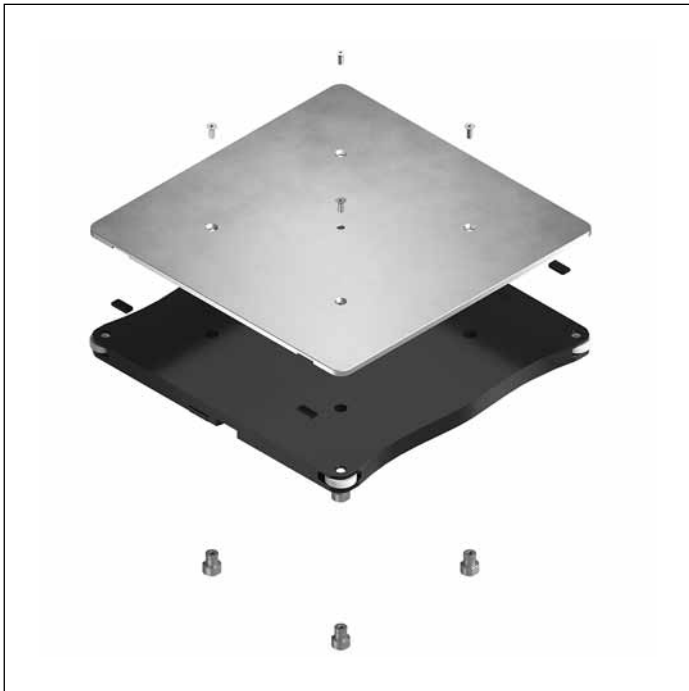


Workpiece pallet

2

Workpiece pallet selection	2-2
Base pallets	2-4
Accessories	2-6
Permissible workpiece pallet load	2-8
Selection of workpiece pallets in accordance with load limits	2-9
Carrying plates, standard sizes	2-10
Carrying plates, variable dimensions	2-13

Workpiece pallet selection



Versions

The workpiece pallet is a modular system consisting of a base pallet and carrying plate. The positioning bushings (see page 2-6) and an attachment kit (see page 2-6) comprising sensor plates, damping elements and rollers with pins are available separately.

- ▶ Workpiece pallets available in 6 standard sizes, see page 2-4
- ▶ Side rollers reduce friction, particularly in curves, diverters, and junctions
- ▶ Aluminum carrying plates available in 2 thicknesses (see page 2-10) and with variable dimensions (see page 2-13).

The carrying plate may extend over the front and rear of the base pallet.

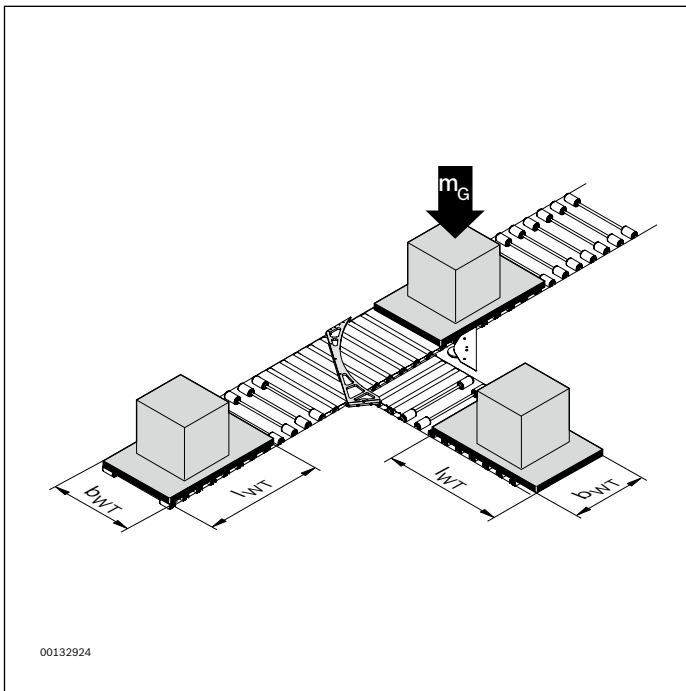
Application and functions

The workpiece pallet transports the workpiece in the transfer system as it goes through the processing stations.

- ▶ Defined positioning of the supported workpiece in the processing station is enabled through integrated positioning bushings.
- ▶ Integrated damping elements help to avoid noise and damage when workpiece pallets run into each other.
- ▶ Workpiece-related information can be transferred with the workpiece during processing using optional data tags. This information can be evaluated on-site and also updated.

The orientation of the workpiece pallet on the conveyor section must strictly be observed:

- ▶ Traveling through curves/diverters is only possible in a longitudinal conveyor direction (see arrow on workpiece pallet).
- ▶ Separating workpiece pallets is only possible in a longitudinal conveyor direction (see arrow on workpiece pallet). A WT can also be brought cleanly to a halt on the outside of a transverse conveyor.
- ▶ In order to read out data tags, the workpiece pallet must cross the reader in the proper position.



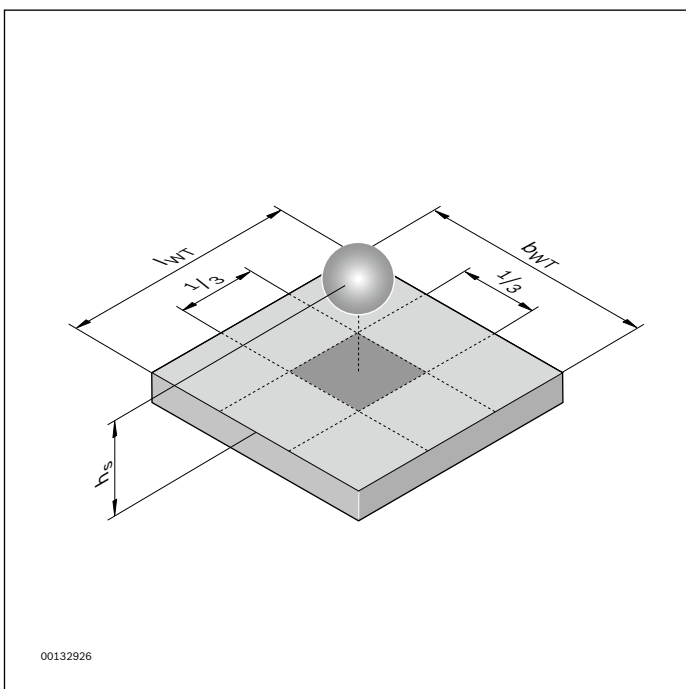
Size and load carrying capacity

The total mass of a workpiece pallet m_G is the sum of the

- ▶ Base pallet mass
- ▶ Carrying plate mass
- ▶ Workpiece support mass
- ▶ Workpiece mass
- ▶ Identification system mass

Depending on the total mass m_G of the workpiece pallet, the transport system can be set up with various parameters:

- ▶ roller spacing
- ▶ Load class of the conveyor unit



Permissible gravity center position

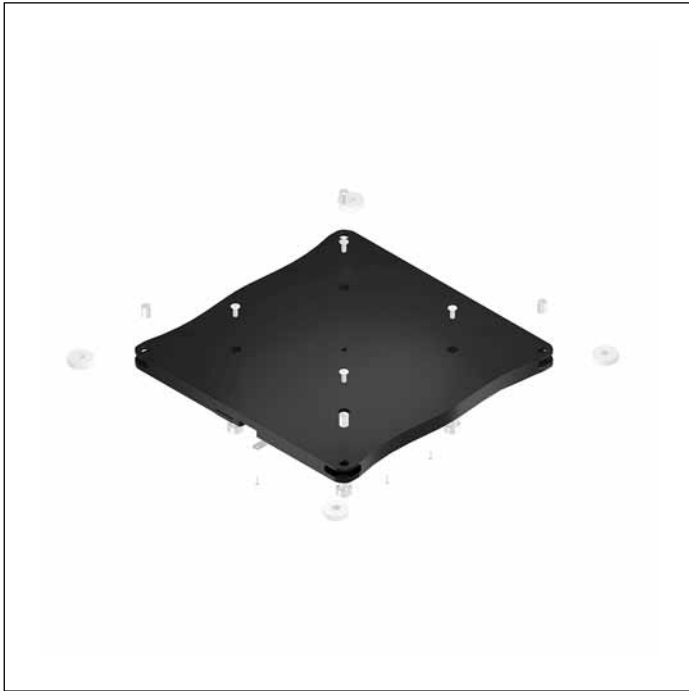
In order to absorb acceleration forces without any problems when separating and changing the direction of the pallets (in curves, when changing to transverse conveyors), the location of the load center position on the workpiece pallet must be noted.

Generally we recommend that:

- the load should be positioned in the center of the workpiece pallet
- the center of gravity should not exceed a height h_s of $1/3 b_{WT}$ (with $b_{WT} \leq l_{WT}$).

Limits with junctions and diverters, see page 5-17 and 5-22

Base pallets



Use:

- ▶ The base pallet is the interface between the transfer system and the carrying plate with workpiece fixtures
- ▶ The base pallet is designed to deal with the highest loads

Version:

- ▶ 6 standard sizes
- ▶ Optimized contours for easier movement through curves
- ▶ Stop gate stop on interior and exterior of the workpiece pallet surface (in the longitudinal conveyor direction)
- ▶ Can be combined with mobile data tags from the ID 40 and ID 200 identification systems, see RFID systems catalog

Condition on delivery:

- ▶ Not assembled, attachment kit available, without carrying plate

Required accessories:

- ▶ Attachment kit incl. rollers, roller pins, damping elements and sensor plates, see page 2-6

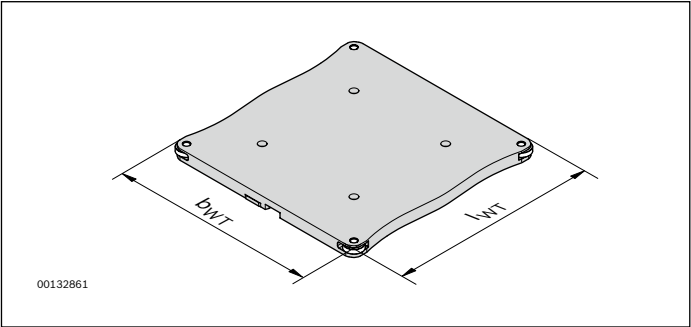
Material:

- ▶ PE UHMW, ESD-capable

Recommended accessories:

- ▶ Positioning bushing kit, see page 2-6
- ▶ Carrying plate, see page 2-10; 2-13

Ordering information

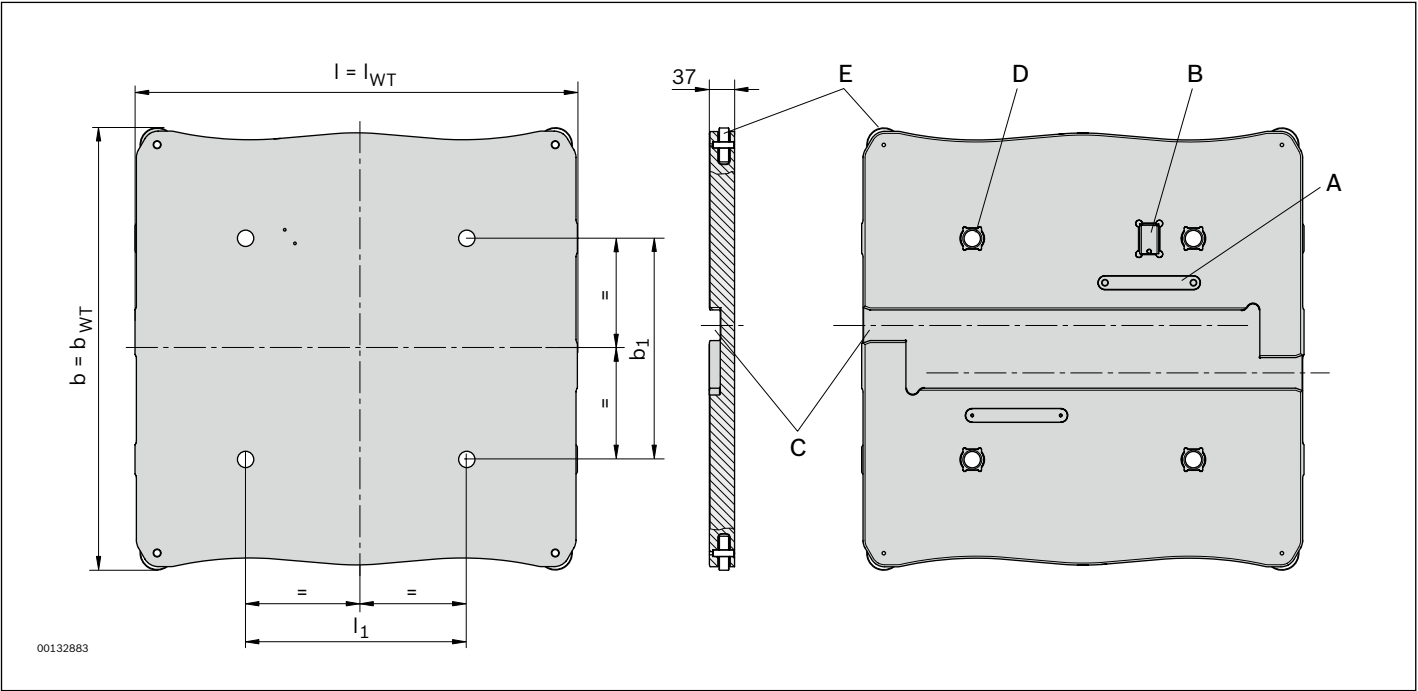


b_{WT} (mm)	l_{WT} (mm)	m_{WT} (kg)	b_1 (mm)	l_1 (mm)	Material number
455	455	6.4	195	195	3 842 545 080
455	650	8.9	195	325	3 842 545 083
650	650	13.5	325	325	3 842 545 086
650	845	17.2	325	520	3 842 545 089
845	845	23.2	520	520	3 842 545 092
845	1040	27.2	520	715	3 842 545 095

m_{WT} = weight of the workpiece pallet itself
Description of further parameters, see page 0-3

Dimensions

WT 5 workpiece pallet



- A

Damping element
- B

Holder for ID data tag ...
- C

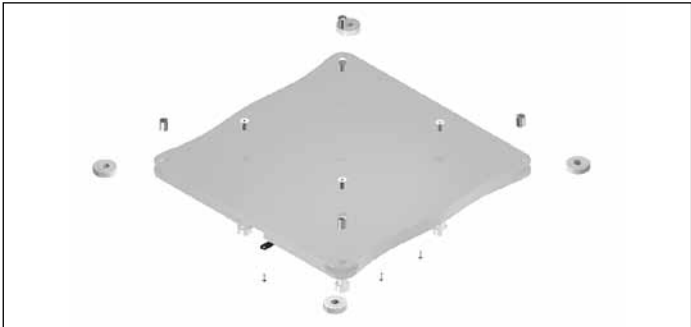
Stop gate feed-through
- D

Mounting for positioning bushing
- E

Guide rollers

3D models can be found in the eShop or in MTpro see page 12-3

Accessories



Attachment kit

Use:
► Attachment kit for mounting the workpiece pallet

Version:
► 4 rollers for lateral guides
► 4 roller pins for adjusting the rollers
► 2 sensor plates for damping inductive sensors
► 4 damping elements help to avoid noise and damage when workpiece pallets run into each other.

Material:
► PUR, POM

Attachment kit

	b_{WT} (mm)	Material number
	455	3 842 554 931
	650; 845	3 842 554 932




Positioning bushing kit

Use:
► For fixing the carrying plate on the base pallet
► For a defined workpiece pallet entry in the positioning unit

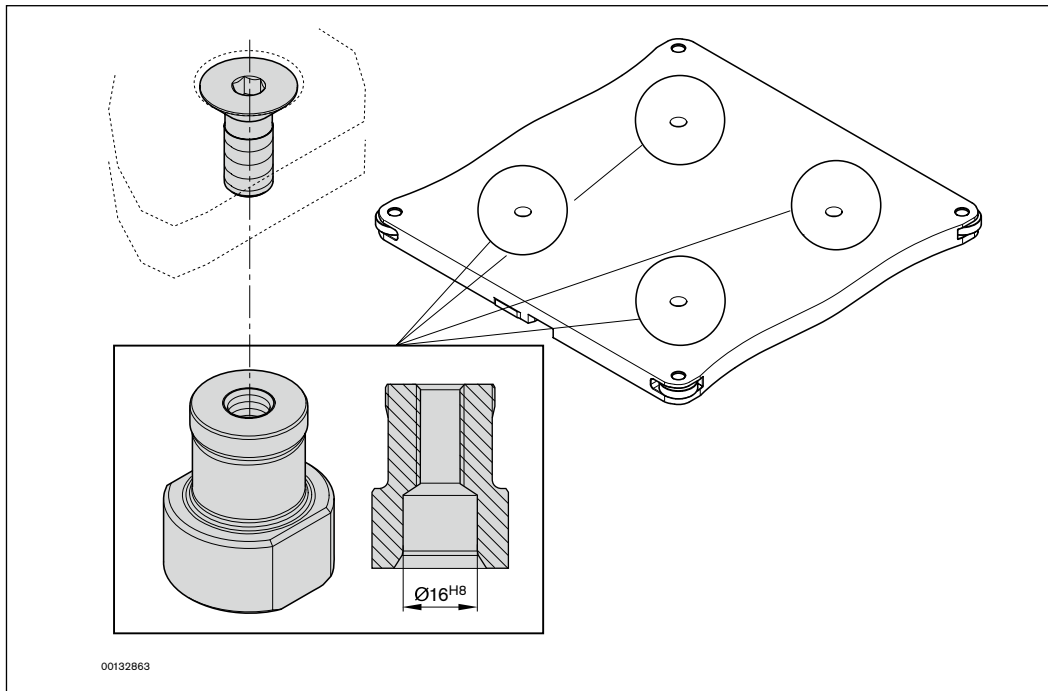
Scope of delivery:
► 4 positioning bushings, 4 screws for fixing the carrying plate

Material:
► hardened steel

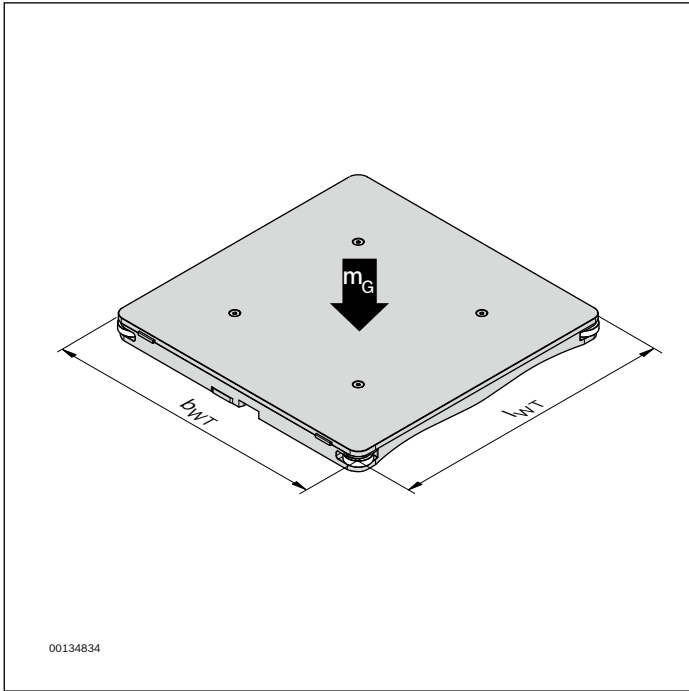
Positioning bushing kit

		Material number
	Set	3 842 545 264

Dimensions

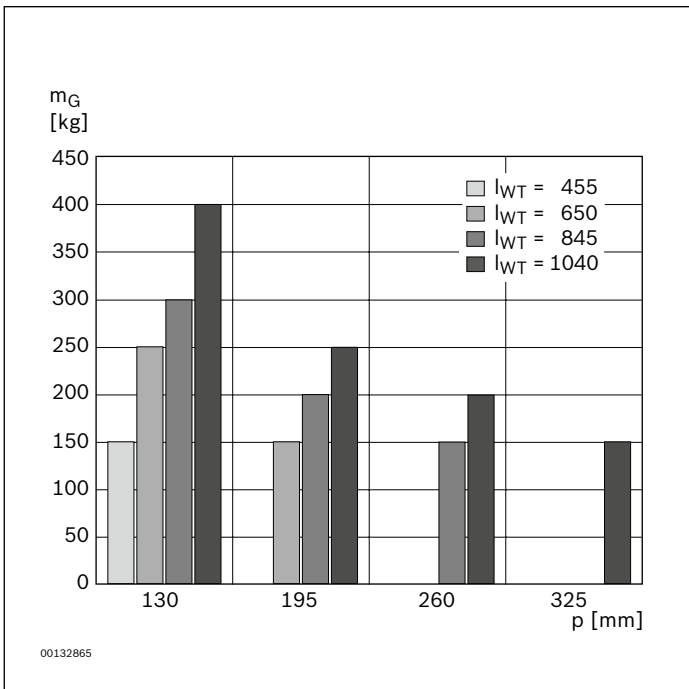


Permissible workpiece pallet load



The permissible load from the conveyed goods is calculated based on the permissible WT total mass less the weight of the workpiece pallet itself including supports and special equipment etc.

The permissible total mass depends on the length of the workpiece pallet l_{WT} , and on the roller spacing.



The carrying force per roller is 50 kg, and the WT must always be on at least 3 rollers. The resulting load limits for the longitudinal conveyor are illustrated in the graphic.

Note:

For curves, junctions and diverters, alternative load limits must be observed.

Selection of workpiece pallets in accordance with load limits

For workpiece pallets that are not square, please note that the permissible WT total mass m_{Gzul} is different for longitudinal and transverse conveyors. In the transverse conveyor the shorter side (b_{WT}) is to be used for the calculation.

The resulting permissible WT total masses are shown in the table opposite.

The WT total mass m_G results from:

- Workpiece pallet mass
- WT load (workpiece, support, etc.)
- Mass of the special equipment (data carrier, etc.)

The WT total mass m_G must not exceed the permissible WT total mass m_{Gzul} :

$$m_G \leq m_{Gzul}$$

The workpiece pallet must be designed with sufficient rigidity for the load. The deflection of the workpiece pallet (base pallet can be ignored) must not exceed 1 mm.

Permissible load according to the number of rollers

b_{WT}	l_{WT}	p	m_{Gzul} Longitudinal conveyor	m_{Gzul} Transverse conveyor	m_{WT1}	m_{WT2}	m_{WT3}
(mm)	(mm)	(mm)	(kg)	(kg)	(kg)	(kg)	(kg)
455	455	130	150	150	13.6	17.4	6.7
455	650	130	250	150	18.8	24.3	8.9
455	650	195	150	–	18.8	24.3	8.9
650	650	130	250	250	28.8	35.3	13.9
650	650	195	150	150	28.8	35.3	13.9
650	845	130	300	250	36.3	45.5	17.7
650	845	195	200	150	36.3	45.5	17.7
650	845	260	150	–	36.3	45.5	17.7
845	845	130	300	300	48.0	60.0	23.8
845	845	195	200	200	48.0	60.0	23.8
845	845	260	150	150	48.0	60.0	23.8
845	1040	130	400	300	57.6	72.4	27.7
845	1040	195	250	200	57.6	72.4	27.7
845	1040	260	200	150	57.6	72.4	27.7
845	1040	325	150	–	57.6	72.4	27.7

p = Roller spacing (pitch)

m_{Gzul} = Permissible WT total mass

m_{WT1} = mass of workpiece pallet, fully installed with carrying plate (mass of base plate + mass of carrying plate $d_{pi} = 12.7$)

m_{WT2} = mass of workpiece pallet, fully installed with carrying plate (mass of base plate + mass of carrying plate $d_{pi} = 19.05$)

m_{WT3} = mass of workpiece pallet, fully installed without carrying plate
(mass of base plate)

Carrying plates, standard sizes



Use:

- ▶ For combination with a base pallet to form a WT 5 workpiece pallet
- ▶ For finishing fixtures by the user

Version:

- ▶ 6 standard sizes in 2 thicknesses
- ▶ Carrying plate, ready to assemble with mounting holes

Material:

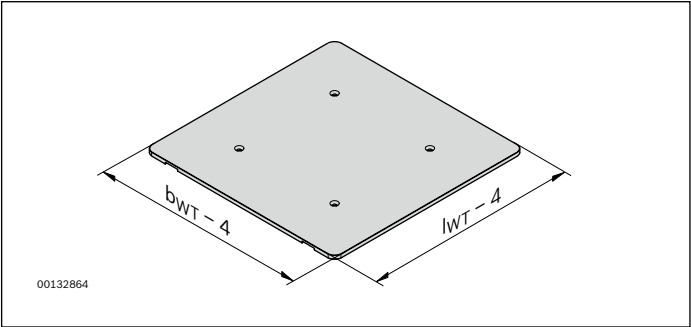
- ▶ aluminum

Note:


To assemble the carrying plate on the base pallet:


- ▶ positioning bushing kit 3 842 545 264, see page 2-6

Ordering information

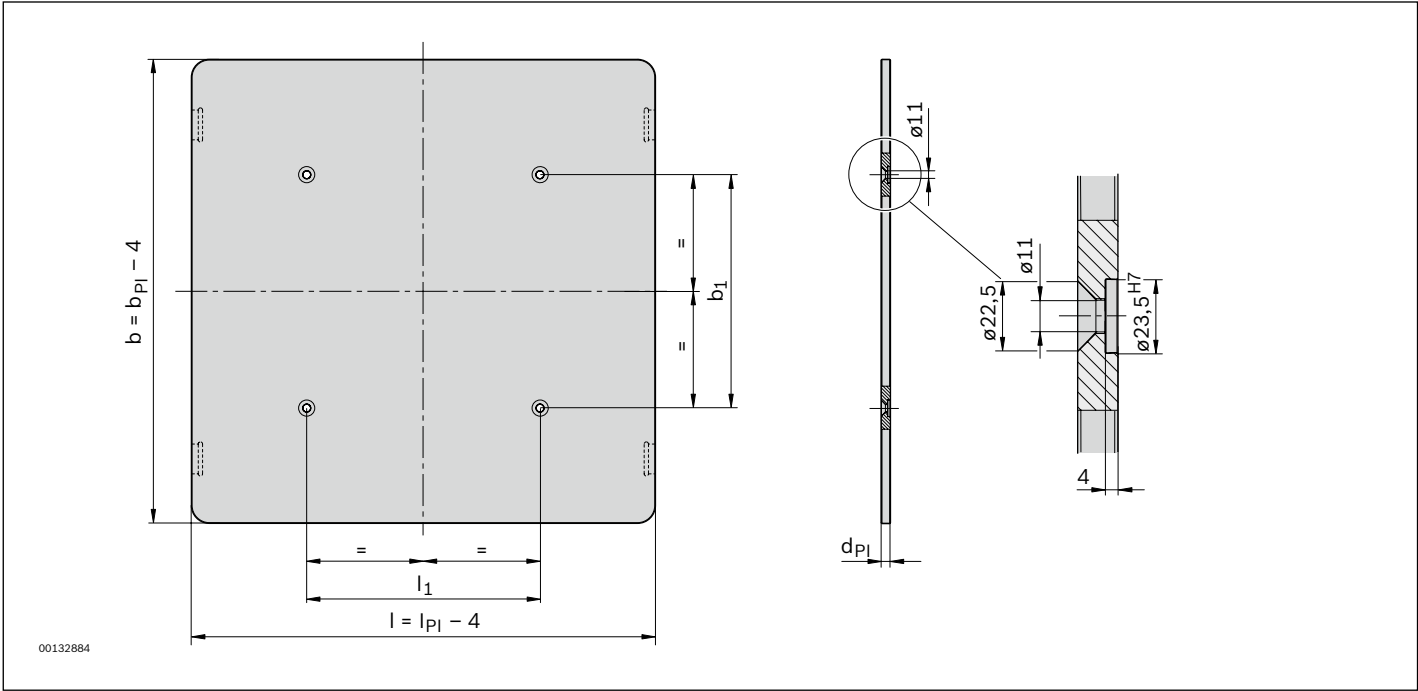


2

b_{WT} (mm)	l_{WT} (mm)	d_{PL} (mm)	 (mm)	m_{PL} (kg)	Material number
455	455	12.7	0.6	6.6	3 842 545 081
455	650	12.7	0.8	9.4	3 842 545 084
650	650	12.7	0.8	14.2	3 842 545 087
650	845	12.7	1.0	18.6	3 842 545 090
845	845	12.7	1.0	24.2	3 842 545 093
845	1040	12.7	1.2	29.8	3 842 545 096
455	455	19.05	0.6	10.4	3 842 545 266
455	650	19.05	0.8	14.9	3 842 545 267
650	650	19.05	0.8	21.3	3 842 545 268
650	845	19.05	1.0	27.8	3 842 545 269
845	845	19.05	1.0	36.2	3 842 545 270
845	1040	19.05	1.2	44.6	3 842 545 271

- b_{WT} = width of workpiece pallet
 l_{WT} = length of workpiece pallet
 d_{PL} = plate thickness
* = evenness
 m_{PL} = plate weight

Dimensions
WT 5: carrying plate, standard sizes



Carrying plates, variable dimensions

2

**Use:**

- ▶ For combination with a base pallet to form a WT 5 workpiece pallet
- ▶ For finishing fixtures by the user

Version:

- ▶ Variable sizes in 2 thicknesses
- ▶ Carrying plate, ready to assemble with mounting holes

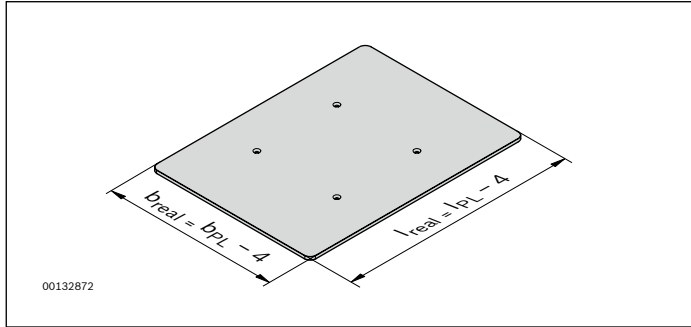
Material:

- ▶ aluminum

Note:

The carrying plate may extend beyond all sides of the base pallet. Exception: The HQ 5 cannot be passed through if the carrying plate protrudes on the sides. The user must install dampers in the direction of transport. To assemble the carrying plate on the base pallet: positioning bushing kit 3 842 545 264, see page 2-6.

Ordering information



l_{PL} = ordered length of the carrying plate
 b_{PL} = ordered width of the carrying plate

Carrying plates in various dimensions, adapted to the base pallets $b_{WT} \times l_{WT}$

$b_{WT} \times l_{WT}$ (mm)	b_{PL} (mm)	l_{PL} (mm)	d_{PL} (mm)	\square^* (mm)	b_1 (mm)	l_1 (mm)	Material number
455 x 455	$455 \leq b_{PL} \leq 650$	$455 \leq l_{PL} \leq 650$	12.7	0.6	195	195	3 842 998 562
455 x 650	$455 \leq b_{PL} \leq 650$	$650 \leq l_{PL} \leq 845$	12.7	0.8	195	195	3 842 998 564
650 x 650	$650 \leq b_{PL} \leq 845$	$650 \leq l_{PL} \leq 845$	12.7	0.8	195	195	3 842 998 566
650 x 845	$650 \leq b_{PL} \leq 845$	$845 \leq l_{PL} \leq 1040$	12.7	1.0	195	195	3 842 998 568
845 x 845	$845 \leq b_{PL} \leq 1040$	$845 \leq l_{PL} \leq 1040$	12.7	1.0	195	195	3 842 998 570
845 x 1040	$845 \leq b_{PL} \leq 1040$	$1040 \leq l_{PL} \leq 1250$	12.7	1.2	195	195	3 842 998 572
455 x 455	$455 \leq b_{PL} \leq 650$	$455 \leq l_{PL} \leq 650$	19.05	0.6	195	195	3 842 998 563
455 x 650	$455 \leq b_{PL} \leq 650$	$650 \leq l_{PL} \leq 845$	19.05	0.8	195	195	3 842 998 565
650 x 650	$650 \leq b_{PL} \leq 845$	$650 \leq l_{PL} \leq 845$	19.05	0.8	195	195	3 842 998 567
650 x 845	$650 \leq b_{PL} \leq 845$	$845 \leq l_{PL} \leq 1040$	19.05	1.0	195	195	3 842 998 569
845 x 845	$845 \leq b_{PL} \leq 1040$	$845 \leq l_{PL} \leq 1040$	19.05	1.0	195	195	3 842 998 571
845 x 1040	$845 \leq b_{PL} \leq 1040$	$1040 \leq l_{PL} \leq 1250$	19.05	1.2	195	195	3 842 998 573

$b_{WT} \times l_{WT}$ = base pallet dimensions

b_{PL} = carrying plate width (b_{real}) + 4 mm = ordered width

l_{PL} = carrying plate length (l_{real}) + 4 mm = ordered length

d_{PL} = plate thickness

\square^* = evenness

Description of further parameters, see page 0-3

Formula for calculating the weight of a carrying plate:

$$m_{PL} \text{ (kg)} = (b_{PL} - 4) \text{ (mm)} \times (l_{PL} - 4) \text{ (mm)} \times d_{PL} \text{ (mm)} \times 0.0000027 \text{ (kg/mm}^3\text{)}$$

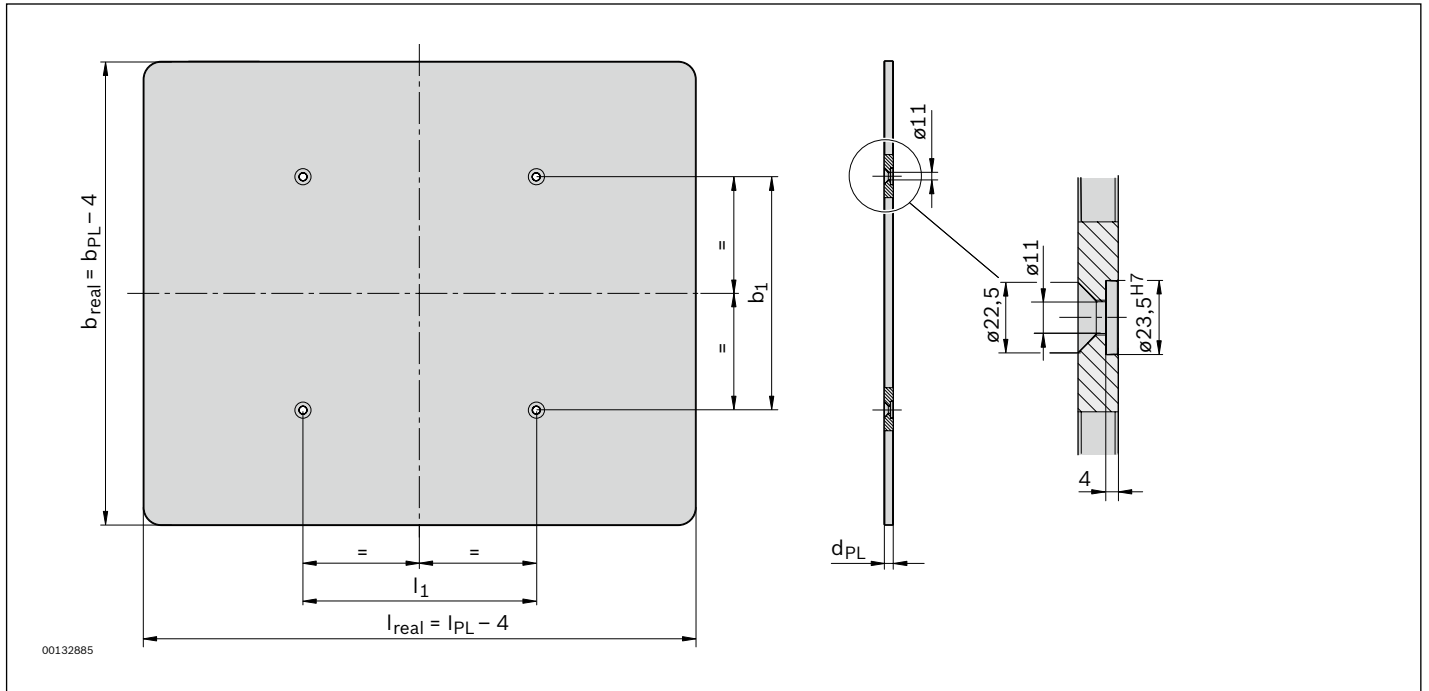
Order examples:

Standard plate without cut-out for damping element:

- $b_{PL} = b_{WT} = 455 \text{ mm}$;
 $l_{PL} = l_{WT} = 455 \text{ mm}$
Delivery dimensions: 451 mm x 451 mm
- $b_{PL} = b_{WT} = 650 \text{ mm}$;
 $l_{PL} = l_{WT} = 650 \text{ mm}$
Delivery dimensions: 646 mm x 646 mm
- $b_{PL} = b_{WT} = 845 \text{ mm}$;
 $l_{PL} = l_{WT} = 845 \text{ mm}$
Delivery dimensions: 841 mm x 841 mm

Dimensions

WT 5: carrying plate, variable dimensions



Formula for calculating the weight of a carrying plate:

$$m_{\text{PL}} \text{ (kg)} = (b_{\text{PL}} - 4) \text{ (mm)} \times (l_{\text{PL}} - 4) \text{ (mm)} \times d_{\text{PL}} \text{ (mm)} \times 0.0000027 \text{ (kg/mm}^3\text{)}$$