



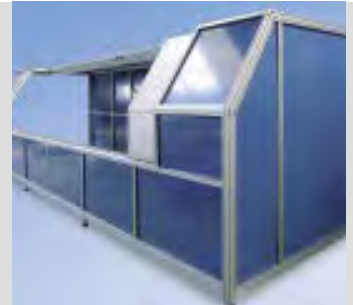
mk Factory Equipment

Introducing mk



*„We live our passion for technology –
that shapes us for over 40 years“*

Maschinenbau Kitz GmbH, was founded in 1966 and is headquartered in Troisdorf, near Bonn, Germany and operates internationally together with its subsidiaries and sales partners as the “mk Technology Group”. mk is the leading supplier of mechanical modules and components for profile, conveyor and linear technology, as well as factory equip-



ment. In addition, we are at our customers' side from the project planning and design phase, to implementation, commissioning and maintenance of complete transfer systems. The base for the mk modular system is our variety of 250 different aluminium profiles and comprehensive assembly and excessively components. The resulting benefits are considerable

cost savings during the installation of systems as well as a high degree of flexibility for extensions and reconstructions. Our most important target sectors include the machine construction, as well as the automotive, electrical, packaging, pharmaceutical, and food industries.

One construction kit – many options



Base Technology



Profile Technology



Conveyor Technology



Linear Motion



Factory Equipment

Advantages of the mk modular system

- Everything comes from one source: interchangeable modules and components for profile, conveyor and linear technology, as well as factory equipment
- Outsourcing of various project functions at a fixed price helps integrators to minimize their project costs and risks
- Coverage of all basic mechanical functions for modern factory automation
- The widest profile range on the market reduces the need for specialized design and therefore provides a cost benefit due to standardization
- High material quality, solid connecting technology and high-quality accessories guarantee high loading capacity and long service life
- The highest flexibility for system extensions or alterations due to the reusability of individual components and modules
- The degree of assembly of our products can be freely selected, guaranteeing optimum adaptation to the existing utilization of resources at all times
- The modular construction is subject to constant optimization and extension because mk itself uses it daily for the preparation of customer-specific solutions

Our Factory Equipment Products



Guarding

With guarding from mk, you are opting for a flexible and economic modular design. Choose from a large assortment of guarding modules, swinging door, sliding door and lift door elements that can be electrically secured on request. Pneumatic, hydraulic or electrically operated door elements can be easily integrated. mk allows you to design distance guarding that conforms to the applicable safety standards.

→ page 6



Workstations

The mk system makes it easy to custom design workstations in the workshop and in the assembly and office areas. Maximize the functionality and ergonomics of your workstations while remaining flexible and economical. The mk profile technology allows you to easily and cost-effectively design workstations based on your needs thanks to the modular design.

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GTP (Guard Rails, Treads, Platforms)

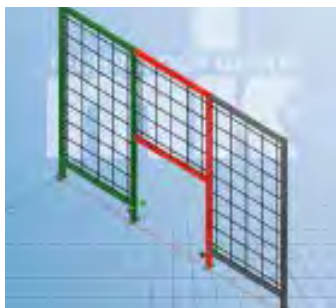
Safe access and platforms for your plant can be easily built with the mk GTP-System. Based on the proven mk profile technology, dimensionally accurate individual solutions for access, transitions or even work platforms can also be set up. Our guardrails, tracts, and platforms are compliant with the current occupational health and safety regulations.

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mk Guarding

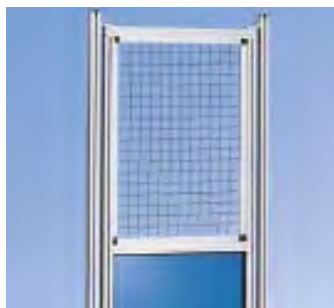


Contents Guarding



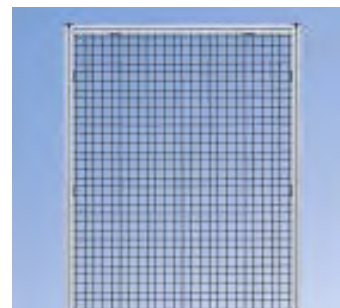
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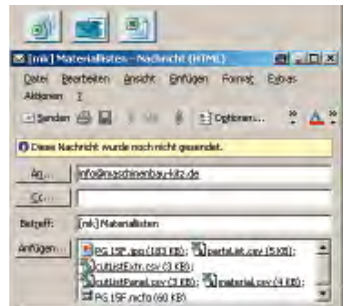
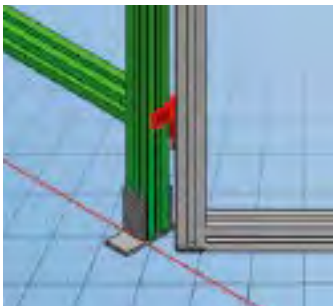
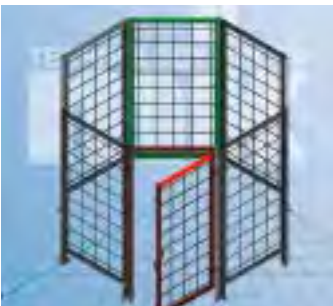
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mk QuickDesigner – our 3D product configurator

mk QuickDesigner – our 3D product configurator



Functions and Advantages



- Reduction in development and engineering time
- Large variety of paneling, window and door options
- Standardized components reduce costs
- No CAD software or CAD skills required
- Design with intuitive user guidance in three dimensional space
- Automatic creation and dimensioning of 2D and 3D drawings
- Import .dxf layouts
- IGES, STEP and JPEG export formats
- Automatic generation of parts lists, cut lists, bill of materials lists and weight estimates
- Direct design verification and modification via e-mail
- Degree of assembly freely selectable (raw materials, kit, assembled)
- Variable angles in combination with posts and fields for angle ranges from 0° to 135°
- Automated control of the floor mounting brackets
- Full or half floor mounting brackets and end caps can be manually selected and combined
- Post-panel method: Optional end caps allow for quick disassembly by straight connecting plates
- Update of the design and development status for models, parts lists and component limits

Safety Distances

Safety distance for 1400 mm tall partition

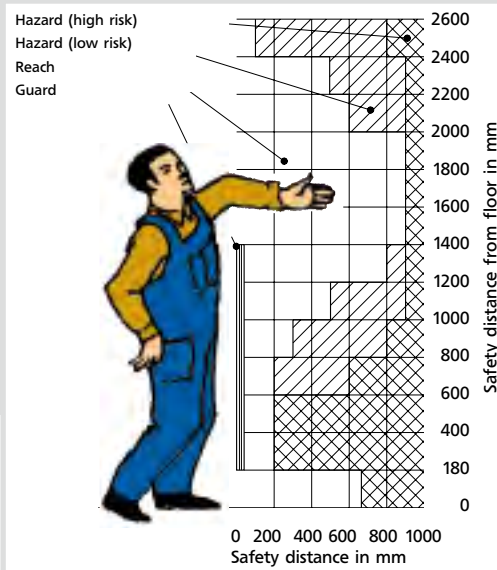


Figure a

Safety distance for 2000 mm tall partition

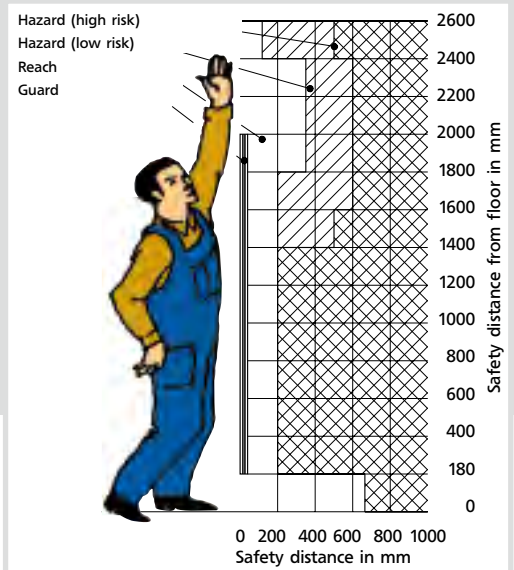


Figure b

Safety through mk Guarding

Effectively safeguard your plant with mk guarding systems. Choose from a wide range of guarding components and build barriers which are precisely matched to your individual spatial circumstances as well as the required safety distances of your plant. In this way you prevent employees or visitors from entering hazard zones or falling equipment, tools or workpieces from causing serious accidents.

All mk guarding is designed and produced taking into account the country-specific relevant safety standards. So that you are always on the safe side!

Safety Distances

Fixed safety distances are specified by local ordinances to effectively protect employees. Depending on the required safe distance, choose between closed paneling such as sheet metal, polycarbonate or glass (required safety distance = 0 mm) and open welded or corrugated fencing solutions (required safety distance with an opening of 40 x 40 mm = 200 mm). Guarding components with the standard frame heights 1400 mm and 2000 mm are available depending on the nature of the equipment or area to be protected (see Fig. a and b).

Configuring guarding



Apart from the ability to individually design guarding, mk also offers two different standards which are fully compatible with each other.

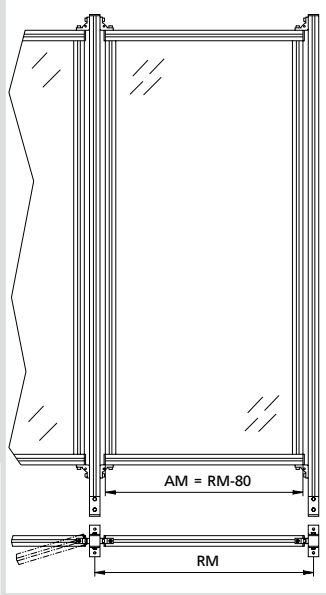
The post-panel solution is characterized by separate panel frames which are each mounted between posts anchored in the ground. In the panel solution, the posts with the panel infill form a unit and are erected next to each other, are connected and anchored in the ground.

The various solutions are based on the same base dimensions. This ensures continuous compatibility and modularity. In the

post-panel solution the base dimension extends from post centerline to post centerline and in the panel solution the base dimension refers to each frame's outer dimensions.

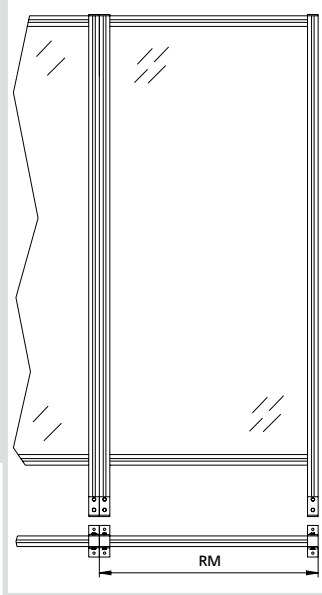
The default floor clearance of both systems is 180 mm, which enables easy floor cleaning with no critical safety or security issues. The favorable weight/strength ratio of the profile structure provides an ergonomically advantageous effect when it comes to handling and assembling the individual elements.

System selection



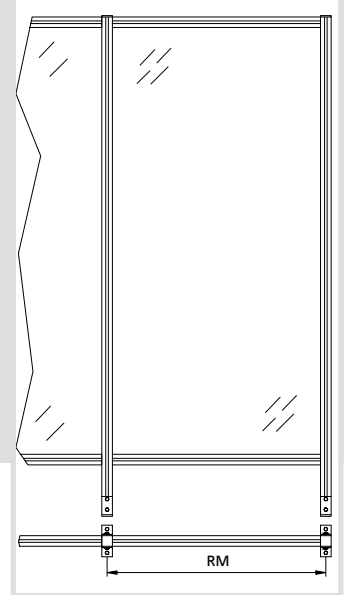
Post-Panel Method

Basically, this system is intended for large plants that must be accessed multiple times for maintenance purposes and from various locations; and entry must be simple and quick. Angles are used for the installation. This makes it simple and flexible; furthermore, the brackets are available in a variety of angular settings. When disassembling partitions for maintenance purposes, our captive retention system, which is compliant with the Machinery Directive, should be used.



Partition Method

Because of their standard right-angle connections, the Partition style of guarding is ideal for long straight or rectangular perimeter guards. As such the partitions can be installed flush together with little effort. The compatibility with Panel-Post guards and the modularity and versatility of the individual guarding components enable the layout and manufacture of almost any guarding requirement. The connecting plates feature protrusions which lock the panels in place.



Custom Solutions

Although custom solutions for perimeter guarding provide savings due to lower material cost, there is often a significant assembly component which should not be overlooked. Custom, i.e. machine specific guards are possible on request. Many examples of custom guards can also be found in the mk Profile Technology System catalog.

Configuring guarding

Assembly Details

Panel Connection with Angles

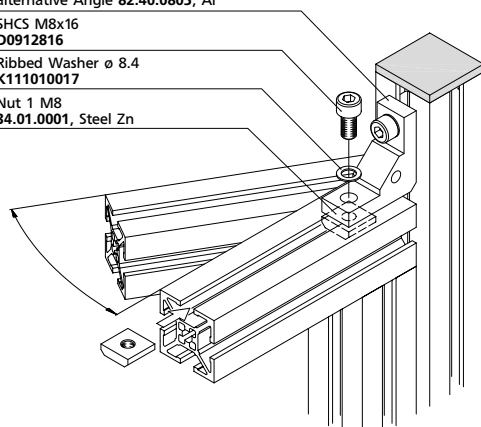
The panel connection with angles offers the highest stability with minimal labor. By loosening only four screws, the entire panel can be removed if necessary. Panels may be rotated up to $\pm 90^\circ$. The connection shown below is standard for the Post-Panel style of guards.

Angle B20/40 82.05.0026, Al
alternative Angle 82.40.0805, Al

SHCS M8x16
D0912816

Ribbed Washer \varnothing 8.4
K111010017

Nut 1 M8
34.01.0001, Steel Zn



Panel connection with captive fastening system

When using the fastening system, quick installation and disassembly of the panels is guaranteed, complying with the Machinery Directive.

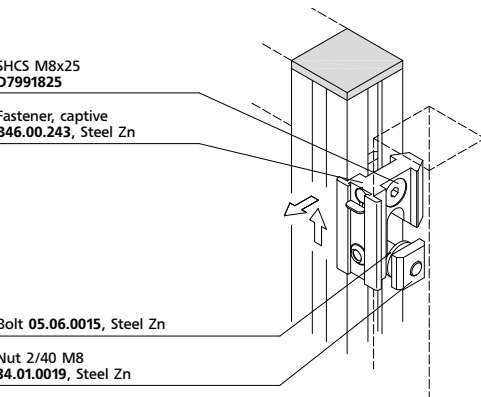
Further information see page 19

SHCS M8x25
D7991825

Fastener, captive
B46.00.243, Steel Zn

Bolt 05.06.0015, Steel Zn

Nut 2/40 M8
34.01.0019, Steel Zn



Floor mounting bracket

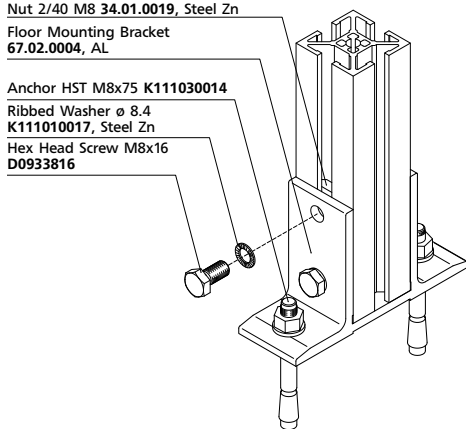
Use a M8 nut and place it into the groove of the panels or posts between the floor mounting bracket 67.02.0004, it is then tightened firmly and anchored into the ground. Using the floor mounting bracket, uneven surfaces and floor height variations up to 10 mm can be compensated.

Nut 2/40 M8 34.01.0019, Steel Zn
Floor Mounting Bracket
67.02.0004, AL

Anchor HST M8x75 K111030014

Ribbed Washer \varnothing 8.4
K111010017, Steel Zn

Hex Head Screw M8x16
D0933816

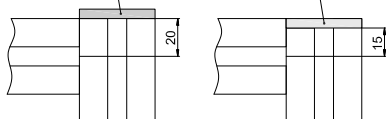


Installation of end caps

The end caps are used to cover the sharp cutting edges on the profile front.

End Cap mk 2507SI, silver-gray

End Cap mk 2507, black



Assembly Details

Rectangular connection of panels

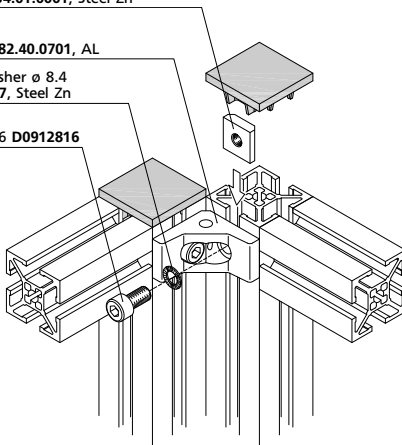
Using angles ensures a very sturdy, quick to install, and movable profile connection. Furthermore, angles also allow the connection of profiles from a variety of series.

Nut 1 M8 34.01.0001, Steel Zn

Angle E25 82.40.0701, AL

Ribbed Washer ø 8.4
K111010017, Steel Zn

SHCS M8x16 D0912816



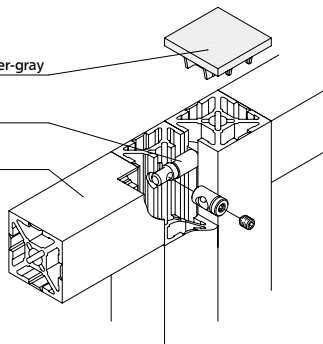
Parallel connection of panels

In order to install the parallel connector, an additional bore (offset by 90°) must be drilled. A second connector prevents torsion. The compression ball (sphere with spring) locks the connector in the groove, which makes the vertical installation very easy. As a rule of thumb, a connector should be installed every 1,000 mm.

End Cap mk 2507SI, silver-gray

Parallel Connector
B51.03.042, Steel Zn

Profile mk 2040.96



T-connection of panels

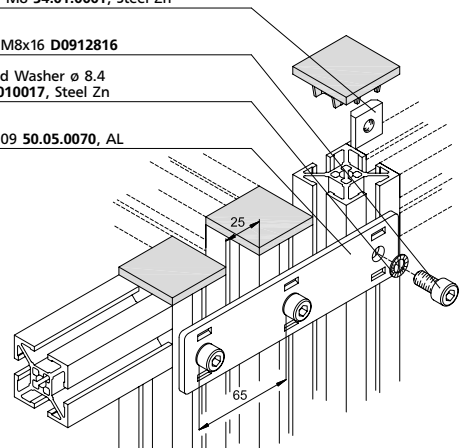
The connection plates feature protrusions. This guarantees the precise alignment of the panels. M8 screws are used to fasten the connecting plates.

Nut 1 M8 34.01.0001, Steel Zn

SHCS M8x16 D0912816

Ribbed Washer ø 8.4
K111010017, Steel Zn

Plate 09 50.05.0070, AL



Joining with connecting plates

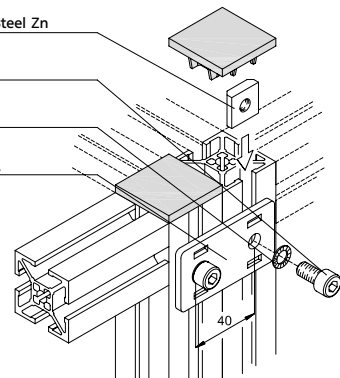
The connecting plate may be used as angle as well as parallel connection. The connection plates feature protrusions. This guarantees the precise alignment of the panels. Two connecting plates are provided for each panel connection; both are fastened using two M8 screws.

Nut 1 M8 34.01.0001, Steel Zn

SHCS M8x16 D0912816

Ribbed Washer ø 8.4
K111010017, Steel Zn

Plate 05 50.05.0053, AL



Configuring guarding

Assembly Details

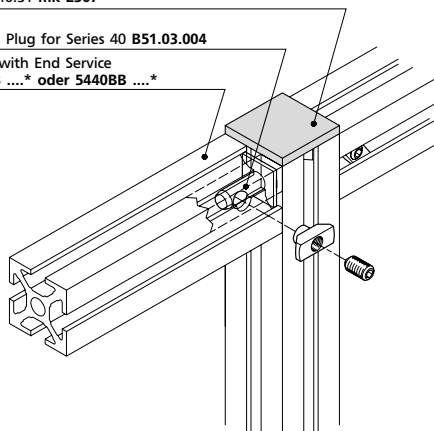
Internal Fastener Series 40

If some grooves should remain open for accommodating other panels later, tension plugs are perfectly suited for the assembly of profiles. This connection method requires an access hole which is drilled with the help of the Drill Fixture shown on page 15, and can be accomplished by the customer using a normal power drill. Profiles can also be supplied pre-drilled by mk.

End Cap for Profile mk 2040.01, mk 2040.40 and 2040.31 mk 2507

Tension Plug for Series 40 B51.03.004

Profile with End Service
5401BB* oder 5440BB*

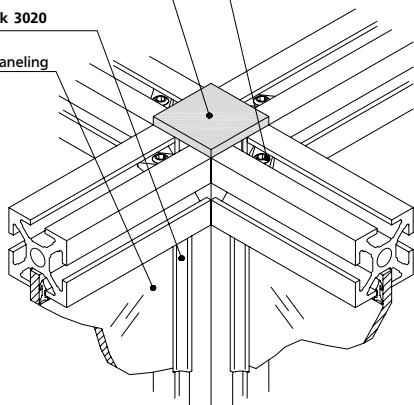


Tension Plug for Series 40
B51.03.004

End Cap for Profile mk 2040.01, mk 2040.40 and 2040.31 mk 2507

Seal strip mk 3020

ex. 6 mm paneling

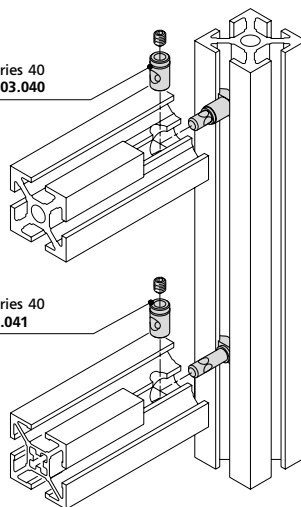


Internal Fastener Series 40/1

Especially for using panelling, because all internal slots remain available. The pressure piece (ball with spring) locks the tension plug in the groove, which makes the vertical installation very easy.

Tension Plug for Series 40
(normal+light) B51.03.040

Tension Plug for Series 40
(extra light) B51.03.041



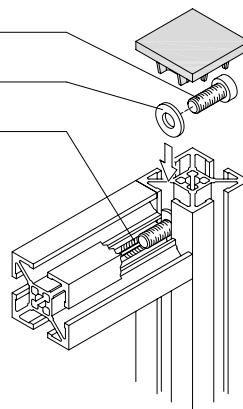
Economy Fastener Series 40 light

This connection requires an M8 thread or threaded insert in the profile that is to be attached, and a $\varnothing 9$ mm access hole at the connection position in the other profile.

SHCS M8x20
D6912820

Spring Washer $\varnothing 8.4$
D67968, Steel Zn

5431AB* M8
thread formed in Profile



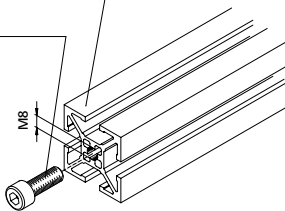
Assembly Details

Profile Services

As a standard for Profile Series 40, mk uses a Metric M8 thread for the Economy Fastener. Profile mk 2040.31 features a $\varnothing 7.4$ mm center hole, which allows two fastening methods. When using standard M8 screws, an M8 thread must be formed (Note that thread forming is not the same as tapping). If using self-tapping screws, no services are required.

Profile mk 2040.31

SHCS M8



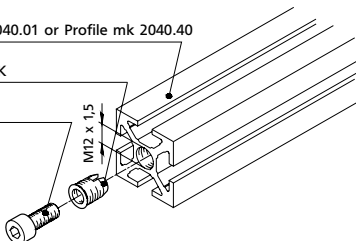
Profile Services using a threaded insert

Profiles mk 2040.40 and mk 2040.01 are normally used with an M8 threaded insert, whereby the $\varnothing 10$ mm center hole first requires an M12x1.5 tap. The threaded insert significantly increases the thread strength. To install the threaded insert use Insert Tool K902010012.

p.ex. Profile mk 2040.01 or Profile mk 2040.40

Insert
K112030008, 9S20K

SHCS M8



Drill Fixture $\varnothing 9$

This Drill Fixture is used to locate the $\varnothing 9$ mm access hole required for the Economy Fastener. A detent ensures the correct 20 mm center distance from the end of the profile. This detent can also be pushed in for access holes required at other locations.

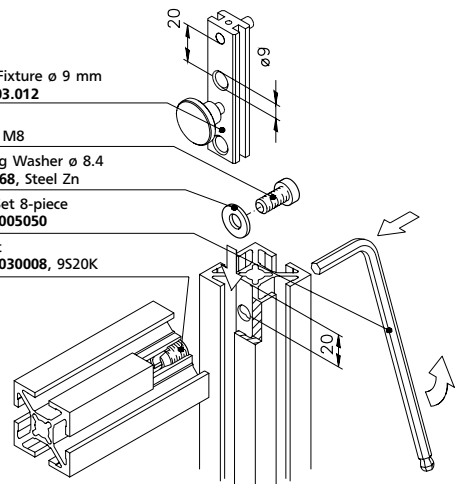
Drill Fixture $\varnothing 9$ mm
B51.03.012

SHCS M8

Spring Washer $\varnothing 8.4$
D67968, Steel Zn

Key Set 8-piece
K902005050

Insert
K112030008, 9S20K

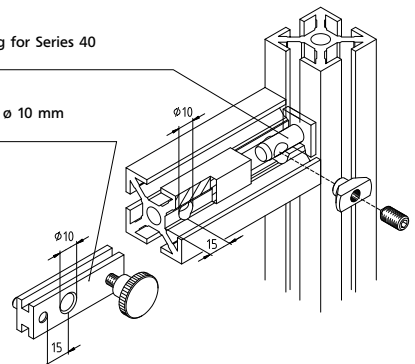


Drill Fixture $\varnothing 10$

This Drill Fixture serves to locate the required $\varnothing 10$ mm hole when using Tension Plug B51.03.004, B51.03.040 and B51.03.041. A detent provides the required 15 mm offset between the center of the hole and the end of the profile.

Tension Plug for Series 40
B51.03.004

Drill Fixture $\varnothing 10$ mm
B51.03.005

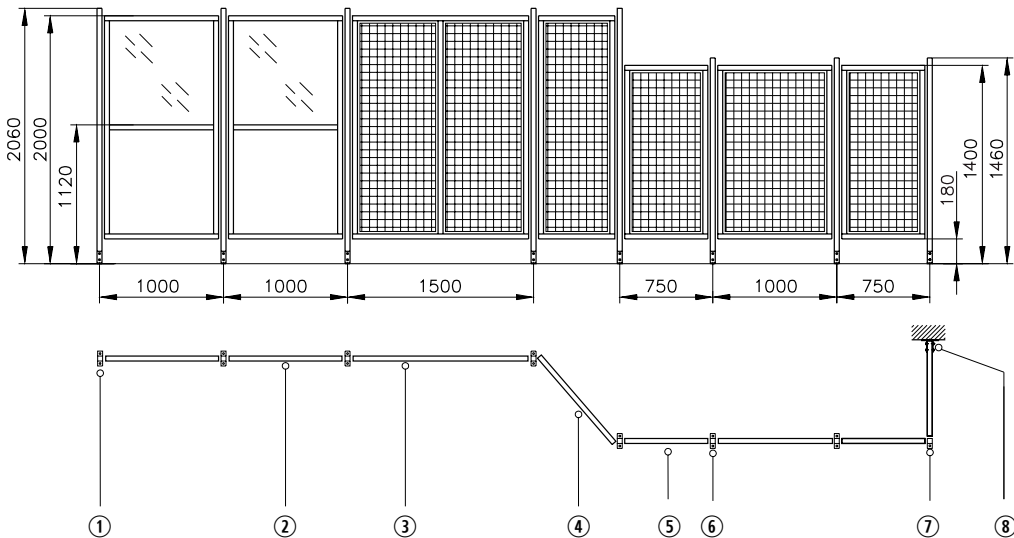


Guarding

Post-Panel Method

Post

Depicted here is an example of the many possibilities when standard elements such as Posts, Panels and various paneling materials, or Fillers, are combined. The standard heights are fixed at 2060 and 1460 mm. These reference dimensions and the standard heights can also be modified to customer specific requirements.



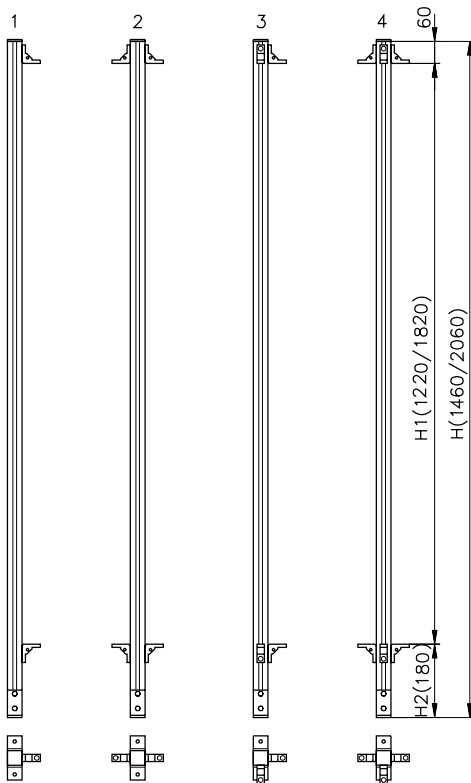
- ① Post 1
- ② Panel with horiz. brace/Metal/Polycarbonate
- ③ Panel with vertical brace/Fencing
- ④ Simple Panel/Fencing

- ⑤ Simple Panel/Fencing
- ⑥ Post 2
- ⑦ Post 3
- ⑧ Wall attachment

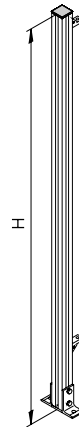
Post-Panel Method

Post

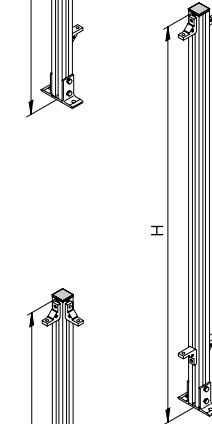
consisting of: Profile mk 2040.31, Angles B20/40 82.05.0026, Screws, Nuts, End Cap and Floor Mounting Bracket.



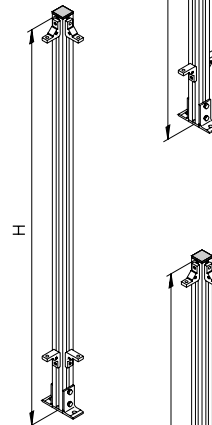
Standard H: 1460 and 2060 mm



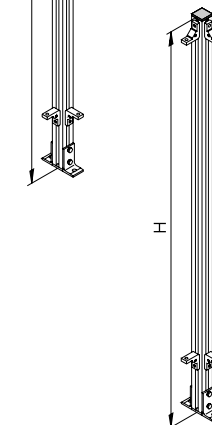
Post (no Angles)
B69.65.000 H ...
not shown



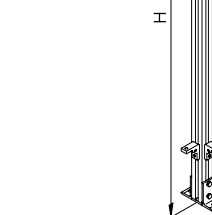
Post 1
B69.65.001 H ...



Post 2
B69.65.002 H ...



Post 3
B69.65.003 H ...




Post 4
B69.65.004 H ...

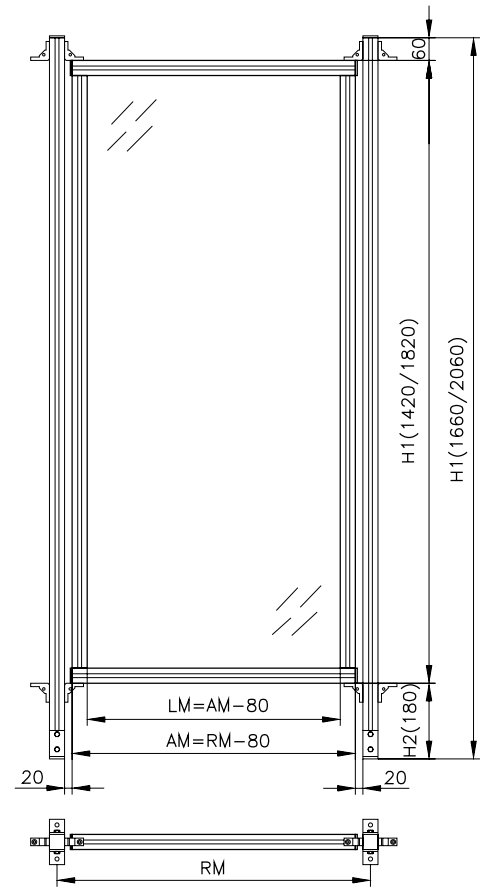
Guarding

Post-Panel Method

Panel

consisting of: Profile mk 2040.31 and Tension Plugs. The panels are attached to the angles of the posts.

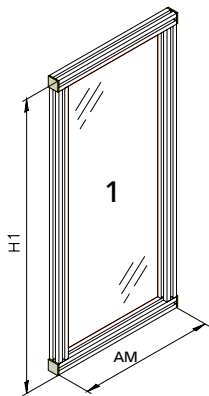
 For paneling material see page 44



LM = Light (Opening) dimension
AM = Outside dimension
RM = Reference dimension

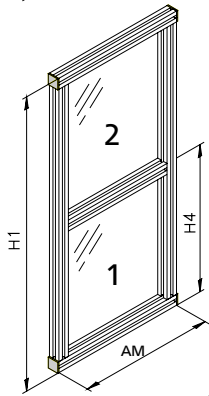
Standard H1: 1400 and 1800 mm

Panels using Profile mk 2040.31



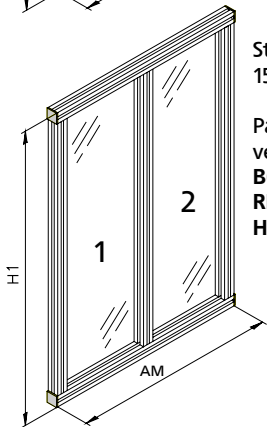
Standard RM:
500, 750, 1000,
1250 mm Fencing
max. 1000 mm

Simple Panel
B69.50.001
RM
H1



Standard RM:
500, 750, 1000,
1250, 1500, 2000 mm

Panel with
horizontal brace
B69.50.002
RM
H1




Standard RM:
1500, 2000 mm

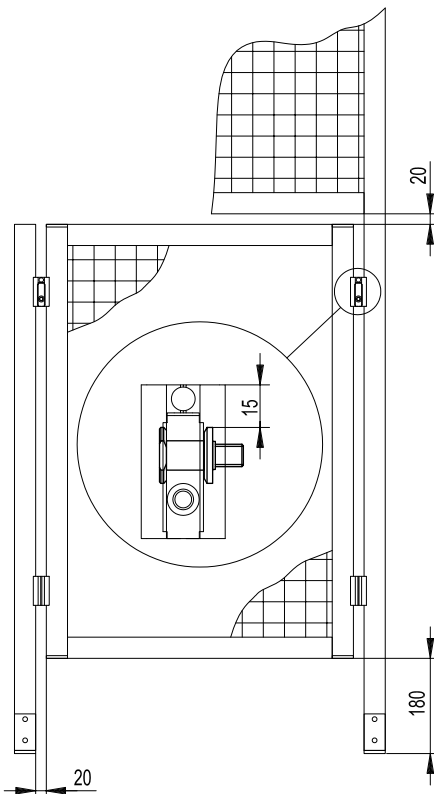
Panel with
vertical brace
B69.50.003
RM
H1

Post-Panel Method

Captive Fastening System

The mk fastening system for fixed and dividing guarding allows for the quick and easy assembly and disassembly of panels integrated in protective fences. Its solid design is its primary feature. All that is required are commercially available tools for the assembly and disassembly. Adjustments of as little as ± 1 mm are possible. It consists of three different panel blocks with various features that can be combined randomly.

 For detail parts see page 56



Various methods for fastening a panel

- Captive: 2x B46.00.243 (top) and 2x B46.00.245 (bottom)
- Lockable: 2x B46.00.244 (top) and 2x B46.00.245 (bottom)
- Without locking: 4x B46.00.245 (top and bottom)

Assembly of bolts and fasteners

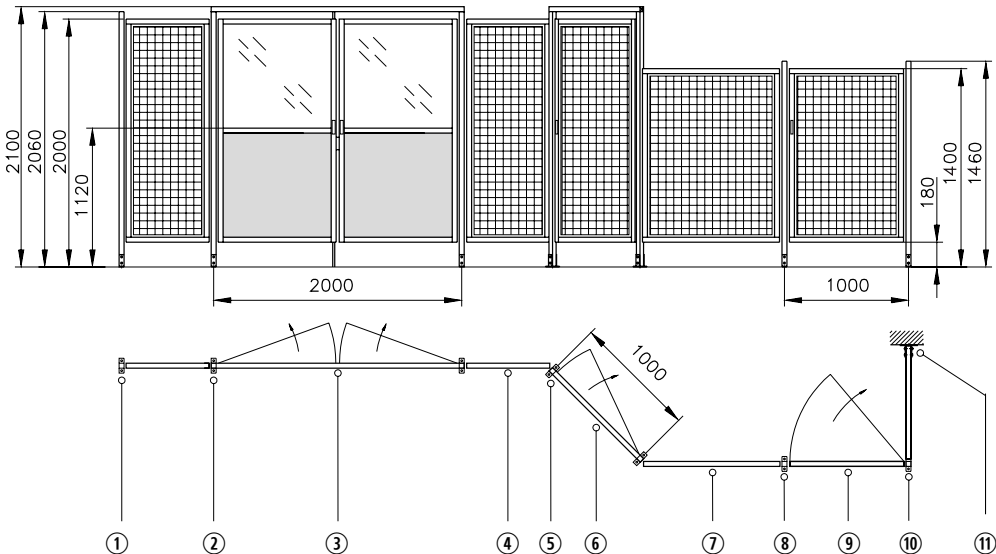
- Mount 2 catches at the top of each side of the panel to be removed. Ensure equal distances from the top.
- Use 2 bolts and nut 1 M8 and attach to the panel or post on the right- and left-hand side of the panel that must be removed. The distance from the top edge of the catch to the top edge of the bolt is 15 mm.
- As described above, tighten the 2 catches (bottom) Ensure equal distances from the top. Measure the distance between the top and bottom block.
- As described above, tighten the 2 bolts. Ensure the distance from the top bolt to the bottom bolt is identical in both cases.
- If a partition is intended to "drop out" on its own when the guarding is unlocked, the bolts must be attached to the partition and the catches must be mounted to the post.

Guarding

Post-Panel Method

Swing Doors

The modular construction method of the mk Guarding System enables a completely flexible incorporation of doors into the enclosure design. You can specify the dimensions of your door and include any of the filler materials shown on pages 50-55. The width of doors is typically dependent on their function, as well as frequency of use:
Normal use: 750 mm minimum opening.
Emergency exit: 1000 mm minimum opening.



- | | |
|---|-------------------------------|
| ① Post 1 | ⑦ Simple Panel/Fencing |
| ② Swing Door Frame | ⑧ Post 1 |
| ③ Double Swing Door/Metal/Polycarbonate | ⑨ Swing Door DIN-left/Fencing |
| ④ Simple Panel/Fencing | ⑩ Post 1 |
| ⑤ Swing Door Frame | ⑪ Wall attachment |
| ⑥ Swing Door DIN-left/Fencing | |

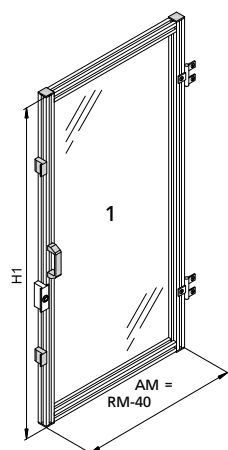
Guarding

Post-Panel Method

Single Swing Door

consisting of: Profile mk 2040.40, Tension Plugs, Door Stops, Handle, Hinges and either an external Double Bit or Cylinder Lock. Fillers can be found on pages 50-55.

Special versions available with: Latches, Cam Locks, Profile cylinders and T- or Lever Handle Locks.

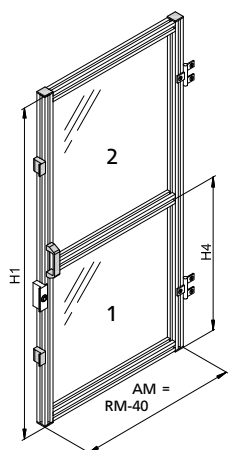


Standard RM:
750, 1000, 1250 mm
Fencing
max. 1000 mm

Single Swing Door
.....-lock

DIN-right
B69.60.001
RM
H1

DIN-left
B69.60.002
RM
H1



Standard RM:
750, 1000, 1250 mm
Single Swing Door
with horizontal brace
.....-lock


DIN-right
B69.60.003
RM
H1
H4

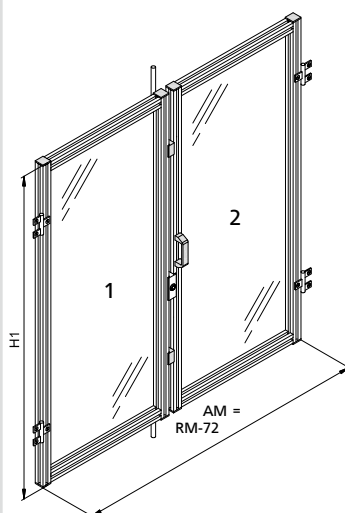
DIN-left
B69.60.004
RM
H1
H4

Standard H1: 1800 mm

Double Swing Door

Double Doors include upper and lower slide latches.

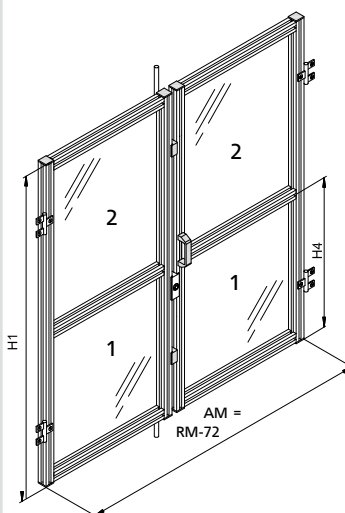
 Accessories see page 56



Standard RM:
1500, 2000 mm

Double
Swing Door
.....-lock

B69.60.005
RM
H1



Standard RM:
1500, 2000 mm

Double
Swing Door
with horizontal
brace
.....-lock

B69.60.006
RM
H1
H4

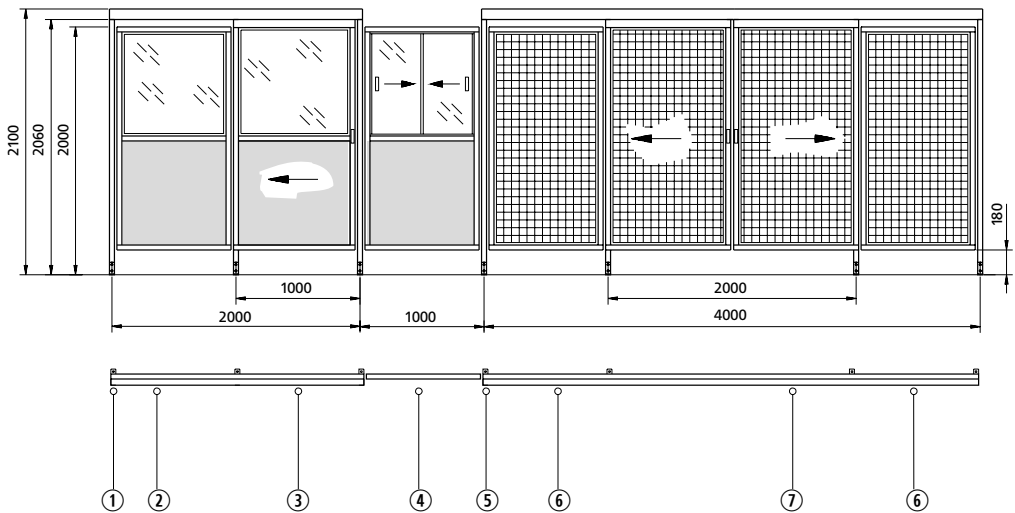
Post-Panel Method

Sliding Doors

When selecting sliding doors, two types are available:

- Sliding Doors B
- Sliding Doors C

The Sliding Door Frames can be used in combination with Sliding Door type B and C. It is also possible, through a slight redesign, to include windows or other access panels within the doors themselves.



- ① Sliding Door Frame
- ② Panel with horiz. brace/Metal/Polycarbonate
- ③ Single Sliding Door with horizontal brace/Metal/Polycarbonate
- ④ Panel with horiz. brace/Metal/Polycarbonate Slider

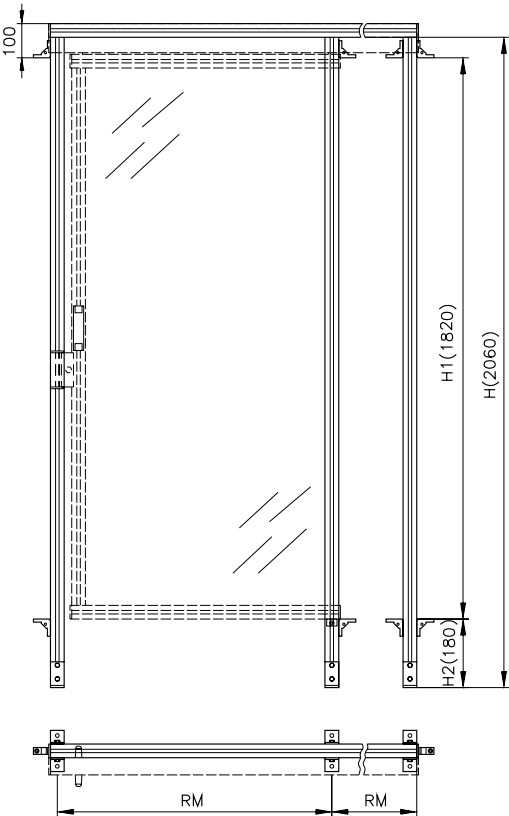
- ⑤ Sliding Door Frame
- ⑥ Simple Panel/Fencing
- ⑦ Double Sliding Door/Fencing

Guarding

Post-Panel Method

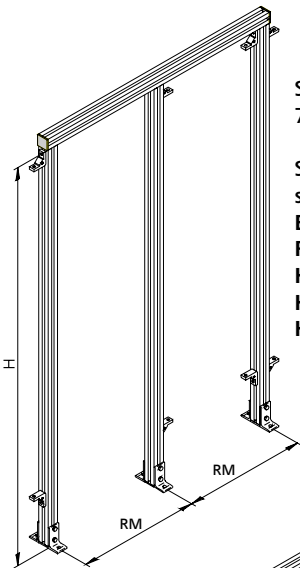
Sliding Door Frame

consisting of: Profile mk 2040.40, Tension Plugs, Angles, Screws, Nuts and Floor Mounting Baskets. The Sliding Door Frame „Single” is used for DIN-right and DIN-left sliding doors.



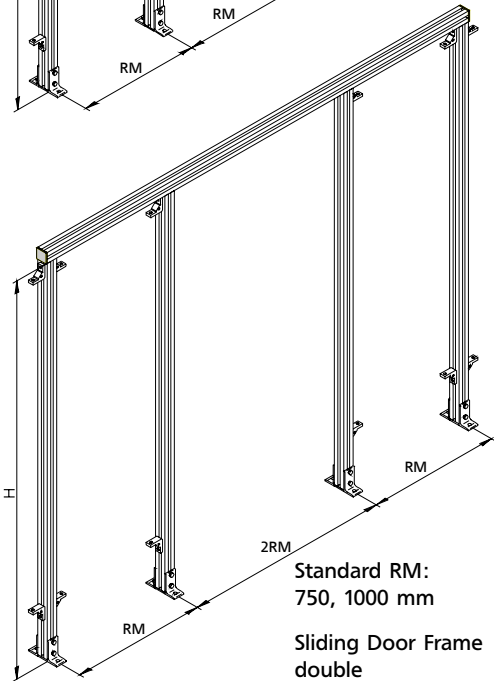
RM = Reference dimension

Standard H: 2060 mm



Standard RM:
750, 1000, 1250 mm

Sliding Door Frame
single
B69.55.003
RM
H
H1
H2

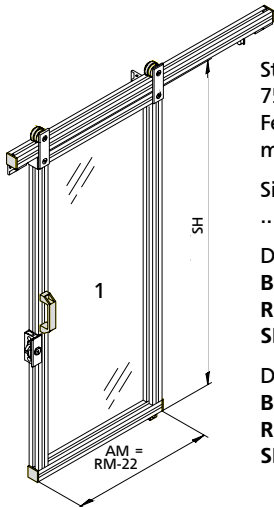


Standard RM:
750, 1000 mm

Sliding Door Frame
double
B69.55.004
RM
H
H1
H2

Post-Panel Method

Sliding Doors B

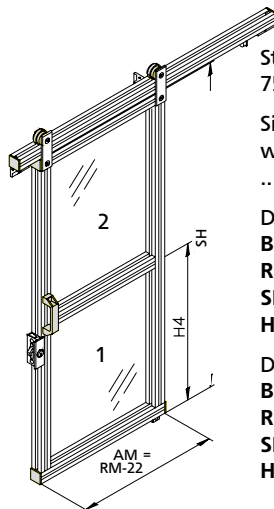


Standard RM:
750, 1000, 1250 mm
Fencing
max. 1000 mm

Single Sliding Door
.....-lock

DIN-right
B69.61.007
RM
SH

DIN-left
B69.61.008
RM
SH



Standard RM:
750, 1000, 1250 mm

Single Sliding Door
with horizontal brace
.....-lock

DIN-right
B69.61.009
RM
SH
H4

DIN-left
B69.61.010
RM
SH
H4

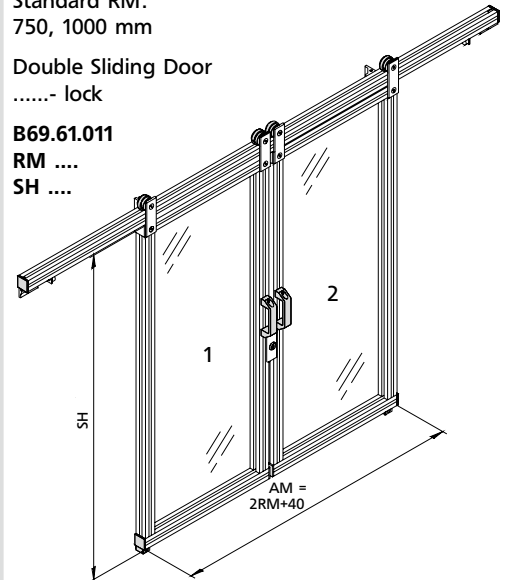
SH = Height of sliding door

If the distance between the sliding door and the floor is to correspond to the height H2 of the sliding door frame or the adjacent post, SH = H - H2 - 43 has to be selected.

Standard RM:
750, 1000 mm

Double Sliding Door
.....- lock

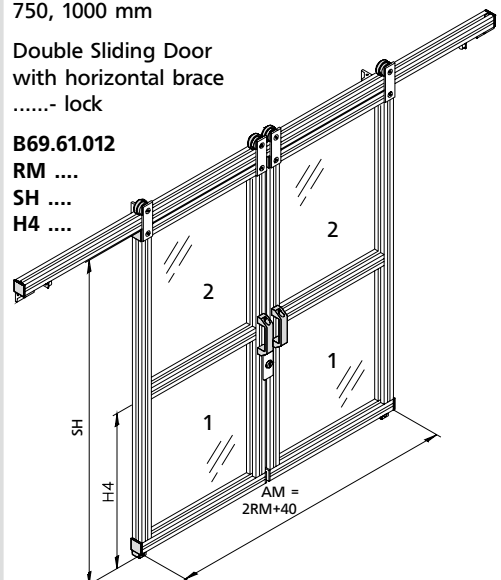
B69.61.011
RM
SH



Standard RM:
750, 1000 mm

Double Sliding Door
with horizontal brace
.....- lock

B69.61.012
RM
SH
H4




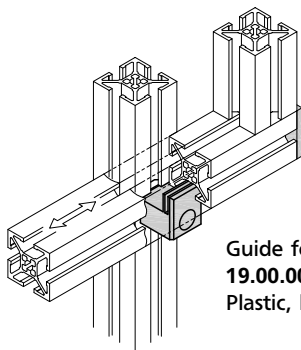
Guarding

Post-Panel Method

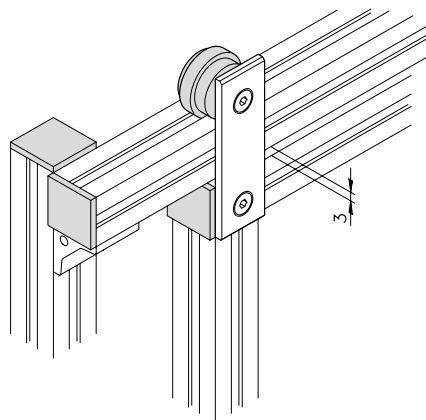
Roller Assembly Sliding Doors B

A cost-effective alternative to Sliding Doors C, the hardware for Sliding Doors B has the additional advantage of being easily assembled. The flanged Roller Assembly guides the door along the upper Profile T-slot. Once properly installed, the door is designed to be non-removable.

 Locks see page 59



Guide for Sliding Door
19.00.0005
Plastic, black

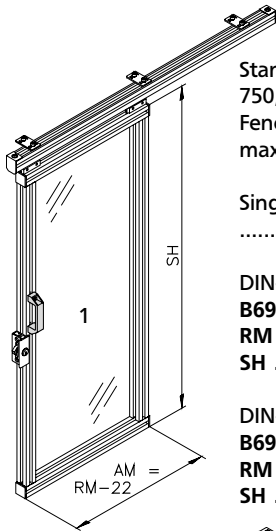


Roller Assembly **B68.11.003** for Sliding Door

consisting of: Plate, Roller, Bolt, Washer, Flanged,
Button-Head Screw and Nut

Post-Panel Method

Sliding Doors C

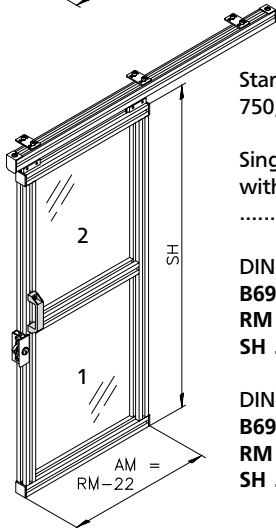


Standard RM:
750, 1000, 1250 mm
Fencing
max. 1000 mm

Single Sliding Door
.....-lock

DIN-right
B69.61.015
RM
SH

DIN-left
B69.61.016
RM
SH



Standard RM:
750, 1000, 1250 mm

Single Sliding Door
with horizontal brace
.....-lock

DIN-right
B69.61.017
RM
SH

DIN-left
B69.61.018
RM
SH

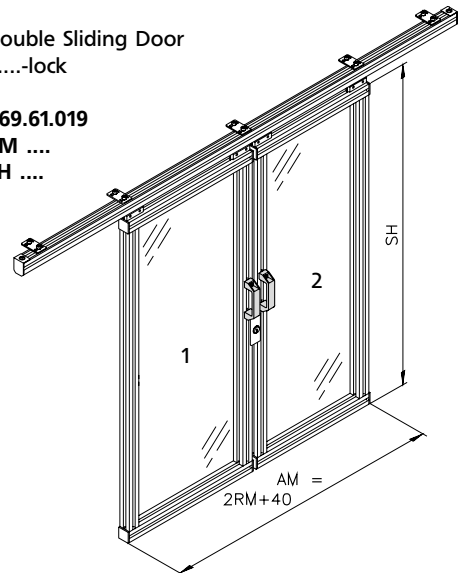
SH = Height of sliding door

If the distance between the sliding door and the floor is to correspond to the height H2 of the sliding door frame or the adjacent post, SH = H - H2 - 30 has to be selected.

Standard RM: 750, 1000 mm

Double Sliding Door
.....-lock

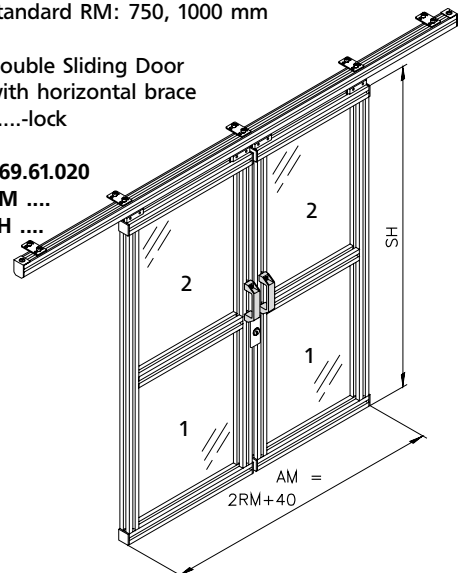
B69.61.019
RM
SH



Standard RM: 750, 1000 mm

Double Sliding Door
with horizontal brace
.....-lock

B69.61.020
RM
SH

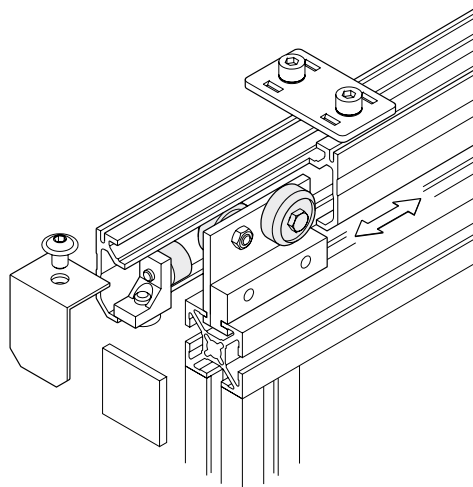


Guarding

Post-Panel Method

Roller Assembly Sliding Doors C

The C-guide consisting of Profile mk 2245 offers the advantage of a closed track. The lower guide engages the T-slot to keep the sliding door properly positionend. Maximum track length is 5100 mm.



Mounting Hardware for Sliding Doors

Single Sliding Door

B68.11.005 $L = 2 \times RM + 40$

consisting of: 1x Track, 2x Carriages,
2x Stop, 2x End Cap and Plates (number depends
on length)


Double Sliding Door

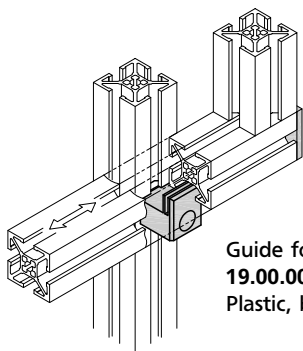
B68.11.006 $L = 4 \times RM + 40$

consisting of: 1x Track, 4x Carriages,
2x Stop, 2x End Cap and Plates (number depends
on length)

Carriage for Sliding Door

B38.00.045

 Locks see page 59




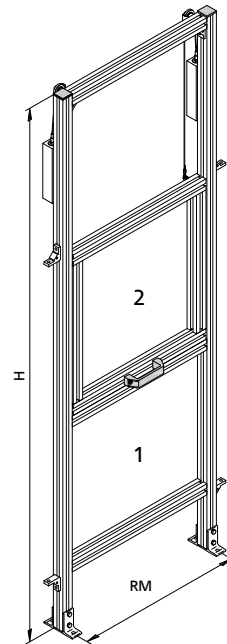
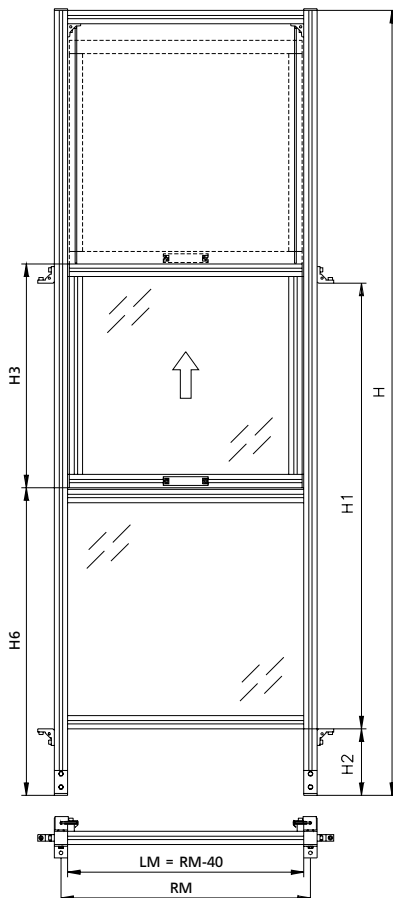
Guide for Sliding Door
19.00.0005
Plastic, black

Post-Panel Method

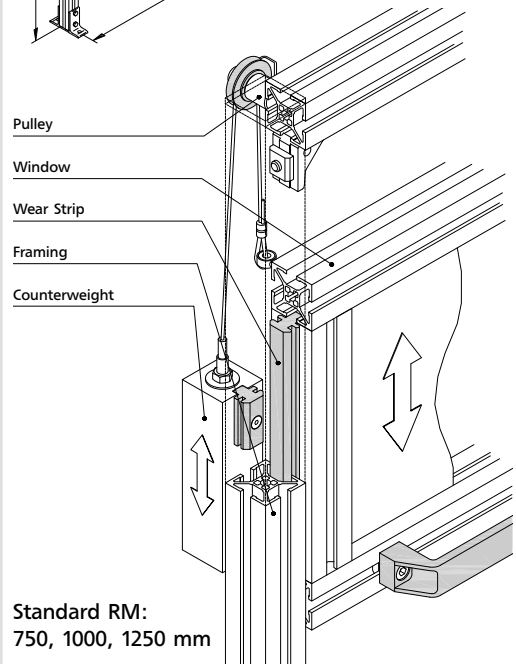
Vertical Door

consisting of: Profile mk 2040.40, Tension Plugs, Floor Mounting Brackets, Handle, Wear Strips, Pulleys and Counterweights. Manually operated – balanced using the Counterweights. Pneumatic or electromechanical operation possible on request.

 Paneling material see page 50



Vertical Door
B69.62.001
RM
H
H1
H2
H3
H6
Stroke

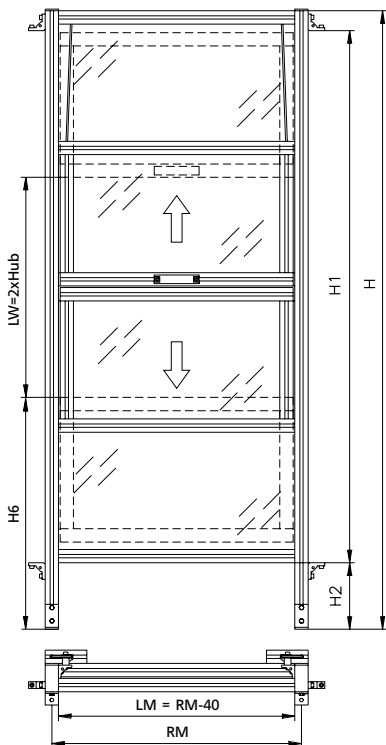


Guarding

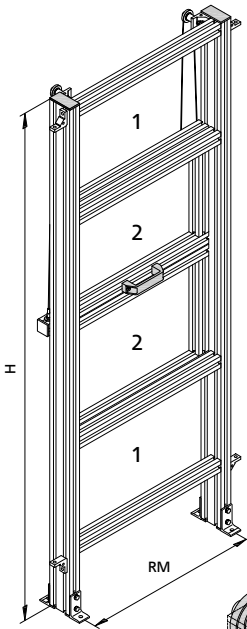
Post-Panel Method

Scissor Door

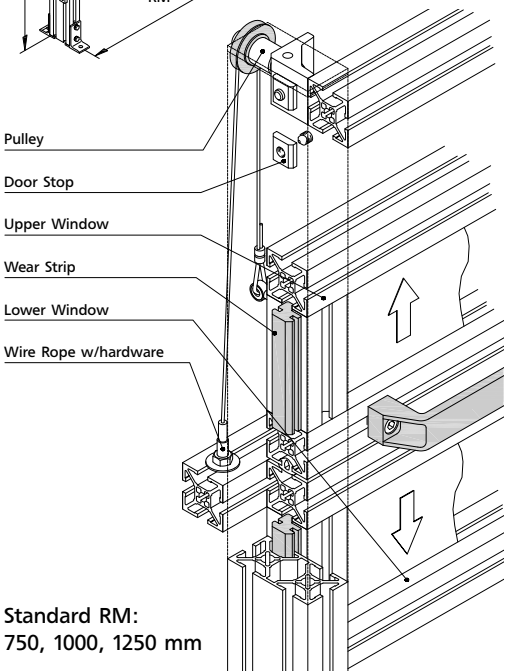
consisting of: Profile mk 2040.40, mk 2040.41, Tension Plugs, Floor Mounting Brackets, Handles, Wear Strips, Pulleys, Wire Rope and hardware. Manually operated – balanced through the scissor action of the equally weighted doors. Pneumatic or electromechanical operation possible on request.



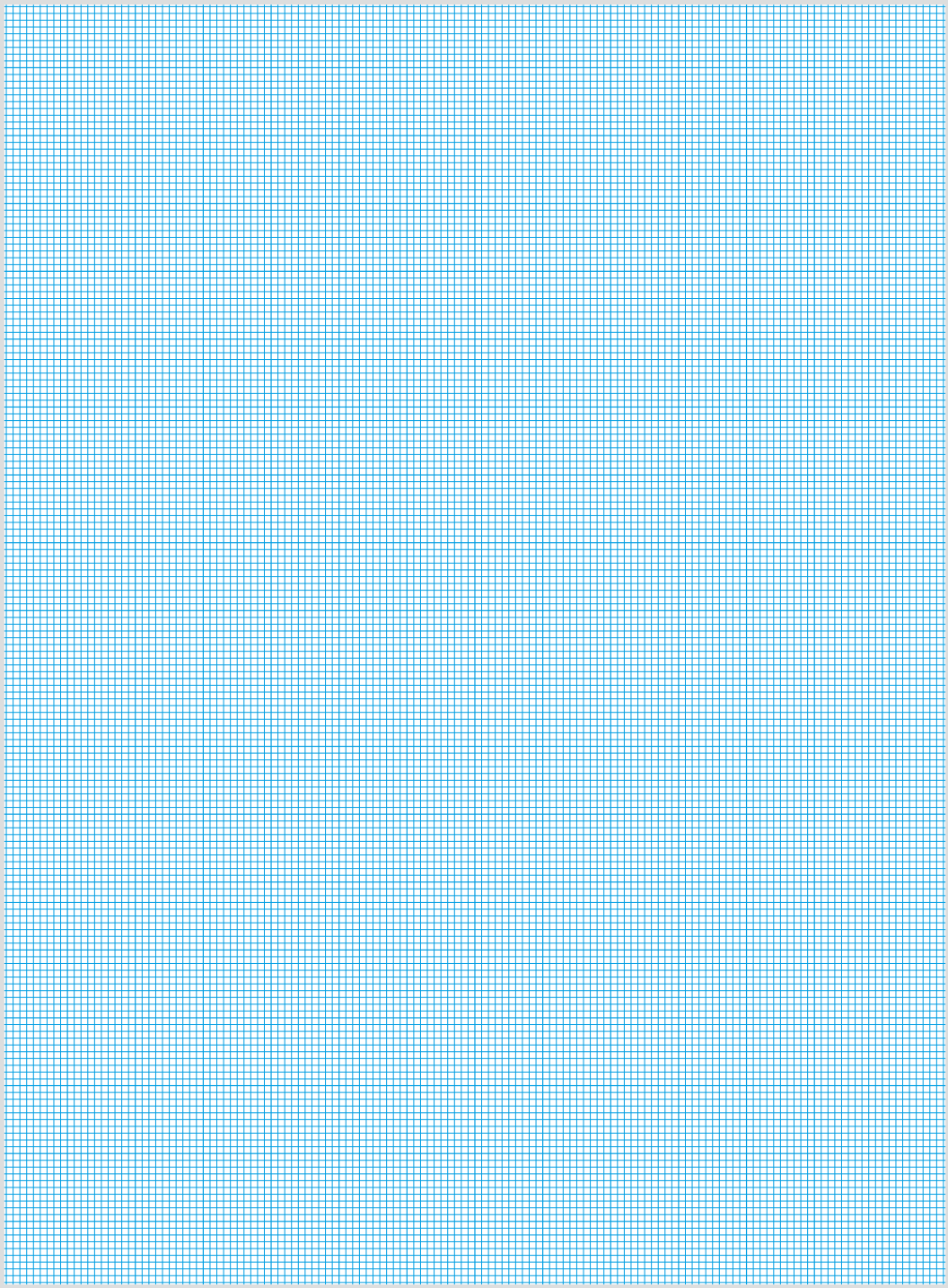
Paneling material see page 50



Scissor Door
B69.62.002
RM
H
H1
LW
H6



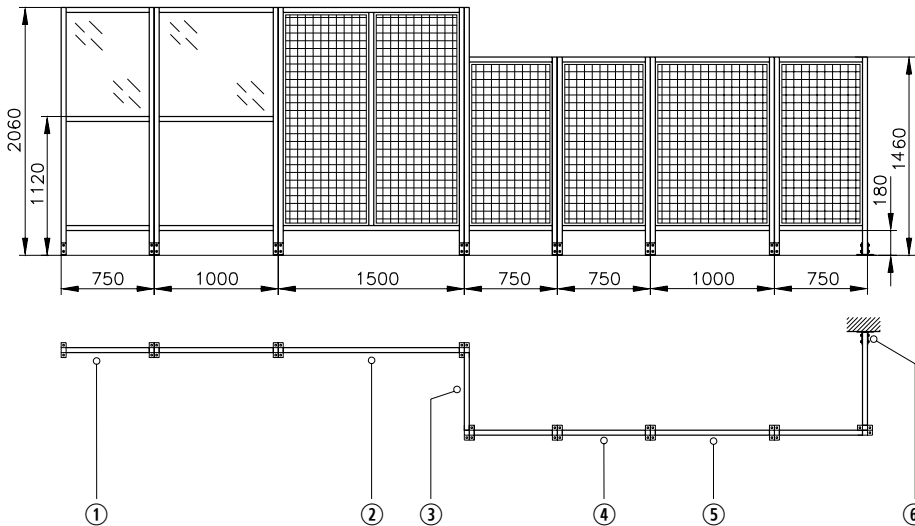
Standard RM:
750, 1000, 1250 mm



Guarding

Partition Method

The following illustrates a variety of standard panels and paneling material (filler) combinations. The standard heights are 2060 and 1460 mm. The reference dimensions as well as the standard heights can be changed to suit your particular requirements.




- ① Partition with horizontal brace/
Metal/Polycarbonate
- ② Partition with vertical brace/Fencing
- ③ Partition/Fencing


- ④ Partition/Fencing
- ⑤ Partition/Fencing
- ⑥ Wall attachment

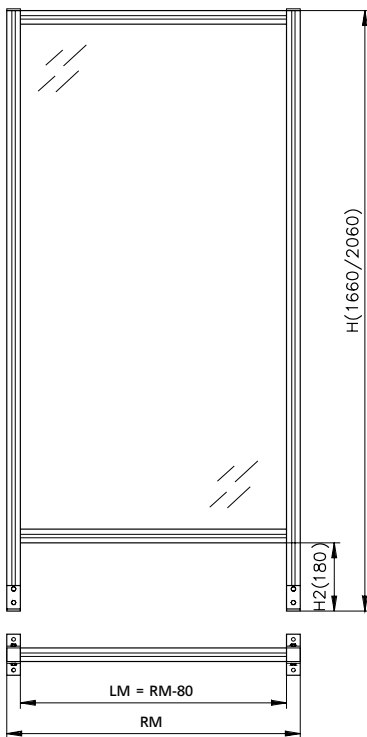
Partition Method

Partition

consisting of: Profile mk 2040.31, Tension Plugs, Floor Mounting Buckets, Screws and Nuts. The easiest way to link neighboring partitions is with the use of plate connections.

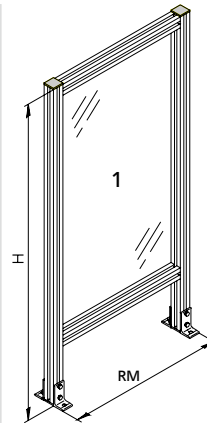
 Assembly details see page 12

 Paneling material see page 44



LM = Light (Opening) dimension
RM = Reference dimension

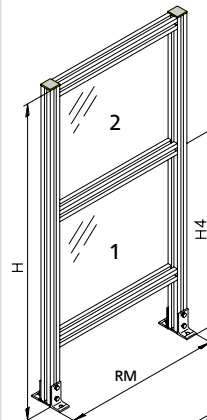
Standard H: 1460 and 2060 mm



Standard RM:
500, 750, 1000, 1250 mm

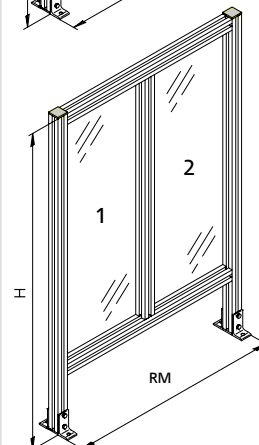
Fencing
max. 1000 mm

Partition single
B69.51.001
RM
H



Standard RM:
500, 750, 1000,
1250, 1500, 2000 mm

Partition with
horizontal brace
B69.51.002
RM
H
H4



Standard RM:
1500, 2000 mm

Partition with
vertical brace
B69.51.003
RM
H

Guarding


Partition Method

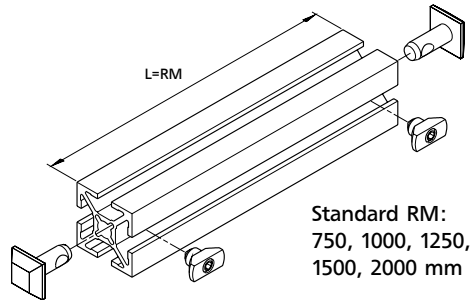
Swing Doors

The modular construction method of the mk Guarding System enables a completely flexible incorporation of doors into the enclosure design. You can specify the dimensions of your door and include any of the paneling materials shown on pages 50-55.

Door Header

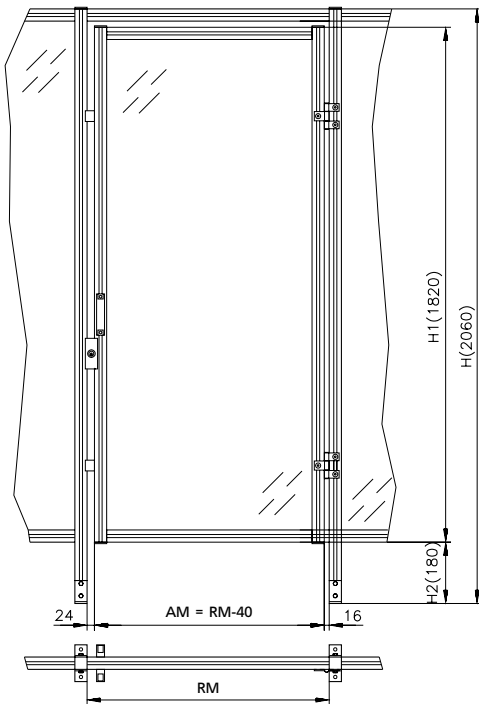
consisting of: Profile mk 2040.40, Tension Plugs. The profile is used with both single and double swinging doors. Panels are attached at the profile ends.

 Tension Plug see page 16



Standard RM:
750, 1000, 1250,
1500, 2000 mm

Door Header
B69.55.010
RM



AM = Outside dimension
RM = Reference dimension

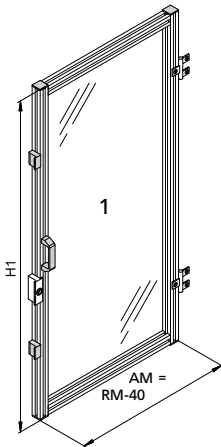
Standard H: 2060 mm

Partition Method

Single Swing Door

consisting of: Profile mk 2040.40, Tension Plugs, Door Stops, Handles, Hinges and and either an external Double Bit or Cylinder Lock. Paneling materials can be seen on pages 50-55. Please indicate lock type when specifying door.

Special versions available with: Latches, Cam Locks, Profile cylinders and T- or Lever Handle Locks.

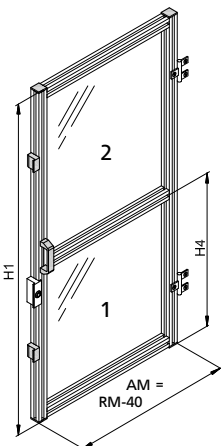


Standard RM:
750, 1000, 1250 mm
Fencing
max. 1000 mm

Single Swing Door
.....-lock

DIN-right
B69.60.001
RM
H1

DIN-left
B69.60.002
RM
H1



Standard RM:
750, 1000, 1250 mm

Single Swing Door
with horizontal brace
.....-lock


DIN-right
B69.60.003
RM
H1
H4

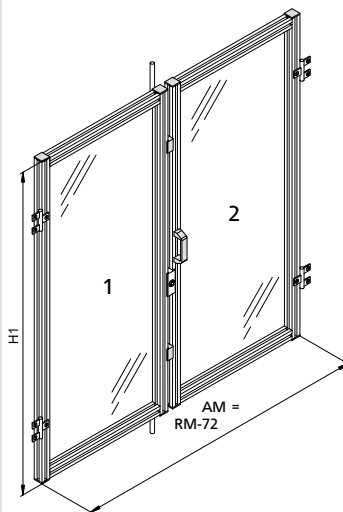
DIN-left
B69.60.004
RM
H1
H4

Standard H1: 1800 mm

Double Swing Door

Double Doors include upper and lower slide latches.

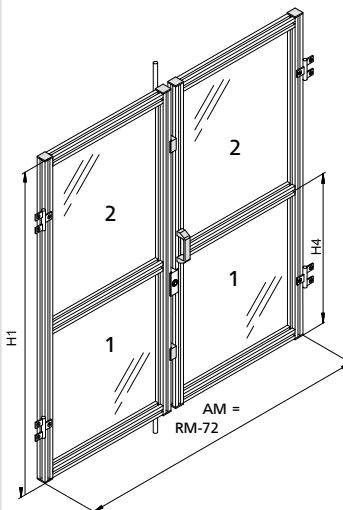
 Accessories see on pages 56



Standard RM:
1500, 2000 mm

Double
Swing Door
.....-lock

B69.60.005
RM
H1



Standard RM:
1500, 2000 mm

Double Swing
Door with
horizontal brace
.....-lock

B69.60.006
RM
H1
H4

Guarding

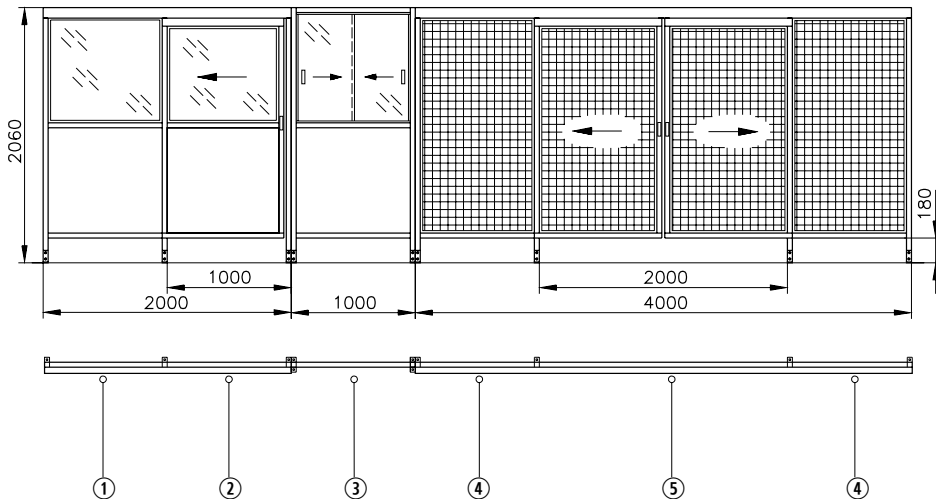
Partition Method

Sliding Doors

When selecting sliding doors, two types are available:

- Sliding Doors B
- Sliding Doors C

The Sliding Door Frame, in combination with Sliding Doors of type C, is the model of a precise and aesthetically pleasing high-quality sliding door. It is also possible, through a slight redesign, to include windows or other access panels within the doors themselves.

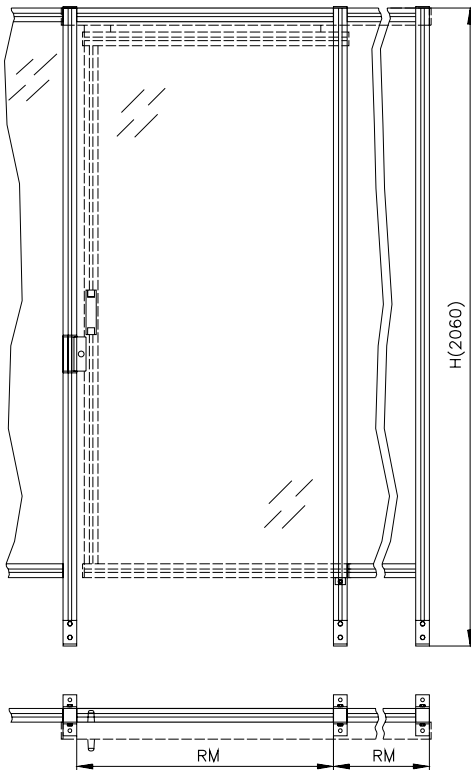


- | | |
|---|--|
| ① Partition with horizontal brace/Metal/Polycarbonate | ③ Partition with horizontal brace/Metal/Polycarbonate Slider |
| ② Single Sliding Door with horizontal brace/Metal/Polycarbonate | ④ Partition single/Fencing |
| | ⑤ Double Sliding Door/Fencing |

Partition Method

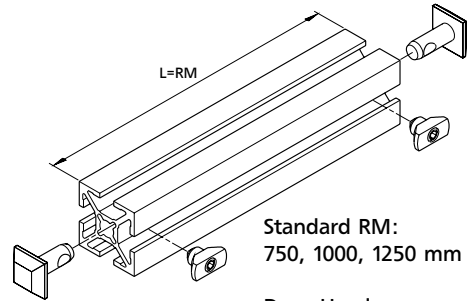
Sliding Door Frame

consisting of: Profile mk 2040.40, Tension Plugs, Screws, Nuts and Floor Mounting Buckets.
The Single Sliding Door Frame is used for Sliding Doors DIN-Right and DIN-Left.



RM = Reference dimension

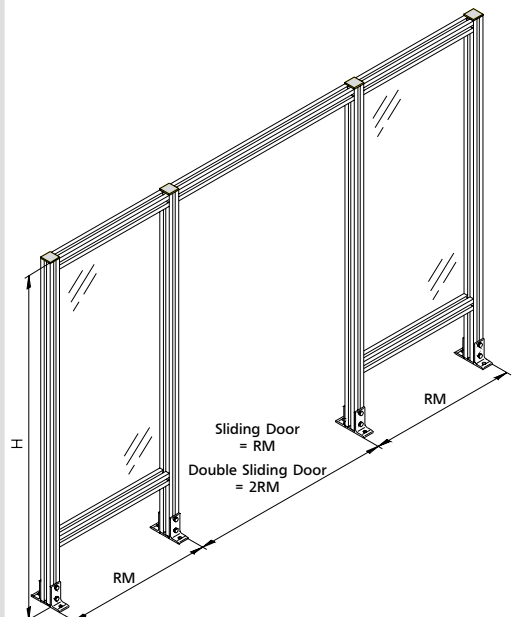
Standard H: 2060 mm



Standard RM:
750, 1000, 1250 mm

Door Header
B69.55.010
RM

The following standard components are combined using the Door Header, when manufacturing Sliding Door Frames: Sliding Door: Post (less angles) B69.65.000 and a simple Partition B69.51.001
Double Sliding Door: 2 x Partition B69.51.001.

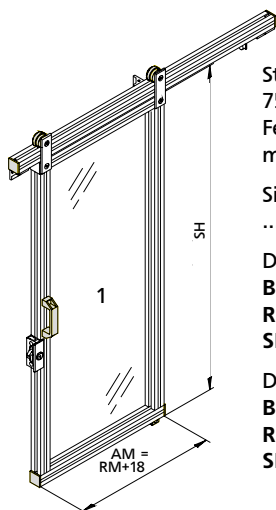


Sliding Door
= RM
Double Sliding Door
= 2RM

Guarding

Partition Method

Sliding Doors B

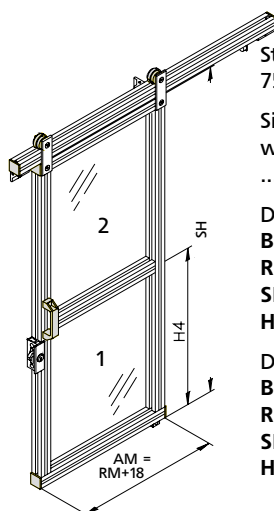


Standard RM:
750, 1000, 1250 mm
Fencing
max. 1000 mm

Single Sliding Door
.....-lock

DIN-right
B69.61.007
RM
SH

DIN-left
B69.61.008
RM
SH



Standard RM:
750, 1000, 1250 mm

Single Sliding Door
with horizontal brace
.....-lock

DIN-right
B69.61.009
RM
SH
H4

DIN-left
B69.61.010
RM
SH
H4

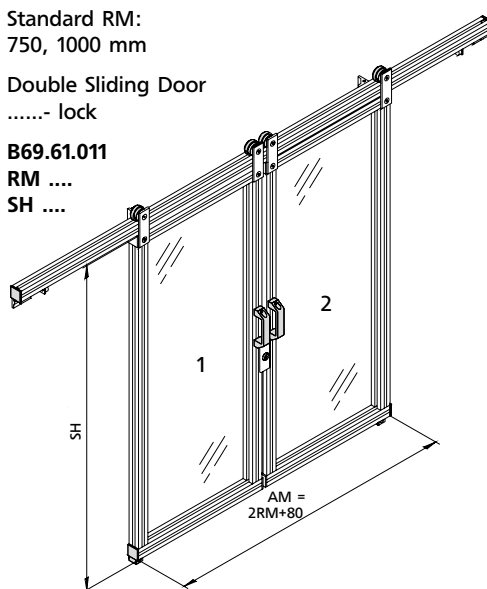
SH = Height of sliding door

If the distance between the sliding door and the floor is to correspond to the height H2 of the adjacent post, $SH = H - H2 - 43$ has to be selected.

Standard RM:
750, 1000 mm

Double Sliding Door
.....- lock

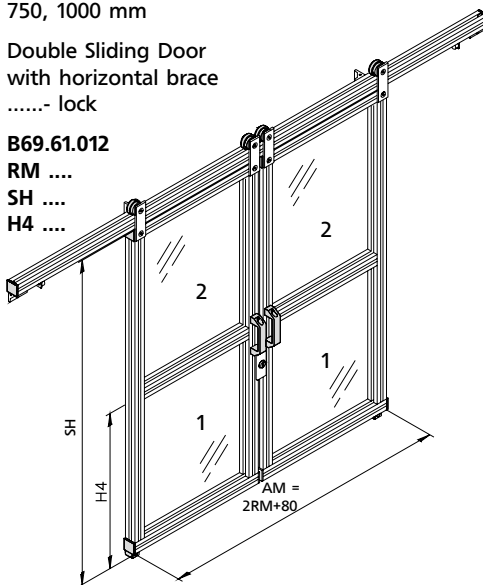
B69.61.011
RM
SH



Standard RM:
750, 1000 mm

Double Sliding Door
with horizontal brace
.....- lock


B69.61.012
RM
SH
H4

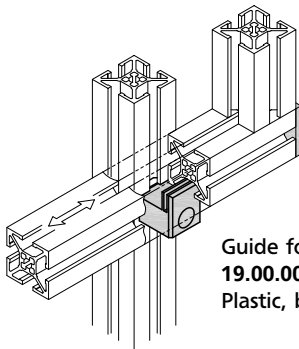


Partition Method

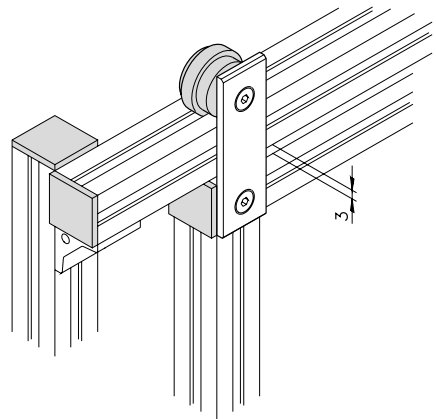
Roller Assembly Sliding Doors B

A cost-effective alternative to Sliding Doors C, the hardware for Sliding Doors B has the additional advantage of being easily assembled. The flanged Roller Assembly guides the door along the upper Profile T-slot. Once properly installed, the door is designed to be non-removable.

 Locks see page 59



Guide for Sliding Door
19.00.0005
Plastic, black



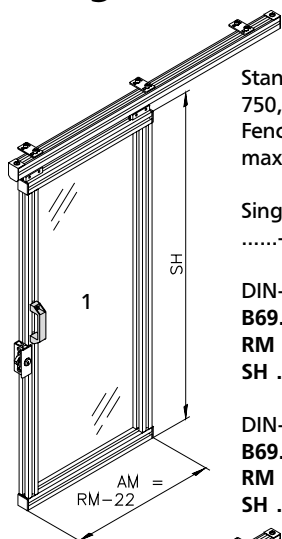
Roller Assembly **B68.11.003** for Sliding Door

consisting of: Plate, Roller, Bolt, Washer, Flanged Button-Head Screw and Nut.

Guarding

Partition Method

Sliding Doors C

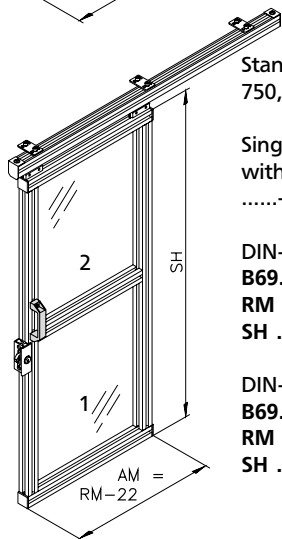


Standard RM:
750, 1000, 1250 mm
Fencing
max. 1000 mm

Single Sliding Door
.....-lock

DIN-right
B69.61.015
RM
SH

DIN-left
B69.61.016
RM
SH



Standard RM:
750, 1000, 1250 mm

Single Sliding Door
with horizontal brace
.....-lock

DIN-right
B69.61.017
RM
SH

DIN-left
B69.61.018
RM
SH

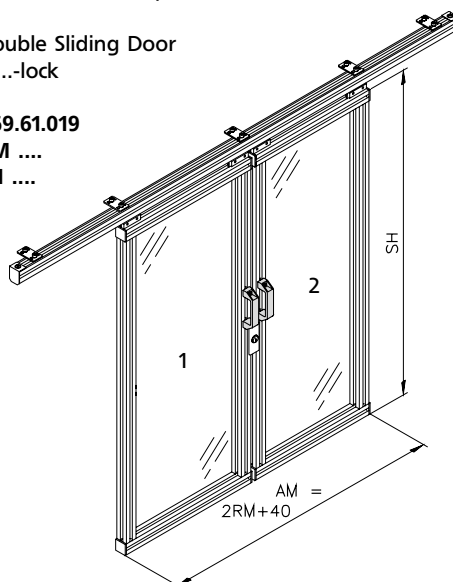
SH = Height of sliding door

If the distance between the sliding door and the floor is to correspond to the height H2 of the adjacent post, $SH = H - H2 - 70$ has to be selected.

Standard RM: 750, 1000 mm

Double Sliding Door
.....-lock

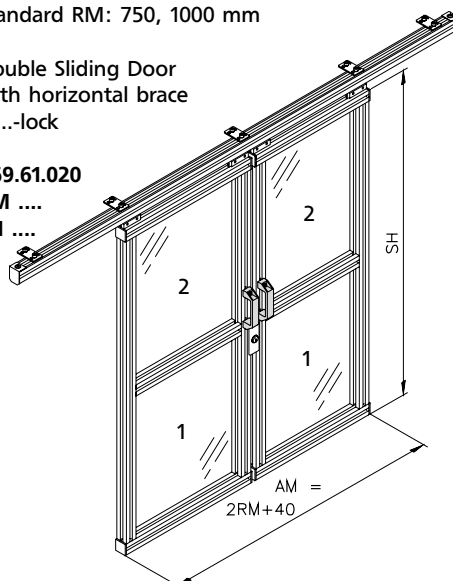
B69.61.019
RM
SH



Standard RM: 750, 1000 mm

Double Sliding Door
with horizontal brace
.....-lock


B69.61.020
RM
SH

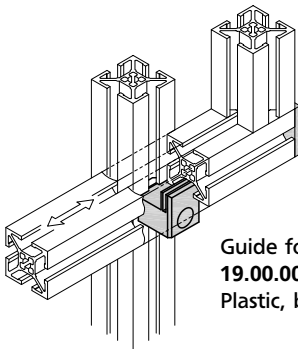


Partition Method

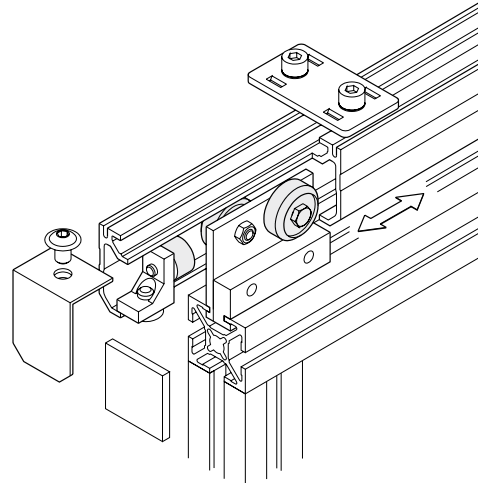
Roller Assembly Sliding Doors C

The C-guide consisting of Profile mk 2245 offers the advantages of a closed track. The lower guide engages the T-slot to keep the sliding door properly positioned. Maximum track length is 5100 mm.

 Locks see page 59



Guide for Sliding Door
19.00.0005
Plastic, black



Mounting Hardware for Sliding Doors

Single Sliding Door

B68.11.005 $L = 2 \times RM + 40$

consisting of: 1x Track, 2x Carriages,
2x Stop, 2x End Cap and Plates (number depends
on length)

Double Sliding Door

B68.11.006 $L = 4 \times RM + 40$

consisting of: 1x Track, 4x Carriages,
2x Stop, 2x End Cap and Plates (number depends
on length)

Carriage for Sliding Door

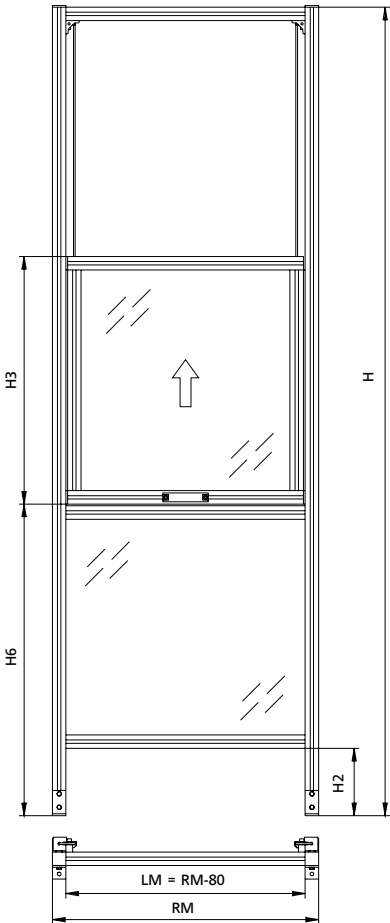
B38.00.045

Guarding

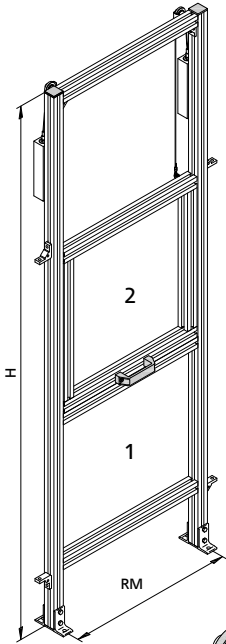
Partition Method

Vertical Door

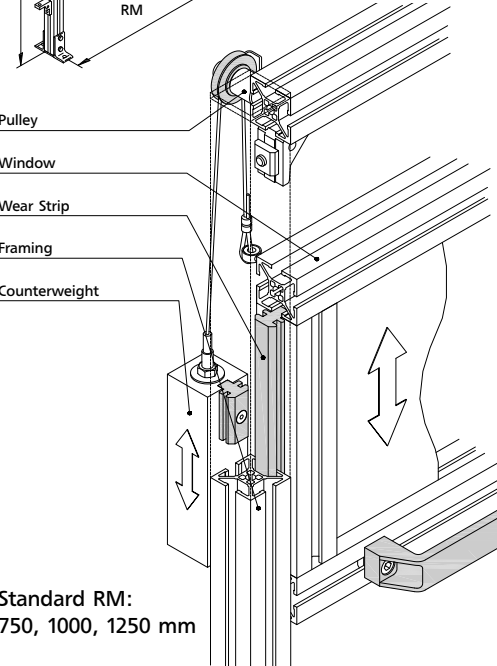
consisting of: Profile mk 2040.40, Tension Plugs, Floor Mounting Buckets, Handle, Wear Strips, Pulleys and Counterweights. Manually operated – balanced using the Counterweights. Pneumatic or electromechanical operation possible on request.



Paneling material see page 50



Vertical Door
B69.62.001
RM
H
H2
H3
H6
Stroke

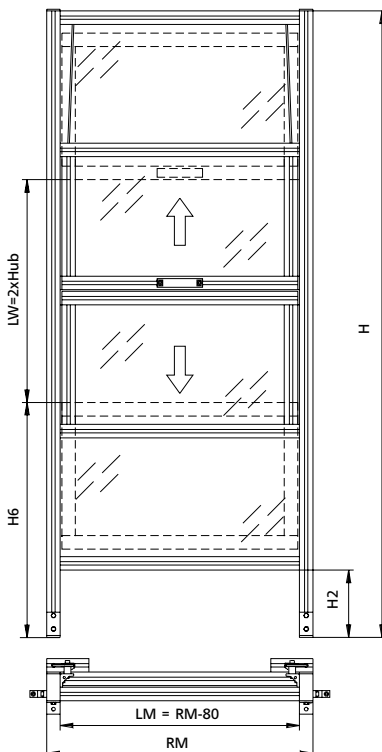


Standard RM:
750, 1000, 1250 mm

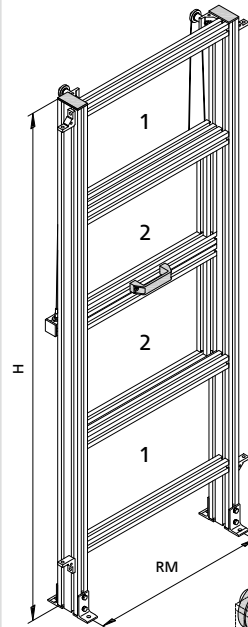
Partition Method

Scissor Door

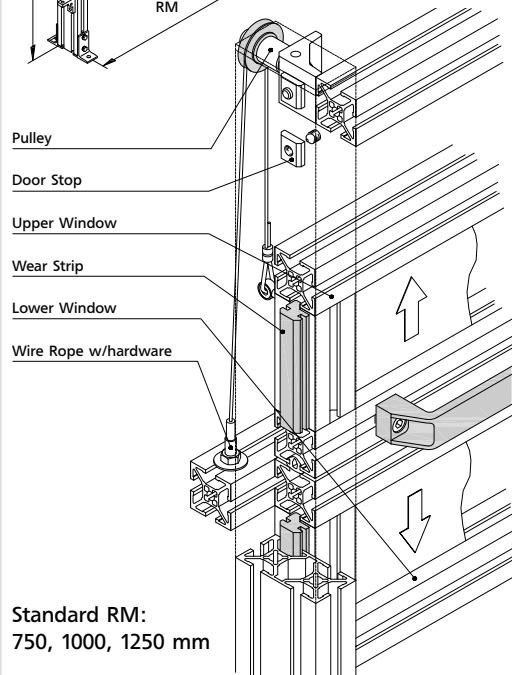
consisting of: Profile mk 2040.40, mk 2040.41, Tension Plugs, Floor Mounting Brackets, Handles, Wear Strips, Pulleys, Wire Rope and hardware. Manually operated – balanced through the scissor action of the equally weighted doors. Pneumatic or electromechanical operation possible on request.



Paneling material see page 50



Scissor Door
B69.62.002
RM
H
LW
H6




Standard RM:
750, 1000, 1250 mm


Guarding

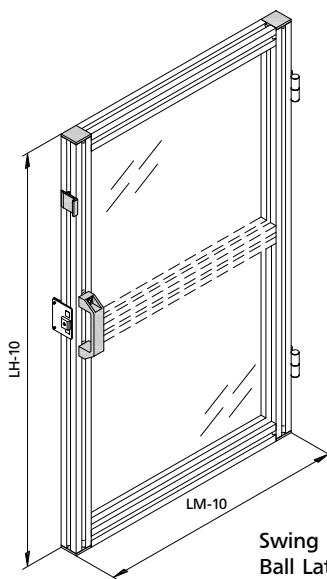
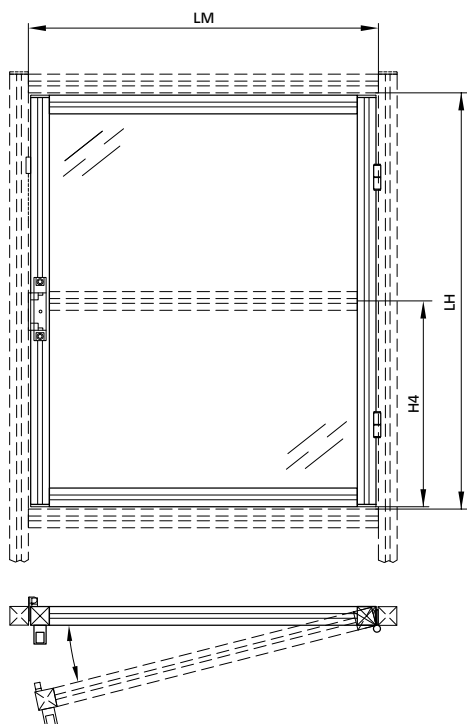
Paneling

Swing Doors with Ball Latch

A standard Access Door may be all you need where safety or security is not required. Our Ball Latch ensures a quick and secure closure of the door within the profile frame. Please note that this is not a safety door. For safety doors, use either a door lock and/or electronic interlock switch.

 Paneling material see page 50

 Safety accessories see page 61



Swing Door with
Ball Latch
B68.07.001
LM
LH

Optional cross
members
H4

without paneling
material

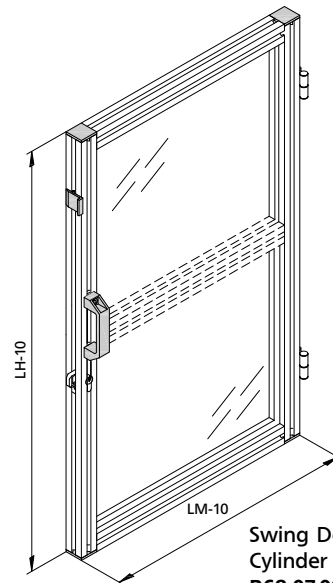
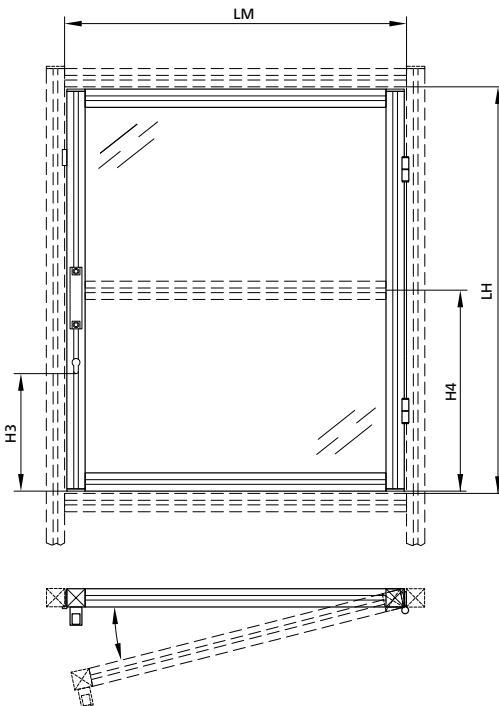
Paneling

Swing Doors with Cylinder Lock

Standard Door with Door Lock. An alternative to the Access Door, the Swing Door uses a Profile Cylinder Lock instead of a ball latch.

➤ Paneling material see page 50

➤ Safety accessories see page 61



Swing Door with
Cylinder Lock
B68.07.002

LM

LH

H3

Optional cross
members

H4

without paneling
material




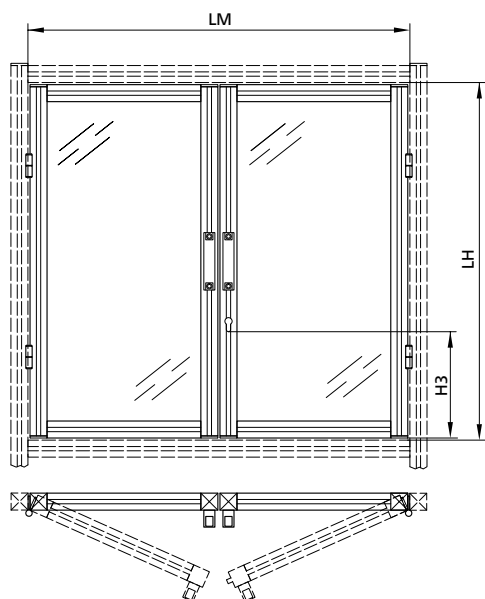
Guarding

Paneling

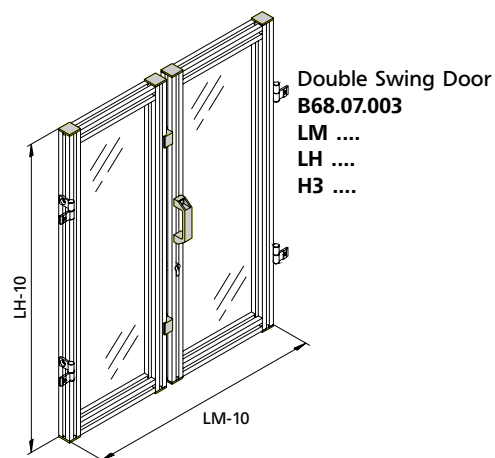
Double Door

consisting of: Profile mk 2040.40, Hinges, Hangles, Latches, Paneling, Seal Strip and attachment hardware.

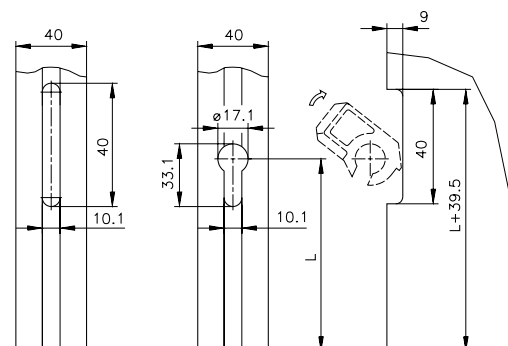
 Paneling material see page 50



LM max. = 1200 mm
LH max. = 1800 mm



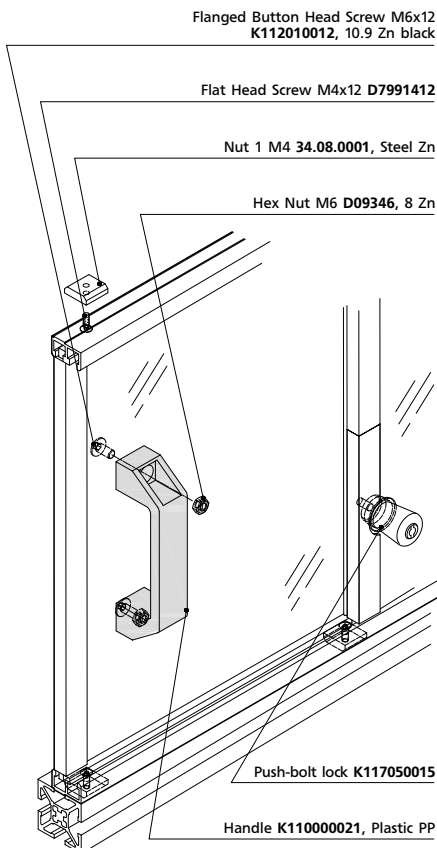
Machining patterns for the Profile Cylinder Lock



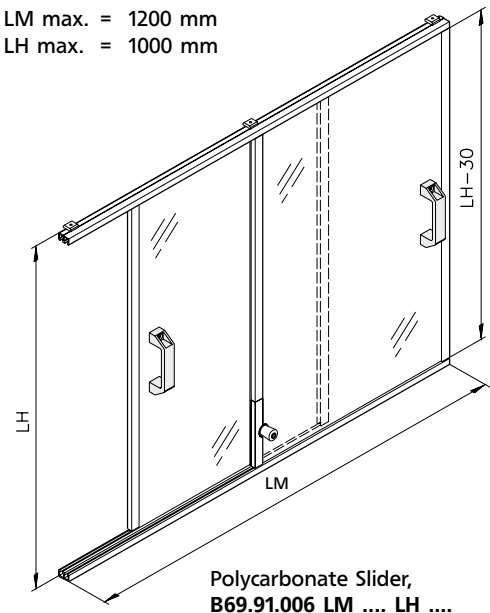
Paneling

Slider

consisting of: Profile mk 2240, Profile mk 2207, PE-Tubing, 6 mm Polycarbonate or Alucobond panels, handles, attachment hardware and push-bolt lock. Both sliding elements can be installed or removed in the open position. In the closed position they are locked using a push-bolt lock and are simultaneously secured against dismantling by locking pins within the slider profiles.



LM max. = 1200 mm
LH max. = 1000 mm




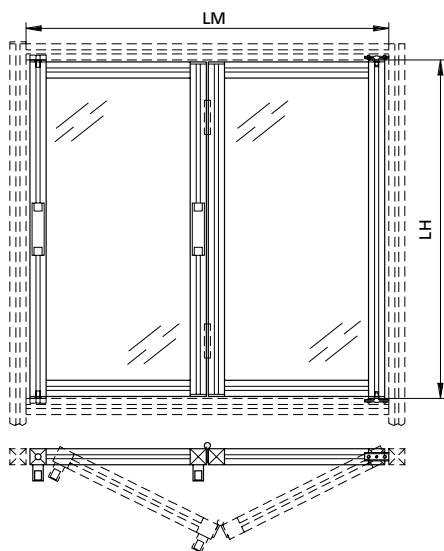
Guarding

Paneling

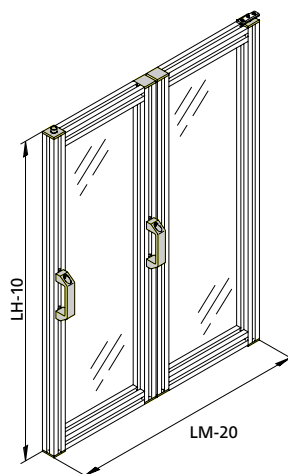
Bifold Door

consisting of: Profile mk 2040.40, Handles, Seal Strip and attachment hardware.

 Paneling material see page 50



LM max. = 1200 mm
LH max. = 1000 mm



Bifold door
Acrylic

B69.91.004

LM

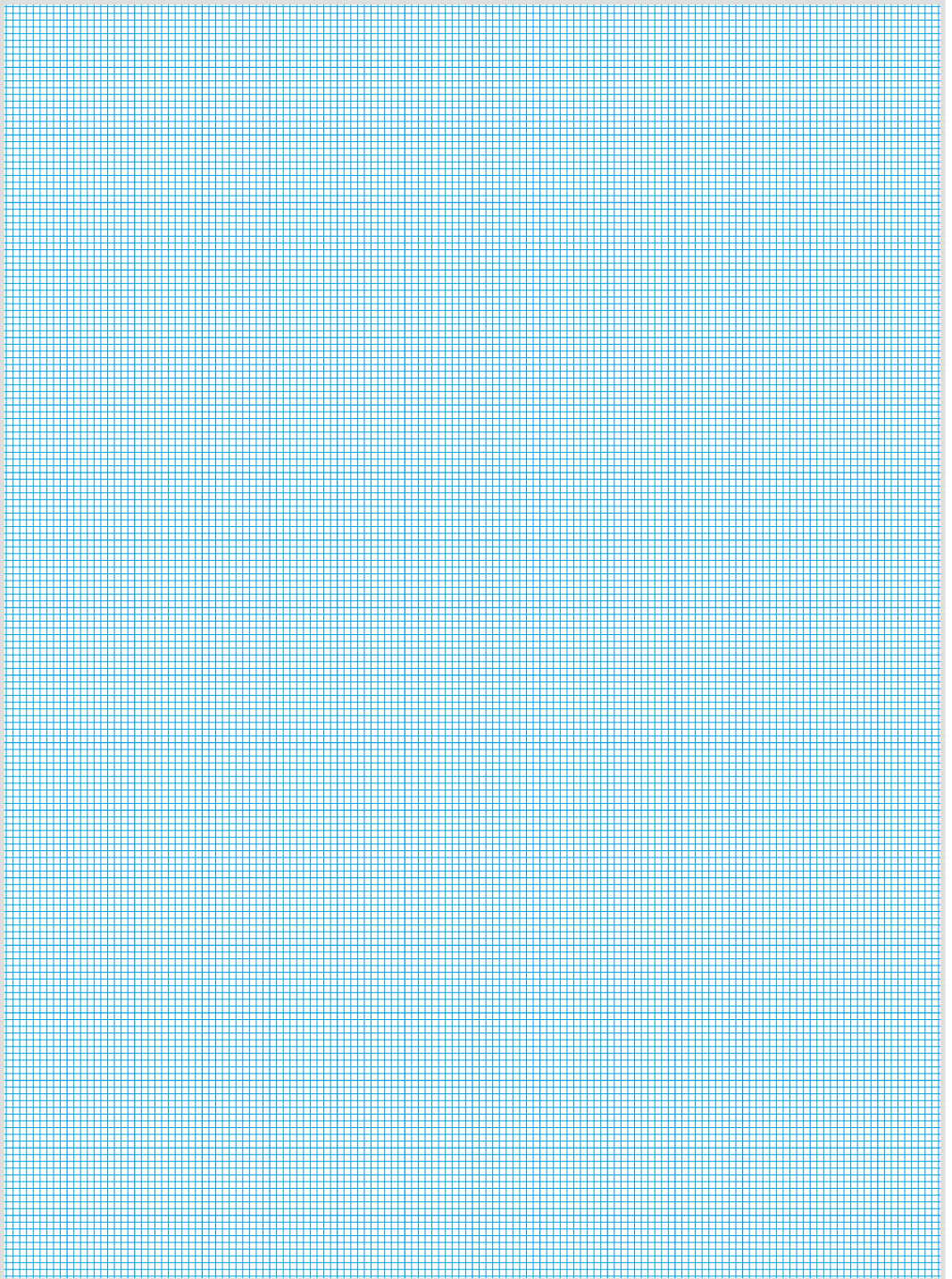
LH

Bifold door
Polycarbonate

B69.91.005

LM

LH



Guarding

Paneling

The panel materials shown here can be used for all panels as well as door component. When placing an individual order or a repeat order, the ID No., the profile frame dimensions 'LM' and 'LH' must be provided. When ordering a panel frame or a door component, the identification number of the panel material must be entered into the parts list. Based on the customer's order, all steel parts are painted using RAL textured paint.

 Order example see page 66-67

- 1) not available in USA
2) available only in USA

Paneling Material and Cuts

Material	Color	Sheet Size	Thickness	Ident-No. Material	Ident-No. Cut 1)
Acrylic	clear	3050 x 2050 mm	4 mm	K01D211004 ¹⁾	50.15.6014
		3050 x 2050 mm	5 mm	K01D211005 ¹⁾	50.15.6000
		3050 x 2050 mm	6 mm	K01D211006 ¹⁾	50.15.6001
		4' x 8'	1/4"	P90.05.001 ²⁾	
Polycarbonate	clear	3050 x 2050 mm	4 mm	K01B211004 ¹⁾	50.15.6009
		3050 x 2050 mm	5 mm	K01B211005 ¹⁾	50.15.6002
		3050 x 2050 mm	6 mm	K01B211006 ¹⁾	50.15.6003
		4' x 8'	1/4"	P90.03.002 ²⁾	
Polycarbonate	grey tint	3050 x 2050 mm	4 mm	K01B231004 ¹⁾	50.15.6009
		3050 x 2050 mm	5 mm	K01B231005 ¹⁾	50.15.6002
		3050 x 2050 mm	6 mm	K01B231006 ¹⁾	50.15.6003
		4' x 8'	1/4"	P90.03.003 ²⁾	
PETG	clear	3050 x 2050 mm	5 mm	K01P211005 ¹⁾	50.15.6019
		3050 x 2050 mm	6 mm	K01P211006 ¹⁾	50.15.6017
Fencing Alu		2000 x 1000 mm	40 x 40 x 4 mm	K00315121.40 ¹⁾	24.00.0000
		3000 x 2000 mm	40 x 40 x 4 mm	K00315122.40 ¹⁾	24.00.0000
Fencing Steel	zinc plated	2000 x 1000 mm	40 x 40 x 4 mm	K00128221.40 ¹⁾	24.02.0000
		3000 x 2000 mm	40 x 40 x 4 mm	K00128222.40 ¹⁾	24.02.0000
Trespa	silver	5' x 10'	1/4"	P90.08.001 ²⁾	

... : ...* width and height in mm.

Paneling

1) not available in USA
2) available only in USA

Paneling Material and Cuts

Material	Color	max. Sheet Size	Thickness	Ident-No. Material	Ident-No. Cut ¹⁾
Fencing Steel	black powder-coated	2000 x 1000 mm	40 x 40 x 4 mm	K00128321.40 ¹⁾	24.05.0000
		2000 x 1250 mm	40 x 40 x 4 mm	K00128323.40 ¹⁾	24.05.0000
		2000 x 1500 mm	40 x 40 x 4 mm	K00128324.40 ¹⁾	24.05.0000
	yellow	4' x 8'	1"x1", 12 Ga.	P90.00.007 ²⁾	
		4' x 8'	1/2"x1/2", 16 Ga.	P90.00.009 ²⁾	
		4' x 8'	1"x1", 12 Ga.	P90.00.008 ²⁾	
		4' x 8'	1/2"x1/2", 16 Ga.	P90.00.010 ²⁾	
Alucobond	silver anod.	3000 x 1500 mm	4 mm	K00316223004 ¹⁾	50.15.4001
			4/2,5 mm reworked	50.15.3005	
		3000 x 1500 mm	6 mm	K00316223006 ¹⁾	50.15.4002
Dibond	white	4' x 8'	2 mm	P90.06.001 ²⁾	
Steel	zinc plated	2000 x 1000 mm	1,5 mm	K00112121150 ¹⁾	07.28.*
	painted	2000 x 1000 mm	1,5 mm	K00112131150 ¹⁾	07.28.*
	zinc plated	4' x 8'	18 Ga.	P57.02.000 ²⁾	
Stainless Steel	polished	2000 x 1000 mm	1,5 mm	K00205121150 ¹⁾	07.29.*
		4' x 8'	20 Ga.	P57.01.000 ²⁾	
Aluminum	silver anod.	2000 x 1000 mm	1,5 mm	K00305321150 ¹⁾	07.30.*
		2000 x 1000 mm	2 mm	K00305321200 ¹⁾	07.33.*
Expanded PVC	black	4' x 8'	1/4"	P90.07.001 ²⁾	
	blue	4' x 8'	1/4"	P90.07.002 ²⁾	
	grey	4' x 8'	1/4"	P90.07.003 ²⁾	
	white	4' x 8'	1/4"	P90.07.004 ²⁾	
Alumalite	silver	4' x 8'	1/4"	P90.04.001 ²⁾	

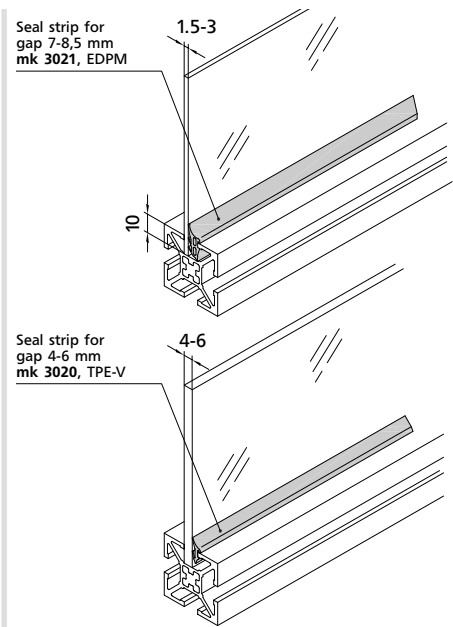
Sizing

Installed using	Width	Height	Installed using	Width	Height
Seal Strip	LM+20 mm	LH+20 mm	Angle	LM	LH
Panel Clamp	LM-31 mm	LH-31 mm	Fencing w. Clamp Profile	LM+10 mm	LH+10 mm
Panel Block	LM	LH	Fencing	LM+20 mm	LH+20 mm

....* width and height in mm.

Guarding

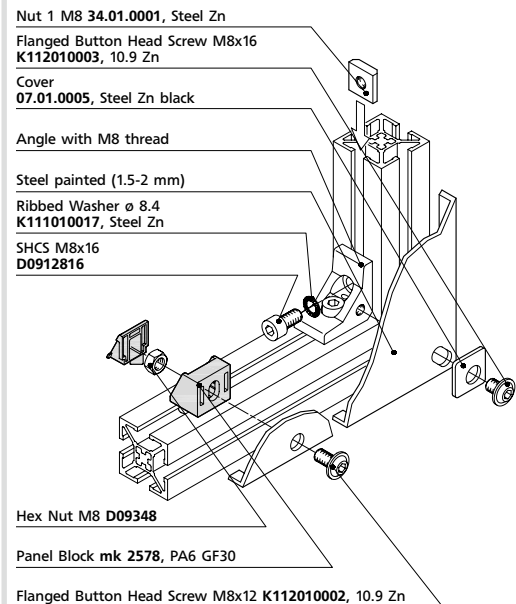
Paneling



Paneling with Seal Strips (LM+20 mm, LH+20 mm)

Alucobond silver anodized (E6/EV1)			
4 mm	B69.90.501	LM	LH
6 mm	B69.90.502	LM	LH
Acrylic clear			
5 mm	B69.90.101	LM	LH
6 mm	B69.90.102	LM	LH
Polycarbonate clear or gray tint			
4 mm	B69.90.201	LM	LH
5 mm	B69.90.202	LM	LH
6 mm	B69.90.203	LM	LH
Steel painted RAL or galvanized			
1,5 mm	B69.90.301	LM	LH
2 mm	B69.90.302	LM	LH
Stainless Steel			
1,5 mm	B69.90.303	LM	LH
2 mm	B69.90.304	LM	LH
Aluminum, anodized			
1,5 mm	B69.90.401	LM	LH
2 mm	B69.90.402	LM	LH

Other materials available on request.



Paneling with Angles (LM, LH)

Steel painted RAL			
1,5 mm	B69.90.310	LM > 300	LH < 300
1,5 mm	B69.90.311	LM	LH
max length to 1200 mm			
2 mm	B69.90.312	LM	LH
Max length over 1200 mm with additional panel blocks mk 2578			

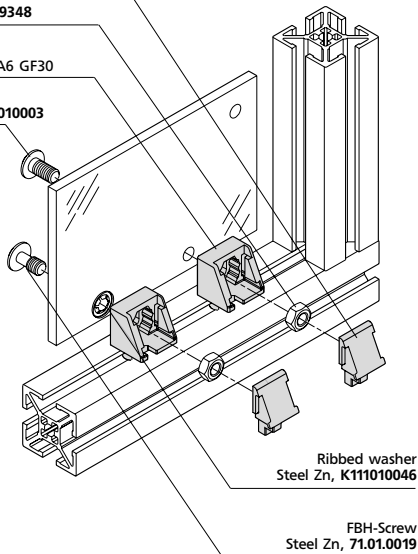
Paneling

Cap mk 2577 for panel block, PA6 GF30

Nut M8, D09348

Panel block
mk 2578, PA6 GF30

FBH-Screw
M8x16 K112010003



Paneling with Panel Blocks (LM, LH)

Polycarbonate clear or gray tint

5 mm	B69.90.206	LM	LH
6 mm	B69.90.207	LM	LH

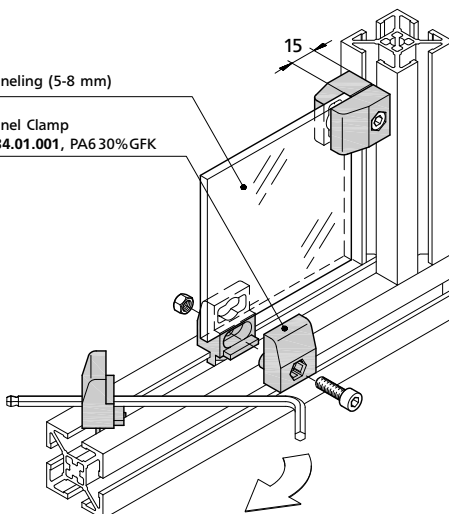
Other materials available on request.

Paneling requires $\varnothing 9$ mm holes at a distance of 10-15 mm from the edge.

The panel block is available with a simple flanged button-head screw or as a captive connection with an undercut flanged button-head screw with ribbed washer.

Paneling (5-8 mm)

Panel Clamp
B34.01.001, PA6 30%GFK



Paneling with Panel Clamps (LM-31 mm, LH-31 mm)

Acrylic clear

5 mm	B69.90.103	LM	LH
6 mm	B69.90.104	LM	LH

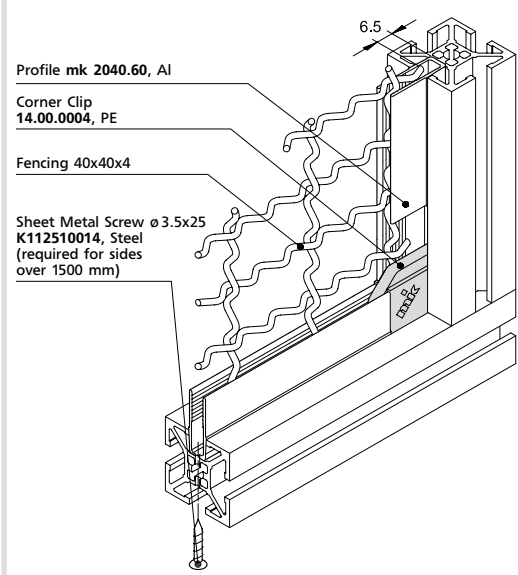
Polycarbonate clear or gray tint

5 mm	B69.90.204	LM	LH
6 mm	B69.90.205	LM	LH

Other materials available on request.

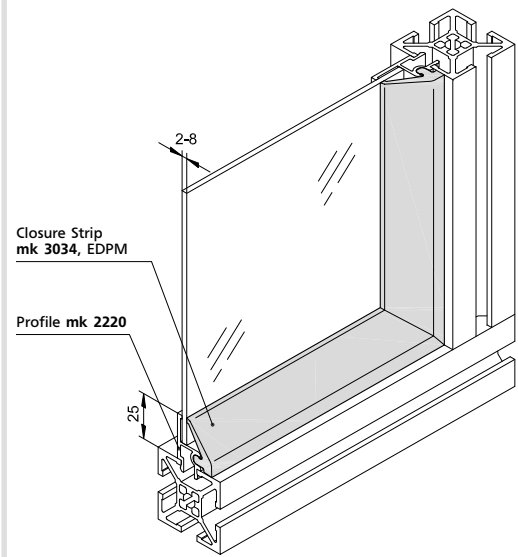
Guarding

Paneling



Paneling with Fencing (LM+23 mm, LH+23 mm)

Fencing			
Al 40x40x4 mm	B69.90.001	LM	LH
Steel Zn 40x40x4 mm	B69.90.002	LM	LH



Paneling with Closure Strip (LM-22 mm, LH-22 mm)

Polycarbonate clear or gray tint			
4 mm	B69.90.701	LM	LH
6 mm	B69.90.702	LM	LH
Acrylic clear			
5 mm	B69.90.710	LM	LH
6 mm	B69.90.711	LM	LH
Steel painted RAL			
2 mm	B69.90.720	LM	LH

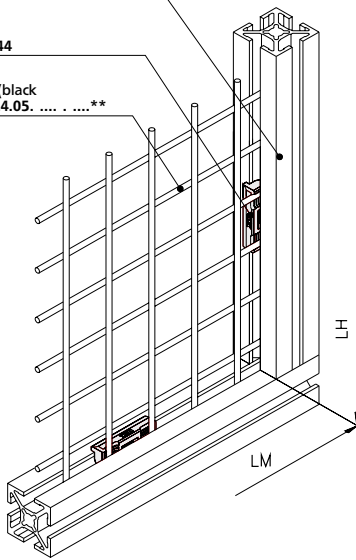
Not for safety guards allowed

Paneling

Profile 40 x 40 mm 54.31.*

Fence Clip mk 2544

Fencing 40x40x4 (black powder coated) 24.05.**



Paneling with Fencing

(LM+20 mm, LH+20 mm)

black powder coated

Fencing 40x40x4 mm

24.05. LM LH

Fencing complete with Fence Clips

B69.90.003 LM LH

Steel galvanized*

Fencing 40x40x4 mm

24.06. LM LH

Fencing complete with Fence Clips

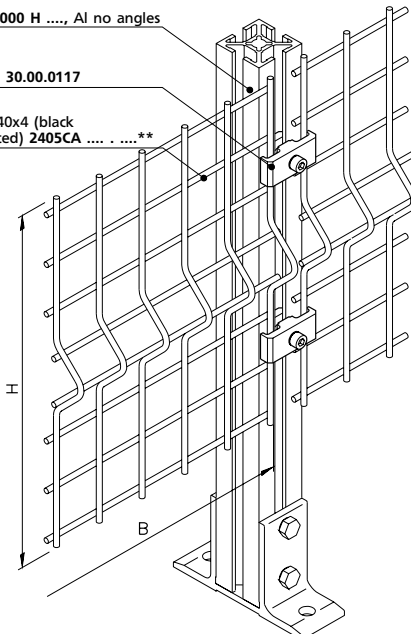
B69.90.005 LM LH

*optional as special paint according to RAL specifications

Post B69.65.000 H, Al no angles

Fence Clamp 30.00.0117

Fencing 40x40x4 (black powder coated) 2405CA**



Paneling with Fencing

(B = RM*-10 mm, H = max. 1880 mm)

Fencing black powder coated

Fencing 40x40x4 mm (Steel)

B69.90.004 B H

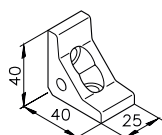
*RM = Centerline of Posts

Guarding

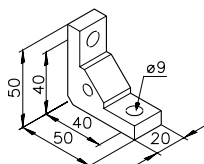
Accessories

Angle Attachments

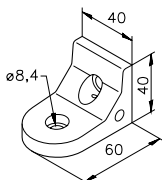
for profile frames to upright posts.



Angle E25
82.40.0701
Al tumbled



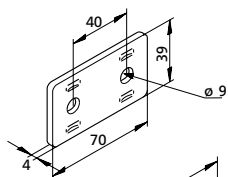
Angle B20/40
82.05.0026
Al tumbled



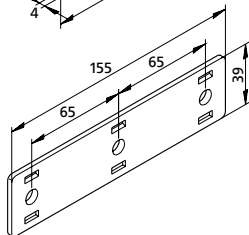
Angle F40/R
82.40.0805
Al tumbled

Parallel Connections

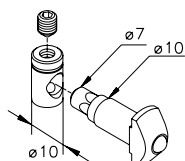
between neighboring profiles and/or frames.



Parallel Plate
50.05.0053
Al tumbled



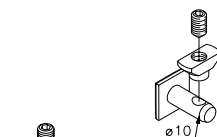
Parallel Plate
50.05.0070
Al tumbled



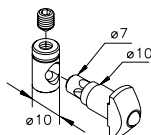
Parallel Connector
Series 40
B51.03.042

Tension Plugs

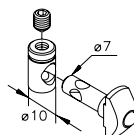
for the assembly of frame structures with unused grooves.



Tension Plug
B51.03.004
Steel Zn



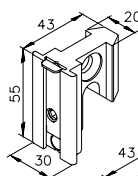
Tension Plug
(normal + light)
B51.03.030
Steel Zn



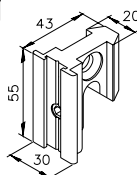
Tension Plug
(extra light)
B51.03.041
Steel Zn

Captive Fastening System

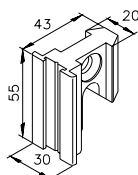
for attaching partition components to a post.



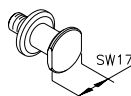
Fastener, captive
B46.00.243
complete including bolts and
mounting hardware



Fastener, locking
B46.00.244
complete including bolts and
mounting hardware



Fastener, open
B46.00.245
complete including bolts and
mounting hardware

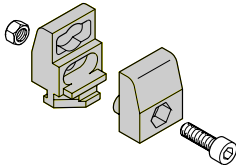


Bolt
05.06.0015
Steel Zn

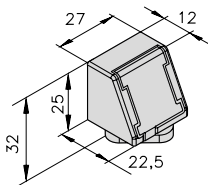
Accessories

Fastening Accessories

Panel Clamps, designed for use with 5-8 mm thick panels, are placed into the T-slots of the assembled frame. If attaching paneling material to angles, the Panel Block should be used as an additional support on sides with lengths of over 600 mm.



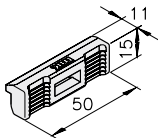
Panel Clamp
B34.01.001



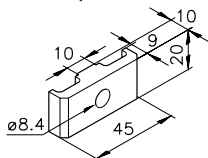
Panel block with cap
B34.01.003
without mounting hardware

Panel block with cap
B34.01.004
with mounting hardware
optional in VA
B34.01.004A2

Panel block with cap
B34.01.005
with mounting hardware
und detachable
optional in VA
B34.01.005A2



Fence Clip
mk 2544



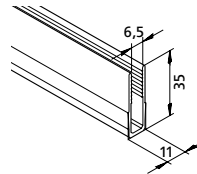
Fence Clamp
30.00.0117



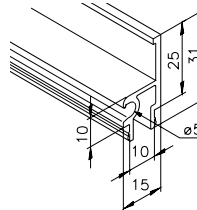
Corner Clip
14.00.0004
for fencing

Fastening Profiles

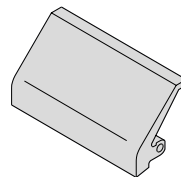
for fix the paneling within the profile.



Profile mk 2040.60
54.60.*
0,30 kg/m
AlMgSi 0,5 F25
A 112,52 mm²

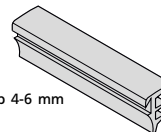


Profile mk 2220
52.20.*
0,30 kg/m
AlMgSi 0,5 F25
A 112,52 mm²



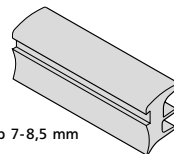
Closure Strip
mk 3034 black
EPDM
Stock length 200 m
for paneling 2-8 mm

Seal Strips for Paneling



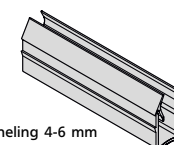
for gap 4-6 mm

Seal Strip
mk 3020 black
TPE-V, stock length 200 m



for gap 7-8,5 mm

Seal Strip
mk 3021 black
EPDM, stock length 200 m



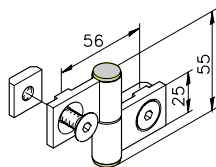
for paneling 4-6 mm

Profile edging
mk 3008 black
mk 3008SI silver-gray
PP, stock length 2 m

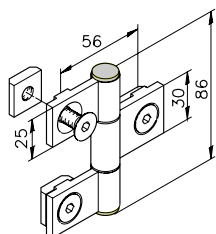
Guarding

Accessories

Hinges

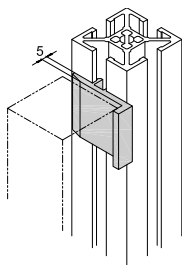


Hinge
40-1/40-1
B46.01.010
complete

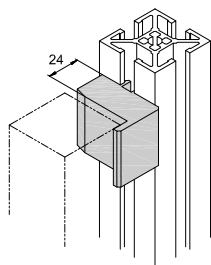


Hinge
40-1/40-7/40-1
B46.01.030
complete

Door Stop



Door Stop
for Swinging Doors
(w. 5 mm gap)
22.90.0035
Plastic PE



Door Stop
for Swinging Doors
(w. 24 mm gap)
22.92.0035
Plastic PE

Ball Latch

B68.02.101 for door gap of 5 mm, complete
B68.02.102 for door gap of 24 mm, complete

Nut 1, M6

34.02.0008, Steel Zn

Flat Head Screw M6x12

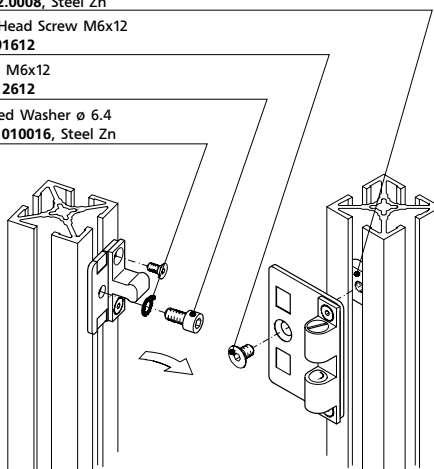
D7991612

SHCS M6x12

D0912612

Ribbed Washer \varnothing 6.4

K111010016, Steel Zn



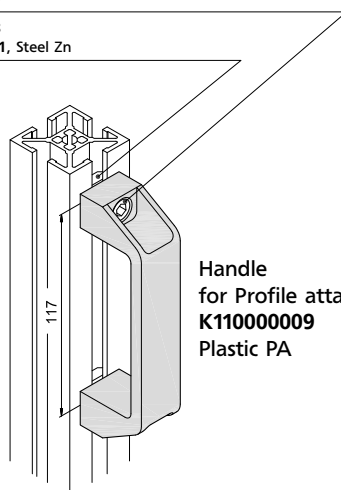
Handle

SHCS M8x16

D0912820

Nut 1, M8

34.01.0001, Steel Zn

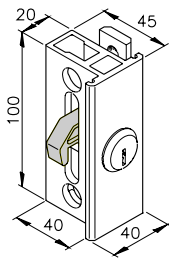


Handle
for Profile attachment
K110000009
Plastic PA

Accessories

External Lock

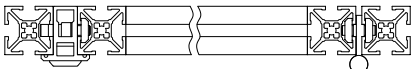
Mounted to door profile T-slot. The gap between the door and frame must be 24 mm. For Sliding Doors, please order Catch B68.06.005 or B68.02.007 separately.



External Double-Bit Lock
DIN-right **B68.02.017**
DIN-left **B68.02.018**

External Cylinder Lock
DIN-right **B68.02.019**
DIN-left **B68.02.020**

Swing Door DIN-right

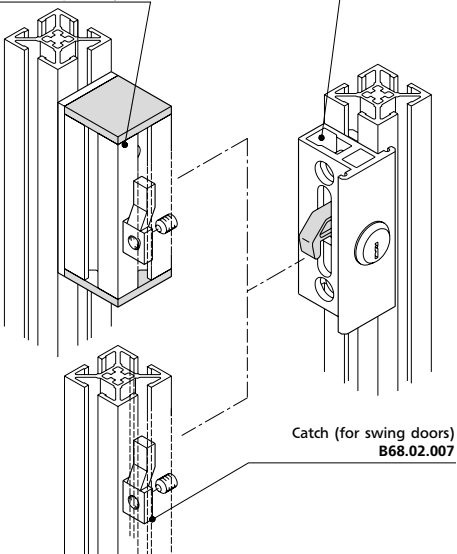


Swing Door DIN-left



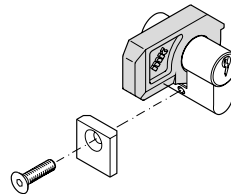
External Cylinder Lock **B68.02.019**

Catch (for sliding doors) **B68.06.005**

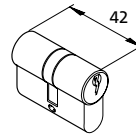


Internal Locks

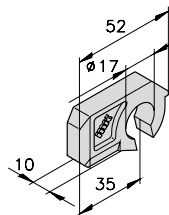
Installed within door frame profile. The gap between the door and frame must be 5 mm.



Cylinder Lock
complete as shown,
plus key
B68.02.051

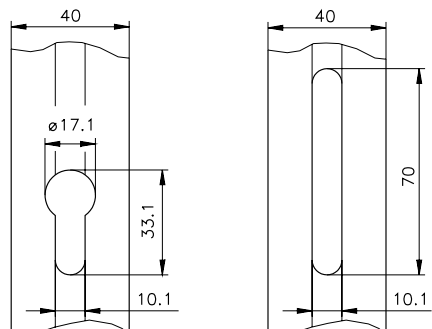


Cylinder
K117055000



Keeper
mk 2533
PA 30 % GFK

Profile machining pattern for Internal Lock

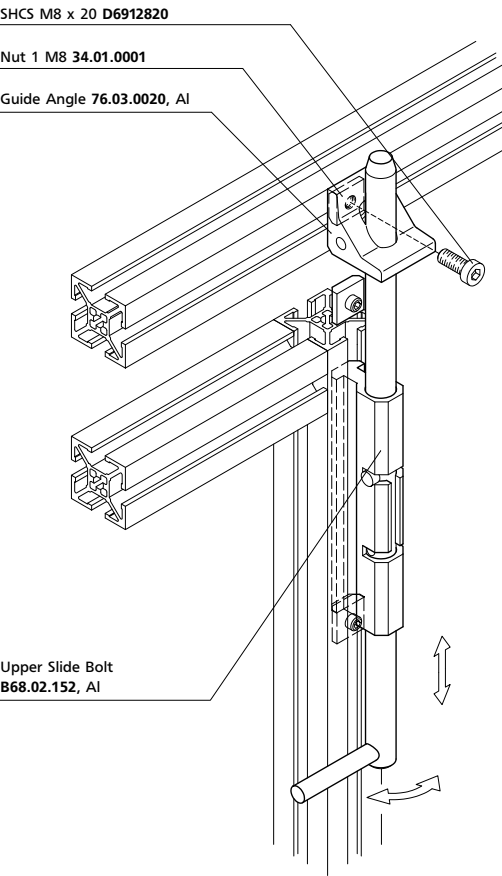


Guarding

Accessories

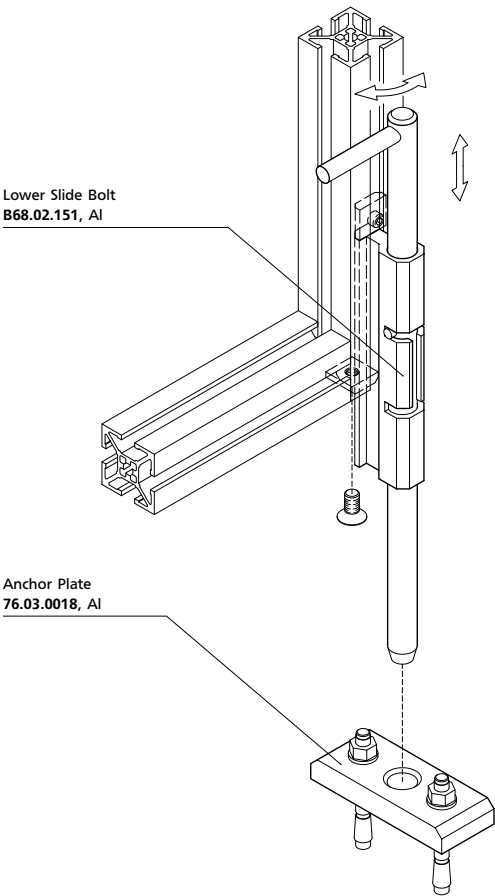
Upper Slide Bolt

To securely latch swing doors to upper framing members, use the Upper Slide Bolt and Guide Angle.



Lower Slide Bolt

A thread must be made in the vertical brace for fixing the slide bolt for locking swing doors on the ground. The Lower Slide Bolt is designed for use with doors featuring a maximum 200 mm sweep clearance.



Safety Accessories

Hinged-Safety Interlock

The safety interlock is suitable for use with swing doors which must be closed to ensure the required operational safety.

Features:

- Plastic housing
- Protective insulation
- Largely oil- and gasoline-resistant
- Dimensions 111.5 mm x 92 mm x 36 mm
- Simple assembly, especially to 40 mm profiles
- Universal assembly to guarding systems fixed to the right or left
- Mounting hole for M6 countersunk screw according to DIN 965
- 2 wire insertions M 20 x 1.5

Protective Class: without 2nd switch max. SK 4

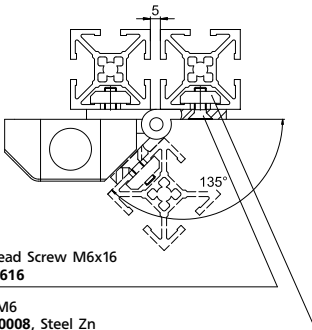
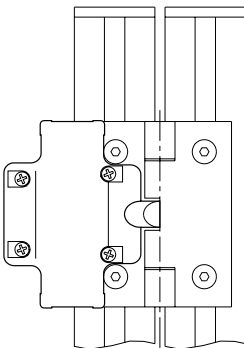
Performance-Level: without 2nd switch max. PL e

Contacts: 1 NO & 2 NC

Protection Class: IP 65

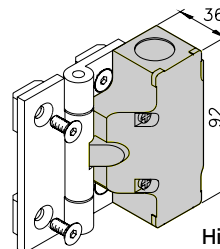
Control Voltage: 24V DC

Note: Actual switch availability may vary according to local and international safety and electrical standards. Although dimensionally identical, please inquire as to normally available ratings.



Flat Head Screw M6x16
D7991616

Nut 1M6
34.02.0008, Steel Zn



Hinged-Safety Interlock
ETVS400-12/B-M20
K370000030

Guarding

Safety Accessories

Mechanical Safety Interlocks

Features:

- Plastic housing
- Protective insulation
- Large connection area
- Dimensions 52 mm x 90 mm x 30 mm
- Multiple coding
- High durability
- Increased contact safety during low current
- Slotted holes for adjustments, bores for mounting
- 3 wire insertions M 16 x 1.5

Protective Class: without 2nd switch max. SK 3

Performance-Level: without 2nd switch max. PL d

Contacts: 1 NO, 2 NC

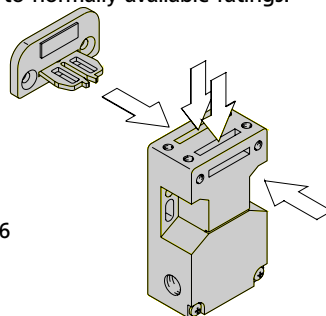
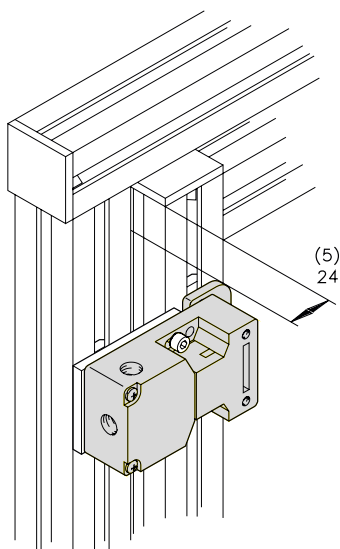
Protection Class: IP 67

Solenoid Locking Force: 30 N

Control Voltage: 24V DC

Note: Actual switch availability may vary according to local and international safety and electrical standards. Although dimensionally identical, please inquire as to normally available ratings.

The safety interlocks with separate activation are suitable for laterally moveable, rotating, and in particular for removable guarding systems that must remain locked in order to ensure the safety of the operation. The gate and activator of the safety interlock are not connected by design; however, during the switching function, they are linked or separated. When opening the safety interlock, the activator is separated from the basic device. This forces normally closed contacts in the safety interlocks to be opened and the normally open contacts to be closed.



Actuating Key
AZ15/16-B1-1747
K370000011

Safety Interlock
AZ 16 zvrk - M16
K370000010

Safety Accessories

Magnetic Safety Interlocks

Features:

- Plastic housing
- Suitable for the food industry
- Covered installation optional
- Dimensions 52 mm x 90 mm x 39 mm
- High durability
- Not affected by lateral mismatch
- Mechanical wear-resistant
- Resistant to soiling
- 3 wire insertions M 20 x 1.5
- Connection area
- Switching distance max. 6 mm

Protective Class: without 2nd switch max. SK 3

Performance-Level: without 2nd switch max. PL d

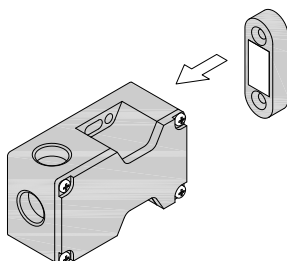
Contacts: 1 NO, 2 NC

Protection Class: IP 67

Control Voltage: 24V DC

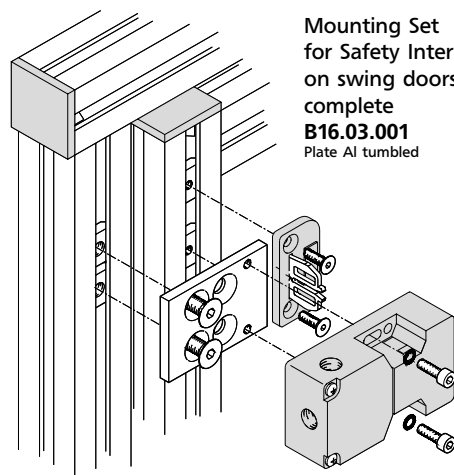
Actuating Key
BPS 16 Magnet
K370000013

Safety Interlock
BNS 16-12ZV
K370000012

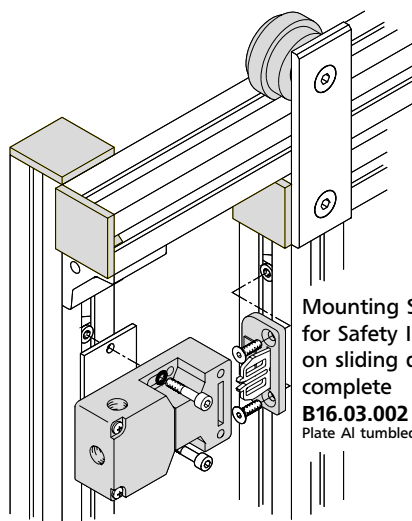


Mounting for Safety Interlocks

The safety switch mounting kit can be used for swing doors with either a 5 or 24 mm gap.



Mounting Set
for Safety Interlocks
on swing doors,
complete
B16.03.001
Plate Al tumbled



Mounting Set
for Safety Interlocks
on sliding doors,
complete
B16.03.002
Plate Al tumbled

Guarding

Safety Accessories

Mechanical Solenoid Latching

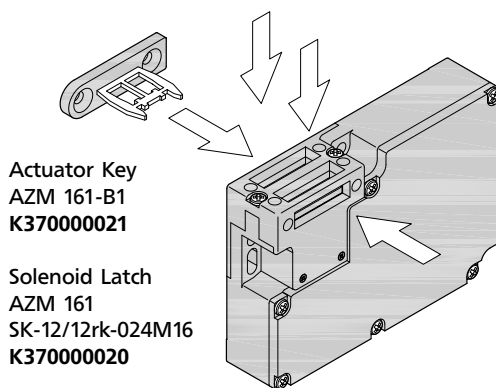
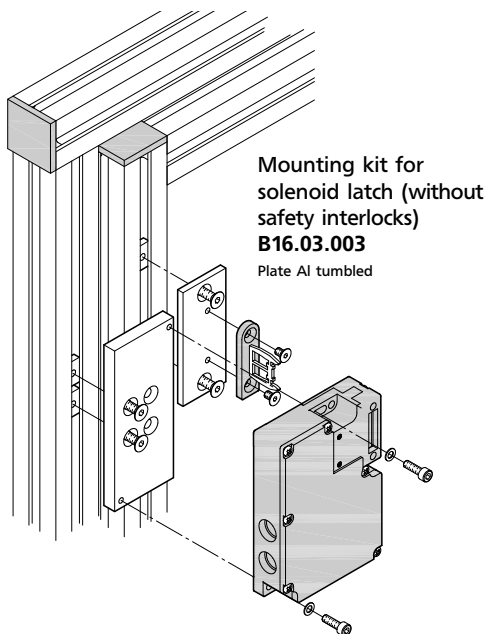
Features:

- Plastic housing
- Protective insulation
- Failproof interlocking guard
- Dimensions 130 mm x 90 mm x 30 mm
- 6 contacts
- High durability
- Large connection area
- Auxiliary unlocking device
- 4 wire insertions M 16 x 1.5
- Quiescent current principle

The solenoid latching ensures that sliding and swing doors, as well as removable guarding sections cannot be opened until all potentially hazardous operations have ceased.

Safety doors that are protected by solenoid latching and are opened only in exceptional cases. Electromagnets that block and release the activator of a switch, are used to trigger the locking function of an interlocking device.

Protective Class: without 2nd switch max. SK 3
Performance-Level: without 2nd switch max. PL d
Contacts: 2 NO & 4 NC
Protection Class: IP 67
Solenoid Locking Force: 2000N
Control Voltage: 24V DC



Safety Accessories

Electronic Solenoid Latching

Features:

- Plastic housing
- 3 different activation directions
- Compact design
- Touchless, coded electronic system
- 3 LEDs for displaying the operating modes
- Resistant to cleaning solution
- Suitable for rotating and sliding doors
- Series circuit
- Auxiliary unlocking device
- Plug-in connector M12, 8-pin plug
- Quiescent current principle
- Interlocking monitoring function
- Diagnostic output

Performance-Level: max. PL e

Contacts: 1 Diagnostic output
p-switching (Out),
2 safety outputs p-switching.
Out: Guarding closed/guarding
closed and locked

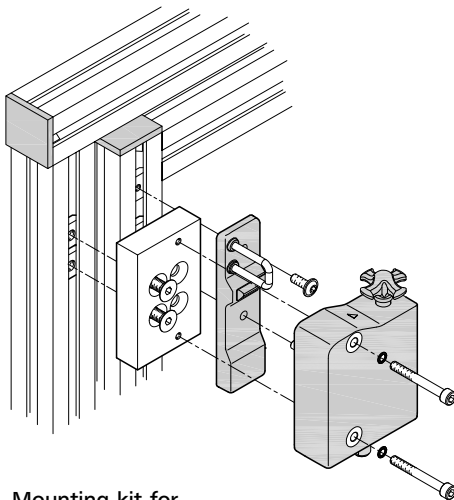
Protection Class: IP66, IP67, IP69K

Solenoid Locking Force: 1000N

Latching force: 25N/50N
adjustable via hub

Control Voltage: 24V DC

With interlocking guard monitoring function

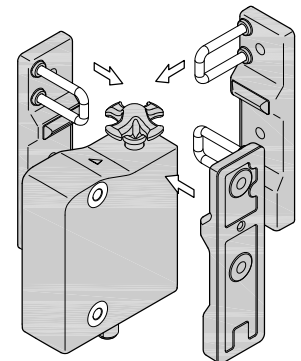


Mounting kit for
solenoid latch (without
safety interlocks)
B16.03.008

Plate Al tumbled

Actuator Key
AZ/AZM 300-B1
K370000023

Electronic
Solenoid Latch
AZM 300Z-ST-1P2P
K370000022

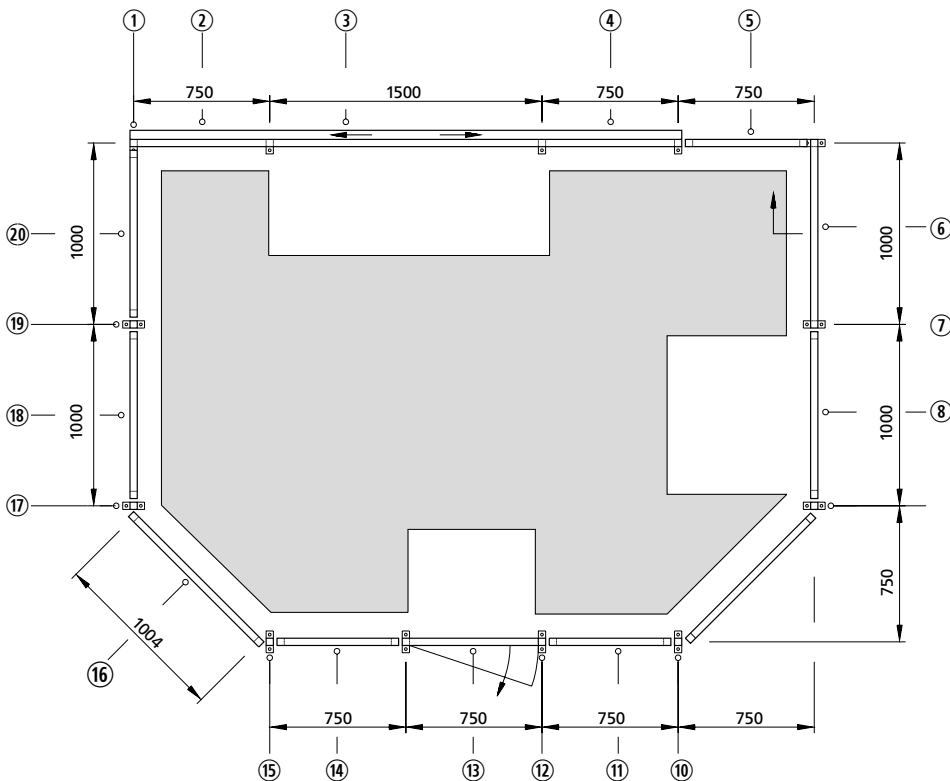


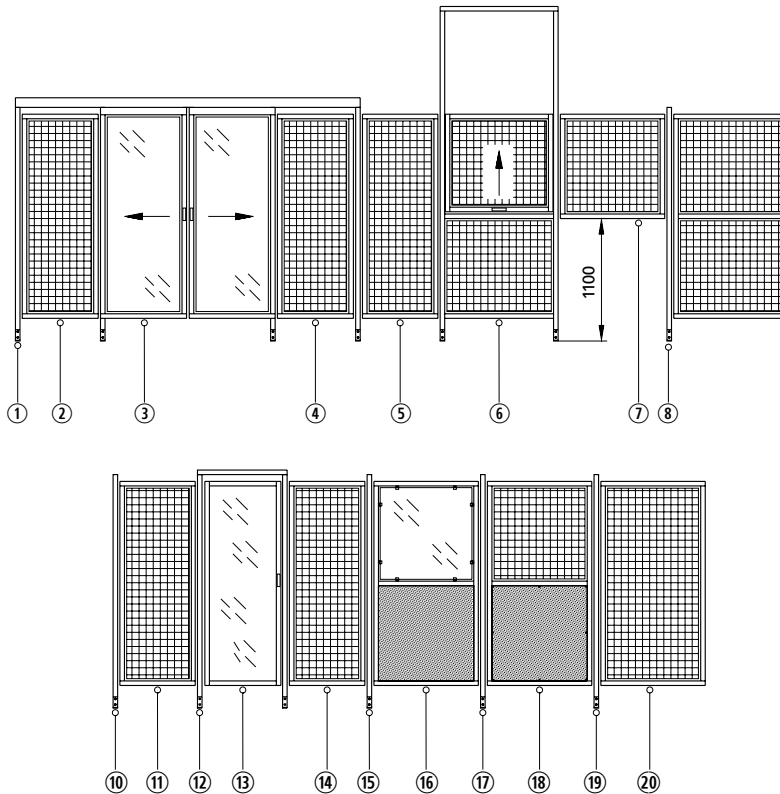
Guarding

Order Example

To properly safeguard your area or equipment, please consider the following order example.

- Create the machine or plant layout or use our 3D configurator.
- Draw in the guarding outline, considering the safety distances and hazard zones shown in illustrations A and B on page 9.
- Lay in the locations of required swing, sliding and/or vertical doors.
- Fully dimension the guard and individual elements. If possible, use our standard reference dimensions. Confirm dimensions are complete and accurate.
- Identify the position the individual components using sequential numbering.
- Sketch the side views as they are to be installed, so that possible digressions from standard can be confirmed and identified.
- List the individual elements of the guard in the form of a parts list. For elements requiring paneling materials, panels and doors for example, enter their respective Ident-Numbers in the correct position (1,2) as identified on their respective pages.
- We would be pleased to assist you.





Ref	Paneling material 1										Paneling material 2	
Nr.	Qty.	Description	Ident-Nr.	RM	Height	Height 1	Description	Ident-Nr.	Description	Ident-Nr.		
1	1	Sliding Door Frame double	B69.55.004	750	2060							
2	5	Simple Panel	B69.50.001	750		1800	Fencing 40x40x4	B69.90.003				
3	1	Double Sliding Door with Double Bit Lock	B69.61.005	750		1800	Polycarbonate 6mm clear	B69.90.203	Polycarbonate 6mm clear	B69.90.203		
4		see Pos. 2										
5		see Pos. 2										
6	1	Vertical Door	B69.62.001	1000	3000		Fencing 40x40x4	B69.90.003	Fencing 40x40x4	B69.90.003		
7	1	Simple Panel	B69.50.001	1000		920	Fencing 40x40x4	B69.90.003				
8	5	Post 2	B69.65.002		2060							

etc.

RM = Reference dimension

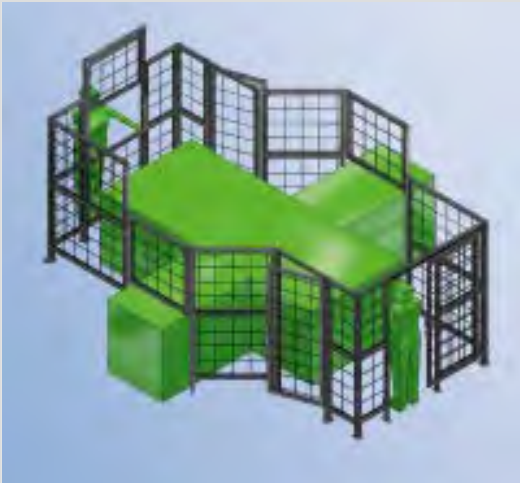
Guarding

Application Examples

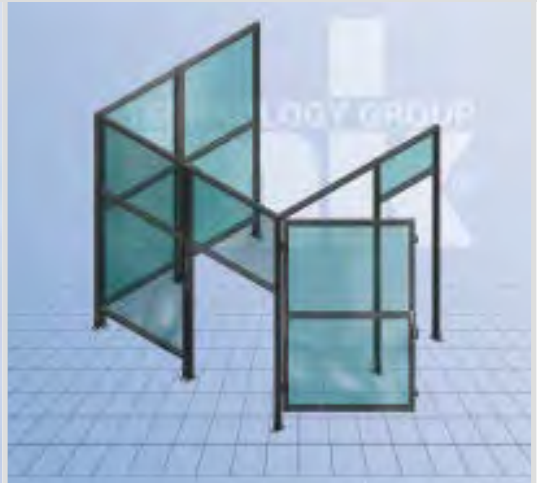
Protective fencing - Panel solutions



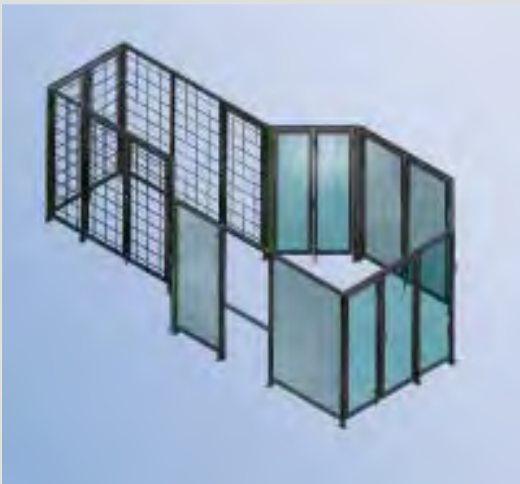
Examples from our mk QuickDesigner configurator



Post/panel solutions with variable angle connection; fencing was used as panel material. A vertical door, swing doors, and passages for moving material in and out were integrated.



Guarding, locked on three sides, including large swing doors with crossbeam. Polycarbonate was used as panel material.



Post/panel solution with variable angle connection. Two swing doors were integrated. A combination of polycarbonate and fencing was used for the panels.



Safety fence configuration with offset access area, swing doors, large inlet area for bringing in products and swing door. Entirely designed with fencing as panel material.

Guarding

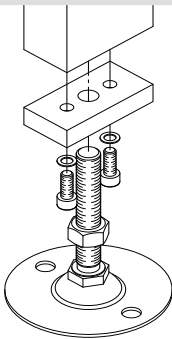
Application Examples

Safety enclosure for the clean room



Safety enclosure for the cosmetic industry. Based on the high level of hygiene requirements, cleanroom profiles of series 40 with encapsulated profile nuts with used. In order to have an unobstructed view of the packaging station, scratch-resistant Makrolon, a polycarbonate product, was used as panel material. In addition, stainless steel adjustable bases have been used. They are ideal for applications that must be compliant with hygiene regulations.

Detail A

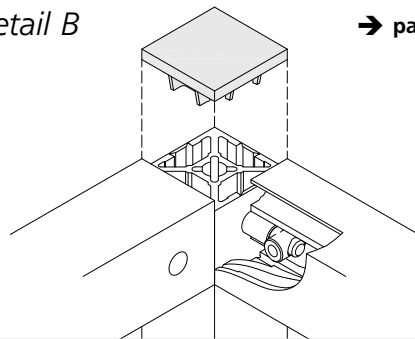


Stainless steel leveling pads

B67.02.081

The leveling pads shown here are made completely of stainless steel and therefore most suitable for the use in cleanrooms or when compliance with FDA requirements is mandatory. Moreover, the spherical design lets liquids run off easily. The adjustment and swivel range of the bases makes it easy to compensate for height differences and uneven floors. In addition, dowels can be used to anchor the bases to the ground.

Detail B



→ page 13

Cleanroom profiles with silver end caps

Profile mk 2040.96 with end cap mk 2507SI

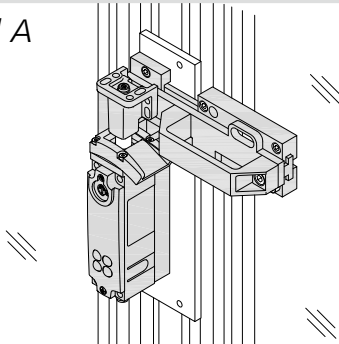
Matching the matte silver of the anodized profiles, they fit inconspicuously into the overall picture of your structures. Made of sturdy plastic injection molding, the end caps seal the front of the profiles and thus protect against damage and cover the edges flush.

Protective enclosure for measuring station



The lifting station and elevator are protected by a panel frame surrounding the system. The frame is painted in RAL colors, specified by the customer. The inlet and the measuring cell are protected by a frame with panels made of polycarbonate and sheet metal covers. Next to the swing door, a space-saving folding door was installed.

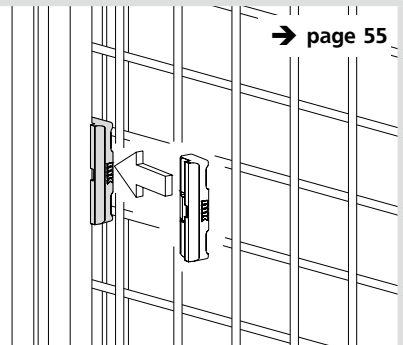
Detail A



Safety interlock

Safety interlock with slide bolt, closer for folding doors, secure closing monitoring function and integrated CES-AP electronics system. This switch does not require a special valuation unit. The switch is compliant with safety category 4 and PL e and compliant with EN ISO 13849-1 if installed horizontally or facing down. There are two secure semiconductor outlets and one message outlet 'OUT' as well as safety outputs with timing feature.

Detail B



Fence Clip

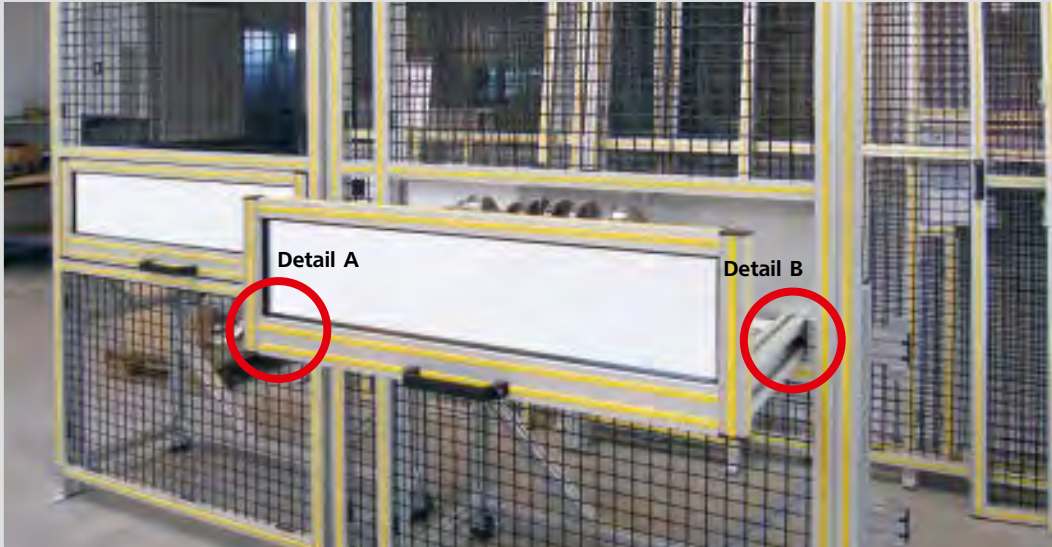
mk 2544

The fence clip can be used to quickly fix wire mesh fencing in series 40 profiles. This is done by simply knocking the clip into the profile slot. To adequately secure the fencing in the profile frame the maximum distance of the fence clips from the corners should not exceed 200 mm and 520 mm from each other.

Guarding

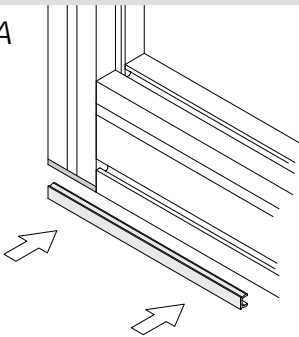
Application Examples

Safety enclosure with drawers for manual removal



Safety enclosure in panel design for a measurement station for crankshafts. The front panels were equipped with a drawer that can be fully pulled out for manual removal. Thereby, the rear side of the protected zone closes in a manner that does not necessitate the interruption of the automated process during the removal.

Detail A

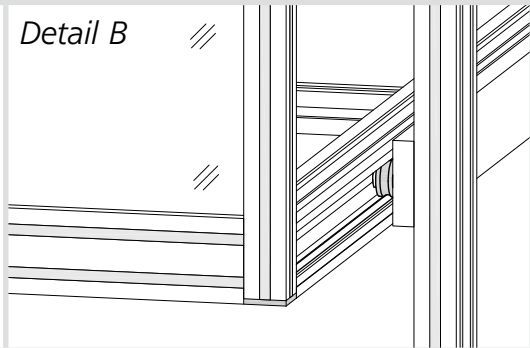


Closure Strips

mk 3015

The open grooves of the assembled profiles mk 2040.40 (40x40 mm), mk 2040.41 (40x80 mm) and mk 2040.45 (80x80 mm) were closed with closure strips painted in the customer-specific yellow factory color. The closure strips keep the grooves clean. A variety of mk paint standards makes it possible to adjust the color accents to the individual customer's requirements.

Detail B



Drawer with track roller guide

Profile rail B51.04.142

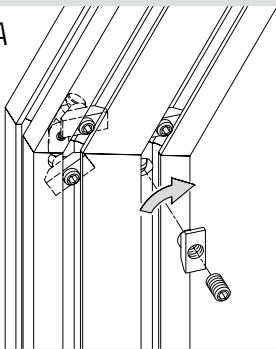
The track roller assembly of the drawer comprises a profile guide (PF-10-38.77) with a $\varnothing 10$ mm guide rod that is mounted on is the inside. The carriage (LW 38.77-44) is mounted securely to the frame. The low rolling friction allows for an smooth operation of the drawer. The simple and robust design requires little maintenance and is wear-resistant.

Safety enclosure with sliding door



This is a machine enclosure that houses a manual lathe. Appearance and shape of the safety enclosure should be adapted to the visual aspects of the lathe. In order to prevent metal chips or drilling water to enter the production hall, the enclosure was finished with sheet metal panels. Two sliding doors made access for the operation of the machine simple. The sliding doors were powered by V-belts.

Detail A

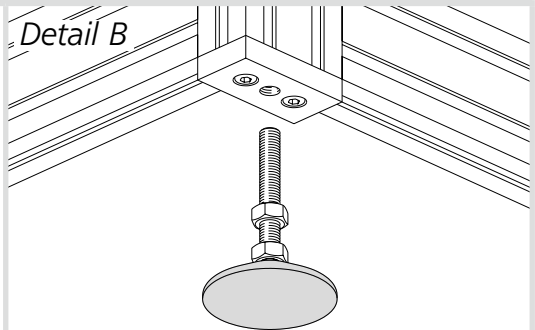


Swivel Tension Plug

B51.03.011

The swivel tension plug can be used to connect mitered series 40 profiles. All angles from 0° to 90° can be accomplished. The connection requires a one-sided $\varnothing 10$ mm hole on the chamfered edge in both profiles at a distance of 15 mm from the middle of the cut edge.

Detail B



Leveling Pad KB M12

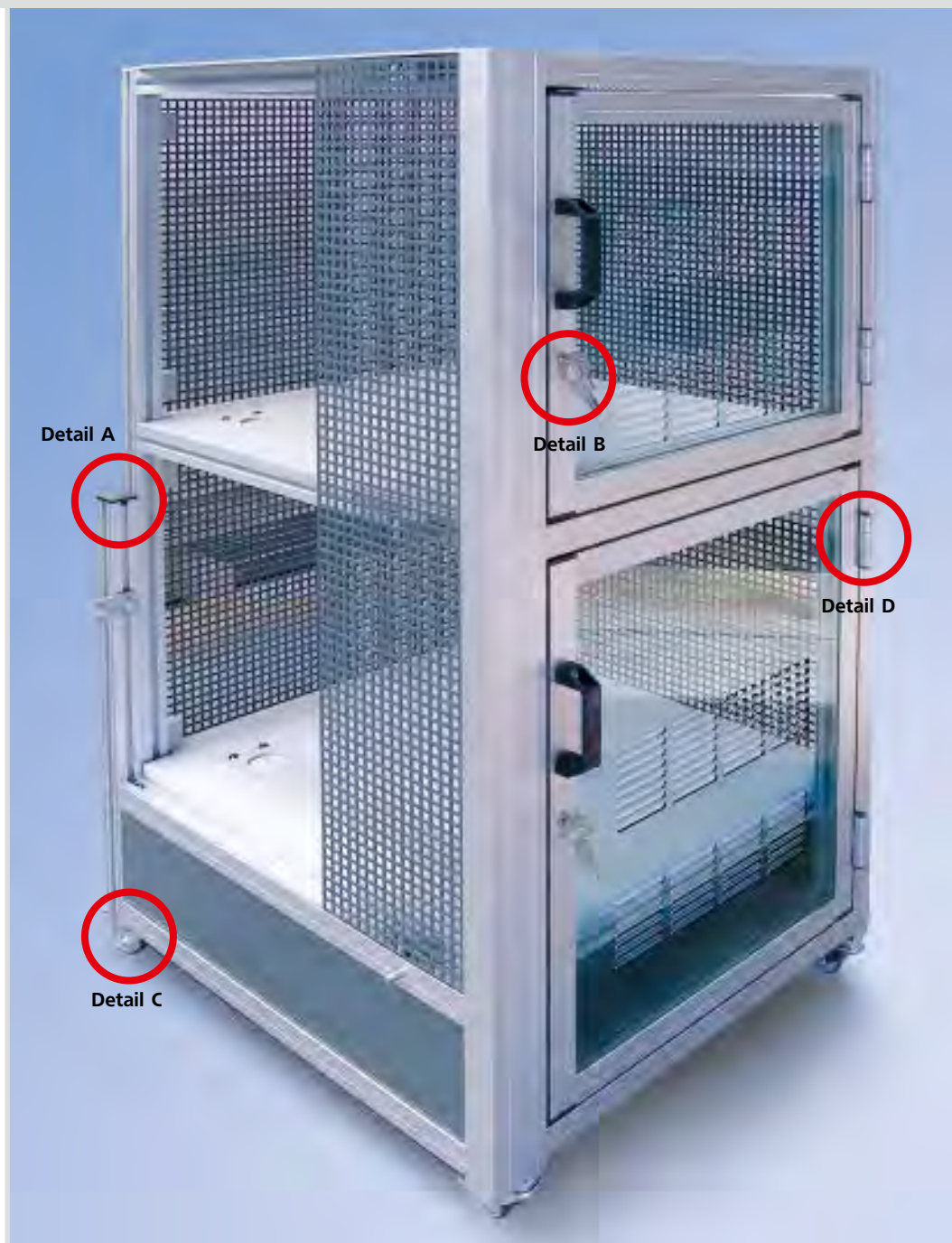
B67.02.001

The leveling pad is screwed into the pad plate matching the respective profile – here Pad Plate I M12 (50.02.0035). After adjusting the height, the pad is locked using the included hex nut. The leveling pad has an adjustment range of 75 mm and a loading capacity of 1,500 N. The ball and socket joint compensates for sloped surfaces.

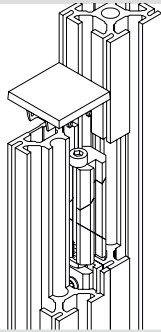
Guarding

Application Examples

Protective cabin with swing doors



Detail A

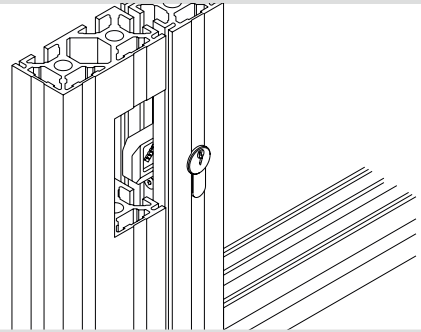


Parallel Connection

B51.03.021

The parallel connectors link profiles that run side-by-side without additional preparation. To do this, the connectors are inserted into the grooves of the opposing profiles. Then, an Allen wrench is used to apply tension across two planes.

Detail B



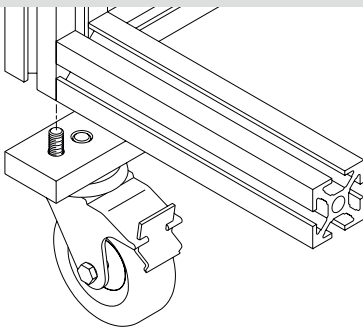
Cylinder Lock

B68.02.051

The lock is designed for installation in mk 2040.01 and mk 2040.40 profiles. This requires profile services 5401BC and 5440BC, whereby specifications must be made regarding both the total length of the profile and the distance from the bottom end of the profile up to the bottom edge of the lock. The profile cylinder is installed by pressing it through the profile opening in the keeper and is then secured by tightening the included hardware.

→ page 59

Detail C

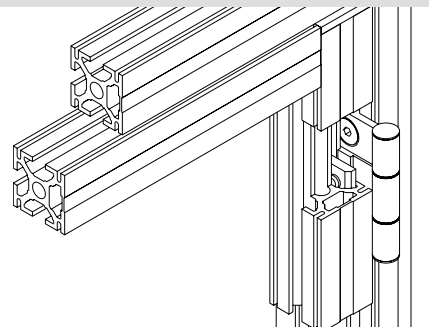


Fixed and Swivel Caster

K106001041 and K106000141

The casters are fastened to the appropriate pad plate using an M 10 hex head screw – here Pad Plate I M10 (50.02.0041). The casters have a load bearing capacity of 600 N. The swivel casters have a brake.

Detail D



Hinge 40-1/40-7/40-1

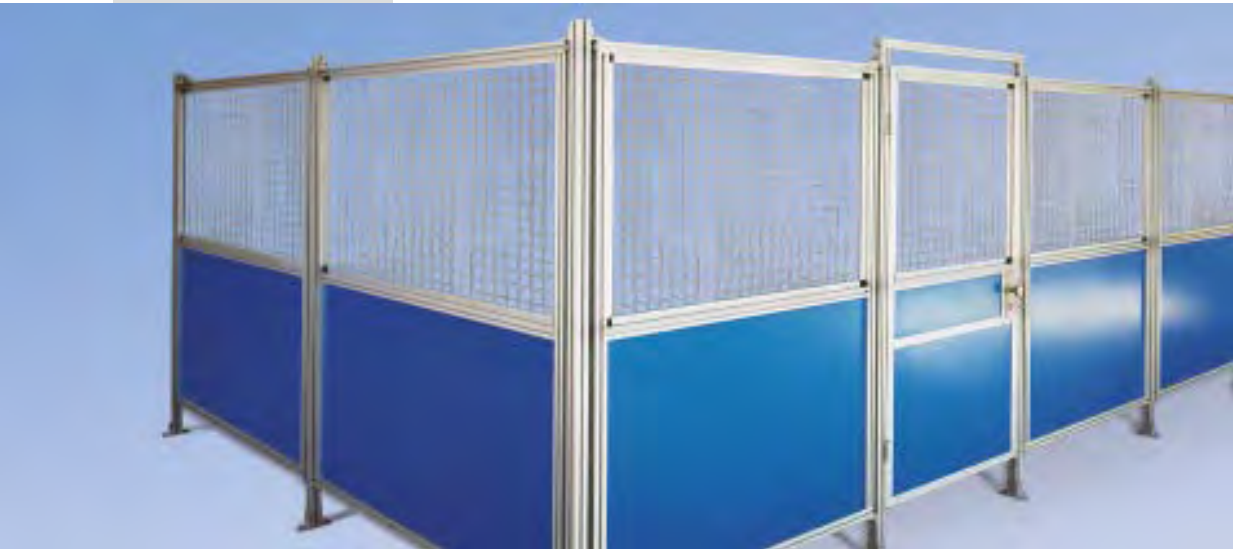
B46.01.030

The hinge is mounted between two profiles using flat head socket head cap screws (FH-SHCS) and nuts. The appropriate mounting hardware is included with all hinges. The keys in the hinge arms ensure parallel orientation of the elements. If three hinge arms are used the door cannot be lifted and removed without tools.

→ page 58

Guarding

Application Examples



**Standard guarding
(Post-Panel Method)**



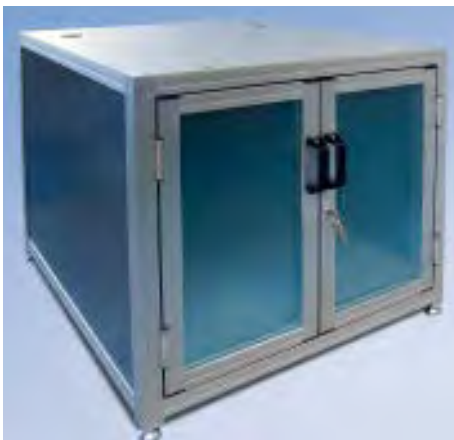
Custom guarding for conveyor segments



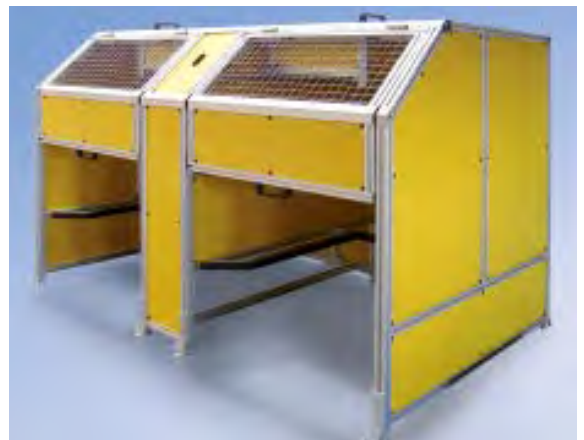
Machine guarding with vertically swinging door actuated by gas springs



Bifold door within post-panel system



Cabinet with swing doors, cylinder lock, handles, and stainless steel bases



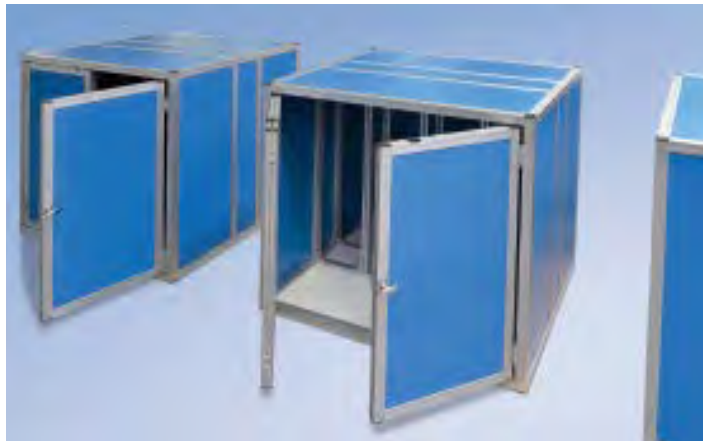
Custom guarding with vertically swinging doors actuated by gas springs

Guarding

Application Examples



Individual guarding for production machine



**Container with double swing door,
cabinet bolt and slid bolt**



Telescoping guarding on rollers



Vertical door elements with counterweights



Protective device guard with paneling made of Alucobond and polycarbonate



Scanner cabin with double swing door

Guarding

Application Examples



Individual guarding for baby stroller test fixture



Protective enclosure for flight safety areas with Alucobond paneling



Frames for swing door attachment made of black, powder-coated panels



Manual vertical door equipped with counter balances inside profile, attachment with cable and pulleys and optional weight adjustment



Guarding with swing doors made of clean room profiles

mk Workstations

Contents Workstations



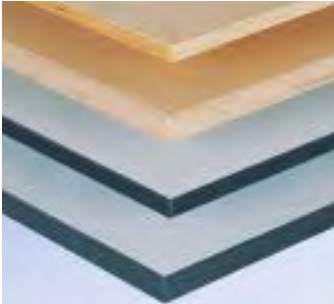
Workspace Configuration

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Workspace Configuration



Advantages of mk Workstations

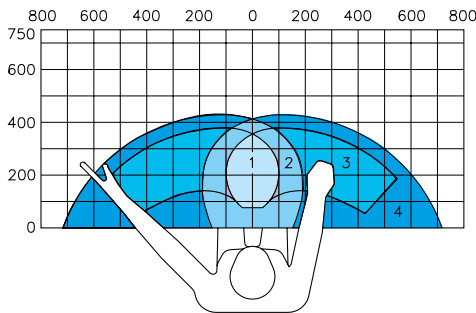
- Know-how in the area of customer-specific workstations guarantees a standardized and modular product pallet for custom design based on specific customer requirements.
- mk workstation systems fit the person, not the reverse.
- With changing production conditions, simple and economic adjustment to the new situation is easy and cost-effective
- Consistent system design of compatible elements, quality in material and workmanship and above all, a high level of utility ensure cost efficiency in the long term
- Competent advice and support in design from mk engineers

Ergonomics and mk Industrial Workstations

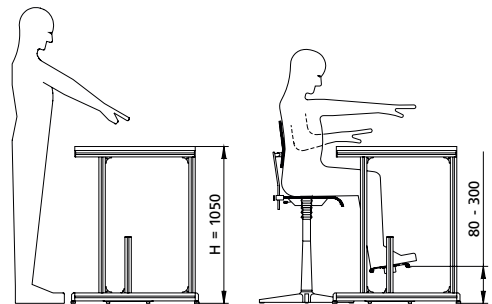
The word Ergonomics is a combination of the Greek words Ergon = work and Nomos = law. Our workstations are designed to provide a balance between human well-being and performance. It is a known fact that the ergonomically ideal layout of workstations and workplaces not only stimulates the efficient manufacture of

products in general, yet also has direct benefits with respect to reducing the psychological demands placed on employees. When properly designed, workstations are built around normal and comfortable human body movement rather than subject it to forced positions. It also has a positive influence on the well-being of

the individual with respect to their work and to their company. Statistically, a disregard of ergonomic principles when designing workstations has been shown to result in reduced performance of between 5 %- 20 %, due to back and neck pain alone.



- Zone 1 work area
- Zone 2 extended workspace
- Zone 3 one-hand zone
- Zone 4 extended one-hand zone



Use of a workstation as a standing or seated workplace

Workspace Configuration

Standards and protection from ESD

Standards and Practices

mk has used the following Standards and Practices as a basis for its designs:

- BGI 523; Person and workplace
- DIN 31000/A1; VDE 1000/A1; general principals for safe design of technical products
- DIN EN 527-1/-2/-3; Office furniture, office and work desks
- DIN EN 894-1/-2/-3; Safety of machinery – Ergonomic requirements for the design of displays and control actuators
- DIN EN ISO 6385; Ergonomic principles in the design of work systems
- DIN EN ISO 10075-1/-2/-3; Ergonomic principles related to mental work-load
- DIN VDE 0100-410; VDE 0100-410; Construction of low-voltage power systems, protective measures – protection against electric shock

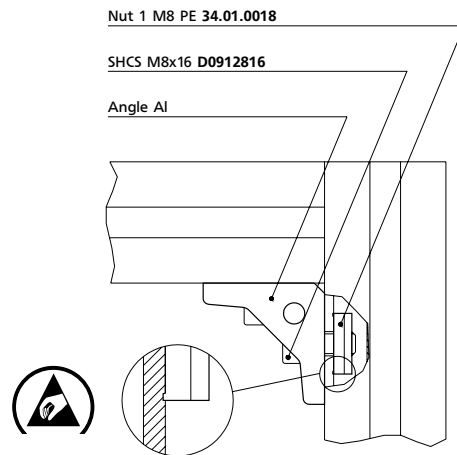
Electricity and Grounding

If workplaces are electrified (i.e. lighting, electrical outlets, etc.), DIN VDE 0100-410 requires that all conductive elements of the workplace must be connected via a common ground, so that the workplace remains safe in the case of an electrical short.

As a rule, mk uses a grounding method in all its standard workstation systems which is applied whether the workstation has electrical components or not. Connecting angles using our PE-Nuts, this grounding is accomplished without the use of additional wires. This means that in the case of later electric additions, that only the electrical grounding must be connected with the workplace.

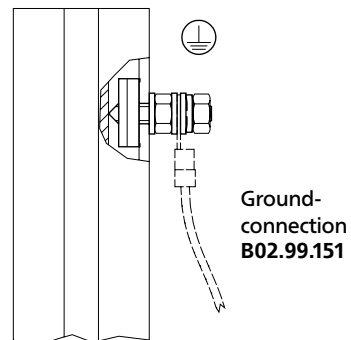
Angle connection with ESD-Nuts

The nut is stamped to include protrusions which break through the anodized surface of the profile. This provides conductivity through the screw and thus ensures grounding of the connection.



Common Grounding mk Workstations

A defined grounding location of an mk workplace for attachment to a common ground.



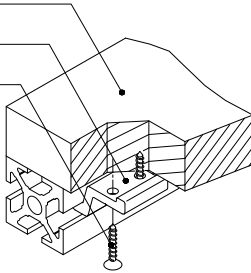
Attachment details

Worksurface attachment

mk offers various methods within the standard program whereby a worksurface can be attached to the framing.

Worksurface

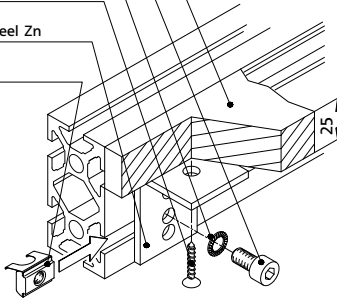
Clamp 26.00.0052, Al
Wood Screw \varnothing 4x25
K112510020



Worksurface 25 mm

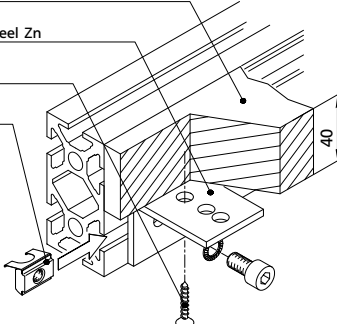
SHCS M8x16
D0912816
Ribbed Washer \varnothing 8.4
K111010017, Steel Zn
Wood Screw \varnothing 4x25
K112510020

Angle 82.03.0018, Steel Zn
Swivel-in Nut 1
M8 34.16.0831



Worksurface 40 mm

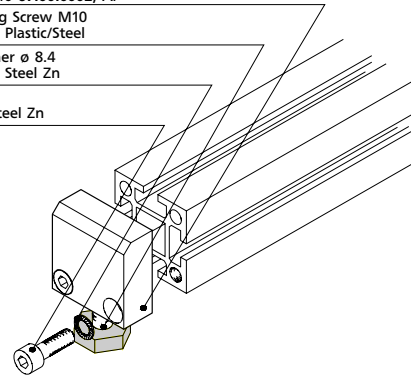
Angle 82.03.0018, Steel Zn
Wood Screw \varnothing 4x25
K112510020
Swivel-in Nut 1
M8 34.16.0831



Leveling Pad attachment

Floor level variations of up to 30 mm can be compensated for with the Floor Leveling Screw. This is available standard on all mk System Workplaces.

Pad Block M10 67.00.0002, Al
Floor Leveling Screw M10
K110060003, Plastic/Steel
Ribbed Washer \varnothing 8.4
K111010017, Steel Zn
SHCS M8x25
D0912825, Steel Zn

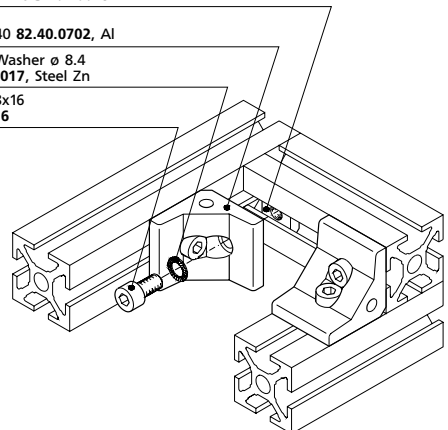


Angle connections

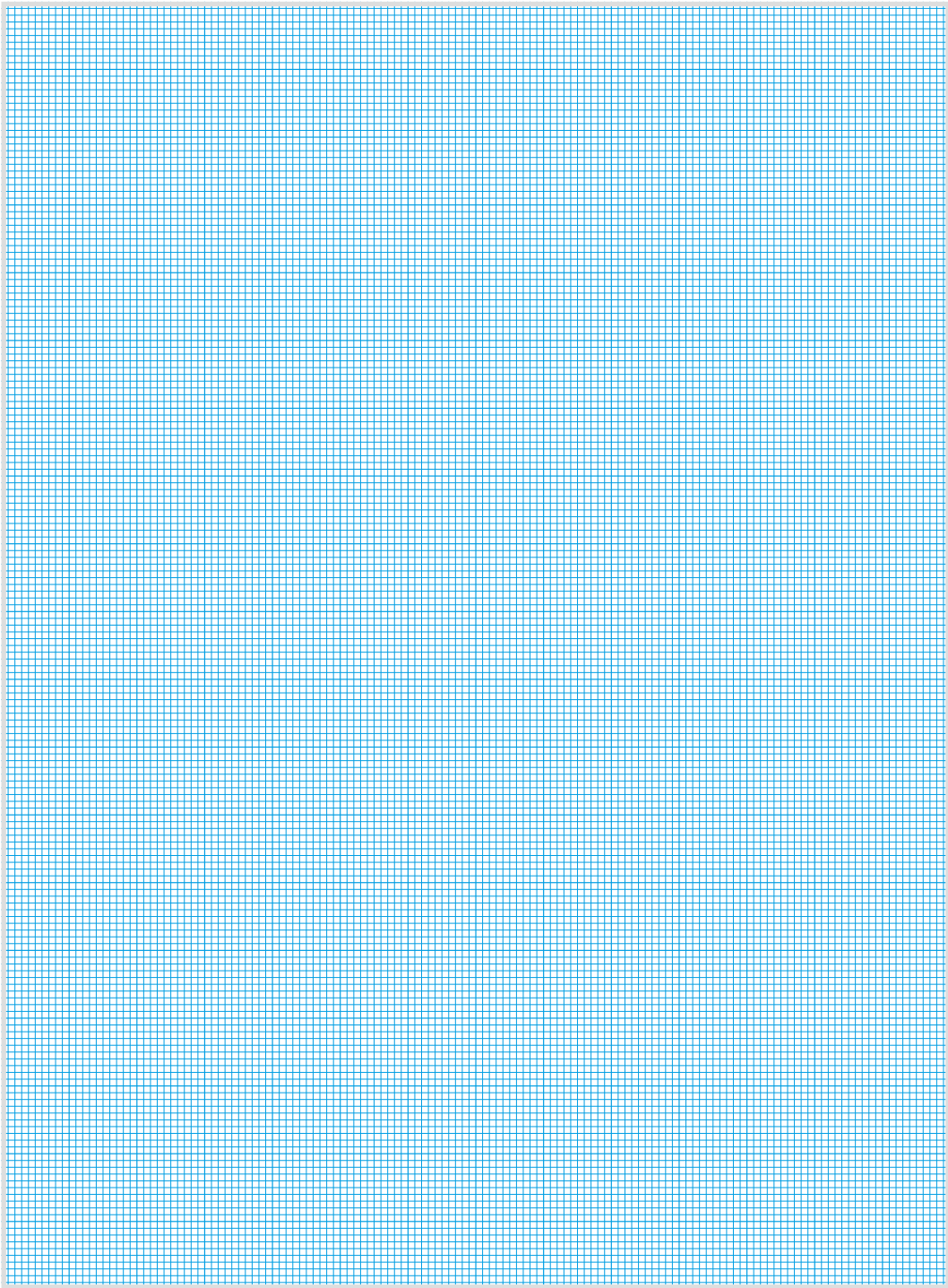
Angles are available either with or without key steps. Keyed angles offer the advantage of preventing profile twisting while easily achieving a flush connection.

Nut 1 PE M8 34.01.0018

Angle E40 82.40.0702, Al
Ribbed Washer \varnothing 8.4
K111010017, Steel Zn
SHCS M8x16
D0912816



Workstations



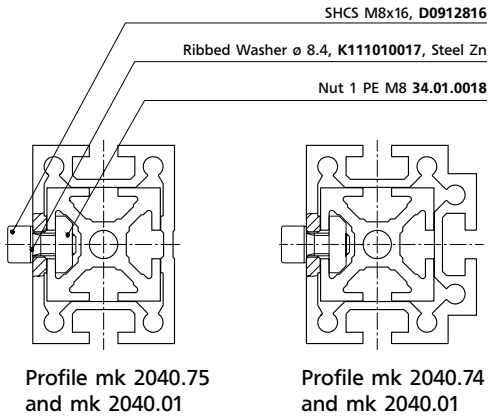


Workstations

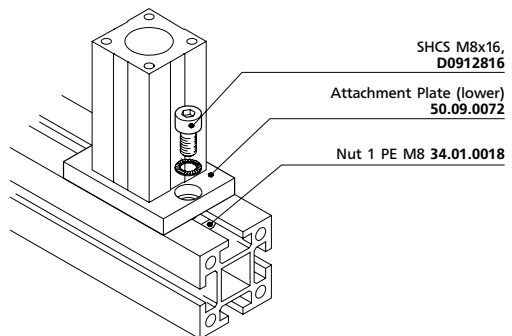
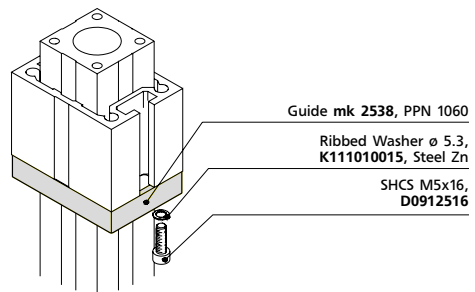
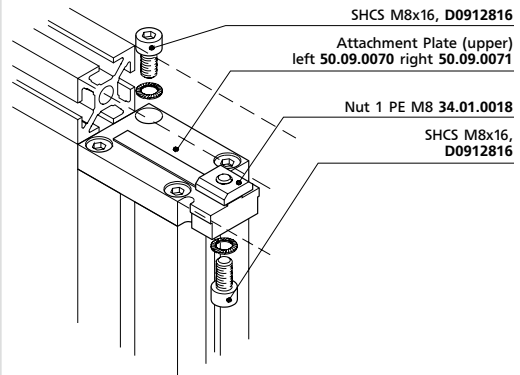
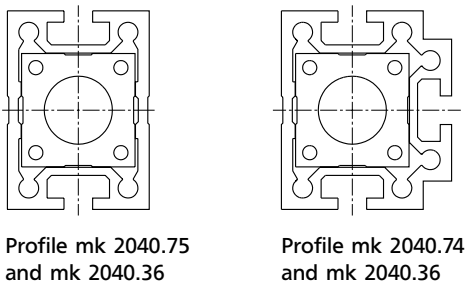
Workstations

Telescoping Legs

Telescoping Profiles for manual height adjustment



Telescoping Profiles for electric height adjustment

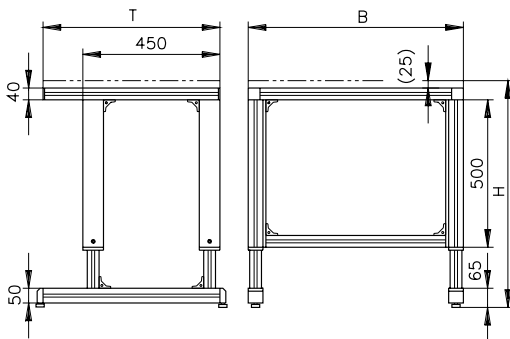


Workstations

Manual height adjustment

Manufactured using our Series 40 Profiles, mk height adjustable workstation frames are designed using an extremely rigid desk construction. The method of height adjustment is accomplished using screws to hold telescoping profiles. The adjustment of the work height is easily accomplished while maintaining high workstation rigidity and load capacity. The light and heavy versions differ primarily in the worksurface size and placement as well as the profiles used for framing.

A selection of various worksurfaces and paneling is shown on the following pages.



Workstation D1 light

B02.13.040

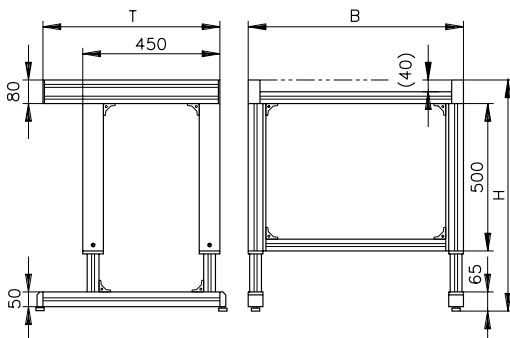
Load capacities

Load type	Surface load	Point load
Static load	2000 N (450 lbs)	1200 N (270 lbs)

Standard dimensions (mm)

Height H	Depth T	Width B
680 to 1070	600	1200
ab H = 900 mm	750	1400
with additional brace		1600

Other dimensions possible



Workstation F1 heavy

B02.13.060

Load capacities

Load type	Surface load	Point load
Static load	4000 N (900 lbs)	2400 N (540 lbs)

Standard dimensions (mm)

Height H	Depth T	Width B
680 to 1070	600	1200
ab H = 900 mm	750	1400
with additional brace		1600

Other dimensions possible

Workstations

Workstations

Manual, hydraulic height adjustment with crank

Manufactured using our Series 40 Profiles, mk height adjustable workstation frames are designed using an extremely rigid desk construction. The height adjustment of this workstation style is accomplished using a hand crank to drive telescoping profiles with the appropriate wear strips. The surface elevation can be quickly changed to accommodate different operators or products. A change between seated and standing positions can also be realized. The torque requirement of appx. 6 Nm (53 in-lbs) falls within the range of ergonomic design guidelines for manual operation as outlined in DIN 33401. A selection of various worksurfaces and paneling is shown on the following pages.

Workstation D4 light

B02.13.043

Load capacities

Load type	Surface load	Point load
Static load	2000 N (450 lbs)	1200 N (270 lbs)
Dynamic load	1600 N (360 lbs)	1000 N (225 lbs)

Standard dimensions (mm)

Height H	Depth T	Width B
680 to 1070	600	1200
ab H = 900 mm	750	1400
with additional brace		1600

Other dimensions possible

Workstation F4 heavy

B02.13.063

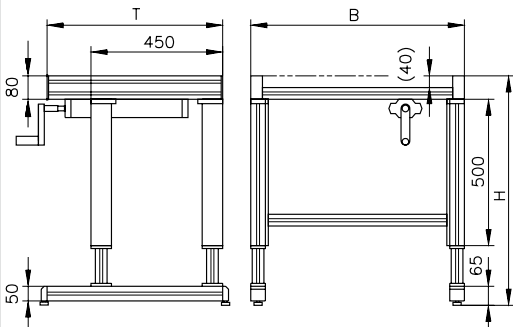
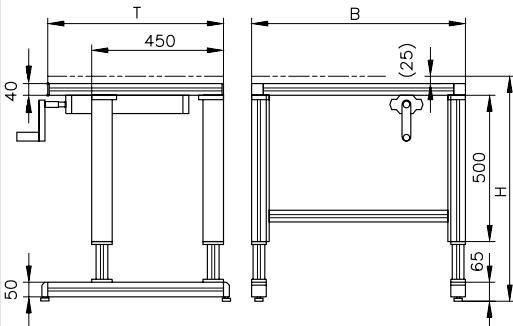
Load capacities

Load type	Surface load	Point load
Static load	2800 N (630 lbs)	1600 N (360 lbs)
Dynamic load	1600 N (360 lbs)	1200 N (270 lbs)

Standard dimensions (mm)

Height H	Depth T	Width B
680 to 1070	600	1200
ab H = 900 mm	750	1400
with additional brace		1600

Other dimensions possible



Workstations

Electric, hydraulic height adjustment

The workstation with electric and hydraulic height adjustment includes the same ergonomic features as described in the workstation with manual height adjustment. Height adjustment is accomplished using a keypad which features digital height display and four memory functions. A selection of various worksurfaces and paneling is shown on the following pages.

Technical Data

Travel speed	v = 10 mm/s
Voltage/Frequency Europe	230 V/50 Hz
(North America)	(115 V/60 Hz)
Operating voltage (secondary)	29 V DC
Construction	IP30/II
comes complete with 3 m cable	

Workstation D5 light hydr. B02.13.044

Load capacities

Load type	Surface load	Point load
Static load	2000 N (450 lbs)	1200 N (270 lbs)
Dynamic load	2000 N (450 lbs)	1200 N (270 lbs)

Standard dimensions (mm)

Height H	Depth T	Width B
680 to 1070	600	1200
ab H = 900 mm	750	1400
with additional brace		1600

Other dimensions possible

Workstation F5 heavy hydr. B02.13.064

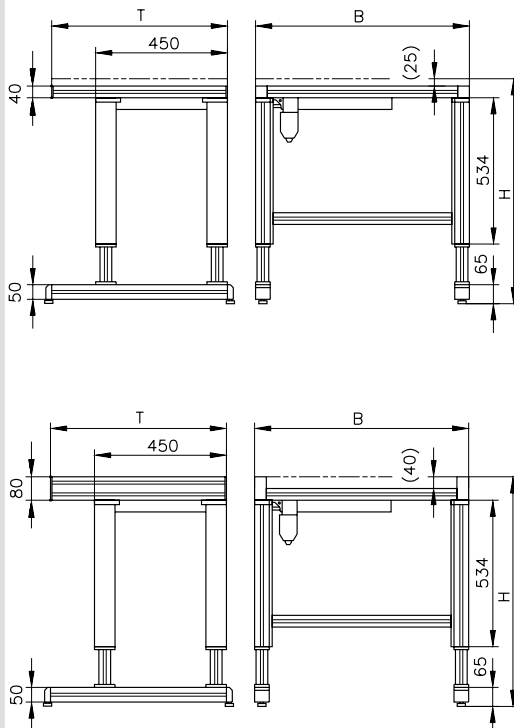
Load capacities

Load type	Surface load	Point load
Static load	2800 N (630 lbs)	1600 N (360 lbs)
Dynamic load	2000 N (450 lbs)	1200 N (270 lbs)

Standard dimensions (mm)

Height H	Depth T	Width B
680 to 1070	600	1200
ab H = 900 mm	750	1400
with additional brace		1600

Other dimensions possible



Workstations

Worksurfaces

mk offers a variety of standard worksurface materials with thicknesses of 25 and 40 mm. The workstation frame rigidity, the worksurface material and the product, as well as the friction between the two, are factors to be considered when selecting an appropriate worksurface. Additionally, environmental factors such as humidity and high temperatures can influence this decision. An additional advantage to consider is with the application of heavy workstations with 40 mm worksurfaces. These workstations feature available T-slots which are accessible from the top and sides for the attachment of additional equipment or components.

ESD-resistant worksurfaces upon request.

Multiplex surface

25 mm	m = 18.9 kg/m ²	50.13.5005
40 mm	m = 30.0 kg/m ²	50.13.5008

Multilayered beechwood, dimensionally stable and free of knots. Level, impregnated and polished natural surface, painted on request.

Laminated surface

20.6 mm	m = 15.5 kg/m ²	50.13.6004
26.6 mm	m = 20.0 kg/m ²	50.13.6005
39.6 mm	m = 27.2 kg/m ²	50.13.6008

Laminated particle board, standard color light gray, black edging with rounded corners. Limited resistance to oil, acid, alkalies and heat. Conductive surfaces available on request.

Aluminum Plate

10 mm	Ident-Nr. 50.13.0012
15 mm	Ident-Nr. 50.13.0013
20 mm	Ident-Nr. 50.13.0014
25 mm	Ident-Nr. 50.13.0015

Aluminum Profile Surface (on request)

Profile worksurfaces used for fixturing with commonly available tools. Surface features T-slots along entire length.

Customer Specific Surfaces

On request we can provide you with other surface materials (such as wood with stainless sheeting, UHMW or butcher block, for example).

Multiplex mounting kit


Required to fasten 25 mm and 40 mm thick surfaces **B02.99.050**
consisting of:
6 pieces Clamp **26.00.0052**
12 pieces Wood Screws $\varnothing 4 \times 25$ **K112510020**

Laminate mounting kit

Required to fasten 20, 25 mm and 40 mm thick surfaces **B02.99.050**
consisting of:
6 pieces Clamp **26.00.0052**
12 pieces Wood Screws $\varnothing 4 \times 25$ **K112510020**

Aluminum Plate mounting

Required to fasten 10 mm and 25 mm thick surfaces **B02.99.053**
Depending on the material thickness, aluminum plates are attached with Series 40 Angles.

 For more infos see our Profile Technology Catalog

Important Note:

Typically the material selection available in North America (United States, Canada and Mexico) will vary from that shown. In addition, thicknesses of material will be the more standard ANSI dimensions. Please inquire prior to ordering.

Paneling

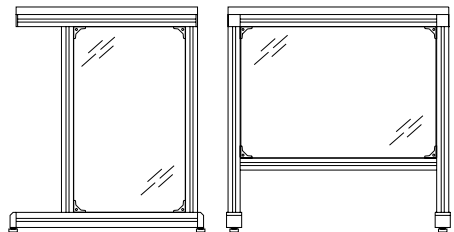
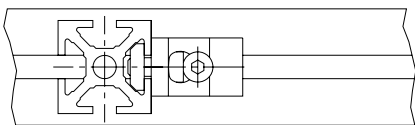
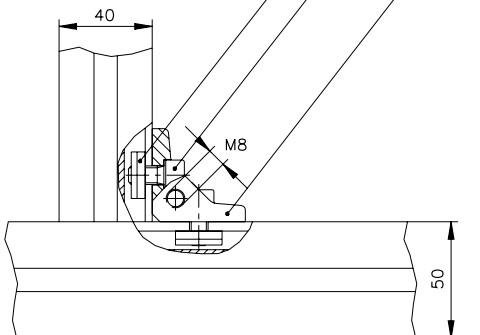
Additional panels may be desired to further enhance the aesthetic appeal of the workstation. Available as sets, these panels are pre-defined for the Workstations C1 and E1 (fixed height), as well as D and F (height adjustable). The sets can be readily installed at a later date. Besides their visual appeal, the panels can increase the structural rigidity of the workstation.

Customer-specialized paints in RAL colors are optional.

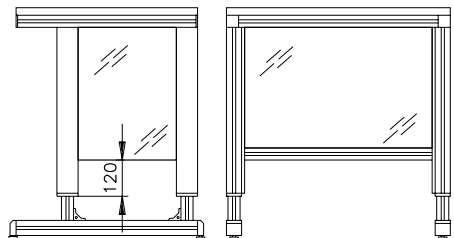
Angle E25s 82.40.0741, Al

SHCS M8x16 D0912816

Nut 1 PE M8 34.01.0018



Paneling for mk Workstations
with fixed height



Paneling for mk Workstations
with adjustable height

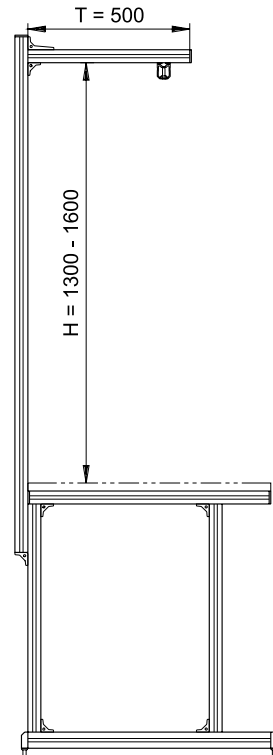
Workstation	Ident-No. Paneling (set)
C1 and E1	B02.20.500
D and F	B02.20.501

Workstations

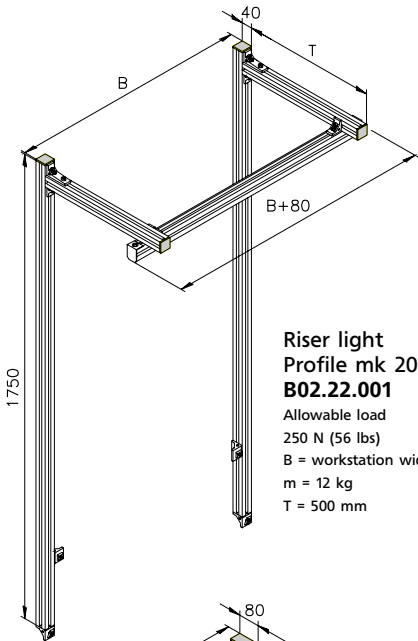
Risers

mk Risers serve as a place to locate various accessories above the worksurface including shelving, electric and pneumatic outlets, etc. The standard version is supplied with a C-channel designed to accept tool holders. This channel features our standard T-slot, whereby lamps can be hung and properly located, for example, without the need for any additional profile. The height of both the Risers and the Outriggers can be freely adjusted. Due to varying load requirements, mk offers both a Light and a Heavy version.

 Worksurfaces see page 94

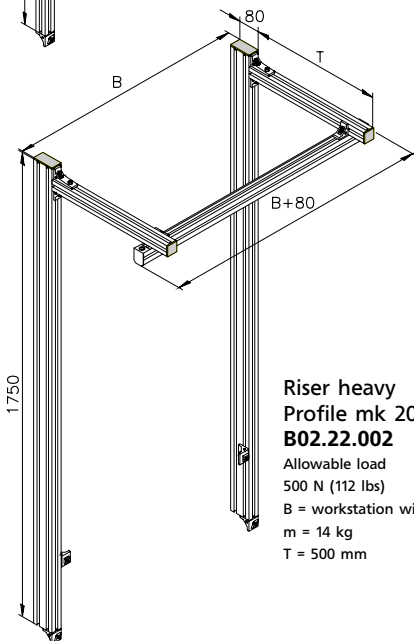


Risers



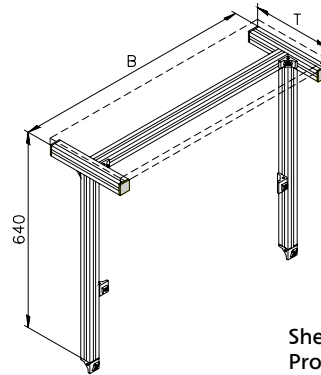
Riser light
Profile mk 2040.01
B02.22.001

Allowable load
250 N (56 lbs)
B = workstation width
m = 12 kg
T = 500 mm



Riser heavy
Profile mk 2040.02
B02.22.002

Allowable load
500 N (112 lbs)
B = workstation width
m = 14 kg
T = 500 mm



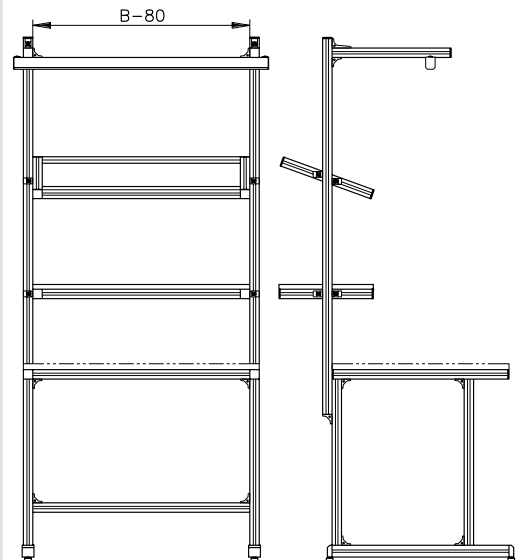
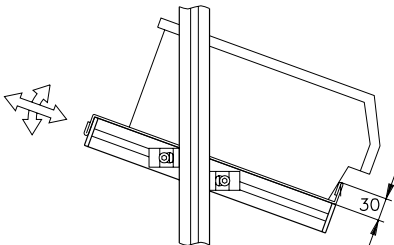
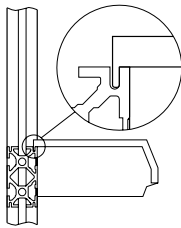
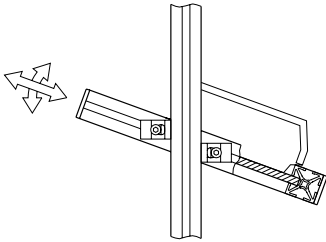
Shelf
Profile mk 2040.01
B02.22.003

B = workstation width
m = 6 kg
T = 300 or 400 mm

Workstations

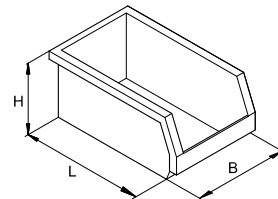
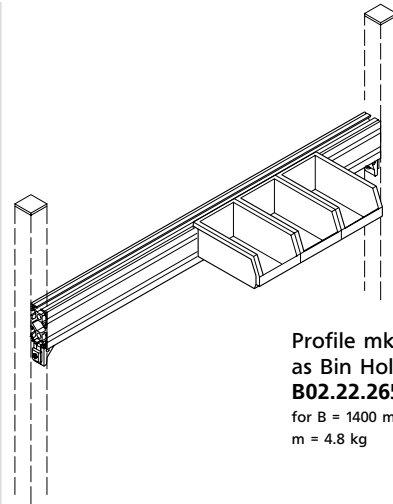
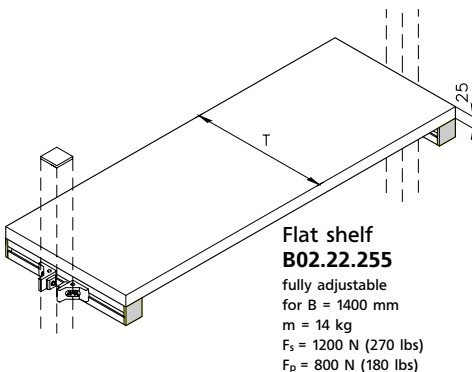
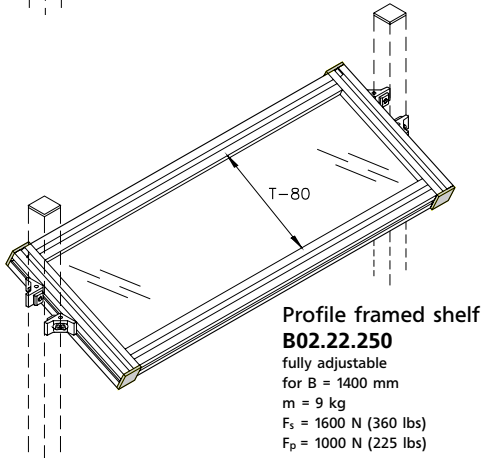
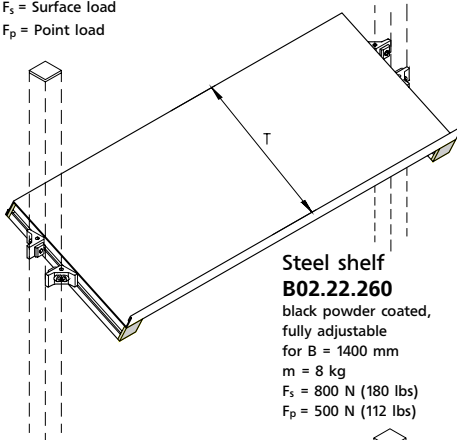
Rack Systems

mk offers three basic standard shelving styles for the placement of bins, tools, test and measurement equipment, or work-specific literature and instruction binders. Basically, the shelving options vary according to their application and orientation. For optimum ergonomic use, the shelves are freely adjustable with respect to their height, depth and incline angle.



Rack Systems

F_s = Surface load
 F_p = Point load



Bins available in a variety of designs

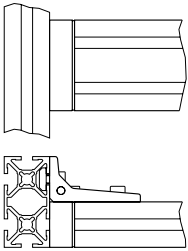
Ident No.	Designation	Length L [m]	Width B [mm]	Height H [m]
K120010025	Bin EF 6220 red	600	400	220
K120010026	Bin LF321 green	343	209	145
K120010027	Bin LF321 blue	343	209	145
K120010028	Bin LF321 red	343	209	145
K120010029	Bin LF221 green	233	149	120
K120010030	Bin LF221 blue	233	149	120
K120010031	Bin LF221 red	233	149	120
K120010032	Bin LF211 green	163	109	75
K120010033	Bin LF211 blue	163	109	75
K120010034	Bin LF211 red	163	109	75

Workstations

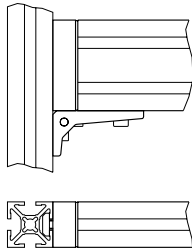
Power Supply

Pneumatic Outlets

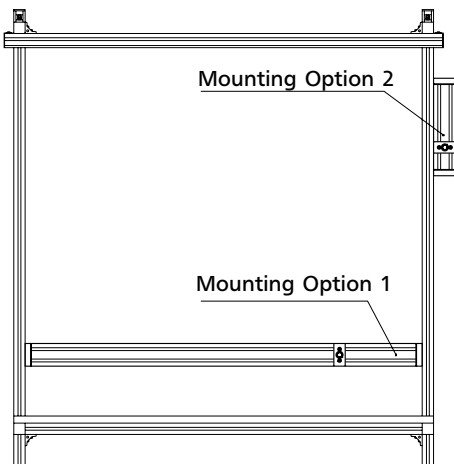
Series 40 Profile mk 2040.02 serves as the air plenum for pneumatic outlets. This profile offers enormous advantages with respect to the flexibility of placing air inlets, outlets and distributor plates. Air can be drawn anywhere along the 80 mm profile surface and at as many locations as is desired. A variety of plate options are available for the profile ends as well. Please refer to the mk Profile Technology catalog for a complete listing of all available plates. Note that our system is designed for a maximum pressure of 6 bar (90 psi).



on heavy Riser



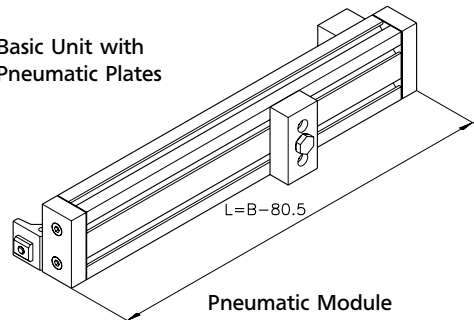
on light Riser



Mounting Option 2

Mounting Option 1

Basic Unit with
Pneumatic Plates



$$L = B - 80.5$$

**Pneumatic Module
B02.23.179**

for B = 1400 mm

m = appx. 5.5 kg (12 lbs)



Power Supply

Pneumatic Parts

Prior to mounting plates to the profile T-slot, an $\varnothing 8.4$ mm hole must be drilled at the desired location. For exact hole placement, Drill Fixture B46.03.007 is recommended, or the plates themselves can be used to mark the hole location. An O-ring placed between the profile and the plate serves to seal the connection. Proper O-ring placement is ensured by a groove on the underside of the plate.

Mounting 1/O-Ring

Coupling G1/4" K502050700

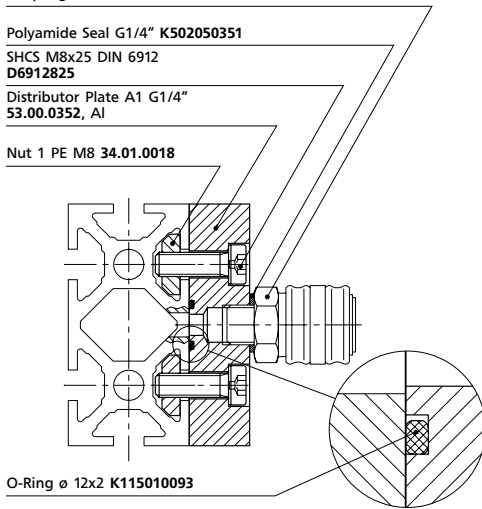
Polyamide Seal G1/4" K502050351

SHCS M8x25 DIN 6912
D6912825

Distributor Plate A1 G1/4"
53.00.0352, Al

Nut 1 PE M8 34.01.0018

O-Ring $\varnothing 12 \times 2$ K115010093

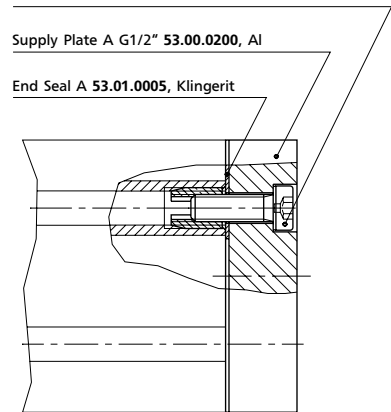


Mounting 2/End Seal

SHCS M8x25 DIN 6912 D6912825

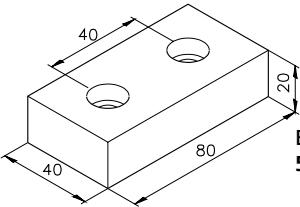
Supply Plate A G1/2" 53.00.0200, Al

End Seal A 53.01.0005, Klingerit

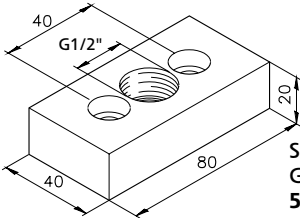


Workstations

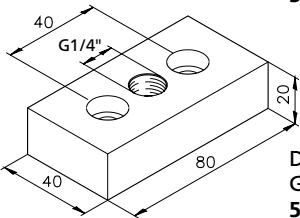
Power Supply



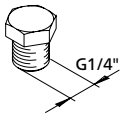
End Plate A
53.00.0100, AI



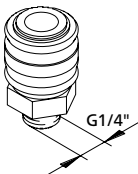
Supply Plate A
G1/2"
53.00.0200, AI
NPT 1/2"
53.00.0210, AI



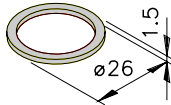
Distributor Plate A1
G1/4"
53.00.0352, AI
NPT 1/4"
53.00.0353, AI



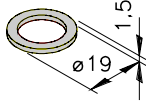
Closure Screw
G1/4"
K502050426
G1/2"
K502050428
NPT 1/4"
K502050451
NPT 1/2"
K502050450
(NPT only in USA)



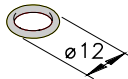
Coupling G1/4"
K502050700
NPT 1/4"
K502050706
NPT 1/2"
K502050705
(NPT only in USA)



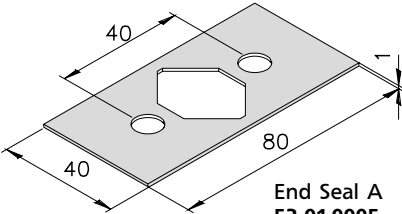
Polyamide Seal
G1/2"
K502050353



Polyamide Seal
G1/4"
K502050351



O-Ring
K115010093



End Seal A
53.01.0005



Power Supply

Electric Outlets

As an alternative to integrated electric outlets, mk offers high quality power strips (Schuco) in two versions. The housing is a clear anodized aluminum profile with tough plastic end pieces. The outlets are angled to neatly accommodate right-angled plugs. A lighted rocker switch turns the 16A rated power strip on and 2-poles off. Complete with a 1.75 m long cable, the power strip can be mounted anywhere along the profile T-slots.

Please Note:

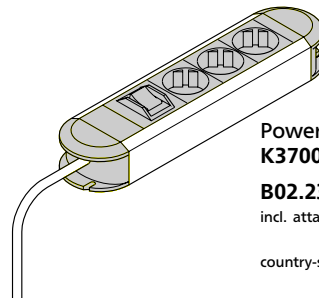
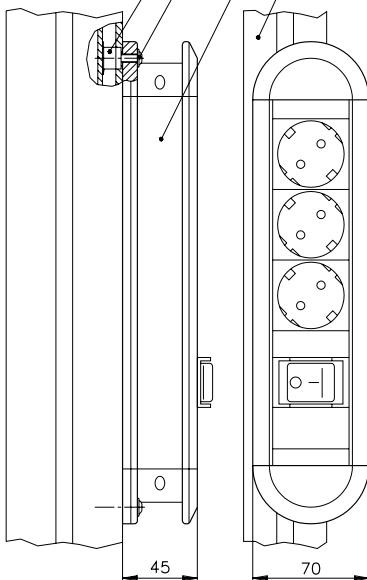
These, and all mk Electric Accessories and Components, vary in style and appearance to conform to local and international standards. Please inquire before ordering.

ex. Profile mk 2040.75 54.75.*, Al

Power Strip K370020020

Flanged Button Head Screw M5x20
K112010024, 10.9 Zn

Clip M5 34.14.0007, PPN

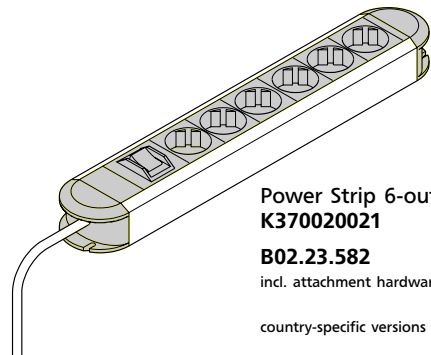


**Power Strip 3-outlet
K370020020**

B02.23.581

incl. attachment hardware

country-specific versions



**Power Strip 6-outlet
K370020021**

B02.23.582

incl. attachment hardware

country-specific versions

Workstations

Power Supply

Electric Outlets

The Electric Outlet Module shown consists of a combination of Profiles mk 2040.41 and mk 2069. Noteworthy are the assembly's rigidity and design. Various outlet and switch combinations can be placed freely along the entire length. A further advantage of this design is the ability to add or move electric elements as desired. Each assembly is tested per DIN VDE 0100-410/413 and comes with a wiring diagram. Also included is a 3 m long cable with plug.

Important Note:

These, and all mk Electric Accessories and Components, vary in style and appearance to conform to local and international standards. Please inquire before ordering.

SHCS, M8x16 D0912816

Flat Head, M8x20 D7991820

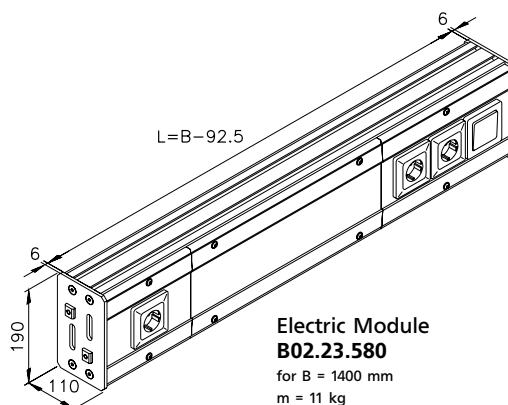
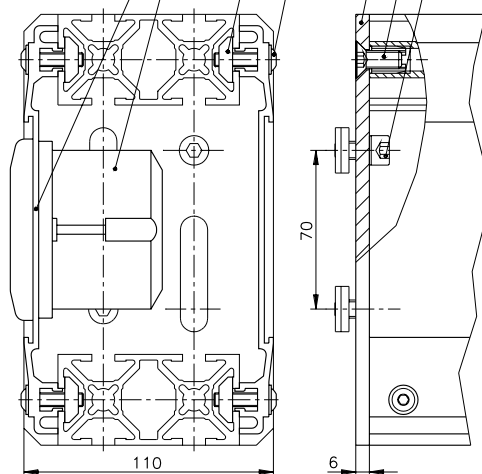
End Plate 50.12.0005, Al

Flanged Button Head Screw M6x25
K112010015, 10.9 Zn

Nut 1 M6 34.02.0008, Steel Zn

Outlet (EU 230V/50Hz) K370020050

Profile mk 2069
51.69.....*, Al



Electric Module B02.23.580

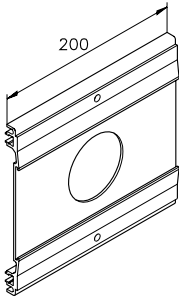
for B = 1400 mm

m = 11 kg

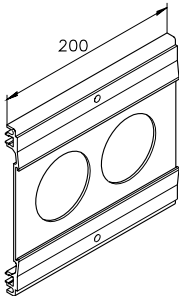
Rated for max. 16 A

Power bar can be
randomly assembled

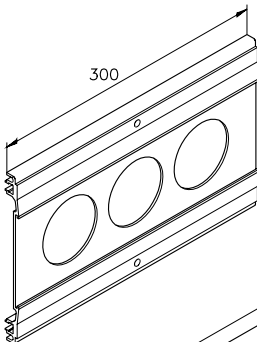
Power Supply



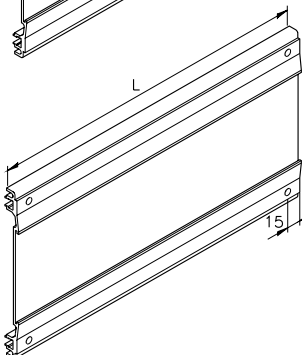
**1x – Cover
5169BB0200**
AlSiMg 0,7 F28
Reworked
to local standards



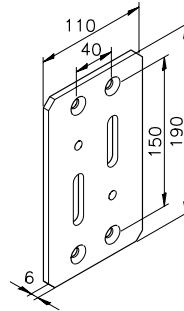
**2x – Cover
5169BC0200**
AlSiMg 0,7 F28
Reworked
to local standards



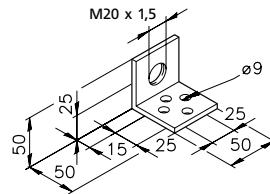
**3x – Cover
5169BD0300**
AlSiMg 0,7 F28
Reworked
to local standards



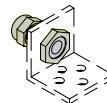
**Cover
5169BA**
AlSiMg 0,7 F28



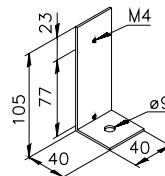
**End Plate
50.12.0005**
Al



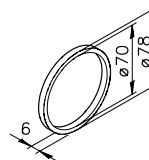
**Angle for
strain relief
16.05.0030**
Al



**Cord Grip
K399010001**

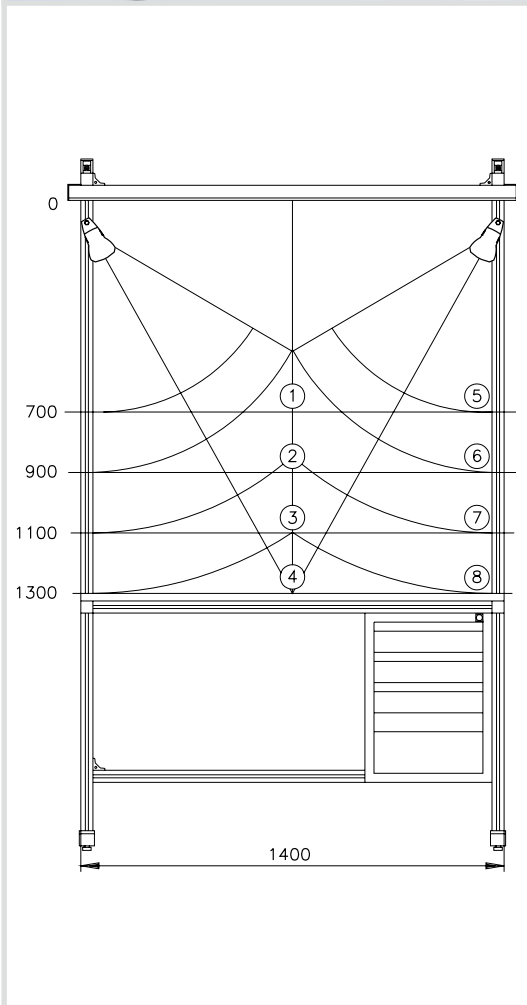


**Angle for
power strip
82.01.0007**
Al



**Spacer for
Round Housing***
16.01.0038

*not applicable in USA

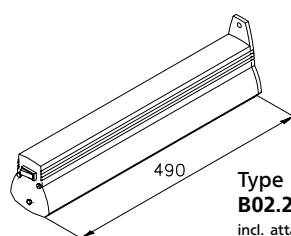


Workstations

Workplace Lighting

Side Lights

One of the more important requirements of first-class productivity and the ability of personnel to produce quality products is optimized lighting of the workstation. For this mk offers suitable work lights for every situation. The lamps provide a bright and even illumination of the work area, and are absolutely non-reflective. The illustrated matrix and table shown below are designed to provide a quick, simple and exact selection of recommended illumination for various distances. The measurements took place in ambient lighting measured at 135 Lux. LED design upon request.



Type SAMKC 136
B02.23.802
incl. attachment hardware

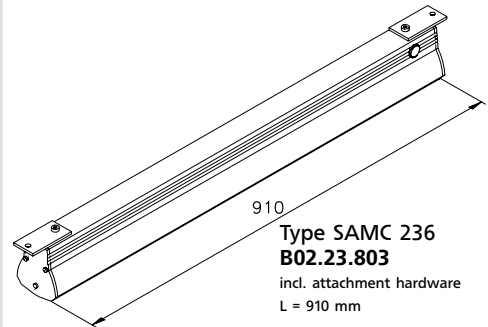
Luminous Intensity

Type	Point	Lux	Point	Lux
SAMKC136	1	700	5	500
SAMKC136	2	560	6	340
SAMKC136	3	530	7	340
SAMKC136	4	400	8	340

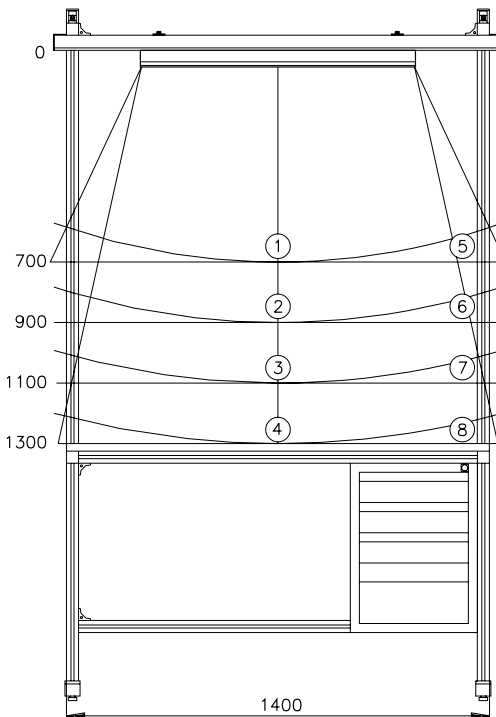
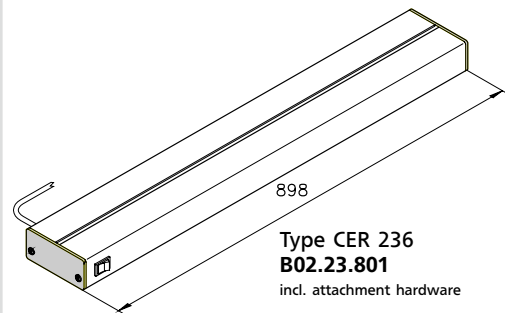
Workplace Lighting

Center Lights

LED design upon request.



Type SAMCE 240
B02.23.804
incl. attachment hardware
L = 1120 mm



Luminous Intensity

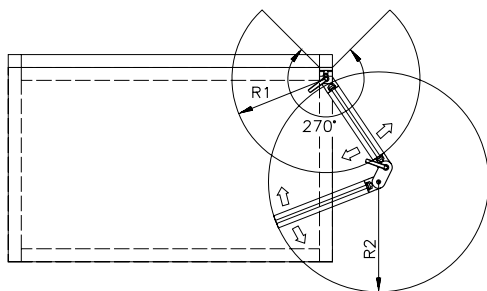
Type	Point	Lux	Point	Lux
SAMC236	1	1350	5	600
SAMC236	2	1000	6	540
SAMC236	3	800	7	500
SAMC236	4	600	8	480
SAMCE240	1	1550	5	1000
SAMCE240	2	1200	6	850
SAMCE240	3	1000	7	800
SAMCE240	4	800	8	800
CER236	1	1250	5	680
CER236	2	1100	6	610
CER236	3	900	7	560
CER236	4	740	8	530

Workstations

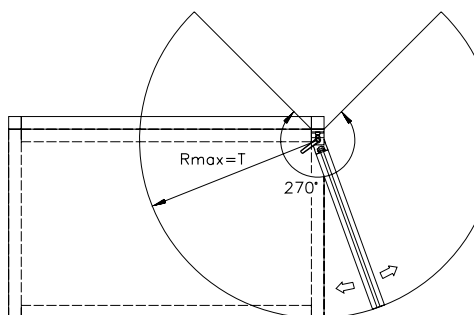
Material Supply

Swing Arm

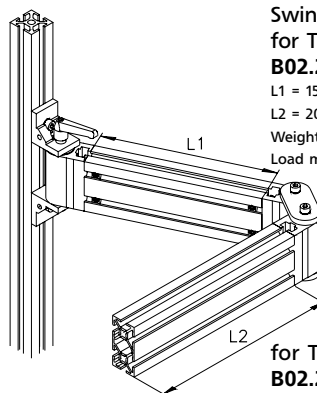
mk Swing Arms are designed for stability, flexibility and high load capacity. Applications range from simple bin holders for small parts on up to monitor platforms at testing or logistic stations. Besides freeing up valuable space on the work-surface, an optimum ergonomic presentation of parts can be achieved for each operator due to the Swing Arms' inherently flexible design. Locking (or adding some resistance through tightening) of the joints is accomplished using the adjustable handles or the socket head cap screws.



R1 max = 290 mm
R2 max = 340 mm



T = Workstation Depth



Swing Arm, Double
for T = 600mm

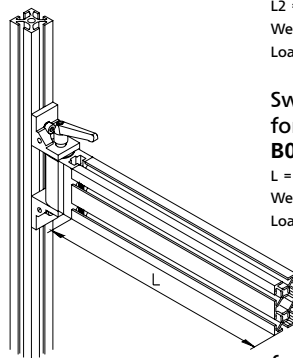
B02.24.360

L1 = 150 mm

L2 = 200 mm

Weight 5 kg (11 lbs)

Load max. 300 N (67.5 lbs)



for T = 750 mm

B02.24.361

L1 = 200 mm

L2 = 300 mm

Weight 5.5 kg (12 lbs)

Load max. 300 N (67.5 lbs)

Swing Arm
for T = 600 mm

B02.24.362

L = 250 mm

Weight 4.6 kg (10 lbs)

Load max. 300 N (67.5 lbs)

for T = 750 mm

B02.24.363

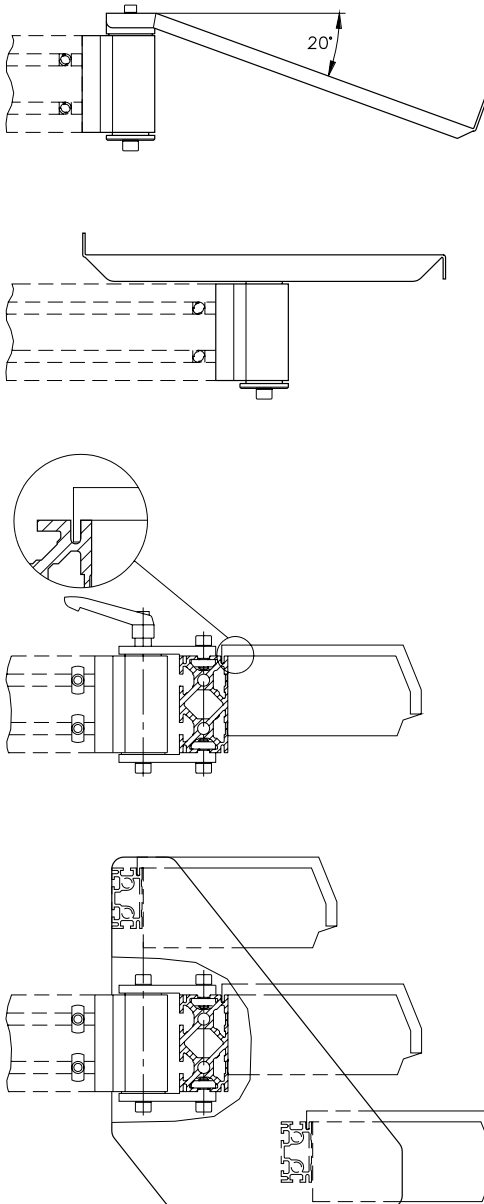
L = 400 mm

Weight 4.9 kg (11 lbs)

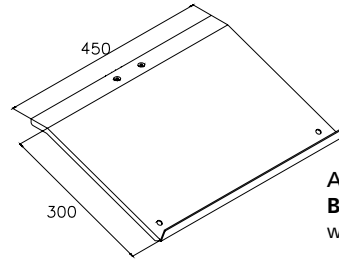
Load max. 300 N (67.5 lbs)

Material Supply

Mounting to Swing Arms

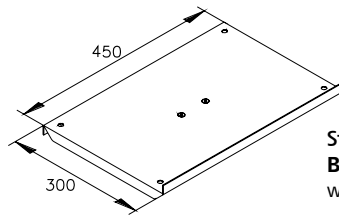


Mounting to Swing Arms



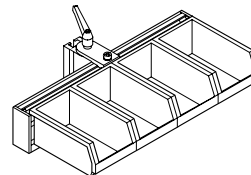
Angled Shelf
B02.24.364

Weight: 3.6 kg (8 lbs)



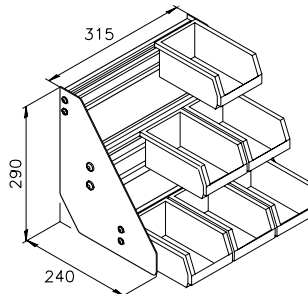
Straight Shelf
B02.24.365

Weight: 3.4 kg (7.5 lbs)



Bin Holder
B02.24.366


L = (Bin width + 1 mm) x N
(N = # of bins, not incl.)



Rack
B02.24.367
with Swing
Arm Mounting

Rack
B02.24.356
without Swing
Arm Mounting

Weight: 4.6 kg (10 lbs)
Bins not included

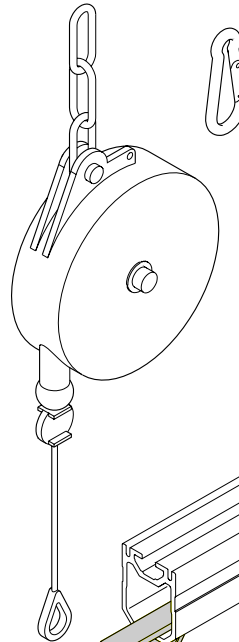
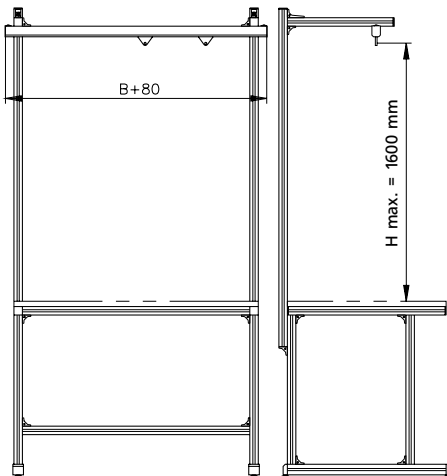
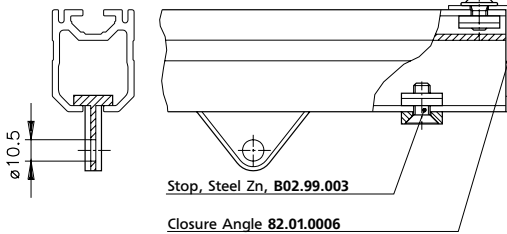
 Bins see page 99

Workstations

Material Supply

Tool Holders

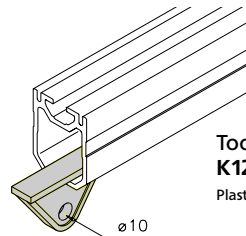
The Tool Holder components shown are some of the basics, which can be expanded with customer specific components. They help to ensure a safe and organized workplace. In addition, they present tools without minimizing the available work-surface. With the adjustable Tool Balancers an ergonomically important strain relief is available to the operator.



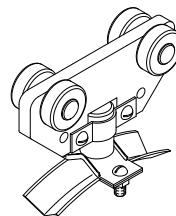
Carabiner
K120010003

Tool Balancer F2
K120010006
supports 1-2 kg (2-4.5 lbs)
max. extension 2 m

Tool Balancer F3
K120010005
supports 2-3 kg (4.5-6.5 lbs)
max. extension 2 m



Tool Holder
K120010004
Plastic PAGF



Pulley used as
cable and
hose carrier
K120010001

Material Supply

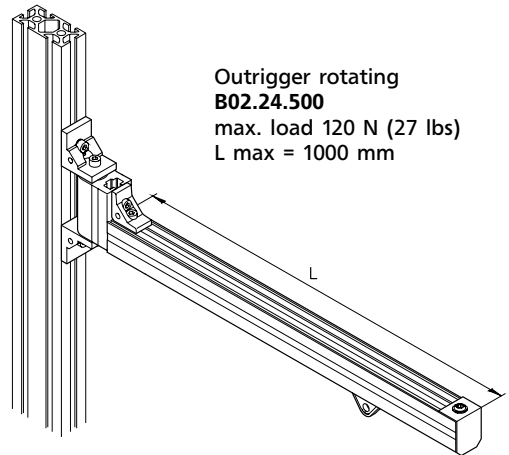
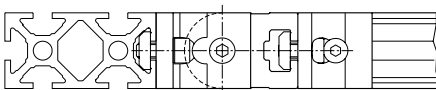
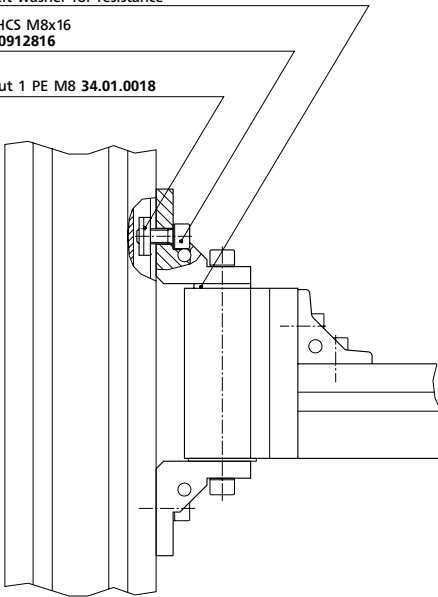
Outriggers

The mk Outrigger is an extended application of the C-channel for tool hanging as used with mk Risers. With a 270° swivel range and maximum length of 1000 mm, a tool can be used exactly where needed for manual assembly or manufacturing operations. When work is completed, the tool can be pushed back and clear of the work area.

Felt washer for resistance

SHCS M8x16
D0912816

Nut 1 PE M8 34.01.0018



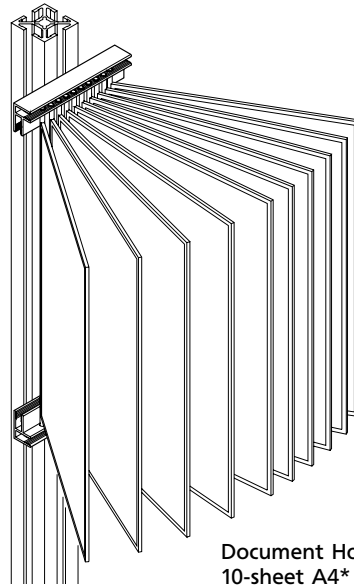
Outrigger rotating
B02.24.500

max. load 120 N (27 lbs)
L max = 1000 mm

Workstations

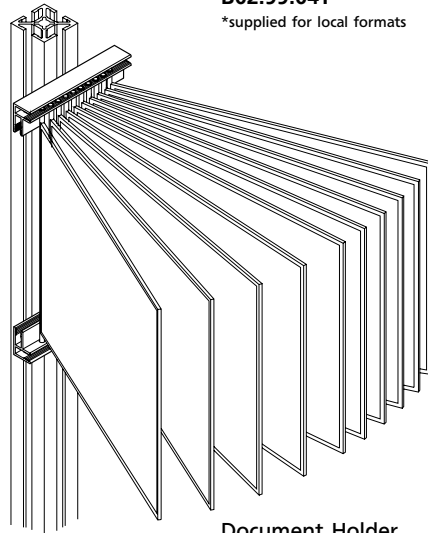
Material Supply

Document Holder



Document Holder
10-sheet A4* portrait
B02.99.041

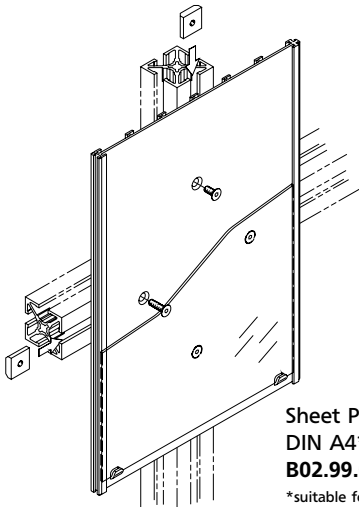
*supplied for local formats



Document Holder
10-sheet A4* landscape
B02.99.042

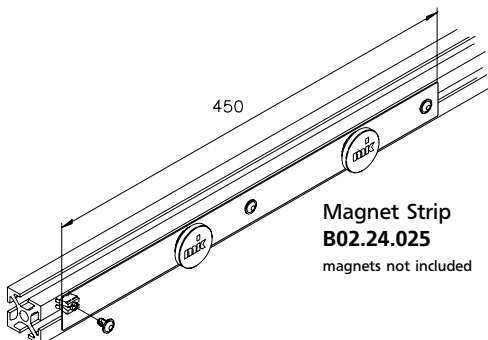
*supplied for local formats

The Sheet Pocket of anodized mk Profile with clear plastic cover can be installed vertically or horizontally.



Sheet Pocket
DIN A4*
B02.99.043

*suitable for A4 only



Magnet Strip
B02.24.025

magnets not included



Material Supply

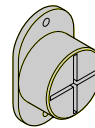
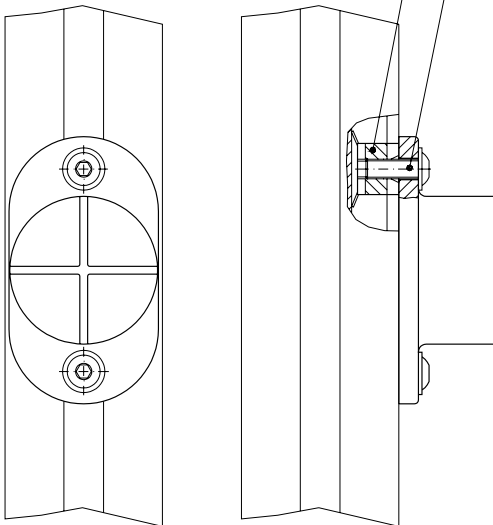
Holders

Holders for shop rags and water bottles round out the organized workstation. Every element at the workplace therefore has its place, thus preventing possible obstructions for the worker as well as damage to, or contamination of, the workpiece.

The Bottle Holder is made of stainless steel and is designed to accept drink cartons as well. Shop rags or cleaning towels now also have a defined place on the workstation. The Rag Holder can be mounted to any available T-slot, either horizontally or vertically.

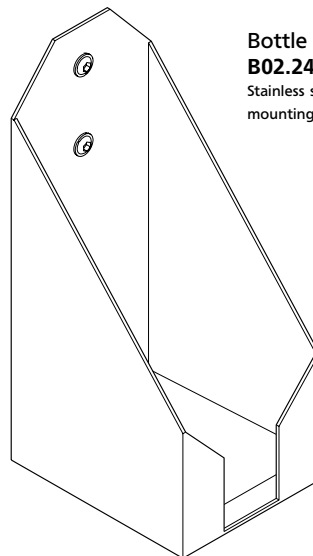
Flanged Button-Head Screw M6x12 K112010012

Clip M6 K111020008



Rag Holder
B02.24.015

Plastic with
mounting hardware



Bottle Holder
B02.24.010

Stainless steel with
mounting hardware

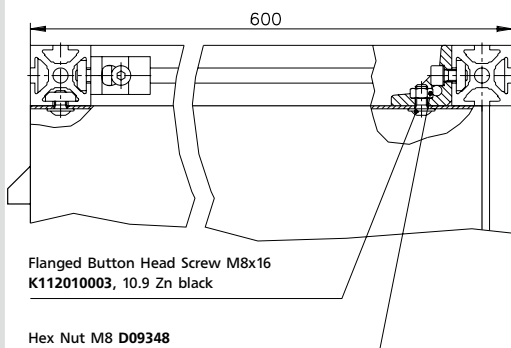
Workstations

Accessories

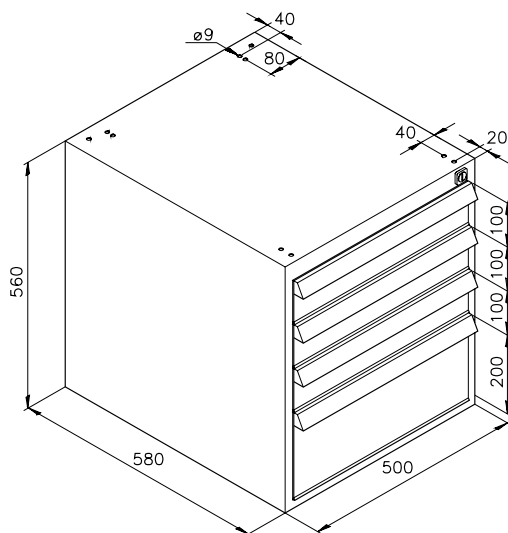
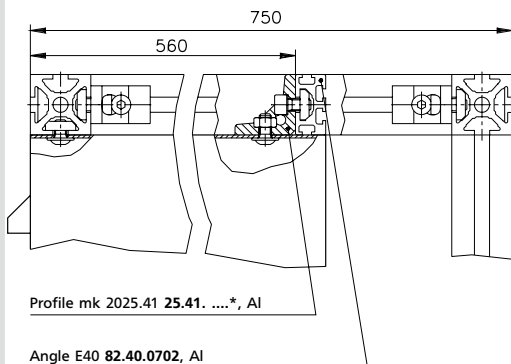
Drawer Cabinets

These Hanging Cabinets offer ample storage space for work-specific items, thus presenting a professional appearance and organization by maintaining a clean and uncluttered work area. The cabinets are manufactured using reinforced sheetmetal construction, and can be loaded with up to 200 kg (440 lbs). All Hanging Cabinets feature cylinder locks and are painted RAL 7035 (shown).

Hanging Cabinet mounting T = 600 mm



Hanging Cabinet mounting T = 750 mm



4-Drawer Cabinet

B02.23.901

Weight 35 kg (77 lbs)

Mounting hardware kit

Workstation Depth 600 mm

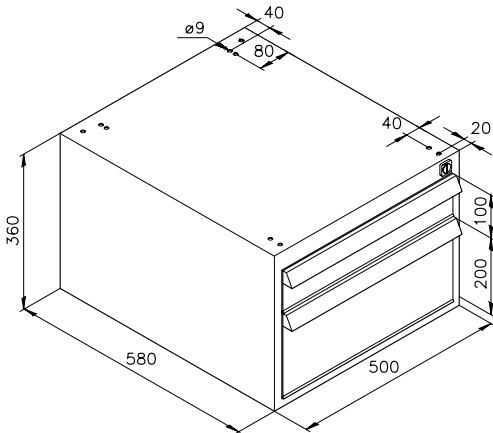
B02.99.001

Mounting hardware kit

Workstation Depth 750 mm

B02.99.002

Accessories



2-Drawer Cabinet

B02.23.902

Weight 23 kg (51 lbs)

Mounting hardware kit

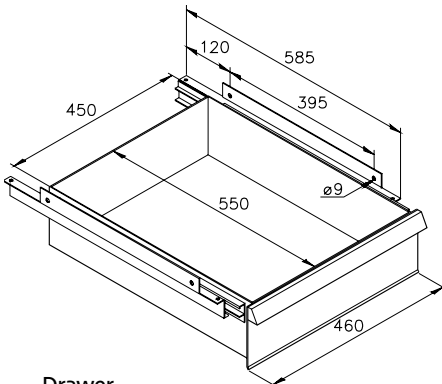
Workstation Depth 600 mm

B02.99.001

Mounting hardware kit

Workstation Depth 750 mm

B02.99.002



Drawer

B02.23.903

Weight 8 kg (17.5 lbs)

Mounting hardware kit

B02.99.004

Important Note:

Cabinets may vary in style, color or appearance depending on local and international availability. mk makes every effort to maintain global uniformity, yet it is sometimes more economically realistic to work with regional suppliers. There will be, however, no difference in the quality and workmanship of our products.

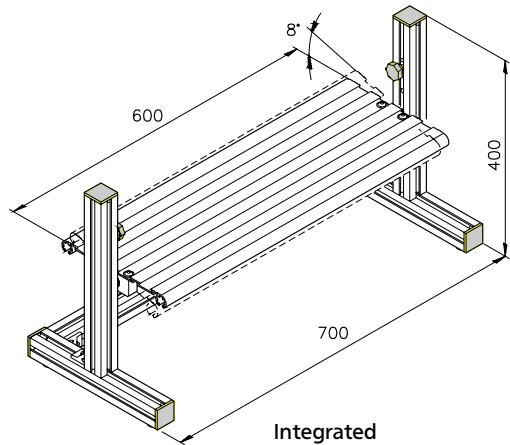
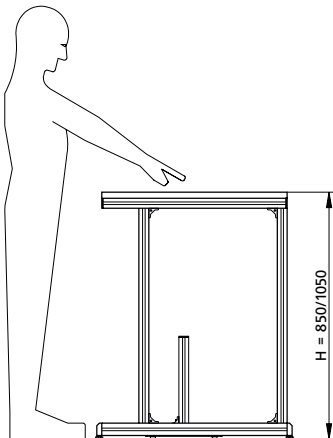
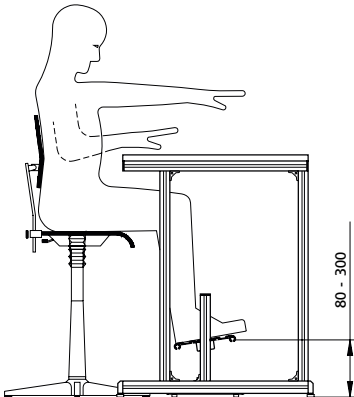
Please inquire before ordering.

Workstations

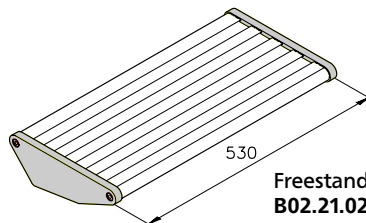
Accessories Workstations

Foot Rest

An important element to reduce strain at the workstation is the proper seating height. It is achieved when, with vertical upper arms, the forearms lay parallel on the worksurface, the thigh and lower leg form an angle of at least 90° at the knee, and the soles of the feet are flush with the floor. For workstations which are too tall, a foot rest can compensate for the distance between foot and floor. The freely adjustable Foot Rest is comfortable for the feet and reduces leg strain for a pleasant working environment.



**Integrated
Foot Rest**
H min - 83 mm
H max - 300 mm
B02.21.030

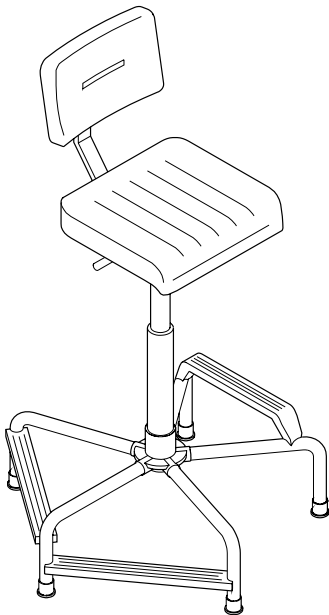


Freestanding Foot Rest
B02.21.020
Heated version on request

Accessories Workstations

Work Stools

The correct seating position is a requirement for relaxed and strain-free work. The optimum ergonomic position is described on page 116 in combination with a height adjustable foot rest. In order to achieve this ergonomically ideal position, a chair conforming to the relevant norms and standards should be utilized. The seat should be adjustable in such a way as to accommodate operators of varying body sizes, as well as the functions they are to perform. Work Stools may vary in style, colour or appearance depending on local and international availability. There will be no difference in the quality and workmanship of the product. Please inquire before ordering.



**Work Stool
K606-ST1030**

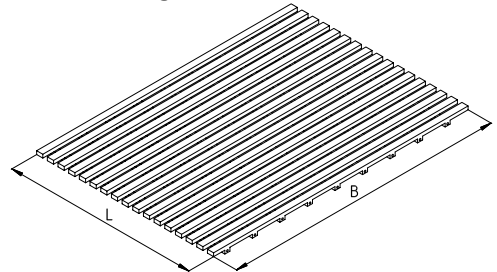
Seat height from 480 to 880 mm,
black

Floor Mats

Floor mats made of black TPE-V make workstations safer and relax the muscles and joints of the employee.

Advantages:

- Lightweight and easy to roll up
- Flame retardant design upon request
- Creates minimum smoke density in case of fire and, because it is a non-halogen design, it does not emit toxic gases
- Cavities in the material reduce the stress on muscles and joints
- Slip-resistant
- Oil-resistant
- Available in dimensions up to 1.2 m wide and max. 15 m long, 3 mm thick



Floor Mats

Ident No.	Designation	Width B [mm]	Length L [m]
K12002.0600	Floor Mat	600	max. 15
K12002.0800	Floor Mat	800	max. 15
K12002.1000	Floor Mat	1000	max. 15
K12002.1200	Floor Mat	1200	max. 15

Floor Mats

(flame retardant according to DIN 4102-1 B1)

Ident No.	Designation	Width B [mm]	Length L [m]
K12003.0600	Floor Mat B1	600	max. 15
K12003.0800	Floor Mat B1	800	max. 15
K12003.1000	Floor Mat B1	1000	max. 15
K12003.1200	Floor Mat B1	1200	max. 15

Workstations

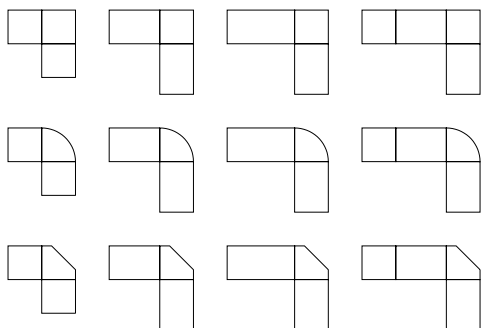
Office Workplaces

Individually tailored office workplaces

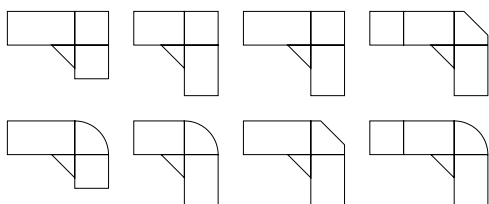
Based on our proven Profile System, mk developed the mk Office Desk System X80 (80 cm basic dimension). Its functionality and adaptability allow you to layout and design workplaces to your exact requirements – resulting in a professional look which reflects positively on your company.

Important are your actual requirements. Whether setting up an entire department or a single office, the Office Desk System X80 offers an ideal solution. High quality materials and workmanship guarantee robust construction which will last for years. Various standard desks are available. Naturally we will assist you during planning and selection.

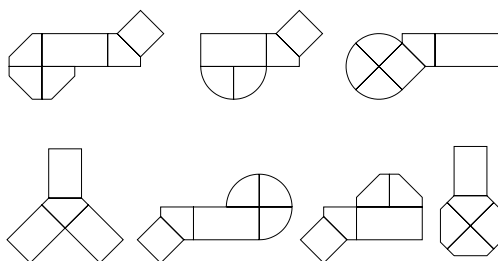
Application Examples



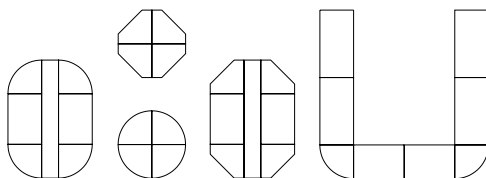
Examples PC-Workstations



Examples with integrated consultation area



Examples Conference and Training Tables



Office Workplaces

Desk Frames

mk Office Desk Frames consist of our proven Aluminum Structural Profiles (with natural anodize). Advantages of System X80 include the absence of leg obstructions and the compact construction of the frames, which can be disassembled and reassembled effortlessly. The desks can be leveled to the floor, and come standard with basic wire management.

 Worksurfaces see page 94

Legs

Aesthetic accent sheets can be placed onto the exterior of several profiles.

BEECH



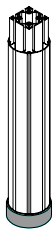
SILVER



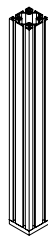
BLACK



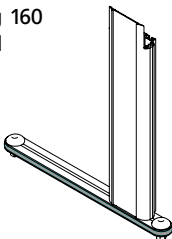
Post 80R



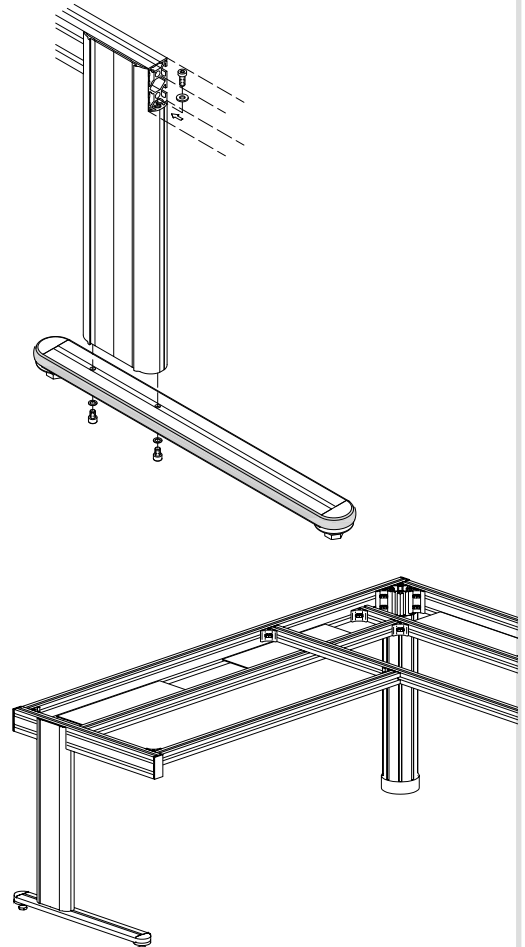
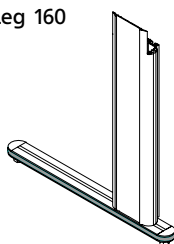
Post 80



Leg 160
Ball



Leg 160



Workstations

Ordering instructions and example

Defining Form and Function

The workstation must be laid out in such a way as to satisfy two (principally) important factors. One the one hand there are economic considerations such as the efficient production, manufacture or assembly of a given product while on the other maintaining employee health and well-being while at work.

In order to accomplish this it is necessary to separate and distinguish between the required human and technical aspects in an effort to formulate an appropriate workstation. The result will be an mk Workstation which is custom-tailored to the specific requirements of the customer, while satisfying both the ergonomic and economic considerations.

Establishing the Requirements for the Proper Workstation

It is important to first define the scope of the activities to be performed at the workstation.

- Is the workstation subject to heavy loads or large forces, or is it designed for light assembly where precision plays more of a role?
- What is the size of the product, it's dimensions and weight?
- Will there only be one product, or could there be multiple, different products?
- Will the processes performed always be the same?
- Is this a free-standing workstation, or will it be part of a larger system?

The resulting answers will already point to whether a light or heavy workstation is appropriate, and whether the height can be fixed or needs to be adjustable.

Ergonomic Considerations

- What type and duration of work can the employee be expected to perform at the workstation?
- Can work categories be defined?
- Must considerations be made for more than one individual?
- How large is the individual?

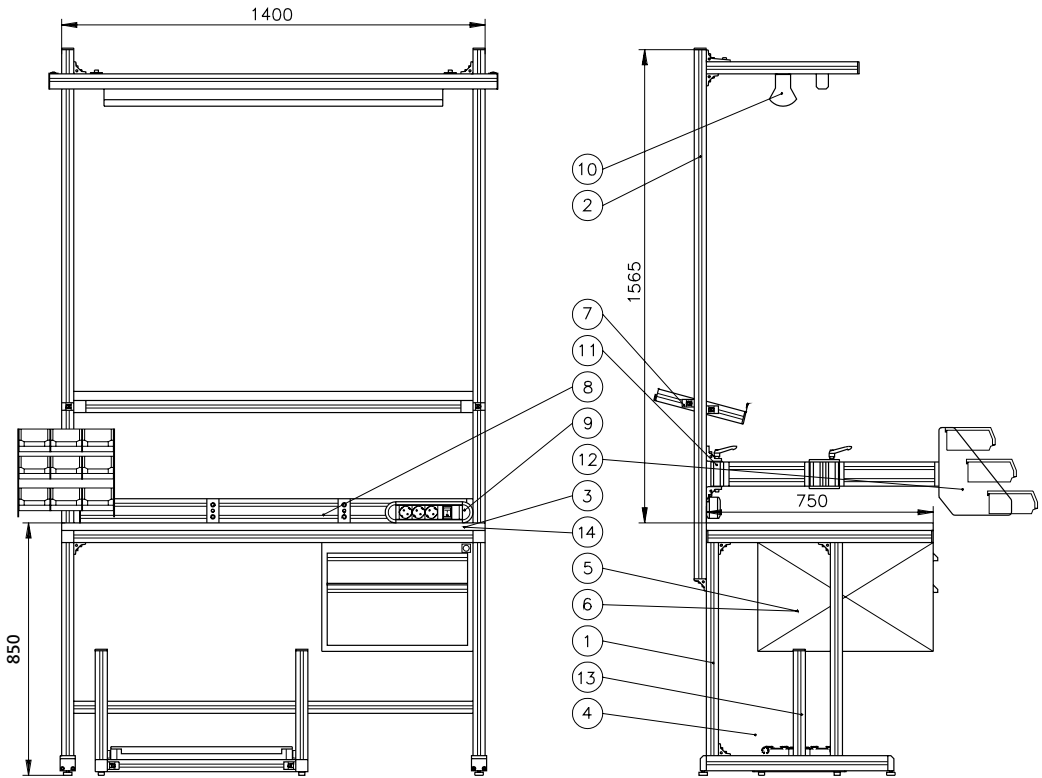
Herewith the actual work considerations for both the user and the product should be defined.

With respect to the following parameters, define the type of work to be performed and evaluate the importance of the required elements.

- Type of work performed: Manufacturing, assembly, rework, testing, packaging, shipping, etc.
- Evaluation: Importance, frequency, sequence, accessibility, freedom of movement
- Required supplies: Production aids, tools, assembly parts, information presentation, etc.
- Workstation requirements: Risers, shelves, swing arms, lighting, etc. but also work stools, foot rests, etc.

When planning a workstation, consider that the best solution to provide a safe and efficient workplace is often only achieved when understanding the entire process as a whole. Laying out single workstations, without the larger picture in mind, can result in bottlenecks or minimize their full potential. Therefore, sensible layout planning must be used, which takes into account and optimises the whole material flow. We will be pleased to assist you with the planning.

System Workstation Series 40



Example Workstation B02.05.100 composed of:

① Workstation C1 1400 x 750 x 850 mm	B02.13.030	⑧ Pneumatic Outlets	B02.23.179
② Riser Light B = 1400 mm	B02.22.001	⑨ Power Strip 3-sheet	K370020020
③ with Multiplex surface	50.13.5005	⑩ Workstation Light	B02.23.803
④ Panel in RAL 5015	B02.20.500	⑪ Swing Arm double	B02.24.360
⑤ 2-Drawer Cabinet	B02.23.902	⑫ Rack with swing arm mounting	B02.24.367
⑥ Cabinet mounting hardware	B02.99.002	⑬ Height adjustable Foot Rest	B02.21.030
⑦ Steel shelf	B02.22.260	⑭ Worksurface Mounting kit	B02.99.050

Workstations

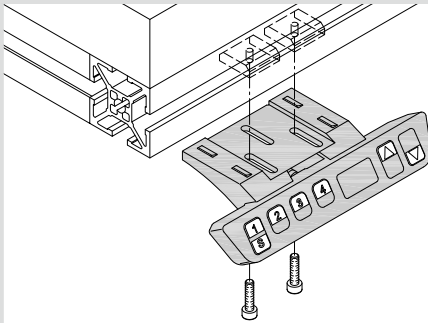
Application Examples

Ergonomically Designed Industrial Workstations



Detail A

→ page 93



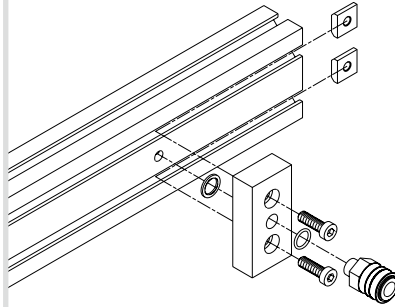
Electric, hydraulic height adjustment

Electric Ergoswiss system K110090002

The height is electrically and hydraulically adjustable. A manual switch is used to adjust the positions. The control module provides the option to store various positions and return to these adjustments later with a push of a button.

Detail B

→ page 102



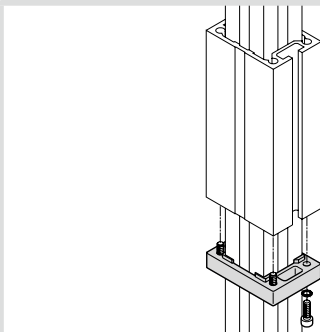
Pneumatics

53.00.0352

The cavities in many profiles of Series 40, such as mk 2040.02 or mk 2040.03, can be utilized to store compressed air. In order to discharge the compressed air at the side of the profile's groove, a $\varnothing 8$ mm bore must be drilled into the center of the profile and a distribution plate must be mounted. An O-ring is used to seal the area.

Detail C

→ page 90



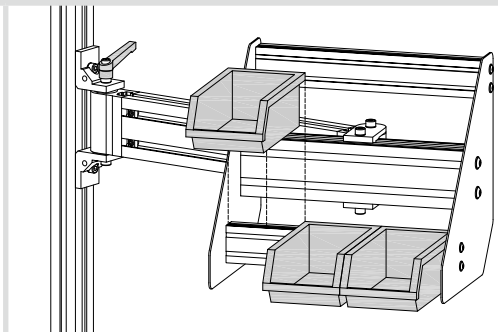
Telescoping Legs

Profil mk 2040.74

The 40 x 40 mm profile can be inserted into legs. The mk 2575 guide finishes the end of the profile. In order to do this, threaded bushes must be inserted into the mk 2040.74 profile.

Detail D

→ page 109



Rack with swing arm mounting

B02.24.367

Various items that are used in during the assembly process, can be stored in the bins. The arrangement of the individual bins is quick and easy and can be adjusted to meet the requirements of the relevant assembly process. The swing arm makes it easy for the assembler to adjust the bins to optimize his/her reach.

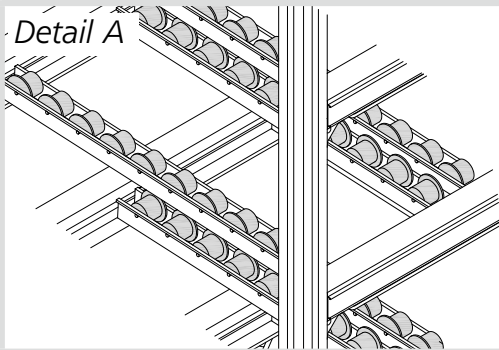
Workstations

Application Examples

Industrial Workstations

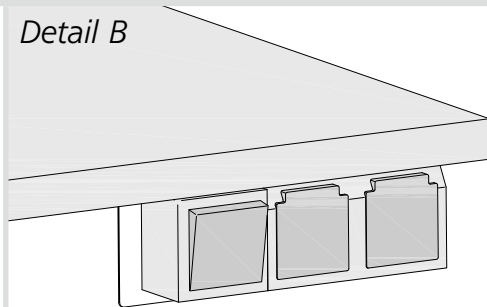


To ensure a quick and simple assembly, it is most important for the assembler to have all components readily accessible at the workstation. If a bin is empty, it is being removed and replaced with a full bin. If electric/pneumatic tools are requirement to make assembly easier, power bars and pneumatic adapters are readily available to operate those tools.



Roller guide bars

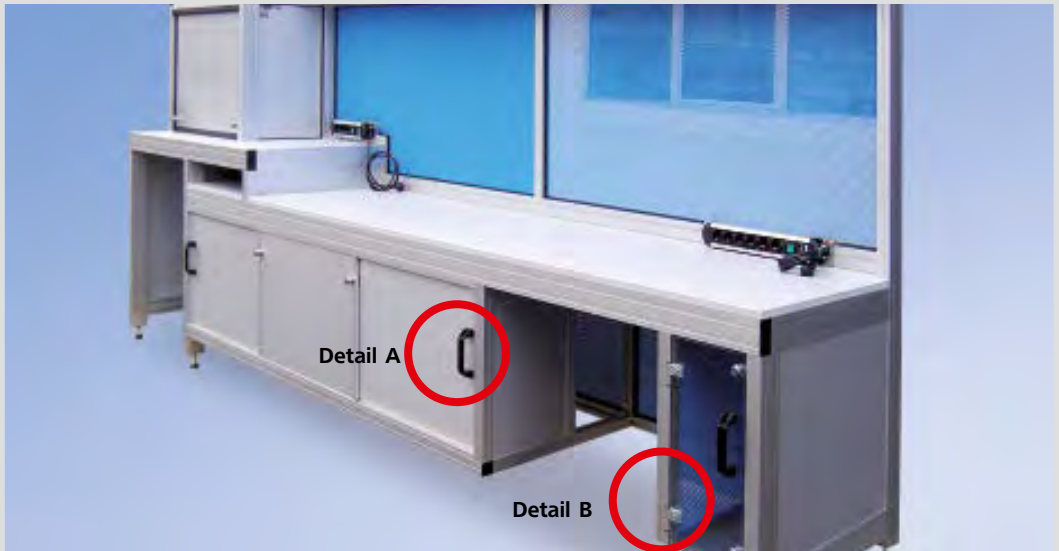
The small roller bars are primarily use on gravity flow racks for the safe movement of transport bins. The small rollers are made of thermoplastic material which is impact and break-resistant. The assembler removes an empty bin and, due to gravity, a full bin slides automatically into the position where the empty bin used to be; thus, avoiding any interruption of the material supply.



Power supply

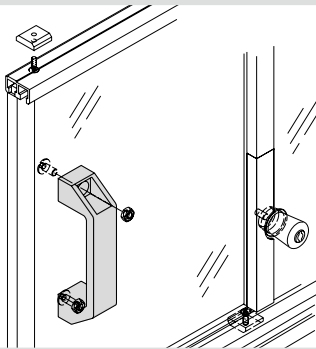
Power bars are used to provide the electrical energy for all tools that are necessary for the assembly process. A variety of electrical outlets and combinations of switches can be randomly selected across the entire width of the work station. The dependability and the design of this unit is impressive.

Customized Industrial Workstations



Workstations specifically designed compliant with customer specifications. Individual storage options and a lockable sliding doors made out of Alucobond. A special feature is a customized enlarged work-space with a lockable roll-up cabinet that can be pushed upward to open. During the design, the focus was directed towards a closed table surfaces. In order to do this, closed Series 40 profiles were used.

Detail A

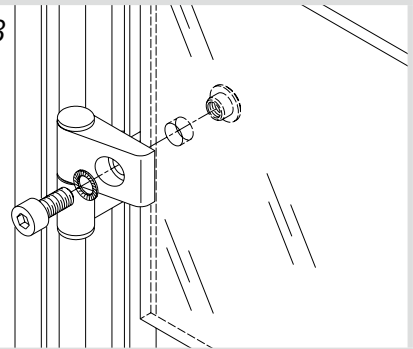


Handle

K110000020

The handle is attached directly onto the door panel using two M6x16 screws (**D0912616**) and two M6 hex nuts (**D09346**). To do this, drill two $\varnothing 6$ mm clearance holes, 152 mm apart, into the panel.

Detail B



Hinge 40-1/40-3

B46.01.050

The hinge is mounted directly onto the 6 mm thick Polycarbonate panel. This requires a $\varnothing 10$ mm hole at a distance of 20 mm from the edge of the panel. All mounting hardware is included in the set of components. The key in the hinge arm ensures parallel orientation of the elements.

Workstations

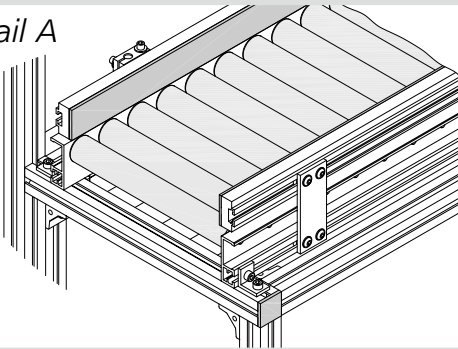
Application Examples

Kanban System Workstations – for the manual removal of products



This Kanban workstation is used for commissioning a variety of subassemblies. Here, the appropriate parts are removed from the Kanban supply station. Empty bins all moved to the gravity flow rack on the bottom and move to the rear with the request to be refilled. Profiles of Series 40 were used to assemble the frame and to comply with the ergonomic requirements.

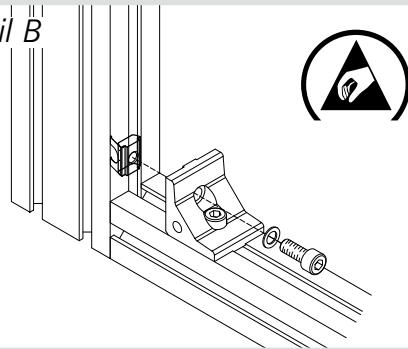
Detail A



Gravity Roller Conveyor

The order picker pushes the containers across and past the detail parts on the gravity roller conveyor RBS-P 2065, and assembles the respective subassemblies. The empty bins are removed at the rear of the rack, refilled by another employee, and sorted and placed back on the top shelf.

Detail B

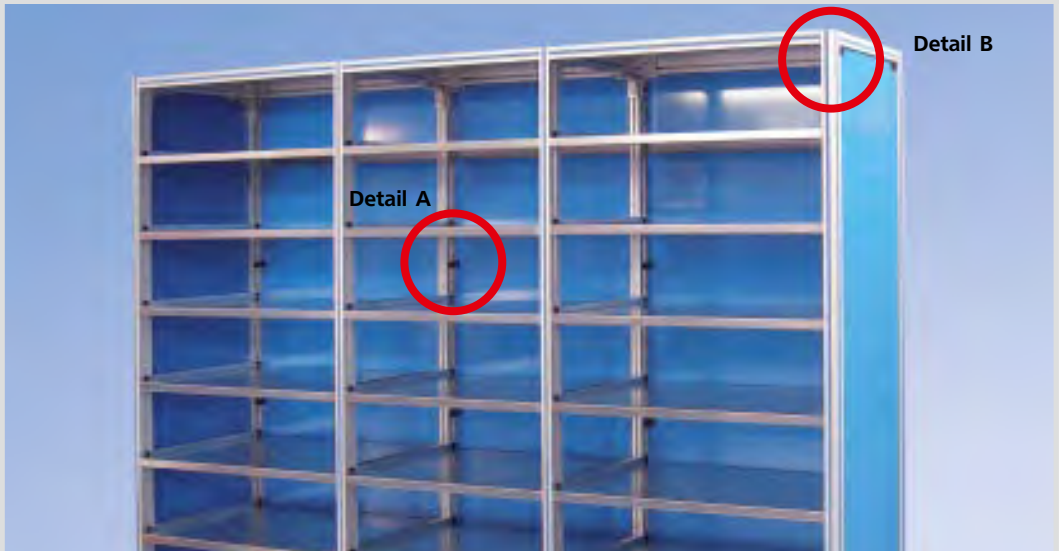


ESD-Swivel-in Nut 1 M8

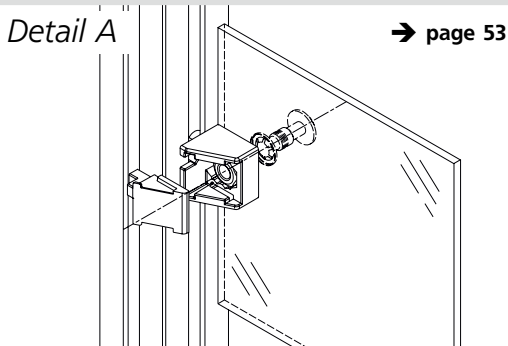
34.16.0831

In order to prevent electrostatic discharges, the entire system was equipped with ESD-protective nuts. Therefore, preventing electric potential differences. The discharge of potential differences may damage electrical components and therefore, is undesirable.

Kanban Rack – for the manual removal of products

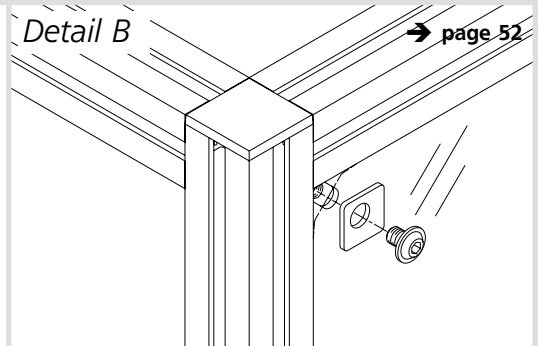


Each Kanban system also uses Kanban racks that must not be refilled continuously. Therefore, refilling from the rear of the rack is not necessary. In this application, items are used that are required infrequently during the assembly process. These items are better stored in racks that are equipped with large storage spaces.



Attachment with Panel Block mk 2578

The undetachable panel block is used together with the undercut flanged button-head screw and ribbed washer for subsequent attachment of paneling in accordance with the Machinery Directive. Paneling requires 9 mm drills at a distance of 10-15 mm from the profile frame.



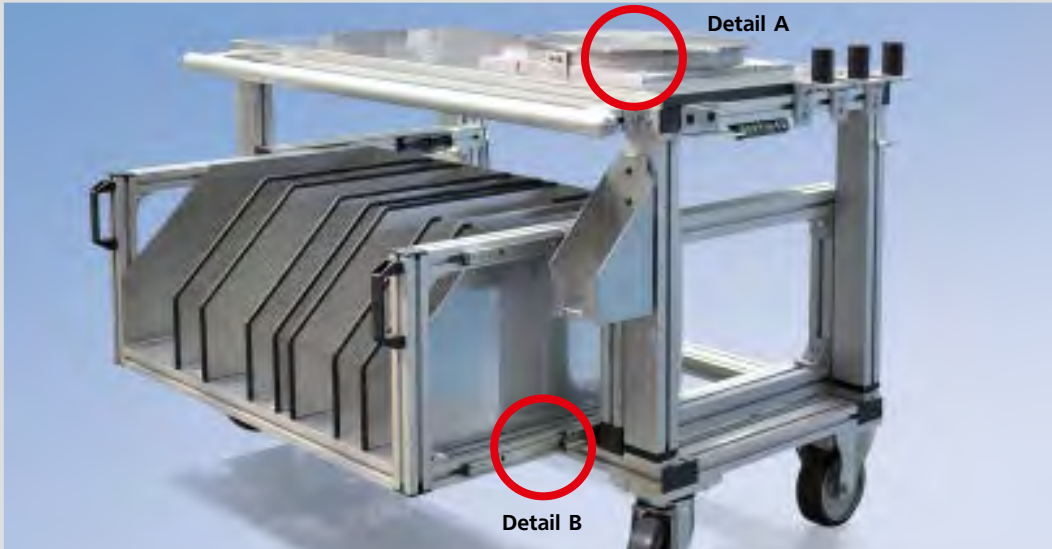
Attachment with Angles

This method is suitable for 1.5-2 mm thick metal sheets. The metal sheet edging provides the necessary stiffness up to a side length of 1200 mm. Panel Blocks mk 2578 are required for longer lengths. The angles must have an M8 thread placed in the side. The elongated hole can be covered with cover (07.01.0005); the metal sheets are screwed on using flanged button head screws (K112010003).

Workstations

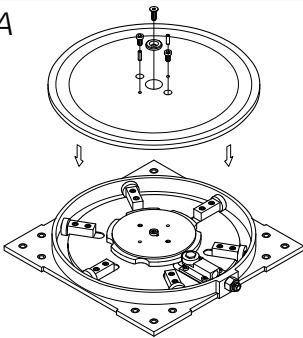
Application Examples

Customer-specific Supply Trolley

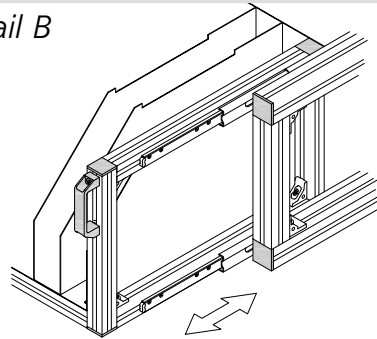


Assembly and supply trolley with electric height adjustment feature for the assembly of a drive train. For the top surface is used for the assembly work. In order to ensure the continuous assembly flow on the production line, various assembly stations can be easily approached and docked onto large magnets. On the lower level the trolley, individually adjusted stacking trays are installed that can be pulled out easily thus allowing easy removal of components that must be installed.

Detail A



Detail B



Turntable

B12.00.001

The turntable is ideally suitable for the manual assembly procedure. Positioning heavy loads for a smooth assembly can be done easily and quickly. A grid function is incorporated into the rotating disk – here $4 \times 90^\circ$ – which allows the disk to be fixed in the specified positions. And the max. applied load is 100 kg.

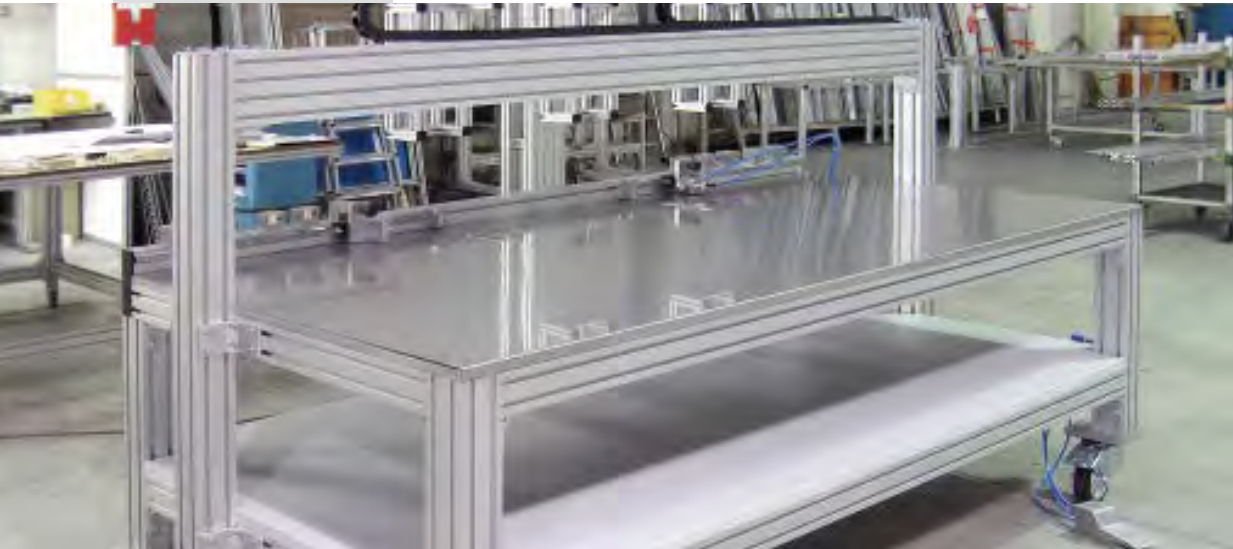
Drawer

The drawer slides along a ball track that is mounted on both sides (top and bottom) and has a load capacity of up to 150 kg. The special feature of this track is its soft, self-closing design with integrated dampening at the end positions.

A large rectangular area filled with a light blue grid pattern, intended for taking notes. The grid consists of small, evenly spaced squares. The area is bordered by a thin grey line on the top, left, and bottom, while the right side is open to the page margin.

Workstations

Application Examples



Customer-specific assembly table with linear guide and pneumatic clamping device



Assembly workstation using a crank for manually adjustable heights, load capacity 600 kg



Assembly workstation with integrated press and document tray



Workstation with electro-hydraulic height adjustment and hanging cabinet



Hydraulically height adjustable workstation with pivoting and depth adjustable steel shelf



Packaging tables with roller table, integrated scale and chute



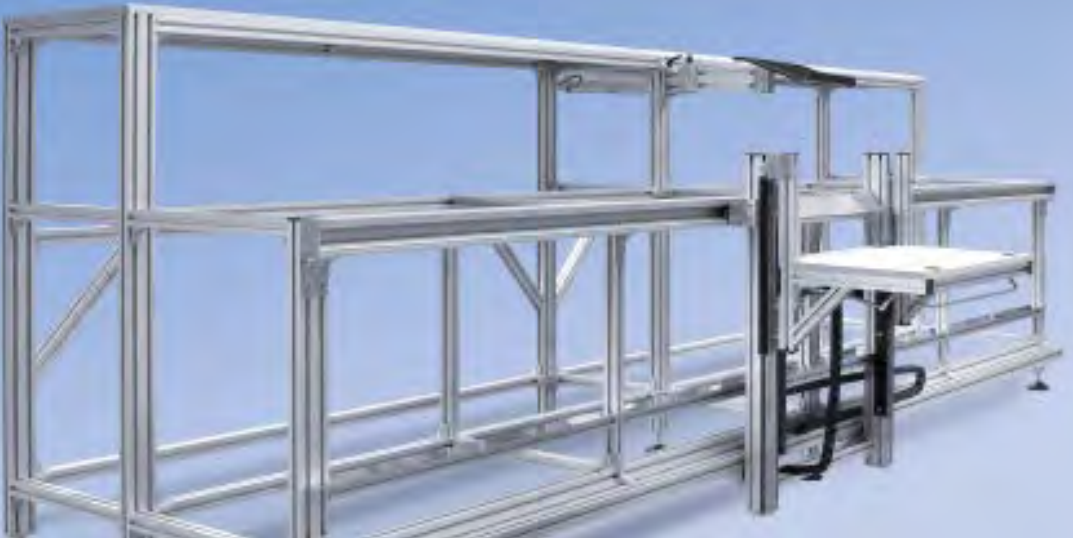
Assembly service table with lockable rotating unit for vacuum pumps



QA inspection stations for motor parts

Workstations

Application Examples



Packaging workspace with load-sensitive lowering device via horizontal and vertical linear units



Special inspection station with 19" rack and monitor mount



Assembly line for pumps of profile Series 50 with closed profile T-slots via closure strip, red



Mobile workstation of profile Series 50 with 3 drawers for tool storage



Assembly workspace with lowering device for electrically powered hydraulic cylinders



Workstation with protective fluid and manually adjustable sliding element

Workstations

Application Examples



Kanban assembly workstation of series 40 profiles



Workstation following the "Kanban principle" for productivity-enhancing decoupling of assembly and supply logistics



Material supply trolley; bins of various sizes can be attached to the open grooves of the profile



Spring-loaded trolley lowers and raises itself when media is removed or added



Supply trolleys made of Series 40 profiles, painted red



Material supply trolleys made of clean room Series 40 profiles incl. acrylic shelves

Workstations

Application Examples



System workstation with integrated material handling via roller conveyors



Complete solution workstation with integrated electric module, ball transfer table and driven roller conveyor



Service and assembly units



Workstation "ET Sorter" with storage and retrieval system and roller conveyor



Test bench for vacuum pumps



DFT continuous assembly line for vacuum pumps

GTP (Guard Rails, Treads, Platforms)



Contents GTP (Guard Rails, Treads, Platforms)



Information about GTP (Guard Rails, Treads, Platforms)

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Platforms

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Assembly Details 152

Information about GTP (Guard Rails, Treads, Platforms)



Advantages mk GTP (Guard Rails, Treads, Platforms)

- Based on the comprehensive mk profile technology modular system, dimensionally accurate individual solutions for accesses, crossovers, and work platforms can be adapted.
- Upon request, work platforms with integrated rotary joints, height adjustments, mobile versions with fixed and swivel casters, as well as air cushions are available.
- If production conditions change, simple and economic reconfiguration can be accomplished smoothly and easily.

Safe access and safe work with the mk GTP System

The Guardrail-, Tread- and Platform-System from mk is the perfect combination of the various local safety requirements between Platform and Workstation ergonomics. In order to carry out service and repair work on large

equipment, appropriate access is necessary. Even elevated workplaces on machines and equipment require suitable platforms. Further, production and assembly lines often require crossovers for access to process-relevant locati-

ons. Under these aspects, and with respect to surfaces, traffic patterns and minimum clearance requirements, mk transforms customer requests into reality using pre-engineered Profile Technology.



Standard Platform

GTP

Guardrails

Information/Technical Data

Using the advantages of mk Profile Technology, mk Guardrails can be used in a variety of situations. Applications include industrial work platforms or as handrails along stairways. Treads require handrails as of four steps.

For tread widths of less than 1500 mm, a handrail must be installed on the right-hand side (as seen when descending). Wider treads require handrails on both sides. As a rule, industrial platforms at an elevation of >200 mm should be designed with Guardrails. The standard program is designed exclusively for indoor use. Appropriate versions for outdoor use may also be available on request.

Handrails

Profile mk 2040.16, with it's 40 mm diameter, conforms to DIN 59410 requirements. The connecting elements as well as the end caps are designed with large radii, in order to enhance operator safety.

Rail height

The minimum height requirements vary with the application. Stair rails must be at least 900 mm tall and platforms require rails to be at 1100 mm.

Toe kicks

min. height = 100 mm

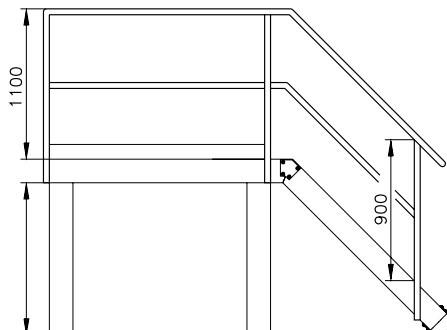
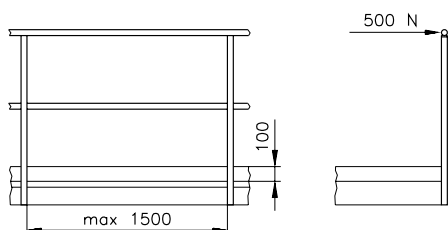
Knee braces

As a rule, guardrails are designed with knee braces (additional cross braces between posts). The distance between the knee braces and both the Guardrail and Platform is maximum 500 mm.

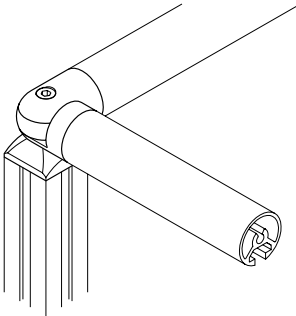


Post spacing

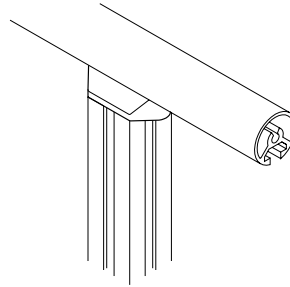
The distance between the posts must be less than 1500 mm. It must be designed in such a way as to support a force of at least 500 N/m (370 lb/ft).



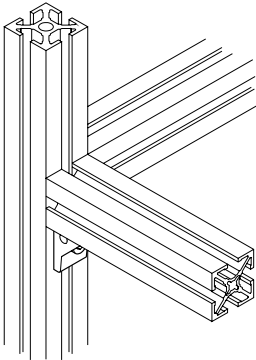
Individual Component



Joint 40/H5
B46.01.026
Al

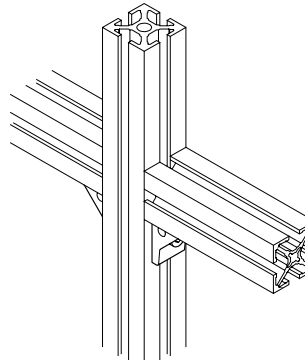


T-Connector 40/H2
79.00.0011
Al



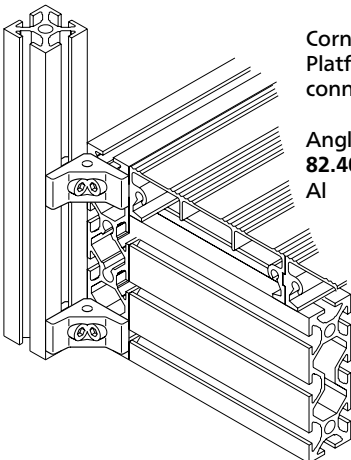
Post/Corner Brace
connection

Angle E25
82.40.0701
Al



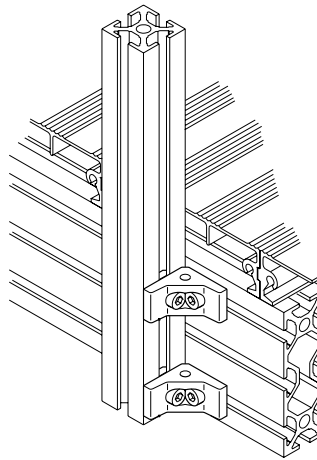
Post/Straight Brace
connection

Angle E25
82.40.0701
Al



Corner Post/
Platform
connection

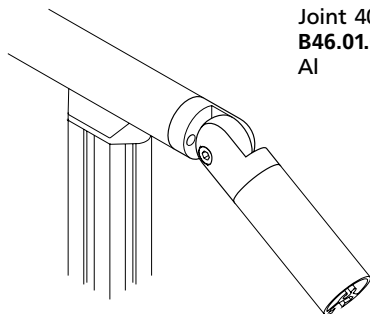
Angle E25
82.40.0701
Al



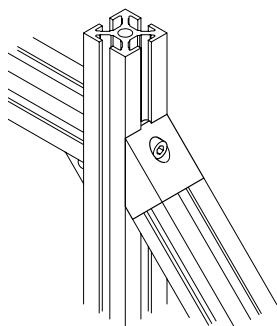
Straight Post/
Platform
connection

Angle E25
82.40.0701
Al

Individual Component



Joint 40/H2
B46.01.023
Al

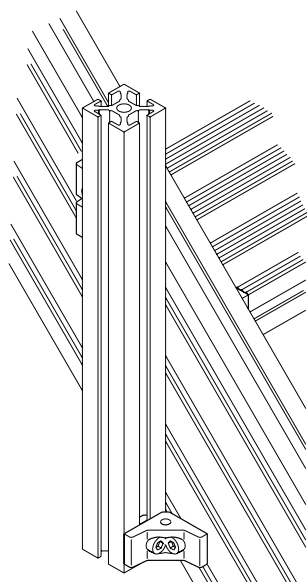


Post/Angled Brace
connection

Angle Block 45°
79.01.0066

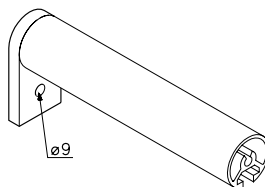
Angle Block 35°
79.01.0064

Angle Block 30°
79.01.0062
Al



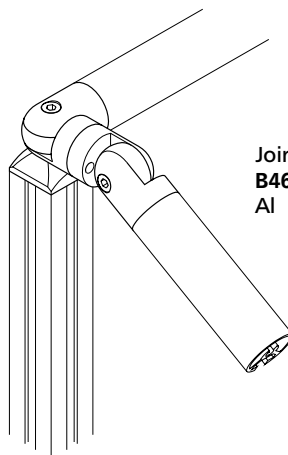
Post/Stair
connection

Angle E25
82.40.0701
Al

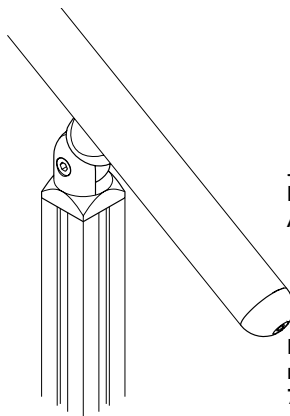


Wall connection
for Profile mk
2040.16 (shown)
50.03.0034
Al

Wall connection
for Profile mk
2040.01 (rectangular)
50.03.0033
Al



Joint 40/H3
B46.01.024
Al



Joint 40/H4
B46.01.025
Al

End Cap for Profile
mk 2040.16
76.01.0002
Al



GTP Treads



Information/Technical Data

mk Treads (stairs) are manufactured using Profiles mk 2040.68, mk 2040.69 and mk 2040.06. The profiles used for the treads feature a grooved top surface to help prevent slippage. The screwed connection in the Profile T-slots makes any further rework unnecessary.

Stair inclines

Angles are used to attach stairs of various incline angles to the platform structure. The recommended angle depends on the application. Stairs used often should be designed with a 30° or 35° angle. Steeper angles should only be used for stairs which are rarely utilized (as in a service situation, for example).

Note:

Vertical tread spacing of 160 mm is ideal for traffic with heavy loads.

Step spacing TA - 160 mm

Number of steps = $H/160-1$ (round off)

Step spacing TA - 190 mm

Number of steps = $H/190-1$ (round off)

Order Example:

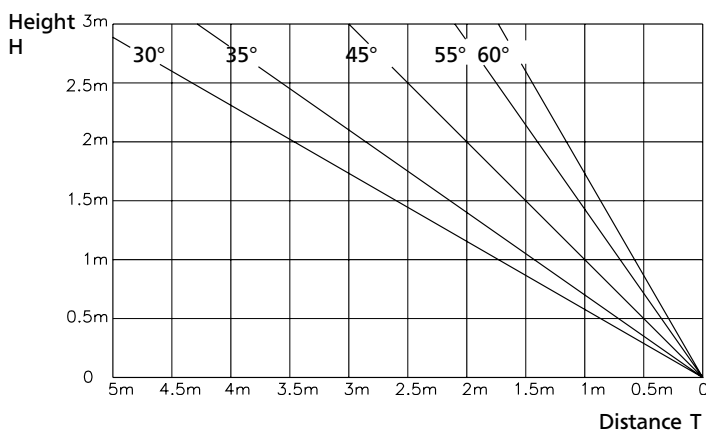
Stairs should be suitable for use with heavy loads:

Width (B) = 1000 mm

Height (H) = 1800 mm

Angle = 45°

Number of Steps = 10

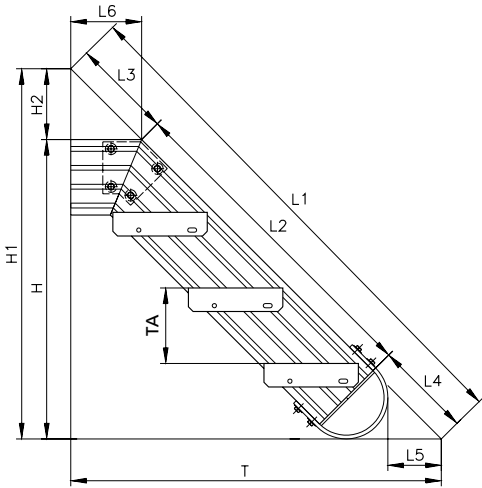


Step height 160 mm		Step height 190 mm	
Number of Steps	Height	Number of Steps	Height
18	3040	15	3040
17	2880	14	2850
16	2720	13	2660
15	2560	12	2470
14	2400	11	2280
13	2240	10	2090
12	2080	9	1900
11	1920	8	1710
10	1760	7	1520
9	1600	6	1330
8	1440	5	1140
7	1280	4	950
6	1120	3	760
5	960	2	570
4	800	1	380
3	640	0	190
2	480		
1	320		
0	160		
	0		0

GTP

Treads

Assembly Treads

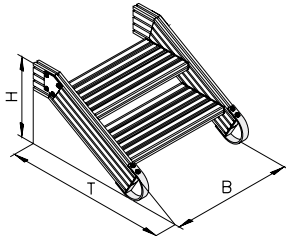


Calculations:

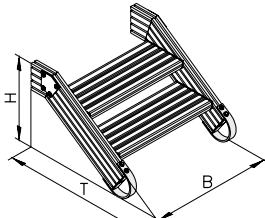
- 30° $T = H1 \times 1.732$
 $L2 = H \times 2 - 314.5$
- 35° $T = H1 \times 1.428$
 $L2 = H \times 1.743 - 267.5$
- 45° $T = H1$
 $L2 = H \times 1.414 - 204.4$
- 55° $T = H1 \times 0.7002$
 $L2 = H \times 1.22 - 163.5$
- 60° $T = H1 \times 0.5774$
 $L2 = H \times 1.155 - 147.7$

	H1	H2	L1	L3	L4	L5	L6
30°	H+86.6	86.6	L1=L2+487.5	173.2	314.5	224.5	150
35°	H+105	105	L1=L2+450.5	183.1	267.5	177	150
45°	H+150	150	L1=L2+416.5	212.1	204.5	113	150
55°	H+214	214	L1=L2+425	261.5	163.5	71	150
60°	H+260	260	L1=L2+448	300	148	55	150

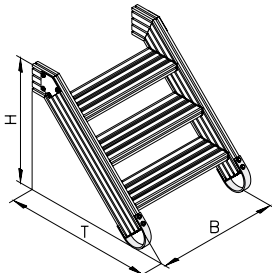
H = Platform height



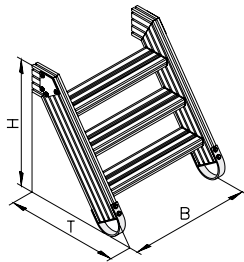
Stair 30°
B02.31.005



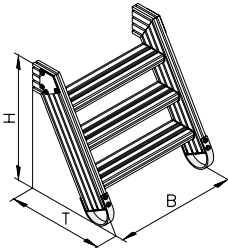
Stair 35°
B02.31.006



Stair 45°
B02.31.007

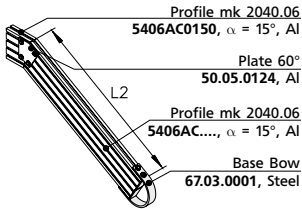


Stair 55°
B02.31.008

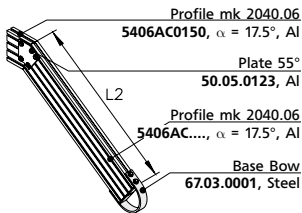


Stair 60°
B02.31.009

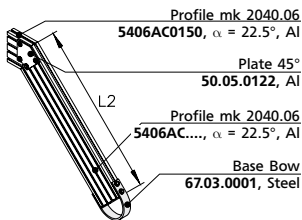
Assembly Risers and Steps



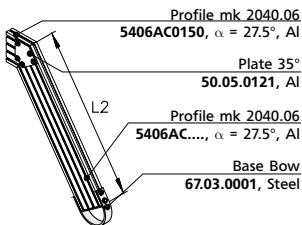
**Riser 40/30°
B02.34.006**



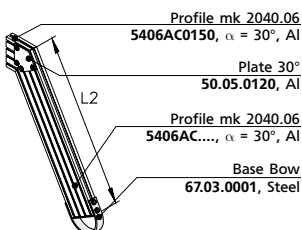
**Riser 40/35°
B02.34.007**



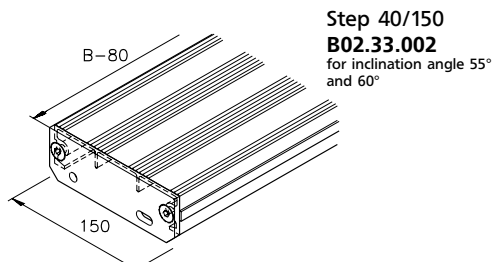
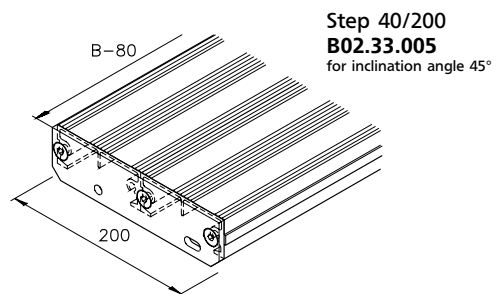
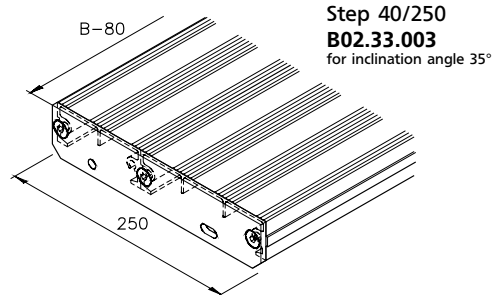
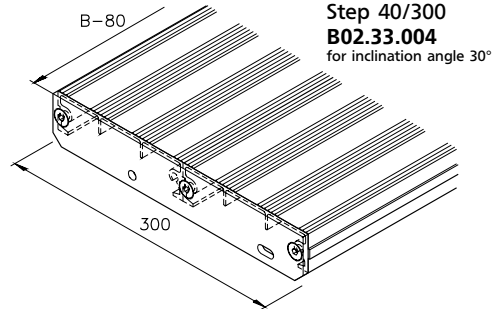
**Riser 40/45°
B02.34.008**



**Riser 40/55°
B02.34.009**



**Riser 40/60°
B02.34.010**



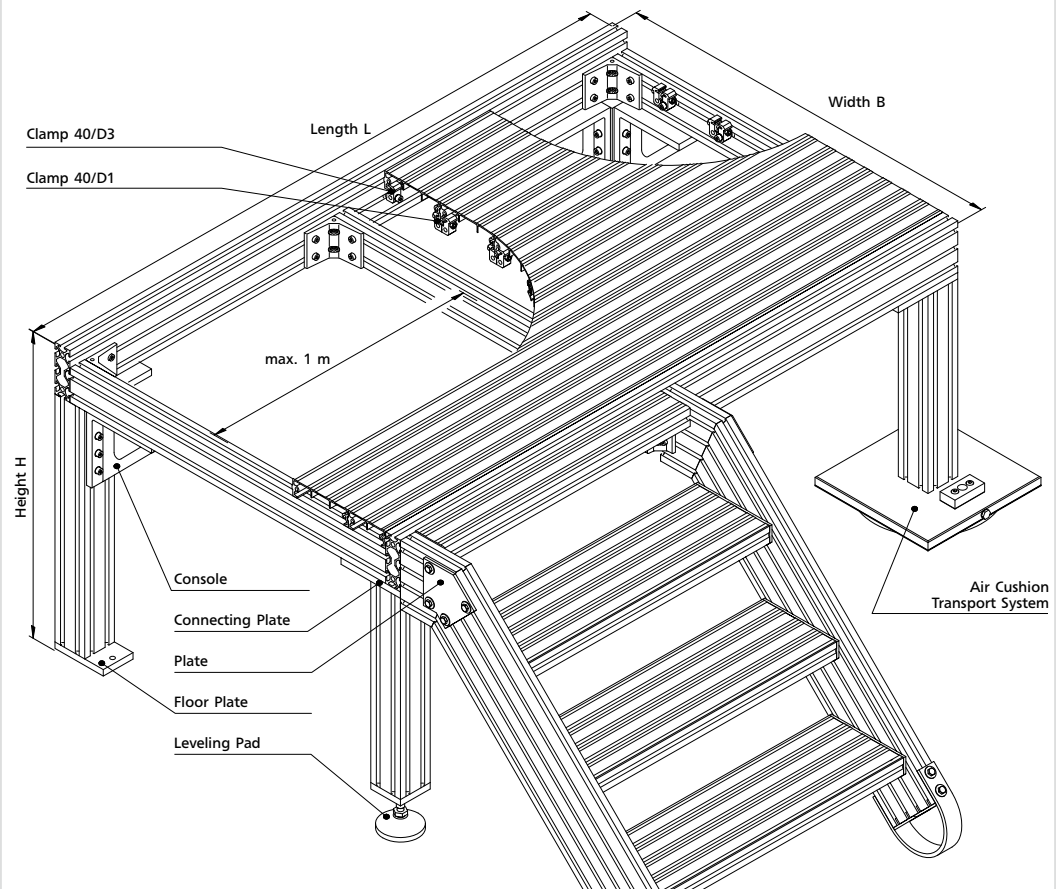


GTP

Platforms

Information/Technical Data

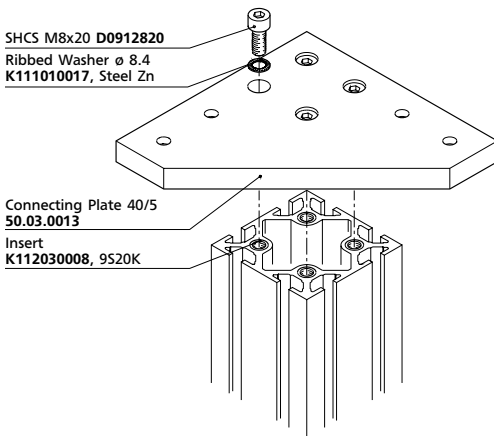
The mk Profile Technology System with its four profile series offers nearly unlimited possibilities for the construction of Platforms. Spans of up to 8 m can be manufactured, for example, in combination with our Foamed Structural Profiles. The mk Profile Technology catalog shows many such application examples. The following components show some of the basics. Platforms are covered with mk Profiles or customer requested materials. For industrial applications, the platforms can be supplied with toe kicks (minimum height 100 mm) per DIN 31003.



Assembly Details

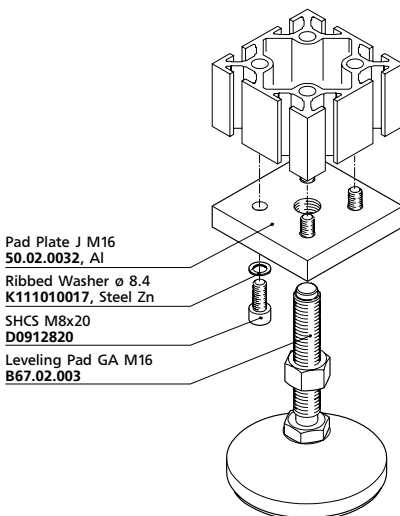
Connecting Plates

A simple and secure connection is provided using the Connecting Plate. Three Profiles can be attached with this one element.



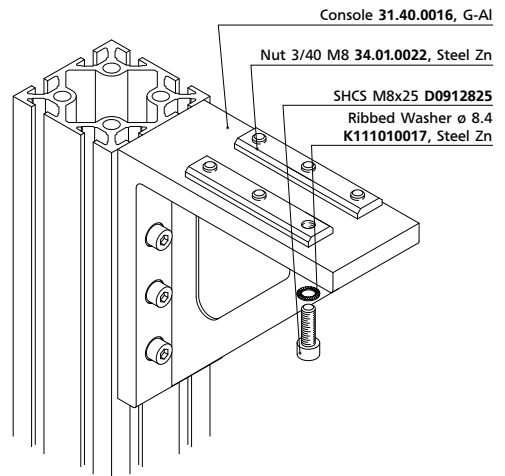
Leveling Pads

The leveling pad features an 80 mm adjustment range as well as a high load capacity of 25,000 N.



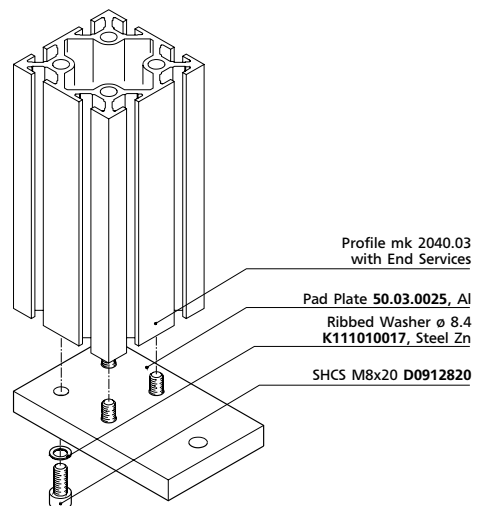
Consoles

Consoles are designed for the highest stability requirements. This cast aluminum console features a total of 12 attachment holes and is ideally suited for larger spans.



Floor Mounting

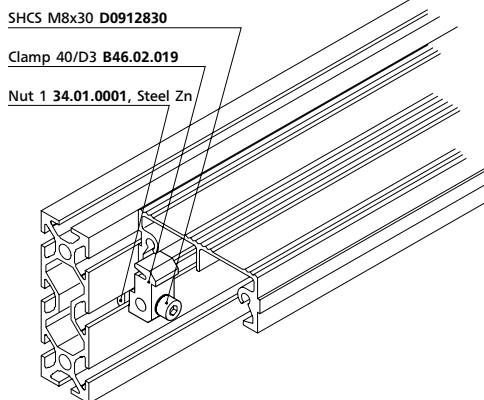
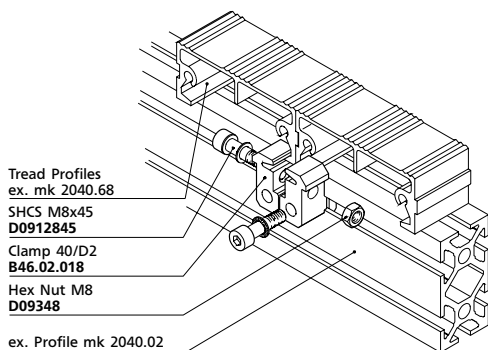
The floor mounting plate can be lagged to the floor after the frame has been positioned.



Assembly Details

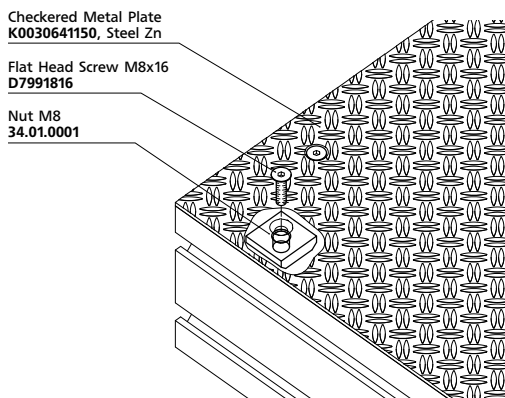
Tread Profile Attachment

The tread profiles feature a tongue and groove, and are further attached to each other and to the sub-structure using specially designed clamps.



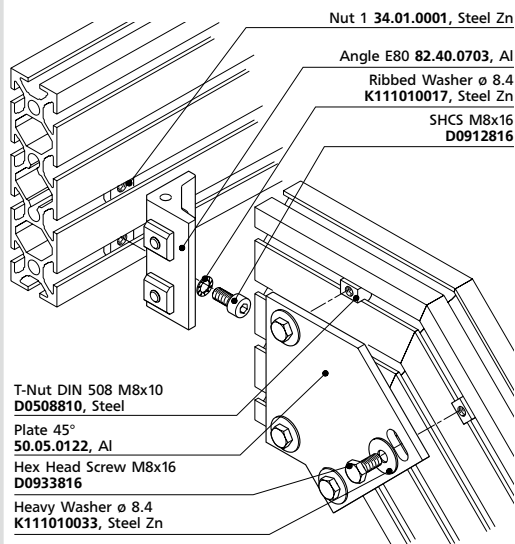
Floor coverings

As an alternative to the floor profile, checkered metal plates are used as floor coverings. The plates are simply bolted to the basic frame structure.



Riser Attachment

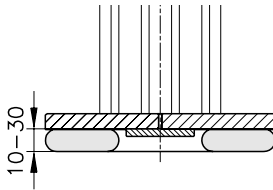
The riser is constructed with two angle cut profiles joined using the appropriate plate, and attached to the platform with angle E80.



Air Cushion Transport System

The air cushion transport system is mainly intended for the occasional lateral shifting of heavy loads along level and smooth floor surfaces. In order to ensure sufficient stability, at least three if not four air cushion modules must be placed underneath the load and as far apart as possible. If possible, the highest load should be located in the center point of the item that must be moved.

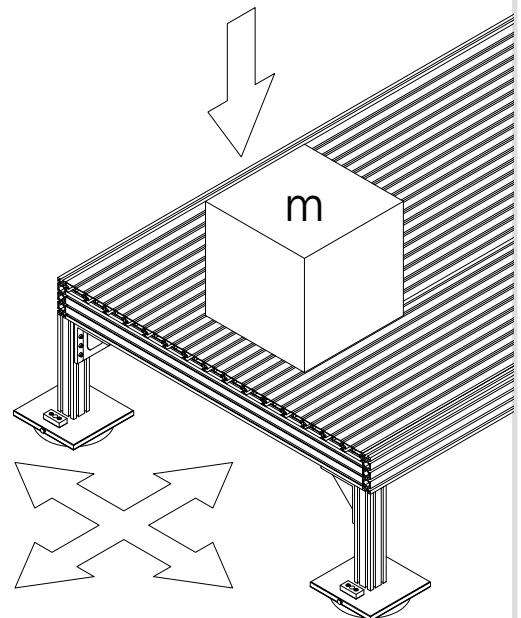
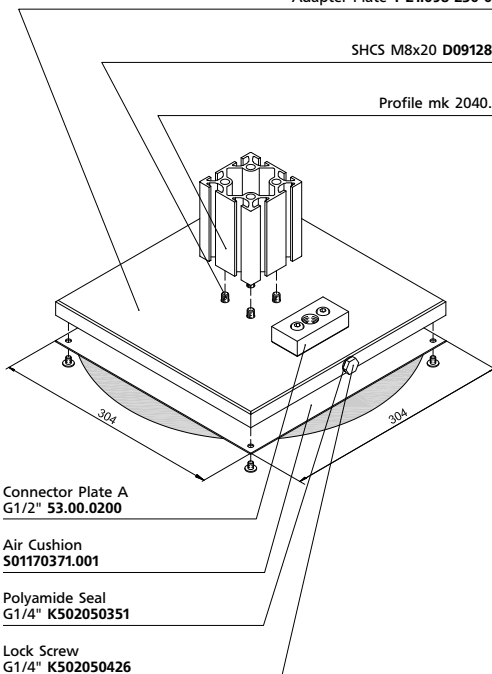
Hoses connect the air cushion module with the control unit. The supply hose is connected to the compressed air system. By using the pressure regulating valve of the control unit, the pressure in the individual air cushion modules is slowly increased until the modules collectively raise the load and an air space is formed between the floor and the air cushion modules. Now, only a minimum effort is required to move the load in any horizontal direction. Load capacity up to 1,750 kg per air cushion.



Adapter Plate 1-21.098-230-006

SHCS M8x20 D0912820

Profile mk 2040.03



Guardrails

Application Examples



Assembly platform, one side secured by guard rail



**Platform with guardrails made of profile Series 40,
installed along one side of platform and stairs**



**T-connector 40/H2
for guardrails**



**Joint 40/H3 for the crossover
of stairs and platforms**



**Guardrail corner with
swivel joint 40/H2**



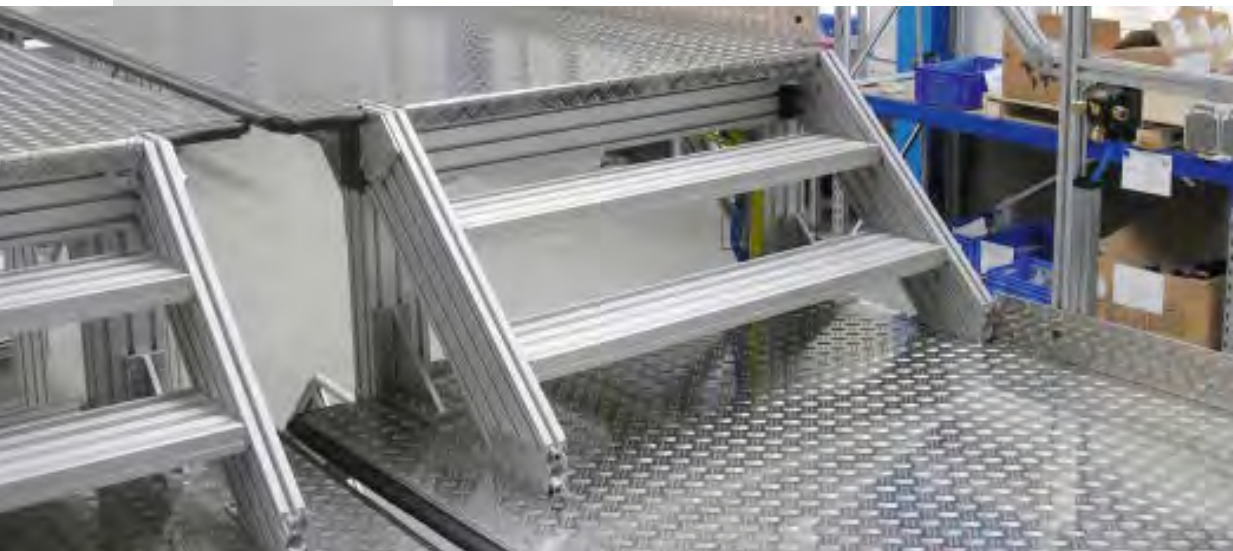
**Post mounted to platform and
angle used to attach baseboard**



**Components such as the electronic supply can be attached to the
guard rail posts from the mk profile technology range**

Treads

Application Examples



**High-traffic stairs provide secure hold
and high loading capacity**



Stair crossover with solid connectors for high loads



45° stair connector plate



Universal floor support
for the stair slope



Load platform 45° with 10 steps
according to DIN standards



Tread with perforated plate for
signs or warnings

Platforms

Application Examples



Assembly platform for helicopters. Air cushion floor elements enable effortless movement of the whole structure on the factory floor



Cantilever assembly platform, 15 meter, with load steps for secure grip for heavy loads



Empty grooves offer multiple options to route electrical supply lines



Very ridged connection using cast consoles, brackets, and support profiles are available for all profile series



Control cabinet



Assembly platform protected on one end by guardrails, platform floor made of aluminum diamond tread plate

Platforms

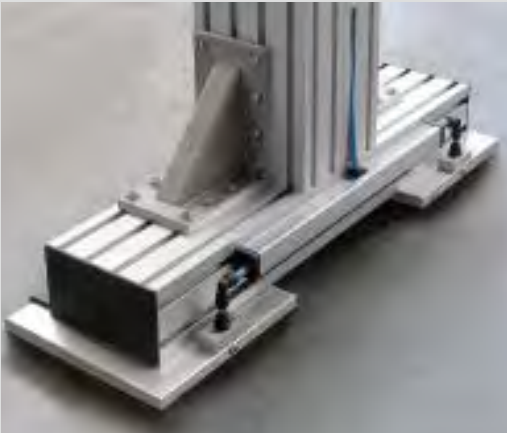
Application Examples



Bridge made of Series 40 profiles incl. extendable frame with fencing paneling



Self-supporting assembly platform with 45° stairs



Platform support with air cushion transport system



Platform for easy and safe maintenance and assembly work on helicopters



Service door in platform floor;
anti-slip coating on underside



Platform made of Series 40
profiles with leveling pads

Our service

Range of performance

mk Parts



Reduce your planning time by using the "mk Parts" CAD parts library!

- Online at www.mk-group.com
- Free access to CAD data
- Simple processing with native and neutral CAD formats
- Automatic part list information for the components
- Part configuration online

mk QuickDesigner Guarding



Quick and easy design of your guarding!

- To download, click on www.mk-group.com/Service
- Conveniently create guarding without costly design
- Cost optimization through automatic selection of default fields
- Exporting of 3D drawings for further processing or enhancement in your CAD system

mk Comparison- and Selection Tool: Conveyor Technology and Linear Motion



Immediately obtain your matching mk conveyor or linear technology system online based on your requirements!

- Online selection tool for determining the optimal system based on the parameters entered
- Comparison of up to 3 systems at a glance
- Motor selection program
- Direct link to our e-catalog

mk Profile Technology Online Shop



Order profiles, connectors and accessory elements at mk-group.com/shop – 24 hours a day!*

- Visual parts selection prevents confusion
- Search function by name or ID number
- Direct price calculation
- Order online

*Only for commercial customers of the German market

mk Online Order Tracking



Check the status of your order at any time – online!

As a registered user, you can view the history of your orders at mk in our online shop. Follow the status of your online or off-line orders. Find out, for example, whether your order is currently in assembly or whether it has already been shipped.

mk Quick Delivery Program (QDP)



We deliver your GUF-P MINI and GUF-P 2000 fast!

- Top adherence to delivery dates and availability thanks to optimized storage and a lean manufacturing process
- We cover a wide range of applications due to standardization and modularization of these units
- Fast delivery of spare parts
- Price advantage

Our service

We're there where you need us



Headquarters, Troisdorf,
Germany

Every hour of downtime for you or one of your customers costs you money and reputation. Therefore, we are on your side in the planning and design phase, as well in after-sales business as a partner. Our international net-

work of production, sales and service sites make it possible to quickly respond to your requirements and make the service you are used to possible. Our site addresses are available on our website at www.mk-group.com.

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Information material

Our catalogs are organized by our four main business areas. Various product flyers complement our catalogs.

Current information about mk products and other interesting topics are also available on our website at www.mk-group.com.

mk Profile Technology Catalog



More than 250 combinable system profiles made of high-quality alloys, perfected and stability-oriented connectors, as well as a comprehensive range of accessories is available in our comprehensive 300-page mk profile technology catalog.

mk Conveyor Technology Catalog



20 different conveyor systems from belt, timing belt, chain and flat top chain conveyors to roller conveyors are available in our 320+ page mk conveyor technology catalog. Our mk INOX conveyor technology catalog includes belt and flat top chain conveyors, as well as roller conveyors made of stainless steel.

mk Linear Motion Catalog



mk linear technology stands for optimal, needs-based design. Gliding assemblies, track roller assemblies and recirculating ball bearings are displayed on 130 pages. You have the choice between profile and linear guides, as well as complete linear modules.

mk Factory Equipment Catalog



Building on our profile technology, a comprehensive range of modules for individual factory equipment is on 160 pages. It includes guarding, system workstations, guard rails, treads and platforms in modular design.

Mini-CD mk E-Catalog



The handy Mini-CD contains all mk catalogs in the form of an eBook. You can conveniently page and search through the catalogs on your screen, as well as save them as PDF files.

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