

Title: DOOR CLOSER OR DOOR DRIVE**Description**

- 5 The present invention relates to a door closer or to a door operator with a housing, which, at its first end, is closed by a cover, with a spring supported in the housing, and with a spring tensioning device for the spring.
- 10 A door closer or door operator usually has attachment bores in its housing for the attachment screws to pass therethrough. Due to the narrow bore gauge, said attachment bores are located in the border area of the housing. Thus only very little space remains in this area for
- 15 disposing a spring tensioning device.

Therefore, it is the object of the present invention to propose a door closer or a door operator, in which, despite the narrow hole pattern, a suitable spring tensioning device

20 can be realized.

This problem is solved according to the invention in a door closer or a door operator with a housing, which at one end is closed off by a cover, with a spring supported in the

25 housing and with a spring tensioning device for the spring, in that the spring tensioning device comprises an adjusting nut, which is rotatably supported on an adjusting screw, in that the adjusting screw bears against a stepped bore of

the cover and is accessible from the outside through the cover.

As a result of this configuration, the point of attack for the
5 adjusting screw has been transferred to the inside of the housing, such that, despite the narrow hole pattern of the attachment screws, it is still possible to realize a suitable adjusting possibility for the spring.

The dependent claims include advantageous further
10 developments and embodiments of the invention.

According to a preferred embodiment, the larger diameter of the stepped bore is located at the side of the cover oriented to the inside and the smaller diameter of the
15 stepped bore is located at the side of the cover oriented to the outside.

According to a preferred further development, the larger diameter of the stepped bore merges into the smaller
20 diameter of the stepped bore via a transverse shoulder, and the adjusting screw bears with its head against said shoulder. Thus, the adjusting screw is reliably supported in the cover and can bear against the latter. Moreover, the adjusting screw is prevented from falling out.

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In order to be able to adjust the pre-tension of the spring, according to an advantageous embodiment, the adjusting screw has a polygonal socket to which an adjusting tool

has access to engage therein from the outside. Advantageously, the polygonal socket may be configured as a hexagonal socket. On account of this measure, an adjustment of the spring pre-tension can be easily and quickly accomplished from the outside.

In order to guarantee an even more reliable support for the adjusting screw at the cover, according to an advantageous further embodiment, the adjusting screw has a support shoulder by means of which the adjusting screw additionally bears against an inside of the cover.

According to an advantageous embodiment, the adjusting screw is provided, at its portion, which engages into the stepped bore, with a surrounding groove, in which a sealing ring is disposed. This arrangement allows for achieving a liquid-tight sealing.

Further details, features and advantages of the invention will become apparent from the following description, reference being made to the drawings, in which:

Figure 1: shows a view of an inventive door closer, respectively door operator, and
Figure 2: shows a section through the inventive door closer, respectively door operator according to Figure 1.

An inventive door closer, respectively door operator is illustrated in Figure 1. The door closer, respectively the door operator has a housing 1, which can be attached to a door, a door frame or the like via attachment screws 2.

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Among other items, a spring 3 is located in the housing 1 of the door closer, respectively door operator, which spring bears with one of its ends against an adjusting nut 4. The adjusting nut 4 is rotatably supported on an adjusting screw
10 5. The adjusting screw 5 is placed with its head in a stepped bore, which is disposed in a cover 6 closing off the housing 1 at one of its ends.

The stepped bore has one portion with a larger diameter
15 and one portion with a smaller diameter, wherein the portion with the larger diameter is oriented to the inside towards the spring 3 and the portion with the smaller diameter is oriented to the outside.

20 The larger diameter of the stepped bore merges into the smaller diameter via a transverse shoulder 7. The adjusting screw 5 bears against said transverse shoulder 7 with its head.

A polygonal socket 8, preferably a hexagonal socket, into
25 which an adjusting tool can be inserted from the outside through the cover 6, is fitted into the head of the adjusting screw 5.

Furthermore, the adjusting screw 5 has a supporting shoulder 9, by means of which the screw bears against an inside of the cover 6. On the one hand, the adjusting screw 5 thus bears against the shoulder 7 of the stepped bore with its head, and on the other hand bears against the inside of the cover 6 with the supporting shoulder 9.

At its portion, which engages into the stepped bore, the adjusting screw 5 is provided with a surrounding groove 10, in which a sealing ring is disposed.

As a result of the inventive embodiment, an adjusting tool can be inserted from the outside and through the cover 6 into the polygonal socket 8 of the adjusting screw 5 and change the pre-tension of the spring 3.

The preceding description of the present invention serves for illustrative purposes only and is not intended to limit the invention. Various changes and modifications are possible within the range of the invention without leaving the scope of the invention or the equivalents thereof.

List of reference numerals

	1	housing
	2	attachment screws
5	3	spring
	4	adjusting nut
	5	adjusting screw
	6	cover
	7	shoulder
10	8	polygonal socket
	9	supporting shoulder
	10	surrounding groove

Patent claims

1. A door closer or a door operator with a housing, which, at its one end, is closed off by a cover, with
5 a spring supported in the housing, and with a spring tensioning device for the spring, **characterized in that** the spring tensioning device comprises an adjusting nut (4), which is rotatably supported on an adjusting screw (5), in
10 that the adjusting screw (5) bears against a stepped bore of the cover (6) and is accessible from the outside through the cover (6).
2. The door closer or door operator according to
15 claim 1, **characterized in that** the larger diameter of the stepped bore is located at the side of the cover (6) oriented to the inside, and in that the smaller diameter of the stepped bore is located at the side of the cover (6) oriented to the outside.
- 20 3. The door closer or door operator according to claim 1 or 2, **characterized in that** the larger diameter of the stepped bore merges into the smaller diameter of the stepped bore via a
25 transverse shoulder (7), and in that the adjusting screw (5) bears against said shoulder (7) with its head.

4. The door closer or door operator according to claim 1 or 2, **characterized in that** the adjusting screw (5) has a polygonal socket (8), which is accessible from the outside, for the engagement of an adjusting tool.
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5. The door closer or door operator according to claim 1 or 2, **characterized in that** the adjusting screw (5) has a supporting shoulder (9), by means of which the adjusting screw (5) bears against an inside of the cover (6).
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6. The door closer or door operator according to claim 1 or 2, **characterized in that** the adjusting screw (5), at its portion, which engages into the stepped bore, is provided with a surrounding groove (10), in which a sealing ring is disposed.
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