ELEKTROMATEN® FS

Fire-door-drive

For driving: fire shutters which must close under their own weight in the case of fire

FS 15.20
FS 25.20
FS 50.20
FS 110.18

ELEKTROMATEN FS are special drives for fire shutters. The door shaft is driven by a chain-transmission. For rising loads a safety brake of the appropriate size must be fitted.
ELEKTROMATEN FS comprises of:
Spur gear, centrifugal brake, reversible universal brake[1], integrated limit switches and electrical motor.

Spur gear
The spur gear allows the doors to close under their own weight in the case of a fire, even if there is a power failure.

Centrifugal brake ❶
The centrifugal brake limits output speed in the case of a fire with power failure; the output speed in this case exceeds the normal operation output speed.

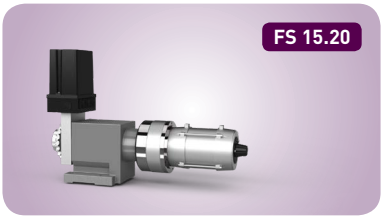
Patented universal brake[1] with two switchable operation modes:

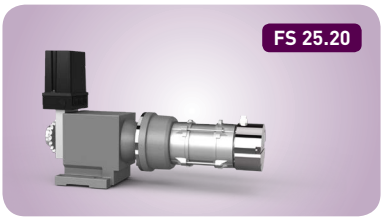
Installation mode ❷
- The operation corresponds to that of a spring-loaded brake[2]
- The door can be operated with a suitable door control like a standard roller shutter

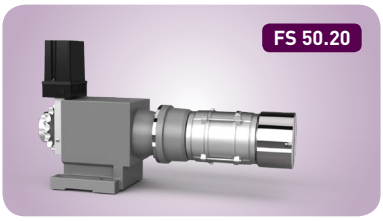
Fire-protection mode ❸
- The operation corresponds to that of a magnetic brake[3]
- Operation as fire-door with VdS approval
- In the case of fire the universal brake opens and the door closes under the own weight.

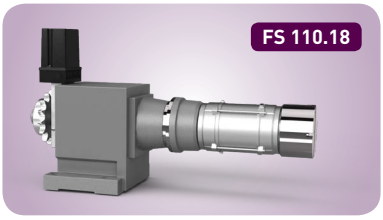
Approvals and certificates

ELEKTROMATEN
MPA Materials Testing Institute of North-Rhine Westphalia (Germany)
Test report no. 120001461.60-01 (FS 15.20)
Test report no. 120001461.10-01 (FS 25.20, FS 50.20, FS 110.18)









Centrifugal brake

- The centrifugal brake limits output speed in the case of a fire with power failure ❶

Universal brake, reversible

- Installation mode ❷
- Fire-protection mode ❸

Switch sensor

- Optional electronic switch sensor ❹
- Possibility of evaluating the operating status of the universal brake using a suitable control

Limit switches

Mechanical limit NES ❺
- 2 operating, 2 emergency- and 2 auxiliary limit switches

Digital limit DES ❻
- Absolute encoder, after a power failure, re-adjustment is not required

Connection cables

- Connection cables (for NES or DES) in different lengths for connection to a suitable door control[4]
- NES connection cable: 7 m / 10 m / 15 m
- DES connection cable: 3 m / 5 m / 7 m / 13 m

1) Universal brake is not available for FS 15.20: ELEKTROMATEN FS 15.20 only has a magnetic brake for fire-protection mode

2) Braking action when no voltage is applied
3) Braking action when voltage is applied
4) Door controls on request (not VdS-compliant)

1. Technical data

ELEKTROMATEN		FS 15.20	FS 25.20	FS 50.20	FS 110.18
Output torque	Nm	150	250	500	1100
Drive speed [1]	rpm	20 (23)	20 (23)	20 (23)	18 (23)
Output shaft / hollow shaft (Ø)	mm	25	30	40	50
Restoring torque [2]	Nm	15	15	22	30
Max. holding torque [3]	Nm	150	250	500	1100
Motor power	kW	0,3	0,45	0,90	1,10
Supply voltage	V	3x400	3x400	3x400	3x400
Operating frequency	Hz	50	50	50	50
Operating current [4]	A	1,5	2,0	2,7	4,1
Max. cycles per hour [5]		14 (13,9)	12 (8,3)	11 (6,9)	10 (4,2)
Limit switch range [6]		20 (60)	20 (60)	20 (30, 60)	20 (30, 60)
Weight	kg	26	45	70	105
Part no. installation drawing (dxf, dwg)		50001373	50000995	50000996	50000997
Part no. ELEKTROMATEN		10003485	10002912	10002913	10002914

Generally applies: Degree of protection IP54, permissible temperature range -10 °C...+40 °C (+60 °C), operating sound pressure level SPL <70 dB(A)
1) See 2.4 · **2)** See 2.7 · **3)** Maximum torque that may act on the output shaft of the drive unit when the door is stationary · **4)** The max. current in door drives can reach up to 4x the rated operating current for limited periods, see 2.5 · **5)** One cycle consists of a complete opening and closing movement of the door. The value according to EN 60335-2-103 is given in brackets. If the limit switch range is not fully used, the number of possible cycles can be increased in relation to the reduced number of revolutions of the output shaft, see also 2.2 · **6)** Maximum revolutions at the output-shaft

2. Notes

2.1 European directive

In accordance with the product standard EN 16034 Doors- and EN 12453 Safety in use of power operated doors-Requirements.

Relevant local and national regulations also apply to doors used for fire-protection purposes.

2.2 Selection chart / Cycles per hour

The specified cycles per hour (see technical data) apply to even distribution and the limit switch range first mentioned. When using the temperature range +40 °C to +60 °C, the specified value must be halved. For other limit switch ranges, the values must be converted accordingly.

2.3 Gear self-braking / Brake

Drives without an electric brake have a self-sustaining worm gear and stop automatically.

On drives with an electric brake, stopping is achieved by the external brake. Brake inspection must always be carried out by qualified service engineers.

2.4 Safety brake

For rising loads a safety brake of the appropriate size must be fitted.

The admissible drive speeds for the safety brake may not be exceeded. The locking torque moment must not exceed the admissible loads on mechanical components such as e.g. fixings, shafts, keys etc.

2.5 Motor overload protection

Motor overload protection must be able to withstand 4x the operating motor current because the starting current of the drive unit can reach these levels for short periods.

2.6 Chain drive

It is not allowed to exceed the admissible loads on chains, shafts, keys and bearings. Observe the direction of the power input.

We recommend the use of drive sprockets with at least 15 teeth. The drive sprocket must not protrude beyond the end of the output-shaft.

The chain drive transmission is to be fitted with tensioning devices designed to prevent the chain riding up or disengaging.

2.7 Restoring torque

The restoring torque values indicated (See item - 1. Technical data) must be applied to the door assemply in its open position in order to ensure that the door can be closed in the case of fire with power failure.

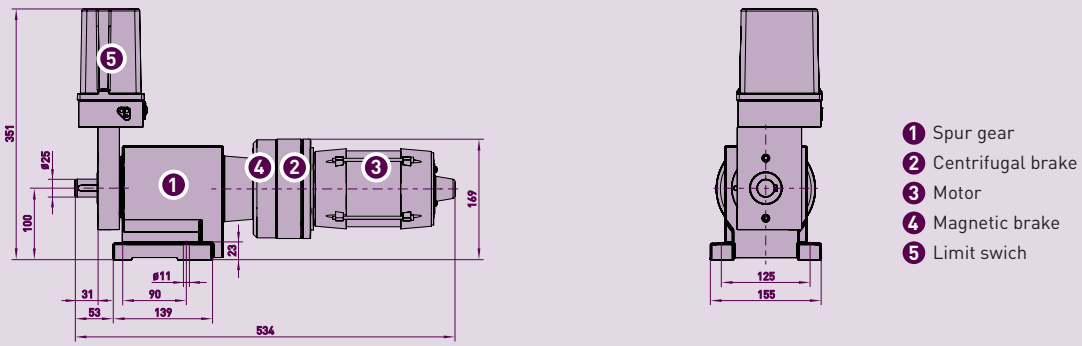
3. Selection chart

ELEKTROMATEN	Tube EN 10220	Transmission 1:2		Transmission 1:3		Transmission 1:3,8		Transmission 1:4,5	
	[mm]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]	F [N]	v_a [cm/s]
FS 15.20	133,0 x 4,0	3137	8,0	4705	5,3	5961	4,2	7059	3,6
	159,0 x 4,5	2681	9,4	4022	6,2	5095	4,9	6033	4,2
	177,8 x 5,0	2426	10,4	3640	6,9	4611	5,5	5460	4,6
FS 25.20	133,0 x 4,0	5229	8,0	7843	5,3	9935	4,2	11765	3,6
	159,0 x 4,5	4469	9,4	6704	6,2	8492	4,9	10056	4,2
	177,8 x 5,0	4044	10,4	6067	6,9	7685	5,5	9100	4,6
	193,7 x 5,4	3744	11,2	5615	7,5	7113	5,9	8423	5,0
	219,1 x 5,9	3346	12,5	5019	8,3	6357	6,6	7528	5,6
FS 50.20	159,0 x 4,5	8939	9,4	13408	6,2	16983	4,9	20112	4,2
	177,8 x 5,0	8089	10,4	12133	6,9	15369	5,5	18200	4,6
	193,7 x 5,4	7487	11,2	11231	7,5	14226	5,9	16846	5,0
	219,1 x 5,9	6692	12,5	10038	8,3	12714	6,6	15056	5,6
	244,5 x 6,3	6049	13,8	9074	9,2	11493	7,3	13611	6,2
	273,0 x 6,3	5461	15,3	8191	10,2	10375	8,1	12287	6,8
	298,5 x 7,1	5024	16,7	7535	11,1	9545	8,8	11303	7,4
	323,9 x 7,1	4653	18,0	6979	12,0	8840	9,5	10468	8,0
FS 110.18	177,8 x 5,0	17796	9,3	26694	6,2	33812	4,9	40040	4,1
	193,7 x 5,4	16472	10,1	24708	6,7	31296	5,3	37061	4,5
	219,1 x 5,9	14722	11,3	22083	7,5	27972	5,9	33124	5,0
	244,5 x 6,3	13308	12,5	19962	8,3	25285	6,6	29943	5,5
	273,0 x 6,3	12014	13,8	18020	9,2	22826	7,3	27031	6,1
	298,5 x 7,1	11052	15,0	16578	10,0	20998	7,9	24867	6,7
	323,9 x 7,1	10236	16,2	15353	10,8	19448	8,5	23030	7,2

- F = Lift [N]
- v_a = Initial speed [cm/s]
- Includes 20 % friction (profile thickness 20 mm)

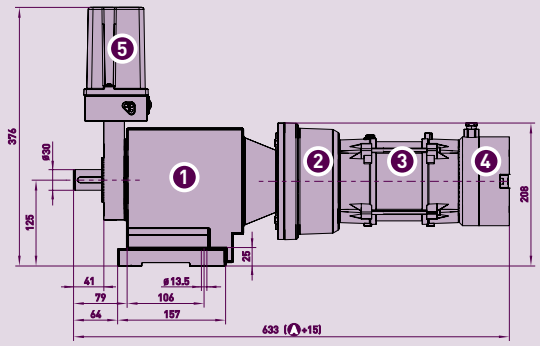
4. Dimensions

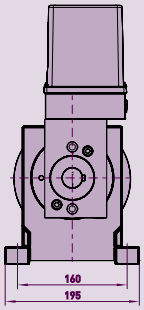
4.1 FS 15.20



- Permitted installation: Horizontal (as shown)

4.2 FS 25.20

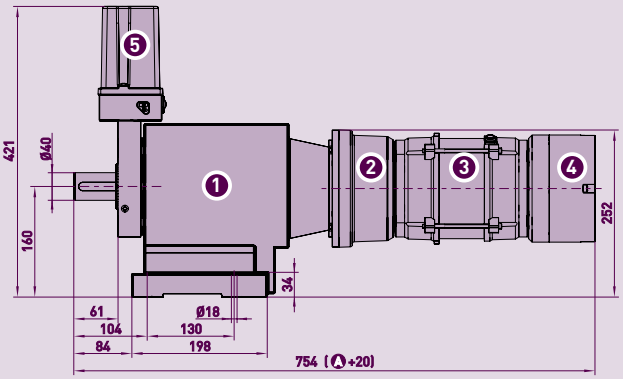


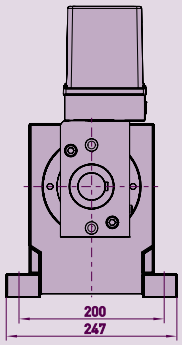


1 Spur gear
2 Centrifugal brake
3 Motor
4 Universal brake
5 Limit swich
A Installation mode

■ Permitted installation: Horizontal (as shown)

4.3 FS 50.20

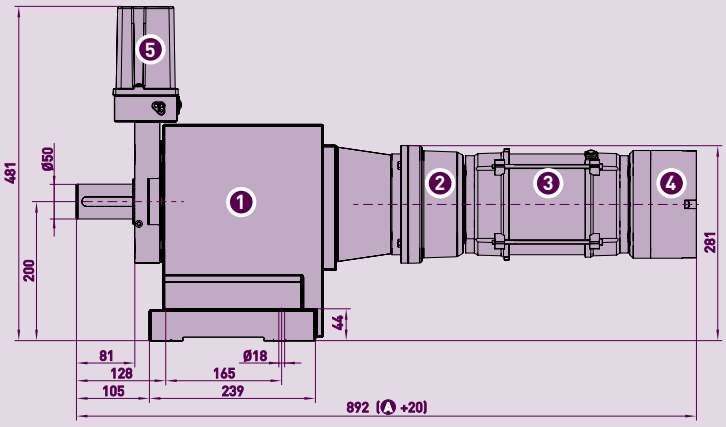


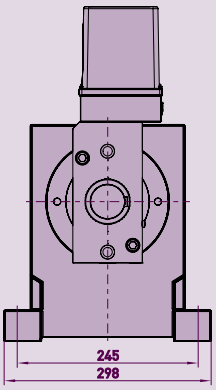


1 Spur gear
2 Centrifugal brake
3 Motor
4 Universal brake
5 Limit swich
A Installation mode

■ Permitted installation: Horizontal (as shown)

4.4 FS 110.18





1 Spur gear
2 Centrifugal brake
3 Motor
4 Universal brake
5 Limit swich
A Installation mode

■ Permitted installation: Horizontal (as shown)