

FlexiForce



651LH/RH, 667LH/RH
spring breaking device
residential (garage) overhead doors

GB

INSTALLATION MANUAL



GENERAL WARNINGS!

There is a lot of tension on torsion springs.

At all times, work safely and with proper precautions.

Installation, maintenance and repairs can only be done by qualified and experienced overhead door mechanics.



APPLICATION RANGE

The Flexi-Force spring breaking devices 651 and 667 can be used for residential (**garage**) overhead doors, both manually operated as well as power operated doors.

Model 651 is used for torsion springs with an internal diameter of 44,5 mm (1 3/4") and 51 mm (2") with the proper plugs. These are the spring plugs from our delivery program with article codes: FF-1.75, FSW51 and FF-2.00TAI.

Model 667 is used for torsion springs with an internal diameter of 67 mm (2 5/8") with the proper plugs. These are the spring plugs from our delivery program with article codes: FF-2.63TAI and FSW67.

Both types are suitable for garage overhead doors with a 1" tubular shaft without key-hole (article code 701-...Z) and small normal lift cable drums (article code FF-4X8 and FF-4-13).

The max. torque per spring breaking device for type 651 is 31.5 Nm.

The max. torque per spring breaking device for type 667 is 42 Nm.

For the above mentioned cable drums (diameter 105,6 mm; with cable diameter 4 mm) the maximum door weight can be determined with the next formulas:

Maximal torque [Nm]

$$0.5 \times D \text{ drum [m]} = \frac{F \text{ [N]}}{m \text{ [kg]} \times a \text{ [m/s}^2\text{]}} \quad (a=10)$$

$$\text{Model 651} \quad \frac{31.5}{0,5 \times 0,1056} = 600 \text{ N} \quad \frac{600}{m = 10} = 60 \text{ kg}$$

$$\text{Model 667} \quad \frac{42}{0,5 \times 0,1056} = 800 \text{ N} \quad \frac{800}{m = 10} = 80 \text{ kg}$$

We strongly recommend always to use two torsion springs to balance a door.



Attention: The maximum door weight, determined by the supplier of the cable drums, may not be exceeded. Per torsion spring one spring breaking device can and must be used.



TUV-APPROVAL

The spring breaking devices, types 651 and 667 are approved under number 01020 from the BG (Berufs Genossenschaft "Bauliche Einrichtungen in Bonn, Germany). They both are tested by TÜV (Technische Überwachungs Verein, Bayern). With this, the devices easily match the demands from the new European Norms, such as the EN12604 (mechanical aspects).

FUNCTIONING OF THE SPRING BREAKING DEVICE:

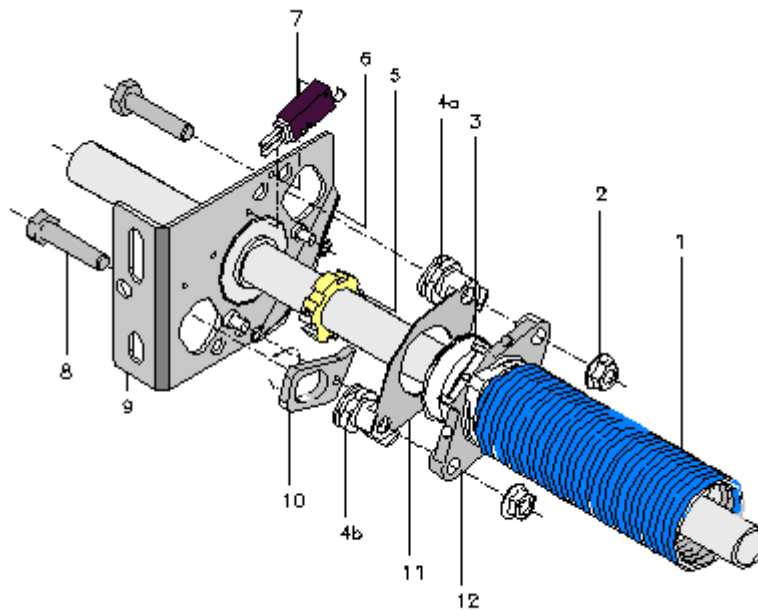
By tensioning the torsion spring(1) the cam shafts(4) rotate in the slotted holes of the bearing plate(9). The spring(6) fitted on the bearing plate (9) pushes against the camshaft (4a) without pal. The camshaft (4b) with pal(10) turns around the stiff (turning point) on the bearing plate and the edge of the pal is being released out of the tooth of the palwheel(5), which is fitted onto the shaft.

When the spring breaks, the tension of it drops. Because of this drop of tension and the sudden release of energy from the spring, the camshafts rotate in the slotted holes of the bearing plate.

This causes the camshaft pal to turn around the stiff on the bearing plate and the edge of the pal drops into one of the teeth of the palwheel which is fitted onto the shaft. This stops the drop of the door. Plate(11) is reinforcement of the

stationary plug(12). The spring(6) which pushes the camshaft(4a) without pal ensures that the pal clamps the palwheel when the torsion spring breaks at the point of the stationary plug. During normal operation of the door, there must always be a minimum of tension left in the torsion spring. This tension should exceed the spring pressure given to the camshaft. This prevents the device to actuate when not necessary. When there is a switch(7) mounted onto the bearing plate, this is actuated through the turning pal, thus giving a signal to the electrical operator. This prevents overload of the operator onto the spring breaking device and other parts of the overhead door.

The delivered spring breaking device is with help of the enclosed drawings easily adjusted to an opposite turning shaft. The Flexi-Force definition of LH (left) and RH (right) device is also expressed on these drawings. The drawing is included in the packaging of each spring breaking device.



INSTALLATION GUIDE-LINES



ATTENTION: DURING INSTALLATION CONSULT THE DRAWING WHICH IS INCLUDED IN THE PACKAGING OF EACH SPRING BREAKING DEVICE!



- 1) Determine the rotating direction of the shaft and drum.
Adjust, if necessary the position of the pal(10) and the spring(6) on the bearing plate (9) according to the instructions on drawing 1a.
- 2) Move the torsion spring(1) with winder and stationary spring plug, the 1" roller bearing(3), the palwheel(5) and the pre-assembled spring breaking device on the shaft.
Fix the bearing plate against the wall or to a support. Make sure that the turning parts of the device are not blocked in any way (use proper bolts)
- 3) Remove the security bolt (tapping end) from the palwheel(5). Shift the palwheel against the bearing of the bearing plate(9). Lock the position of the palwheel by fastening the other security bolt (with craterend).
Drill a hole of 4 mm through the hole in the shaft through the hole in which the bolts were mounted. Now fix the security bolt with tapping end. Check whether both bolts are lined up with the surroundings of the palwheel. They may not stick out.
- 4) Remove the flanged nuts(2).
Shift the stationary spring plug of the torsion spring (1) onto the bolts(8) and fasten the flanged nuts(2).

- 5) Tension the torsion spring according to the prescribed method. You must give all the springs the same number of rotations..

With electrical operated doors, mount the switch (7) and check whether the lip of the switch is operating properly. The wiring of the switch must be connected in such a way that a short push of the lip will cause the operator to stop

WHAT TO DO AFTER BREAKING OF THE SPRING

- 1) Make sure that the door is blocked from falling by supporting the bottom panel (by example, using a forklift truck)
- 2) Remove the spring breaking device and the complete broken spring.
- 3) Install a new spring with new plugs, a new spring breaking device and a new tubular shaft according to the instructions.



NB! Parts of a spring breaking device which as been actuated may not be used again! This also applies to the stationary spring plug, which is an essential part of this safety system.

MALFUNCTIONING

If a spring breaking device malfunctions, the causes must be examined and solved. If necessary, the device must be replaced and has to be sent to the supplier accompanied by the next information:

- a) Type of malfunctioning.
- b) Door weight with which the device is used.
- c) When known, the drop height of the door.

The supplier will investigate the cause of the malfunctioning.

TESTING

The qualified maintenance mechanic of the door, must check, twice a year, the tension of the support spring (6). When it is broken, it must be replaced by a new one.

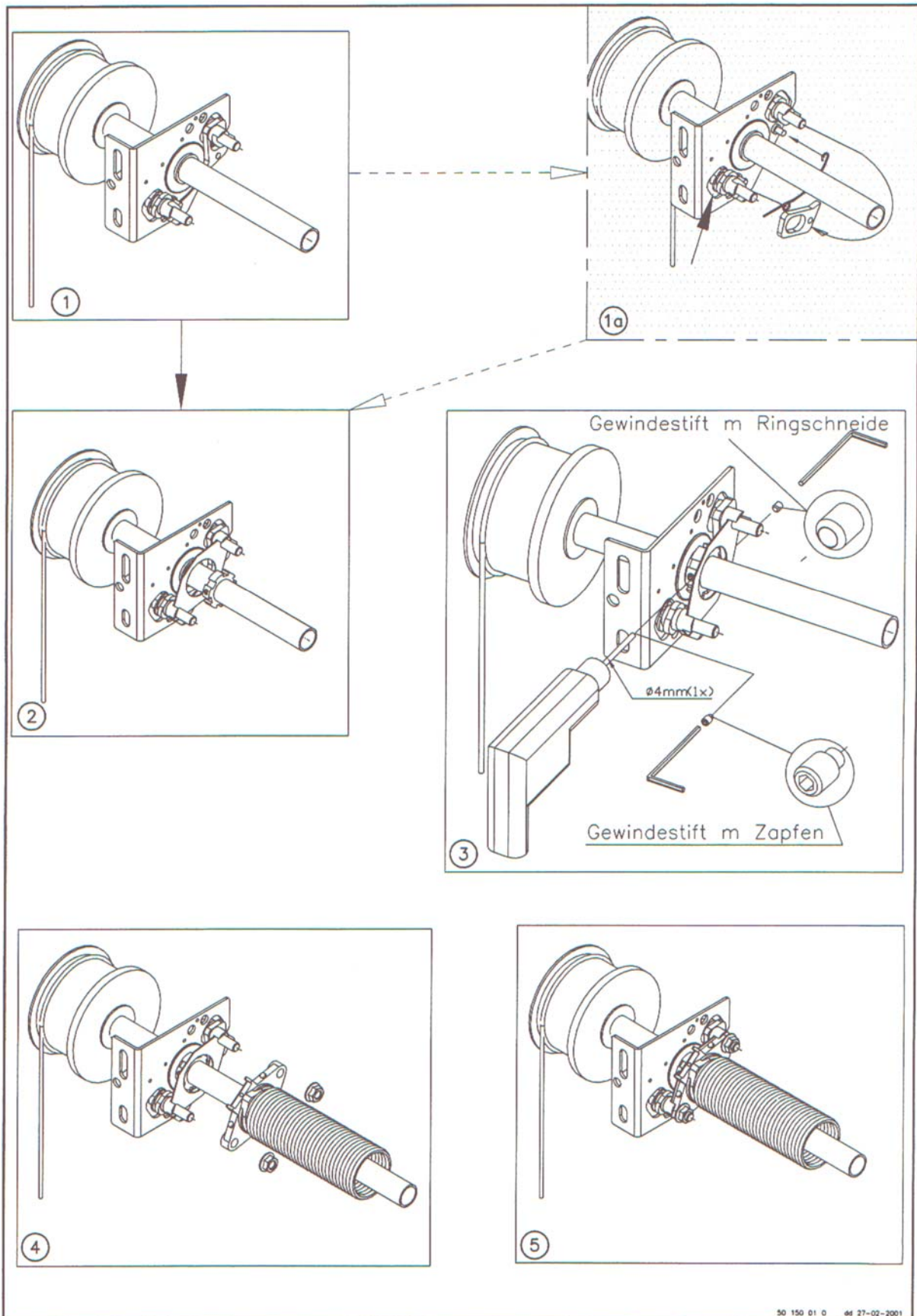
MAINTENANCE

This spring breaking device does not need regular maintenance. It is however recommend to regularly remove dirt from the device.

TERMS AND CONDITIONS

"All our quotations, all our orders and all contracts concluded with us are governed by the METAALUNIE TERMS AND CONDITIONS, lodged with the Registry of the Court in Rotterdam on 1 January 2001, as these read in the last text deposited with same. We waive explicitly other terms and conditions". These terms and conditions of delivery will be sent to you on request, but may be downloaded from our Internet-site www.flexiforce.com. (news)

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Fachausschuss
Bauliche Einrichtungen
Prüf- und Zertifizierungsstelle
im BG-PRÜFZERT

Hauptverband der gewerblichen
Berufsgenossenschaften

BG-Prüfbescheinigung

01020

Bescheinigungs-Nummer

Name und Anschrift des FlexiForce BV
Bescheinigungsinhabers: Hanzeweg 19, NL-3771 NG Barneveld
(Auftraggeber)

Name und Anschrift des siehe oben
Herstellers:

Zeichen des Auftraggebers: Peterse
Zeichen der Prüf- und Zertifizierungsstelle: 686.73/242-FF Ma/us
Ausstellungsdatum: 10.04.2001

Produktbezeichnung: Federbruch-Fangvorrichtung für Fenster, Türen und Tore

Typ: 651 RH/LH und 667 RH/LH

Bestimmungsgemäße ---
Verwendung:

Prüfgrundlage:	DIN EN 12605	Tore - Mechanische Aspekte - Prüfverfahren, Abschnitt 5.3.2	08.00
	GS-BE-04	Grundsätze für die Prüfung und Zertifizierung von Fangvorrichtungen für Fenster, Türen und Tore	01.01

Bemerkungen: ---

Das geprüfte Baumuster entspricht den zur Zeit geltenden Sicherheits- und Gesundheitsanforderungen in der Bundesrepublik Deutschland.

Der Bescheinigungsinhaber ist berechtigt, das umseitig abgebildete BG-PRÜFZERT-Zeichen an den mit dem geprüften Baumuster übereinstimmenden Produkten anzubringen, und zwar mit dem unter 'Bemerkungen' genannten Hinweis.

Diese Bescheinigung wird spätestens ungültig am:

10.04.2006

Weiteres über die Gültigkeit, eine Gültigkeitsverlängerung und andere Bedingungen regelt die Prüf- und Zertifizierungsordnung vom Oktober 1997.

Unterschrift (Dipl.-Ing. Oberzier)