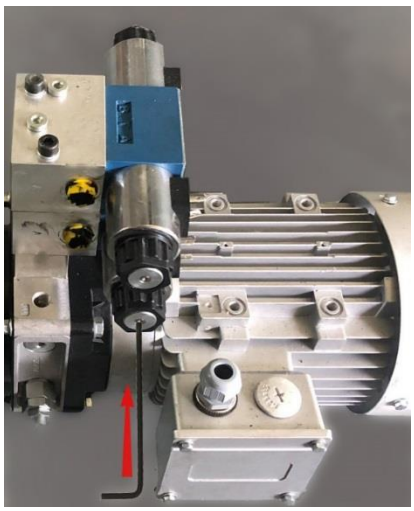


PHOTO 2

METHOD 2

This method consists in acting on the distributor by using a rounded tip rod (Allen key for example).



With the end of the Allen key, press the distributor's brass coloured nozzle and, at the same time, pull the wheel-stop's reinforcement leg to make the wheel-stop enter. The reinforcement leg must not be pressured on the truck's wheel. If the wheek-stop does not re-enter at all, do the same operation with the opposite coil.

When pressing the distributor, a slight movement must be felt on the nozzle.

The wheel-stop's re-entrance necessitates a certain effort, this operation must be carried out with 2 people.

Machinery control and its maintenance must be assured at least once a year and consigned. This frequency is minimum for most of the below control points. However, certain controls can be daily depending on usage, atmosphere and mostly to the attention given to the proper functioning.
An impact, an unloading zone obstructed by objects or a pallet, a non-conform usage, can easily lead to the Autoblock's malfunction and it's deactivation.
Grinding, reduced speed or unusual noise must be taken into consideration and in most cases, an anticipated greasing can avoid certain important problems.

ELECTRICAL PART

OVERVIEW TABLE

Control points	Good	To repair	To replace	To do	DANGER Out of Order
Check the carriage position's inductive sensor					
Check the wheel contact's inductive sensor					
Check the dock position sensor					
Check door security					
Check the solenoids connections (4)					
Check the cables state and the guidance chain					
Check the signalization lights (inside/outside)					
Check the sound signal					
Check the emergency stop and the disconnectors proper functionning					
Check the general condition, cleanliness and obsolescence on the whole					

OBSERVATIONS:

HYDRAULIC PART

OVERVIEW TABLE

Control points	Good	To repair	To replace	To do	DANGER Out of Order
Check the oil level Note: change the oil on the 2nd year of service, then every 4 years in average depending on usage (BESLUX HIDRO-BAT 32) – or similar – 95 % biodegradable					
Check the cylinder and distributor connexions					
Check service pressure (55/60 bars)					
Check 1000 mm cylinder's sequential valve, pressure between 25 and 35 bars					
Check the hoses (deterioration, cracking, leakage…) – Check their positioning in the guidance chain. Change the hoses in average every 6 years depending on exposition, atmosphere, maintenance…					
Check the hydraulic unit, the motor's ventilation, cleanliness or the whole					
Check the cylinders					
Check the general condition, cleanliness and obsolescence on the whole					

OBSERVATIONS :

MECHANICAL PART

OVERVIEW TABLE

Control points	Good	To repair	To replace	To do	DANGER Out of Order
Check spring tension and change them if they have lost strength					
Check detection arm's cable and change it if necessary					
Grease the detection arm (axle, both springs and cable)					
Grease the bottom rotation roller					
Grease the wheel-stop					
Grease top rollers and lower rollers					
Check the carriage's position and make adjustments if necessary					
Check the guidance rail and the wheel-guide's fixings (if steel wheel-guides)					
Check the wheel-guides general condition					
Check the general condition, cleanliness and obsolescence on the whole					

OBSERVATIONS :

The following specifications are indicative. However, they may change according to the product, or is components, evolution.

ELECTRICAL	
Power supply	380 V three-phase
Power	7 Amps
Control	24 V DC
MOELLER automaton	EASY 721-DC-TC
Stabilized power supply	24 V DC protected (fuses not needed)
Withdrawable relays	YES - Facilitates maintenance
Cabling with connectors	YES - Facilitates maintenance
Door position sensor	YES (serial) - Reflex Sick sensor (interlocking ED 6059)
Dock position sensor	YES (serial) - Reflex Sick sensor (interlocking ED 6059)
"NO" contact motorized door blockage	YES (serial) - Feedback to terminal block (interlocking ED 6059)
"NO" contact hydraulic dock blockage	YES (serial) - Feedback to terminal block (interlocking ED 6059)
Autoblock position sensor	Inductive sensor with control indicator light NBN8-12GM50-E2-V1
Wheel detection sensor	Inductive sensor with control indicator light NBN8-12GM50-E2-V1
Automatic safety lighting	YES (serial) - 2 LED lights 4 W with adjustable dusk light
Signalization LED lights	YES (serial) - Red and green - LED strips on Autoblock
Interior indicator light LED signalization	YES (serial)
Beeper alarm	YES (serial) - Adjustable
Maintenance contact key	YES (serial) with control indicator light
Summer/winter function	YES (serial)
Automatic return function (if there is no vehicle)	YES (serial) - Avoids wrong maneuvers from blocking the dock
Releasing security in case the vehicle isn't braked	YES (serial) - Very important if the dock is on a slant Note: the slant must be sufficient so that the wheel stays in contact with the wheel-stop

HYDRAULIC	
1) Hydraulic unit: motor 1500 Tr with hydraulic pump 9,8 cc	Motor 1,5 KW – 1500 RPM 220/380 TRI, pump adjusted to 60 bars – Tank 12 L
2) Hydraulic unit: motor 3000 Tr with hydraulic pump 4,8 cc	Motor 1,5 KW – 3000 RPM 220/380 TRI, pump adjusted to 60 bars – Tank 12 L
Solenoid valves and coils with control indicator LED lights	2 solenoid valves NG6 VNK 4 coils 24 Volts DC and 1 sequential valve 10 to 100 bars (factory tare 25 bars)
Connectors	Sets in 3/8
Hoses	SAE 100 3/8 service pressure 330 bars
Oil	95% biodegradable – BESLUX HIDRO–BAT 32
DIMENSIONS	
Wheel blockage height	370 mm
Wheel blockage, cantilever mini	800 mm (wheel rear located at less than 180 mm)
Maximum wheel blockage, cantilever maxi	3700 mm (the standard varies from 2800 to 3500 mm)
Length, width, height of the Autoblock	4500 mm x 750 mm x 500 mm
Weight	780 kg
OPTIONS	
Vehicle presence detection	Detection by infrared sensor
Wheel guides	Steel (140 to 168 mm) and concrete (recommended)
Laser sensor	Positioning control and wheel–stop exit
CONFORMITY	
CE – Compliant to the electrical and machine standard. Manufacturer's CE plate	

Purchaser's responsibility:

Most accidents which occur during docking or during transhipment operations are either very serious, or deadly. The AUTOBLOCK is a machine conceived to eliminate certain risks that can cause severe accidents. However, seeing as "zero risk" does not exist, we recommend people to respect its safety and security instructions.

The AUTOBLOCK's purchaser must choose a person who will be trained for its correct use and for its safety manoeuvers. This person must also know the company's security protocol and will have the power and the duty to make sure that the safety and security instructions are respected.

1) The company must have a Protocol Accord. This Protocol will allow the company's security instructions to be respected by the interior and exterior staff. (Art. R4515-4 to 11 of the Labour Code).

2) The purchaser must inform the drivers who are going to dock their vehicles about:
    a) The uncovering area
    b) The manoeuver to do for the docking procedure
    c) The manoeuvers to do depending on the signal lights
    d) The type of vehicles that cannot be taken over by the Autoblock

3) The purchaser must respect the conditions and the maintenance periods required by the manufacturer.

4) After an impact or improper use, the purchaser must contact a company approved by the manufacturer to carry out a diagnosis. If the Autoblock is used in a non-compliant state or condition, the manufacturer's responsibility is excluded.

The trucks docking is regulated by standards, decrees and recommendations. A list of these recommendations is in the booklet (page 42).

User's responsibility:

The user must respect and make sure that the security Protocol is respected by the other members of staff.
The user must respect and make sure that the Autoblock's instructions are respected.
The user must check that the Autoblock is working correctly on a daily basis.
Anything abnormal must immediately be reported and repaired.
The dock's ramp must be free of all obstacles before the docking takes place.
.

Driver's responsibility:

The driver must read the Protocol Accord and respect it.
The driver must respect the instructions within the Autoblock's manual.
The driver must position his vehicle to a perpendicular angle to the dock and center it between the wheel guides.
The driver must only brake his vehicle when the signal light is a red, non-flashing light.
The driver must only start his vehicle after the flashing green light.
The driver must be ensured that his vehicle is able to be used with the Autoblock (certain vehicles are not - see page 9).
After the transhipment, the driver must leave the dock without turning immediately (straight on) so that the wheel guides are not hit by the rear of the vehicle.

WARANTY

The AUTOBLOCK is guaranteed one year for spare parts and manpower, and for two years in case a manufacturing defect is identified by the manufacturer.
The guarantee is subject to a maintenance contract with two annual visits that are scheduled in the maintenance booklet.

/!\ Warranty exclusions:

All machines that are not compliant, or that haven't been assembled by certified staff.
All machines that have received an impact or damage that has not been repaired by certified staff.
All assembling of non-genuine spare parts that have not been approved by the manufacturer.
All modifications made without written approval from the manufacturer.

The Manufacturer
ASA FERMETURES

COMPLIANCE STATEMENT WITH MACHINE DIRECTIVE 2006/42/CE

The company,

ASA FERMETURES
87, Boulevard de l'Europe
64230 LESCAR
France

Hereby declares that the semi-automatic restraint system

AUTOBLOCK 2019

Is compliant with the requirements of European Directive 2006/42/CE

The reference standards consulted during its conception are the following :

- EN 60 204-1 (2009) Electrical equipment for machinery
- EN 282 (1996) Safety requirements concerning hydraulic equipment
- EN 13 849-1 (2008) Safery related portions of control systems

Lescar,
March 13th 2019

Yannick BELLOTA
CEO

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