



INSTALLATION and OPERATION MANUAL



T-REX

MODEL

100165 / 200165 /
300165 / 400165
(22/44/66/88K)



6500 MILLCREEK DRIVE,
MISSISSAUGA, ONTARIO L5N 2W6
TEL: 905-826-8600 * FAX: 905-826-7800

READ and SAVE THIS INSTRUCTION MANUAL

NOV 2003 6-2130

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1. GENERAL

1.1 Special hints for the reader

A few special features were used in this manual to facilitate reading and understanding of pictures and written instructions:

- Bullets signal the operator where to act.

SAFETY RULES ARE HIGHLIGHTED IN GREY.



Arrow showing where to look.



Arrow showing the direction to move.

1.2 General safety rules

Only properly trained and authorized operators are allowed to operate the lift. Unauthorized changes and modifications to the lift relieve the manufacturer from any liability for any damages and injuries that might result therefrom. Especially making inoperative or removal of the safety features means a violation of the Health and Safety at Work regulations.

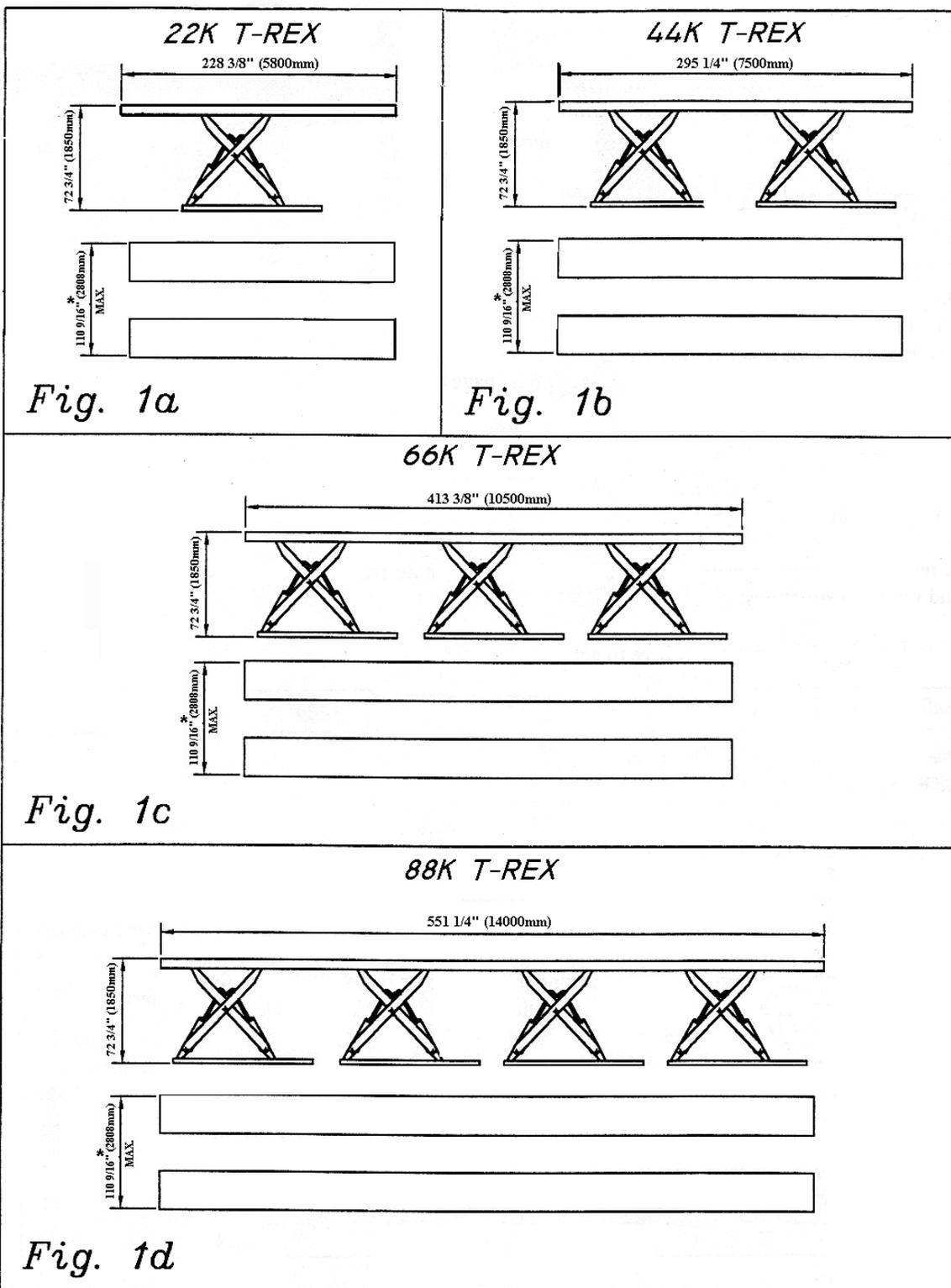
Rated load capacity (that ranges from 22000 lb to 88000 lb according to the model) must not be exceeded (pay attention to any additional load).

All versions of T-REX must not be used in car wash installations, nor be installed outdoors.

In general any work on the electrical system such as fitting of a plug and changing of connections, if necessary, must be carried out by a qualified electrician in line with relevant national standards and the regulations of the local power station.

For further safety rules to be observed during operation of the lift, please refer to Section 6 Operation of the Lift.

Please ensure that safety glasses and safety shoes are worn during installation and operation of the lift.



* **Note:** Overall width varies depending on application.

1.3 Scope

The various versions of the electro-hydraulic lift T-REX are designed to lift motor-vehicles up to maximum weight that ranges from 22000 lb to 88000 lb (including any additional load in the vehicle) to any level within the specified lifting range.

The lift must not be used for lifting other objects than specified under Section 1.3 Scope.

All versions of T-REX must not be installed outdoors or in humid environment.

1.4 T-REX versions

The T-REX is designed to lift trucks with a weight up to 88000 lb, is equipped with single scissors and unnotched runways, and may be equipped with jacking beam rails. The different versions have the following load capacities:

- 22000 lb. (10000 kg.) - Fig. 1a
- 44000 lb. (20000 kg.) - Fig. 1b
- 66000 lb. (30000 kg.) - Fig. 1c
- 88000 lb. (40000 kg.) - Fig. 1d

1.5 Description of function

The hydraulic unit, the pneumatic unit, the connectors for power supply and the control panel are housed together in a control desk which is positioned adjacent to the lift. All versions of T-REX are designed and manufactured in line with the following rules:

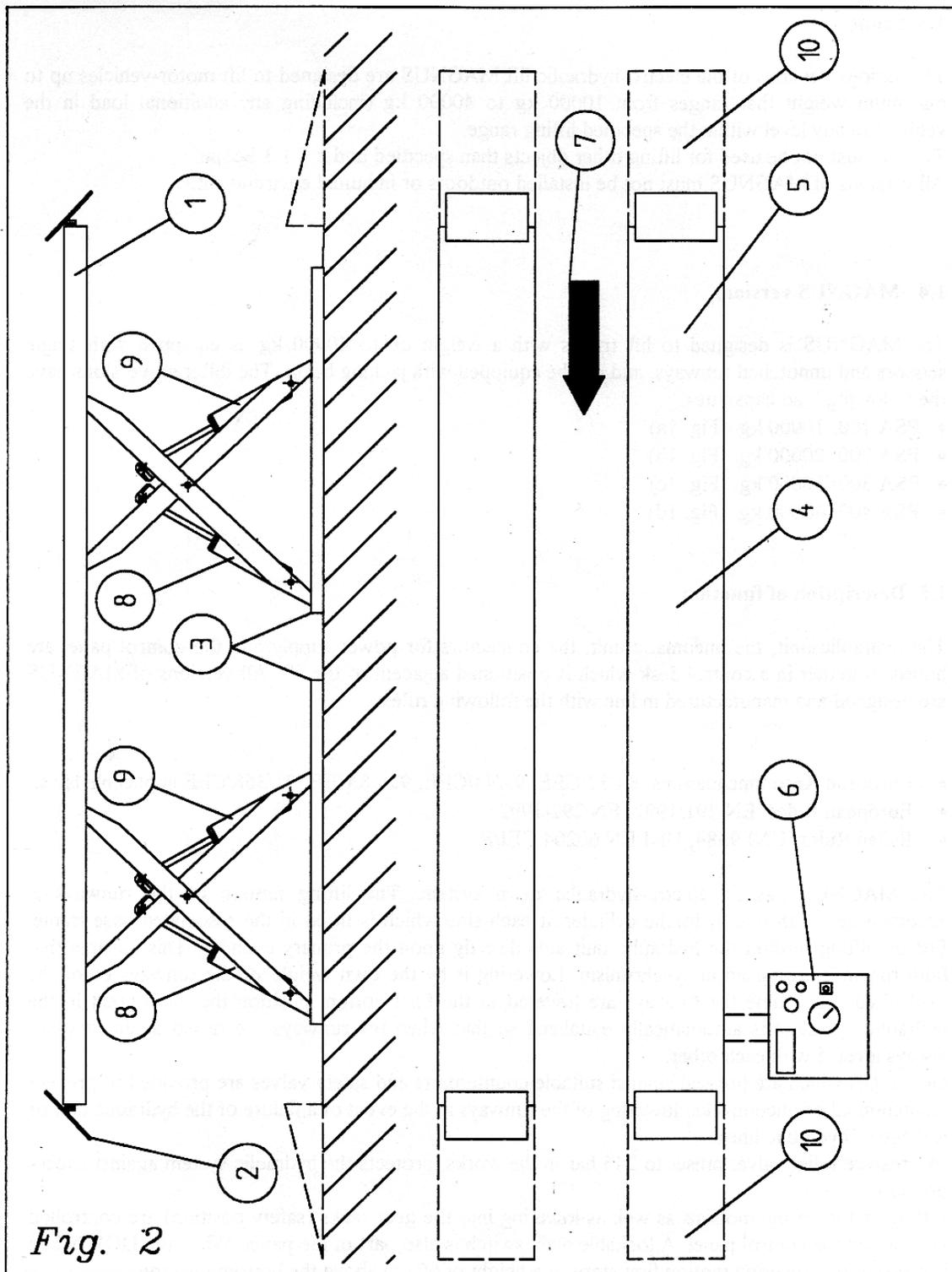
- European Recommendations: 89/32/CEE, 93/44/CEE, 93/68/CEE, 91/368/CEE applicable laws.
- European Rules: EN 291/1992, EN 292/1992.
- Italian Rules: UNI 9584, UNI EN 60204 CEI/8.

The T-REX has an electro-hydraulic drive system. The lifting motion of the runways is accomplished with one hydraulic cylinder at each side which is fitted in the associated base frame. For the lifting motion the hydraulic unit acts directly upon the primary cylinder. This ensures that both runways are raised in synchronization. Lowering is by the own weight of the runways or of the load lifted. Each time the runways are lowered to the final bottom position the oil content in the hydraulic cylinders is automatically equalized so that when the runways are raised again they are level with each other.

Gear racks which are pressed against suitable counterparts and safety valves are provided to prevent unintentional or uncontrolled lowering of the runways in the event of a failure of the hydraulic unit or leakage of hydraulic lines.

A pressure relief valve, preset to 3553psi (245bar) protects the hydraulic system against excess pressure.

Lifting and lowering motions as well as lowering into the gear racks (safety position) are controlled via keys on the control panel. A lockable main switch is also part of the panel. When the DOWN key is pressed, the lowering motion first stops at a height of 23 5/8" (600mm) above the bottom position. Then the operator must ensure that the working area is clear of people and obstructions before pressing the safety button (Fig. 4, Item 2) to lower the lift to the final bottom position. When the safety button is pressed an audible signal can be heard over the entire travel.



At the front and the back side of the runways further safety chocks are provided to prevent the vehicle from rolling off of the lift in raised positions.

Two drive-on ramps are available for surface mount installations, or four short drive-on ramps for flush mount installation are available so that the vehicle can be driven on the lift.

1.7 Delivery

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

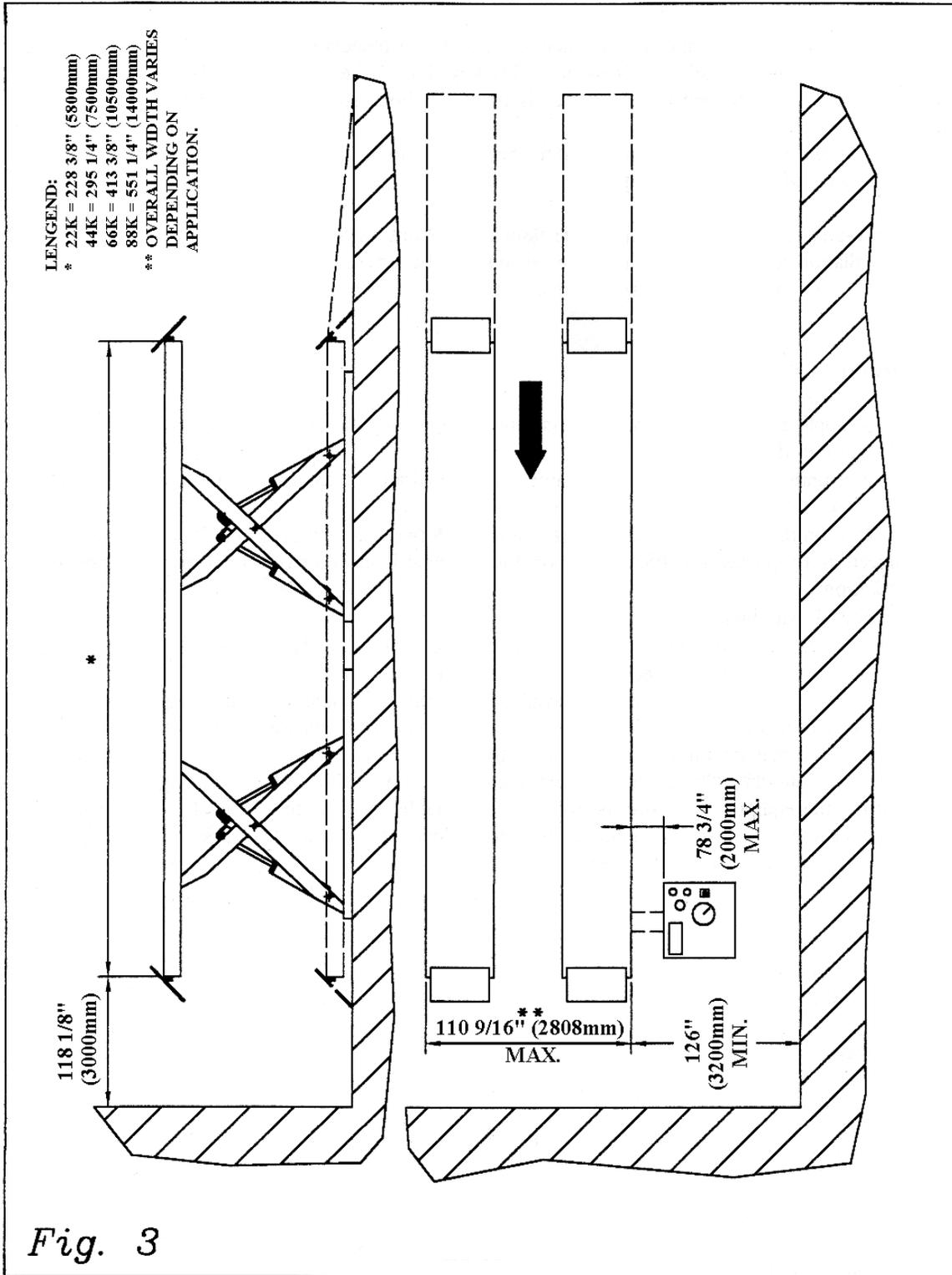
Example for the T-REX 22K:

- two runway assemblies; (Other versions may have multiple runway assemblies to facilitate shipping and handling)
- two drive-on ramps for surface mount installations, with safety chocks and line covers; four standard small drive-on ramps for flush mount installation;
- control desk with hydraulic unit;
- A box containing hydraulic lines, connecting lines, a compressed air line and technical documentation.

When the equipment is delivered, please check that it is complete according to the manufacturer's order confirmation and for any damage that may have occurred in transit, which should be reported to the carrier without delay. When loading/unloading or transporting the equipment on site, be sure to use suitable hoisting means and trucks (e.g. crane, stacker truck etc.) and suitable slinging (Figure 7). Be sure to load or suspend the parts to be transported securely so that they cannot be dropped.

Fig. 2 View of the lift

1. Runway
2. Small Drive-on ramps
3. Base frame
4. Runway P1
5. Runway P2
6. Control desk
7. Drive-on direction
8. Primary cylinder
9. Secondary cylinder
10. Access ramps



2. SITE

2.1 Space requirement

The minimum dimensions as specified in Fig. 3 have to be available on site. In addition there should be sufficient space for driving the vehicles on and off. The clearance about the lift should be at least 118”(3000mm). The control desk is not confined to a certain position, but should be placed such as to allow the operator to observe lift and vehicle during operation. The length of the cord set allows a maximum distance of 80”(2000mm) between the control desk and the lift. Please state any special site conditions when you order.

2.2 Site/foundation/bolting

For *Surface Mount* installation only, the lift has to be installed on a level concrete floor of at least 6”(152 mm) thickness and a minimum concrete quality of 4000psi (280kg/cm²). If a floor covering of above specifications is not available on site, a foundation plate, or at least fastening points of adequate size and foundation thickness, and in the specified concrete quality, have to be provided.

For *Flush Mount* installation is intended, provide the foundations in line with the applicable foundation plan. Concrete specifications are indicated on foundation plan. The foundation plan will be sent together with the order confirmation. Bolting flush mount installation is identical with that for surface mount lifts.

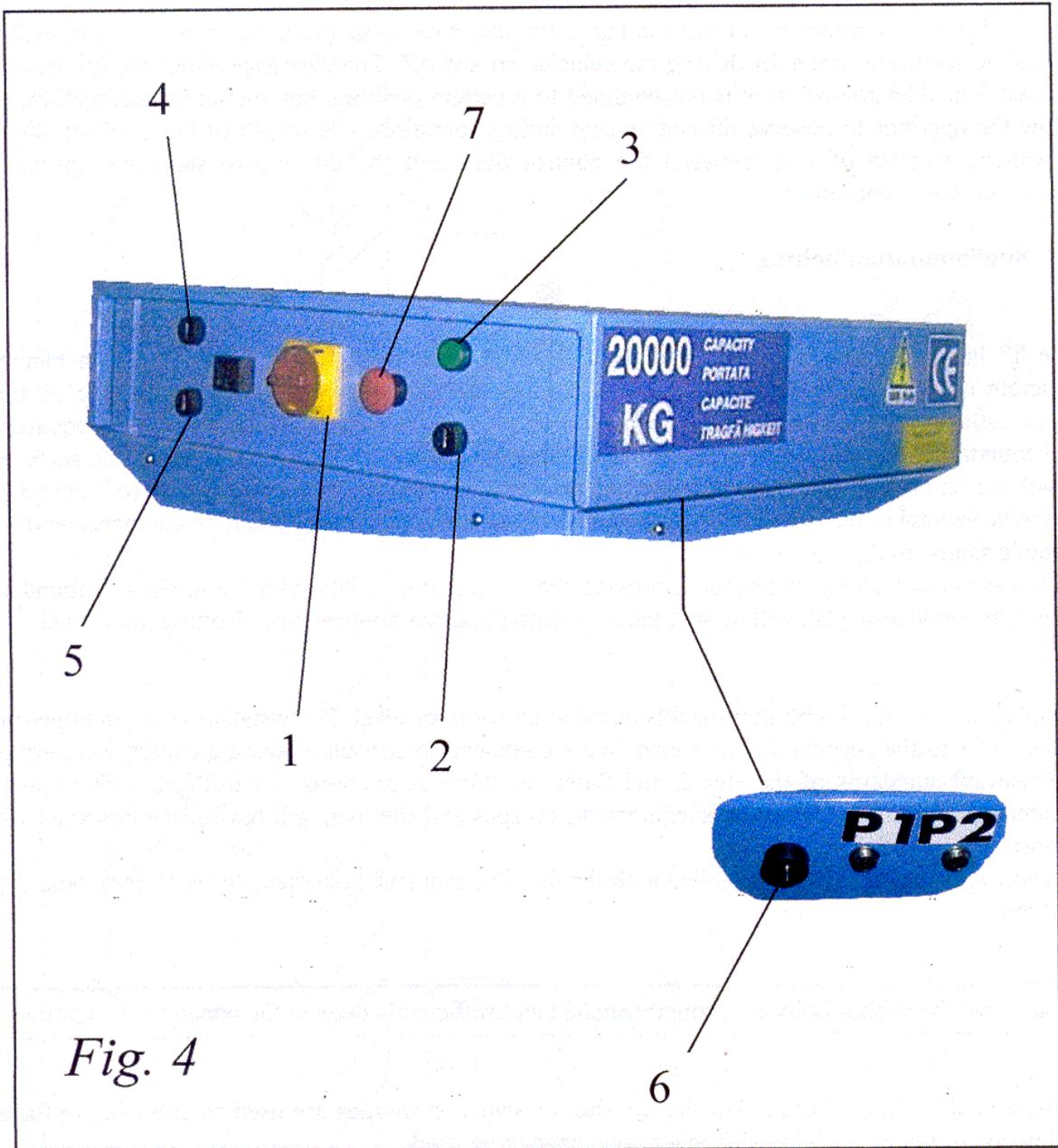
For installation on an *Upper Floor* please refer to the permissible floor load. We recommend to consult a building expert. Furthermore, the relevant standards of the Health and Safety at Work regulations, for instance with respect to minimum distance to wall or other equipment, escapes and the like, will have to be observed when choosing the site.

The surface on which the lift is installed should be plane and level in all directions. Inclinations of up to 3/4”(20mm) relative to the horizontal in the drive-on direction and 3/8”(10mm) in tranverse direction can be compensated for by suitable shims, wedges or similar. Anchor bolts (5/8” x 6”) are supplied with the lift. The required hole diameter is 5/8” and the hole depth is 6”. These bolts must then be torqued to 100 ft. lb. If there is an additional floor covering on site, or shims or wedges are used to compensate for any inclination of the ground, longer anchor bolts may be required. Consult the lift manufacturer if you need any further assistance.

Ensure that the anchor bolts are properly applied and sufficiently deep in the concrete foundation.

2.3 Power supply at site

If necessary, any work on the electrical system such as fitting of a plug and changing of connections must be carried out by a qualified electrician (in accordance with local and national electrical codes and regulations). Standard power supply for T-Rex models is available in 3Ph/60Hz; several voltage selections are available. The power unit is protected by fuses located in the control desk under the control panel. The user must provide a power cord of suitable cross section and with suitable fusing up to the terminal strip in the control desk (Section 11 Electrical Diagrams), taking into account relevant national standards and the regulations of the local power station.



3. CONTROL DESK

The control desk is supplied with four removable panels so that it is accessible from any side. As follows find the controls and safety features that are positioned in the front panel as shown in Fig. 4.

1. Lockable main switch
2. Two-function safety key: engaging of the gear racks, lowering of the last 23 5/8”(600mm).
3. Power supply LED - ON/OFF.
4. UP key
5. DOWN key
6. RELEASE key: TOP POSITION, PHOTOCCELL (22K)
7. EMERGENCY key
8. Electric connections on the lift

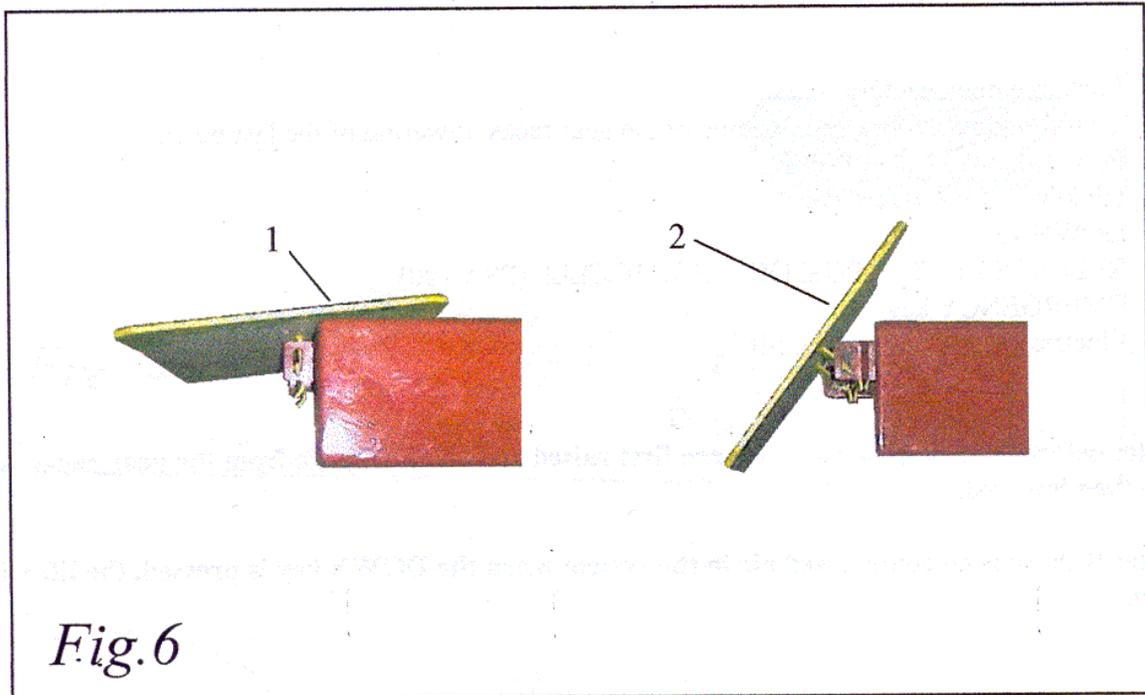
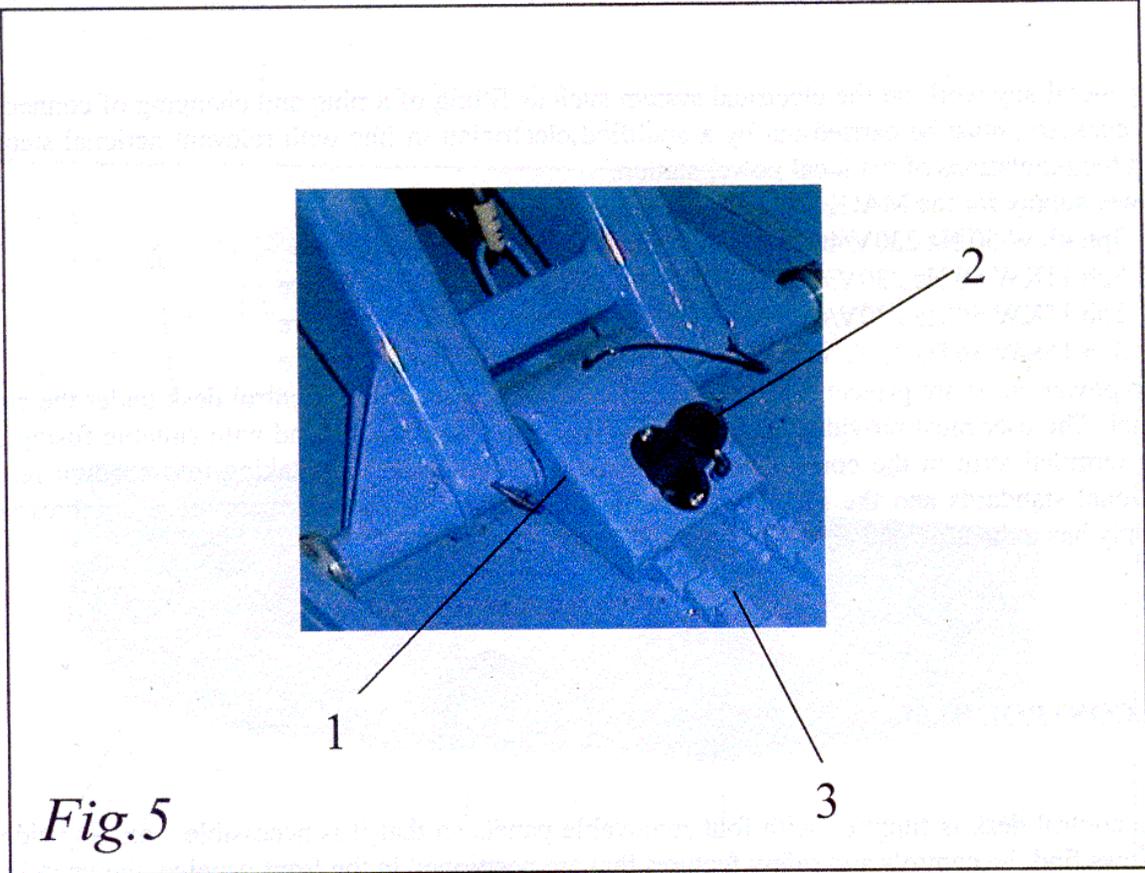
Fig. 5 Gear racks

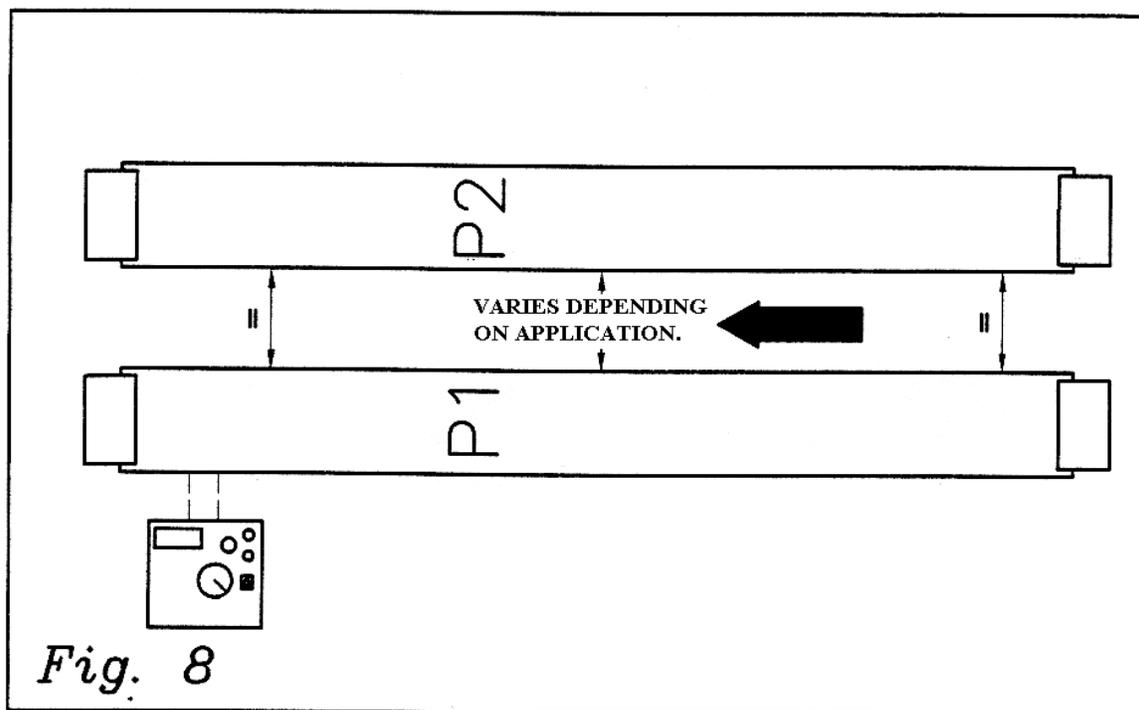
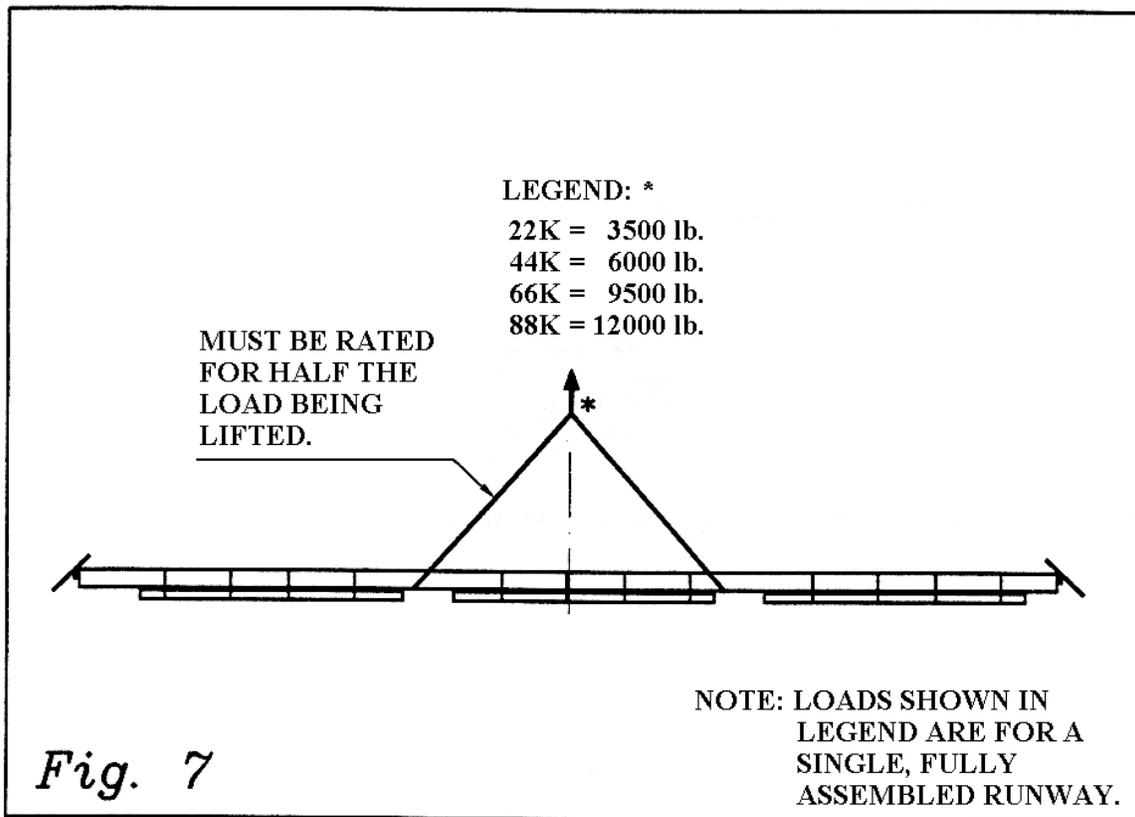
1. Upper gear rack on the boom
2. Pneumatic cylinder to disengage the gear racks
3. Lower gear rack on the base frame

The gear racks prevent the runways from unintentionally or uncontrollably lowering in the event of a failure of the hydraulic unit or leakage of hydraulic lines. Furthermore, when the gear racks are engaged and the runways are raised, it is possible to bleed the pneumatic system. This operation is necessary when maintenance on the pneumatic system itself is required.

Fig. 6 Safety chocks

1. The short drive-on ramps serve as safety chocks when the runways are lifted (Item 1 and 2).





4. ASSEMBLY OF THE LIFT

Most of the components of the T-REX are pre-assembled, and the lift is factory-tested prior to delivery. It should be assembled as described below. The tools required are those usually taken along by a service technician.

Do not connect pneumatic lines until the hydraulic system has been filled and bled, and the runways have been raised to the final top position.

4.1 Positioning of the runways

- To transport the runways to the site always use suitable hoisting means of sufficient load capacity. The same applies for the slinging means used (ropes, chains, etc.). To prevent the runway from slipping or dropping during transport, it should be lifted according to its centre of gravity. Fig. 7 show an example for transporting the lift. Always pick up the runways on the underside of the base frame.
- At the site, position the base frames with the runways on the foundation according to the drive-on direction of the lift (Fig. 8). The runways may be shipped in more than one piece. If so, lay the pieces to be connected in line with each other. Refer to the hydraulic connection diagrams for the respective models in Section 4.2.2.1., 4.2.2.2., 4.2.2.3., and 4.2.2.4 to properly orient the runway sections. Do not make any connections at this time.
- Align the runways parallel to each other and in the drive-on direction (Fig. 8).
Note: in the case of flush mount installation the runways have to be aligned with the prepared foundation recesses.
- Positioning the control desk in the required location.

The standard hydraulic and pneumatic lines are designed such that the control desk can be installed approx. 78¾”(2000mm) from the lift, and approx. 71”(1800mm) in case of flush mount installation. For special requirements, it is possible to order lines and cables with more length.

Fig. 8 Positioning of the runways

P1 Primary runway
P2 Secondary runway
Arrow Drive-on direction

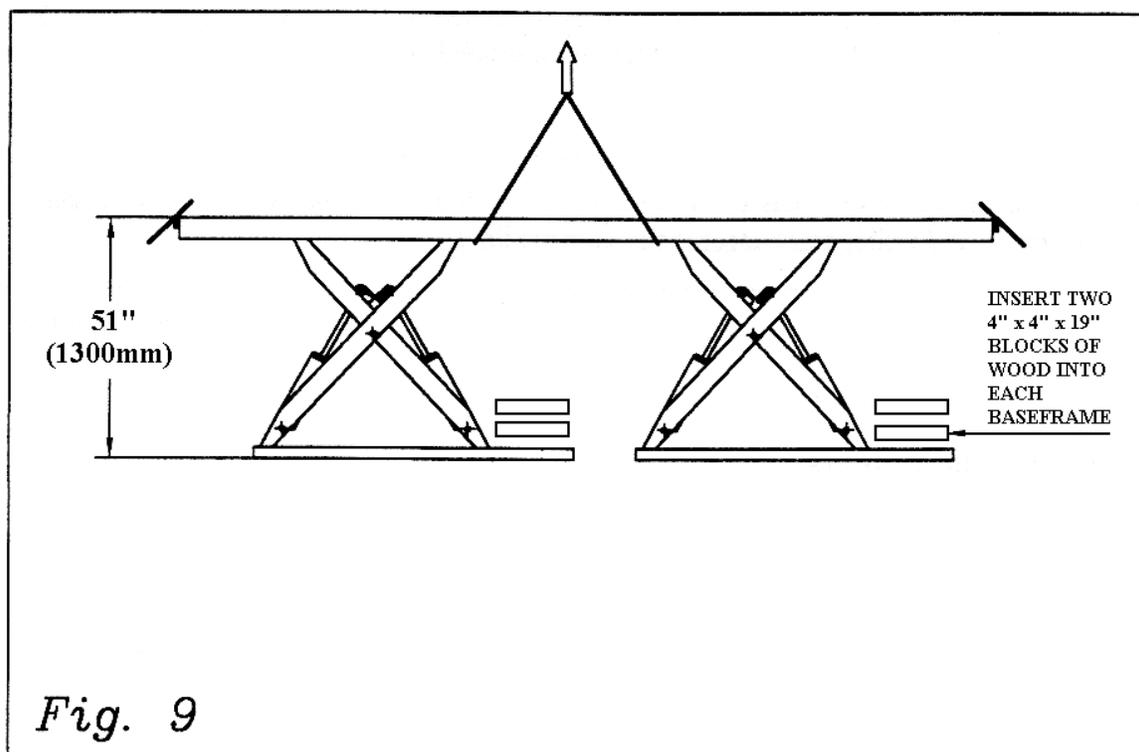
4.2 Raising runway sections and hydraulic line connections

Once the runways are raised, place two 4”x4”x19” pieces of wood into the baseframes of each section such **that if the lift comes off the safeties during installation, the scissors will not collapse** (i.e. they will jam against the wood block). Do not work underneath the runways unless the wood block are in place. The blocks may be removed once installation is complete.

4.2.1 Raising the runways and connecting runway sections

Raise the aligned runways one after the other to a vertical height of approx. 51"(1300mm) from the base frame and settle them in the gear racks (runways should be on the same level). When raising the runways take care not to damage the cables and hose lines. Insert wood blocks into each baseframe on the safeties side as shown in Figure 9.

Connect each section of the runways to the others by using the fasteners that are on the ends of the runways.



4.2.2 Hydraulic connection

Important note: Before laying the hydraulic lines the couplings should be sealed (with adhesive tape, plastic caps/plugs or similar) to prevent dirt or other objects from entering the lines during installation.

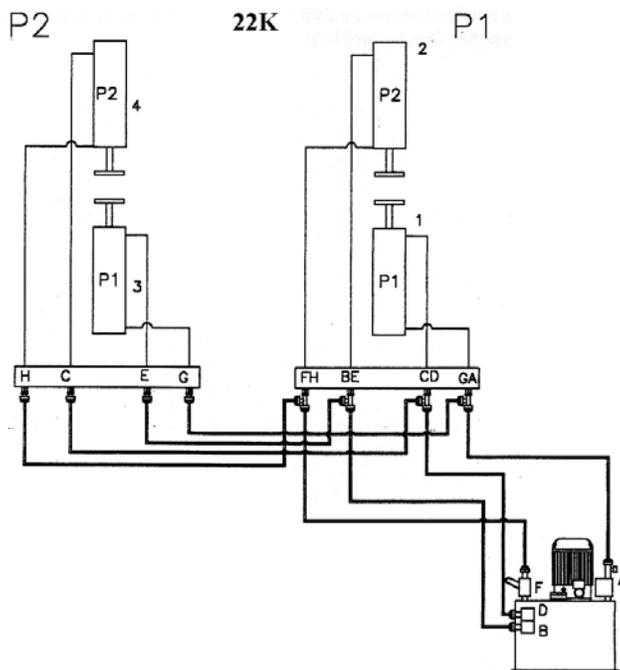
The copper seals may only be used once.

Reference numbers are marked on all hydraulic lines, manifolds, and on the control desk.

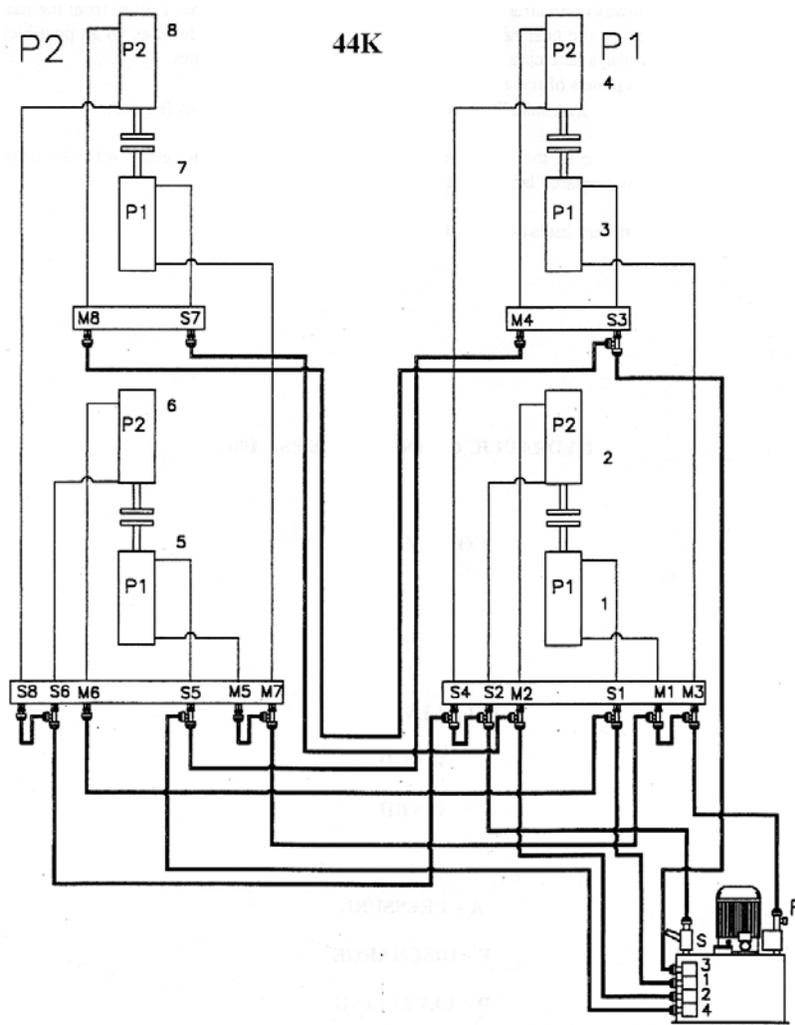
Detailed hydraulic plans are included in Section 12.

- Make all hydraulic connections between runway sections.
- Lay the hydraulic lines from the lift to the control desk; if the lift is to be flush mounted you should feed the hydraulic lines from the console to the lift.
- Remove one or more panels of the control desk.
- Make all hydraulic connections at the control desk and at the lift.

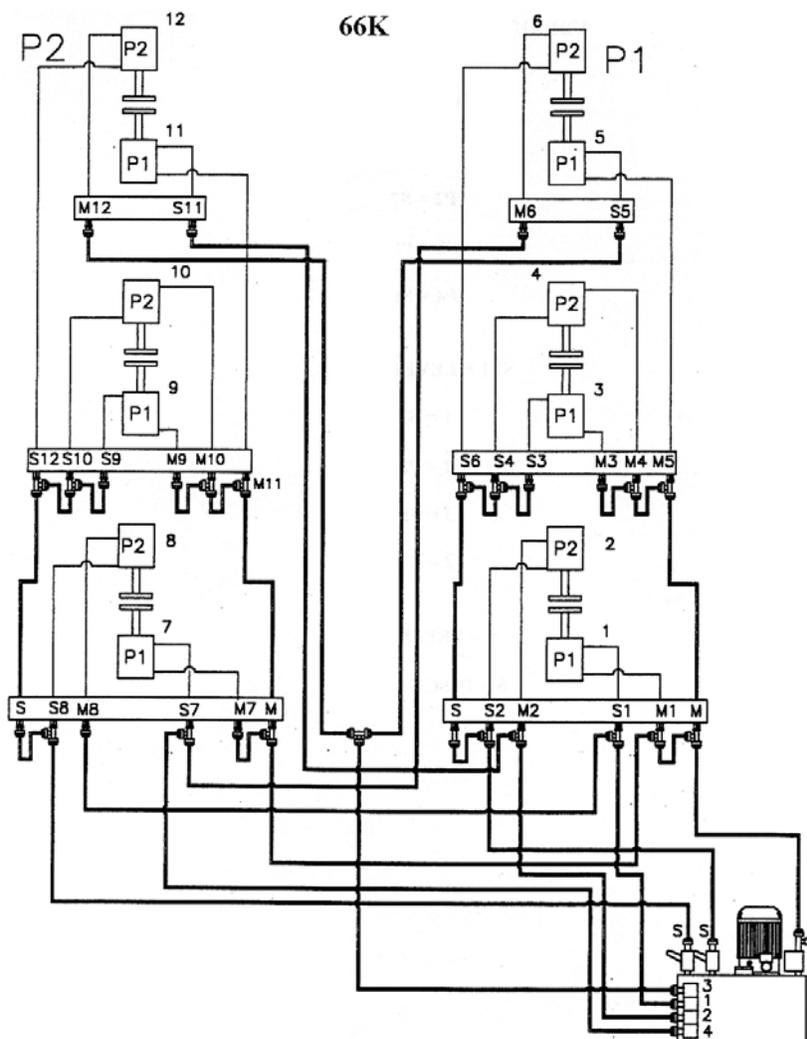
4.2.2.1 HYDRAULIC CONNECTIONS 22K



A = PRESSURE
F = DISCHARGE
B = LEVELLING
D = LEVELLING

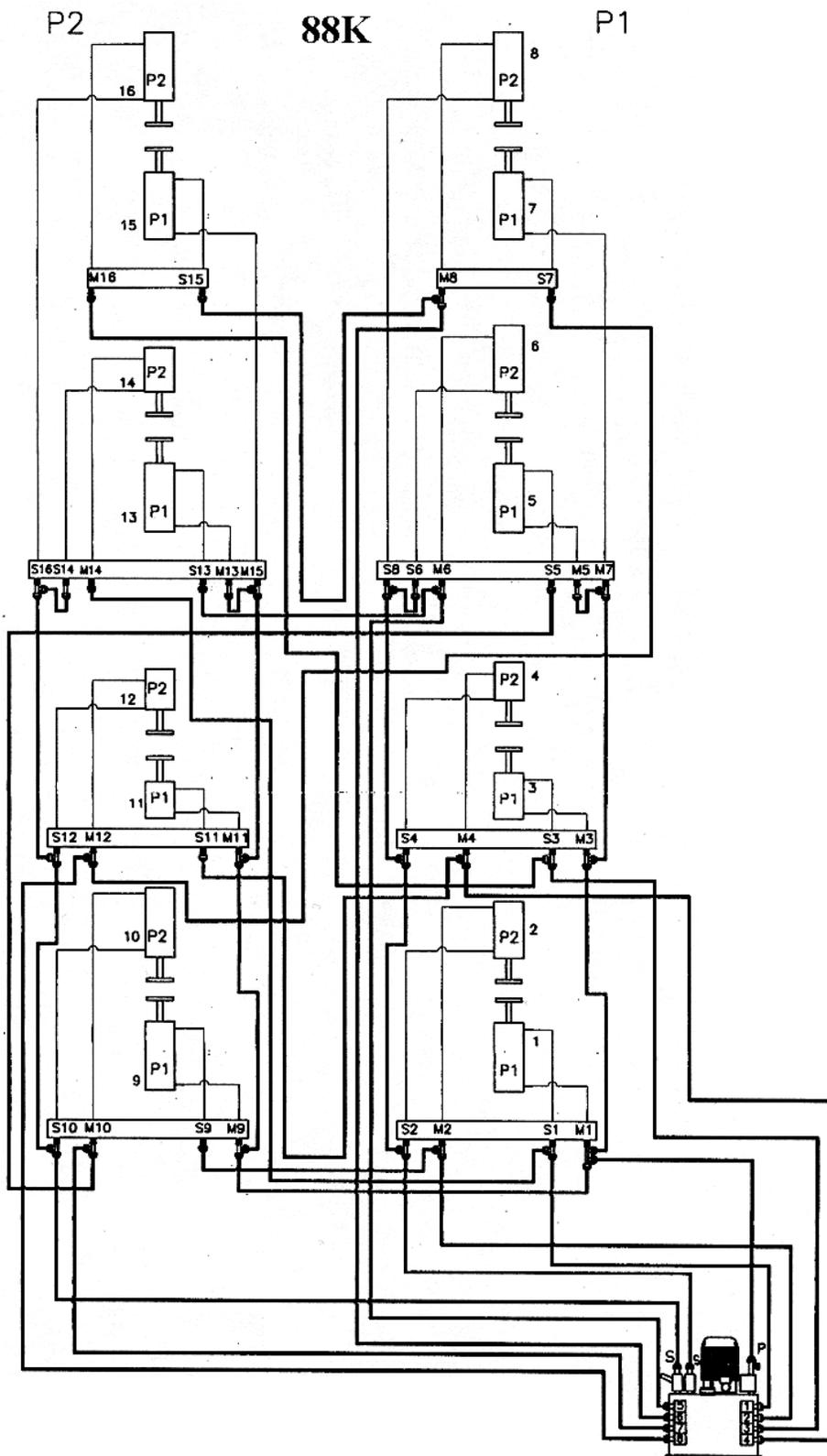


- 1 = LEVELLING
- 2 = LEVELLING
- 3 = LEVELLING
- 4 = LEVELLING
- P = PRESSURE
- S = DISCHARGE



- 1 = LEVELLING
- 2 = LEVELLING
- 3 = LEVELLING
- 4 = LEVELLING
- P = PRESSURE
- S = DISCHARGE

4.2.2.4 HYDRAULIC CONNECTIONS 88K



1 = LEVELLING
2 = LEVELLING
3 = LEVELLING
4 = LEVELLING
5 = LEVELLING
6 = LEVELLING
7 = LEVELLING
8 = LEVELLING
P = PRESSURE
S = DISCHARGE

4.3 Connection of electrical control lines and power cord

In general any work on the electrical system such as fitting of a plug and changing of connections, if necessary, must be carried out by a qualified electrician or an expert authorized to do so by the manufacturer, in line with relevant national standards and the regulations of the local power station.

- Connect the power cord provided by the user in the control desk as shown in the electrical diagram (Section 11). Suitable fused protection must be provided by the user before the point of connection and in line with applicable standards.
- Connect the control lines pre-fitted to the lift in the control desk as shown in the electrical diagram (Section 11).
- When all the lines are connected turn on the main switch (Fig. 4, Item 1), set the SELECTION switch to the required position and check for the correct direction of rotation of the motor (as indicated on the motor housing) of the hydraulic unit by pressing the UP key (Fig. 4, Item 4). If the direction of rotation is not correct, interchange the two phases of the main switch.

4.4 Filling and bleeding of the hydraulic system

- When the hydraulic lines are connected, fill the hydraulic unit with hydraulic oil (see recommended oil, Section 8.1), considering that you need:
 - 10.6 Gallons (40 litres) for the 22K;
 - 26.4 Gallons (100 litres) for the 44K;
 - 39.6 Gallons (150 litres) for the 66K;
 - 52.8 Gallons (200 litres) for the 88K;
- Turn on the main switch.
- Press the UP (Fig. 4, Item 4) key and raise the runway P1 (primary runway) until it reaches the final top position.
- Now fill the hydraulic unit with half the quantity already filled.
- Continue to press the UP key and simultaneously the RELEASE key (Fig. 4, Item 6 – having removed the front panel of the control desk) and hold it pressed until the runway P1 and also the runway P2 are both raised to the final top position. On reaching the final top position keep the keys pressed for further 10-20 seconds to completely bleed the hydraulic system.
- Ensure that the wooden blocks are still inserted in the baseframes before proceeding any further.
- Proceed to Section 4.5 to connect all pneumatic lines.

4.5 Connection of the pneumatic lines

The disengagement of the gear racks is carried out pneumatically. The lift must be connected to a pneumatic supply at site which must have a water separator, oiler and pressure reducer (see Section 10 Technical Data for recommended pneumatic line pressure); these devices must be supplied by the owner.

- Leave the lift at the final top position and verify that wooden blocks are in place (Fig. 9).
- Connect the pneumatic lines pre-assembled on the runways between runway sections.
- Lay or run the pneumatic line supplied from the control desk to the lift.
- Connect the pneumatic line in the control desk according to the colour marking.
- Connect the pneumatic system of the lift to the pneumatic supply at site.
- Check the pneumatic control operations for proper performance. Pressing the UP or the DOWN key will disengage the gear racks (Figure 5, Item 1). Releasing the UP or DOWN key will engage the gear racks.
- Remove the wooden blocks and lower the runways completely (see Section 1.5).
- Repeat the bleeding procedure detailed in Section 4.4 once more.

The hydraulic and pneumatic system of the lift is now ready to operate. Replace all the panels previously removed from the control desk.

Fig. 10 Diagram of the pneumatic connections with designations of the lines

1. Disengagement of the gear racks
2. Connections to the control desk
3. Solenoid valve
4. Valve for the disengagement of the gear racks
5. Compressed air supply

Pneumatic lines

- L1 Pneumatic line
- L2 Pneumatic line
- P Hydraulic pistons

4.6 Bolting of the lift (Follow instructions in Section 2.2)

- Check the alignment of both runways and correct it if necessary.
- Shim underneath the lift if necessary.
- Raise the runways to the final top position.
- Drill holes for anchor bolts using the holes in the base frame as a drilling template.
- Clean the holes, insert the bolts and tighten them by hand.

4.7 Limit switches check

When the anchor bolts are fitted and the lift is connected, check the limit switches for proper performance. The lift comes equipped with various preset limit switches for monitoring the safety functions or the final positions. The control function of the limit switches is described below.

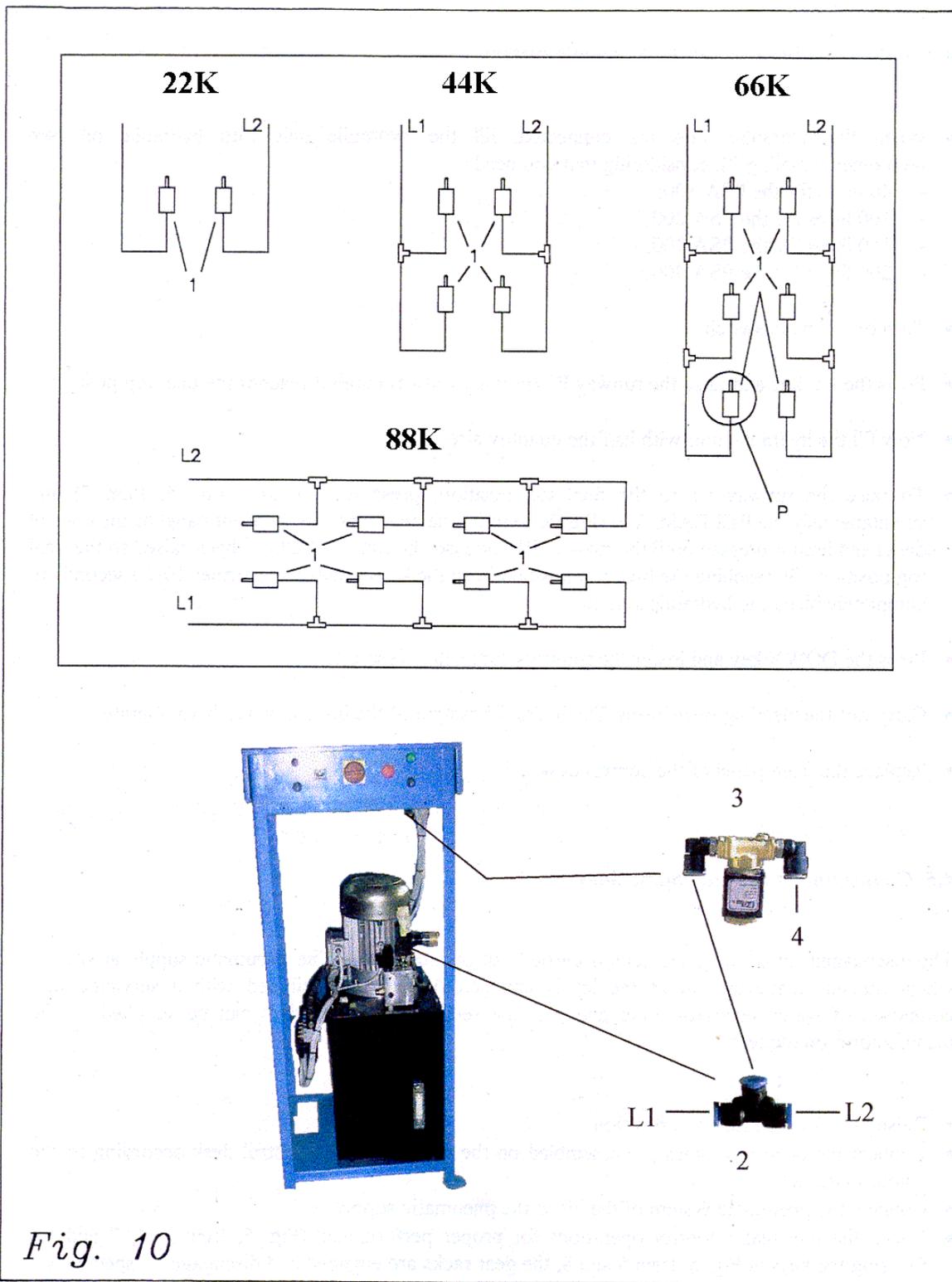
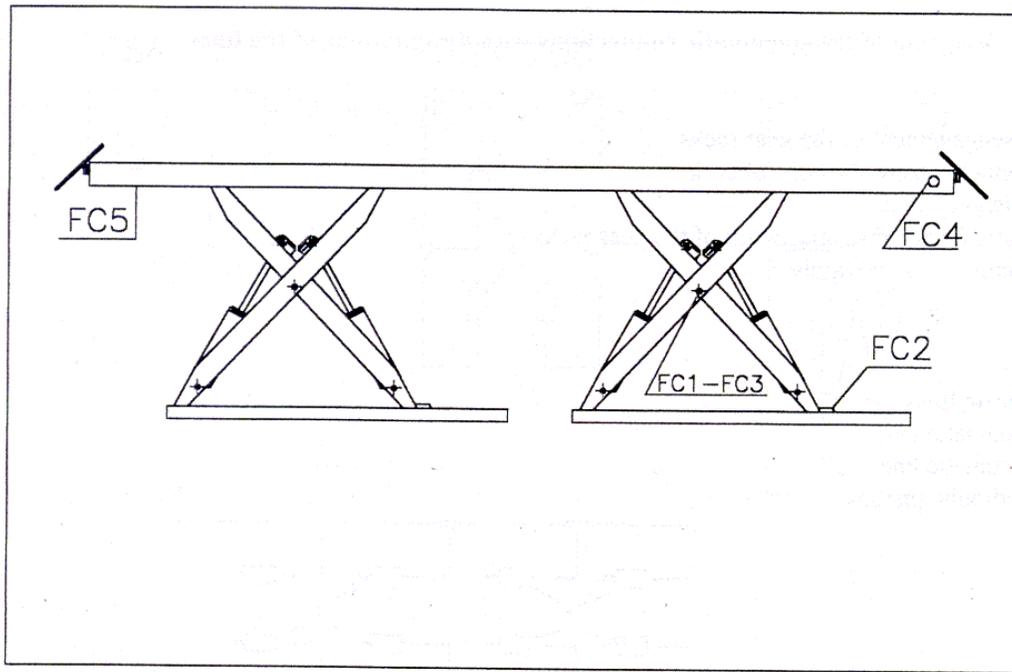
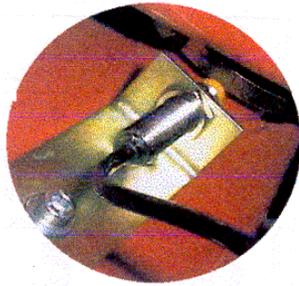


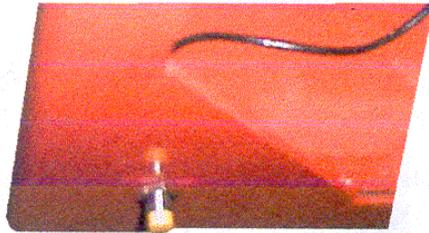
Fig. 10



FC1 - FC3



FC5



FC2

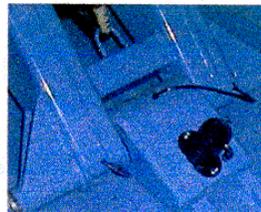


Fig. 11

Fig. 11 Safety switches designation

- FC1 Magnetic switch – maximum working height of the lift.
 The drive must cut out approx. 2” (50mm) below the maximum possible lifting range.
- FC2 Magnetic switches – safety devices on the gear racks.
 Signals that the gear racks are engaged or disengaged.
- FC3 Magnetic switch – device for automatic cut out at approx. 23 5/8” (600mm) before the
 final bottom position.
- FC4 Photocell – device for vertical levelling control of the runways (only 22K).
 The drive cuts out if the runways are not level to each other.
- FC5 Magnetic switch – device for alignment of the runways in case of uneven travel.

The connection diagram for the control and safety switches is illustrated in Section 12.

Note: To check the limit switches the lift should be raised to the corresponding positions. If the settings are incorrect, the limit switches should be re-adjusted accordingly.

4.8 Final runways adjustment

When all the cables are connected, adjust the lift as indicated below:

- Raise the runways to 63” (1600mm) and settle them in the gear racks.
- Check the runway alignment and correct it if necessary.
- Torque all the Anchor bolts following directions in Section 2.2.

4.9 Ramps, wheel chocks, and line covers

If your lift is being installed surface mount you must secure the supplied drive on ramps to the floor at this time (Fig. 3). Install supplied front and rear wheel chocks. Install, and secure to the floor, line covers to protect the lines running from the control desk to the lift.

If your lift is being installed flush mount you must install four small drive-on ramps to the runways; these also act as wheel chocks when the lift is raised (Fig. 6).

5. INITIAL OPERATION

- **Initial operation may only be carried out by an expert.**
- Check the electrical connections and control leads for proper installation.
 - Visual inspection -
- Ensure that the base frames are properly fixed to the ground.
 - Torque anchor bolts -
- Check parallelism and same vertical level of the runways.
 - Tape measure and level -
- Check that all the hydraulic connections are properly positioned and there is no leakage.
 - Visual inspection -
- Check that the hydraulic system has been bled properly, and repeat the bleeding if necessary.
 - Visual inspection: vehicle should raise and lower smoothly over the entire travel -
- Check the controls for proper operation and performance.
- Check the gear racks for proper engagement. To do so, raise the runways and settle the gear racks at several levels.
- Check that the front wheel chocks are properly placed.
 - Visual inspection –
- Position the cables covers and protections and fix them firmly.
- Check that the panels of the control desk are properly fitted.
 - Visual inspection –
- Check the photocell for proper performance (to do so, cover/uncover the opposite reflector in order to verify the correct transit of the beam of light).(only 22K)
 - Visual inspection –
- Check that, during lowering, the lift stops on the security step (23 5/8” above lowered height).

The lift is now ready to be operated by a fully trained and certified operator; refer to local and national regulations to certify this.

Note: During the initial period of usage it is normal for the lift and control desk to make odd noises. These are typically due to the fact that the seals are still new, to air in the hydraulic systems or at the various bearing points of the axle bearings or roller tracks. If these noises persist, check their cause and remedy accordingly.

6. OPERATION OF THE LIFT

6.1. Behaviour and use during operation

- Operators are obligated to meet all Health and Safety at Work regulations and all applicable national safety standards.
- The lift may only be used as advised by the manufacturer.
- The safety devices must not be manipulated, made inoperative or removed.
- Only properly trained and authorized operators should be allowed to operate the lift.
- The rated load capacity of the lift must never be exceeded (take into account any additional load in or on the vehicle to be lifted).
- Operators are obligated to observe both the runways and the vehicle when lifting or lowering.
- During lifting or lowering motions it is forbidden to stay under the runways (working area).
- Climbing the raised vehicle or the runways is strictly forbidden.
- The operator should keep the work area around the lift clear of any objects that might prevent the runways from travelling to the final bottom position when lowered.
- In case of trouble, press the EMERGENCY STOP key. Inspection of the lift and resetting into operation must always be carried out by an expert.
- Before carrying out any maintenance on the lift, disconnect the power supply, lock the main switch and keep the key in a safe place in order to prevent unauthorized persons from switching it on.

6.2 Lifting and lowering

- Before driving a vehicle on or off the lift ensure that the lift is at the final bottom position.
- Drive the vehicle slowly onto the runways until all wheels are fully accommodated on the runways.
- Prevent vehicles from rolling off the runways. All safety chocks have to be utilized and in working order.
- Press the UP key (Fig. 4, Item 4) to lift the vehicle to the required level.
- Press the key (Fig. 4, Item 2) to settle the gear racks and give stability to the runways. On reaching the required level release the key.
- Press the DOWN key (Figure 4, Item 5) to lower the lift. The runways first move upwards to disengage from the gear racks, and then start lowering. The lowering motion stops at a height of 23 5/8" (600mm) before the bottom position. Then the operator has to make sure that neither persons nor objects are within the working area. Only if clear should the operator proceed to press the safety key (Fig. 4, Item 2) and lower the lift to the final bottom position.

7. RELOCATING THE LIFT

To relocate the lift, dismantle and re-install it on the new site as described in this manual.

Initial operation and safety inspection of the relocated lift have to be carried out by an expert.

8. MAINTENANCE

Regular maintenance in line with the specifications is the basis for proper and reliable performance of the lift. Failure to carry out maintenance may impair the performance and reliability of the lift and represents a risk to both personnel and vehicles.

Before carrying out any maintenance on the lift, disconnect the power supply, lock the main switch and keep the key in a safe place in order to prevent unauthorized persons from switching power on.

- The lift has to be cleaned at least once a month. Do not use hoses, steam jets or harsh detergents.

Note: immediately wipe away any spilt brake fluid as it will attack and damage the protective coating of the lift.

- It is particularly important to ensure that the piston rods of the hydraulic cylinders are always clean and not mechanically damaged since this might result in leakage of the seals and consequent malfunction of the lift. The piston rod is chromed and have long work resistance. Therefore damage will come only from improper use or inadequate maintenance.

The following steps have to be performed at regular intervals, depending on the frequency of use of the lift:

- Check the hydraulic lines and unions for leakage and mechanical damage. The hydraulic lines have to be replaced at the prescribed intervals (follow local or national safety rules).
- Likewise, check the pneumatic lines and unions for leakage and mechanical damage.
- Lubricate the tracks of the scissors supporting rollers on the runways using a commercial lubricating grease.
- Check all the safety devices for proper performance.

If additional equipment such as jacking beams are used, refer to the maintenance instructions for that equipment.

Note

To check the hydraulic pressure (e.g. during the required annual safety inspection) a connection for the test manometer is provided on the valve block.

8.1 Recommended hydraulic oil

For best results use ISO 32 – 10 Weight (non-foaming and non-detergent) hydraulic oil.

- Change the hydraulic oil every 5 years.

Important note

Used oil is a highly pollutant product. Always dispose of used oil as specified by the effective law of the country where the lift is installed.

To retain any warranty entitlements, it is important to follow the maintenance instructions given in this manual.

Defective parts must be replaced by an expert only.

8.2 Annual safety inspection

The Health and Safety at Work regulations for Automotive Lifts require that the lifts be inspected and approved for further operation by an expert at maximum intervals of one year after initial operation. These inspections are to be certified in the test book.

9. TROUBLESHOOTING

Before carrying out any maintenance on the lift, disconnect the power supply, lock the main switch and keep the key in a safe place in order to prevent unauthorized persons from switching on.

9.1 Troubles, causes and remedies

A list of possible troubles and remedies is given below.

PROBLEM	CAUSE	REMEDY
The lift does not work.	<ul style="list-style-type: none"> - The main switch is not turned on. - Power failure. - The safety device is defective. - The electrical lines are interrupted. 	<ul style="list-style-type: none"> - Check all the associated components.
The lift does not raise	<ul style="list-style-type: none"> - The direction of rotation of the motor is not correct. - Insufficient oil in the hydraulic unit. - The UP key is defective. - The micro device is defective. - The lowering valve does not close. - The filter of the suction pump is dirty. 	<ul style="list-style-type: none"> - Interchange two phases on the main switch. - Add hydraulic oil. - Check the UP key and the related line. - Check the micro device and the related line. - Check the lowering valve. - Check the filter and clean it if necessary.
The lifting capacity is insufficient.	<ul style="list-style-type: none"> - The pressure valve is not set correctly. - The pump is defective. 	<ul style="list-style-type: none"> - Adjust the pressure valve - Check the pump and replace it if necessary
The runway does not lower completely.	<ul style="list-style-type: none"> - The micro device is not set correctly or is defective. - The lowering valve is defective. 	<ul style="list-style-type: none"> - Check the micro device and bleed the hydraulic system. - Lower lift manually (see Section 10.2 for 22K only).
The runways lower on their own.	<ul style="list-style-type: none"> - The synchronizing valve does not work correctly. - Leakage in the hydraulic system. 	<ul style="list-style-type: none"> - Check the valve. - Check the hydraulic system.
The lift does not lower when the DOWN button is pressed.	<ul style="list-style-type: none"> - The micro devices on the gear racks do not work properly. - The photocell does not work properly (22K only). 	<ul style="list-style-type: none"> - Check all the associated components and replace them if necessary. - Check the photocell and associated components (22K only).
The lift does not lower smoothly.	<ul style="list-style-type: none"> - Air in the hydraulic system. - The pressure switch is not set correctly (22K). - The lowering valve is defective. 	<ul style="list-style-type: none"> - Bleed the hydraulic system. - Check the photocell and the relative lines (22K only). - Replace the lowering valve.
The gear racks do not engage or disengage.	<ul style="list-style-type: none"> - No compressed air. - No oil. 	<ul style="list-style-type: none"> - Check the pneumatic system. - Check the relative components.
The travel is uneven	<ul style="list-style-type: none"> - Leakage or air in the hydraulic system. - The pump is defective. - The solenoid valve is defective or dirty. 	<ul style="list-style-type: none"> - Check the components of the hydraulic system. - Bleed the hydraulic system.

10. TECHNICAL DATA

	22K	44K	66K	88K
Capacity:	22000 lb (10000 kg)	44000 lb (20000 kg)	66000 lb (30000 kg)	88000 lb (40000 kg)
Length of Runways:	228 3/8" (5800mm)	295 1/4" (7500mm)	413 3/8" (10500mm)	551 1/4" (14000mm)
Overall Width (Max):	110 9/16" (2808mm)	110 9/16" (2808mm)	110 9/16" (2808mm)	110 9/16" (2808mm)
Width of Runways:	32 1/4" (820mm)	32 1/4" (820mm)	32 1/4" (820mm)	32 1/4" (820mm)
Dimension of Control Desk: Width x Depth x Height	24"x24"x55" (600x600x1400mm)	24"x24"x55" (600x600x1400mm)	24"x24"x55" (600x600x1400mm)	24"x24"x55" (600x600x1400mm)
Maximum Lifting Height:	65" (1650mm)	65" (1650mm)	65" (1650mm)	65" (1650mm)
Collapsed Height:	15" (380mm)	15" (380mm)	15" (380mm)	15" (380mm)
Hydraulic oil:	see Section 8.1			
Hydraulic oil – quantity:	10.6 Gal. (40L)	26.4 Gal. (100L)	39.6 Gal. (150L)	52.8 Gal. (200L)
Max. service pressure:	3553 psi (245 bar)			
Safety valve responds at:	3481-3553 psi (240-245 bar)			
Pneumatic line pressure	73-145 psi (5-10 bar)			
Lifting time	approx. 60 sec.			
Lowering time	approx. 60 sec.			

10.1 Emergency manual lowering of the 22K lift only

- Open the front panel of the control desk and press the valve A upwards using a thin screwdriver or a pin punch, at the same time pumping with the manual pump (Fig. 12, Item 1) until the lift is raised slightly and the gear racks become disengaged.
- Fold back the upper gear rack from the lower rack and prevent them from re-engaging (e.g. with a strip of wood).
- Unscrew the cap nut on the valve, release the lock nut from the adjusting screw underneath and drive the screw in completely using a suitable socket screw wrench (hex. socket 3) the pad plates lower to the final bottom position.
- Unscrew the adjusting screw again, and then drive it in again until a slight resistance can be felt. Lock the adjusting screw with the lock nut and replace the cap nut.

Fig. 12 Hydraulic unit with manual pump and lowering valves

1. Manual pump
2. Valve for level
3. Connection of hydraulic line C
4. Connection of hydraulic line A
5. Connection of hydraulic line B
6. Control valve, view Y
7. View Y, cap nut
8. View Y, adjusting screw for emergency lowering of pad plates
9. Vent screw (hexagon socket screw) for emergency lowering pump (Item 1)

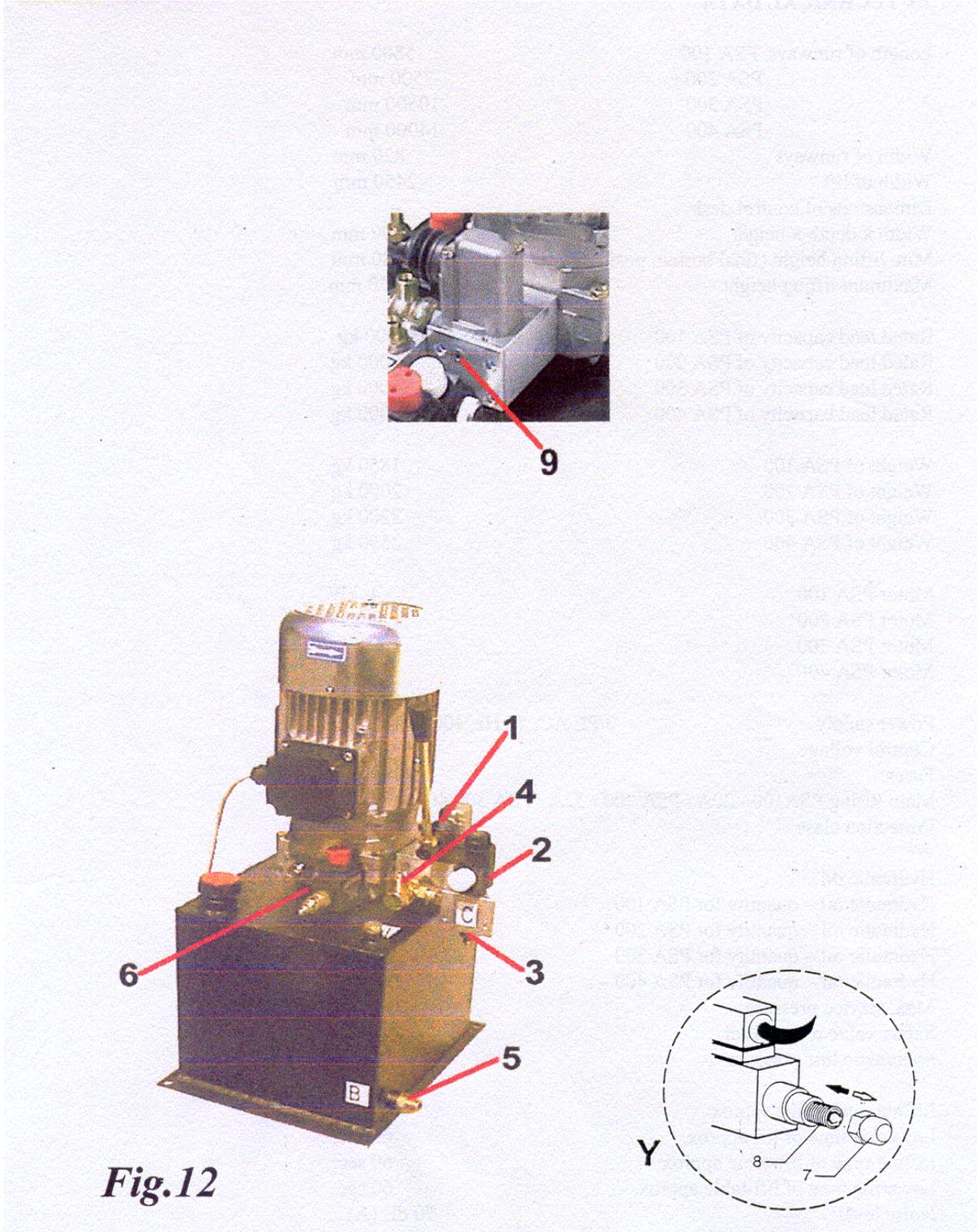


Fig.12

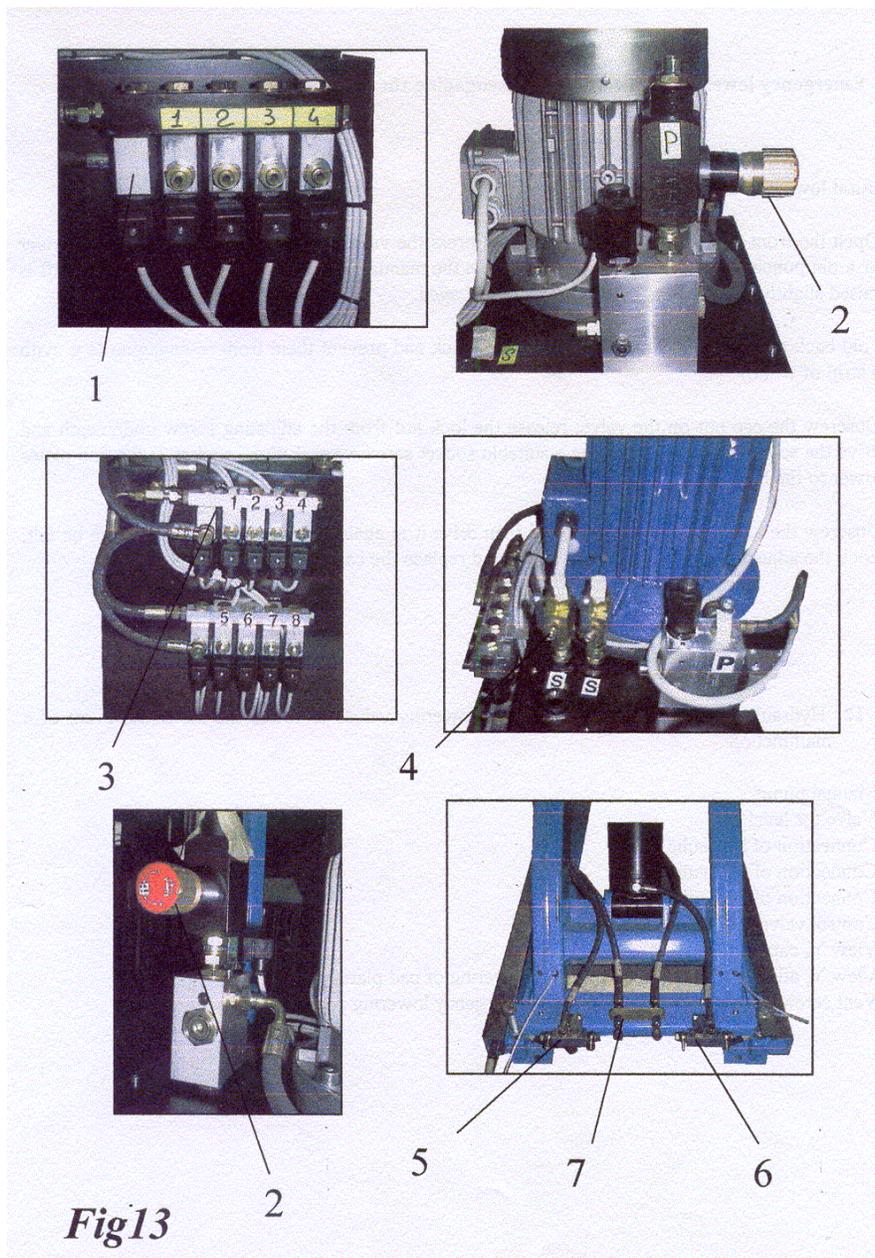


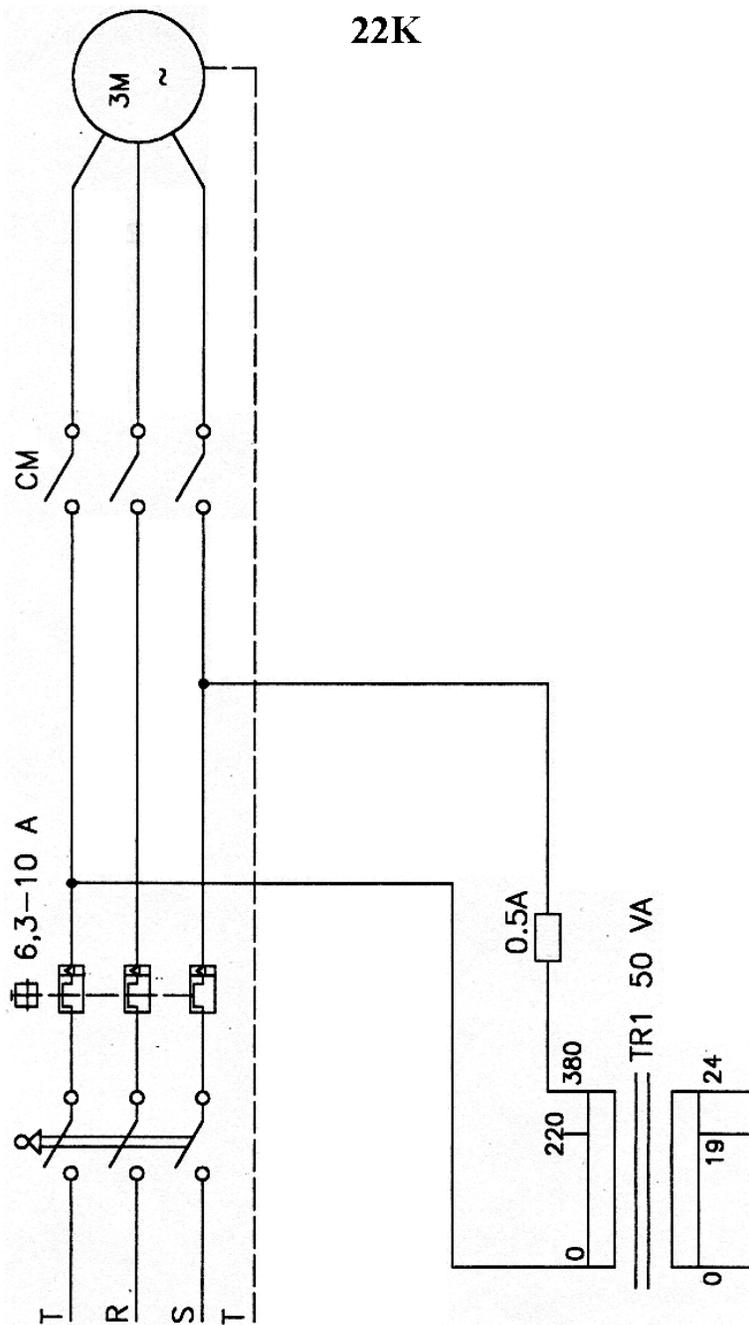
Fig13

FIG. 13 SELENOID VALVES

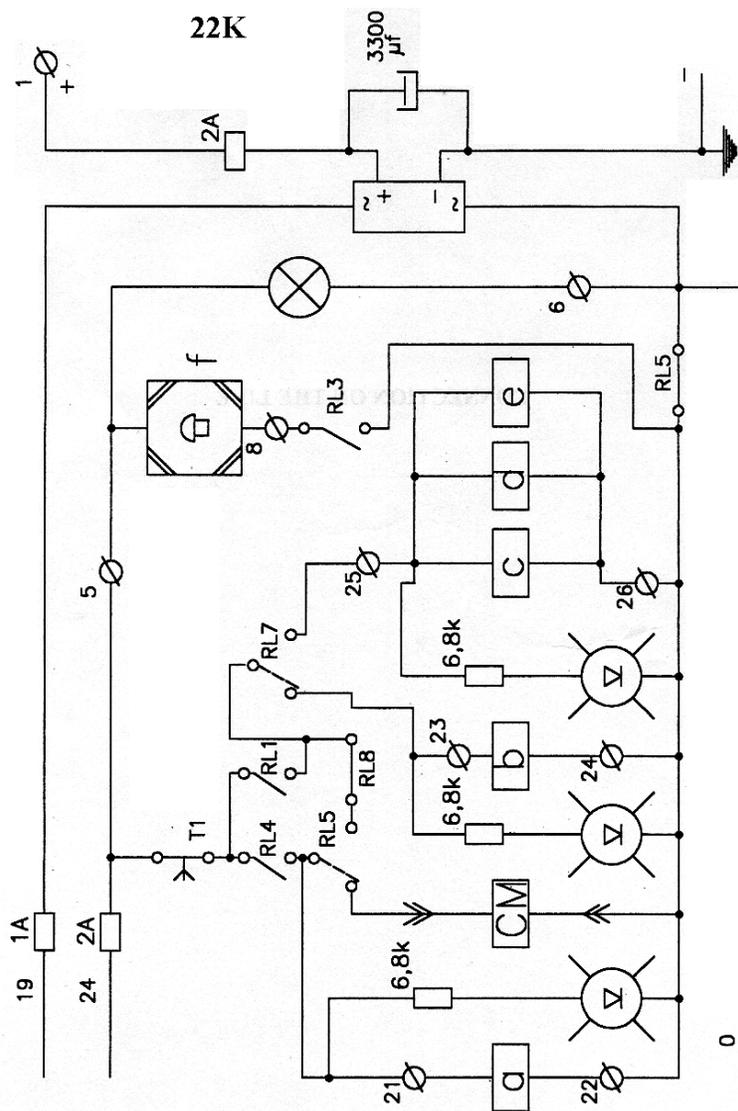
- 1. SELF - LEVELLING GROUP 44/66K**
- 2. DELIVERY VALVE WITH REGULATOR FOR ALL MODELS
S DISCHARGE**
- 3. SELF - LEVELLING GROUP 88K**
- 4. DISCHARGE VALVE (2 PCS. IN 66/88K)**
- 5. BILATERAL CONNECTION DISCHARGE**
- 6. BILATERAL CONNECTION DELIVERY**
- 7. SELF - LEVELLING JUNCTION**

11 ELECTRICAL DIAGRAMS

11.1 GENERAL POWER - 22K T-REX

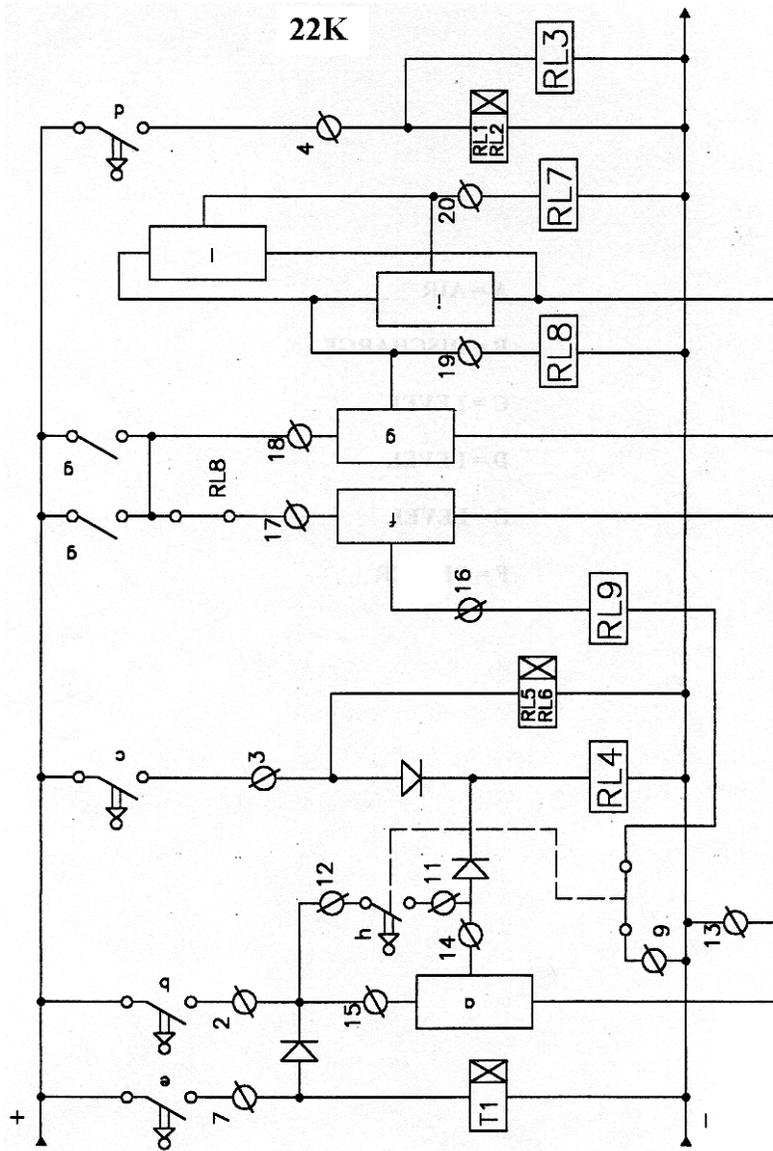


11.2 ELECTRICAL DIAGRAM 1 - 22K T-REX



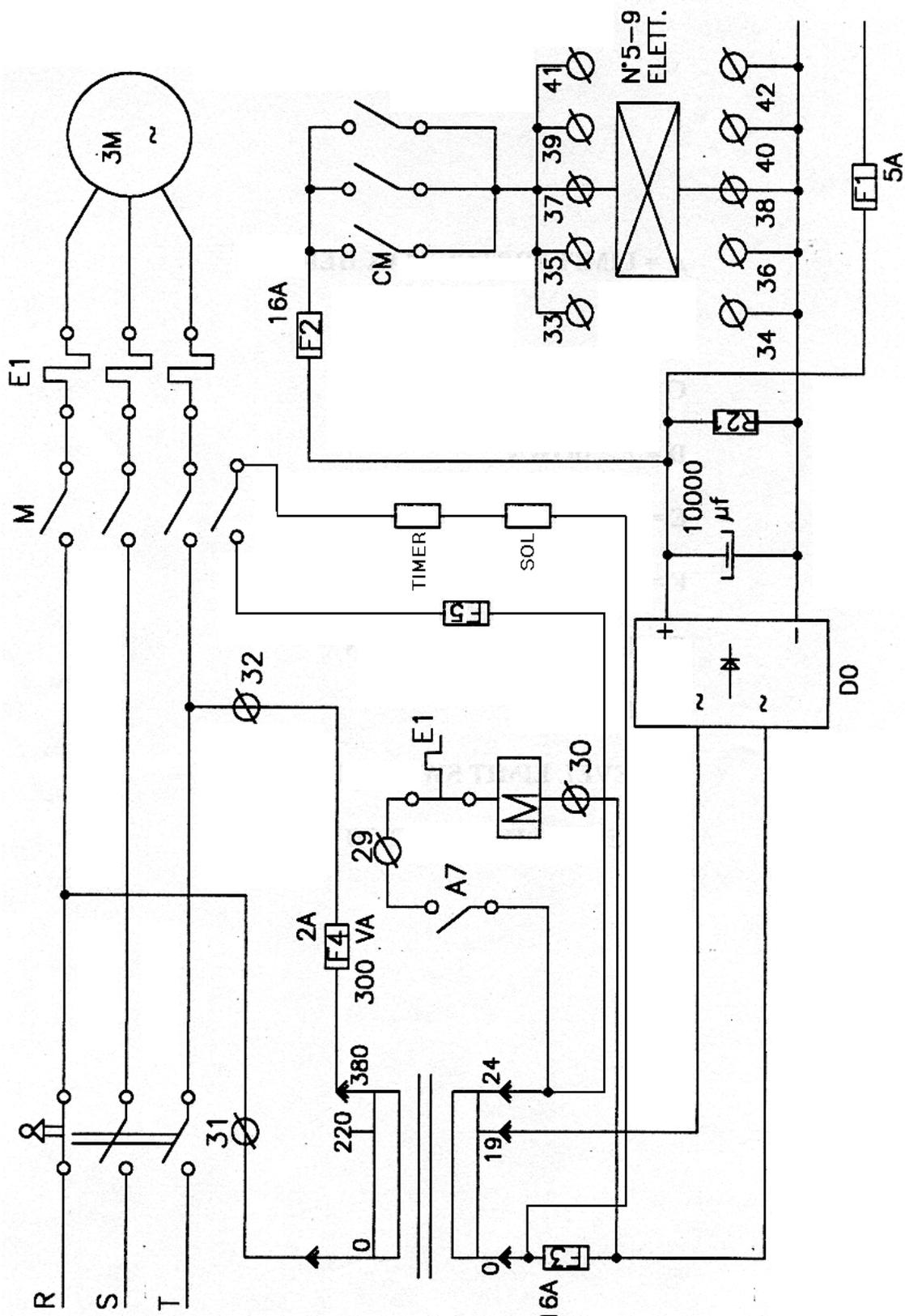
- A = AIR
- B = DISCHARGE
- C = LEVEL
- D = LEVEL
- E = LEVEL
- F = BEEPER

11.3 ELECTRICAL DIAGRAM 2 - 22K T-REX

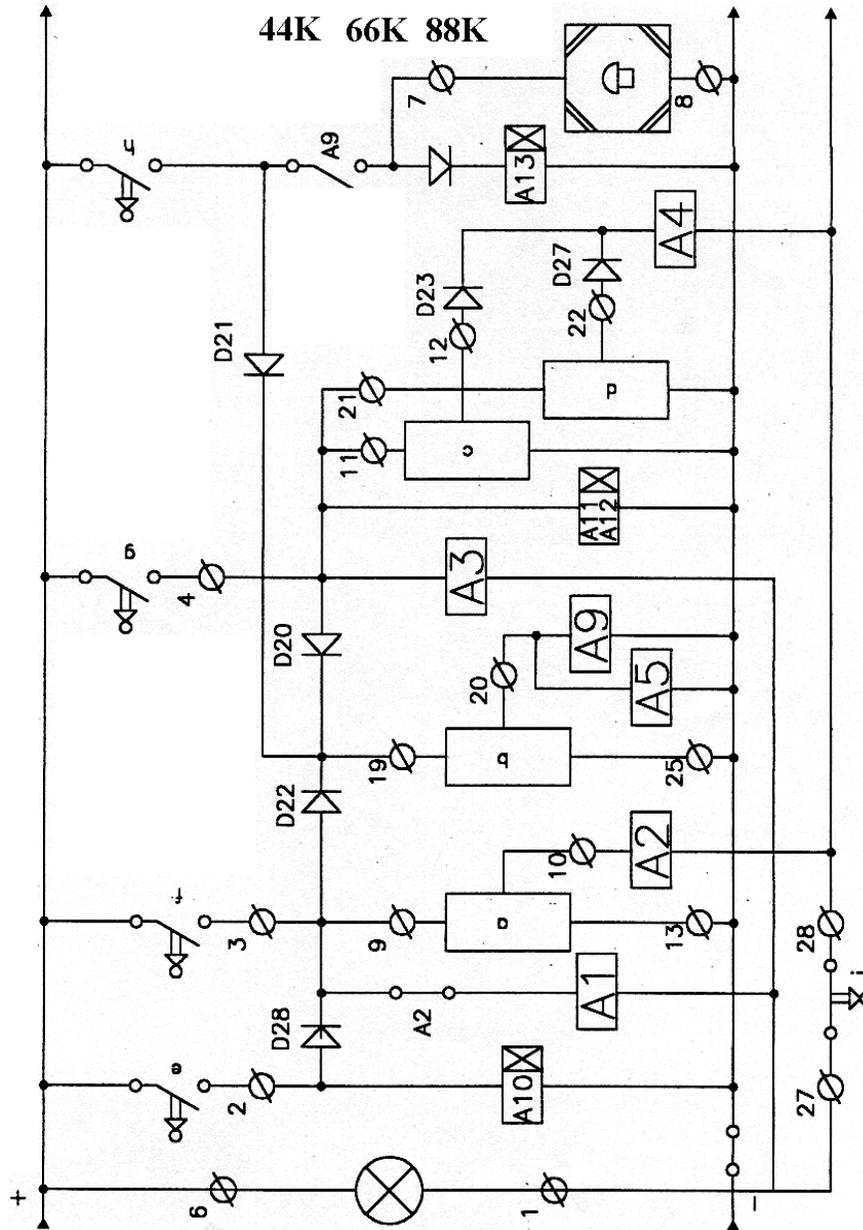


- A = LIMIT SWITCH MAX HEIGHT
- B = UP
- C = 1ST DOWN
- D = 2ND DOWN
- E = EMERGENCY
- F = PHOTOCCELL
- G = LIMIT SWITCH DOWN
- H = RELEASE
- I = LEVEL LIMIT SWITCH P1
- L = LEVEL LIMIT SWITCH P2

11.4 GENERAL POWER 22/44/66/88K



11.5 ELECTRICAL DIAGRAM 1 - 44/66/88K

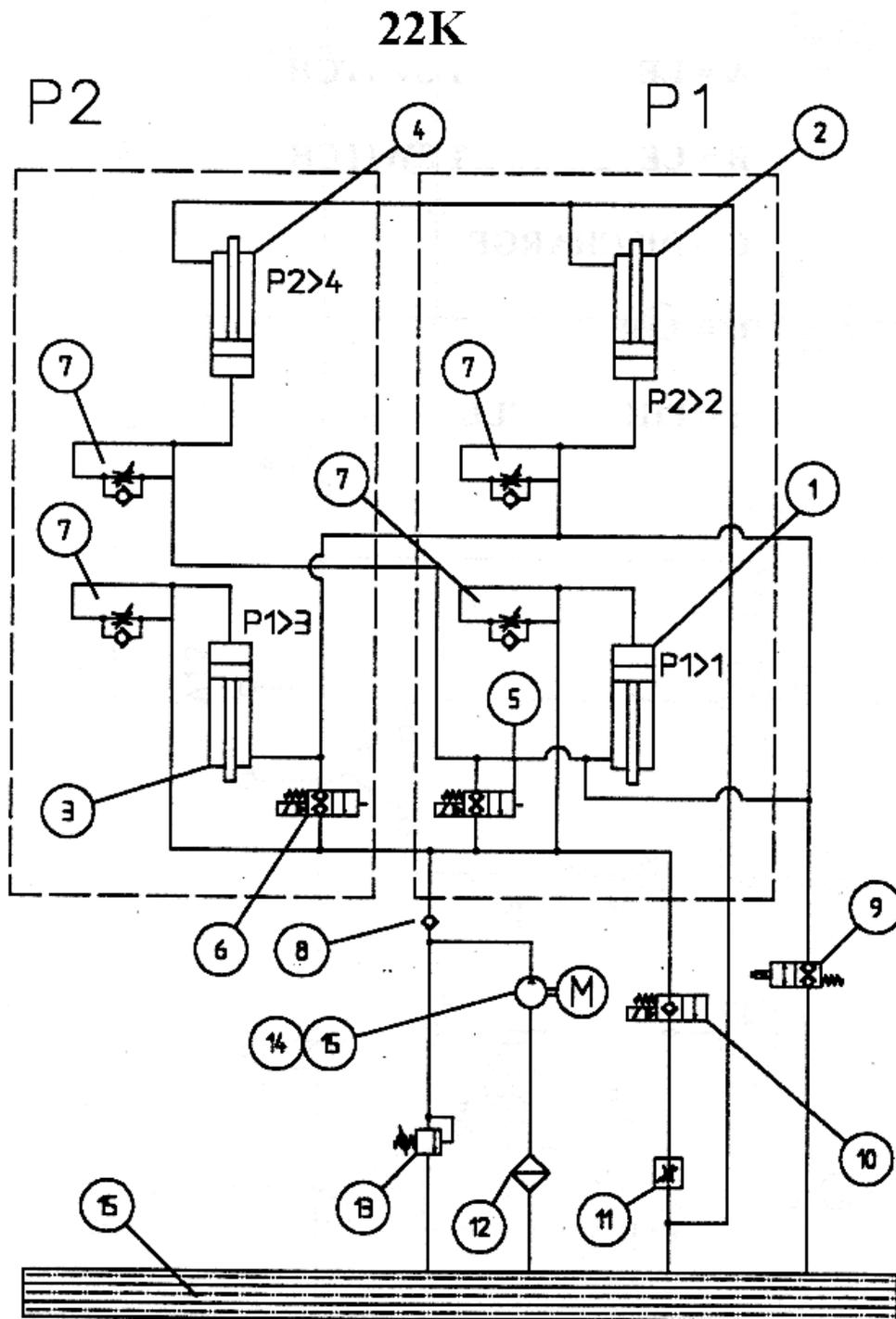


- A = UP LIMIT SWITCH
- B = DOWN LIMIT SWITCH
- C = GEAR RACKS LIMIT SWITCH
- D = GEAR RACKS LIMIT SWITCH
- E = EMERGENCY
- F = UP
- G = 1ST DOWN
- H = 2ND DOWN
- I = RELEASE PROTECTIONS

12 HYDRAULIC DIAGRAMS

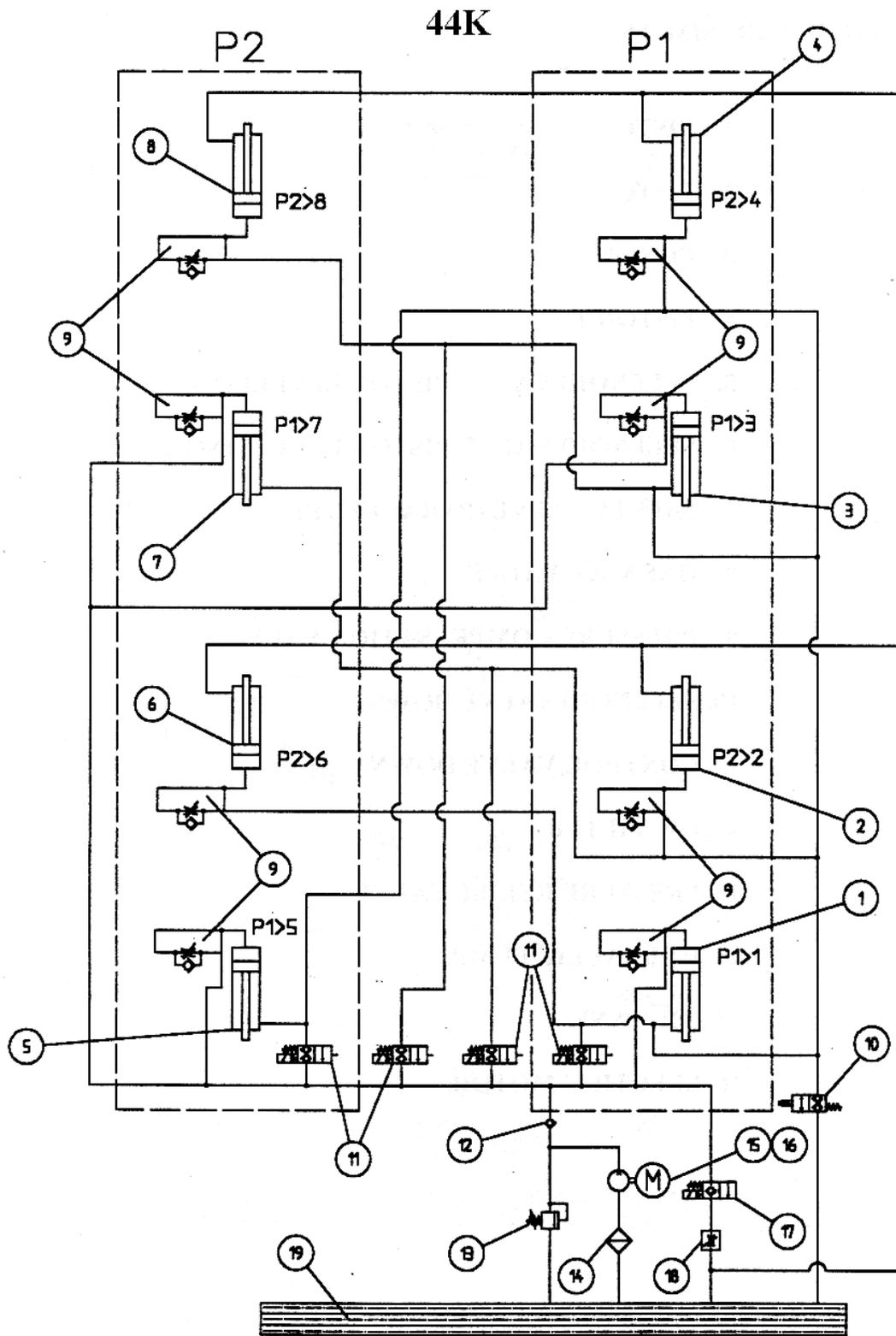
12.1 HYDRAULIC DIAGRAM 22K

- 1. PISTON 1**
- 2. PISTON 2**
- 3. PISTON 3**
- 4. PISTON 4**
- 5. SELENOID VALVE PISTON LEVELLING 1/3**
- 6. SELENOID VALVE PISTON LEVELLING 4/2**
- 7. SAFETY VALVE (PARACHUTE)**
- 8. ONE WAY VALVE**
- 9. PRESSURE COMPENSATION VALVE**
- 10. SELENOID VALVE DOWN**
- 11. CONTROL VALVE DOWN**
- 12. OIL FILTER**
- 13. PRESSURE RELIEF VALVE**
- 14. HYDRAULIC PUMP**
- 15. OIL TANK**
- 16. ELECTRIC MOTOR**



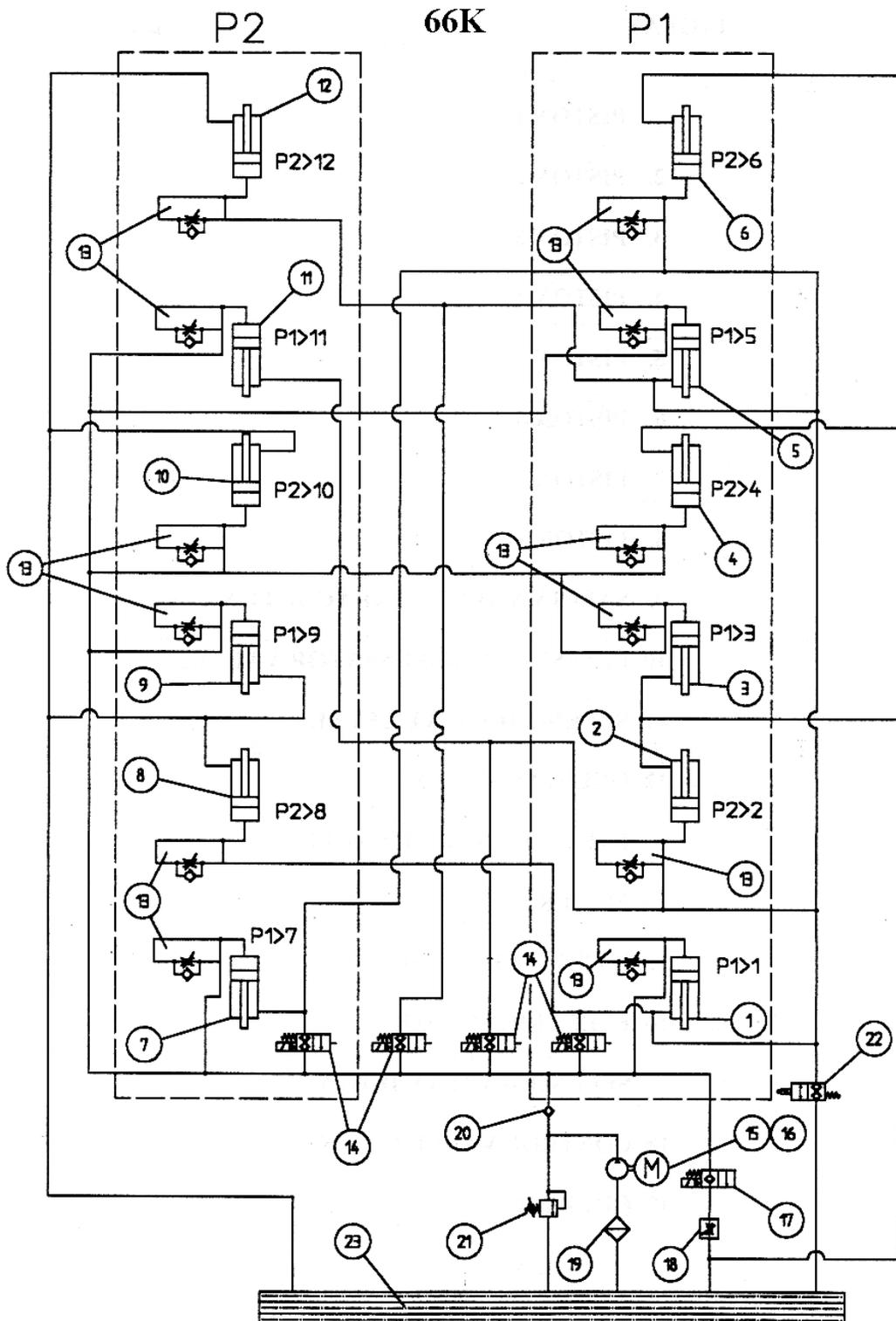
12.2 HYDRAULIC DIAGRAM 44K

- 1. PISTON 1**
- 2. PISTON 2**
- 3. PISTON 3**
- 4. PISTON 4**
- 5. PISTON 5**
- 6. PISTON 6**
- 7. PISTON 7**
- 8. PISTON 8**
- 9. SAFETY VALVE (PARACHUTE VALVE)**
- 10. PRESSURE COMPENSATOR VALVE**
- 11. SELENOID VALVE LEVEL**
- 12. ONE WAY VALVE**
- 13. PRESSURE RELIEF VALVE**
- 14. FILTER**
- 15. HYDRAULIC PUMP**
- 16. ELECTRIC MOTOR**
- 17. SELENOID VALVE DOWN**
- 18. CONTROL VALVE DOWN**
- 19. OIL TANK**



12.3 HYDRAULIC DIAGRAM 66K

- 1. PISTON 1**
- 2. PISTON 2**
- 3. PISTON 3**
- 4. PISTON 4**
- 5. PISTON 5**
- 6. PISTON 6**
- 7. PISTON 7**
- 8. PISTON 8**
- 9. PISTON 9**
- 10. PISTON 10**
- 11. PISTON 11**
- 12. PISTON 12**
- 13. SAFETY VALVE (PARACHUTE)**
- 14. SELENOID LEVEL**
- 15. HYDRAULIC PUMP**
- 16. ELECTRIC MOTOR**
- 17. SELENOID VALVE DOWN**
- 18. CONTROL VALVE DOWN**
- 19. OIL FILTER**
- 20. ONE WAY VALVE**
- 21. PRESSURE – RELIEF VALVE**
- 22. PRESSURE COMPENSATOR VALVE**
- 23. OIL TANK**



12.4 HYDRAULIC DIAGRAM 88K

- 1. PISTON 1**
- 2. PISTON 2**

- 3. PISTON 3**
- 4. PISTON 4**

- 5. PISTON 5**
- 6. PISTON 6**

- 7. PISTON 7**
- 8. PISTON 8**

- 9. PISTON 9**
- 10. PISTON 10**

- 11. PISTON 11**
- 12. PISTON 12**

- 13. PISTON 13**
- 14. PISTON 14**

- 15. PISTON 15**
- 16. PISTON 16**

- 17. SELENOID VALVE DOWN**
- 18. CONTROL VALVE DOWN**

- 19. OIL FILTER**
- 20. ONE WAY VALVE**

- 21. PRESSURE RELIEF VALVE**
- 22. PRESSURE COMPENSATOR VALVE**

- 23. HYDRAULIC PUMP**
- 24. ELECTRIC MOTOR**

- 25. SELENOID VALVE LEVELLING**
- 26. SAFETY VALVE (PARACHUTE)**

- 27. OIL TANK**

88K

