

# **TECHNICAL SPECIFICATIONS**

## **SCISSOR PLATFORMS MODELS THX , THXX**

**APPLICATION** Lifting loads/persons for relatively short heights; has many and diverse industrial uses, always as fixed-position elevator. Can be used for raising materials to working level in many industrial processes, or as loading pier adjusting to different truck heights, for spanning minor differences in floor levels transitted by fork lifts, etc. Other viable non-industrial uses are set forth under the section listing other applications.

The term scissor platform is understood to mean a lifting mechanism needing no outside spars or rails, and using a articulated trestle as means of vertical motion; thus, a self-supported elevator where force is transmitted to its support base, as in figures 1 and 2.

**REGULATIONS** Scissor platforms comply with Machine Directive 98/37/EC, whereby the EC allows the commercialisation of machines by all countries of the European Economic Community. Also, any scissor platform used for the elevation of goods and/or persons up to a maximum travelling distance of 2 m is designed and manufactured in conformity with norm EN 1570.

**MODEL THX** Single scissor platform, see figure 1.

*LOAD* 100 Kg to 5000 Kg ; Minimum 200 Kg / m<sup>2</sup>. Consult us for greater load.

*TRAVEL* Maximum travel 60% of the larger dimension (measurement A).

*SPEED* Average speed = 0.05 m/s. Lifting time,  $t (s) = R (m) / 0.05$ .

*MOTOR POWER* See figure 3. In case of deeper pits than the minimum required ones, the motor power is lower than values showed in figure 3 because the required starting motor couple is lower too. Similary if the size of the platform is smaller than the maximum indicated dimensions, the motor power will be also lower because the total load to lift is lower.

*POWER SUPPLY* 230 V  $\pm$  5% Single phase, 50/60 Hz ( up to 2.2 kW of power )  
230/400 V  $\pm$  5% 3-phase, 50/60 Hz.  
Other voltages available.

*DIMENSIONS* Any size between the minimum and maximum dimensions specificated in figure 1 is manufactured; cosult us for greater or smaller dimensions than specificated.

*PIT* See figure 1 for minimum required dimensions .

**MODEL THXX** Double scissor platform, see figure 2.

*LOAD* 100 Kg to 2000 Kg ; Minimum 200 Kg / m<sup>2</sup>. Consult us for greater load.

*TRAVEL* Maximum travel 120% of the larger dimension (measurement A).

*SPEED* Average speed = 0.05 m/s. Lifting time,  $t (s) = R (m) / 0.05$ .

*MOTOR POWER* See figure 3. In case of deeper pits than the minimum required ones, the motor power is lower than values showed in figure 3 because the required starting motor couple is lower too. Similary if the size of the platform is smaller than the maximum indicated dimensions, the motor power will be also lower because the total load to lift is lower.

**POWER SUPPLY** 230 V  $\pm$  5% Single phase, 50/60 Hz ( up to 1.9 kW of power )  
230/400 V  $\pm$  5% 3-phase, 50/60 Hz.  
Other voltages available.

**DIMENSIONS** Any size between the minimum and maximum dimensions specified in figure 2 is manufactured; consult us for greater or smaller dimensions than specified.

**PIT** See figure 2 for minimum required dimensions .

**TYPE OF DRIVE** Hydraulically operated by cylinders articulated in their ends working only against axial forces.

**CYLINDER** Single acting cylinder with internal catch, with safety valve if pipe is broken connected directly to the cylinder.  
Plunger formed by a solid, chromium - plated piston rod. Steel Fe 510 C.  
Jacket formed by a tube of the appropriate thickness. DIN 2391 tube with BK finish, St-52 steel.

**POWER UNIT** Pumping unit with external asynchronous motor (1500 rpm) and gear driven pump. W i t h AH-1VS valve block including non-return valve, pressure relief valve, ascent acceleration adjustment, down flow adjusting valve and manual lowering button.  
Possibility of ordering: Shut-off valve, pressure gauge, maximum pressure switch (overloading)

**PIPING** Flexible, hydraulic hoses with double metallic mesh, tested with couplings fitted.

**ENVISAGED INSTALLATION CONDITIONS** The pit dimensions for a platform with A x B dimensions are shown in figures 1 and 2. The edge of the pit must be strengthened along its whole length with some angle sections; within the pit there must be a PVC tube or conduits to house the hydraulic hose and the electrical cables, besides a possible water evacuation.  
In case of using to over go a high ground higher than 0.5 m a landing door has to be provided in the upper level to avoid the falling risk when the platform is in lower level; this landing door or barrier will be provided with a electric contact avoiding moving of platform when the door is open.

**CONTROL USE** Control panels on all floors with push buttons for up and down commands; a STOP switch is incorporated for each emergency stop.  
In case of power failure a manual switch will be installed in the hydraulic unit, so that the platform will shift to floor level.

Simple automatic operation by relay plate, in DC rectified to 24 V. Plus an automatic switch and thermal relay so as to protect the motor.

**SAFETY SYSTEMS** As safety measure regarding to the installation a movable barrier has to be provided in the upper level to avoid the falling risk when the platform is in lower level if required; besides the platform will be fitted with an anti-slip surface (chequered steel plate).  
The scissor platform is designed with the required safety distance between moving parts to avoid risk of crushing and shearing of fingers, hands, etc. (point 5.2.1.1. in EN 1570).  
The control board and all operation controls function at delay current to 24 V as a electrical safety measure.

The safety devices incorporated into the elevator itself are:

- Blocking device
- Contact activated stopping device
- Safety valve against pipe breaking connected directly to the cylinder
- Protecting walls on the load platform – optional, must be ordered

**BLOCKING DEVICE** Extensible spring pins incorporated to the scissors' arms which automatically block the operating system, thus avoiding the descent of the platform. It ensures safe handling under the platform during maintenance and calibration operations.

**CONTACT ACTIVATED STOPPING DEVICE** Movable frame hanged below the floor and fitted to the outer edge of the platform which operates a safety contacts series when a vertical force moves it. The safety contacts directly cut off the electricity supply to the motor contactor and lowering electrovalve making the platform stops.

**SAFETY VALVE AGAINST PIPE BREAKING** In case of a breakage in the piping which links the power unit and the cylinder, the cylinder itself is equipped with a safety valve which blocks the leakage of oil from the cylinder when the descent flow increases above a value. The closing is instantaneous, the external valve adjustment is not allowed.

**PLATFORM PROTECTIONS** If the platform is going to be used to carry people, it will be duly protected by mobile bars so as to avoid access to the platform. Protection devices include handrails with a 250 mm separation between platform tubes and skirting boards of 150 mm screwed to the platform floor.

**GEAR PROTECTION** Folding covers stopping access to the mechanisms of the lower part of the platform when the platform is extended (a flexible metal mesh or a semi-controlled textile bellows).

#### **OPTIONAL DEVICES**

Optional elements on request:

- Central stopcock
- Protection for load platform
- Protection of access to operation controls

Other optional devices:

- Loading ramp
- Special button panels

**LOADING RAMP** If used as a loading deck, a manual hinged ramp may be attached to the shorter side of the platform and placed upon the trailer for easier loading and unloading operations.

**SPECIAL BUTTON PANELS** A aerial button panel is also available so as to improve platform control in complex loading and unloading operations.  
Botoneras con llavín para restringir el uso de la plataforma.

#### **INSTALLATION**

**PLATFORM** Key controlled button panels to restrict platform use.

*HYDRAULIC INSTALLATION* All the necessary piping and couplings are supplied to carry out hydraulic installation.  
The pipe will be a flexible hose to make easy the assembly through the tube running into the pit.

*ELECTRIC INSTALLATION* Landing button-panels are water-proof type (IP-65) and it is anticipated that they will be fitted on the wall. The limit switches and electrical contacts of the contact activated stopping device are already supplied connected to a electrical connections box placed on the bottom frame of the platform.  
Wiring will be make in accordance with the Low Tension Directive or with the harmanized standard EN 60204-1.

*MACHINE ROOM* It is envisaged that the hydraulic power unit shall be positioned no more than 10 metres from where oil inlet to the cylinder; consult us if a greater distance is required. To calculate the cables from the supply, external switch and thermic protection previous to the control panel see the values of current in figure 4.  
Dimensions of the power unit : See figure 4  
Dimensions of the electric control board : 300 (width) x 400 (height) x 150 (depth)

## **SUPPLY**

*PLATFORM* The platform is supplied fully assembled with slings for the maneouvering and positioning in the pit area.

*HYDRAULIC POWER UNIT* Consisting of the equipment described in previous paragraphs, this is supplied after testing its operation and ensuring that its sealing components are right.  
The 3-phase motors will be supplied connected to the maximum voltage of their plate of characteristics (400 V or 692 V).

*ACCESSORIES BOX* Includes the electrical control board, electrical hose and wire for electrical connections, button panels, hydraulic material, anchorages and other materials depending on the optional specifications.

*OIL* Oil is supplied for the proper performance of the machine. The oils used comply with ISO HM-46.

## **OTHER APPLICATIONS**

*MOVABLE STAGES IN THEATRES* The scissors lift solution can be most adequate for movable platforms that, being part of the base floor of the stage, must be free of any guides, suspensions or structures that may protrude beyond the uppermost service level.

The usual solution is to leave the scissor platform stationary at the top level, serving also to bridge the void along which it travels, precluding falls. In such a position, a bolts built into the platform serve to lock the platform onto the stage floor structure, blocking creep of same – these devices are hydraulically operated. Otherwise, and for small travels, retractable legs support the platform at pit level, transmitting loads to the pit floor itself. Positioning and anchoring of these devices is automatic.

As for the platform's flooring, this is normally smooth sheet metal ready for surfacing with woodwork or any other material used on the stage

*ELEVATORS FOR  
HANDICAPPED  
PERSONS*

Self-carrying elevator used by wheel-chair users to climb small ground differences, see figure 3.

With ground differences of more than 0.5 m, a mobile protection device must be installed in the upper part of the platform to avoid falls when the platform stands stationary in the lower level; this protection device or barrier will be equipped with an electric application stopping the platform sliding when the protection device is not on.

There will also be side barriers such as handrails, which will contain push buttons.

So as to avoid falls, access to the lower level will be by a ramp stopping the wheel-chair from sliding out of the platform.

For travel distances of more than 0.5 m, mobile barriers will also be used, in addition to the abovementioned side barriers.

As an additional safety measure, handling will be by an anti-drift electric system.

The floor will have an anti-sliding aluminium or stainless steel finish.

The standard size of the platform is:

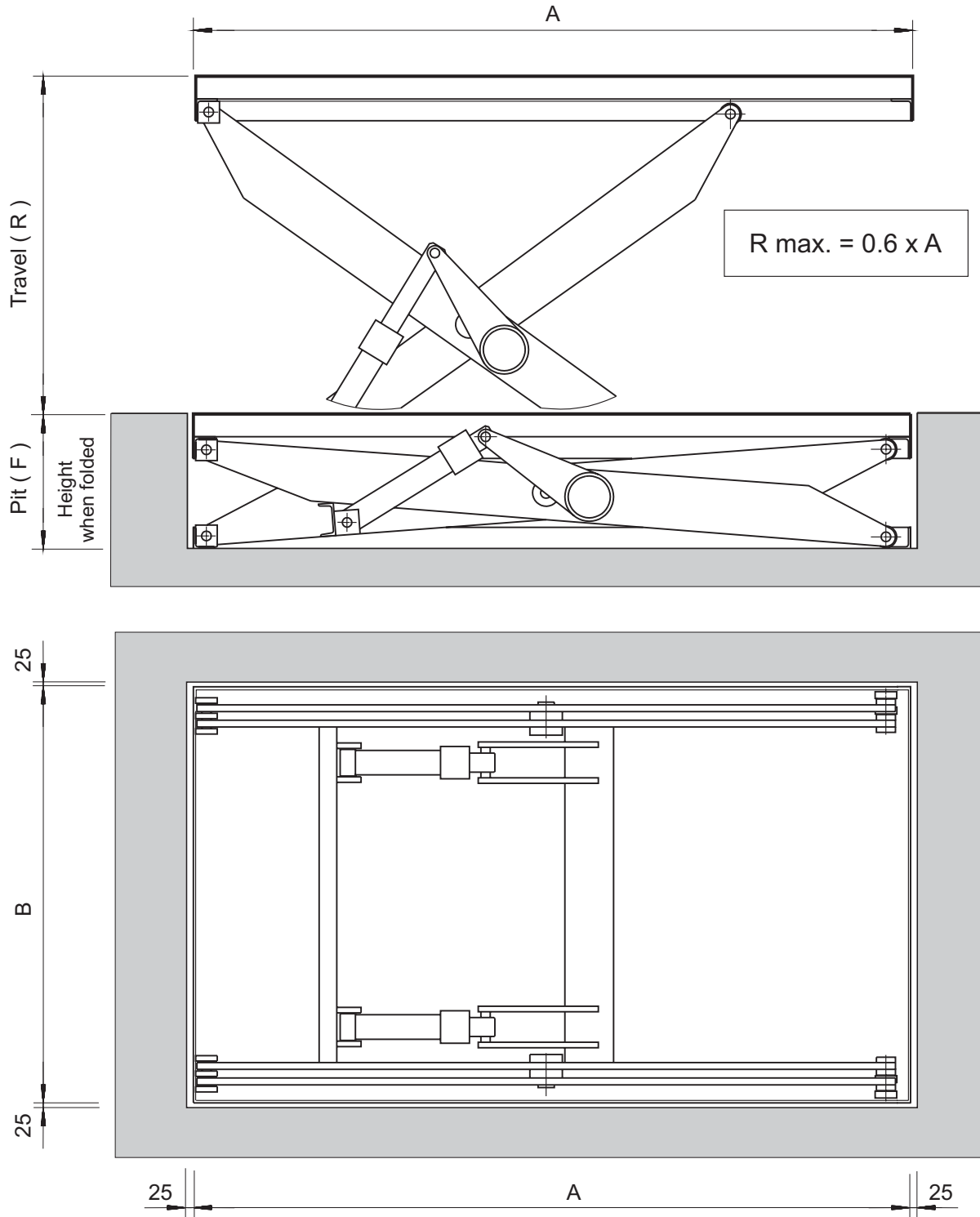
- 300 Kg : 1400 x 950

- 400 Kg: 1600 x 950

Other sizes available, to a maximum of : 1800 x 1000

Single (THDX) or double (THDXX) scissor depending on ground unevenness.

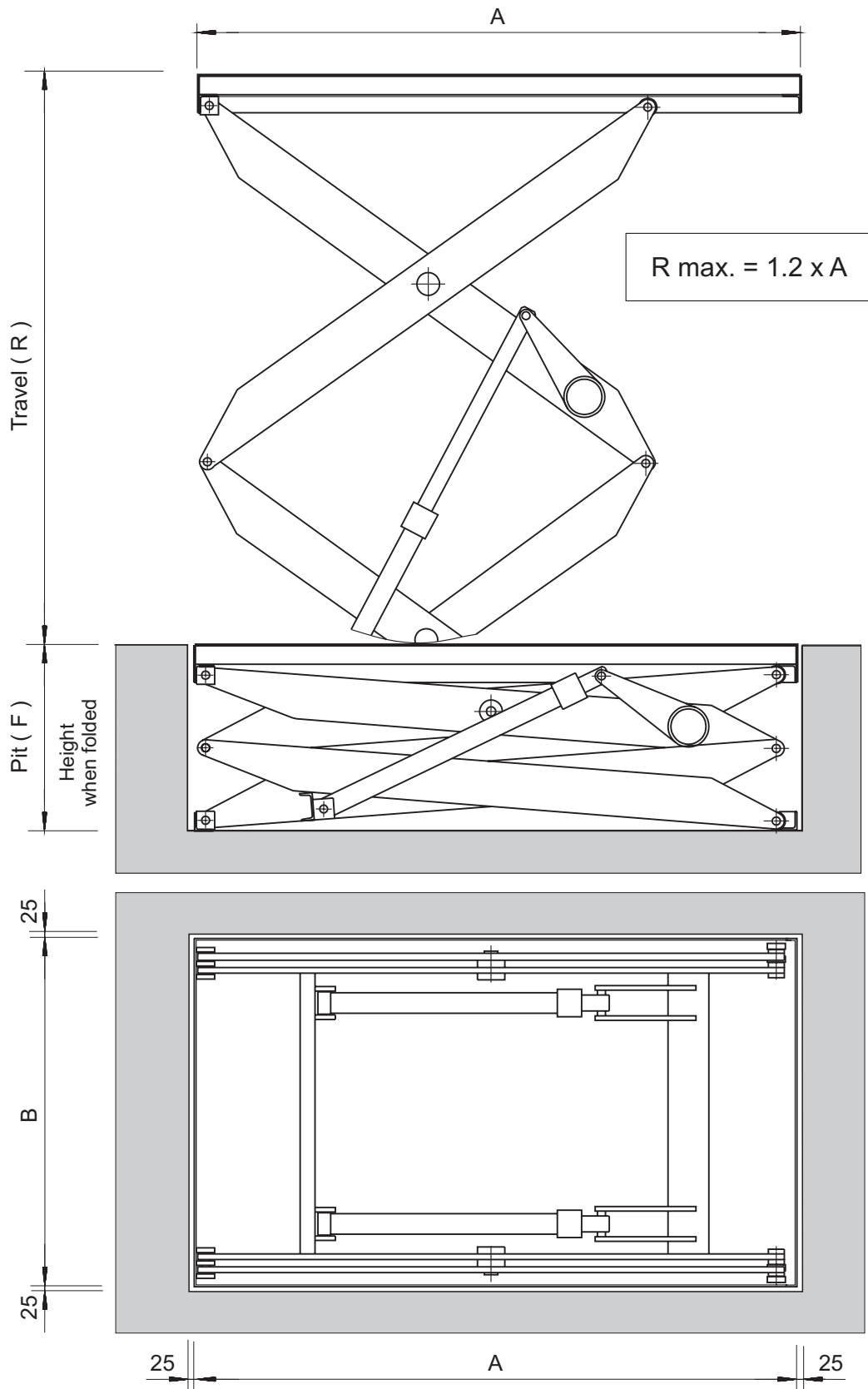
**Figure 1.** *Single scissor platform, THX*  
 Dimensions



Load (Kg)	A min.	A max.	B max.	F min.
100 - 500	1500	2000	1300	300
750 - 1500	1600	3000	2000	400
2000 - 3000	1700	4000	2200	500
4000 - 5000	1800	5000	2400	550

**Figure 2.**

Double scissor platform, THXX  
 Dimensions



Load (Kg)	A min.	A max.	B max.	F min.
100 - 300	1100	1500	1000	450
400 - 500	1100	2000	1300	500
750 - 1000	1500	3000	1800	600
1500 - 2000	1600	4000	2000	650



**Figure 3.** Scissor platform option for wheel-chair users

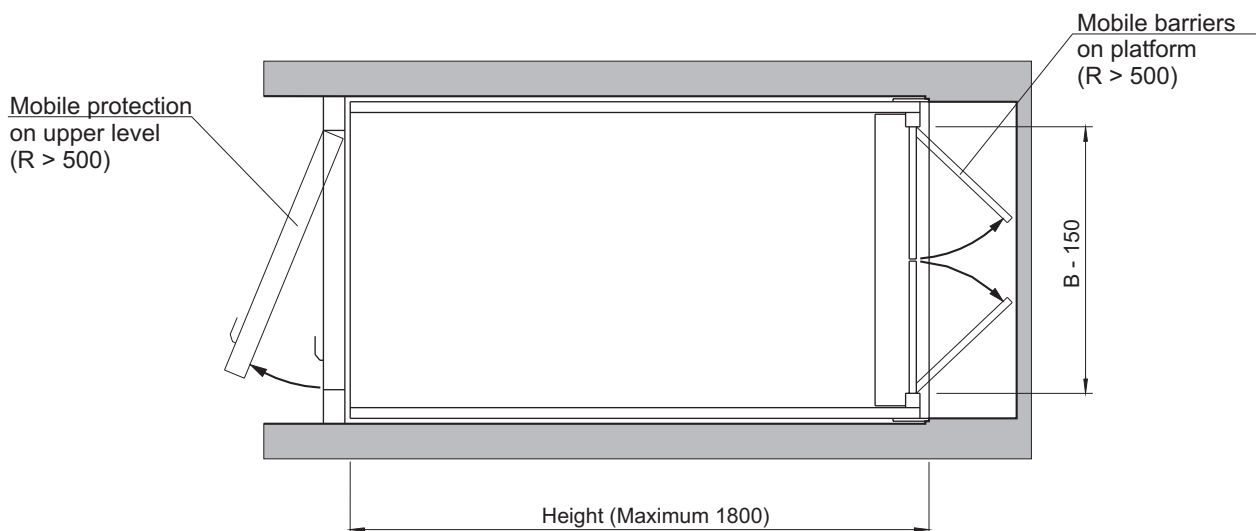
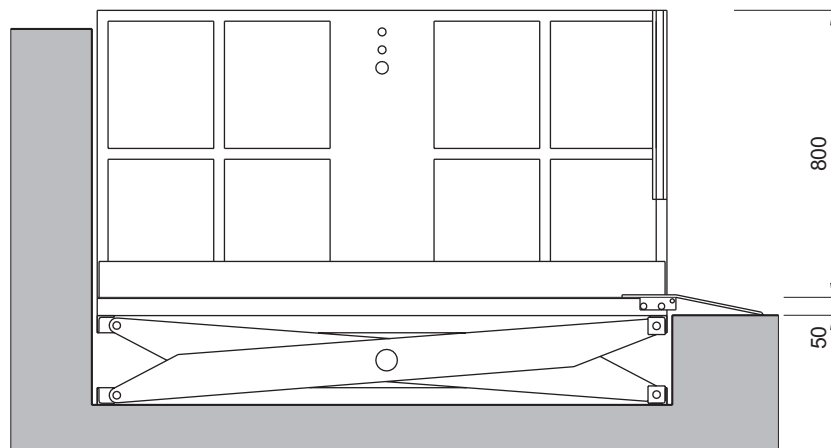
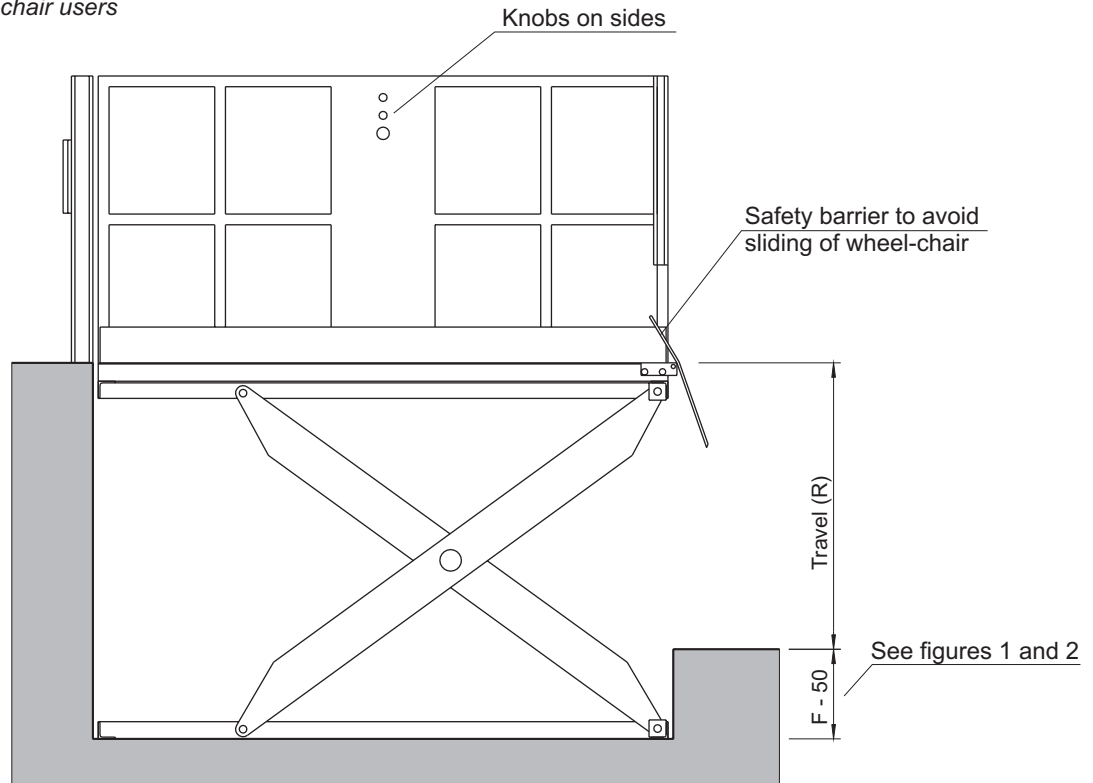
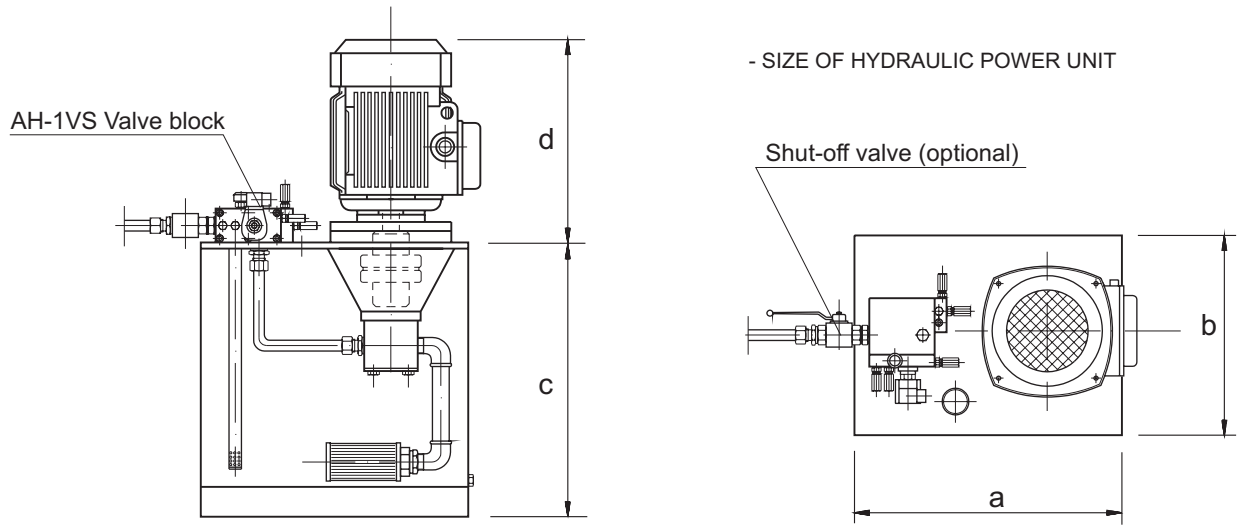


Figure 4. Size of hydraulic power unit. Required power, motors data.



- REQUIRED POWER FOR MINIMUM PIT DEPTH AND MAXIMUM SIZE. Lower required power if deeper pit.

Model / Load	A x B max.	F min.	Power	d	a x b x c
THX / 100 - 200 Kg	2000 x 1300	300	0.75 kW	245	390x245x290
THX / 300 - 500 Kg	2000 x 1300	300	1.1 kW	280	
THX / 750 Kg	3000 x 2000	400	2.2 kW	310	
THX / 1000 - 1500 Kg	3000 x 2000	400	3.0 kW	310	
THX / 2000 Kg	4000 x 2200	500	4.0 kW	310	455x355x445
THX / 3000 Kg	4000 x 2200	500	5.5 kW	380	
THX / 4000 Kg	5000 x 2400	550	7.5 kW	380	
THX / 5000 Kg	5000 x 2400	550	9.2 kW	415	
THXX / 100 - 300 Kg	1500 x 1000	450	0.55 kW	245	390x245x290
THXX / 400 - 500 Kg	2000 x 1300	500	0.75 kW	245	
THXX / 750 Kg	3000 x 1800	600	2.2 kW	310	
THXX / 1000 Kg	3000 x 1800	600	3.0 kW	310	
THXX / 1500 Kg	4000 x 2000	650	3.0 kW	310	
THXX / 2000 Kg	4000 x 2800	650	4.0 kW	310	455x355x445

- MOTORS DATA

Power kW (CV)	Power factor cos	Nominal Current (A)		Starting Current (A)	
		230 V ( )	400 V ( Y )	230 V	400 V
0.37 ( 0.5 )	0.65	2.0	1.2	7.0	4.0
0.55 ( 0.75 )	0.69	2.9	1.7	10.2	6.0
0.75 ( 1.0 )	0.68	3.7	2.2	13.7	8.0
1.1 ( 1.5 )	0.79	4.4	2.6	22.0	13.0
1.5 ( 2.0 )	0.79	5.9	3.4	29.5	17.0
2.2 ( 3.0 )	0.81	8.3	4.8	46.0	26.0
3.0 ( 4.0 )	0.81	11.2	6.5	63.0	36.0
4.0 ( 5.5 )	0.80	15.0	8.6	105.0	60.0
5.5 ( 7.5 )	0.83	19.0	11.1	139.0	81.0
7.5 ( 10 )	0.83	26.0	15.0	205.0	117.0
9.2 ( 12.5 )	0.85	31.0	18.0	226.0	130.0