

670LH



670RH - 675LH/RH - 675LH/RH-5/4 - 66767

Spring break device industrial overhead doors

INSTALLATION / MAINTENANCE / USAGE

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ATTENTION! GENERAL WARNING!

Before starting maintenance, installation or repairs, read this manual carefully! Torsion springs are under extreme high tension! Do not try to remove, adjust or repair, without releasing the tension! Always be careful during installation! Installation, maintenance and repairs only can be done by qualified and experienced overhead door mechanics, obeying local laws and regulations (CE-norms). Certain components may be sharp or have jagged edges. As such you are advised to wear safety gloves.

SPECIAL SAFETY WARNINGS OR REMARKS IN THIS MANUAL ARE INDICATED WITH THIS SYMBOL:  READ THESE WARNINGS CAREFULLY.

APPLICATION RANGE

The Flexi-Force spring break devices 670LH/RH, 675LH/RH and 675LH/RH-5/4 can be applied on industrial sectional overhead doors which are rope-, chain- or electrical operated.

Model 670LH/RH and 675LH/RH are suitable for industrial overhead doors having a 1" (25,4 mm) key way shaft (being Flexi-Force model 702GBL, 705GB, 702K, 702C and 702-...Z). Model 675LH/RH-5/4 is suitable for industrial overhead doors having a 1 1/4" (31,75 mm) key way shaft (being Flexi-Force model 699-...Z)

We advise you to apply the reinforced version, model 675LH/RH, on heavy springs especially on 6" (152 mm) springs. This reinforced version can withstand larger axial forces thanks to the flanges. The combination of weight and length of the spring as well as the distance between the shaft supports (bearing plates) influence the amount of axial force; the distance of the shaft towards the door installation surface and the number of turns on the spring are also of influence.



The maximum torque per spring break device is 210 Nm (Newton Meter).

For a specific drum the minimum number of spring break devices per door* can be determined as follows:

$$\text{Door weight} = \frac{\text{Maximum torque}}{0,5 \times \text{drum diameter} \times g} = \text{_____ kg} \quad (g = 10 \text{ m/s}^2)$$

Drum diameter: in meters measured from the point where the cable peels off the drum when door is fully closed. *Example:* FF-NL-18 drum for normal lift having 5 mm cable, gives a diameter of 138,4 mm =

$$\frac{210}{0,5 \times 0.1384 \times 10} = 303 \text{ kg} = 3034 \text{ N}$$

So for a door weight, as lifted by the cables, up to 303 kg you may apply the minimum of 1, or more spring break devices. Over 303 kg you need a minimum of 2, or more spring break devices.

The number of spring break devices must be equal to the number of springs.



ATTENTION!

Never exceed the maximum weight per pair of drums as given by your drum supplier. Apply one spring break device per torsion spring.

Installation can be done on cable drums type FF-NL-32, FF-NL-18, FF-NL-12 etc. according to the Flexi-Force Product catalogue. Only testes and approved with Flexi-Force spring fittings (cones).



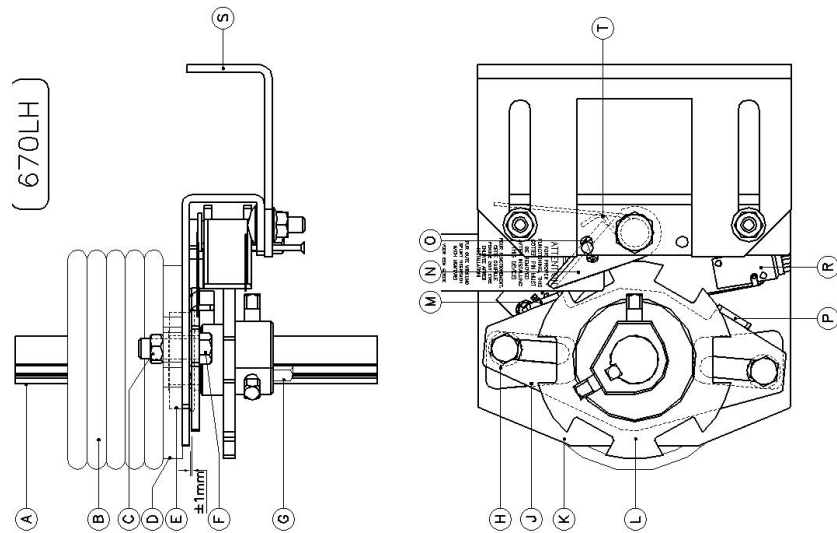
The spring break device models 670LH/RH, 675LH/RH and 675LH/RH-5/4 have approval number TorFV 04/048 of the TUV Süd (as Notified Body Nr. 0036). and also have been tested by the TUV (Technische Überwachungs Verein Bayern) at Munich.



Flexi-Force has applied the mandated INITIAL TYPE TESTING (EN13241-1) for doors described in this manual, at the SP-Institute in Sweden (as Notified Body Nr. 0402). Mentioned article codes spring break devices have been tested and approved for "Safe opening" The results are included in the INITIAL TYPE TESTING REPORT that has been rewarded.

METHOD OF OPERATION

When tensioning the counter balancing torsion spring (B) the blocking plate (J) turns about 5 degrees and the lip (M) blocks the pawl (N). The small double torsion spring (T) pushes the pawl to the lip (M). The pawl wheel (L), which is fixed to the door shaft (A) by means of a key (G), can turn freely and the door can be opened and closed. In case of a spring breakage the moment of the balancing spring (B) is no longer appearing, and so the blocking plate (J) can turn. The small torsion spring and gravity push the pawl (N) away and the pawl catches into the pawl wheel (L) by which the fall of the door is blocked. If electrically operated, the lip (P) will touch the switch (R) rendering the motor inoperable, which will avoid overload by the motor on the safety device and other door parts.



INSTALLATION INSTRUCTIONS



⚠ The fixation of the spring break device to the wall has to be done with proper fixing materials. This is the responsibility of the installer.

Proper installation depends on mounting surface (brick, concrete or steel), the fixing material, max. force and of course good installation.

- 1) If electrically operated install switch (R) and check if lip (P) activates the switch.
- 2) Place the torsion spring (B) with the stationary spring fitting (D) (according to FF catalogue code: FF2.63TAI, FF3,75LE, FF-3.75LETAI, FF6.00, FF6.00-5/4) and the spring device with pawl wheel (L) on the door shaft (A).
- 3) Fix the stationary fitting (D) with help of the bolts (F) with a torque of 10Nm and distance rings (H) on the blocking plate.


⚠ Please note:

- 3a) The stationary fitting (D) has to turn freely around the bearing (E).
- 3b) The spring fitting (D) and blocking plate (J) must have a play of 2 mm which is created by the 2 thick distance rings (H) and have to be free of the centre plate (K).
- 3c) The third big thin ring must be removed. The only reason why it is there is to be able to supply you the device completely assembled .
- 4) Install the central plate (K) on the door frame where normally the centre bearing plate is installed.

- 5) If the centreline is over 86 mm utilise the adjusting plate (S) which is model 661 or 322BAS. In case of a centre line of 152 mm (and adjusting plate model 322BAS) apply the reinforcing angle (U) being model 674HOEK on the models 675LH/RH and 675LH/RH-5/4. Fix the bolts with a torque of 10 Nm.
-  6) **Take care that lip (M) is placed above the door shaft!**
- 7) Fix the pawl wheel (L) directly against the bearing, with help of the set screw(s) at max. torque 10 Nm and a 1/4" key of 30 mm minimum length.
- 8) Wind the torsion spring (B) in the prescribed usual way. All torsion springs on one door must be given an equal number of turns.
-  9) Remove the temporary blocking (O) of the pawl. The pawl must be pushed to the lip (M) of the blocking plate by the small double torsion spring (T).
- 10) If electrically operated the wiring of the switch (R) must be connected in such a way that after a short touch the door operator stops. See instructions.

WHAT TO DO AFTER BLOCKING OF THE DEVICE AFTER SPRING BREAKAGE

- 1) The installer has to prevent the door from falling by supporting the bottom section (e.g. by placing the forks of a forklift truck under the section).
- 2) Remove the spring break device and the adjusting plate, if installed, and remove the broken spring.
- 3) Install a new spring and a new spring break device and (if applied) an adjusting plate, according to the installation instruction.
- 4) Check the possible damage of the shaft (torsion: keyway in line) In case of a tubular key way shaft always replace the shaft.

 **ATTENTION! If the spring break device has been activated due to spring breakage the device and/or its parts may not be used again.**

MALFUNCTIONING

In case of malfunctioning of the spring break device the cause has to be determined and solved. If necessary the spring break device has to be replaced and send to the manufacturer, indicating :

- 1) nature of malfunctioning
- 2) door leaf panel weight applied
- 3) cable drum diameter
- 4) The falling distance, if known

The manufacturer will research the reason of the malfunctioning.

TESTS

A skilled door installer has to check the tension of the pawl (N) during the regular 6 months maintenance/check of the door. If the double torsion spring (T) is broken it has to be replaced.

MAINTENANCE

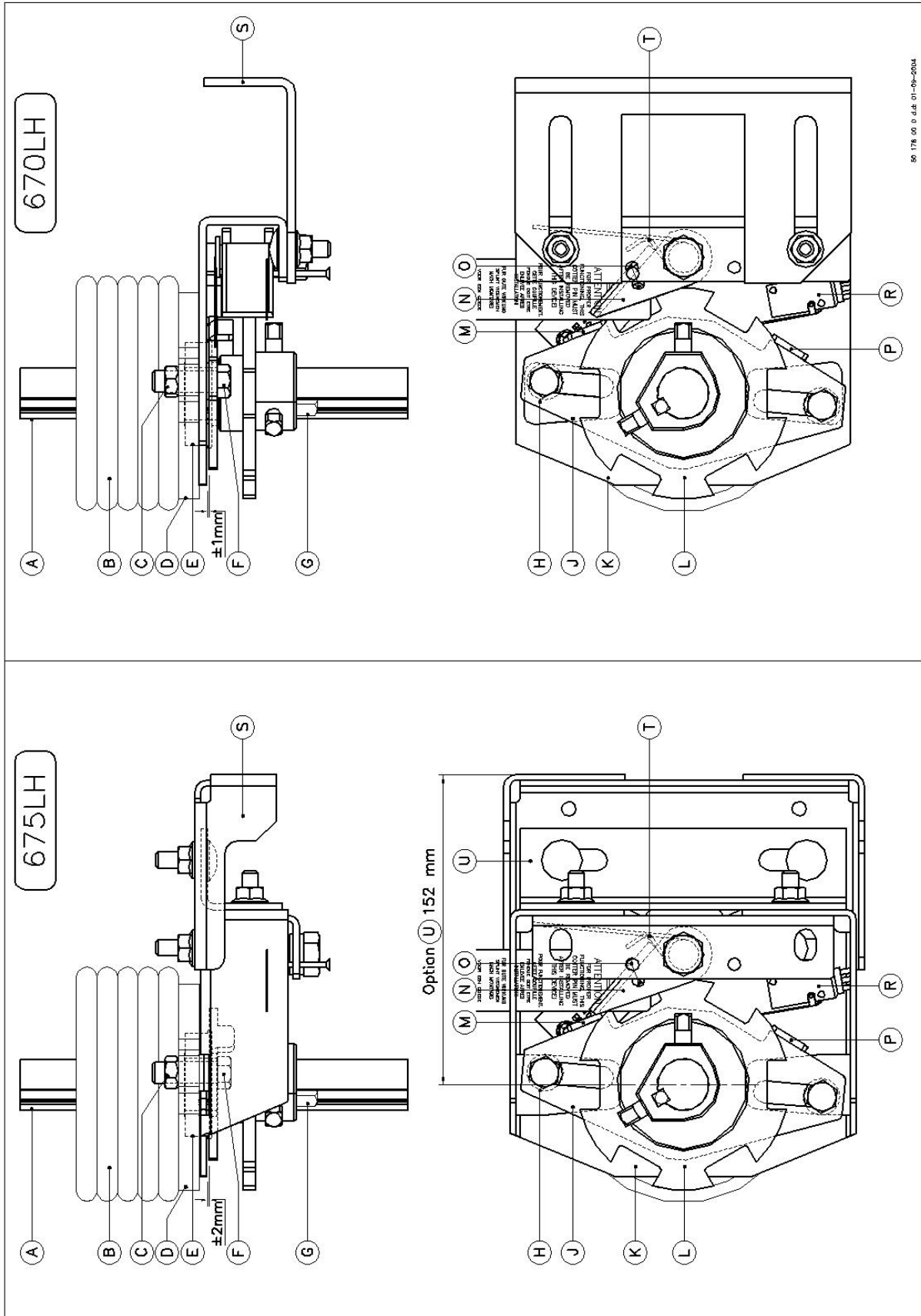
In principle the spring break device does not need maintenance. However, it is advisable to prevent dirt entering or to remove this regularly.

TERMS AND CONDITIONS OF DELIVERY

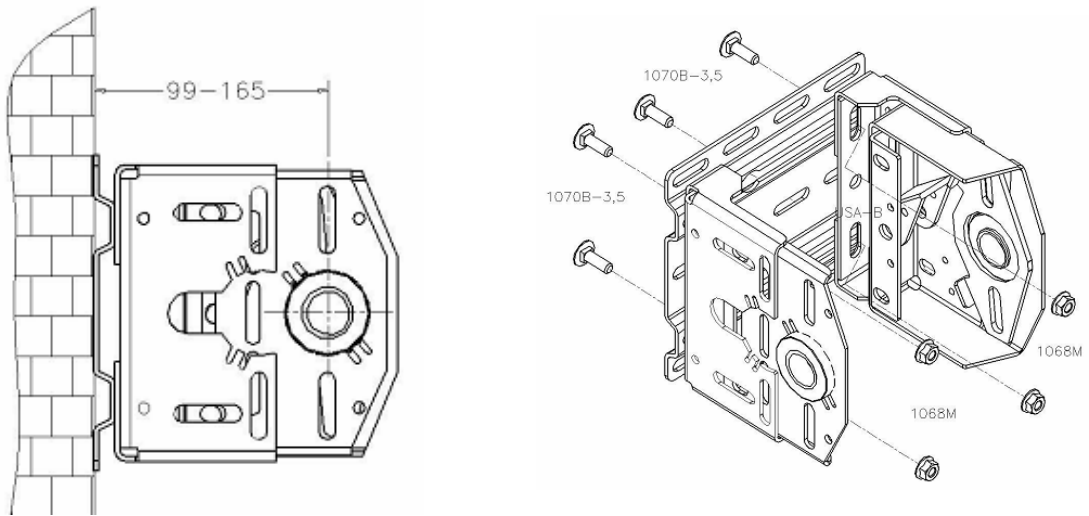
The general terms and conditions of delivery and payment issued by the Metaalunie and designated as METAALUNIE CONDITIONS are fully applicable to all our quotations, contracts and their implementation. We expressly reject all other terms and conditions. A copy of these terms and conditions is included in our document binder, or download from www.flexiforce.com

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Attachments: Drawings and Instructions 667-77 switch



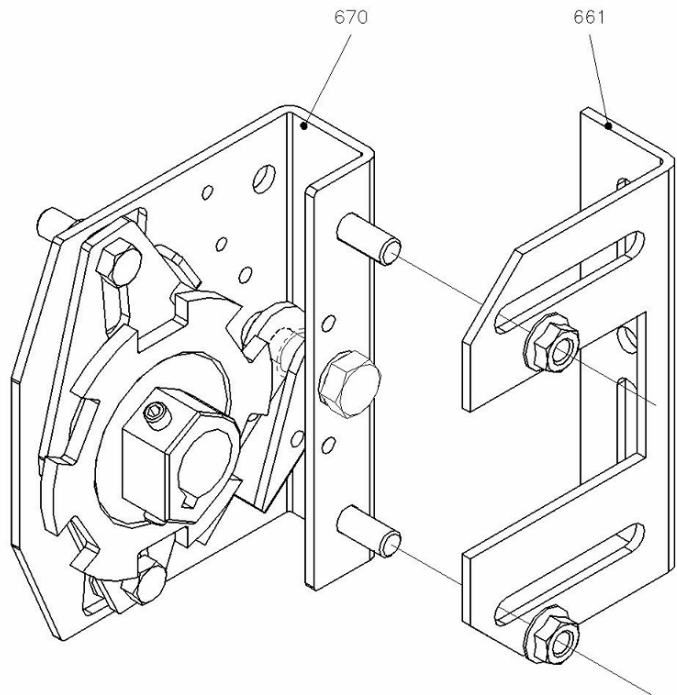
56 178 00 0 d.d. 01-09-2004



321WAL+323LAG+322BAS

Figure 2

670+661 ->



<- 670+662N

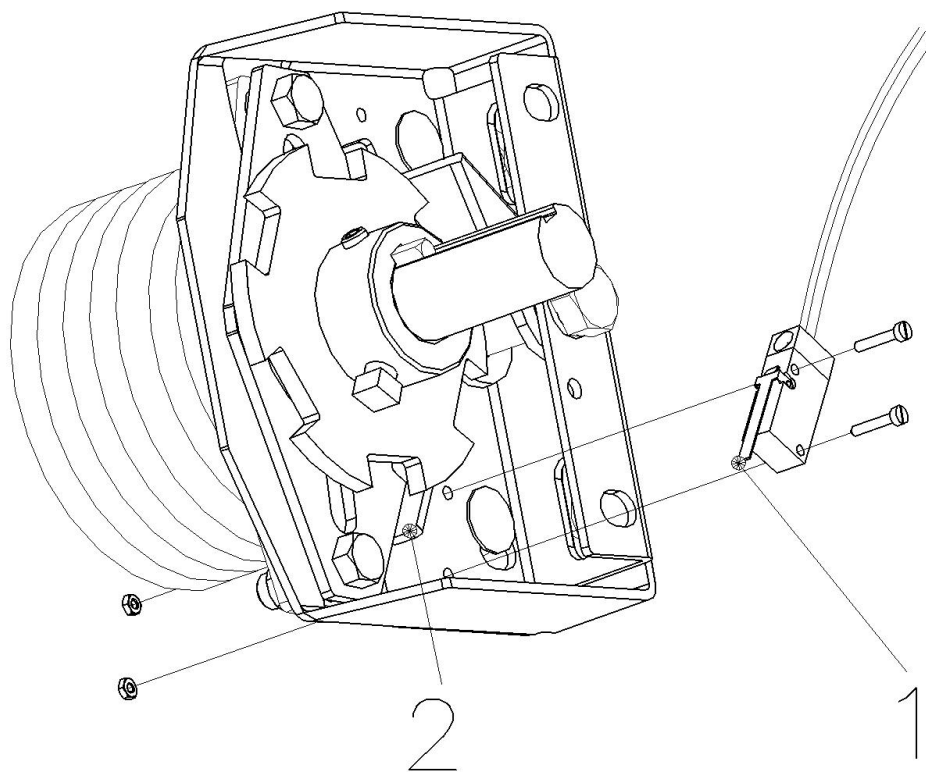


INSTALLATION INSTRUCTIONS FOR SWITCH 677-67.



Note Additional to the switch you need M3 bolts and nuts (1024SCHROE and 2513MOE)

- 1) The switch has to be mounted inside of the SBD. See figure 4.
- 2) The lever (1) of the switch must touch the lip of the blocking plate (2).
- 3) The cables may not hinder the proper functioning of the device.
- 4) Check if the activation of the SBD also activates the switch.
- 5) Connect according to the schedule.



670+677-67

Fig. 4