

GENERAL INFORMATION

Regarding hinge load values
Reference value **160 kg**

Overview of load values for hinges

The following table provides you an overview of the maximum load value for the individual hinge type, taking the interaction of width and height of the door as well as the hinge gap into account.

Assuming a reference value with door leaf dimensions of 1000 x 2000 mm (W x H), the use of 2 hinges and a hinge gap of 1435 mm, the permissible load values change with different width and height ratios.

Green: load value = reference value. **Orange:** load value < reference value.

↑ Hinge gap in mm	2000	160	160	160	160	160	160	160	160	160
	1950	160	160	160	160	160	160	160	160	160
	1900	160	160	160	160	160	160	160	160	160
	1850	160	160	160	160	160	160	160	160	159
	1800	160	160	160	160	160	160	160	160	154
	1750	160	160	160	160	160	160	160	156	150
	1700	160	160	160	160	160	160	158	152	146
	1650	160	160	160	160	160	160	153	147	142
	1600	160	160	160	160	160	155	149	143	137
	1550	160	160	160	160	157	150	144	138	133
	1435	160	160	160	152	145	139	133	128	123
		900	950	1000	1050	1100	1150	1200	1250	1300
		→ Leaf width in mm								

The hinge gap dimensions according to DIN 18101 must be taken into account for standardised door elements.

The specifications above are guidelines. Especially in the case of borderline load requirements, please approach us.

LOAD VALUES FOR HINGES

An accurate, professional fitting in accordance with the SIMONSWERK installation instructions is always a prerequisite.

Installation site (residential building, public building, school, administration, barracks, kindergarten etc.)
Type of material of the element
Frequency of operation
Door dimensions (e.g. excess widths)
Positioning of hinges
Assembly of hinges
Outward opening doors (porch)
Door stop
Door closer
Swing-door operator
Wall soffits
Closing sequence control systems, etc.

When selecting or deciding on a hinge, the load alone is already often viewed as being identical to the weight of the door. However, the hinge load can often be several times the door weight, caused by various influential factors.

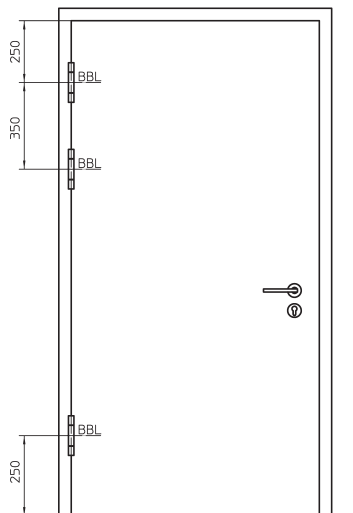
Even taking these various criteria into account, an additional reserve should always still be included when selecting the hinge. Especially in public buildings where extra loads are incurred due to the high opening frequency and stress which is not always calculable (kindergarten, hospitals etc.), sufficiently dimensioned hinges should be used even if this would not have been necessary merely based on the door weight as such.

Reference details

The load specifications for SIMONSWERK hinges are based on a maximum door weight. Additionally, the named influential factors must be taken into account for hinge loads.

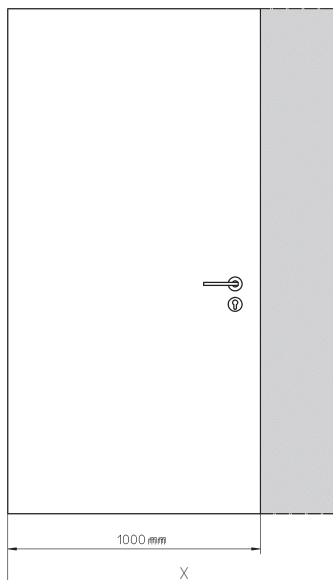
All indications are based on the following references:

Door leaf dimensions	1000 x 2000 mm
Use of	2 hinges
Hinge distance	1435 mm



Third hinge

In addition to the factors mentioned above the use of a third hinge can have a significant impact on the load capacity. In practice often a third hinge is located in the middle of the door in order to meet the optical demands and to minimise warping in the centre of the door. Under certain circumstances however it may be useful or even necessary to additionally support the upper hinge which takes most of the major tractive forces - this could be true, for instance, in the case of extra-wide doors (>1000 mm), where additional forces occur due to the lever action. For these applications the third hinge has to be located in the upper third since only then the load capacity of the hinge is positively influenced. The door regulations stipulate the use of a third 350-mm hinge (please note: new measurement) below the upper one (with reference to the upper HRL). In the case of unregulated units (e.g. exterior doors), SIMONSWERK recommends reducing this size to as far as 250 mm depending on the knuckle length.

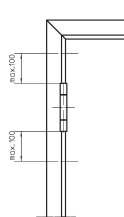


Doors with excess widths

SIMONSWERK heavy-duty hinges have generally been designed for the indicated load capacities. Please take into account that for two doors wider than 100 cm and the hinge spacing remaining constant the load capacities are reduced in percentages by the same ratio as the Standard door width of 100 cm is exceeded (e.g. door width 125 cm = load capacity ./ 25 %).

An accurate, professional fitting in accordance with the SIMONSWERK installation instructions is always a prerequisite.

LOAD VALUES FOR HINGES



Frame fixing

To achieve a max. load capacity of a door hinge a proper and appropriate assembly of all components is compulsory. Special emphasis shall be given to the fixing of the door element to the wall.

Especially closed frames, whether made of steel, aluminium or derived timber boards, often show a higher instability, therefore it is necessary to pay attention to a secure fixing to the brickwork or framework. Foaming alone in this area is not recommended for door weights > 60 kg. Here, a force-fitted connection must be created via a screw or plug connection through the receiver, or max. 100 mm from the outer edge of the hinges.

Door closers

When door closers are used, SIMONSWERK recommends the use of a third hinge in the upper third of the door. The correct adjustment of the closer is a fundamental requirement for a long-lasting, problem-free functioning.

Door drives

When a swing-door operator is used, SIMONSWERK recommends using a total of four hinges, placed in two pairs at the top and the bottom.

The international distance between a pair of hinges should not exceed 350 mm (please note: new measurement).

Closing sequence control systems

When closing sequence control systems are used with double-leaf doors, it is important to ensure that a cushioned locking device is used for the active leaf, so that the forces are not transmitted to the hinges 1:1. In this case, SIMONSWERK recommends using a third hinge in the upper third of the door.

Wall openings, door stoppers

Factors such as door stoppers, projecting wall openings or similar cannot be measured or estimated and need to be considered individually, due to the lever action and forces that may occur if the door is opened too far resp. beyond a defined level. As a result of the doors' masses/weights, this can quickly lead to damage to the fastening, the hinges or similar. If it is necessary to use a door stopper, this should either be mounted on the wall or, instead, on the floor placed at 75 % of the door's width away from the hinge axis in the direction of the lock.

Miscellaneous

The points given here are simply guidelines. In practice, it may very well make sense, depending on the door's composition, usage levels, location, etc., to take the above factors into account even for door widths < = 1000 mm. This needs to be decided on a case-by-case basis. In any case, care must be taken to ensure that the hinges are of a sufficient size to be able to cover the extraneous factors.