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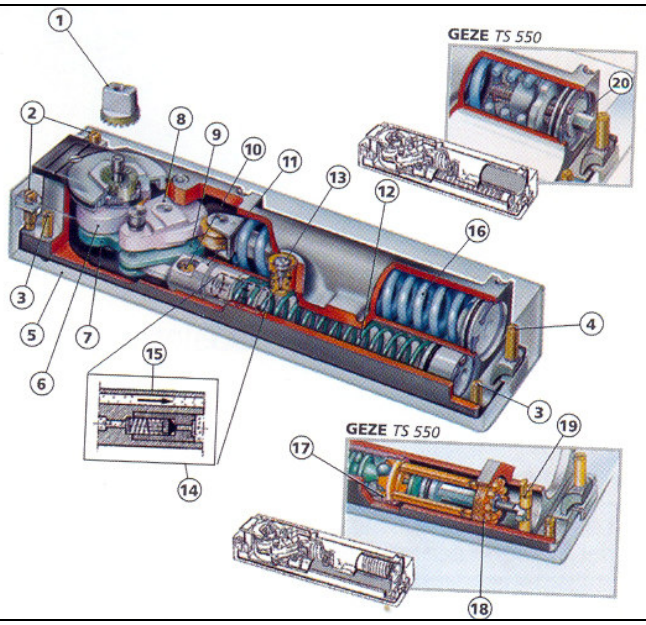
Help with prescribing and installing floor springs.

The floor spring, like its older sister, the air spring, is today a complex mechanism, designed to return the force exerted on a helical spring housed in its body when we open a door, rotating the axis that serves as its pivot.
Essentially, the coil spring will, when the door is released, return to its resting position by decompressing.
To allow this decompression to occur at a controlled speed, the helical spring is placed inside a cylindrical chamber. When the spring is compressed, it fills with a special oil that passes through a non-return valve. When the spring attempts to return to its original position, it presses the oil inside the chamber back into the chamber, allowing it to return the space it occupied. The oil output is then controlled by valves that regulate its flow, causing the spring to decompress faster or slower, depending on the desired closing speed for the door.

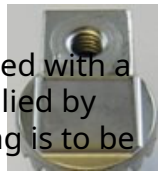
1. Interchangeable shaft 2. Fixing screws 3. Height adjustment screw 4. Fixing screw 5. Box for anchoring to cement 6. Closing force plunger 7. Hydraulic piston 8. Oscillating spring 9. Oscillating piston 10. Oil filter 11. Piston 12. Piston and spring guide 13. Adjustable valve 14. Safety valve 15. Oil return channel 16. Closing spring 17. Ball crown for internal control 18. Regulatory control 19. Control: on duty/rest 20. Adjusting the closing force	

When choosing and prescribing a floor spring, the following aspects must be taken into account:

1. **The weight of the door** Because the floor spring acts as a support pivot, it must be calculated to determine the type of spring to use. Depending on the spring chosen, we can support doors up to a maximum weight of 250 kg. TS 500 N up to 100 kg; TS 500 NV up to 150 kg; and TS 550 up to 250 kg.

2. **The type of axis** The floor spring's axle is its connection to the door. Therefore, it is important that its shape is compatible with the shape of the intended fittings.

for the door. By default, GEZE floor springs are supplied with a rectangular shaft, as the door fixing accessories supplied by GEZE also have that shape. However, if the floor spring is to be used on glass doors and the accessories for



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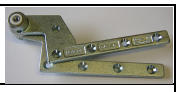
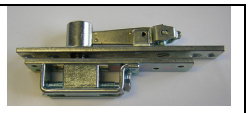
are not from the GEZE brand, the spring axle may need to be replaced with a square one. GEZE offers axles that adapt to market needs.

3. **The stop at the opening** GEZE door closers can be supplied with a predefined opening stop point. This means that whenever the door is opened to an opening angle "x," it remains in that position until it receives a closing impulse. The possible stopping angles are: 85º, 90º, and 105º. A mechanical opening stop should never be used on fire doors.
4. **The connecting accessories** For the spring to work, it must be properly connected to the element it controls: the door. The accessories depend on the type of door and, for a swing door made of wood, iron, or aluminum, are:

a) The lower support arm 	b) The upper pivot 
c) The arm covers. These covers are supplied in the color of aluminum, and can be subsequently anodized or lacquered to hide the galvanized iron of the arms. 	

For a wooden, iron or aluminum swing door:

d) The lower support arm 	e) The upper pivot 

5. **The force of the spring** This is the force that the spring must have to be able to close a door with a given width, mass and wind resistance. **How is it determined?** We know empirically that some doors close perfectly when opened, while others, with the same dimensions and weight, don't close properly when controlled by the same equipment. In fact, both the natural force of the wind in the room and the action of air extractors, particularly in industrial kitchens, or drafts in stairwells in residential buildings, among others, can cause a spring designed with sufficient force to perform a specific task to prove insufficient after installation. To solve this problem, GEZE created two springs whose force can be adjusted on-site by the installer according to needs. These springs essentially have a screw that, when tightened or loosened, compresses or decompresses the coil spring, providing the required force for each case. If you're unsure which force to choose, opt for the TS 500 NV or the TS 550.
6. **Damping on opening.** Whenever a door is opened violently (escape route) or pushed by the wind in the direction of opening, it runs the risk of breaking against the adjacent wall or damaging some of its components. To prevent this effect, GEZE added another feature to its equipment. It placed a valve in the spring body that works like a car seatbelt: when the door is pushed gently, it offers no resistance, but when pushed violently, it stops the opening movement.

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7. Care to be taken when installing floor springs.

A good floor spring, when properly specified—that is, when suited to the door it controls—should function for many years without any problems. Because GEZE springs are manufactured according to the standard**EN 1154**, must be able to open and close the door at least,**half a million times**.

We know that in the vast majority of cases this does not happen.

Could it be because the spring is poorly regulated in terms of force or closing speed?**? No!**

A spring with all the speed control valves open closes the door violently, causing the destruction of the door or its frame, but not the spring.

It could be because when the door is being closed by the spring, users tend to push the door, helping it close faster, and in doing so, they drastically increase the oil pressure inside the spring, damaging it.**? No!**

GEZE springs prevent this misuse by means of an overpressure valve (14), which discharges the oil into an antechamber when the pressure increases excessively.

The main reason for premature failure of floor springs is poor installation and has to do with their leveling in relation to the door.

The spring shaft, which receives and supports the weight of the door, rests on a tapered needle bearing and must be perfectly aligned with the door in its vertical position.

In the vast majority of cases, the installer does not use a level to level the spring on the floor and, when he does, he only levels the spring lengthwise (approximately 27 cm) but rarely has or uses a small level to level the spring widthwise (approximately 8 cm).

Because the shaft is not flexible, it is supported by a thrust bearing at the bottom and guided by another collar bearing at the top, if it is not perpendicularly aligned with the door, during the opening and closing process, one of two things will happen: The spring body will move in a circle inside its housing when it is not properly tightened, trying to adapt to the movement of the door, or the shaft will draw a cone of revolution as the door moves.

This movement will tend to break the support bearing sleeve, a failure that is indicated by the loud clicking sound that many of the installed doors make when they open or close.

In addition to this effect, the shaft will also tend to try to widen the sealing o-ring at the top, allowing the oil to escape and producing the famous “drool” of hydraulic springs.

1st Care to take: Properly level the floor spring during installation. Floor springs are installed, as the name suggests, on the floor.

The process of washing the floor using a wide variety of products, usually caustic and strongly oxidizing, destroys the equipment.

Although the body of the springs is made of cast aluminum and is thick enough to resist corrosion, there are some elements that are not as resistant and that communicate directly with the interior of the spring:

- Speed regulation valves.

These are made of brass, small in size and easily damaged by highly aggressive washing products.

2nd Care to take: Fill the spring housing with a good, consistent grease with high resistance to high temperatures and seal the spring cover with good quality silicone.

Ulysses Mota