

# Operation manual

## Mobile hydraulic ramps AUSBAU



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## **Introduction**

Dear customers,

We thank you for your purchase of the AUSBAU mobile hydraulic ramps. Please read these operating instructions carefully before use. The ramps must be operated in accordance with the requirements of this manual, as well as other regulations regarding work safety requirements.

We will be grateful for any advice and recommendations to make our equipment even better and more efficient!

"AV-exim", manufacturer of warehouse equipment AUSBAU

### 1. Purpose of equipment

Mobile hydraulic ramps are special, auxiliary equipment that is used together with a forklift or pallet jack for loading and unloading of goods. With the AUSBAU mobile hydraulic ramp, a forklift can carry out unloading and loading operations of grouped cargoes inside a truck/wagon, driving directly into it from the ground. It helps the company significantly save its labor resources, increase efficiency, speed up cargoes turnover, demonstrating an overall economic effect.

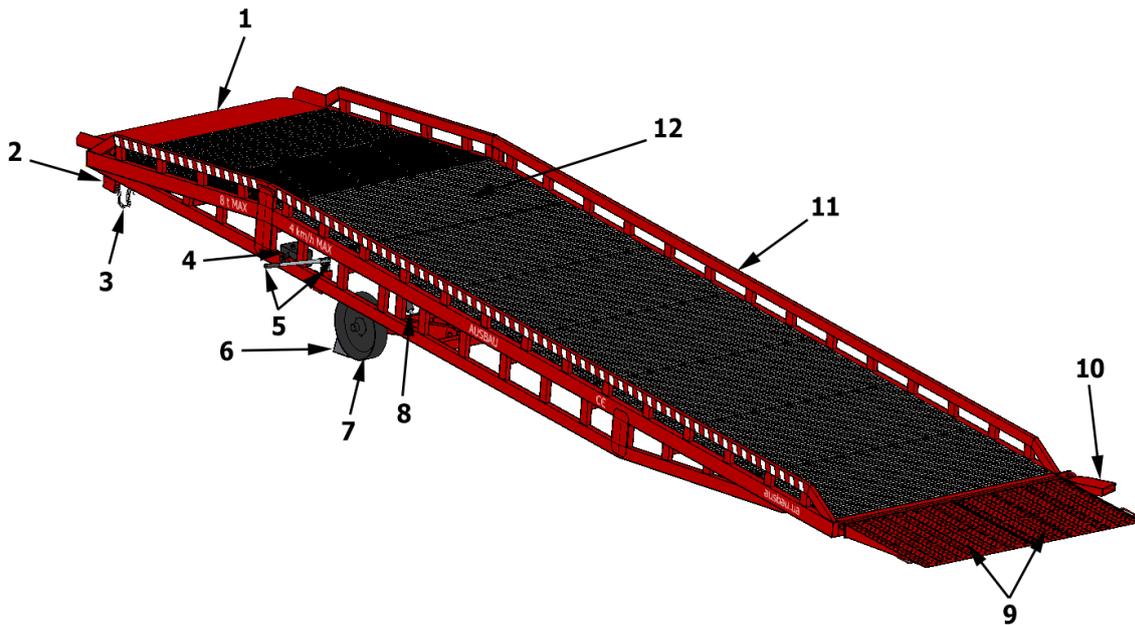
### 2. Specifications

See product certificate/contract.

### 3. Package supply

1. Mobile ramp.
2. Operation manual.
3. Quality documents.

### 4. General idea of the product and its design



- |   |                       |    |                           |
|---|-----------------------|----|---------------------------|
| 1 | Strong connecting lip | 7  | Wheels                    |
| 2 | Chain fixation device | 8  | Hydraulic cylinders       |
| 3 | Chain with hook       | 9  | Entry bridges             |
| 4 | Oil tank              | 10 | Tow pole for ramp moving. |
| 5 | Pump with a handle    | 11 | Railings                  |
| 6 | Wheel chocks          | 12 | Riding surface            |

The loading ramp consists of two load-bearing welded sidewalls, entry bridges, connection lip, riding surface, hydraulic and wheels.

The ramp entrance is made of entry bridges, coated with diamond plate reinforced by ribs installed on the back side.

The middle and upper parts of the ramp have decks that provide maximum grip of the forklift wheels on the surface and free drainage of water.

The connection lip is made of thick steel sheet.

In the central part of the product there is a hydraulic group that provides raising and lowering of the ramp. The hydraulic group consists of a hydraulic station (includes a manual pump, oil flow valve and oil tank) and two hydraulic cylinders (single-acting with return to initial position under the ramp's own weight).

To move the ramp in its lower part, between the lifting bridges of the entrance or on the side, there is a tow pole for one "fork" forklift.

In the upper horizontal part of the ramp there are chains with carabiners (hooks) for fixation of the ramp with the car body. In the middle of the ramp, on both sides there are wheel chocks for fixing the ramp wheels during loading/unloading.

\* The manufacturer reserves its right to make changes in the design of the product without prior notice.



**If you purchased a ramp with the 2SL3SW and/or EHP options, request an addition to this manual from your supplier. Do not operate the ramp without reading the required addendum.**



**Adjustable 2SL supporting legs, serve as a safety feature in case the truck suddenly pulls away and the chain breaks. When driving the forklift over the ramp, it is strictly forbidden to rest the ramp on the supporting legs.**

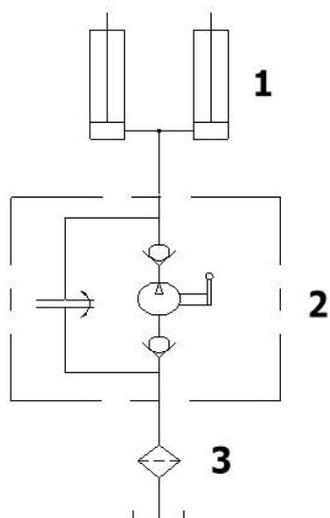
## 5. Description of the hydraulic station

A manual hydraulic pump transfers oil under pressure from the oil tank to the hydraulic cylinders, in this way the "body" of the ramp is raised. When the ramp is lowered (not faster than 5-8 mm/sec), the hydraulic oil flows to the tank through a distribution valve under the control of a speed limiting valve and a flow control valve.

The oil level should be no less than 1/2 and no more than 3/4 of the oil tank volume when the ramp is fully lowered. The oil level should be checked before operation and refilled if necessary.

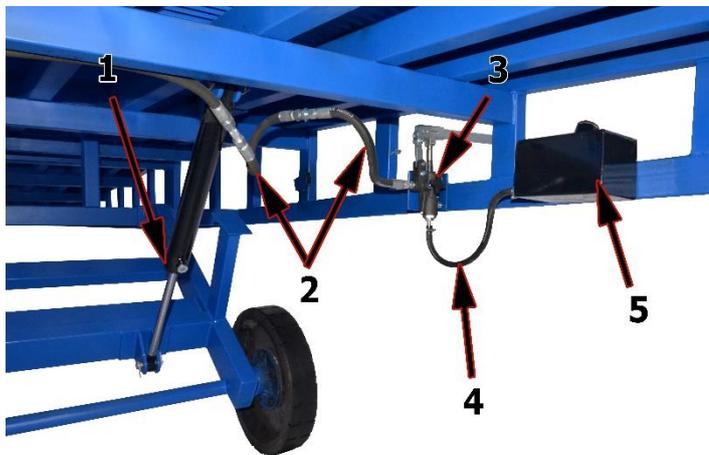


**The hydraulic group (hydraulic cylinders, high-pressure hoses, triple adaptors, connectors and pump) are consumables and are not included in the warranty list of materials to be replaced under warranty.**



- 1 – Cylinders.
- 2 – Pump.
- 3 – Oil tank.

The information on the contour frame only explains the essence of the hydraulic principle.



- 1 – Hydraulic cylinder.
- 2 – High pressure hoses.
- 3 – Shut-off valve for pumping.
- 4 – Oil transfer hose.
- 5 – Oil tank with necktube.

At rest state (valve open) the oil is in the expansion tank and all hydraulic components are under no pressure. The weight of the ram presses oil from the hydraulic cylinders into the oil tank through the high pressure hoses and the pump. When the valve is closed, the oil backflow from the hydraulic cylinders into the tank stops and the pump, driven by the operator, supplies oil under pressure to the hydraulic cylinders. When the valve is opened (gradually), the pressure in the system will decrease and the oil, under the weight of the ramp, will flow back to the distribution tank through the hose. Ramp lowering speed should not exceed 5-8 mm/sec.



**Do not open the valve on the pump sharply to avoid a sudden lowering, which could damage the mechanism. Pressure should be released slowly (5-8 mm/sec. is recommended).**

The hydraulic system is filled with all-season oil. If it is necessary to operate in temperatures below 0 degrees Celsius, change the oil to the corresponding temperature set.

## 6. Transportation of the product

Transportation of the packed product can be carried out by road, rail and sea transport in accordance with the rules established for this type of transport.

Loading on transport, unloading, placing and securing on transport should be carried out by methods that ensure the safety of the package.

Loading and unloading is carried out by means of 4 strapping ropes with hooks. The hooks are placed on top of the item and hooked into the side guards so that the center of gravity falls inside the rectangle formed by the hooking points.

## 7. Storage policy

1. The loading ramp must be stored in the lowered state.
2. To make the use of the ramp long and efficient, we recommend putting the ramp under a shelter to prevent rain and rusting of the ramp.
3. The ramp must not come into contact with aggressive chemical compounds.

## 8. Ramp usage intensity

The product is designed to operate in a mode in which the throughput capacity of one ramp should not exceed 160 tons of cargo transported through it daily. In case of exceeding the limit of intensity of use, the manufacturer declines the responsibility to provide warranty and post-warranty service of the equipment.

## 9. Precautions for operating the ramp

The mobile ramp can be operated by persons who are familiar with this operation manual, have studied the device and operating procedures, safety measures, maintenance, typical failures and troubleshooting procedures, storage, transportation and operation rules.

Before starting work, it is necessary to inspect the overall condition of the ramp.

The permissible load is the summary of the weights of objects simultaneously on the ramp when it is supported by another vehicle or stationary surface.



**It is forbidden to use the ramp if there are any troubles.**

**Do not allow the maximum permissible ramp load to be increased.**

**Do not exceed the maximum ramp lowering speed and the maximum forklift speed.**

**It is forbidden to drive onto the ramp without support on the body/wagon/warehouse.**

1. Never exceed the maximum load (see quality certificate for model).
2. Before starting each operation, make sure that there are no people in the working area.
3. Check tightness of connections, oil level, general condition of the ramp.
4. The ramp may only be used on plain surfaces. Do not use the ramp on uneven or unstable surfaces (rock, soil, soft asphalt, etc.).
5. Make sure that the connection lip rests securely on the loading surface to a depth of at least 250 mm.
6. Do not drive up the ramp unless the lip rests on the body/wagon/warehouse by 250mm.
7. Immediately stop operating the ramp if the lip moves and eliminate the cause of the ramp movement.
8. Make sure that the ramp is connected to the truck with chains and carabiners (hooks).
9. Make sure that the wheel chocks are installed under the ramp wheels.
10. Wheels are only used to move the ramp. It is strictly forbidden to drive onto the ramp resting on wheels.
11. Do not move the ramp while lowering/lifting.
12. Do not drive into the ramp if the valve on the hydraulic pump is closed.
13. Do not stop or stall suddenly on the ramp.
14. Ensure free cylinder movement when using the ramp directly.
15. The supporting legs on the ramp are only used for safety when the truck accidentally disconnects from the ramp. The use of the ramp standing on the legs is strictly prohibited.

## 10. Operating rules

### Before you start operating the ramp:

1. Visually verify that the ramp is in the correct position for operation.
2. Check the oil level.
3. Raise the ramp above the floor of the vehicle (50 mm higher) by closing the valve on the pump and inflate pressure using the pump. When the desired height is reached, stop pumping pressure and the ramp will stop at the reached height.
4. Center the car body regards to the ramp, carefully back the car up, making sure that the ramp and the car body are parallel. Make sure that the ramp goes inside the loading surface of the vehicle body to a depth not less than the length of the connection lip minus 50 mm.
5. Install wheel chocks under the ramp wheels (supplied with the ramp) and under the vehicle wheels.
6. Open the valve on the pump and wait until the ramp rests completely on the car body. Make sure that the ramp is lying flat.
7. Secure the ramp chains to the vehicle body with carabiners (hooks).
8. Make sure that the pump valve is open when operating the ramp.

During loading and unloading, the ramp automatically monitors the level of the vehicle.



**It is forbidden to drive the truck onto the ramp, connecting lip of which is not supported by the vehicle body.**

**The hydraulic system is designed for ramp lifting only.**

**Do not use the ramp to lift the load.**

**The wheel group is designed only to move the ramp without load.**

**Do not drive up the ramp with the pump valve closed.**

### The direction of travel of the forklift:

1. The forklift must move strictly on the reinforced parts of the ramp (tighter arrangement of the lower support beams under the roadway).
2. The forklift should not drive into the extreme left and right 100 mm of the ramp driveway.
3. Forklift driving diagram (arrows indicate forklift wheel lanes).



#### During operation:

1. The connecting lip of the ramp remains on the loading surface of the truck (container) at a depth not less than the connection lip length minus 50mm.
2. The hydraulic system remains free from pressure for the ramp to track the height of the supporting transport (this height varies depending on the load on the truck pendant).
3. Working with the forklift should be careful. The maximum speed of the forklift should not exceed 4 km/h. Driving faster than 4 km/h on a ramp can cause damage to the roadway, which is not covered under warranty.
4. The passing width of vehicles (outside track) that travel on the ramp must not exceed 90% of the inside width of the ramp (F), and the distance between the guardrail and the wheel of the vehicle must not be less than 5% of the inside width of the ramp (F).



**High-pressure hoses, oil, connectors, hydraulic cylinders, pump, expanded metal sheet (driveway), steel grating, bolts, self-tapping screws, fasteners, wheels are consumable (wearing parts) and are not replaced under warranty.**

#### After completing the work:

1. Disconnect the chains.
2. Raise the ramp 50 mm above the vehicle body by closing the pump valve and pumping pressure into the system.
3. Drive the vehicle straight up to the ramp exit from the car body.
4. Lower the ramp (5-8 mm/sec), smoothly opening the valve.
5. Remove the wheel chocks under the ramp wheels.

## 11. Technical service

### Ramp maintenance

The maintenance intervals for the ramp should be set according to the specific operating conditions.

When inspecting the ramp it is necessary to:

1. Check condition of connections, presence and condition of grease in moving parts, level of working liquid in the tank of hydraulic drive, absence of cracks.
2. Check operation of the hydraulic group - no leakage of hoses and sealing elements of hydraulic cylinders.
3. Service fluid should be replaced once in 1000 hours of operation, but not less than once a year.
4. The necessity of replacing the sealing elements of the hydraulic system is determined while making repair work.

The quality of operation and service life of the product depends on preventive maintenance and the operating conditions of the product. Timely lubrication, painting, replacement of consumables and other maintenance will ensure many years of trouble-free service.

### Hydraulic system maintenance

The ramp is delivered to the customer with the working fluid - hydraulic oil.

At low operating temperatures (winter period) the operating fluid becomes very thick and must have a stable viscosity index for low temperatures.

Hydraulic oil for ramps that are used inside cold storage facilities or in climates with low temperatures (below 0 degrees Celsius), must have the properties required for the product to be used in this temperature range.

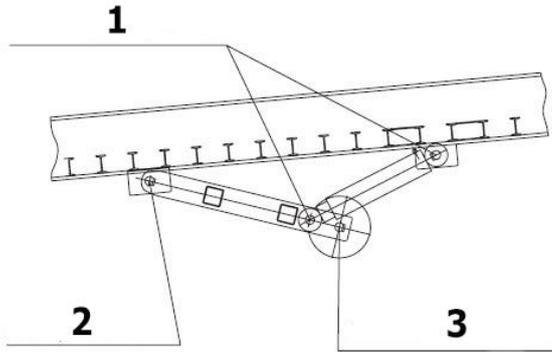
Do not mix different types of oil as an operating fluid, as they may have different rust resistance and expiration dates.

Check the hydraulic fluid level at least twice a month.

*Operating fluid level:* with the system filled and the ramp in the down (parking) position, the oil tank should be at least 1/2, maximum 3/4 full.

**Thick Grease Points:**

Thick grease points (Lithol-24 or equivalent) are shown below and should be checked at least every 6 months. All grease points should be wiped down periodically with kerosene (or equivalent) to remove dirt and fresh grease should be applied.



- 1 – Hydraulic cylinder axles.
- 2 – Lever axles.
- 3 – Wheel Supports.

**12. Maintenance**

**Monthly maintenance**

1. During inspection check the condition of connections for wear and damage, the presence and condition of lubricant in moving parts, if necessary, lubricate them. Moving parts of the ramp (bushings, axles, bearings) should be checked at least once every 3 months. All lubrication points should be periodically wiped with kerosene (or equivalent) to remove dirt and then a fresh grease should be applied (e.g. Lithol-24 or equivalent).

2. Check oil level and quality in the tank. Oil level - with the system full and the ramp in the down position, the oil tank should be 3/4 full. If the oil is dirty, contaminated, or contains water, it must be replaced.

3. Check the operation of the hydraulic group for the presence/absence of leakage of hoses and sealing elements of hydraulic cylinders. If necessary, replace the sealing elements of the hydraulic system.

**Yearly maintenance**

Do a complete oil change: drain the old oil, unscrew the valve and pull out the oil filter, which must be cleaned with compressed air. Put it back in the oil tank, connect the tubes. Change the oil with new oil.

**Painting for care**

1. If the ramp is outdoors (not protected from rain or other precipitation), it should be painted every 6 months, thus extending the life of the equipment.

2. If the ramp is covered with something that prevents contact with atmospheric precipitation, painting is required every year.

3. If rust is evident, clean up the damaged areas and apply paint. Check with your supplier for the type of paint.

**Other maintenance**

If there is damage to the metal or welds, weld them up with welds.

### 13. Typical faults and solutions

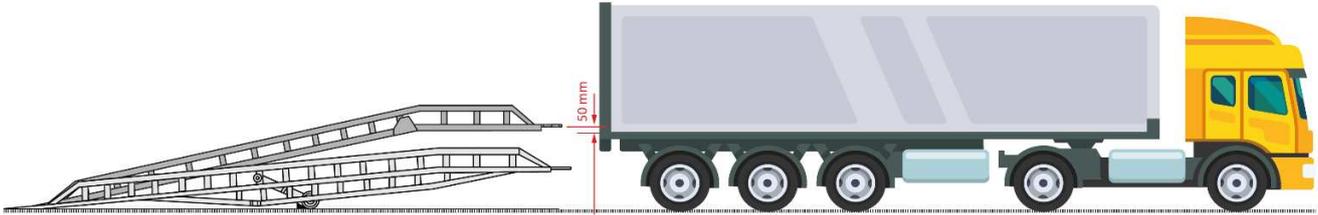
Name of the trouble. External signs and additional signs	Possible reason	Method of elimination
The ramp does not rise	Hydraulic pump leaks	Check the location valve, clean it if there is any dirt on the surface or inside
	There is a load on the ramp	Remove the load
	The system is vented due to a small amount of oil	Fill the tank with oil, open the plug on the pump, bleed out all the air, close the plug
	Opened valve on the pump	Close ramp lift valve
Climbing speed is too slow	Fluid leaks from hoses or cylinders	Replace hoses or cylinders
Ramp does not rise to the required height	Low oil level in the tank	Refill the oil according to the supplier's recommendations
The ramp does not go down	Descent valve is out of service	Check the location valve, clean it if there is any dirt on the surface
The wheels in the ramp are driving away	The ramp carried the load without support on transport	Not a warranty case. Replace wheel bearing and/or axle with hubs/wheels. Contact your supplier
Ramp falls down	Hydraulic pump leaks	Check the location valve, clean If there is any dirt on the surface
	Tank leakage	Weld (or close in other wayotherwise close) the leaking hole

**Please, don't doubt to call/email supplier. We are always open to help you:**

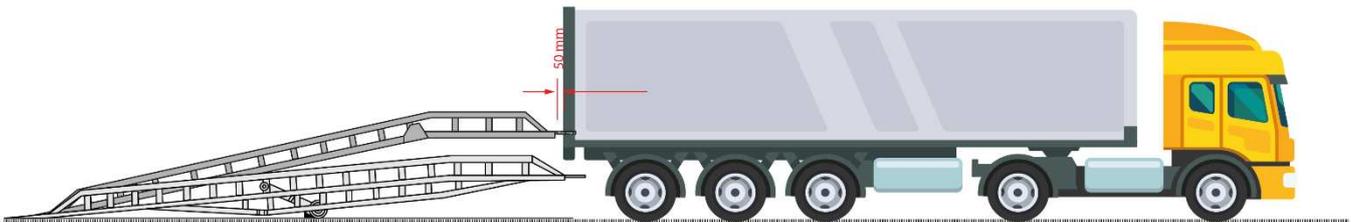
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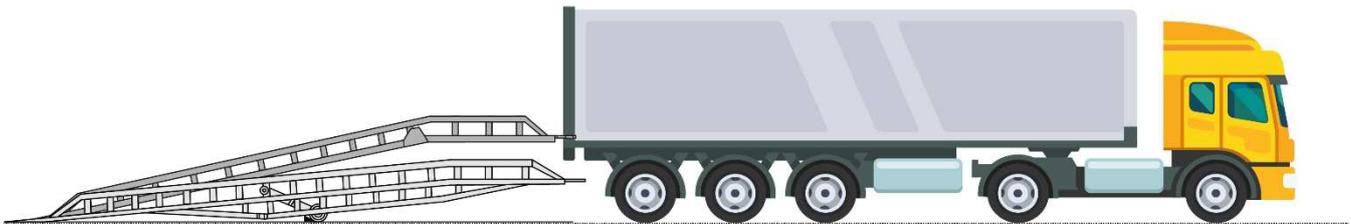
## Appendix 1. Work scheme for unloading/loading



Set the height of the ramp to +50 mm from the bottom of the truck (container).



The distance between the ramp frame and the truck should be max 50 mm.



Turn the hydraulic pump valve counterclockwise so that the connecting lip rests on the bottom of the truck or container.



Connect the ramp firmly to the truck with the connecting chains.



Please check the following before operating the forklift:

1. The connecting lip is inside the truck.
2. The ramp position is secured with a wheel chock.
3. The ramp is connected to the truck with connecting chains.