

# Protective devices

according to EN ISO 12100



## PROTECT-PANEL

The "impenetrable" housing for your machines

page 590

## PROTECT-PANEL system

### The "impenetrable" housing for your machines

High speeds, quick machining cycles, cooling water and chips: Machine tools represent a dangerous environment for people. This is why all machine tools are contained in nearly "impenetrable" housings.

These help reduce or eliminate the hazards for the persons who work with them. With the KABELSCHLEPP PROTECT-PANEL system, we offer you optimized protection for a particularly attractive price.

### Steel plate construction for a totally harmonised system

Every protective device is produced to your specifications – nevertheless made from standardized parts. We design in 3D and assemble your protective device from predefined elements. Special connecting elements hold the walls in line.

The entire system is made of steel. Extremely sturdy wall modules are created by using a combination of screws and rivets as well as sandwich-design without weld joints from industrially preassembled components. The wall elements are normally mounted vertically on C-profiles, e.g. on the shop floor. Unevenness of the floor surface can be compensated by adjusting hardware.

This production method offers you several advantages: Short design times by use of standardized parts. Short delivery times, since our production is based on predefined processes. Shorter installation time, since our mounting profiles are standardized and the wall elements are assembled with only a few screws. Processing on state-of-the-art processing machine tools provides a high precision for all elements. Avoiding welding as much as possible eliminates the potential for distortion and irregularities.

#### KABELSCHLEPP PROTECT-PANEL – modules:

- Wall modules
- Window modules
- Corner modules
- Roof modules
- Sliding doors
  - automatic design
  - telescopic design
- Folding doors
- Lift gates
- Roll gates
- Chip protection walls
- Powder coated (colour as desired, RAL 9002 is standard)



### PROTECT-PANEL: Secure protection against water spray

The unique connecting element means that the wall elements are sealed against water spray, and are joined to each other in an extra-sturdy manner. Each pair of modules is joined by specially-formed plates held together by bolts. An additional plate on the inside forms a labyrinth seal. In order to direct the remaining water spray downwards, we have fitted a deflector plate which guides the downward-flowing water directly into a particle conveyor, for example. The sandwich construction of the wall elements, together with the deflector plate, result in a sealed protective wall which can withstand even high water pressures.

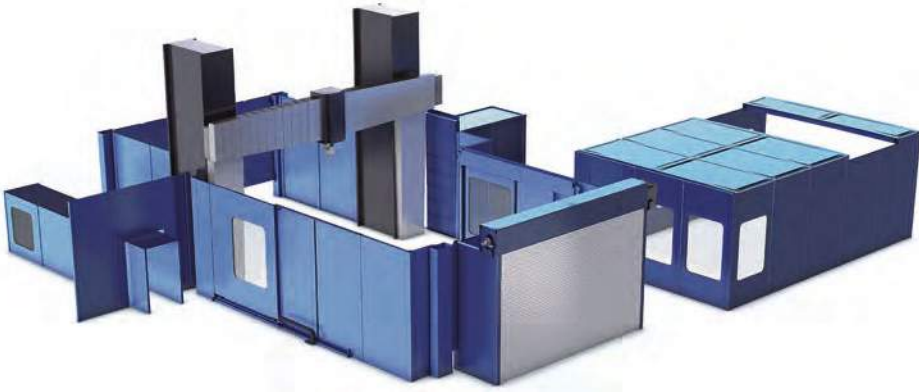


- Protection against sprayed fluids: Sealed with a rubber seal and deflector plate.

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## Protective devices in modular design



### PROTECT-PANEL – modules:



■ **Wall modules**  
(standard dimensions  
B x H 1235 x  
2350 mm)



■ **Window modules**  
(with special glass  
pane insert)



■ **Corner modules**



■ **Roof modules**



■ **Sliding doors**  
(automatic design)



■ **Sliding doors**  
(telescopic design)



■ **Folding doors**  
(electric motor-driven  
under PLC control)



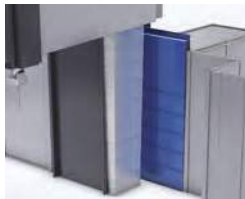
■ **Lift gates**  
(up to six segments)



■ **Roll gates**  
(vertical/vertical-  
horizontal motion)



■ **Roll gates with stainless steel lamellas**  
(opens quickly, lightweight design)



■ **Movable chip protection walls**  
(vertical and horizontal)

Subject to change.

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591



## PROTECT-PANEL system

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### Protective devices in modular design

#### Wall modules

The standard wall module measurements are defined at 1235 mm width, 2350 mm height and 50 mm thickness. The sheet thickness of the outside cover plates is 2 mm.

Also the DIN EN 12415 and/or 17 standards are fulfilled by a total sheet thickness of 4 mm.

Using a 150 mm high floor-mounted C-profile with a wall connection element creates a grid spacing of 1250 x 2500 mm (W x H). The wall modules can be mounted side-by-side to form long walls. When necessary, supporting-columns are installed to add to lateral stability. Corner modules and roofs also provide a stabilizing effect and add to wall stability considerably. Connection elements have a labyrinth-seal on the work area side so that additional synthetic or rubber seals are not necessary. All parts of the walls are riveted or screwed together and are protected against rust by a powder coating in the desired colours. Cavity sealing protects the inner sides of the walls from condensation.



#### Windows modules

In the staging area of the machine polycarbonate-glass compound windows with high-grade steel frames are used which meet the DIN/EN 12415 standards for lathes and/or DIN/EN 12417 for machining centers. Outside the work area safety windows which are designated as single-pane safety glass are usually sufficient.

All window panes are installed in the walls – where necessary – in a splash-proof way. While the windows themselves are always produced as a rectangle, the opening can be formed according to customer preference. Whether oval, rectangular or rectangular with rounded corners, the organization of the external cover plates in the window area makes any shape possible.

Usual window measurements are 1000 x 1200 mm (W x H). The wall module in the standard measurements is made as a window module. If larger window widths are desired special modules are necessary.



## Corner modules

Wall modules can be combined to form corner modules. It is irrelevant whether it is a standard or a custom wall width. Specially designed corner profiles combine the elements at the header sides using screws and rivets imbedded in the already coated walls.

A metal valance reaching to the ground closes the outside corner opening and provides good aesthetics. As seen from the staging area the inside corner is sealed and waterproof without the use of synthetic seals. The 90° corner constructed in this way is extremely stable.

Multiple colours – as shown in the picture – require separately produced elements, since otherwise a powder coating would not be possible.



## Roof modules

The machine tools had to be secured at the top for reasons of job safety.

The task: Although the covers to be constructed do not have to bear the same load as the side walls, they need to ensure a high degree of stability to effectively block flying chips.

Based on our PROTECT-PANEL system, we developed a roof with a sandwich design that is both light-weight and stable.

To dispense with inner braces, a bearing structure was selected that is also used for suspension bridges: Steel cables and pylons assume the static function for the roof elements.

Since workpieces are frequently supplied by cranes in processing centres, the roof was designed to open a few locations. This opening was created by two movable elements that telescopically overlap. The sliding roof elements take up very little space when open.



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### Protective devices in modular design

#### Sliding doors (automatic design)

Because automatic doors are integrated into the machine tool programme, they automatically open and close according to the required production cycle. For heights of 2-3 m that's nothing special. But the automatic door in the PROTECT-PANEL system can manage much bigger sizes.

At the production plant of one of our customers, a first automatic door has been installed which is 6500 mm high, 1600 mm wide, 500 kg in weight and can open and close within 5 seconds. It's a challenge that we were able to solve with the help of linear drives, a three-phase motor and control shaft technology.



#### Sliding doors (telescopic design)

The access to the inside of machining centres is particular large due to our space-saving telescopic sliding door. Components in XXL format can be easily supplied.

The PROTECT-PANEL system already boasts of a series of sliding door and roll gate solutions. The telescopic sliding door can be opened wide quickly, but it remains impenetrable when closed.

The sliding door elements also come in a sandwich construction and additionally provided with bullet-proof glass window to allow a view of the interior.



#### Folding doors

To make exchanging workpieces easier, and if it is not possible to implement a guide rail in the upper and lower areas of the enclosure, then you can equip the enclosure with a folding door which moves to the side. The folding door is suspended only from a lateral post, leaving the greatest possible open space for your workpieces, especially in the upwards direction.

The door elements have the same design as the wall elements. Each of them is driven by a 24 V DC motor with a planetary gear unit and integrated PLC controller. Country-specific voltages can easily be obtained using an appropriate transformer.

Modern CAN-BUS technology makes it possible to program different motion patterns for individual door elements. Teaching and loading of programs are remarkably simple. If suitable CAN-BUS equipment is present, the motors can also be monitored using the machine controller. When closed, the



doors are held together by a locking mechanism, and will not open even if a person leans on them, for example. The end positions can be monitored and interrogated either via the program, or by means of additional limit switches.

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## Lift gates

Unlike the roll gate, the lift gate has a small number of larger segments, which all move together. The segments have a sandwich construction, which makes them extremely resistant to penetration. These larger segments are thus not rolled up, but instead are positioned one behind the other, and hang neatly one behind the other when the door is open.

A special feature of this gate is its lifting and lowering mechanism, which makes use of pulleys. Each gate element is suspended on two pulleys, which raise or lower all of the elements evenly.



## Roll gates

When changing pallets on machine tools, a gate is required that moves at high speeds when opening and closing. The PROTECT-PANEL roll gate functions in principle like a garage door. A segmented gate moves upwards and is rolled up. The height of an already built gate structure is 3500 mm.

The lamellas of this gate are made from aluminum, and are reinforced on the inside with steel inserts. This guarantees the required penetration resistance.



## Roll gates with stainless steel lamellas

Different production processes require differentiated gate solutions. The roll gate with rugged stainless steel lamellas is an economical solution featuring lightweight construction.

Thanks to the special shaping of the lamellas the gates are very stable despite their low intrinsic weight and are very resistant to flying chips. The lightweight construction means that high speeds can be achieved when opening and closing.



## Movable chip protection walls

Machining tools should be kept ready near the machining area in order to ensure short distances and thus short changing times. To prevent damage and fouling of the tools that are kept ready, they have to be given special protection.

Our chip protection wall separates the machining cell from the tool magazine and protects the tools in the magazine that are not needed for the current machining operation.

It can be traversed horizontally for loading; during machining it follows the vertical motion of the cross beam.

