item

Lifting-Door-System

Notes on Use and Installation

Content

Symbols, safety

Important, safety information, recommendation

General safety information

The data and the information contained in the Notes on Use and Installation are intended exclusively for product description and assembly. The information does not release the user from conducting their own assessments and checks. It should be noted that our products are subject to natural wear and tear as well as an aging process.
These Notes on Installation and Use include important information for the safe and appropriate use of the product. In the case of a sale, rent or other transmission of the product, the latter must be accompanied by the Notes on Use and Installation.
During the assembly, operation and maintenance of the lifting door system, it must be ensured that all moving parts are secured against accidental switch-on or moving. Rotating and moving parts can lead to serious injury! Please make sure to read and observe the following safety precautions.

- Any work with or close to the lifting door system must be performed under the motto „safety first“.
- Switch the power supply voltage off before you begin a task close to the lifting door system. Secure the drive unit against accidental switch-on, e.g. by installing signs near the switch or remove the fuse from the power supply.
- Do not reach into the working area of the moving parts of the lifting door system while it is operating.
- Secure the moving parts of the lifting door system against accidental contact by installing protective devices and enclosures.
- Please take note of the applicable regulations for accident prevention and environmental protection in the country of use and the workplace.
- Use item products only in technically perfect condition.
- Non-use of original spare parts leads to the expiry of the warranty!
- Check if the product has obvious defects.
- Use the product exclusively within the range of performance described in the technical data.
- Make sure all the safety devices belonging to the product are available, suitably installed and fully functional.
- You are not allowed to change the position of, avoid or disable safety devices.

The lifting door system described here corresponds to the state-of-the-art and respects the general principles of safety at the date of printing of the present Notes on Use and Installation. Nonetheless, the hazard for personal injury and damage to property remains when the fundamental safety instructions and warning notices mentioned in the present Notes on Use and Installation are not observed.

We accept no liability for any damage that may arise from them. In the interest of further development, we reserve ourselves the right to technical changes. Keep the present Notes on Use and Installation readily accessible to all users. Please take notice of the superordinate instructions for use of the complete machinery or equipment.

The general hazard warning refers to the whole life cycle of the partly completed machinery.

1. Transport
Please note the transport instructions on the packaging. Make sure to leave the product in the original packaging and protect it from humidity and damage until assembly. Please note that moving parts are fixed and can cause no damage during transport.

2. Assembly
Always switch the relevant system component off-circuit before you assemble the product or plug/unplug it. Secure the system against re-starting. Lay the cables and conducts so that they cannot be damaged and nobody can trip over them. Avoid places with risk of slipping, tripping or falling.

3. Putting into service
Let the product acclimatise for some hours before putting it into service.
Make sure the partly completed machinery is tightly and safely integrated to the complete machinery. Only put fully installed products into service.

4. During operation
Allow the access to the direct operational area of the system only to people authorised by the operator. This also applies for downtimes of the system. Moving parts must not be accidentally actuated. In case of emergency, error or other irregularities, switch off the system and secure it against restarting. Make sure people cannot be shut in the system‘s danger zone.

5. Cleaning
Close all openings with appropriate protective devices so that no detergent can enter the system. Use no aggressive detergents. Do not use a high-pressure cleaner for the cleaning.

6. Putting into service and maintenance
Perform the required maintenance work in the time intervals described in the operating instructions. Make sure no connection line, connection or component is released until the system is under pressure and tension. Secure the system against restarting.

7. Disposal
Dispose of the product according to the national and international provisions of your country.

Correct use

The lifting door system is a product in accordance with the Machinery Directive 2006/42/EC (partly completed machinery). The lifting door system can only be used in accordance with the technical data and safety regulations of the present documentation. The internal rules and guidelines of the country of use must be respected. Unauthorised structural changes to the lifting door system are not permitted. We accept no liability for any damage that may arise from them.

You are authorised to assemble, operate and maintain the lifting door system only if:

- The lifting door system has been integrated to the complete machinery according to the intended applications and safety requirements.
- You have read the Notes on Use and Installation carefully and understood them.
- You are qualified.
- You have the authorisation of your company.
- You exclusively use the original accessories of the manufacturer.

In case of unsafe and inappropriate operation of the lifting door system, there is a danger of serious injury from crush and shear points.

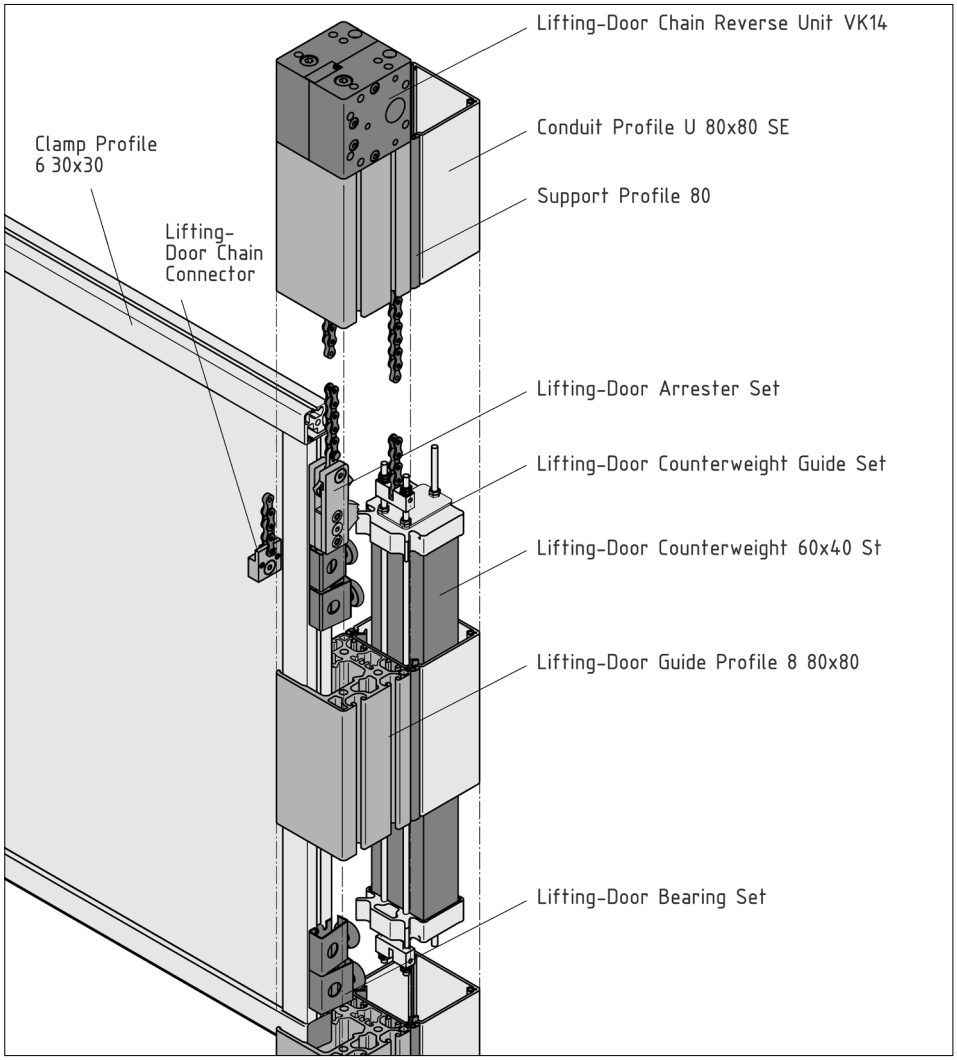
Improper use

The inappropriate use refers to applications differing from the use authorised by the Notes on Use and Installation and the appropriate use. We accept no liability for any damage that may arise.

Introduction

A modular Lifting Door System for building Lifting Doors for use in Enclosure & Guard Systems and which are to be raised and lowered either manually or using a motor.

Lifting Door construction



Safety considerations

During design, safety considerations have been given a particularly high priority:

- At a basic level, two independent, parallel chains provide a high degree of safety.
- The moving parts are contained within enclosed conduits.
- The Lifting Door can be fitted with an Arrester Set to prevent injury if a chain breaks and the door drops suddenly.
- Shock Absorbers can be fitted at the ends of the guide tracks.
- A Buffer Strip or safety cut-off strip can be fitted in either the upper or lower vertical profile groove of the door frame.

Assembly

There are two alternative Chain Reverse Units available:
As a simple counterweight for manually operated doors, use Chain Reverse Unit E; for electrically powered doors, use variant VK14. This variant allows the two chains on a Lifting Door to be synchronised.

The Counterweights are accessible subsequently and can be adjusted.

The elastic guides of the ball-bearing mounted door frame compensate for awkward frame sizes and unfavourable guide set-ups. They are self-adjusting, low-noise, tolerance-compensating constructions.

There are interfaces on the Lifting Door Guide Profiles and Chain Reverse Unit for universal, system-compatible attachments for Enclosure & Guard Systems.

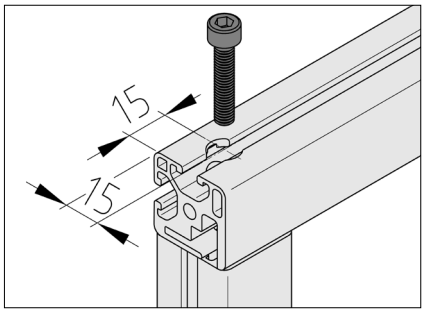
Installation

Installation is simplified by the use of preassembled modules.

Preparation:

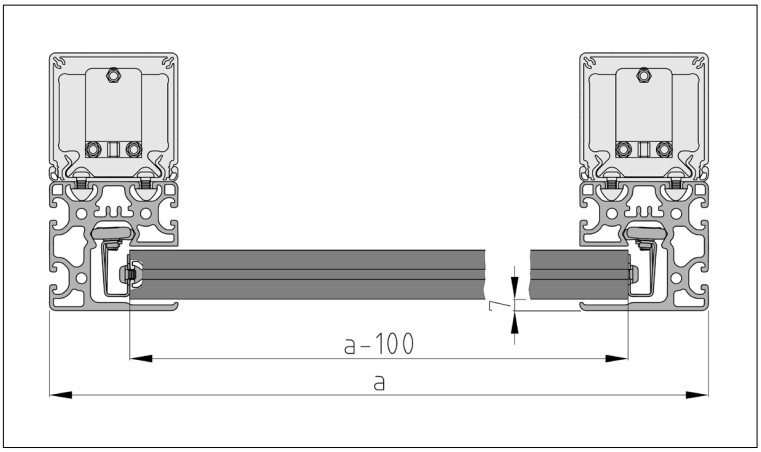
Cut the Lifting Door Guide Profile 8 80x80 and Clamp Profile 6 30x30 to the correct length.

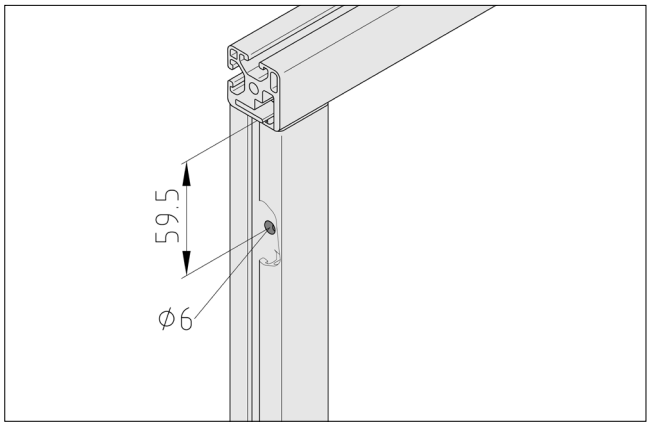
Note:
We recommend running the horizontal Profiles for the door frame (Clamp Profile 6 30x30) straight through for the full length.



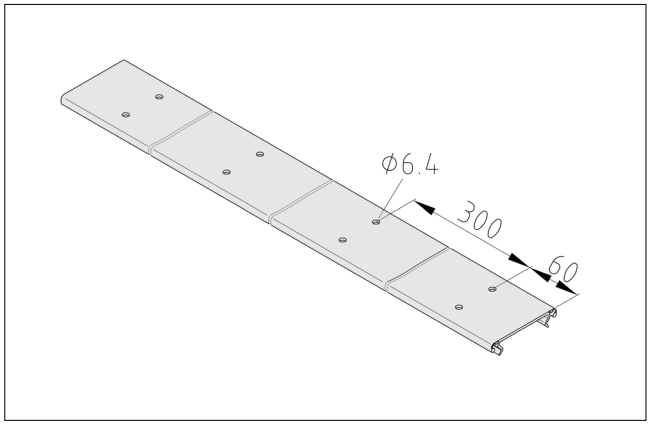
Drill the Clamp Profiles as required:

horizontally - Countersink DIN74-km6
vertically - Thread M6x15 in core bore



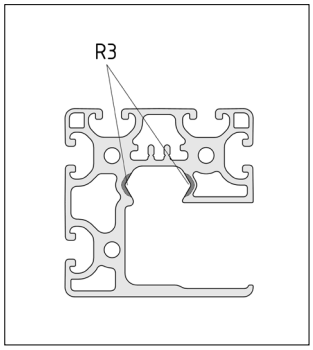


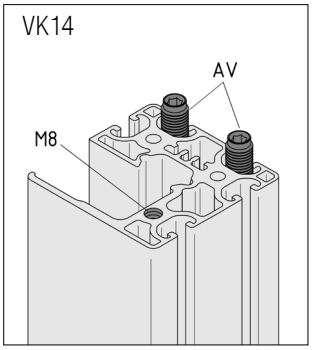
The vertical Profiles making up the door frame (Clamp Profile 6 30x30) require an additional through hole (⌀ 6 mm; 23 mm deep) for preventing the chain connector guide from slipping subsequently.

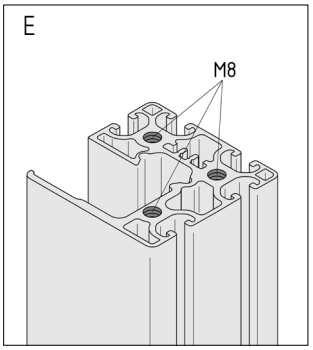


The two Support Profiles 80 which guide the Counterweights are then cut to length (length equivalent to Lifting Door Guide Profile 8 80x80) and require through holes for fixing them to Lifting Door Guide Profile 8 80x80.

Machining the Lifting Door Guide Profiles 8 80x80:





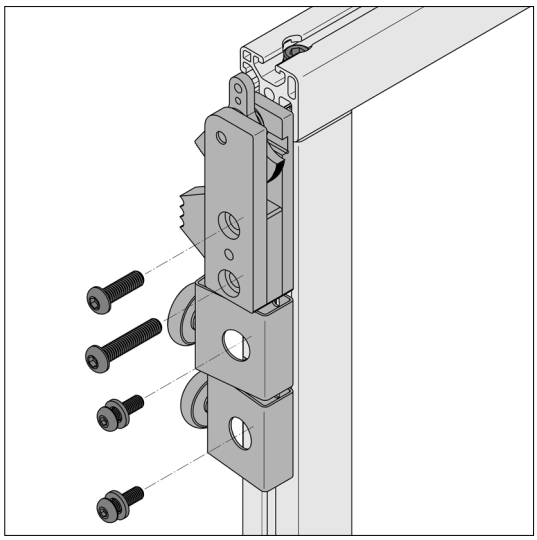


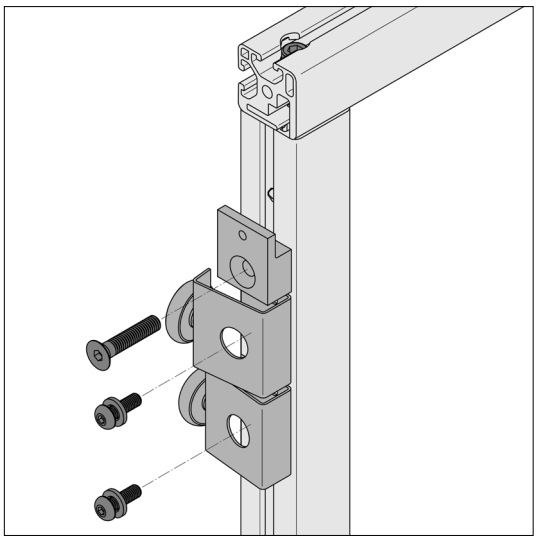
Depending on the Lifting Door Chain Reverse Units used (type VK14 or E), it will be necessary to tap the core holes of the Lifting Door Guide Profiles 8 80x80 with an M8 thread (20 mm deep).

Round off the entrance to the V-guides on the upper side of the profile to prevent damage to the pretensioned Rollers when the Lifting Door is slotted in place later.

Assemble the Lifting Door Frame.

Lifting-Door Bearing Sets and Chain Connectors or Arrester Sets are screwed to the outer sides, where the longer screw is screwed through the through hole in the vertical door frame profile to ensure the components cannot slip.



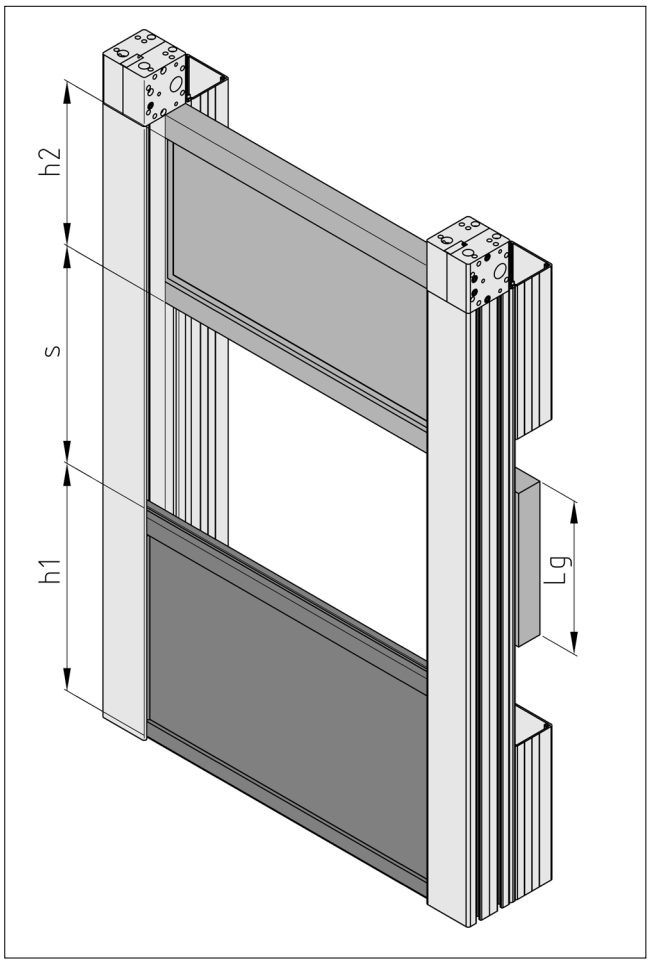


Any other additional components (e.g. handles, cut-off strips etc.) are attached to the door frame.

Calculation

Once it has been fully assembled, the door must be weighed to ensure the Counterweights are matched to the door weight.

Determining the lengths of the two Lifting Door Counterweights:
Length of one Lifting-Door Counterweight 60x40 St (L_G):
L_G [mm] = (mass of the fully assembled door) [kg] x 26 [mm/kg] - 11 [mm]



s = stroke [mm]
h1 = door frame height [mm]
h2 = residual height [mm]
LG = length of Lifting Door Counterweight [mm]

Determining the length of chain required (LK):

L_K = s + h1 / 2 + 2 x h2 - LG / 2 + X

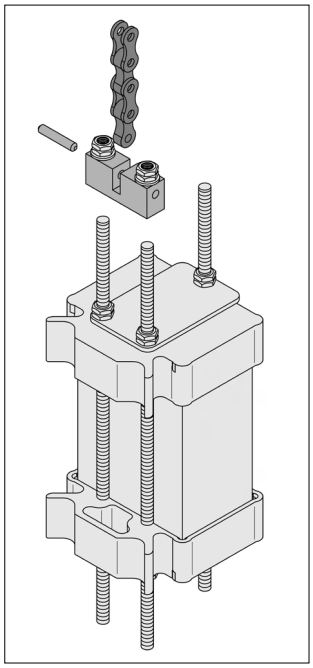
X = 165 mm if connected to Lifting Door Arrester Set c

X = 229 mm if connected to Lifting Door Chain Connector b

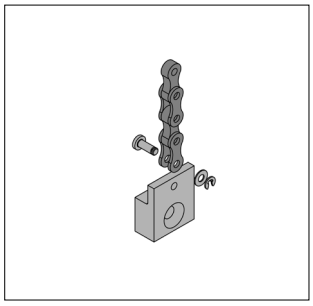
The length of the chain as calculated may have to be adapted to suit the exact conditions prevailing at the site.

The Chain has to be split in such a way that the link attached to the Lifting-Door Counterweight Guide Set a is an internal link section while that attached to the Chain Connector b or Arrester Set c consists of two outer link plates. The holes in the outer link plates must not be damaged when the chain is separated.

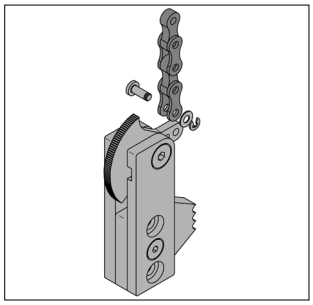
Assembly is made easier, ergonomically speaking, if the door is lying flat on the workbench with the front surface facing down.



a



b



c

Screw the machined Support Profiles 80 onto the Lifting Door Guide Profile 8 80x80.

Attach the Chain to the corresponding points on the Lifting Door Chain Connector or Lifting-Door Arrester Set, and slide the door into the Lifting Door Guide Profiles. (If the Lifting-Door Arrester Set is to be used, it is important to keep the chain taught to enable the door to be inserted).

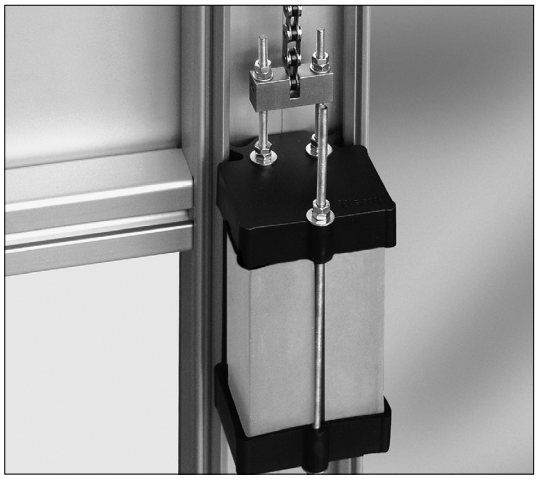
Note: If assembly is performed vertically, the door must now be fixed to prevent it falling (e.g. using a screw clamp).

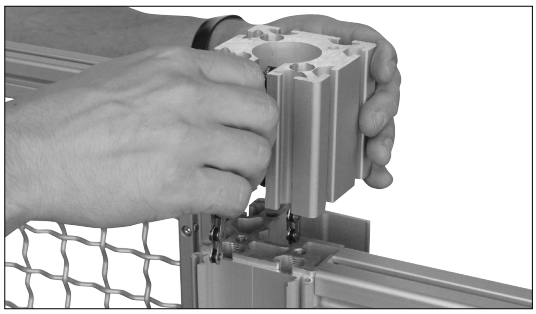
The Lifting Door Counterweight St 60x40 is connected to the Lifting-Door Counterweight Guide Set.

The threaded rods are cut to length, allowing an overlength of 128 mm longer than the Counterweights. The plastic guides are attached to the ends of the Counterweights as caps, screwed to the holding plate and threaded rods and fixed with a locknut. Allow an additional length of approx. 60 mm at both ends of the threaded rods to allow for weight compensation and changes of position.

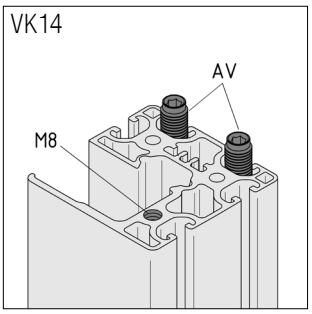
Insert the prepared counterweight sets and the attached Counterweight St into Support Profile 80 on both sides.

Note: If the Lifting Door Guide Profiles are vertical during assembly, the Counterweights will have to be clamped to prevent them falling (e.g. with a screw clamp).

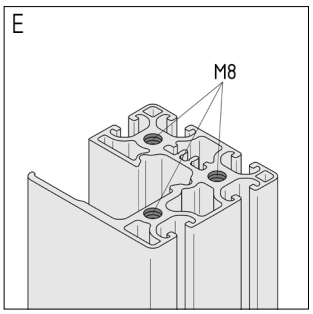




The chain is then passed through the Reverse Units, which are still loose, to the Counterweights.



Screw the Lifting Door Chain Reverse Units VK14 to the prepared Lifting Door Guide Profile, at the front, insert one M8x80 screw in the core bore of the Profile, at the rear, screw Hexagon Socket Head Crap Screws M6x90 into the grooves (with Automatic Fastening Sets 8, tapped).



If Lifting Door Chain Reverse Units E are used, attach them to the Lifting Door Guide Profile 8 80x80 using the three Hexagon Socket Head Cap Screws M8x80 supplied in the core holes (tapped to M8).

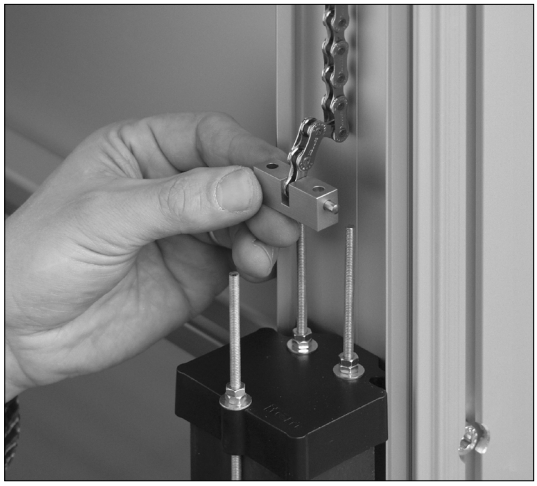
Attach the Chains to the Chain Connectors on the Lifting Door Counterweight Guide Set.

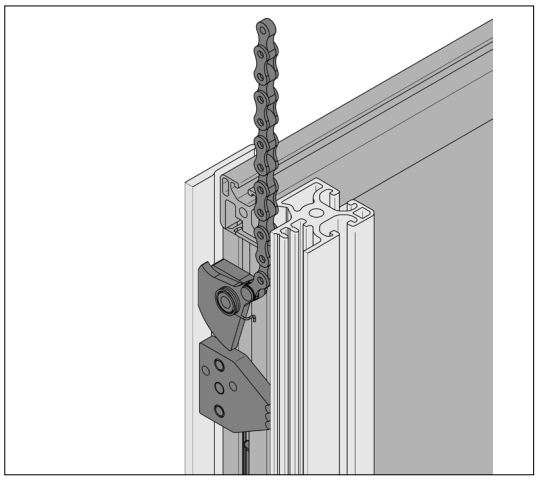
Before the Lifting Door assembly is raised and integrated in the Guard Unit, it is essential to fix the moving parts of the Lifting Door to prevent them falling (e.g. use srew clamps).

The Lifting Door can now be integrated in the Enclosure & Guard System using item system components (L-Based Adjustable Feet, Base Plates, Flat Brackets, Fastening Elements for attaching to profiles).

Test run the Lifting Door to ensure the running characteristics and clearances of the construction are correct.

The door and counterweight should be equilibrium so that the door can is held at any required position. The state of equilibrium can be adjusted accurately since the Counterweight is freely accessible from the rear of the door.





If the Arrester has triggered during assembly, it can be released by tensioning the chain again (by pushing the door up and pulling on the chain).

A Conduit Profile U 80x80 (S)E is used to close off the Counterweight Guides and protect them against inadvertent contact and tampering.

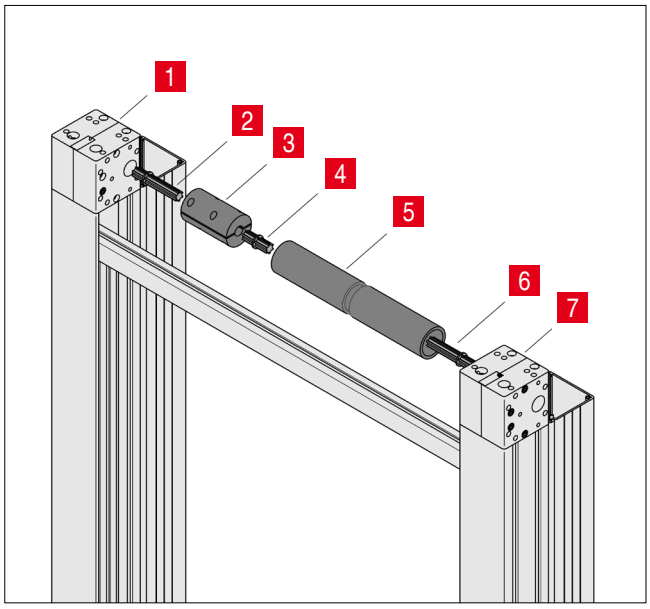
Connecting a drive motor and synchronising the lifting chains

The lifting chains can be synchronised by means of a Synchroniser Shaft between two Chain Reverse Units VK14:

1	Lifting Door Chain Reverse Unit VK14	0.0.485.18
2	Connecting Shaft VK14 R25/WG	0.0.463.15
3	Synchroniser Shaft Equaliser Coupling VK14	0.0.472.28
4	Connecting Shaft U-WG	0.0.408.21
5	Synchronising Shaft Profile VK14	0.0.463.57
6	Connecting Shaft VK14 R25/WG	0.0.463.15
7	Lifting Door Chain Reverse Unit VK14	0.0.485.18

Ensure that the Connecting Shaft VK14 R25/WG is inserted well into the Reverse Unit so that only 30 mm remains accessible for attaching to other components (the catalogue recommends 40 mm). However, this amount is sufficient since the torque to be transmitted is relatively low.

Note:
Synchronising the lifting chains can result in a slight delay in the release of the Lifting Door gravity brake.



Connecting a drive motor

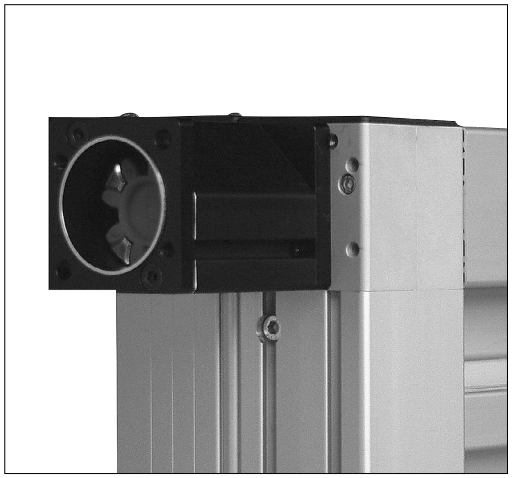
Electrical motors are connected using mechanical Drive Elements via the Lifting Door Chain Reverse Unit VK14. This Unit is supplied ex works with the required Connection Processing.

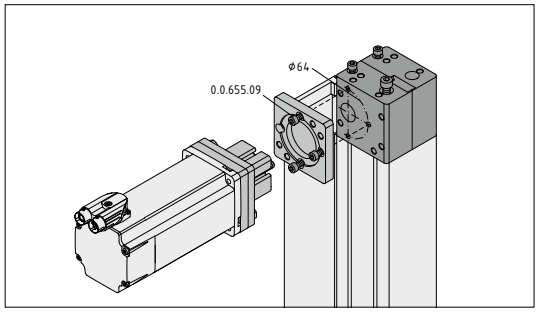
To connect a motor, the following system components will be required:

- Coupling Housing 8 D30 80x80 (0.0.628.95) or
  Coupling Housing 8 D55 80x80 (0.0.628.97)
  (Coupling Adapter Plates D30/D55 Universal 80x80 machined to suit the connection geometry of the motor flange)
- Coupling D30 (0.0.628.83) or Coupling D55 (0.0.628.84)
- Shaft Section VK14 (0.0.337.05)
- 3x Hexagon Socket Head Cap Screw M6x16 (0.0.655.09) for connecting Lifting-Door Chain Reverse Unit VK14 to Coupling Housing 8 D30 80x80 (0.0.628.95) or 8 D55 80x80 (0.0.628.97)

If a motor is used, we recommend synchronising the Chains with a Synchroniser Shaft. The motor can be attached to any of the Reverse Units on the Lifting Door and can face inwards or outwards.

If the motor is to drive the Lifting Door from below, it will be necessary to fit an“endless“ chain to the Lifting Door at least on one side. If the motor is fitted with a suitable brake, the Counterweights can be discarded.





Notes

Customers are reminded that it is necessary to observe regulations relating to minimum spacing and distances between the Lifting Door and other components in the machine installation.
When designing the installation, bear in mind that there may be regulations governing the kind of panel elements used (e.g. with regard to impact resistance).
In order not to compromise the equilibrium state of the door and the Counterweight itself, ensure the counterweight is adjusted to compensate for any components added to the Lifting Door.
The Lifting Door must be exactly aligned both vertically and horizontally.

Subsequent machining of the Lifting Door Guide Profile 8 80x80 is only allowed if steps are taken to prevent chips and swarf finding their way into the functional components or guide tracks of the Profile. When attaching additional Profiles and modules, use only non-machining fastening technology (e.g. Universal Fastening Set or Angle Brackets).

Maintenance

The lifting door system is generally suitable for use in dry rooms and in the temperature range from -20 °C to + 70 °C. The information of the maintenance instruction is largely based on test results at 20 °C temperature.

Deviating or strongly fluctuating ambient temperatures can make more frequent maintenance intervals necessary.

The frequency of maintenance is the responsibility of the operator of the lifting door. In the case of special operating conditions, e.g. special installation application, dust, a short stroke, Influence of solvents etc. the maintenance intervals must also be adapted to the application.

The information does not release the user from carrying out his own assessments and tests. It should be noted that our products are subject to a natural process of wear and aging. If there are excessive running noise of the chain, the Lifting door chain reversers, the counterweights or the lifting door bearing sets, a check of the components and a possible exchange by specialist staff is essential in the interests of safety.

1. Lifting door bearing kit

The spring-loaded rollers of the guide are maintenance-free. If the lifting door is well balanced and set up vertically, the lifting door bearing sets only carries a compensating force component.

The lifting door bearing set was subjected to maximum loads in an endurance test under ideal ambient conditions. After 20000m the test was stopped without significant wear. Depending on the operating conditions, we recommend every 20000m or every 6 months a visual inspection of the bearing sets and if necessary their replacement.

To ensure the trouble-free operation of a chain drive, inspection and maintenance work must be done at regular intervals on the chain and chain reverse units:

2. Lubrication

The chain must be lubricated after the installation is complete. In principle, oil and grease lubrication are possible, depending on the circumferential speed of the chain in the chain reverse units, the environmental requirements and the expected loads. The lubrication must be checked regularly depending on the use of the chain. A dry run is absolutely to avoid.

3. Chain tension and Chain play

This information is only valid if the chain-system is closed. In the case of a closed, revolving chain system, the chain must be free of play and without tension. That can be controlled and adjusted via the lifting door counterweight guide set. After a running-in period of about 100 hours the chain tension must be checked. The chain play and tension should be controlled and corrected at regular intervals, e.g. after the lubrication.

4. Chain elongation and wear

Long-term use will stretch the chain and wear away the joint surfaces through friction. When a total elongation of 3% is reached, the chain is worn and must be replaced. The drive and reverse units must also be checked for wear when changing the chain. Washouts of the tooth contour are visible hints on the necessary replacement of these components as well. After a running-in period of about 100 hours the chain elongation should be checked, then the elongation of the chain should be checked at regular intervals, e.g. after the lubrication.

Ideal operating conditions:

Ambient temperature: 10 °C ... 40 °C

Humidity between 40% - 60%

No aggressive media

No vibrations

Disposal

The product can be recycled or re-used (after any necessary refurbishment and replacement of parts). The use of appropriate materials and easy dismantling ensure the product can be recycled.

Improper disposal can pollute the environment.

You should therefore dispose of the Lifting door in full accordance with the laws of your country.

Transport packaging: Dispose of the packaging using the return and collection systems that are available to you.

Product development and documentation

A process of continuous product development ensures that products from item Industrietechnik GmbH always exhibit a high standard of innovation. Consequently, there could be inconsistencies between these operating instructions and the product you have acquired. item Industrietechnik GmbH can also not exclude the possibility of errors.

We therefore ask for your understanding that the information, illustrations and descriptions provided here cannot constitute an entitlement to any claims. You can find the latest version of these operating instructions at item24.com.

item

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