DOORHAN®

DOCK EQUIPMENT SELECTION

SAFETY · WARMTH · RELIABILITY

CONTENT

GENERAL INFORMATION

The purpose of this manual is to assist in the selection of dock equipment for organization of freight turnover stations, places of goods movement between building levels and floors, and also for premises where it is necessary to maintain the microclimate during loading and unloading work. Different types of dock equipment are actively used in warehouses, large shopping centers, industrial facilities, exhibition centers, logistic and customs terminals.

The main factors affecting the selection of equipment:

- number of loading and off-loading places,
- place dimension for transport maneuvering,
- ramp height,
- type of used loading equipment.

Types of dock equipment:

- dock levellers,
- mechanical folding and portable bridges,
- mobile ramps,
- lifting tables,
- dock shelters,
- sectional doors,
- external farms and dock houses.

NUMBER OF LOADING AND OFF-LOADING PLACES

The number of loading and unloading places directly depends on the number of vehicles to be serviced simultaneously (taking into account peak loads, for example, in the morning and evening hours), and the range of goods stored in different parts of the logistics center. It is also necessary to take into account the zones separation for the goods reception and their shipment (figure 1). The number of places must be at least equal to the number of trucks that are simultaneously loaded or unloaded. Even if a finite number of vehicles are unloaded or loaded throughout the day, it is important to provide for more loading and unloading places, because a wide range of goods can mean their sorting and warehousing in different places.

The following figure shows the organization of the warehouse area, taking into account the number of serviced transport and assortment of goods.

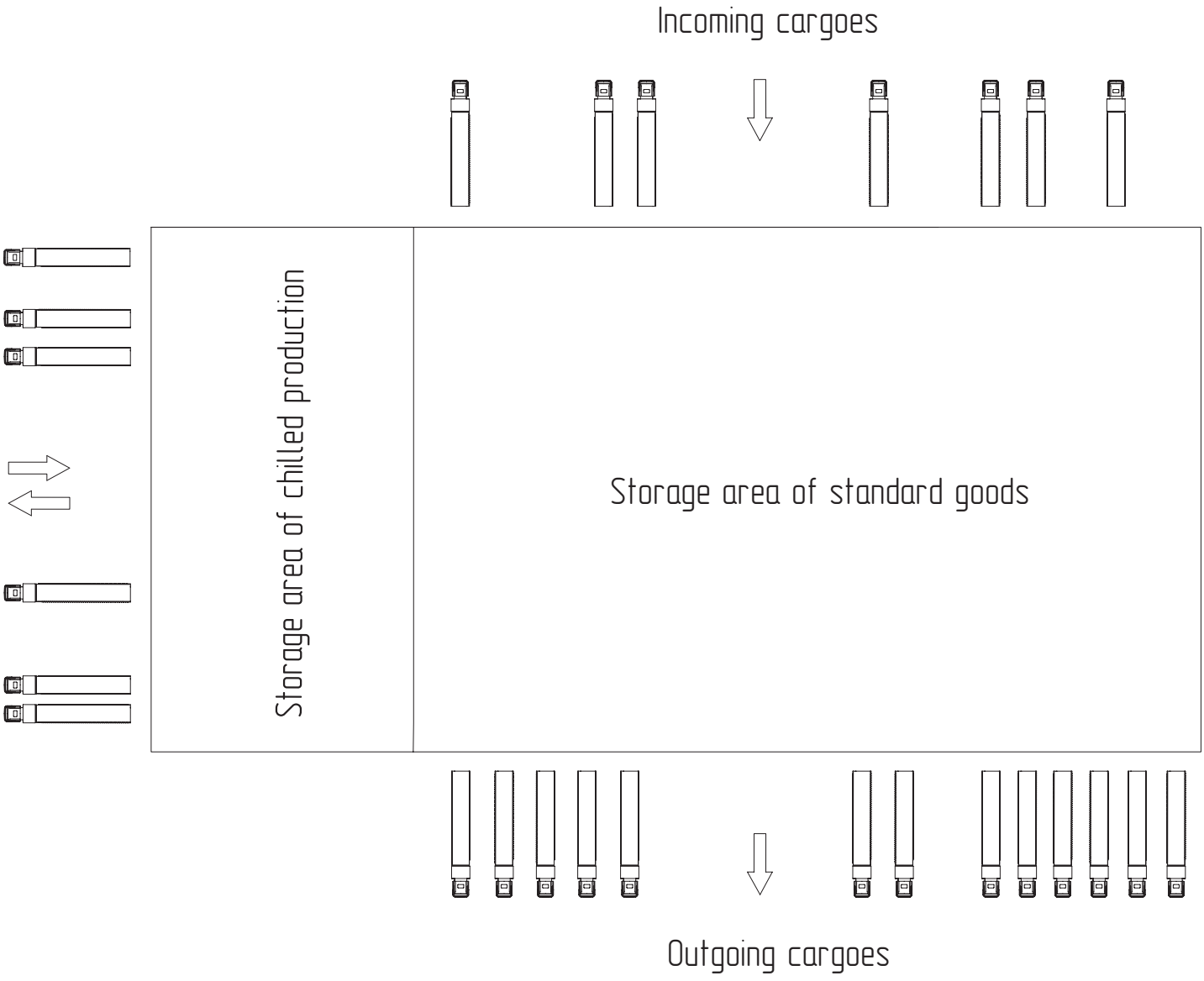


Fig. 1

PLACE FOR TRANSPORT MANEUVERING

When designing a new warehouse it is important to correctly calculate the size of the place, which is necessary for free transport maneuvering. For this one need to take into account the dimensions of all vehicles that will be used, and also to work out a scheme of their movement through the territory of the complex. Standardly adopted in almost all European countries, the full length of a lorry with a trailer is 18 m. If you do not have accurate data on the size of those vehicles, which will be taken in a warehouse, it is necessary to proceed from the maximum permissible sizes. The place depth, sufficient for maneuvering and lorry parking perpendicular to the ramp, is calculated by the following formula:

length of serviced vehicle × 2 + 2 m

Thus, for a maneuver of a truck 18 meters long, it is necessary to have 38 meters of maneuvering place.

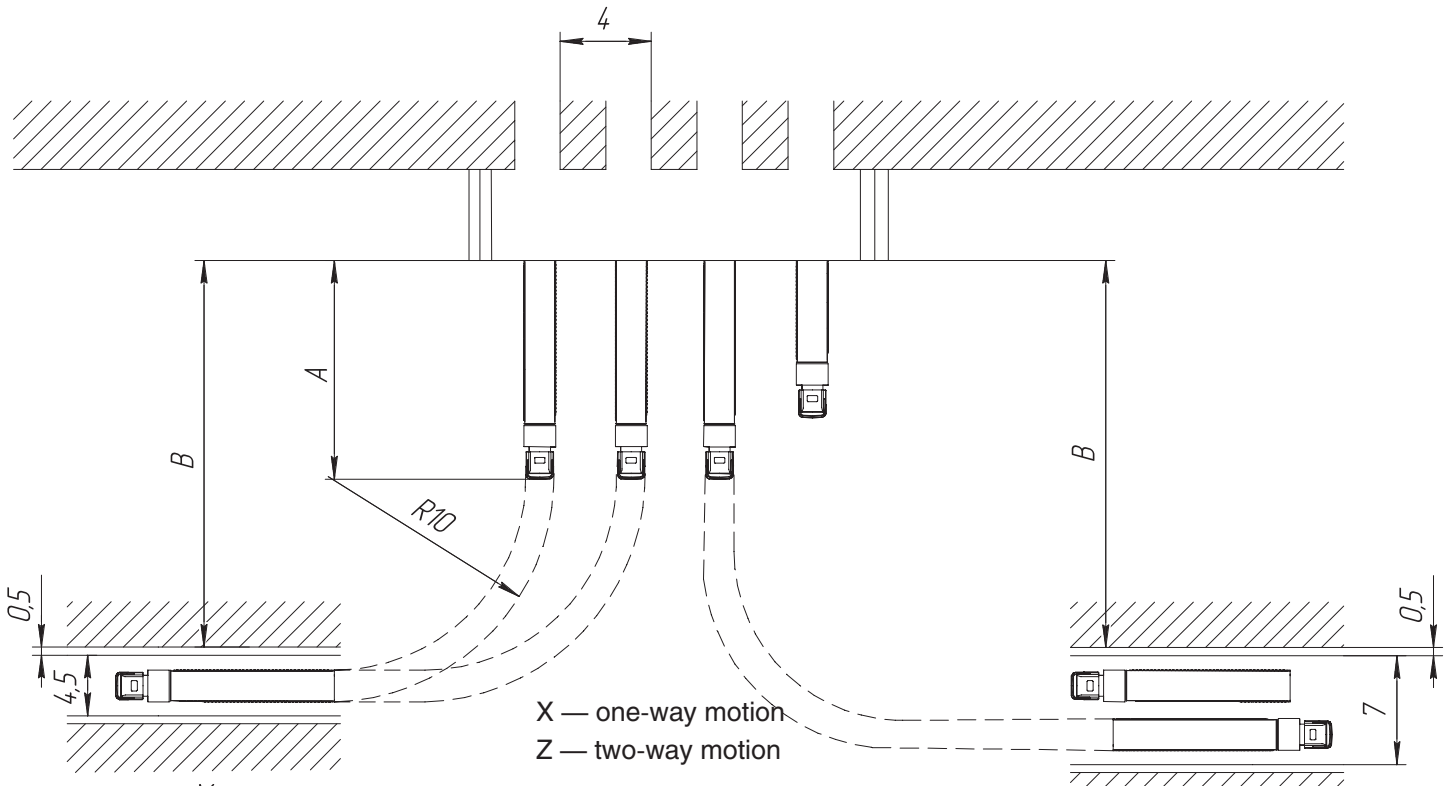


Fig. 2

An example of the depth calculation of the maneuvering place is shown below:

Table 1

Type of lorry	Length of the vehicle (A), m	Required depth of platform (B), m
Type 1	5	12
Type 2	7	16
Type 3	10	22
Type 4	18	38

The installation of corner docks reduces the required depth of the maneuvering platform. To determine the depth, a correction factor (0 < K < 1) is used, depending on the angular deviation under which the docks are arranged:

(length of serviced vehicle × 2 + 2 m) × correction factor

During the angular docks design it is recommended to direct their angular inclination counterclockwise from the wall of the building. Otherwise it will be hard for the vehicles drivers to make docking as an overview of the dock will be restricted.

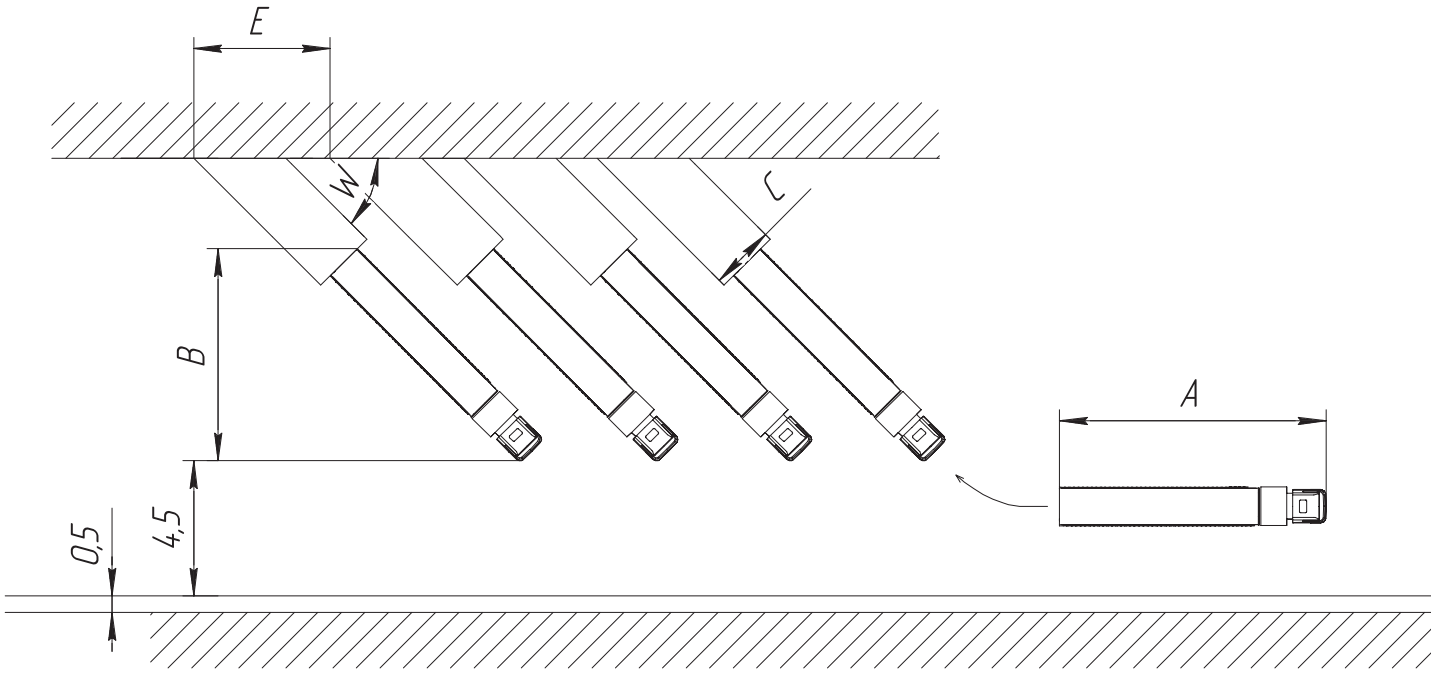


Fig. 3

An example for calculating the depth of maneuvering place is shown in the table 2.

Table 2

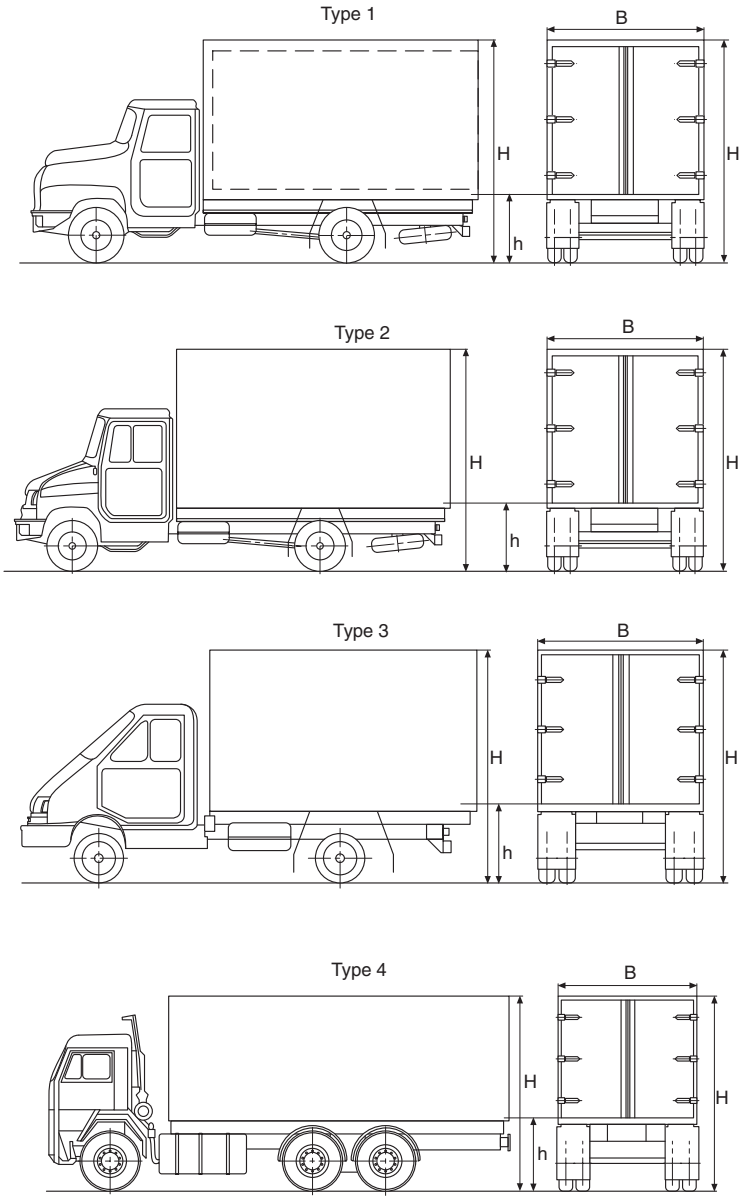
Type of vehicle	Length of the vehicle (A), m	Angle 30° (W)			Angle 45° (W)			Angle 60° (W)		
	A	B	C	E	B	C	E	B	C	E
Type 1	5	4,7	3,6	7,3	5,8	3,6	5,1	6,6	3,6	4,1
Type 2	7	5,7	4	7,7	7,2	4	5,5	8,3	4	4,5
Type 3	10	7,2	4	7,7	9,4	4	5,5	11	4	4,5
Type 4	18	11,2	4	7,7	15	4	5,5	17,8	4	4,5

RAMP HEIGHT

When designing the ramp it should be considered that lorries differ significantly in size and model (see table 3). To select the optimum ramp height it is necessary to know the floor height of the lowest truck when it is fully loaded and the floor height of the highest unloaded vehicle.

Table 3

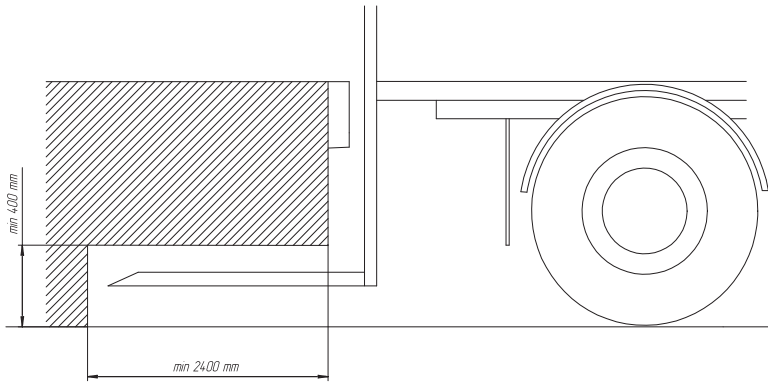
Type of vehicle	B, mm	H, mm	h, mm
Type 1	1950–2100	2700–3200	800–1000
Type 2	2000–2400	3000–3500	1000–1150
Type 3	2000–2400	3200–3800	1200–1400
Type 4	2200–2600	3600–4200	1100–1400



It is necessary to look forward minimizing the difference between the average lorry floor height and the ramp. The recommended ramp height for heavy vehicles is 1 200 mm, for medium and small cars – 1 000 mm (table 3).

However, there are no completely universal solutions. In case of need to service both small and large cars, for example, Gazelles and lorries, several loading places with different ramp height should be organized.

It is necessary to provide a free space under the dock leveller in case it is supposed to unload and load cars equipped with a folding rear hydraulic platform, lowering goods from the car body level to the floor.



LOADING EQUIPMENT

No less important in dock equipment selection is the loading equipment type that will be used for loading and unloading vehicles. The handling equipment usage is determined by those products that will be placed in the storage.

Lightweight packages can be transported by hand-held mobile containers, electrohydraulic trolleys or hydraulic manual lifting trolleys, heavier packages can be transported by electric or diesel loaders. During operation, loaders always move on an inclined plane. Different types of handling equipment can overcome a different angle of inclination (see table 4).

☐ Diesel loader

☐ Electric loader

☐ Electro-hydraulic trolley

☐ Hydraulic manual lifting trolley

☐ Hand-held mobile container

Table 4

Type of handling equipment	Maximum gradeability
Hand-held mobile container	3 % (2°)
Hydraulic manual lifting trolley	3 % (2°)
Electro-hydraulic trolley	7 % (4°)
Electric loader	10 % (6°)
Diesel loader	12,5 % (7°)

When selecting a dock leveller, it is necessary to take into account what type of handling equipment is planned to be used. If loaders with clearance less than 50 mm will be used, it is necessary to specify this information to manager and note this information in customer order when ordering the dock levellers. This is due to the fact that the lip initially has small angles designed in the construction (fig. 4), which form a protuberance (fig. 5). The angle of lip deviation (β) is necessary to extend the lifetime of the dock leveller assembly unit to the lip, since in the process of operating this angle gradually decreases due to wearing process of joint unit's elements.

The angle of lip folding (γ) ensures that the lip front edge touches the car body at the moment when dock leveller is in the up position.

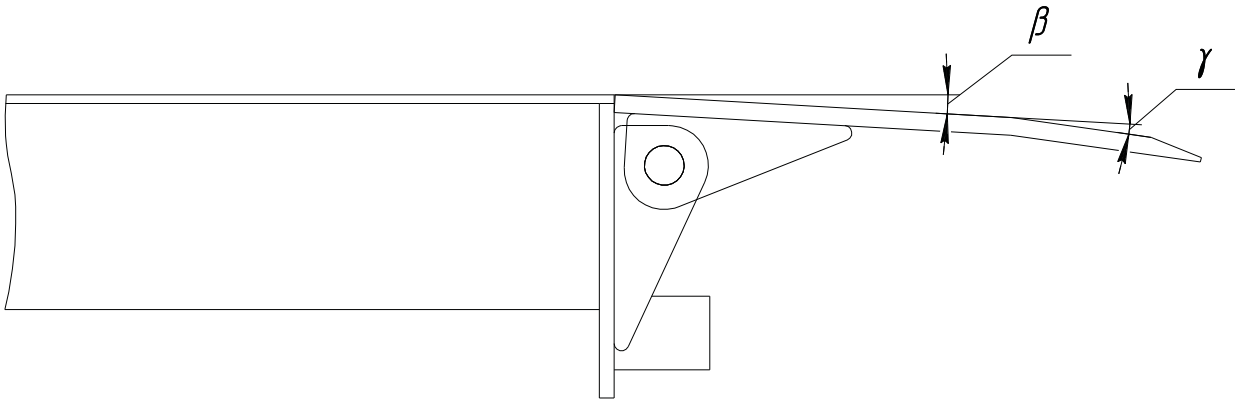


Fig. 4

β — angle of lip deviation (β = 2° 23' ± 53')
γ — angle of lip folding (γ = 3° 47' ± 1° 3')

If this is not taken into account while making an order, a dock leveller will be manufactured with a standard lip and the low-clearance loader movement will be difficult or impossible (fig. 5).

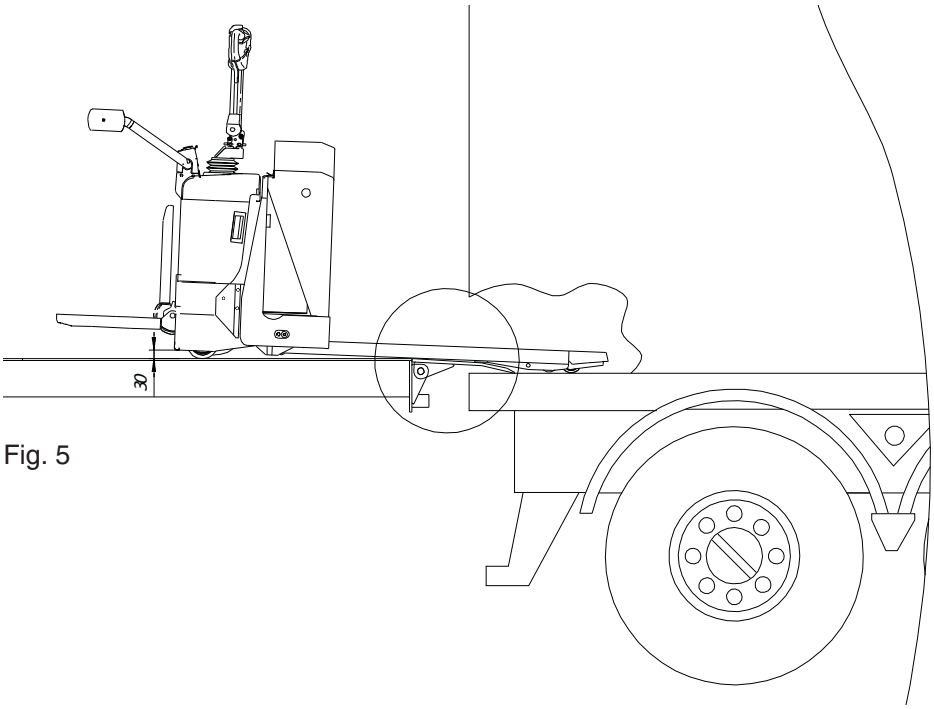


Fig. 5

SELECTING AN EQUIPMENT

Having defined the number of loading and unloading places, the height of the ramp, handling equipment and the height of the serviced transport, it is possible to begin the docking systems selection. For this, it is necessary to determine: the budget size allocated for the acquisition of equipment; is it possible to prepare a pit for the dock leveller and use electricity to automate docking systems. The type and size of dock equipment and additional accessories are selected depending on these factors. DoorHan company offers the following types of dock equipment:

- dock levellers,
- mechanical folding and portable bridges,
- mobile ramps,
- lifting tables,
- dock shelters,
- sectional doors,
- dock houses,
- external farms.

DOCK LEVELLERS

The dock leveller bridges the gap between vehicle and storage floor to ensure smooth and fast movement of automatic loader during loading and unloading operations. Dock levellers can be used with vehicles equipped with built-in elevators. The DoorHan company produces four types of dock levellers :

- electrohydraulic dock levellers with a hinged lip,
- electrohydraulic dock levellers with a telescopic lip,
- mechanical dock levellers,
- mechanical dock levellers Minidok.

A wide range of dock levellers' types and sizes allows you to choose the most suitable option for a particular project.

☒ Dock levellers with a hinged lip

Dock levellers with a hinged lip are the most typical and budgetary devices, allowing to organize a loading and off-loading place and ensure fast loading and unloading. They make for up to 85% of the total number of installed platforms in Russia. The operation principles of the platform are simple. When activated, the platform rises and the lip turns and opens. Then the platform goes down until it reaches the floor of the car body. The system is ready for operation. After the end of loading and unloading works the platform rises, the lip goes down, and the platform returns to the original position. The installation can be carried out both in-built and hanging methods.

Advantages	Disadvantages
Budget solution, satisfies up to 85% of standard requirements for the organization of the loading dock	It is impossible of precise positioning of the lip in the vehicle body
	It is impossible to let down the leveller into the car body if the last loaded pallet is placed close to the rear side of the car
	It is impossible to install doors in front of the leveller and arrange a warm dock

☐ Dock levellers with a telescopic lip leveller

Electrohydraulic dock levellers with a telescopic lip are the most effective devices. These levellers are used in cases where it is necessary to position the lip in the car body as precisely as possible, and also for lateral loading of cars. While using a dock levellers with a telescopic lip (lip length — 1 000 mm), it is possible to organize a warm dock by installing doors in front of the leveller and completely eliminating heat losses at a time when the leveller is not used.

The possibility to install segments on the lip allows you to use it with cars, the width of which is less than the width of the dock leveller. When the leveller is activated, it rises and the lip is pulled out, then the leveller goes down until the lip touches the floor of the vehicle body. After the end of loading and unloading works the leveller rises again, the lip is drawn back, and the leveller returns to its original position.

Advantages	Disadvantages
Precise lip positioning in the car body	High cost
The possibility to work with goods that is right up to the rear of the car	
The possibility to organize a complitely warm dock	
Lateral off-loading of cars	

☐ Mechanical dock leveller

Mechanical dock levellers are used in cases when there is no possibility to supply electricity to the equipment.

The mechanical leveller is lifted manually by the force of two people, while the lip opens automatically. Then the platform goes down until it reaches the floor of the lorry body. When work is completed, the leveller rises again, the lip closes and the leveller returns to its original position.

Advantages	Disadvantages
Do not need electricity supply	Leveller is man-powered
	Limited size range
	It is impossible to install these levellers into the loadhouses

☐ Mechanical dock leveller Minidock

The mechanical dock leveller Minidok is a convenient and economical solution in case when it is impossible to supply electricity and when cars with approximately the same height are to be handled. Minidok is operating manually with a special lever by the force of one person.

During the process of lifting the lip is turning and opening. Then the leveller goes down until it reaches the floor of the car body. When the work is completed, the leveller rises again, the lip closes and the leveller returns to its original position. Installation is carried out on a specially prepared ramp or in the pit.

Advantages	Disadvantages
Do not need electricity supply	Can be used only for identical size cars
Budget solution	Height compensation — ±100 mm

When the dock leveller type has been selected, it is necessary to determine its basic dimensions (length and width). At this time one should take into account such parameters as the height of the ramp, minimum and maximum height of the car's floor (minimum height of the fully loaded vehicle and maximum height of the empty vehicle), minimum and maximum width of the car body (see table 5).

The leveller length depends on the difference in the lorry floor level and the ramp level. Along with it, it is extremely important to calculate the maximum leveller inclination angles which can be overcome by the handling equipment. The minimum length of the dock leveller is calculated by the following formula:

min length = level difference / max inclination

Table 5

Parameters		Example 1	Example 2	Example 3
Car body height	min	1000 mm	1000 mm	1050 mm
	max	1350 mm	1450 mm	1300 mm
Ramp height		1150 mm	1200 mm	1100 mm
Handling equipment type		electrohydraulic trolley	electric loader	manual lifting trolley
Maximum inclination		7 %	10 %	3 %
Level difference		+200 mm/-150 mm	+250 mm/-200 mm	+200 mm/-50 mm
Minimum leveller length calculation		200/7 % = 2850 mm	250/10 % = 2 500 mm	200/3 % = 6650 mm

The dock leveller width is determined by the width of the lorry inside or container, and also by the accuracy that lorry drivers can provide when approaching the ramp. Standardly levellers with a hinged lip are available with a width of 1800, 2000, 2200 mm, levellers with a telescopic lip are available with a width of 2000, 2200, 2400 mm. It is recommended to choose the maximum leveller width to ensure a good maneuvering of the loader and the possibility of unloading the last pallet standing at the lorry tailgate. The leveller width should be about 100 mm narrower than the car body because the car positioning in the dock is not always accurate.

Thus, the dock leveller width can be determined by the formula:

leveller width = car body width - clearance width × 2

Table 6

Parameters	Example
Car body width	2000 mm
Clearance width on each sides	100 mm
Leveller width calculation	2000 - 100 × 2 = 1800 mm

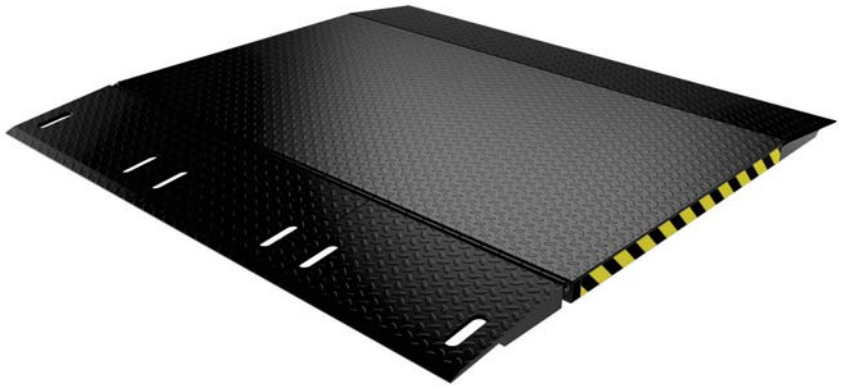
If dock leveller using is impossible, other variants of the off-loading docks equipment are used. All of them are designed to ensure the loader entry into the car body, but they have a number of peculiar features. Let's consider them further.

MECHANICAL DRAWBRIDGES

Mechanical drawbridges are installed on an open ramp and compensate the height difference up to 360 mm. They are designed for using with cars that have nearly the same height. During loading and off-loading operations the bridge is lowered into the car body with the side handle help until the lip touches the floor. After finishing the work, the bridge rises and returns to its original position. Mechanical drawbridges can be of fixed or sliding construction. The sliding bridge allows to perform work alternately in several places on the ramp by moving along the guide rail from one off-loading point to the other.

Advantages	Disadvantages
Budget solution	The car does not stand close to the ramp
Do not need electricity supply	It is extremely difficult to position the car in front of the bridge, because of impossibility to use rubber bumpers as a positioning support
–	Admissible load — 4 000 kg

PORTABLE BRIDGES



Portable bridges are used in case when product stream is not too large and there is no need to install stationary dock. These bridges designed for using with cars that have nearly the same height. The height of the car body must be higher than the level of the ramp. Portable bridges are installed between the ramp and the car body and compensate the height difference up to 240 mm. Bridge movement to the required place is carried out by the loader.

Advantages	Disadvantages
Budget solution	The car does not stand close to the ramp
Do not need electricity supply	Can be used only when the car body height is higher than the ramp height
The possibility to use in different places of the ramp	Admissible load — 4 000 kg

MOBILE RAMPS

Mobile ramps are designed to provide loader entrance from the ground surface to the car body. They do not need special preparation for starting and allow to provide loading ans off-loading operations with no building a stationary ramp.

All the ramps have similar work principle: after activation the ramp is raised by mechanical or hydraulic drive which is outfit by safety system ans is moved to the car by the loader. The ramp with support on the car body lies on the car body, the ramp with own bearing parts is installed on supports. After completion of work the ramp is raised and is transporting to the storage place by the loader.

Advantages	Disadvantages
Loading/off-loading can be carried out from the ground surface	Large dimensions
Do not need electricity supply	Necessity of large space for maneuvering
The possibility to use both hand power and electrohydraulic drive	–

LIFTING TABLES

If there is no ramp at all and no space for placing the mobile ramp it is recommended to use lifting table. In this case cargo is taken out from the car body by the hydraulic manual trolley or the loader to the table which is raised to the level of car body. Then the lifting table is lowered to the ground level. With that there is a pit installed in the ground for table to be placed on the same level with floor surface.

There is a possibility to to organize off-loading places with table installing into the ramp.

The lifting tables also can be used for cars lifting and lowering in the parking, on the industrial lines, for supplying materials to feeding devices. The lifting tables also are the alternative solution when there is no service elevator in the room.

Advantages	Disadvantages
Loading/off-loading can be carried out from the ground surface	The process of loading/off-loading is slow because the table do not provide direct entrance of trolleys and loaders into the car body

The next task which need to be solved during the design of warehouse complex is sealing the space between the docked car body and the building wall to reduce heat losses, protect the production and the staff from negative atmospheric affections. Dock shelters are designed for these purposes.

DOCK SHELTERS

Dock shelters ensures space sealing between loading dock and car body for fast and safety goods loading and off-loading. Standard dock shelters sizes are designed for usage with different dimension transport — from small vehicle to European van. Due to the fact that during loading and unloading works the car body partially enters the shelters, the goods can be loading and unloading in any meteorological conditions, keeping the microclimate of the warehouses and protecting them from drafts.

DoorHan manufactures four types of dock shelters: with restractable structure, rigid dock shelters, inflatable and cushion dock shelters. Dock shelters with restractable structure and rigid dock shelters are called as curtain dock shelters.

☐ Dock shelter with restractable structure

Dock shelter with restractable structure is a classic choice for installing in places with medium intensity of goods traffic. Front sheet is produced from PVC-material which has sufficient flexibility, durability and has a high tear strength. During loading and unloading works the car body partially enters the shelters. Upper and side vertical sheets cover car body ensuring sealing capacity. In case when vehicle is parking not correctly the front frame (restractable structure) is folding and automatically returns to initial position. Dock shelter is carried out by overhead installation.

☐ Rigid dock shelter

Rigid dock shelter functionally designed for high goods traffic. It is manifested in its design. The frame is produced from aluminum-edged sandwich panels. Frontal clamping bar is produced from aluminum extrusion painted with powder method.

Front sheet material is enough flexible, high durable and has a high tear strength. During loading and unloading works the car body partially enters the shelters. Upper and side vertical sheets cover car body ensuring sealing capacity. If using these type of dock shelters it is recommended to install the wheel guides or metal bumpers in front of the dock. Dock shelter is carried out by overhead installation.

☐ Inflatable dock shelter

Inflatable dock shelter is installed in cases when it is extremely important to meet temperature requirements, where maximum effective sealing is needed (for example, at the off-loading dock of freezing warehouse). During loading and unloading works the car body does not press against the dock shelter as it is while using another types of shelters. Inflatable dock shelter's cushions cover the car body on all sides ensuring the best sealing. Inflatable cushions' durable material Condura has a high tear strength. During loading and unloading works the car body partially enters the shelters. Upper and side cushions are inflated ensuring the high sealing between car body and building. After work is completed cushions are deflated. Inflatable dock shelter manipulation can be carried out from the dock leveller's remote controller (in case of using special control unit with inflatable dock shelter's control function). If using these type of dock shelters it is recommended to install the wheel guides or metal bumpers in front of the dock. Dock shelter is carried out by overhead installation.

Cushion dock shelters are used for vehicles with equal car body sizes. During loading and unloading works the car body pressed against the cushions ensuring the sealing.

☐ Cushion dock shelter

After the type of dock shelter is selected it is necessarily to choose its dimensions (length and width). It is necessary with this to take into account such parameters as the ramp height, min/max height of car body floor (minimum height of the fully loaded vehicle and maximum height of the empty vehicle), min/max car body width.

Curtain dock shelter's dimensions calculations

Curtain dock shelter's optimal dimension is calculated by following formula:

width = car body width + 800 mm;
height = car body height - ramp height + 800 mm

Minimum dimension is calculated by following formula:

width = car body width + 400 mm;
height = car body height - ramp height + 200 mm

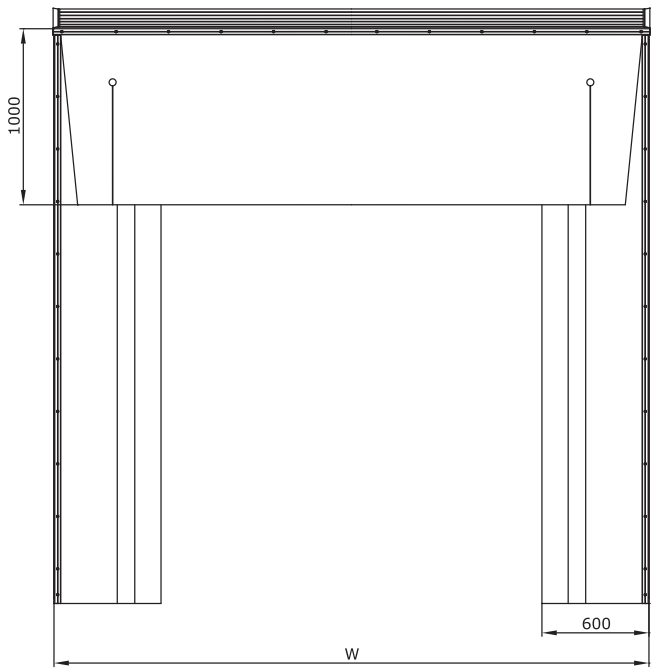
Under these conditions side sheets fold of 200 mm, upper sheets fold of 300 mm. The best doorway sealing is achieved at these parameters.

It is not recommended to install dock shelter with less dimensions than minimum, because in this case the load on construction will exceed permissible load.

Table 7

Parameters		Example 1
Car body height	min	3600 mm
	max	3800 mm
Car body width	min	2400 mm
	max	2600 mm (with open doors)
Ramp height		1200 mm
Width calculation		2600 + 800 = 3400 mm
Height calculation		3800 - 1200 + 800 = 3400 mm

Curtain dock shelter usually is installed such way that its bottom edge is of 100 mm lower than ramp edge (while ramp height is 1200 mm).



Inflatable dock shelter′ s dimensions calculations

In initial state the van must be freely placed in the dock shelter doorway.

Inflatable dock shelter′ s optimal dimension is calculated by following formula:

$$\text{width} = W1 + 200 < \text{car body width} < W2 - 200;$$
$$\text{height} = H1 + 200 < \text{car body height} - \text{ramp height} + 200 < H2 - 200$$

Inflatable dock shelter usually is installed such way that its bottom edge is of 200 mm lower than ramp edge (while ramp height is 1200 mm).

Table 8

Parameters	Dimensions
Car body height	3 000 mm
Car body width	2 000 (with opened doors)
Ramp height	1 200 mm
Width calculation	1 680 + 200 < 2 000 < 2 890 - 200
Height calculation	1 746 + 200 < 3 000 - 1 200 + 200 < 2 646 - 200

The table 9 shows that for car with such car body dimensions the dock shelter DSHINF 3,3 × 3,4 is optimally suited.

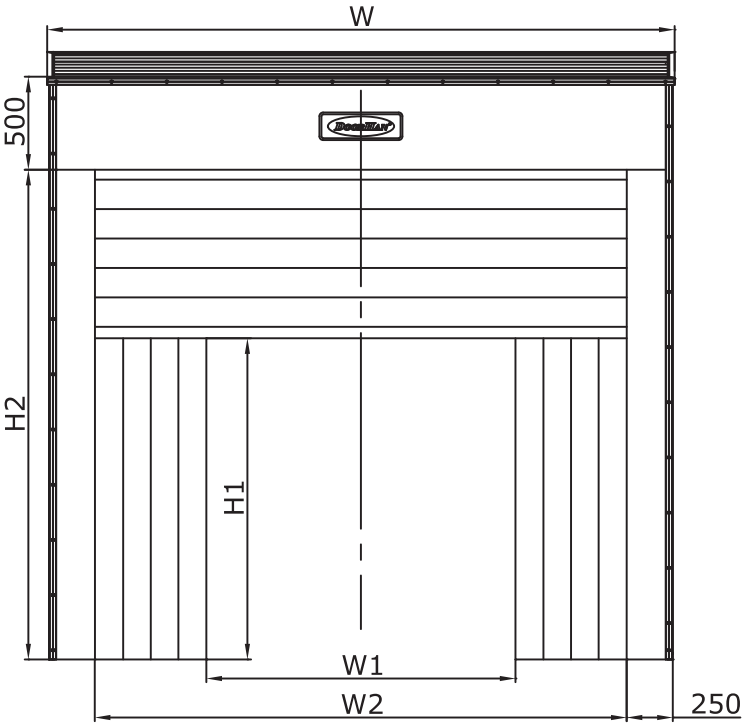


Table 9

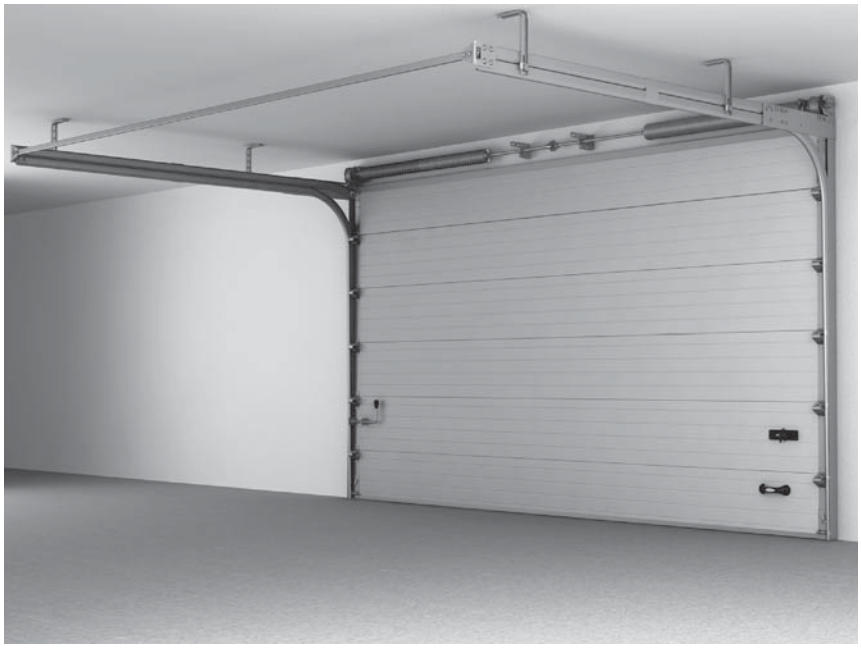
Dock Shelter ID number	W, mm	W1, mm	W2, mm	H, mm	☒= 900	☒= 1 200
					H1 /H2 mm	H1 /H2 mm
DSHINF 3,8 ×3,6	3 610	1 880	3 090	3 828	2 273 /3 173	1 873 /3 073
DSHINF 3,3 ×3,4	3 410	1 680	2 890	3 302	1 746 /2 646	1 346 /2 546

☒— upper cushion extension

For supply a complete off-loading place it is necessary to install doors.

SECTIONAL DOORS

Sectional doors for industrial use are specially designed for use in industrial facilities, so they are able to accommodate high working loads. They are produced of sandwich panels, which consist of two galvanized steel sheets filled with polyurethane foam. Torsional mechanism ensures easy and smooth door lifting. The special design of sandwich panels provides thermal and sound door insulation, and the sealing system used around the door lift perimeter makes them sealed. Industrial sectional doors are safe in operation and are designed for high use intensity. They are of increased durability and aesthetic form.



In case when ramp is not envisaged in the building, the door width must be no less than 3400 mm, and door height must be no less than 4500 mm.

If there is a ramp in the building the door dimension can be determinate by the following parameters:

- ramp height,
- lorry dimensions and type,
- type of dock shelter,
- option of off-loading dock.

While using all the types of dock shelters the door's embrasure width is calculating by the following formula:

door width = car body inside width + 200 mm

For calculating the door's embrasure height one can apply the following formula:

door height = car body inside height - ramp height + 200 mm*

* It is recommended to install industrial doors with a height that is for 200–400 mm higher than the car body height.

The industrial doors can be of bigger size, but less than the installation dimensions of corresponding dock shelter.

Table 10

Parameters	Dimensions
Car body height	4000 mm
Car body width	2400 mm
Ramp height	1200 mm
Width calculation	2400 + 200 = 2600 mm
Height calculation	4000 - 1200 + 200 = 3000 mm

In case when inflatable dock shelter is used the door's embrasure must be equal to dock shelter inside embrasure.

When there is necessity to use warehouse area fully and also for making the loading dock maximum warm one can use the constructions which are adjoined to the external building side.

DOCK HOUSES

Dock house is a complex construction that is used for installation of the dock leveller and the dock shelter. Due to the fact that dock houses are placed beyond the building their usage enabling to keep microclimate and to save warehouse area, and also to protect goods from climatic factors. They are indispensable where it is necessary to use warehouse area maximally, where increased temperature requirements exist and also in places where lorry parking perpendicular to the building is impossible. One of the dock houses advantages is the possibility to modernize it without changing the building construction. DoorHan company produces dock houses with four angle types of contiguity to the building — 90, 60, 45 and 30°. Dock houses with 60, 45 and 30° angle of contiguity to the building are installed where direct driveway is impossible. Dock houses of standard and light series are also available.

The dock house dimensions are determinate by the dimensions of dock leveller and dock shelter.

EXTERNAL FARMS

External farms DoorHan are designed for installation dock levellers and are used in cases where it is necessary to use warehouse area maximally. They are installed on open ramps or in front of the doors where making the pit in the warehouse floor for dock leveller is impossible. One of the external farms advantages is the possibility to modernize it without changing the main building construction. Thank to external farms there is a possibility to organize off-loading places where lorry parking perpendicular to the building is impossible. Its construction enables using all the types of dock levellers both with hinged and telescopic lips (they are ordered separately and do not included in the kit). External farms are produced with four angle types of contiguity to the building — 90, 60, 45 and 30°. The installation is carried out by the outward mounting. The delivery of previously assembled nodes enables fast installation.

The external farms dimensions are determinate by the dimensions of dock leveller.

THE MAIN ASPECTS OF DOCK EQUIPMENT EXPLOITATION

The main problems related to the dock equipment exploitation are conditioned by climatic features and service quality.

Climatic features

Taking into account significant difference in climatic zones of different countries the main factor during correct equipment selection is to specify geographical area where equipment will be installed. It is also important to to specify what requirements are demanded to rooms where dock equipment will be placed.

Thus for southern territories which have a subtropical climate there is no necessity for “warm” dock organization. In these regions the most budget solution can be applied – it is the hinged lip dock leveller, sectional doors and curtain dock shelter.

For middle part of continent there is a possibility to apply both types of docks.

For northern regions the “warm” docks installation is foreground. The dock is almost completely sealed in non-working state when doors come down in front of the dock leveller. The dock house installation can be an alternative solution, but in this case some problems can arise because of dock leveller standing out of the building where the temperature can rich too low points in winter.

DoorHan company optionally supply “winter package” - it is a special hydraulic pump heater which is switched on in case of outer temperature is falling down. There is also a possibility to install hydraulic station inside the building.

Dock equipment maintenance

The specific feature of dock equipment exploitation is the fact that its service is carried out by frequently changed low-skilled personal. There often is an exploitation of already defective equipment and it is becoming the reason of its fast deterioration without the possibility of restoration. The absence of regular technical check-up lead to equipment breakdown early.

To provide dock equipment trouble-free operation DoorHan company recommend to make technical check-up timely and to follow the exploitation norms and rules.

Unified DoorHan company service network provides after-sales service in certified service centers (CSC) that are formed in regional representative bodies and dealer organizations of DoorHan company. Certified service centers are oriented on the work with company clients and are directed to provide a full range of service to DoorHan production owners. If necessary CSC qualified personal can provide detailed technical instructing clarifying the equipment exploitation features to prevent from actions that can lead to equipment breakdown.

FOR NOTES

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