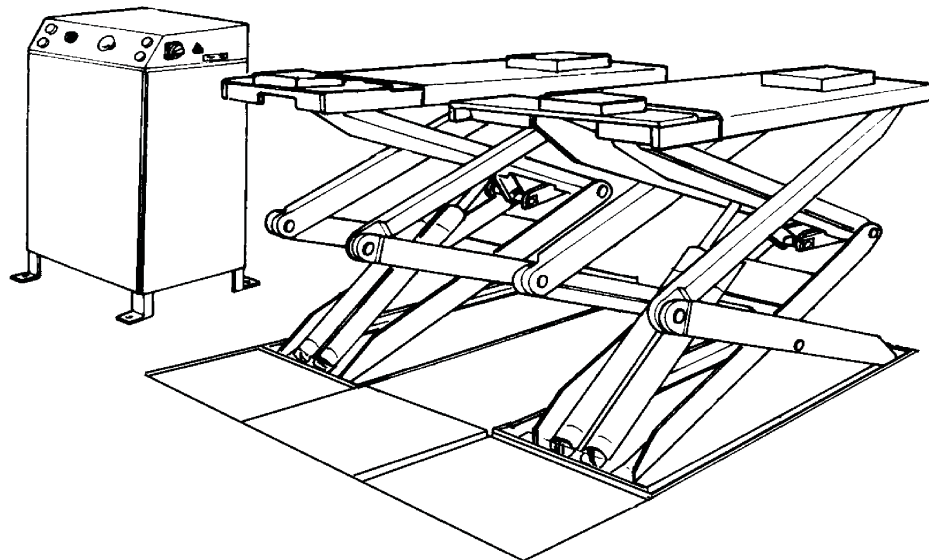

Twin Scissors Lift

Twin F 3.0 A

Twin F 3.0 U

for vehicles up to 3,000 kg gross weight



Operation Manual

English

EDITION

1st edition 2004-05-25
D1 5002BA1-GB01

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The contents of this edition have been checked with great care. However, errors cannot be fully excluded. Please contact MAHA should you find errors of any kind.

These instructions are intended for users with previous knowledge in the field of automotive vehicle service lifts.

Subject to technical change without notice.

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DECLARATION OF WARRANTY AND LIMITATION OF LIABILITY





The manufacturer has paid proper attention to the preparation of this manual. However, nothing contained herein modifies or alters, in any way, the terms and conditions of manufacturer agreement by which this lift was acquired, nor increase, in any way, MAHA's liability to the customer.

TO THE READER

Every effort has been made to ensure that the information contained in this manual is correct, complete and up-to date. The manufacturer is not liable for any mistakes made when drawing up this manual and reserves the right to make any changes due the development of the product, at any time.

PRINTING CHARACTERS AND SYMBOLS

Throughout this manual, the following symbols and printing characters are used to facilitate reading:

	Indicates the operations which need proper care
	Indicates prohibition
	Indicates a possibility of danger for the operators
	Indicates the direction of access for motor vehicles to the lift
BOLD TYPE	Important information



WARNING: BEFORE OPERATING THE LIFT AND CARRYNG OUT ANY ADJUSTMENT, READ CAREFULLY CHAPTER 7 "INSTALLATION" WHERE ALL PROPER OPERATIONS FOR A BETTER FUNCTIONING OF THE LIFT ARE SHOWN

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1 CHAPTER 1 – GENERAL INFORMATION

This chapter contains warning instructions to operate the lift properly and prevent injury to operators or objects.

THIS MANUAL HAS BEEN WRITTEN TO BE USED BY SHOP TECHNICIANS IN CHARGE OF THE LIFT (OPERATOR) AND ROUTINE MAINTENANCE TECHNICIAN (MAINTENANCE OPERATOR).

THE OPERATING INSTRUCTIONS ARE CONSIDERED TO BE AN INTEGRAL PART OF THE MACHINE AND MUST REMAIN WITH IT FOR ITS WHOLE USEFUL LIFE. READ EVERY SECTION OF THIS MANUAL CAREFULLY BEFORE OPERATING THE LIFT AND UNPACKING IT SINCE IT GIVES HELPFUL INFORMATION ABOUT:

- SAFETY OF PEOPLE**
- SAFETY OF THE LIFT**
- SAFETY OF LIFTED VEHICLES**

THE COMPANY IS NOT LIABLE FOR POSSIBLE PROBLEMS, DAMAGE, ACCIDENTS, ETC. RESULTING FROM FAILURE TO FOLLOW THE INSTRUCTIONS CONTAINED IN THIS MANUAL.

Only skilled technicians of **AUTHORISED DEALERS** or **SERVICE CENTRES** **AUTHORISED** by the manufacturer shall be allowed to carry out lifting, transport, assembling, installation, adjustment, calibration, settings, extraordinary maintenance, repairs, overhauling and dismantling of the lift.

THE MANUFACTURER IS NOT RESPONSIBLE FOR POSSIBLE DAMAGE TO PEOPLE, VEHICLES OR OBJECTS IF SAID OPERATIONS ARE CARRIED OUT BY UNAUTHORISED PERSONNEL OR THE LIFT IS IMPROPERLY USED.

ANY USE OF THE MACHINE MADE BY OPERATORS WHO ARE NOT FAMILIAR WITH THE INSTRUCTIONS AND PROCEDURES CONTAINED HEREIN SHALL BE FORBIDDEN.

1.1 Manual keeping

For a proper use of this manual, the following is recommended:

- a) keep the manual near the lift, in an easily accessible place
- b) keep the manual in an area protected from the damp
- c) use this manual properly without damaging it
- d) do not make changes to the manual; any changes and updating can be made only by the manufacturer.

This manual is an integral part of the lift: it shall be given to the new owner if and when the lift is resold.

1.2 Obligation in case of malfunction



IN CASE OF MACHINE MALFUNCTION, FOLLOW THE INSTRUCTIONS CONTAINED IN THE FOLLOWING CHAPTERS

1.3 Cautions for the safety of the operator

Operators must not be under the influence of sedatives, drugs or alcohol when operating the machine.



BEFORE OPERATING THE LIFT, OPERATORS MUST BE FAMILIAR WITH THE POSITION AND FUNCTION OF ALL CONTROLS, AS WELL AS WITH THE MACHINE FEATURES SHOWN IN THE CHAPTER "OPERATION AND USE".

1.4 Warnings



UNAUTHORISED CHANGES AND/OR MODIFICATIONS TO THE MACHINE RELIEVE THE MANUFACTURER OF ANY LIABILITY FOR POSSIBLE DAMAGES TO OBJECTS OR PEOPLE. DO NOT REMOVE OR MAKE INOPERATIVE THE SAFETY DEVICES, THIS WOULD CAUSE A VIOLATION OF SAFETY AT WORK LAWS AND REGULATIONS.



ANY OTHER USE WHICH DIFFERS FROM THAT PROVIDED FOR BY THE MANUFACTURER OF THE MACHINE IS STRICTLY FORBIDDEN



THE USE OF NON GENUINE PARTS MAY CAUSE DAMAGE TO PEOPLE OR OBJECTS.

The lift has been designed and built as required by:
European Directives: 89/392 EEC, 93/44 EEC, 93/68 EEC
TECHNICAL RULES:
European rules: EN 291/1992, EN 292/1992
ELECTRICAL SYSTEM:
Italian rules: UNI 9584, UNI EN 60204 CEI/8

2 CHAPTER 2 – PRODUCT IDENTIFICATION

The identification data of the machine are shown in the label placed on the frame and indicated in the declaration of conformity.

TYPE		CAPACITY	
SERIAL NUMBER		YEAR	



USE THE ABOVE DATA BOTH TO ORDER SPARE PARTS AND WHEN GETTING IN TOUCH WITH THE MANUFACTURER (INQUIRY). THE REMOVAL OF THIS LABEL IS STRICTLY FORBIDDEN.

Machines may be updated or slightly modified from an aesthetic point of view and, as a consequence, may present different features from these shown, this without prejudicing what has been described herein.

2.1 Warranty Certificate

The warranty is valid for a period of 12 months starting from the date of the purchase invoice.

The warranty will come immediately to an end when unauthorised modifications to the machine or parts of it are carried out.

The presence of defects in workmanship must be verified by the Manufacturer's personnel in charge .

2.2 Technical servicing

For all servicing and maintenance operations not specified or shown in these instructions, contact your Dealer where the machine has been bought or the Manufacturer's Commercial Department.

3 CHAPTER 3 - PACKING, TRANSPORT AND STORAGE

ONLY SKILLED PERSONNEL WHO ARE FAMILIAR WITH THE LIFT AND THIS MANUAL SHALL BE ALLOWED TO CARRY OUT PACKING, LIFTING, HANDLING, TRANSPORT AND UNPACKING OPERATIONS.

3.1 Packing

The lift is supplied disassembled into sub-assemblies depending on the model ordered.

The model on-floor installation:

- No. 2 base units, each one with a platform and hydraulic cylinders
- No. 1 control box equipped with hydraulic unit
- No. 1 box containing hydraulic lines, connecting cables, four rubber blocks, stickers and technical documentation
- No. 4 drive-on ramps (2 front and 2 rear ramps) equipped with protective devices to connect platforms

The model in-ground installation:

- No. 2 base units, each one with a platform and hydraulic cylinders
- No. 1 control box equipped with hydraulic unit
- No. 1 box containing hydraulic lines, connection cables, four rubber brackets, 40 mm high, stickers and technical documentation
- No. 2 holes covers

If requested, optional accessories are available to satisfy each customer's requirements (Ref. accessories manual and price lists).

The lift is packed in a single box on a wooden bed, wrapped up in non-scratch waterproof material and sealed with 2 straps.

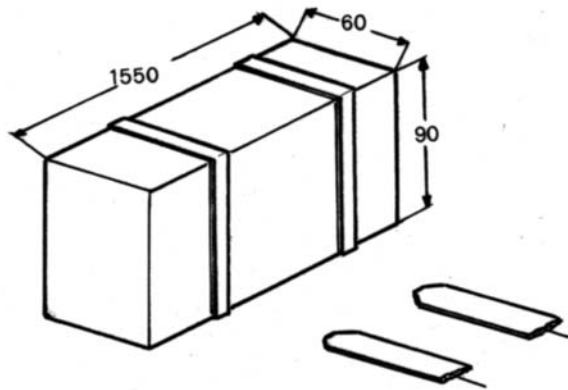
The average of the package is 850 kg.

3.2 Lifting and handling

When loading/unloading or transporting the equipment to the site, be sure to use suitable loading (e.g. cranes, trucks) and hoisting means. Be sure also to hoist and transport the components securely so that they cannot drop, taking into consideration the package's size, weight and centre of gravity and its fragile parts.

(Ref. Figure 1)

Figure 1 – PACKAGE AND HANDLING



HOIST AND HANDLE ONLY ONE PACKAGE AT A TIME

3.3 Storage and stacking of packages

Packages must be stored in a covered place, out of direct sunlight and in low humidity, at a temperature between -10°C and $+40^{\circ}\text{C}$.

Stacking is not recommended: the package's narrow base, as well as its considerable weight and size make it difficult and hazardous.

Should this be necessary, never stack more than three packages a time and fix them with straps, ropes or other suitable means to be sure they are firm.

3.4 Delivery and check of packages

When the lift is delivered, check for possible damages due to transport and storage; verify that what is specified in the manufacturer's confirmation of order is included. In case of damage in transit, the customer must immediately inform the carrier of the problem.

Packages must be opened paying attention not to cause damage to people (keep a safe distance when opening straps) and parts of the lift (be careful the objects do not drop from the package when opening).

4 CHAPTER 4 - PRODUCT DESCRIPTION

4.1 LIFT

(Ref. Figure 2)

All models have been designed to lift motor-vehicles and make them stand at any level between the minimum and maximum height.

The maximum lifting weight, including any additional load on the vehicle, is 3000 kg (29400N).

All mechanical frames, such as platforms, extensions, base frames and arms have been built in pressure bent plant to make the frame stiff and strong while keeping a low weight.

The electrohydraulic operation is described in detail in chapter 8.

This chapter describes the lift showing the principal elements, so allowing the user to be familiar with the machine.

As shown in figure 2, the lifts are composed of two platforms, the platform 1 (1) and the platform 2 (2) anchored to the ground by means of two base frames (3).

The lift is equipped with drive-up (4) and drive-down (5) ramps, placed at both ends, for easy access of the vehicle which is lifted by placing the vehicle frame on four rubber pads (6).

Platforms are linked to the base frame by means of a double scissors lifting system.

Platforms, *1540 mm* long, can reach a length of *2100 mm* with two extractable extensions (7) to allow longer wheel base vehicles to be lifted.

The lifting system of each platform is composed of four arms, two lower (8) and two upper (9) arms, as well as a pair of cylinders, one primary (10) and one secondary cylinder (11).

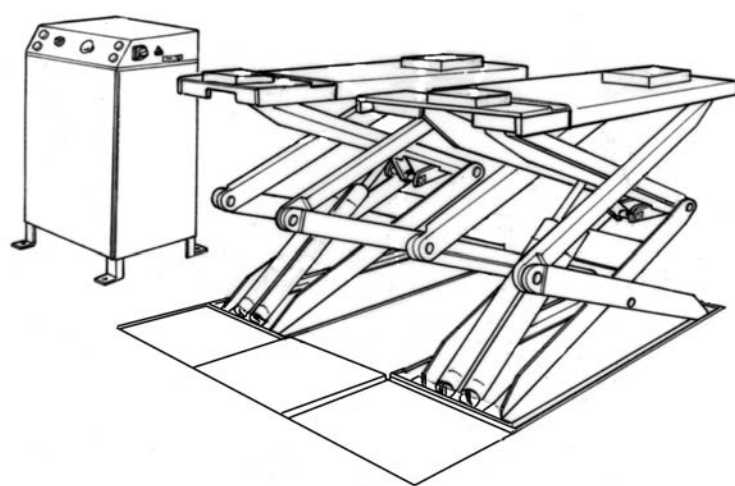
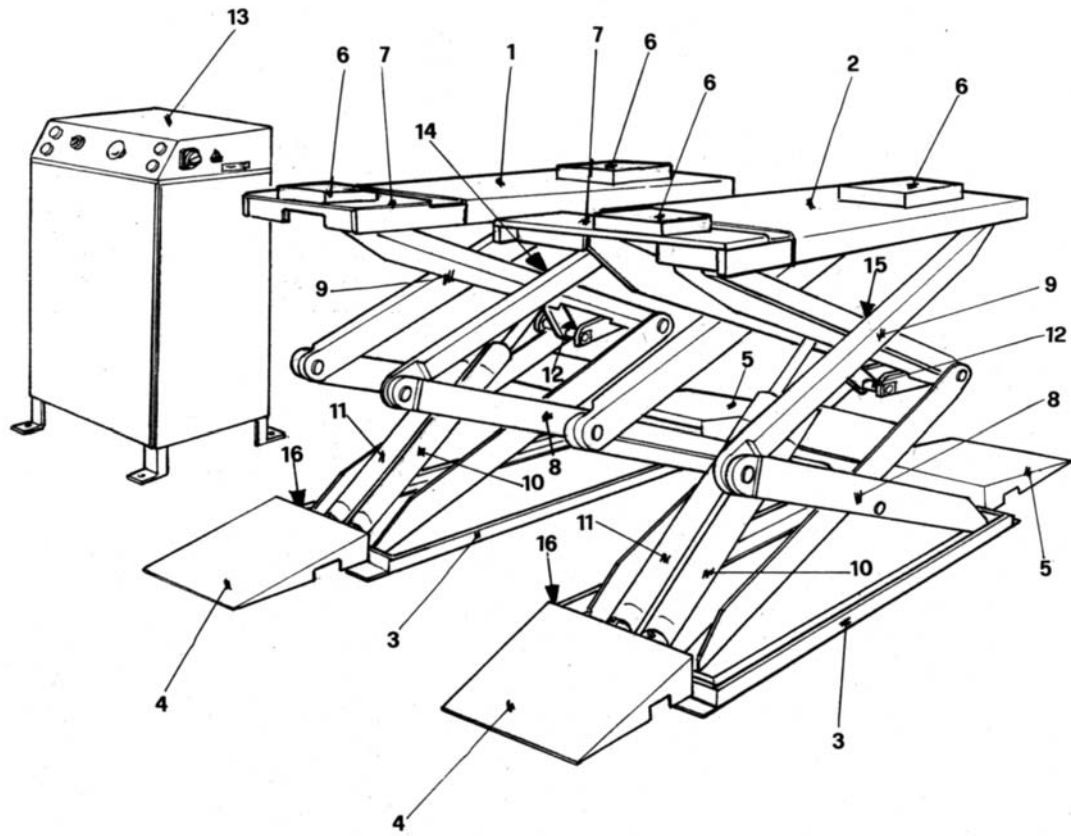
Motion is transmitted from the cylinder to the arms through a lever system (12) .

Lift lowering and lifting are carried out by means of a control box (13) (fixed to the ground) placed next to the lift.

A proximity switch (14) is installed inside the platform 1 scissors to stop the lift at a height of *400 mm*. A proximity switch (15) is installed inside the platform 2 scissors to stop the lift at the maximum height.

Proximity switches (16) are placed at the base of platforms 1 and 2 to level the platforms automatically.

Figure 2 - LIFT



4.2 CONTROL DESK

(Ref. Figure 3)

The Control desk is composed of a frame (1) covered with panels (2) and a top panel (3).

The control panel is placed on the front of the top panel and is equipped with:

- UP button (5)
- DOWN button (6)
- SAFETY BUTTON for lowering last 400mm (7)
- Emergency push button (8)
- Pilot lamp (9)
- Horn/signalling light (10)

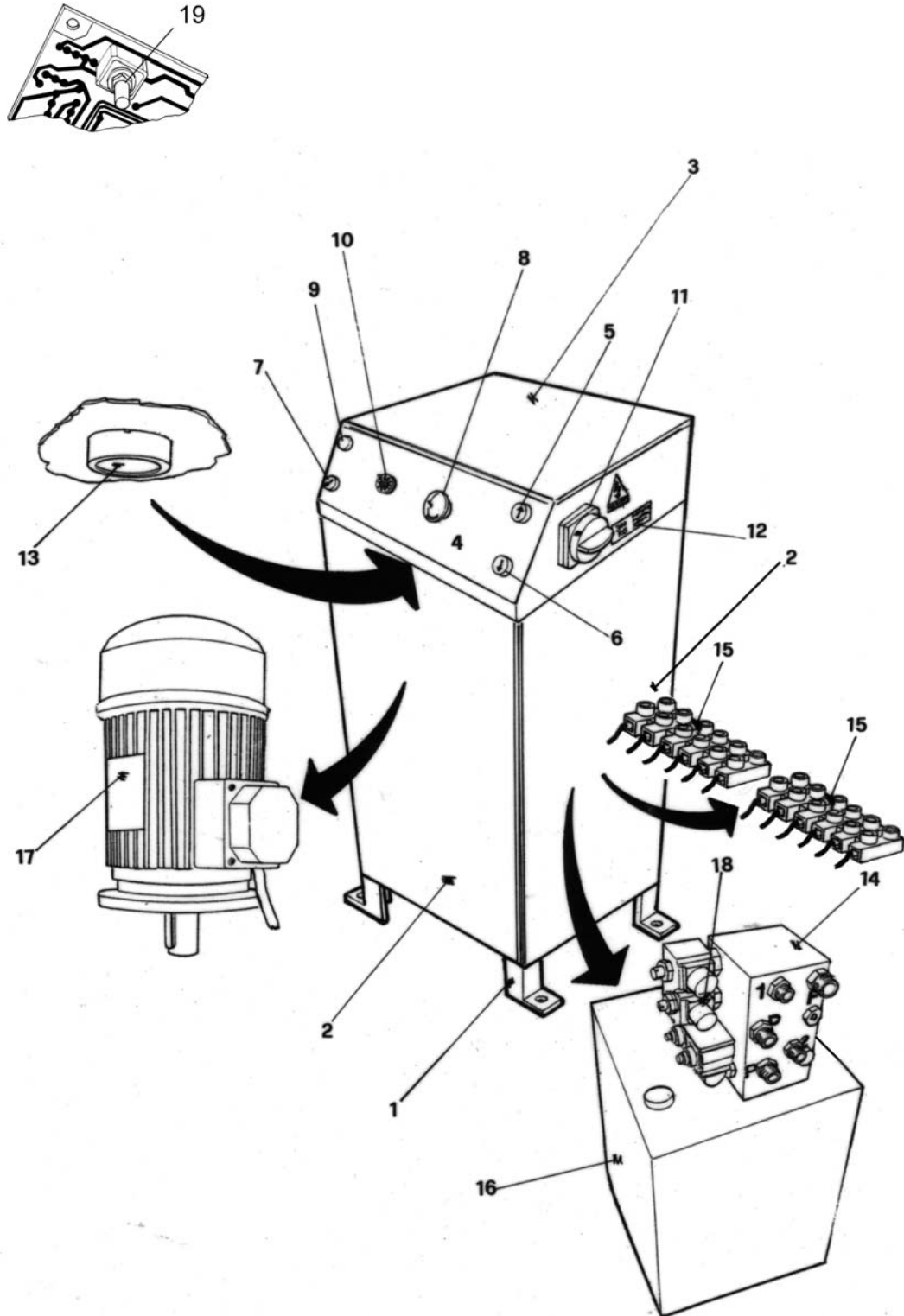
The main switch (11), lift identification plates (12) and safety indicating labels are placed on the side of the head.

The limit switch override button (13) is placed inside the control desk, under the electric panel and on the printed circuit board, the oil discharge button (19).

The main hydraulic unit (14) and the connectors (15) are included in the lower part.

The hydraulic unit (14) is composed of the oil tank (16), the hydraulic pump the electric motor (17) , the solenoid valves (18) and a series of hydraulic hoses.

Figure 3 – CONTROL DESK



4.3 OPERATION

Platform lifting is carried out by the hydraulic unit which acts upon the primary cylinders.

The platforms are raised simultaneously owing crossfeeding of the hydraulic cylinders (Figure 6).

Lowering, even though electrically controlled, is carried out by the weight of both the platforms and the load lifted.

The hydraulic system is protected by a max pressure control valve thus preventing pressure from exceeding the maximum fixed safety limit.

Lifting and lowering motion of the lift is controlled by the push buttons on the control desk panel.

Whenever the lift has to be lowered to the ground and the DOWN button is pressed, the lift will stop at about *400 mm* from the ground.

In this way, the operator must verify that neither persons nor objects are within the safety area.

If so, the SAFETY button can be pressed and the lift be lowered.

A beep sound is heard during the last travel.

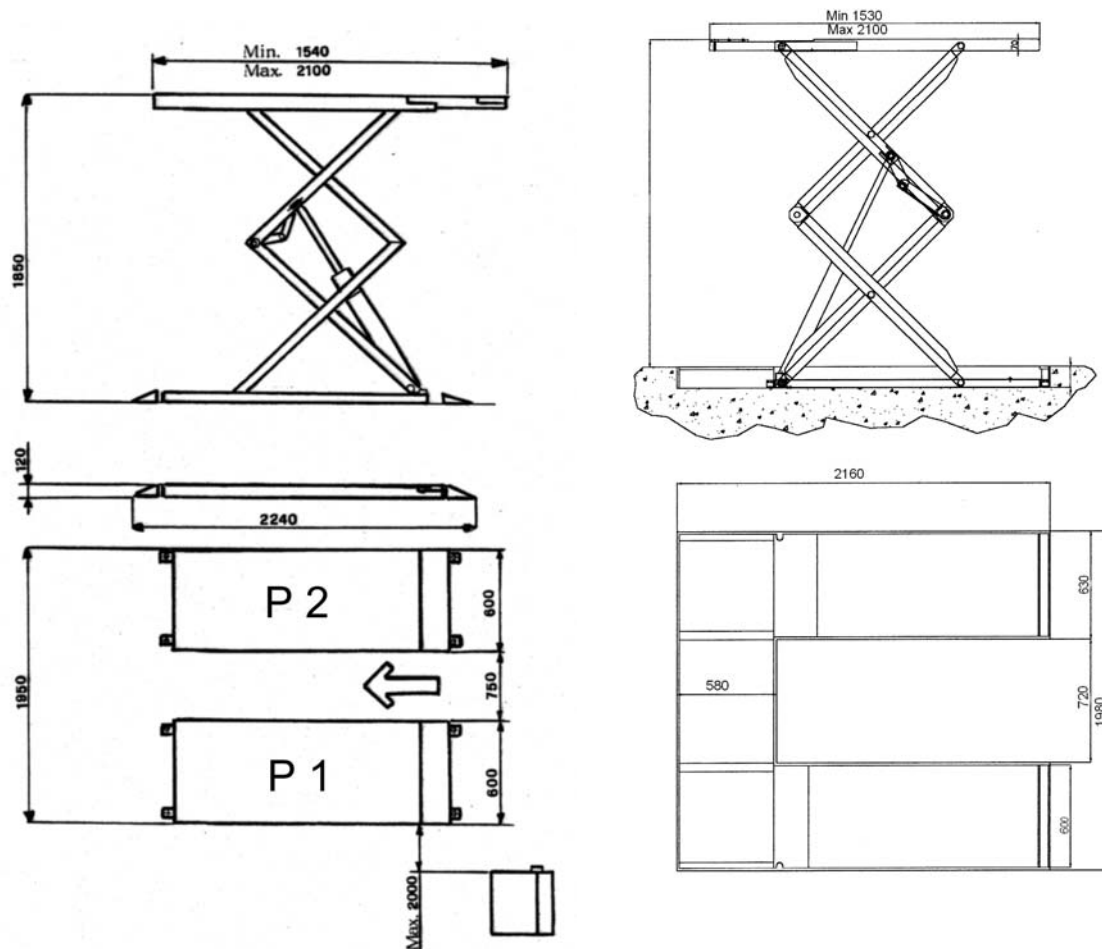
5 CHAPTER 5 - TECHNICAL SPECIFICATION

5.1 Size and main features

(Ref. Figure 4)

Capacity	3000 Kgp (29400N)
Maximum lifting capacity	1850 mm
Minimum height of lift	120 mm
Length of the lift	1540 mm
Width of the lift	1950 mm
Width of platforms	600 mm
Free width between platforms	750 mm
Lifting time	40 s
Lowering time	40 s
Noise level	70 dB(A)/1m
Total weight of the lift	850 Kgp
Working temperature	-10 °C ÷ 40 °C

Figure 4 – LAYOUT



5.2 Electric motor

<i>Type</i>	90LA/4
<i>Power</i>	3 KW
<i>Voltage</i>	230 V / 400V
<i>Frequency</i>	50 Hz
<i>N° Poles</i>	4
<i>Speed</i>	1400 rpm
<i>Motor enclosure type</i>	B5
<i>Insulation class</i>	IP 54
<i>Amperage</i>	13.5 A a 230 V 7.8 A a 400 V

Motor connection must be carried out referring to the attached wiring diagrams (Ref. Figure 7). The motor direction of rotation is shown in the label placed on the motor.

5.3 Pump

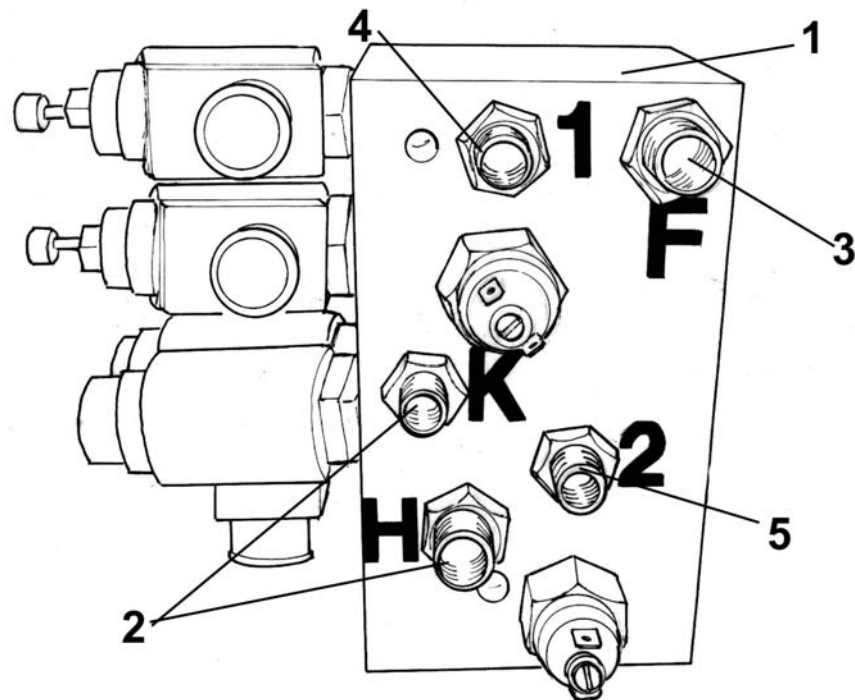
<i>Type</i>	<i>ad ingranaggi AP100/5</i>
<i>Displacement</i>	5 cm ³ /g
<i>Continuous working pressure</i>	210 bar (3000 psi)
<i>Intermittent working pressure</i>	230 bar (3300 psi)
<i>Peak pressure</i>	250 bar (3600 psi)

5.4 Hydraulic unit

(Ref. Figure 5)

The hydraulic unit is equipped with a central block (1), five connections, two for delivery (2) marked with H and K, one for return (3), marked with F, one for platform 1 levelling (4) signed with number 1, and one for platform 2 levelling (5), marked with number 2.

Figure 5 – HYDRAULIC GROUP



5.5 Oil

Use wearproof oil for hydraulic drive, in conformity with *ISO 6743/4* rules (HM class). *Fina HYDRAN TS 32* or equivalent oil with features similar to those shown in the table is recommended:

Test standards	Features	Value
<i>ASTM D 1298</i>	<i>Density 20°C</i>	<i>0.8 Kg/l</i>
<i>ASTM D 445</i>	<i>Viscosity 40°C</i>	<i>32 cSt</i>
<i>ASTM D 445</i>	<i>Viscosity 100°C</i>	<i>5.43 cSt</i>
<i>ASTM D 2270</i>	<i>Viscosity index</i>	<i>104 N°</i>
<i>ASTM D 97</i>	<i>Pour point</i>	<i>~30°C</i>
<i>ASTM D 92</i>	<i>Flash point</i>	<i>215°C</i>
<i>ASTM D 644</i>	<i>Neutralisation number</i>	<i>0.5 mg KOH/g</i>

In case where the average ambient temperature differs from 25° C contact your local specialist oil supplier to find a suitable substitute.

Figure 6 – HYDRAULIC PLAN

- P1 Primary piston
- P2 Secondary piston
- SV1 Lowering solenoid valve
- SV2 Lowering solenoid valve
- SV3 Platform 1 levelling solenoid valve
- SV4 Platform 2 levelling solenoid valve
- SV5 Fine level adjustment solenoid valve
- SV6 Fine level adjustment solenoid valve
- RD1 Lowering speed restrictor
- RD2 Lowering speed restrictor
- FR1 Fine level adjustment platform 1
- FR2 Fine level adjustment platform 2
- NR1 Non return valve
- NR2 Non return valve
- EM Electric motor
- P Pump
- F Filter
- S Tank
- VS Pressure relief valve

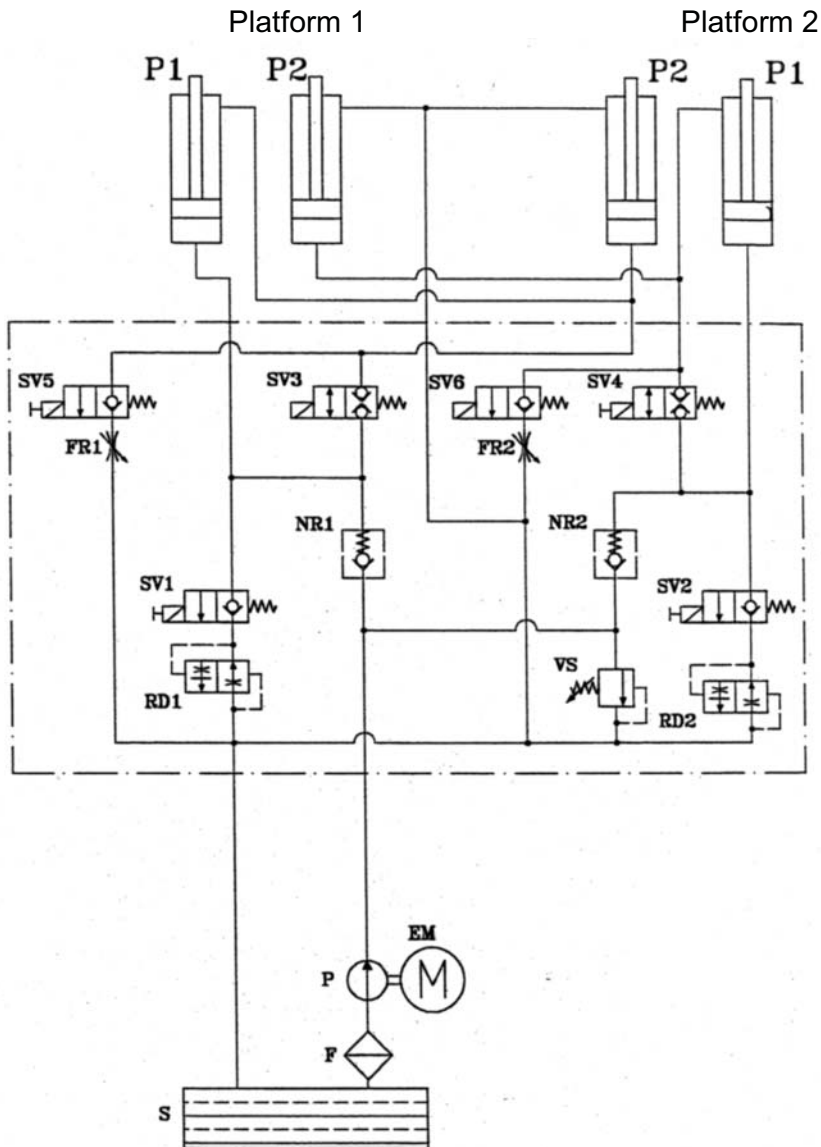
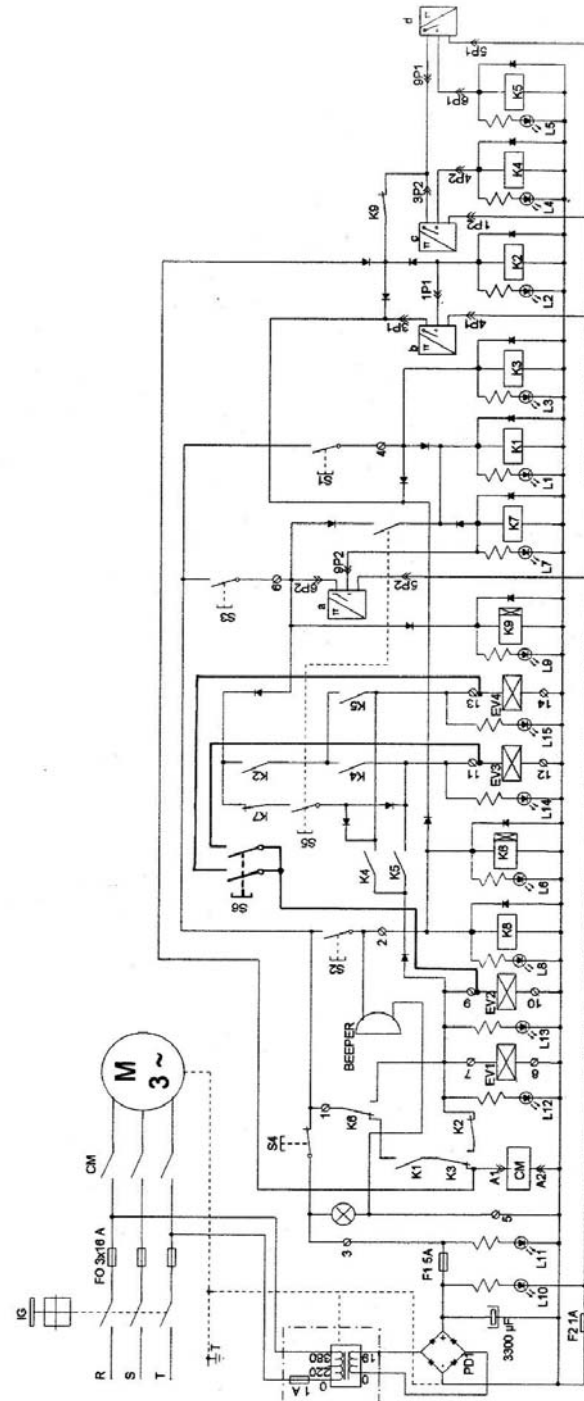


Figure 7 – WIRING DIAGRAM

- a maximum height limit sensor
- b safety height limit sensor
- c platform 2 levelling sensor
- d platform 1 levelling sensor
- S1 DOWN button
- S2 safety down button
- S3 UP button
- S4 emergency push button
- S5 limit switch override button
- S6 oil discharge button
- SV1 lowering solenoid valve
- SV2 lowering solenoid valve
- SV3 levelling solenoid valve
- SV4 levelling solenoid valve
- Beeper Beeper
- M Motor
- TR Transformer



6 CHAPTER 6 - SAFETY

Read this chapter carefully and completely because it contains important information for the safety of the operator and the person in charge of maintenance.



THE LIFT HAS BEEN DESIGNED AND BUILT FOR LIFTING VEHICLES AND MAKING THEM STAND ABOVE LEVEL IN A CLOSED AREA. ANY OTHER USE IS FORBIDDEN, INCLUDING THE FOLLOWING OPERATIONS:

WASHING

PEOPLE LIFTING OR SCAFFOLDING

PRESSING

LOADING

THE MANUFACTURER IS NOT LIABLE FOR POSSIBLE DAMAGES TO PEOPLE, VEHICLES OR OBJECTS RESULTING FROM AN IMPROPER OR UNAUTHORISED USE OF THE LIFT.

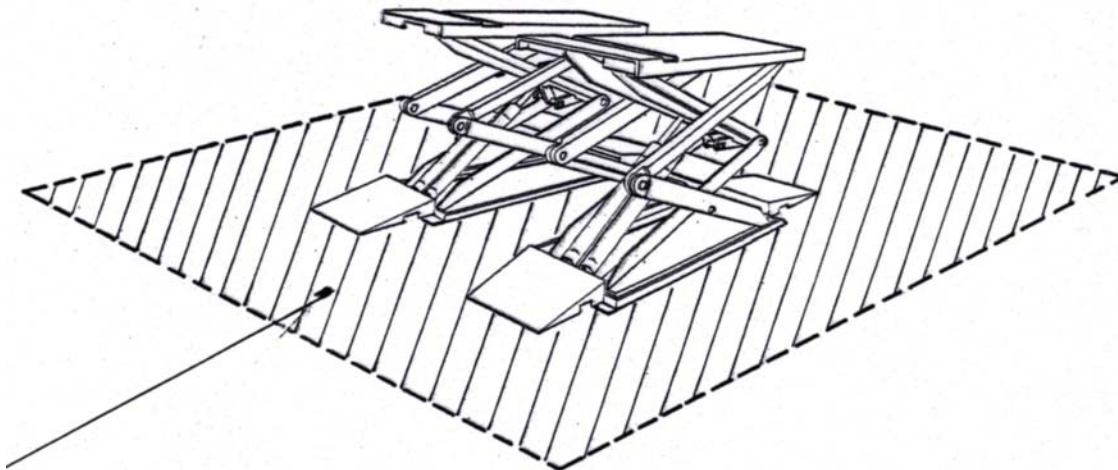
For operator and people safety, the safety area shown in Figure 8 must be vacated during lifting and lowering. The lift must be operated only from the operator's control site, as shown.

Operator's presence under the vehicle, during working, is only admitted when the vehicle is lifted and platforms are not running.



NEVER USE THE LIFT WHEN SAFETY DEVICES ARE OFF-LINE. PEOPLE, THE LIFT AND THE VEHICLES LIFTED CAN BE SERIOUSLY DAMAGED IF THESE INSTRUCTIONS ARE NOT FOLLOWED.

Figure 8 – SAFETY AREA



Safety area (1 meter min.)

6.1 General warnings

The operator and the person in charge of maintenance must follow accident-prevention laws and rules in force in the country where the lift is installed.

They also must carry out the following:

- neither remove nor disconnect hydraulic, electric or other safety devices;
- carefully follow the safety indications applied on the machine and included in the manual;
- observe the safety area during lifting;
- be sure the motor of the vehicle is off, the gear engaged and the parking brake put on;
- be sure only authorised vehicles are lifted without exceeding the maximum lifting capacity;
- verify that no one is on the platforms during lifting or standing

6.2 Risks during vehicle lifting

To avoid overloading and possible breaking, the following safety devices have been used:

- a maximum pressure valve placed inside the hydraulic unit to prevent excessive weight
- a special design of the hydraulic system, in case of pipeline failure, to prevent sudden lift lowering

6.3 Risks for people

All risks the personnel could run, due to an improper use of the lift, are described in this section.

PERSONNEL CRUSHING RISKS

(Ref. Figure 9)

During lowering of runways and vehicles, personnel must not be within the area covered by the lowering trajectory. The operator must be sure no one is in danger before operating the lift.

Figure 9 – CRUSHING RISKS



BUMPING RISKS

(Ref. Figure 10)

When the lift is stopped at relatively low height for working, the risk of bumping against projecting parts occurs

Figure 10 – BUMPING RISKS



RISK OF THE VEHICLE FALLING FROM THE LIFT

(Ref. Figure 11)

Vehicle falling from the lift can be caused when the vehicle is improperly placed on platforms, and when its dimensions are incompatible with the lift or by excessive movement of the vehicle. In this case, keep immediately away from the working area.

Figure 11 – RISKS OF VEHICLE FALLING



SLIPPING RISKS

(Ref. Figure 12)

The risk of slipping can be caused by oil or dirt on the floor near the lift

Figure 12 - SLIPPING RISK



KEEP THE AREA UNDER AND AROUND THE LIFT CLEAN. REMOVE ALL OIL SPILLS.

ELECTROCUTION RISKS

Avoid use of water, steam, solvent, varnish jets in the lift area where electric cables are placed and, in particular, next to the electric panel.

RISKS RESULTING FROM IMPROPER LIGHTING

Make sure all areas next to the lift are well and uniformly lit, according to local regulations.

RISKS OF BREAKING COMPONENT DURING OPERATION

(Ref. Figure 13)

Materials and procedures, suitable for the designed parameters of the lift, have been used by the manufacturer to build a safe and reliable product. Operate the lift only for the use it has been designed for and follow the maintenance schedule shown in the chapter "Maintenance".

Figure 13 - OBSERVANCE OF TECHNICAL SPECIFICATIONS



RISKS FOR UNAUTHORISED USES

(Ref. Figure 14)

The presence of unauthorised persons next to the lift and on the platforms is strictly forbidden during lifting as well as when the vehicle has been already lifted.

Figure 14 - RISKS FOR UNAUTHORISED USES



**ANY USE OF THE LIFT OTHER THAN THAT HEREIN SPECIFIED CAN CAUSE
SERIOUS ACCIDENTS TO PEOPLE IN CLOSE PROXIMITY OF THE MACHINE**

7 CHAPTER 7 - INSTALLATION

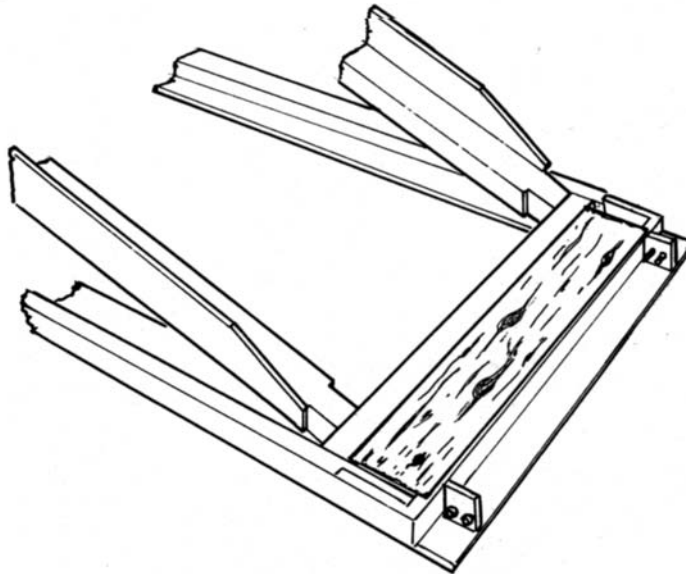


ONLY SKILLED TECHNICIAN, APPOINTED BY THE MANUFACTURER, OR BY AUTHORISED DEALERS, MUST BE ALLOWED TO CARRY OUT THESE OPERATIONS. SERIOUS DAMAGE TO PEOPLE AND THE LIFT CAN BE CAUSED IF THEY ARE MADE BY OTHER PERSONS.



BEFORE CARRYING OUT ANY OPERATIONS, REMEMBER TO INSERT THE SAFETY PIECE OF WOOD BETWEEN THE LOWER BOOMS AND THE BASE FRAME (REF. FIGURE 15)

Figure 15 - SAFETY BLOCK



7.1 Preliminary operations

CHECKING FOR ROOM SUITABILITY

The lift has been designed to be used in covered and sheltered places. The place of installation must not be next to washing areas, painting workbenches, solvent or varnish deposits; the installation near to rooms where a dangerous situation of explosion can occur is strictly forbidden. The relevant standards of the local Health and Safety at Work regulations, for instance with respect to minimum distance to wall or other equipment, escapes and the like, shall be observed.

LIGHTING

Lighting must be carried out according to the effective regulations of the place of installation. All areas next to the lift must be well and uniformly lit.

INSTALLATION SURFACE OR HOLE

The lift must be placed on level floor and sufficiently resistant. The surface and foundation must be suitable for bearing maximum stress values, also in unfavourable working conditions. If in-ground/recessed installation is made (PSB 3IG model only), the finished size of the hole must be verified (as per drawing sent at the time of order). For installations on raised surface, compliance with the maximum carrying capacity of the surface is recommended.

7.2 Runway assembly and control desk positioning



UNAUTHORISED PERSONS ARE NOT ALLOWED TO ENTER DURING ASSEMBLY

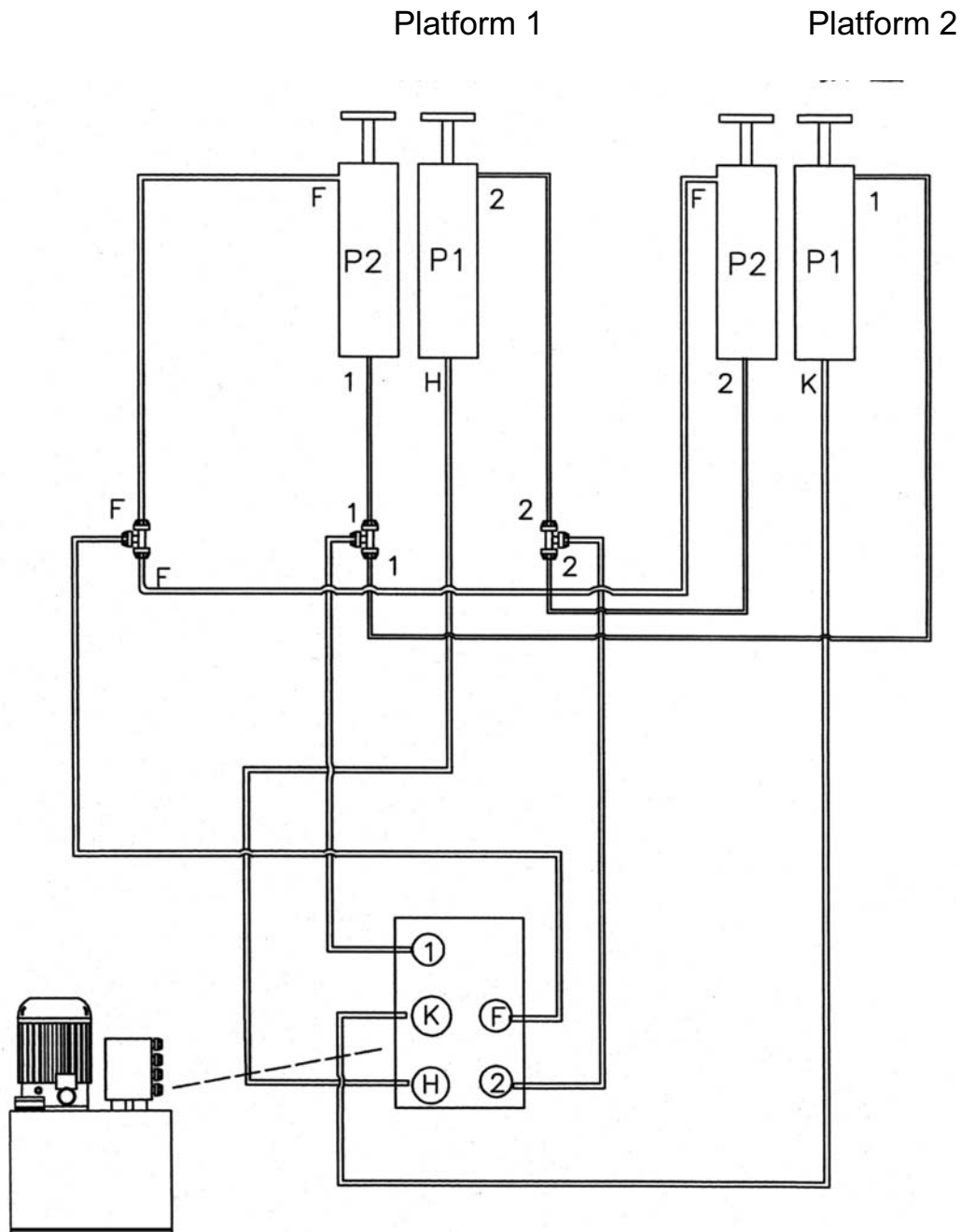
- Transport platforms to the installation site by using hoisting means with load capacity of *500 kg* at least.
- To prevent the platform from dropping during transport, it should be lifted according to its centre of gravity.
- Always raise platforms by holding them on the underside of the base frames.
- Position the base frames on the foundation according to the drive-on direction of the lift. (Align platforms parallel to each other and in the drive-on direction of the lift).
- Lift platforms with auxiliary equipment by using strong ropes, bands and chains and insert the safety blocks supplied with the lift (Ref. Figure 15).
- Place the control desk in the position provided for.

7.3 Hydraulic system connection

(Ref. Figure 16)

- Connect hydraulic hose to the fittings placed on the fixed platforms referring to the letters shown on them.
- Tighten thoroughly.
- Connect hydraulic hoses to the fittings placed on the hydraulic unit referring to the letters shown on them.
- Tighten thoroughly

Figure 16 - HYDRAULIC PIPES CONNECTION



7.4 Electrical system connection

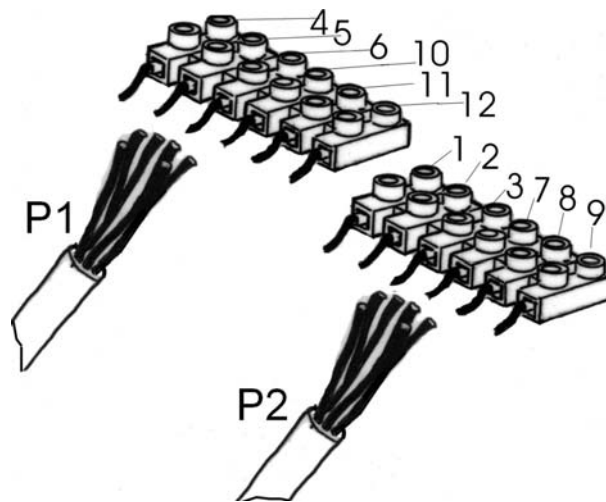
(Ref. Figure 17)

- Connect magnetic proximity pickups of both the platforms to the control desk following the numbering indicated on the cables.
- Connect the external power supply to the positions indicated in Figure 7
- Ensure that the lift is suitably grounded

Figure 17 - ELECTRICAL SYSTEM CONNECTION

1=brown wire FC safety height
 2=blak wire FC safety height
 3=blue wire FC safety height
 7=brown wire FC auto-levelling
 8=black wire FC auto-levelling
 9=blue wire FC auto-levelling

4=brown wire FC safety height
 5=blak wire FC safety height
 6=blue wire FC safety height
 10=brown wire FC auto-levelling
 11=blak wire FCS auto-levelling
 12=blue wire FC auto-levelling



7.5 Starting

- Be sure the working area is free from people and objects.
- Be sure the electrical system feeding voltage is equal to that of the control box supplied with the lift (230 V or 400 V);
- Verify that the control desk is powered.
- Pour oil in the tank (about 15 litres).
- Supply power to the lift by means of a local protected energy source;.
- Verify that the motor direction of rotation is that shown on the label; if not interchange the phases.
- Press the UP button (5) (Ref. Figure 3) until the lift reaches the maximum height
- Effect discharge of the cylinder pushing the UP button (5) and at the same time the override button (13) (ref. Fig. 3)

N.B. WAIT FEW MINUTES UNTIL AIR, MIXED WITH OIL IN THE TANK, COMES OUT.

- Press DOWN button (6) until the lift stops automatically (Figure 3);

NOTE: IF LOWERING IS NOT CARRIED OUT BY THE LIFT OR THE LIFT IS BLOCKED BEFORE THE DETECTION BY THE SAFETY HEIGHT LIMIT SWITCH, OIL IN EXCESS FROM SECONDARY CYLINDERS MUST BE REMOVED.

If the lift does not low, push at the sametime with the down button (6) the oil discharge button (13) and immediately release it.



WARNING! CARRY OUT THIS OPERATION ONLY AND EXCLUSIVELY WHEN THE LIFT IS WITHOUT CHARGE.

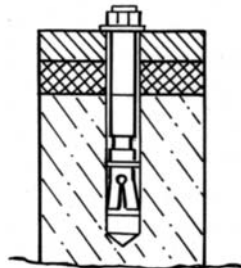
- Press the SAFETY down button (7) (Ref. Figure 3).
- If the runways are not levelled, restart bleeding operations (as described previously).

7.6 Checks and inspections

7.6.1 Mechanical checks

- grease sliding seats of blocks placed under platforms and on bases;
- platform levelling and alignment (as per measurement showed on Figure 18);
- lift fixing to the ground with 8 anchor bolts (Ref. Figure 18) (min. recommended size $\varnothing = 16 \text{ mm}$), bolts, connectors and connections tightened.
- clean all parts of the machine

Figure 18 - FIXING ON THE GROUND



7.6.2 Electrical checks

- connections as per diagrams
- lift grounding
- operation of the following devices:
 - top position limit switch
 - bottom position limit switch
 - P1 levelling
 - P2 levelling

7.6.3 Hydraulic system check

- proper oil level in the tank
- no leakage and blow-by
- cylinder operation

7.7 Set up and adjustments

7.7.1 Loadless check

Carry out two or three complete cycles of lowering and lifting and check:

- the lift for reaching its maximum height
- the max height limit switch for proper operation
- the lowering limit switch for proper operation
- levelling limit switches for proper operation (both the platforms should lower simultaneously)
- the horn/signalling light for proper operation during the final travel

7.7.2 Check with load

Repeat checks provided for by 7.7.1 section with the vehicle loaded;

7.7.3 Bolts and nuts check

After carrying out the checks with load, make a visual inspection of the machine and check bolts and nuts for proper tightening.

7.8 Limit switches adjustments



ONLY SKILLED PERSONNEL MUST BE ALLOWED TO CARRY OUT THIS OPERATION. AN IMPROPER ADJUSTMENT OF LIMIT SWITCHES COULD CAUSE DAMAGES TO THE LIFT, OBJECTS AND PEOPLE.

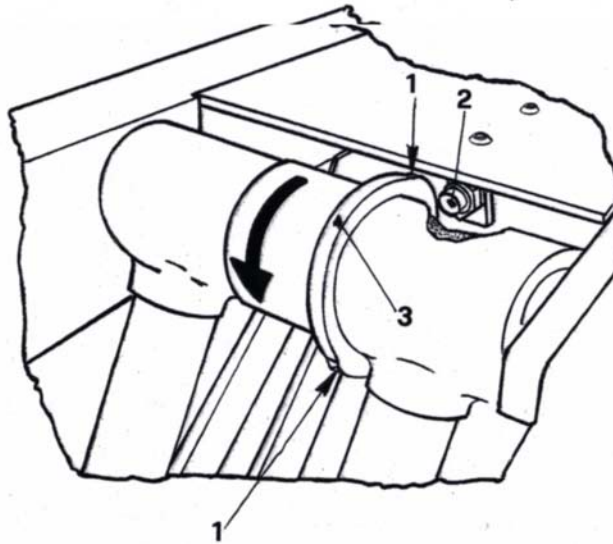
Limit switches are adjusted by the factory. In case of improper functioning, adjust in the following way:

7.8.1 Adjustment of maximum working height limit switch

(Ref. Figure 19)

- manually place the lift at a height of *1850 mm*
- loosen hexagonal-head screws (1) which secure the cam under P2 platform
- bring the proximity pick up (2) nearer the cam (3) at a distance between *1* and *3 mm*
- rotate the cam (3) until it is detected by the magnetic sensor
- tighten screws properly

Figure 19 - ADJUSTMENT OF MAXIMUM WORKING HEIGHT LIMIT SWITCH

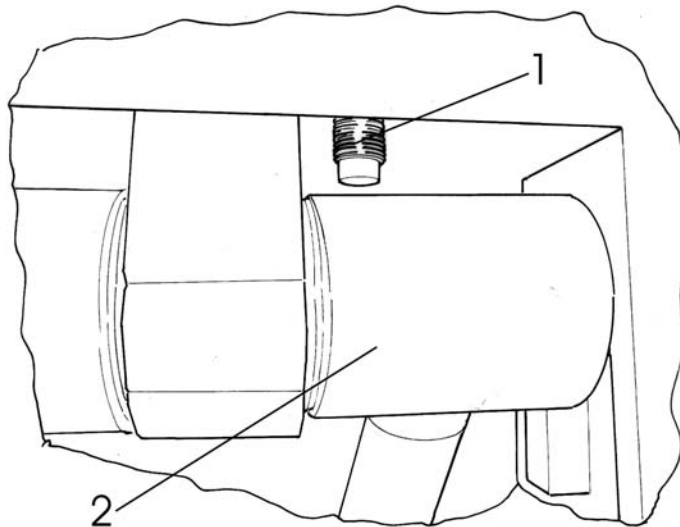


7.8.2 Adjustment of safety height limit switches

(Ref. Figure 20)

Be sure that, when the lift is raised at about 1 meter, the cylinder head is detected by the safety height limit switch and is placed at a distance between 1 and 3 mm from it.

Figure 20 - ADJUSTMENT OF SAFETY HEIGHT LIMIT SWITCH

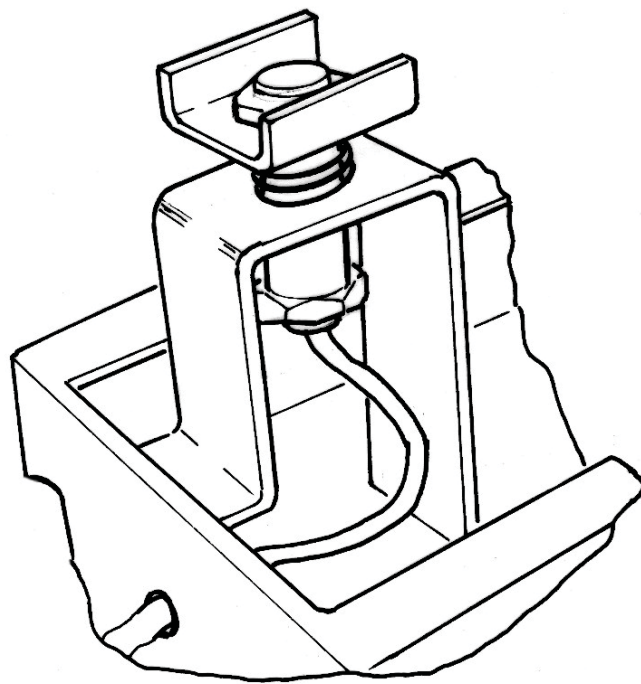


7.8.3 Adjustment of autolevelling limit switch

(Ref. Figure 21)

The auto-levelling system's limit switches are adjusted in factory and, for their specific assembly with the spring, they don't need others adjustments.

Figure 21 - ADJUSTMENT OF PLATFORM AUTOLEVELLING LIMIT SWITCHES



8 CHAPTER 8 - OPERATION AND USE

8.1 Controls

(Ref. Figure 3)

Controls for operating the lift are:

GENERAL SWITCH (11)

0 position: lift electric circuit is not powered; the switch can be padlocked to prevent the use of the lift.

1 position: lift electrical circuit is powered; the lift can be operated.

UP BUTTON (5)

When pressed, motor and hydraulic circuit solenoid valve are operated and the lift will be raised.

DOWN BUTTON (6)

When pressed, the release hydraulic circuit solenoid valve and the lowering solenoid valve are operated and the lift will lower to the safety height (400 mm from the ground).

SAFETY DOWN BUTTON (13)

If it is pressed at the same time as the UP button (5), under the detection by maximum working height limit switch, discharge solenoid valves are opened and the lift can be raised slowly.

If it is pressed at the same time as the UP button (5), when the lift stops at the maximum height, discharge solenoid valves are opened together with levelling solenoid valves in order to carry out cylinders bleeding.

If it is pressed, and immediately released, at the same time as DOWN button (6), oil in excess can be removed from secondary cylinders.



WARNING! CARRY OUT EXCESS OIL DISCHARGE FROM SECONDARY CYLINDERS ONLY AND EXCLUSIVELY WHEN THE LIFT IS WITHOUT CHARGE.

PULSANTE DI CORSA FINALE (7)

When pressed, the horn and, after a few seconds, the release hydraulic circuit solenoid valve as well as the lowering solenoid valve are operated and the lift can make its final travel.



BE SURE THE SAFETY AREA IS FREE FROM PEOPLE AND OBJECTS

Lift operation can be summarised into four steps :

8.2 Vehicle positioning

Place the vehicle at the centre of the platform and adjust the telescopic extensions. Place pads under the positions indicated by the motor vehicle's manufacturer for lifting.

8.3 Lifting

Set the main switch (11) to 1 position and press UP button to lift the vehicle to the required level

8.4 Standing

To let the lift stand, release the UP button when the required position is reached. The motion is stopped automatically.

8.5 Lowering

Press the DOWN button to carry out lowering. The lift will descend to a safety height of about 400 mm under the vehicle's and its own weight.

Be sure the safety area is free of people and objects, then press the SAFETY DOWN button.

NOTE : IT'S POSSIBLE THAT THE LIFT, WITHOUT LOAD, DOES NOT LIFT WHEN THERE IS A BIGGER QUANTITY OF OIL IN THE HYDRAULIC CIRCUIT A CAUSE OF SOME HYDRAULIC NEEDS DURING THE LIFTING.

IN ORDER TO MAKE THIS MANOEUVRE WILL BE NECESSARY TO PUSH AND TO RELEASE IMMEDIATELY, THE DOWN BUTTON (6) AND AT THE SAFETY DOWN BUTTON (13).

8.6 Manual and emergency lowering

(Ref. Figure 22).

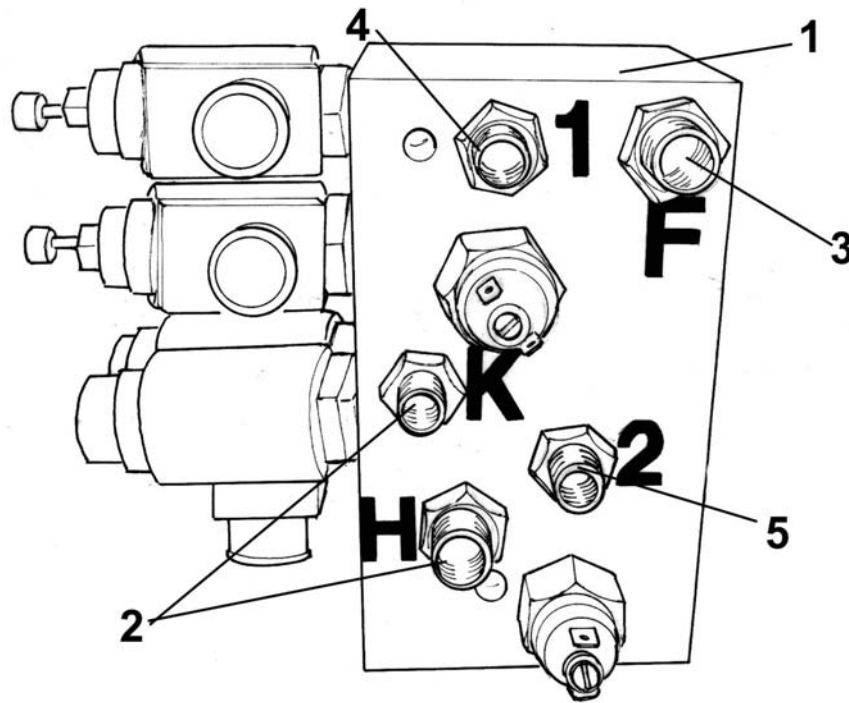
If there is no power or the control box is damaged, lower the lift manually to its initial position as follows:

1. Inside the control box, on the hydraulic group, unscrew the knurled nuts (1) and (2) simultaneously anticlockwise
2. Reset initial operating conditions to lift platform (the lift does not raise if manual lowering valve is opened).



AFTER MANUAL LOWERING OF THE LIFT, RESET ORDINARY OPERATING CONDITIONS. LIFT CANNOT BE LIFTED IF MANUAL LOWERING VALVE IS OPENED.

Figure 22 – MANUAL AND EMERGENCY LOWERING



9 CHAPTER 9 - MAINTENANCE



ONLY TRAINED PERSONNEL WHO KNOW HOW THE LIFT WORKS, MUST BE ALLOWED TO SERVICE THE LIFT

To service properly the lift, the following has to be carried out:

- use only genuine spare parts as well as equipment suitable for the work required
- follow the scheduled maintenance and check periods shown in the manual
- discover the reason for possible failures such as too much noise, overheating, oil blow-by, etc.
- Refer to documents supplied by the dealer to carry out maintenance:
 - functional drawing of the electric and hydraulic equipment
 - exploded views with all data necessary for spare parts ordering
 - list of possible faults and relevant solutions.



BEFORE CARRYING OUT ANY MAINTENANCE OR REPAIR ON THE LIFT, DISCONNECT THE POWER SUPPLY, PADLOCK THE GENERAL SWITCH AND KEEP THE KEY IN A SAFE PLACE TO PREVENT UNAUTHORISED PERSONS FROM SWITCHING ON OR OPERATING THE LIFT.

9.1 Ordinary maintenance

The lift has to be properly cleaned at least once a month. Use self-cleaning clothes.



THE USE OF WATER OR INFLAMMABLE LIQUID IS STRICTLY FORBIDDEN.

Be sure the rod of the hydraulic cylinders is always clean and not damaged since this may result in leakage from seals and, as a consequence, in possible malfunctions.

9.2 Periodic maintenance

<i>Every 3 months</i>	Hydraulic circuit	- check oil tank level; refill with oil, if needed; - check the circuit for oil leakage. Check seals for proper conditions and replace them, if necessary.
	Foundation bolts:	- check bolts for proper tightening
	Hydraulic pump	- verify that no noise changes take place in the pump of the control desk when running and check fixing bolts for proper tightening
	Safety system	- check safety devices for proper operation
<i>Every 6 months</i>	Oil:	Check oil for contamination or ageing. Contaminated oil is the main reason for failure of valves and shorter life of gears

pumps

Every 12 months

General check:

- verify that all components and mechanisms are not damaged.

Electrical system:

- a check of the electrical system to verify that control desk motor, limit switches and control panel operate properly must be carried out by skilled electricians.

9.3 Recommended hydraulic oil

Recommended hydraulic oil for the lift to be used at standard temperatures (25°C - 30°C) is described below. For temperatures different from those standard, contact your dealer for suitable oil.

TRADEMARK	TYPE
<i>AGIP</i>	<i>OSO 32</i>
<i>API</i>	<i>CIS 32</i>
<i>BP</i>	<i>HLP 32</i>
<i>CASTROL</i>	<i>HYSPIN HWS 32</i>
<i>ELF</i>	<i>ELFONA DS 32</i>
<i>ESSO</i>	<i>NUTO H 32</i>
<i>FIAT</i>	<i>HTF 32</i>
<i>FINA</i>	<i>HYDRAN TS 32</i>
<i>IP</i>	<i>HYDRUS 32</i>
<i>Q8</i>	<i>HAYDRIN 32</i>
<i>ROL OIL</i>	<i>LI 32</i>
<i>SHELL</i>	<i>TELLUS OIL 32</i>
<i>TOTAL</i>	<i>AZOLLA ZS 32</i>



CHANGE HYDRAULIC OIL AT 5 YEAR INTERVALS

10 CHAPTER 10 - TROUBLESHOOTING

A list of possible troubles and solutions is given below:

Trouble	Possible Cause	Solution
<i>The lift does not work</i>	The main switch is not turned on	Turn the switch on
	There is no power	Check Power on to restore if necessary
	The electrical wires are disconnected	Replace
	Fuses are blown	Replace
<i>The lift does not raise</i>	The motor direction of rotation is not correct	Interchange the two phases on the main switch
	The oil in the hydraulic unit is not sufficient	Add some hydraulic oil
	Printed circuit board does not operate properly	Replace the printed circuit board
	The UP button is faulty	Check UP button and connection for proper operation. Replace, if needed
	The maximum height limit switch sensor is faulty	Check the max. height and relevant connection for proper operation. Replace, if needed
	The lowering valve does not close	Check and clean, if dirty, or replace, if faulty.
	The suction pump filter is dirty;	Check and clean if needed.
<i>The lifting capacity is not sufficient</i>	The maximum pressure valve is not properly set	Set the maximum pressure valve
	The pump is faulty	Check the pump and replace, if needed.
<i>The lift doesn't low pushing the DOWN button (without load)</i>	Excess of oil in the hydraulic circuit	Push, at the sometime the DOWN button and oil discharge button.

<p><i>The lift does not lower when the DOWN button is pressed</i></p>	<p>Locking solenoid valve is jammed.</p> <p>The DOWN button is faulty</p> <p>Printed circuit board does not operate properly</p> <p>The lowering solenoid valve does not work properly</p>	<p>Verify if it is powered and check magneto for damage (replace if disconnected or blown).</p> <p>Replace the DOWN button</p> <p>Replace the printed circuit board</p> <p>Verify if it is powered and check magneto for damage (replace if disconnected or blown).</p>
<p><i>Platforms do not stop in standing position</i></p>	<p>The lowering and locking solenoid valves stay opened</p> <p>Leakage in at least two hydraulic pipelines</p> <p>Two hydraulic cylinders at least are faulty</p>	<p>Verify that solenoid valve sliders are not blocked</p> <p>Check connections for proper tightening and tubes for damage (replace if damaged).</p> <p>Check and replace if necessary</p>
<p><i>The lift does not lower smoothly</i></p>	<p>Air in the hydraulic system</p>	<p>Bleed the hydraulic system</p>
<p><i>Lifting is not synchronised</i></p>	<p>Leakage or air in the hydraulic system</p>	<p>Bleed the hydraulic system</p>



Konformitätserklärung
Declaration of Conformity
Nr. 491104DG



Hiermit erklärt **MAHA Maschinenbau Haldenwang GmbH & Co. KG.** als Hersteller, in alleiniger Verantwortung, dass nachstehend bezeichnete Maschine in Konzeption und Bauart den grundlegenden Sicherheits- und Gesundheitsanforderungen den hier genannten EG-Richtlinien entspricht.

Bei Änderungen an der Maschine, die nicht mit uns abgestimmt und genehmigt wurde, verliert diese Erklärung ihre Gültigkeit.

Herewith **MAHA Maschinenbau Haldenwang GmbH & Co. KG.** declares as a manufacturer its sole responsibility to ensure that the equipment named hereafter meets the safety and health regulations both in design and construction required by the EC Guidelines stated below.

This declaration becomes invalid if any change is made to the equipment that was not discussed and approved by MAHA beforehand.

Bezeichnung

SH Twin F 3.0 A
SH Twin F 3.0 U

Maschinentyp

Doppelscherenhebebühne
zulässige Traglast 3,0 t

EG-Richtlinien:

- ♦ 98/37/EG für Maschinen
- ♦ 89/336/EG für Elektromagnetische Verträglichkeit
- ♦ 73/23/EG für Niederspannung

DIN EN-Normen:

- ♦ EN 1493 „Fahrzeughebebühnen“
- ♦ EN 292 Teil 1 und 2, EN 294, EN 349, EN 418
- ♦ EN 60204 Teil 1
- ♦ EN 61000-6-3, EN 61000-6-2

Technische Dokumentation:

- ♦ Entwicklungs- und Konstruktionsunterlagen
- ♦ Gefahren- und Risikoanalyse
- ♦ Handbuch des Qualitätsmanagements
- ♦ Zertifikat nach DIN EN ISO 9001
- ♦ Sicherheitsgerechte Bedienungsanleitung
- ♦ Montage- und Installationsanleitung

Model:

SH Twin F 3.0 A
SH Twin F 3.0 U

Type of equipment:

Double Scissors Lift
up to 3.0 t load capacity

EC Guidelines:

- ♦ 98/37/EEC for machines
- ♦ 89/336/EEC for electro-magnetic compability
- ♦ 73/23/EEC for low voltage

EN Standards:

- ♦ EN 1493 "Mobile or movable jacks and associated lifting equipment"
- ♦ EN 292 Part 1 and 2, EN 294, EN 349, EN 418
- ♦ EN 60204 Part 1
- ♦ EN 61000-6-3, EN 61000-6-2

Technical Documentation:

- ♦ Design and construction documents
- ♦ Danger and risk analysis
- ♦ Quality Management Handbook
- ♦ Certificate in accordance with EN ISO 9001
- ♦ Operating manual based on established safety regulations
- ♦ Assembly and installation instructions

Haldenwang, den 22. März 2004

Betriebsleitung / Operations Manager