

LIFTKEYS

"Everything About Elevators"

LKS F1

SLIP BRAKE INSTALLATION GUIDE



Producing for the Whole World, Adding Value

16022024



Introduction

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The information presented in this document is based on general knowledge of operating principles as known to Liftkeys at the time of publication. Therefore, Liftkeys reserves the right to make changes to the content without prior notice. The statements and descriptions in this document are to be regarded as guidelines for the assembly of the LKS F1 sliding brake.

This user and assembly guide pertains specifically to the standard configuration of the elevator brake. Any deviations or modifications may require additional approvals and must be explicitly authorized by Liftkeys in writing.

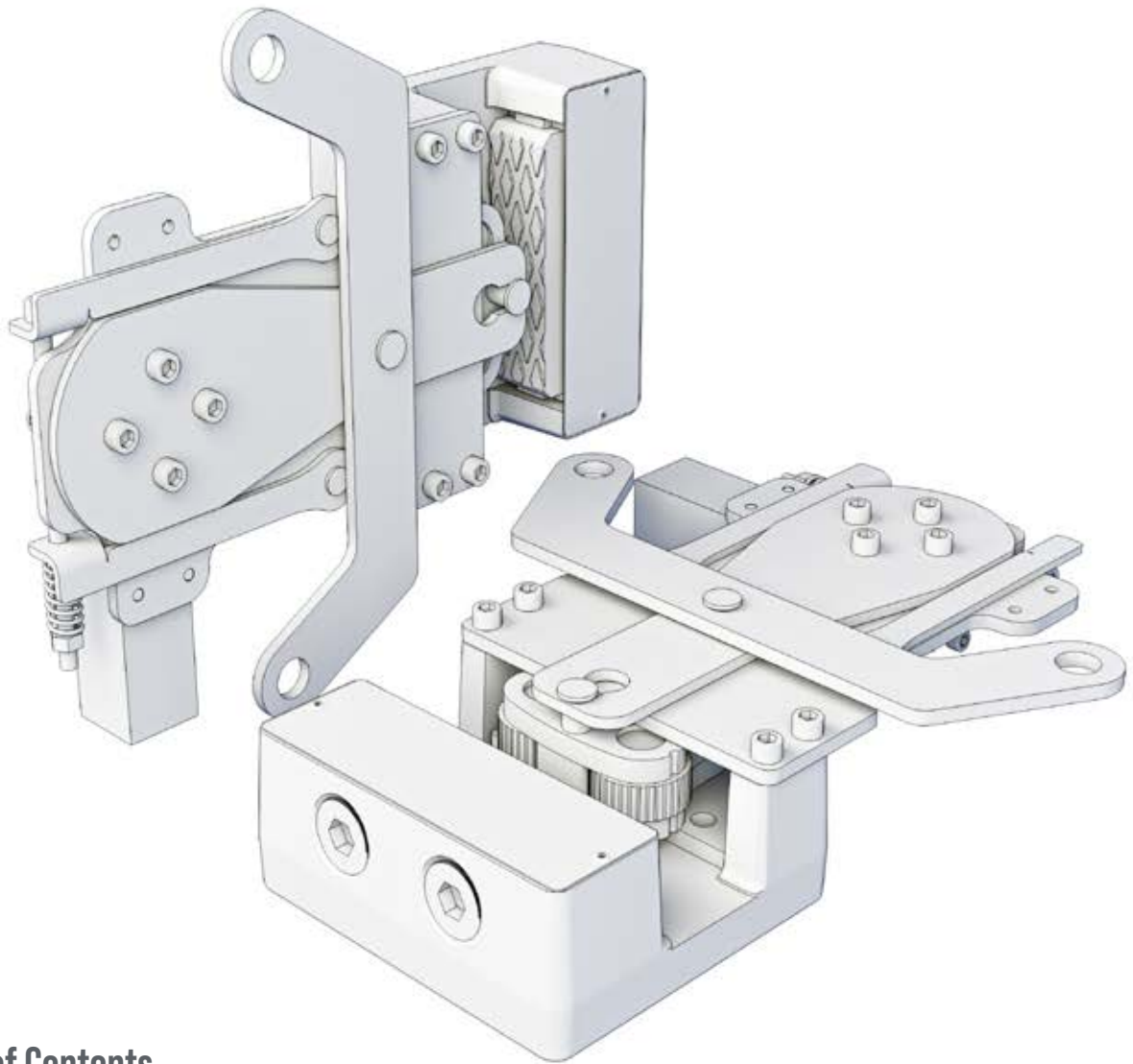
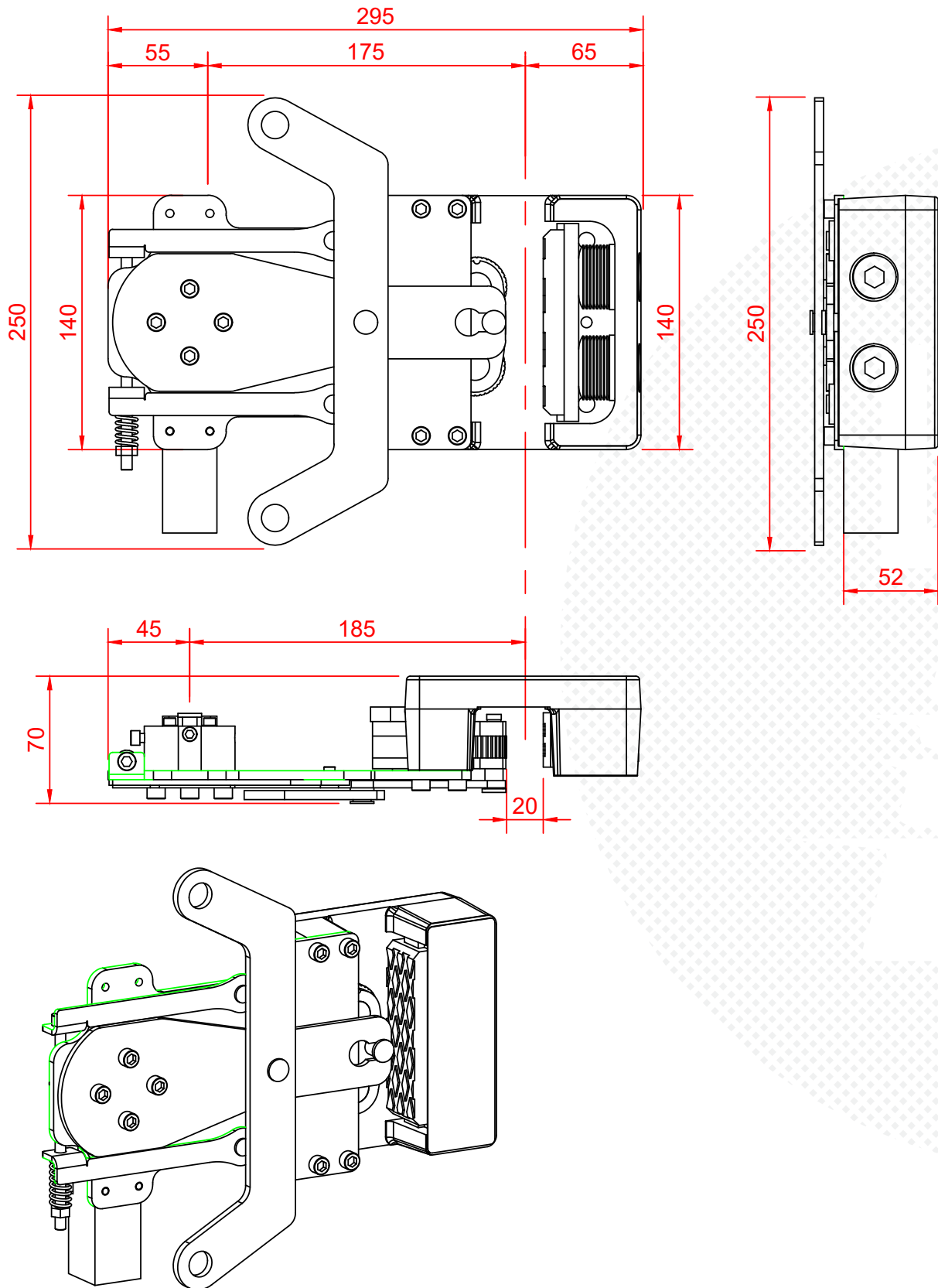


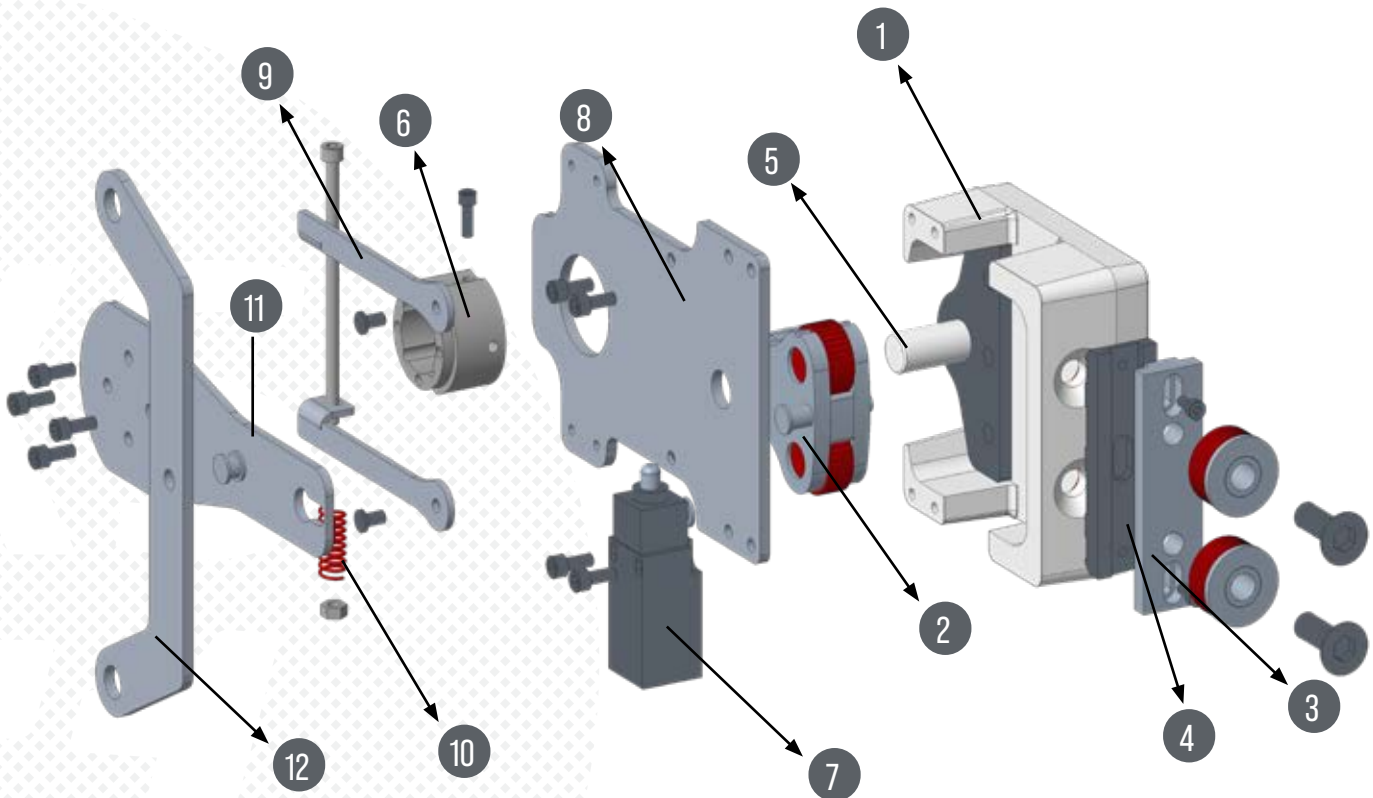
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1. Product technical drawing

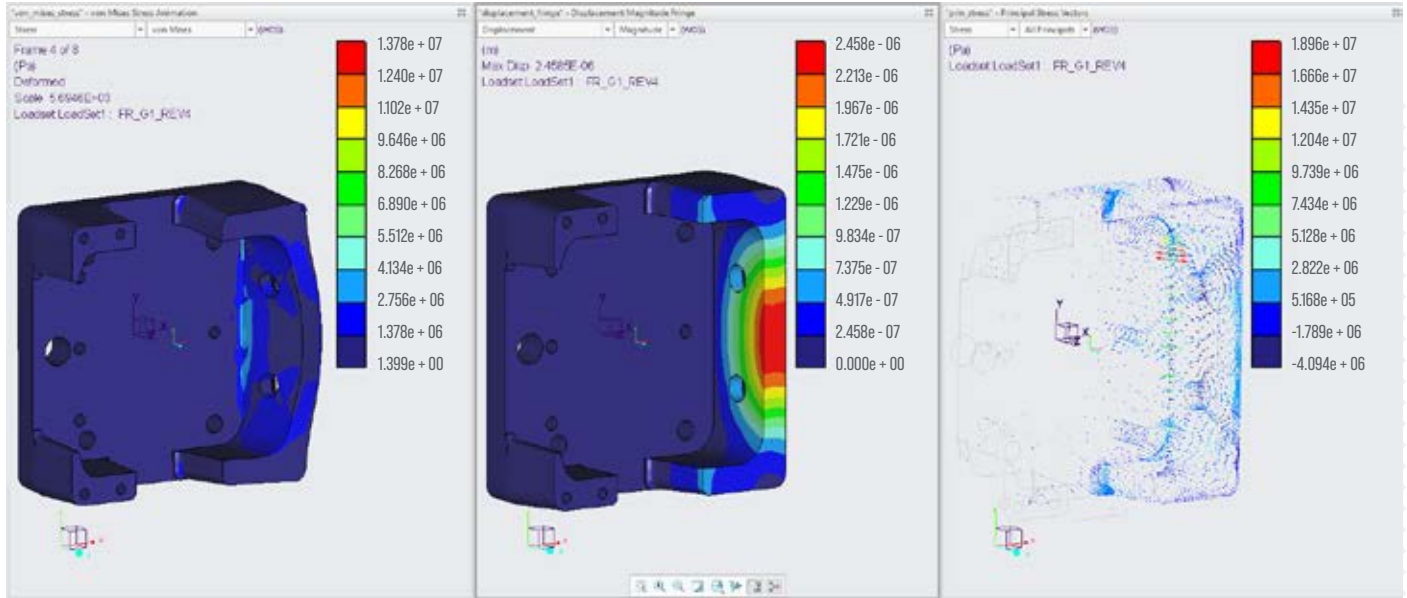


2. Product Specifications and Components

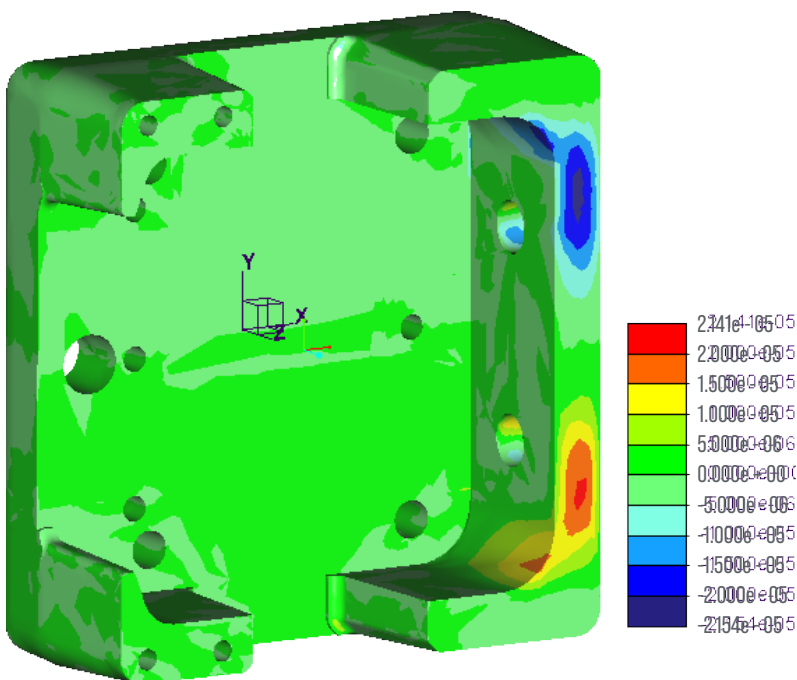


1. Brake Body
2. Clutch Joint
3. Stopper Shoe Holder
4. Stopper Shoe
5. Joint Pin
6. Pivot Bushing [B1]
7. Switch
8. Mechanism Body
9. Tension Plate
10. Tension Spring
11. Operating Lever
12. Regulator Cable Connection Lever

Analysis results indicating the lateral forces applied to the body block during braking and the resulting elastic deformation amounts on the body block in millimeters are provided below.

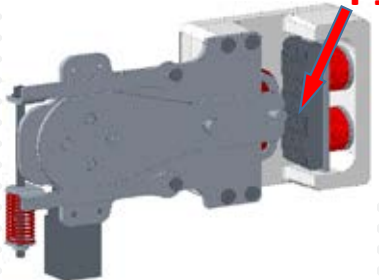
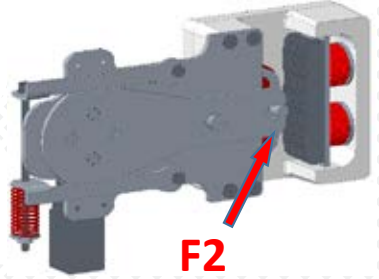


The body block is manufactured as a single-piece forged material. Its resistance to braking forces has been calculated.



Material density and hardness analyses have been conducted.

Clutch Resistance Chart

|  | Capacity (Kg.) | Max. P + Q (Kg.) | FR (N) | Speed (m/s) | 0,63 | | 1 | | 1,6 | | |
|---|----------------|------------------|--------|------------------------------------|--------|---------|--------|-------------------|--------|--------|--|
| | | | | h (m) | 0,193 | | 0,23 | | 0,29 | | |
| | | | | Force (N) | F1 (N) | F2 (N) | F1 (N) | F2 (N) | F1 (N) | F2 (N) | |
|  | 320 | 700 | 11200 | | 2161,6 | 648,48 | 2576 | 772,8 | 3248 | 974,4 | |
| | 450 | 950 | 15200 | | 2933,6 | 880,08 | 3496 | 1048,8 | 4408 | 1322,4 | |
| | 525 | 1100 | 17600 | | 3396,8 | 1019,04 | 4048 | 1214,4 | 5104 | 1531,2 | |
| | 630 | 1450 | 23200 | | 4477,6 | 1343,28 | 5336 | 1600,8 | 6728 | 2018,4 | |
| | 800 | 1850 | 29600 | | 5712,8 | 1713,84 | 6808 | 2042,4 | 8584 | 2575,2 | |
| | 1000 | 2250 | 36000 | | 6948 | 2084,4 | 8280 | 2484 | 10440 | 3132 | |
| | 1125 | 2650 | 42400 | | 8183,2 | 2454,96 | 9752 | 2925,6 | 12296 | 3688,8 | |
| | 1250 | 2800 | 44800 | | 8646,4 | 2593,92 | 10304 | 3091,2 | 12992 | 3897,6 | |
| | 1600 | 3500 | 56000 | | 10808 | 3242,4 | 12880 | 3864 | 16240 | 4872 | |
| Braking Force = FR | | | | Braking Slip Path = h | | | | Braking Energy= E | | | |
| FR=(P+Q).16 | | | | h= v ² /(2.gn)+0,1+0,03 | | | | E = FR.h | | | |
| EN 81 - 20 / EN 81 - 50 | | | | | | | | | | | |

The lateral forces presented in the braking resistance chart are calculated according to formulas specified in elevator standards and are provided for informational purposes.

Brake blocks are sealed by calibration based on speed and P+Q values as indicated in the braking resistance chart.

3. Product Selection Criteria

When placing an order for the LKS F1 product, certain fundamental requirements must be precisely specified. These include:

Total Load Capacity (P + Q): The LKS F1 sliding brake, equipped with elevator safety features, is calibrated for the total load amount specified on its label. This load amount is determined by the sum of the weights of the cabin, frame, cabin door, and other equipment on the cabin (P), along with the declared load (Q).

Declared Speed: When elevator systems are designed, a working speed is determined within the scope of traffic calculations. The elevator traction and production are based on this selected working speed. This speed is communicated during the ordering process, and the LKS F1 is manufactured accordingly. Subsequently, this speed is inscribed on the label of the brake.

Braking Speed: The braking process occurs only with the command given by the regulator system. This speed is specified in the relevant clause 5.6.2 of the EN 81-20 standard. The stated braking speed is recorded on the label of the LKS F1 product.

Rail Measurement: Elevator systems are manufactured according to the rail widths specified in the elevator system projects. The LKS F1 product is produced based on the rail measurement specified in the project, and this rail measurement is inscribed on the label.

Suspension Beam Thickness to Which the Brake Will Be Attached: The thickness and bending dimensions of the suspension beam used in the elevator system must be specified during the order stage.

Additionally, the following information regarding the rail used for product selection must be provided:

Rail Type: Cold Drawn or Processed

Rail Surface: Oiled or Dry

Providing the above information is mandatory for the correct and reliable operation of the LKS F1 product.

4. Brake Assembly, Operational Scenarios, and Adjustment Details

Assembly

The assembly of the LKS F1 product, like all other components in the elevator system, should only be conducted by experienced personnel certified by the Elevator Vocational Qualifications Authority. Before commencing the assembly process, thoroughly review this document. Adhering to the instructions and safety recommendations in the guide is crucial for ensuring the quality and comprehensive completion of a mechanical elevator.

Warnings and Symbols



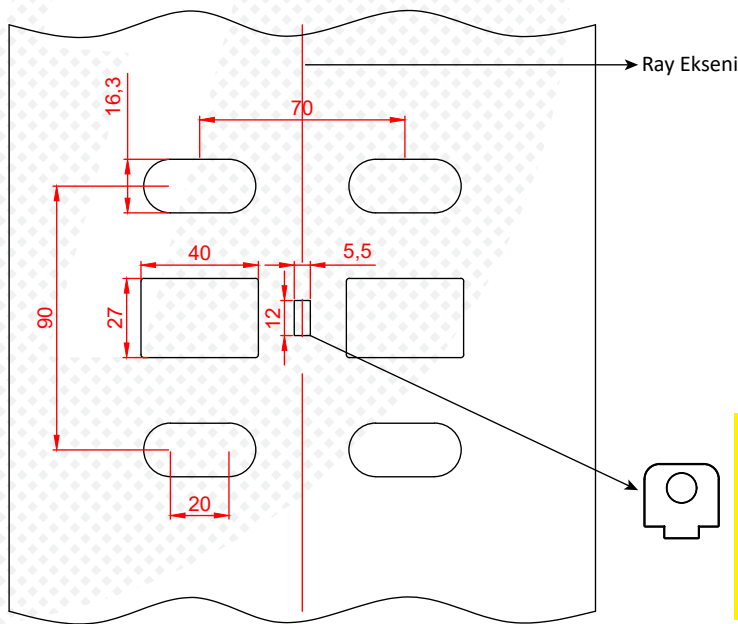
Note!

Suggestions and reminders are provided to facilitate tasks and operations.

Warning! Areas requiring careful attention, as neglect may result in personal injury or damage.



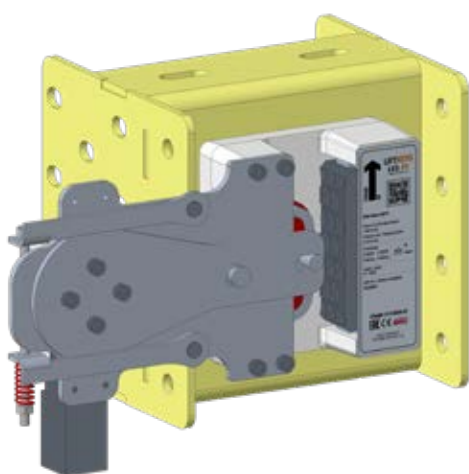
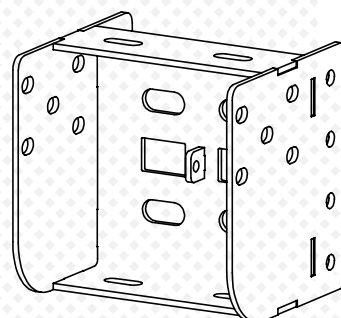
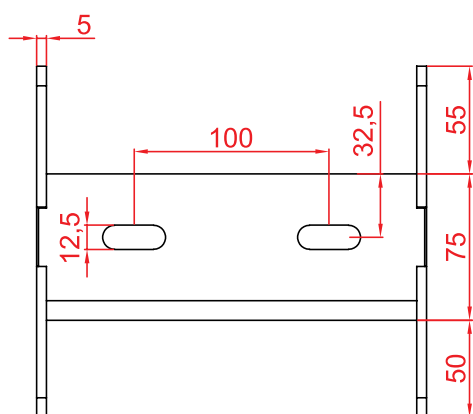
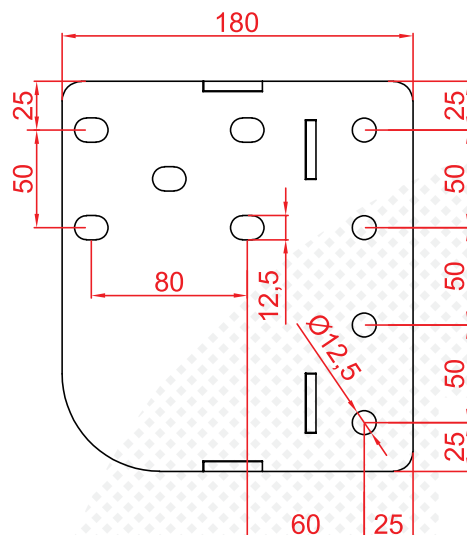
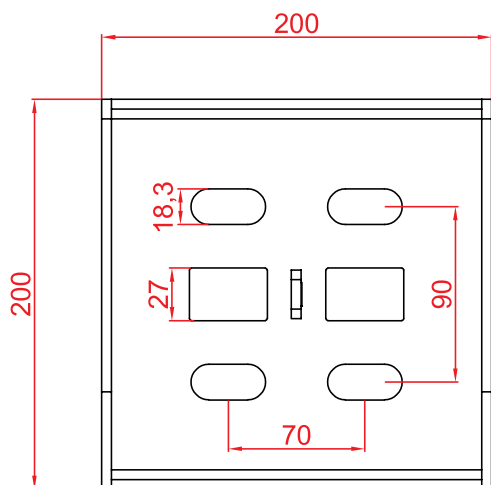
Safety Measures: Strictly adhere to safety measures. Elevator assembly should be undertaken by a professional elevator installation team.



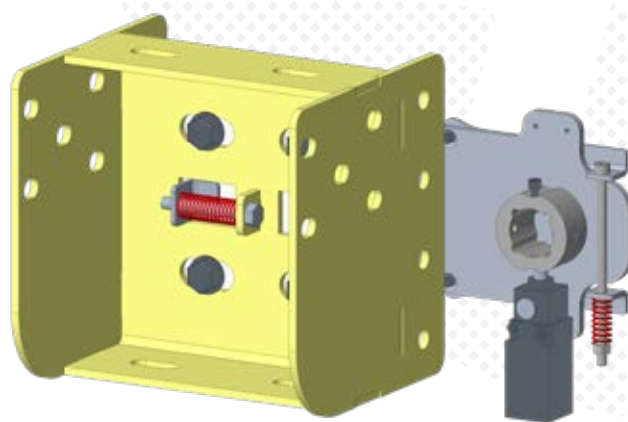
The part provided in the brake package, as shown on the side, should be welded to the inner parts of the suspension beams before connecting the brake block.

To facilitate the assembly of the LKS F1 product, perform the clearance process on the suspension beam as indicated above.

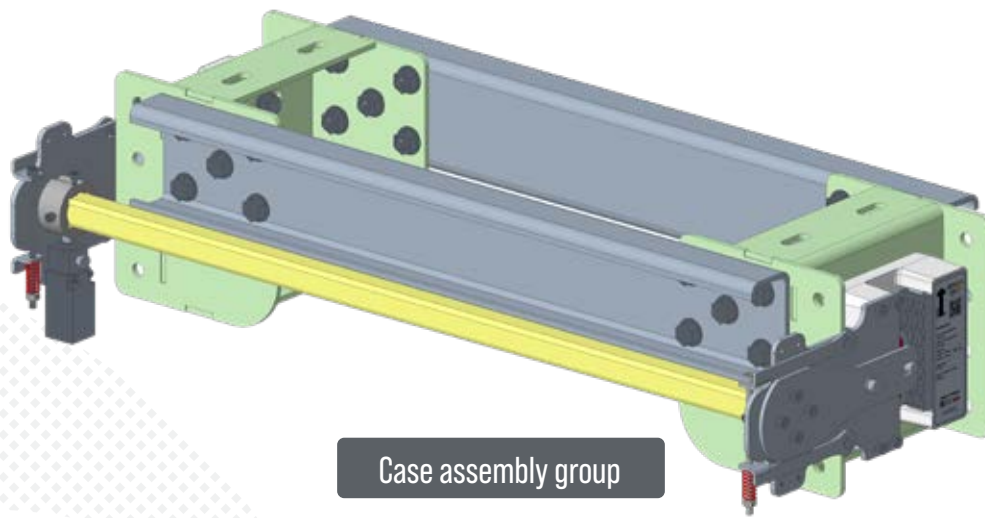
Chassis Production Drawings



LKS F1 Brake System Chassis
Assembly Front Detail



LKS F1 Brake System Chassis
Assembly Rear Detail



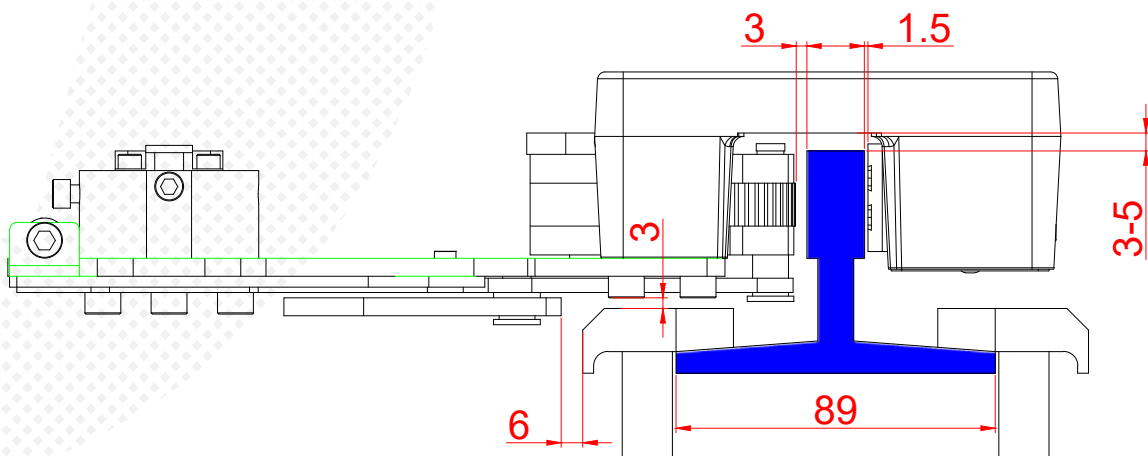
Case assembly group

Frame Types may vary according to the manufacturer’s production philosophy, production structure, project status, or well requirements. Our LKS F1 product is designed to be compatible with all frame types.

Below, you can see the connection method of our LKS F1 product for three basic types of frames.

If the manufacturer prefers to mount the brake system within a frame, the frame production drawings and points to consider are specified. The brake assembly can be located either at the top or bottom of the frame.

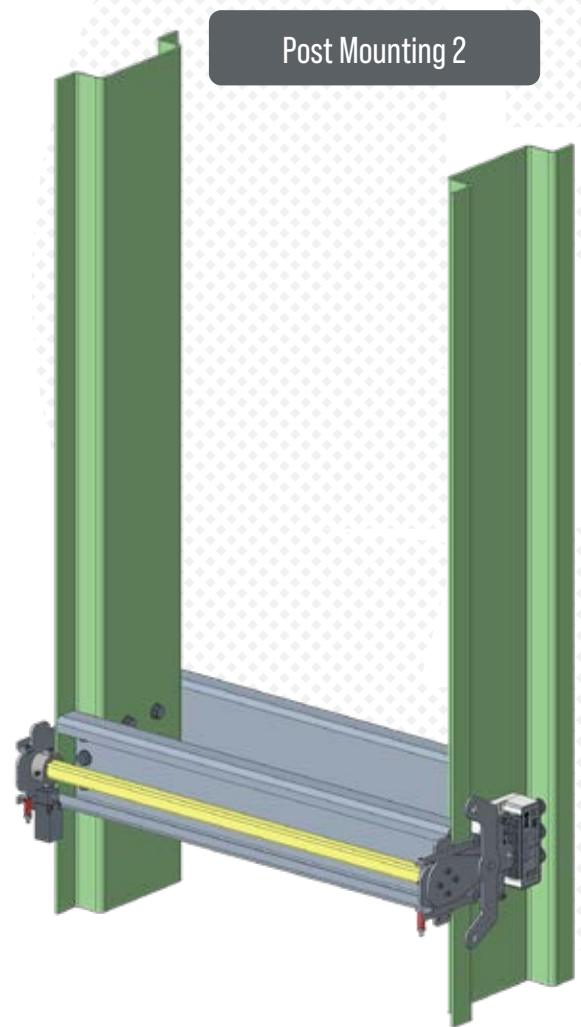
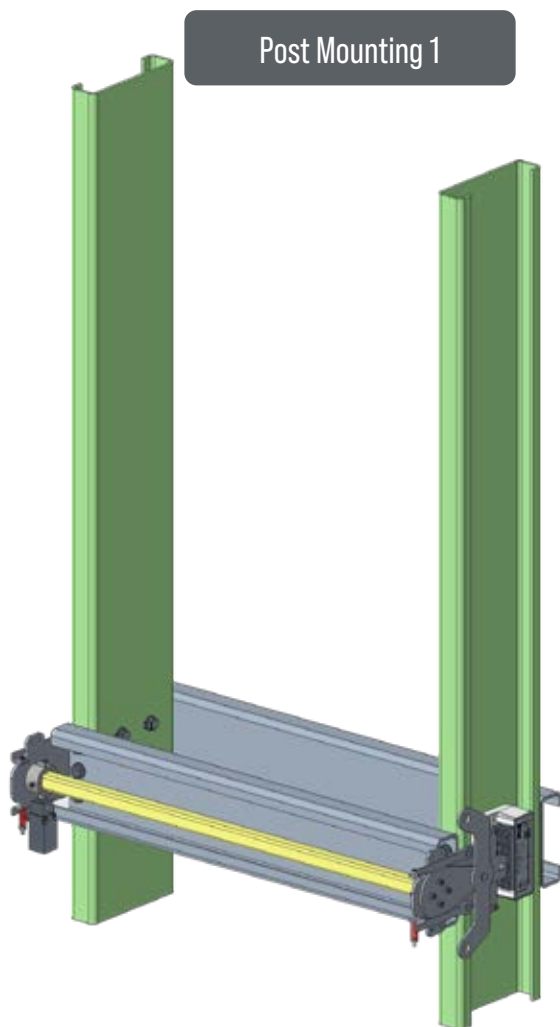
Brake working clearances are indicated below.



LKS F1 motion and working clearances are as shown in the upper picture.

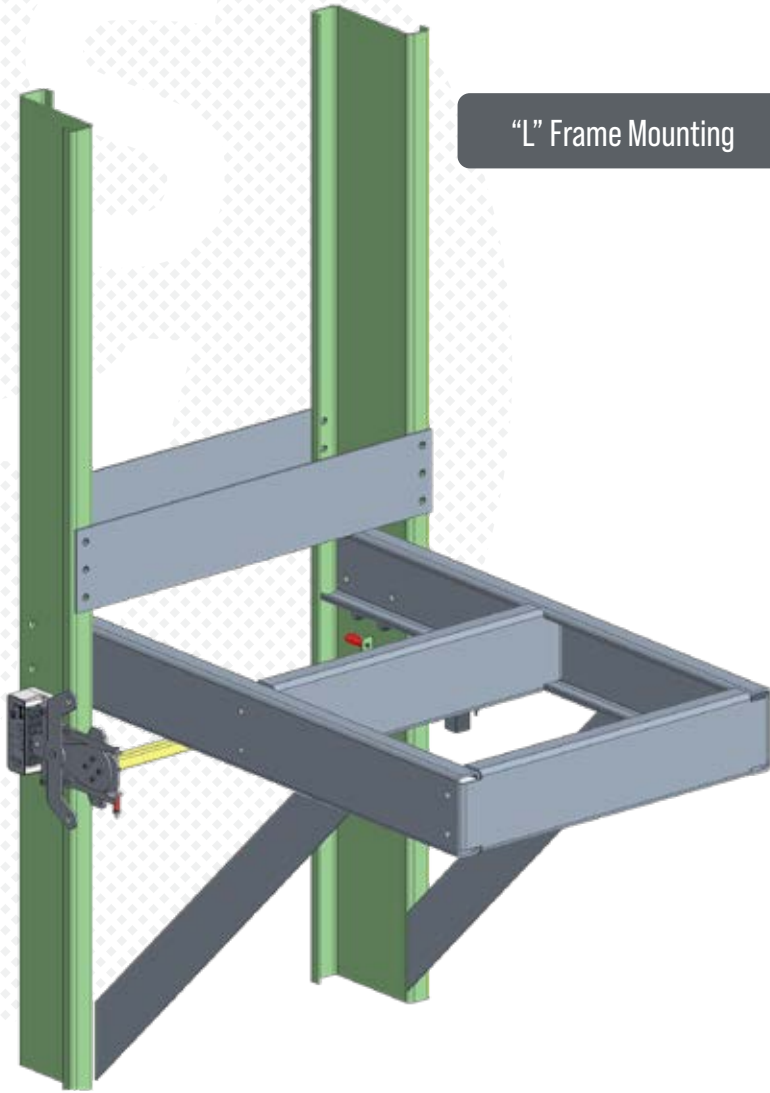
The manufacturer can directly connect the brake system to the post without using a casing. In this case, it is sufficient to make the necessary preparations on the post according to the position specified in the project.

The crucial point here is the dimensions of the post bends. Regardless of whether the posts have internal or external bends, the outer-to-outer dimension of the post should be a maximum of 300 mm. Otherwise, mounting difficulties may arise, and there might be contact between the synchronization arm and the post. If your post dimension exceeds 300 mm, this condition should be specified in the initial order.

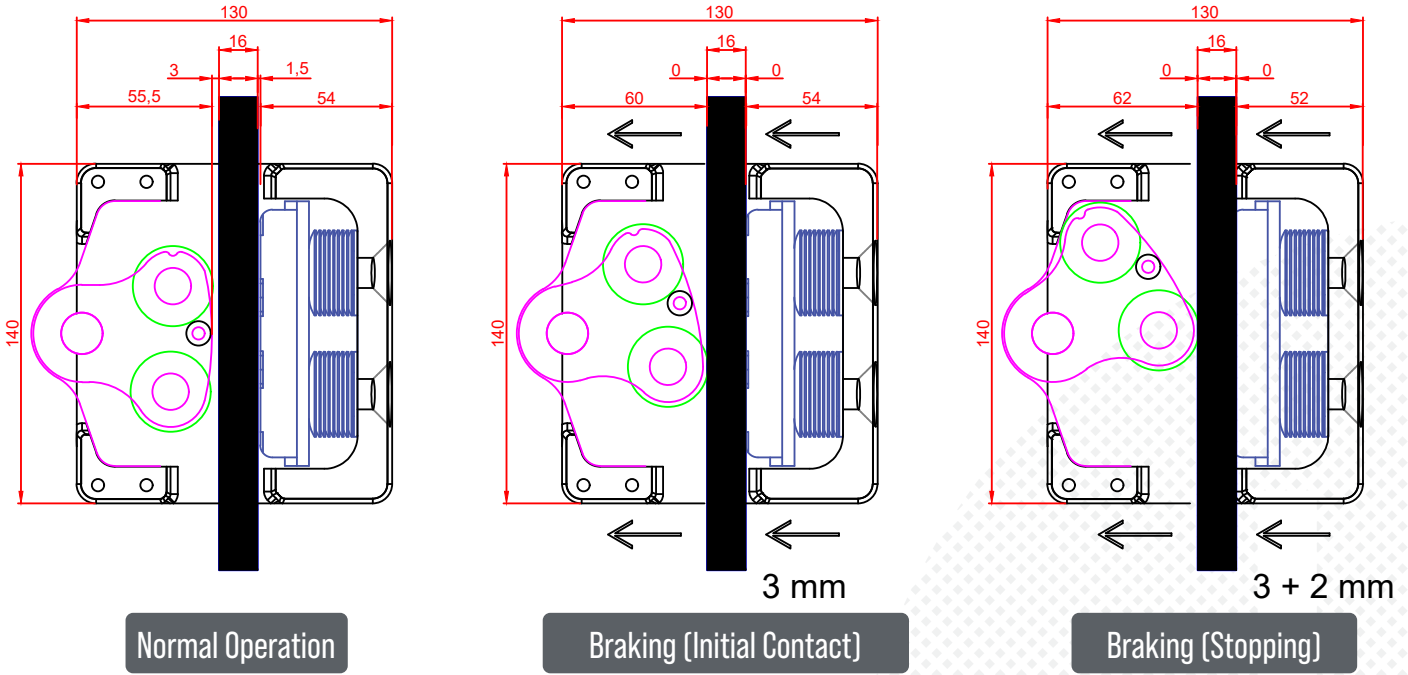


The manufacturer can use the brake system on a specially designed frame according to the shaft requirements. In this case, it is sufficient to make the necessary preparations on the frame according to the specified position.

Here, it is crucial to ensure comfortable clearances for the synchronization arm and the regulator cable connection arm to operate smoothly. Our LKS F1 product can be used on specially designed frames. In this case, you can request a special accessory or connection piece from our company.



Frenleme Senaryosu



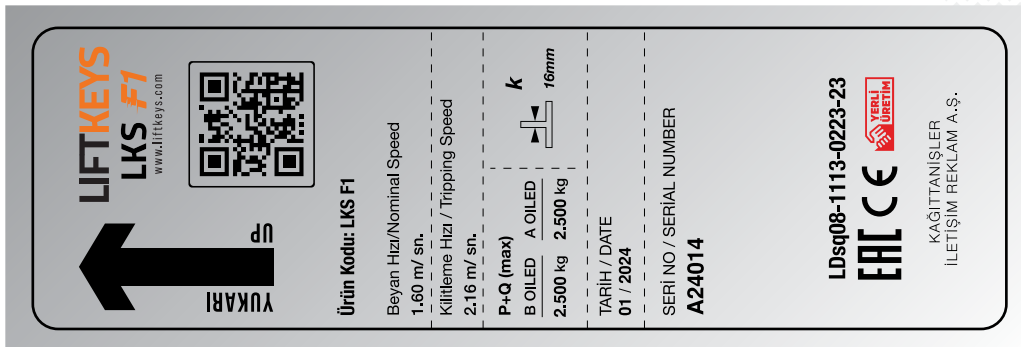
The LKS F1 brake system, when correctly installed, should have 3mm clearances between the front part of the body and side shoes and the guide rail during normal operation, and normal operation should proceed in this manner.

When the regulator reaches the braking speed and initiates the braking process by locking, the tension arm first brings the gripping shoe close to the rail, ensuring the initial contact between the shoe and the rail.

Subsequently, the brake body moves the stopping shoe towards the rail by 3mm, and both jaws of the brake system come into contact with the rail.

Finally, the dish spring arrays arranged in two rows on the stopping system flex 2mm backward, ensuring a smooth and gentle stopping process.

5. Label



The label on the LKS F1 product includes the following information:

Serial Number - Rail Sizing(Measurement) - Capacity - Declared Speed - Braking Speed

6. During Installation

During Installation

Individuals installing the LKS F1 product are expected to adhere to the safety rules outlined below.

The product should be assembled by individuals who have received training related to elevator installation, completed a course, and hold certification from the Elevator Vocational Qualifications Authority.

The installation task must be performed in compliance with regulations and the instructions provided by the manufacturer (LIFTKEYS).

Unauthorized personnel should not be allowed in the area where the product is being installed.

The installer should wear appropriate attire for the job, avoiding excessively loose overalls. Ensure that all personal protective equipment is suitable for the task at hand.

During Operation

Excessive oiling on the rails should be avoided.

During regular monthly maintenance, check for foreign substances inside the brake system and prevent the formation of rust.

Inspect roller cavities during monthly maintenance, and clean the inside of roller cavities during semi-annual or annual maintenance.

Verify the proper operation of the brake block mechanism during monthly maintenance, and check the adequacy of the regulator cable connection.

Avoid excessive painting that may impede the movement of working parts, and check for rail oils and dust accumulation in the blocks.

After every 5 operations, the LKS F1 product should be inspected, recalibrated, and recorded by authorized personnel.



📍 Ramazan Ođlu Mah. Mekke Sok. No: 4
Kurtky-Pendik / İSTANBUL
Postal Code: 34906
☎ +90 216 450 19 00 (pbx)
☎ +90 533 369 45 69
✉ export@liftkeys.com
export2@liftkeys.com
🌐 Web: liftkeys.com



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