

Fire Protection Sliding Door Operators Series DC-21

The door operator series DC-21 with DC-motors has a **completely modular structure**. Along with door operators for the industrial and commercial sector it includes with the types DICTAMAT 8000-21, 7000-21 and 3700-21 door operators especially for fire protection doors. They open the door with motor and close them either by the integrated spring or by a counterweight provided by the customer. This series has been **tested and approved** for the use on fire protection doors.

Your advantages:

- **High performance** at **small dimensions**.
- **Reduction of the installation work to a minimum:** No separate limit switches are required for the version with integrated encoder..
- **Modular system** permits **modification** by our service team to another DC-21 door operator, even on site.
- **Installation, handling and connection** of all DC-21 door drives are **similar**.
- Modular system **facilitates maintenance and service**.



Selection Criteria

- For doors from 1 to 7 m (with encoder); otherwise unlimited distance
- Motor force in opening direction from 300 N to 1000 N
- For doors up to max. 1300 kg (doors must run smoothly)
- For up to 300 cycles per day
- Position control: integrated encoder; with doors > 7 m: separate limit switches
- Closing with integrated/separate spring or counterweight provided by the customer
- Operating options with E8 control system: Open, Stop, Close, partial opening, automatic closing, relay contact (function to be adjusted by customer)





Summary

The door operator "family" is structured completely modular. All system components can be combined differently. For fire protection doors three series have been developed: DICTAMAT 8000-21, DICTAMAT 7000-21 and DICTAMAT 3700-21.

The types mentioned below are the ones most frequently used, but it is no problem to assemble other versions.

All series use the same control system.

Technical Data

DICTAMAT Type	8000-21	7000-21		3700-21	
		Normal	with add. gear box	Normal	with add. gear box
Motor rating	157 W		157 W		40 W
Opening force of the motor	600 N	600 N	1000 N	300 N	500 N
Closing force	160 N (spring)				
Opening speed adjustable	0.10 - 0.18 m/s	0.10 - 0.18 m/s		0.10 - 0.25 m/s	
Closing speed adjustable		0.08 - 0.2 m/s			
Voltage from control system	48 VDC		48 VDC		48 VDC
Nominal current from control system	5 A		5 A		5 A
Driving torque (at drive shaft)	20 Nm	20 Nm	34 Nm	10 Nm	17 Nm
Duty cycle		40 % ED			
IP rating		IP 44			
Weight (without accessories)	19 kg	10 kg	12 kg	10 kg	12 kg
Doors (running smoothly) up to	1000 kg	1000 kg	1300 kg	700 kg	1000 kg
Distance with encoder / Limit switches	6,5 m	encoder: 7 m / limit switches: unlimited			
Cycles per day	200		300		100

Options

- Position Control:

The position of the door can be determined either by an integrated encoder ("L") or by separate limit switches ("E"). Of these you need three pieces, one each for the positions Closed, creep speed open and Open. The integrated encoder reduces the assembly effort considerably.

Door operators with integrated encoder can be used for door widths of 7 meters maximum. Otherwise the positioning will become too imprecise.

- Power Transmission

Door operators with integrated encoder always use toothed belt ("Z") for the power transmission as only this allows an exact positioning. The operator and the accessories have to be configured according to the type of power transmission.

- Additional Gear Box

The additional gear box permits to increase the force of the door operator by the factor 1.7, the capacity of the motor staying the same. Simultaneously the maximum opening and closing speed is reduced by the same factor (in comparison to the normal version).

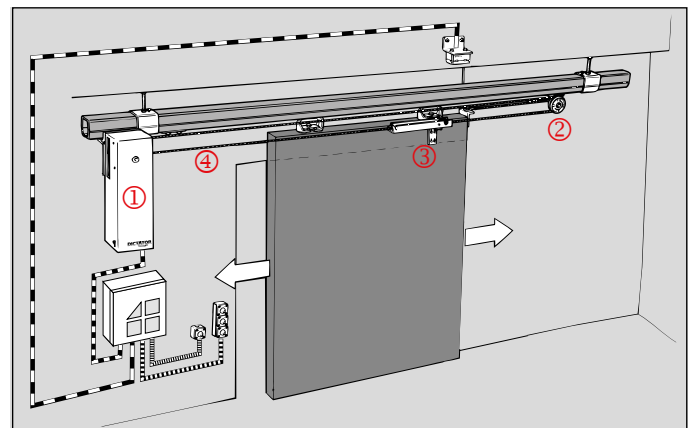


Components

The DC-21 fire door operators open sliding doors by motor. The integrated magnet allows to keep the door in every position. The closing impulse is given either by a push button, the automatic closing or a smoke alarm. The closing is effected mechanically by an integrated or separate closing spring or a counter weight. This ensures that the door is always securely closed, even in the case of a power failure. As the power is transmitted by a revolving toothed belt, also **sliding doors with two leaves** can be powered by one operator and one control system. For the second leaf you only need an additional fixing bracket (dimensioned drawing on page 05.016.00).

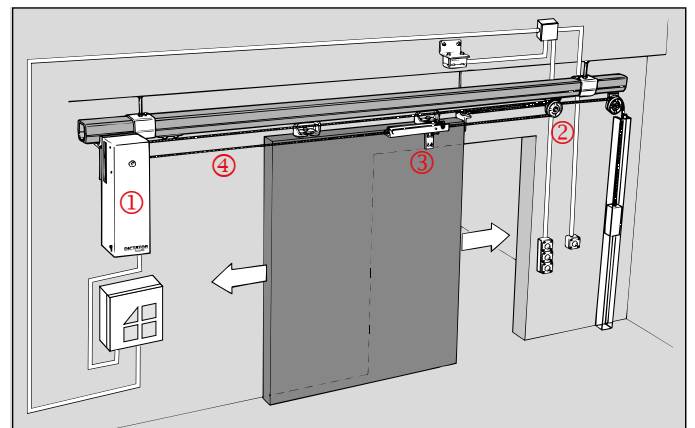
Doors up to 6.5 m Width

DICTAMAT 8000-21 ZL
with integrated closing spring and encoder for position control



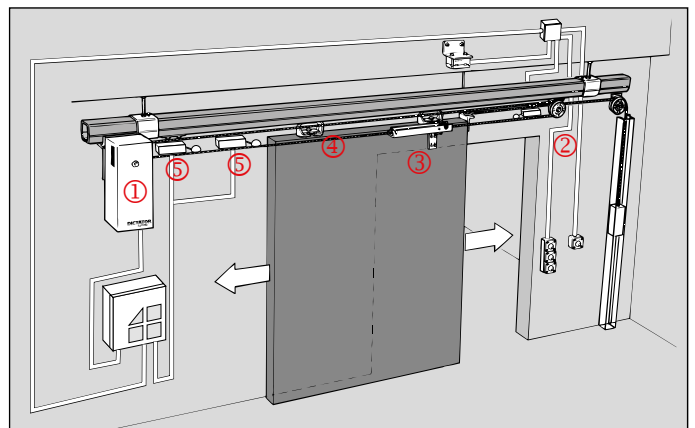
Doors up to 7 m Width

DICTAMAT 7000-21 ZLM or DICTAMAT 3700-21 ZLM
with integrated encoder for position control



Doors Wider than 7 m

DICTAMAT 7000-21 ZEM or DICTAMAT 3700-21 ZEM
with separate limit switches for position control



Legend

- ① Door operator with mounting plate
- ② Idler pulley with fixing bracket
- ③ Fixing bracket
- ④ Toothed belt
- ⑤ Limit switch



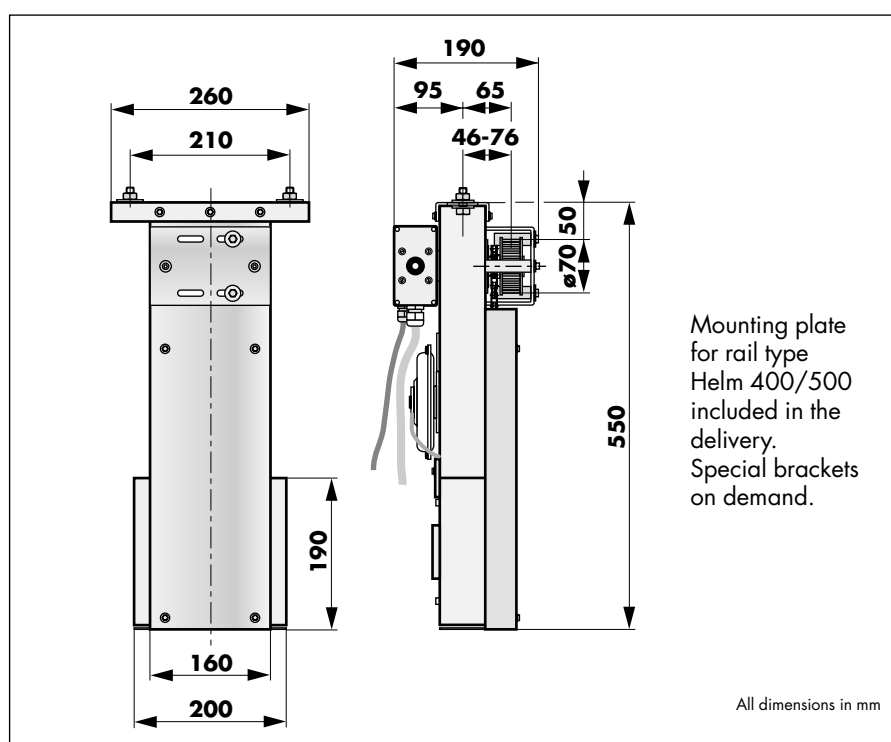
DICTAMAT 8000-21

The DICTAMAT 8000-21 ZLM door operator combines all fire protection features in one device: opening by motor, position control by integrated encoder, keeping the door in any position by the integrated hold-open system, closing by integrated spring, closing speed controlled by integrated magnetic brake.

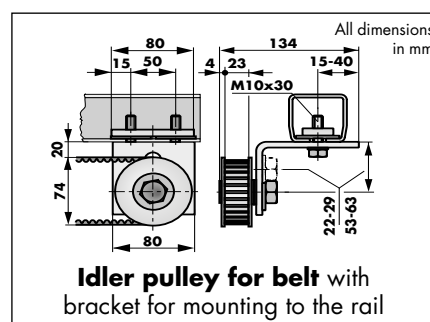
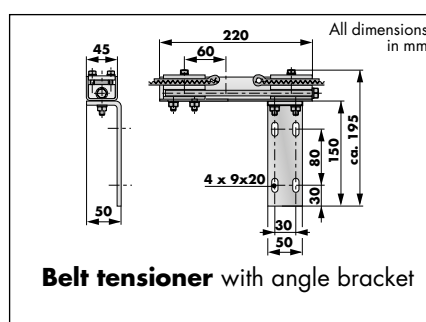
Due to its small and compact design it requires very little space in depth. It is installed directly below the rail, so that no space is necessary between the rear end of the door and the wall.

The toothed belt for power transmission is not included in the delivery as the required length differs almost always.

Dimensions DICTAMAT 8000-21 ZLM



Dimensions Idler Pulley, Belt Tensioner



Components Included DICTAMAT 8000-21 ZLM

- Door operator: gear module with 48 VDC disc-armature motor, driving wheel for toothed belt, encoder, magnet, damping module, 160 N closing spring
- 2.5 m connecting cable to the control system, mounting plate
- Idler pulley with angle bracket for mounting to the rail
- Belt tensioner with angle bracket for fixing to the door

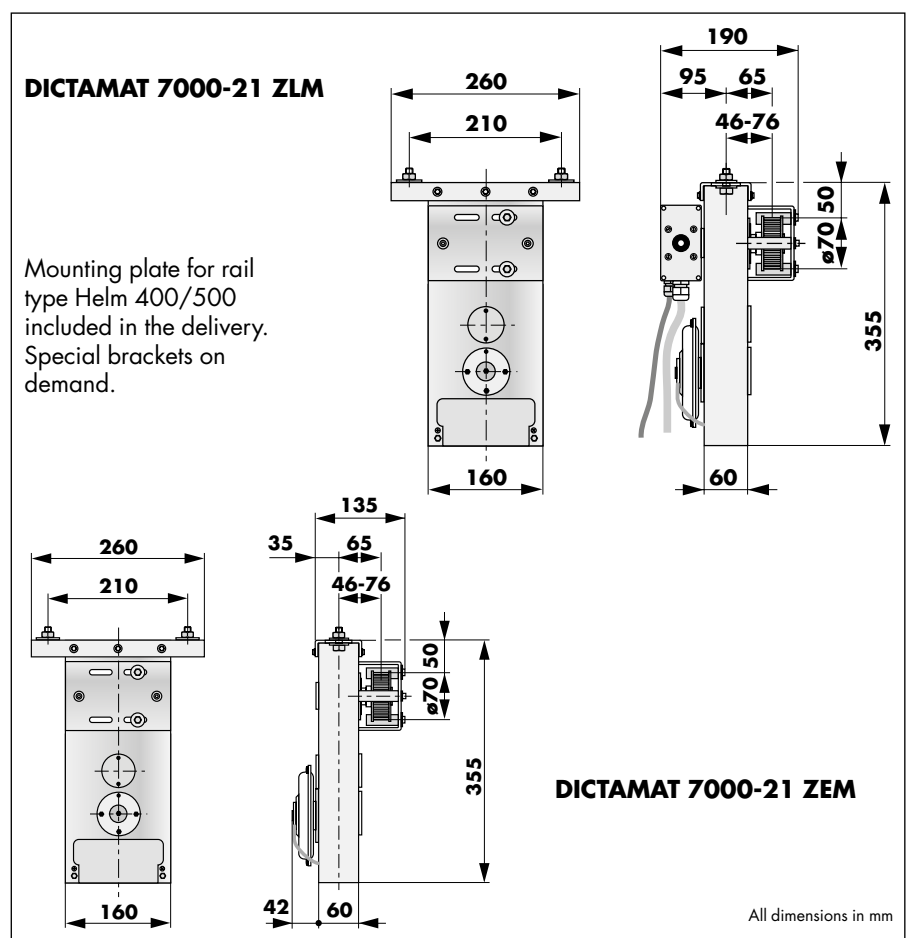


DICTAMAT 7000-21

The DICTAMAT 7000-21 door operator is used especially to automate doors which already dispose of a counter weight or which are wider than 6.5 meters. There exist two types: with integrated encoder for position control of doors up to 7 m width or without encoder for doors wider than 7 m. Here the position control is effected by separate limit switches. Same as the DICTAMAT 8000-21 it requires very little space in depth. It can be installed directly below the rail, so that no space is necessary between the rear end of the door and the wall.

The toothed belt for power transmission is not included in the delivery as the required length differs almost always.

Dimensions DICTAMAT 7000-21



Components Included DICTAMAT 7000-21 ZLM

- Door operator: gear module with 48 VDC disc-armature motor, driving wheel for toothed belt, encoder, magnet, damping module, 2.5 m connecting cable to the control system, mounting plate
- Idler pulley with angle bracket for mounting to the rail*
- Belt tensioner with angle bracket for fixing to the door*

Components Included DICTAMAT 7000-21 ZEM

- Door operator: gear module with 48 VDC disc-armature motor, driving wheel for belt, magnet, damping module, 2.5 m connecting cable to the control system, mounting plate
- Idler pulley with angle bracket for mounting to the rail*
- Belt tensioner with angle bracket for fixing to the door*

*Dimensioned drawings on page 05.014.00

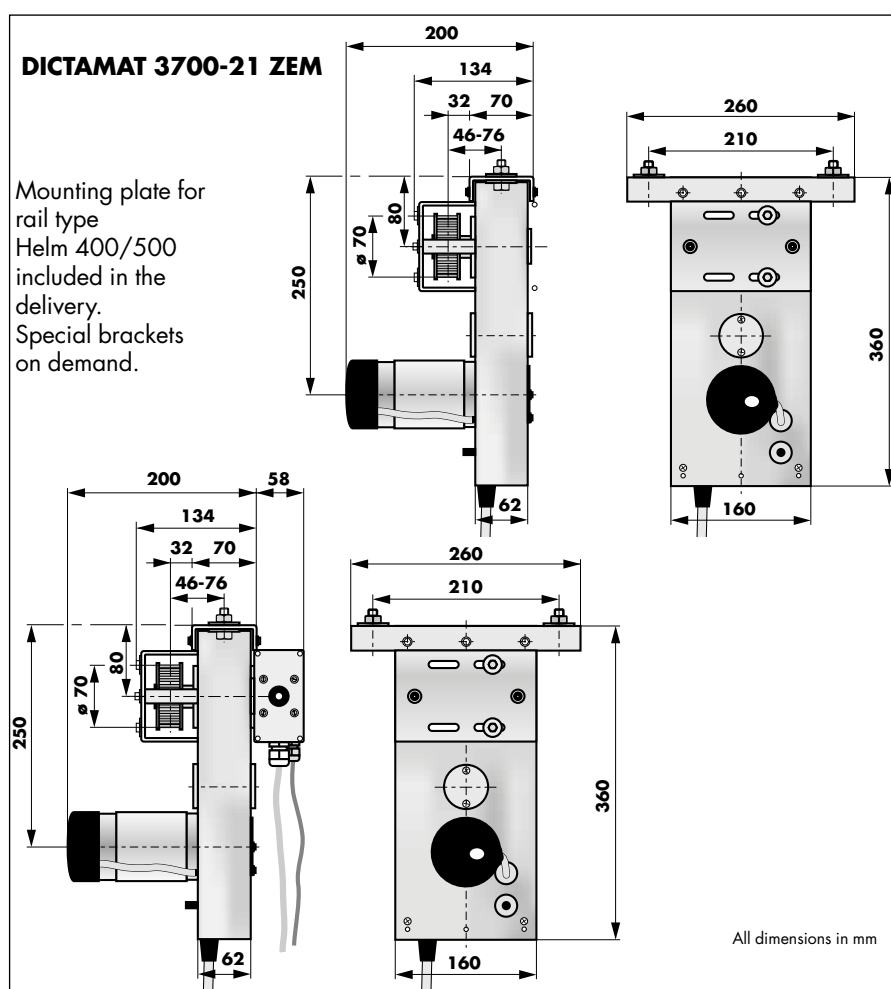


DICTAMAT 3700-21

The DICTAMAT 3700-21 door operator is a slightly weaker version of the DICTAMAT 7000-21. It is also available in two versions: with integrated encoder for the position control of doors up to 7 m width or without encoder for e.g. doors wider than 7 m (separate limit switches). Because of the protruding 24 VDC motor the DICTAMAT 3700-21 needs some more space in depth.

The toothed belt for the type DICTAMAT 3700-21 Z has to be ordered separately.

Dimensions DICTAMAT 3700-21



Components Included DICTAMAT 3700-21 ZEM

- Door operator: gear module with 24 VDC motor, driving wheel for toothed belt, magnet, damping module, 2.5 m connecting cable to control system, mounting plate
- Idler pulley with angle bracket for mounting to the rail*
- Belt tensioner with angle bracket for fixing to the door*

Components Included DICTAMAT 3700-21 ZLM

- Door operator: gear module with 24 VDC motor, driving wheel for toothed belt, encoder, magnet, damping module, 2.5 m connecting cable to control system, mounting plate
- Idler pulley with angle bracket for mounting to the rail*
- Belt tensioner with angle bracket for fixing to the door*

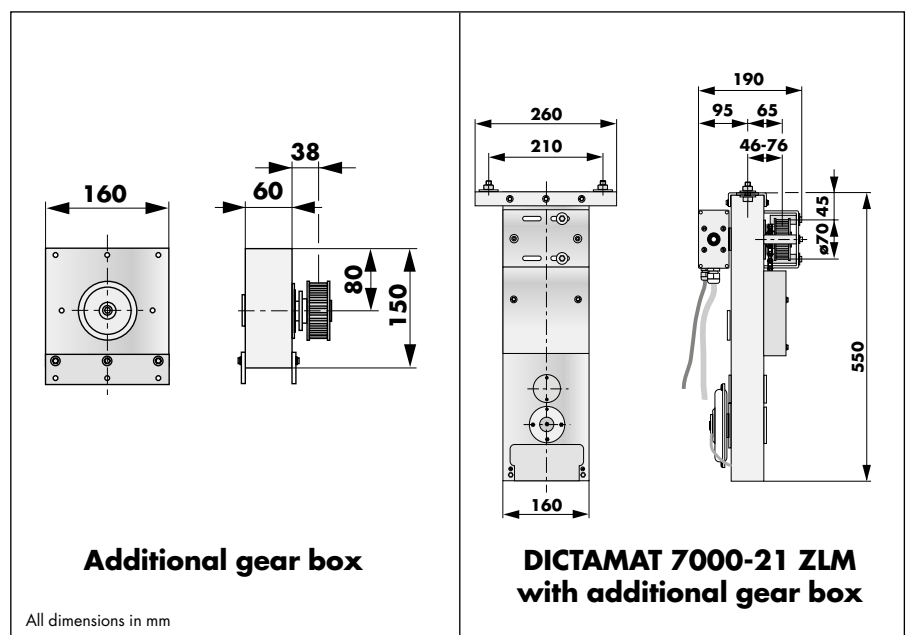
*Dimensioned drawings on page 05.014.00



Additional Gear Box for DICTAMAT DC-21

DICTATOR has developed for the door operators of the DC-21 system an absolute novelty: the gear box for retrofitting. It enables our service to subsequently increase the force of the door operator by the factor 1.7, even on site. It is not necessary to buy a new operator. The opening and closing speed is reduced by the same factor. We also furnish a special version to increase the speed while reducing the force. The additional gear box can be used for all door operators of the DC-21 system except the DICTAMAT 8000-21. Here the force of the integrated spring would not be sufficient to guarantee the closing of the door.

Dimensions Additional Gear Box



The DICTATOR additional gear box is put on top of the basic module of the door operator and fixed with two lateral connection plates. The driving wheel of the operator is taken off and the small chain wheel placed there instead. This chain wheel is connected by a chain with the chain wheel on the additional gear box. Afterwards the cover is remounted.

The additional gear box should always be used in combination with a toothed belt to guarantee the augmentation of the force by the factor 1.7 after the retrofitting. Only a toothed belt can provide an absolutely friction-locked connection between door and operator. In case the installed door operator is a **version with rope**, it has to be **converted to one with toothed belt**. For very heavy doors a version with chain is required. Please ask our technical department.

Components Included

- Additional gear box with lateral connection plates
- Big chain wheel with driving wheel for toothed belt, small chain wheel
- Chain
- Cover from aluminium

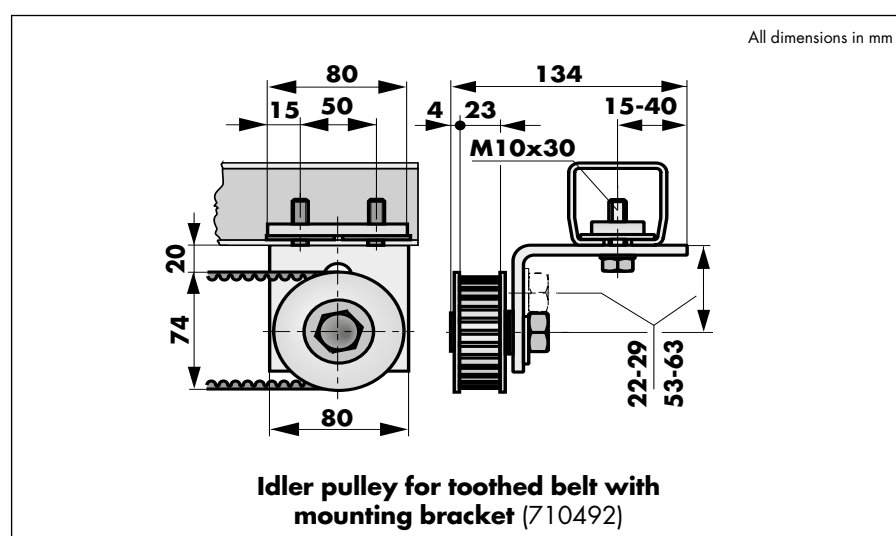


Accessories for DC-21 Door Operators: Idler Pulley, Belt Tensioner, Toothed Belt

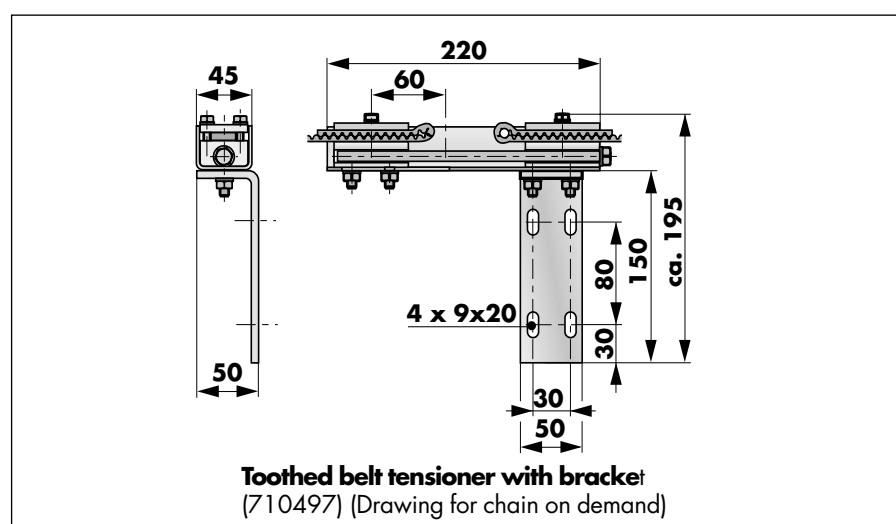
The DICTAMAT DC-21 door operators use either revolving toothed belt or chain to transmit the force to the door. For this purpose an idler pulley has to be fixed to the opposite end of the rail. To fix the toothed belt or chain to the door and to tension it simultaneously you use the belt or chain tensioner. The arrangement of these parts on the door is shown on page 05.009.00. Normally they are included in the delivery.

The revolving toothed belt permits also to operate **two-leafed sliding doors with one operator and one control system**. The toothed belt is not included in the delivery as the required length always differs. Please order it along with the door drive and determine its length with the rule of thumb: length of the toothed belt = 4 x width of the door).

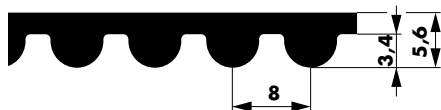
Idler Pulley



Tensioner for Toothed Belt or Chain with Bracket for Fixing to the Door



Toothed Belt HTD



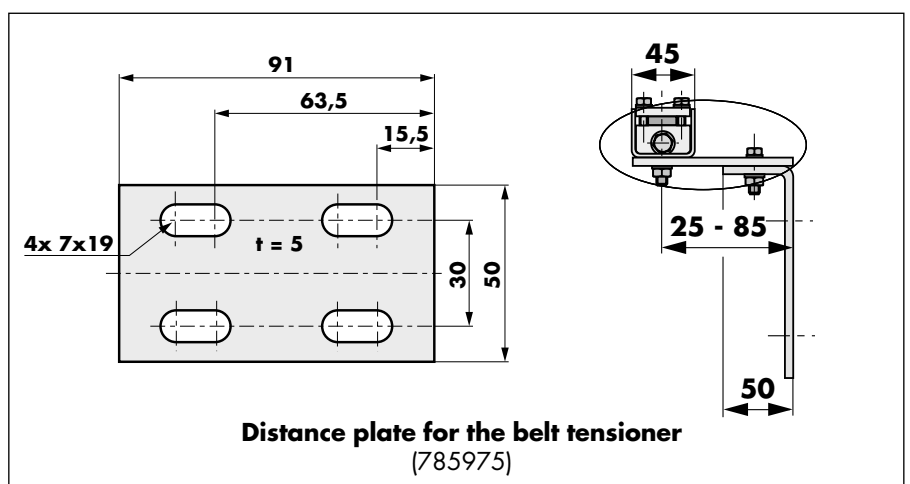
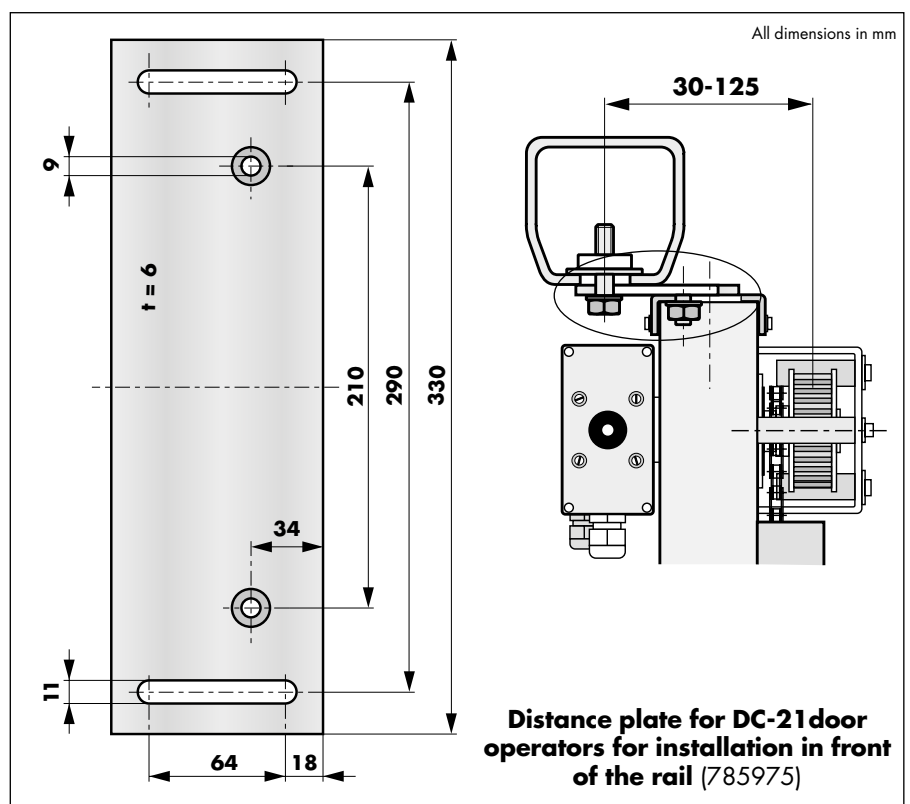
Material	PU (polyurethane)	
Tensile material	steel cord	
Operating temperature	-30° to +80 °C	
Resistant against	UV, ozone, oil und grease	
Tension load:	toothed belt HTD 8M, width 20 mm	2680 N



Accessories for DC-21 Door Operators: Mounting Plates

The DC-21 door operators normally are installed directly below the rail. If the rail is very close to the wall, the distance between rail and wall might be too small for the DC-21 operators with integrated position control. In this case the set of distance plates for the mounting bracket of the door operator and the belt tensioner represents a fast and simple solution. The plates are simply inserted into the existing brackets. This permits to install the door operator up to 85 mm in front of the rail. The mounting bracket of the idler pulley is already provided with such an adjustment possibility.

Set of Distance Plates for the Installation of DC-21 Door Operators in Front of the Rail





The revolving belt even permits to operate sliding doors with two leaves with a single door operator and control system. You just need an additional fixing device for the second leaf, that is fixed to the revolving belt, too.

In case of sliding doors wider than 6 m, an additional supporting roller for the toothed belt/chain should be provided every 3 - 5 m. They prevent the sagging of the toothed belt/chain as this would increase the strain on them and thus reduce their life time. This supporting roller can be used for toothed belt or chain.

Technical drawing of a Type for toothed belt (710495) showing front and side views with dimensions.

Front View Dimensions:

- Overall width: 60
- Width of mounting flange: 30
- Distance between mounting holes: 30
- Distance between belt holes: 30
- Distance between belt holes and mounting holes: 30
- Overall height: 220
- Height of mounting flange: 200
- Mounting holes: 4x 9x20

Side View Dimensions:

- Width of mounting flange: 50
- Thickness of mounting flange: 6

Type for toothed belt
(710495)

All dimensions in mm

Technical drawing of a supporting roller (785960) showing front and side views with dimensions.

Front View Dimensions:

- Width: 60
- Height from base to top of roller: 90-98
- Height from base to center of roller: 133-125
- Total height: 175

Side View Dimensions:

- Roller diameter: $\varnothing 80$
- Roller width: 23
- Distance from roller center to mounting bracket: 70
- Distance from roller center to mounting bracket (inner): 52
- Distance from roller center to mounting bracket (outer): 32

Supporting roller
(785960)



Order Information

Below you will find the part numbers of the most common door operator types. Of course there are available other versions.

All parts included in the delivery are mentioned on the pages 05.010.00 to 05.012.00. The meaning of the letters is given at the bottom of this page.

Along with the door operators we have listed the necessary accessories as control system and toothed belt and the possibly necessary installation accessories. Information on operating and safety devices starts on page 05.071.00.

Order Information Door Operator

DICTAMAT 8000-21 ZLM	part no. 785800
DICTAMAT 7000-21 ZLM	part no. 785700
DICTAMAT 7000-21 ZLM, with additional gear box	part no. 785700A
DICTAMAT 7000-21 ZE	part no. 785702
DICTAMAT 7000-21 ZEM, with additional gear box	part no. 785702A
DICTAMAT 3700-21 ZLM	part no. 785370
DICTAMAT 3700-21 ZLM, with additional gear box	part no. 785370A
DICTAMAT 3700-21 ZEM	part no. 785372

Order Information Necessary Accessories

Control system E8	part no. 730111
Toothed belt HTD8, 20 mm wide (pls. indicate length needed)	part no. 710490
Release button "Close Fire Protection Door"	part no. 040005
Button RESET **	part no. 700112

Order Information Additional Accessories

Final switch (break contact NC)	part no. 700156
Toothed belt fixing device for two-leaf sliding doors	part no. 710495
Supporting roller for belt/chain	part no. 785960
Set of distance plates for DC-21 operators	part no. 785975
Additional gear box for DICTAMAT series DC-21	part no. 785900
Operating and safety equipment	beginning on page 05.071.00
Smoke detectors DICTATOR	see Fire Door Control Solutions
Idler pulley for toothed belt*	part no. 710492
Idler pulley for chain*	part no. 785972
Tensioner for toothed belt*	part no. 710497
Tensioner for chain (1/2" and 3/16")*	part no. 710497K

Legend:

Z	Power transmission by toothed belt
E	Position control by separate limit switch
L	Position control by integrated encoder
*	Normally included in the delivery
**	IMPORTANT: After an alarm there has to be made a RESET.

