

**RESSORT A GAZ
POUR MOULE D'INJECTION**

3487



Ces ressorts a gaz de dimensions compactes permettent de grandes forces ajustables avec une température d'utilisation en continu de 120°C.

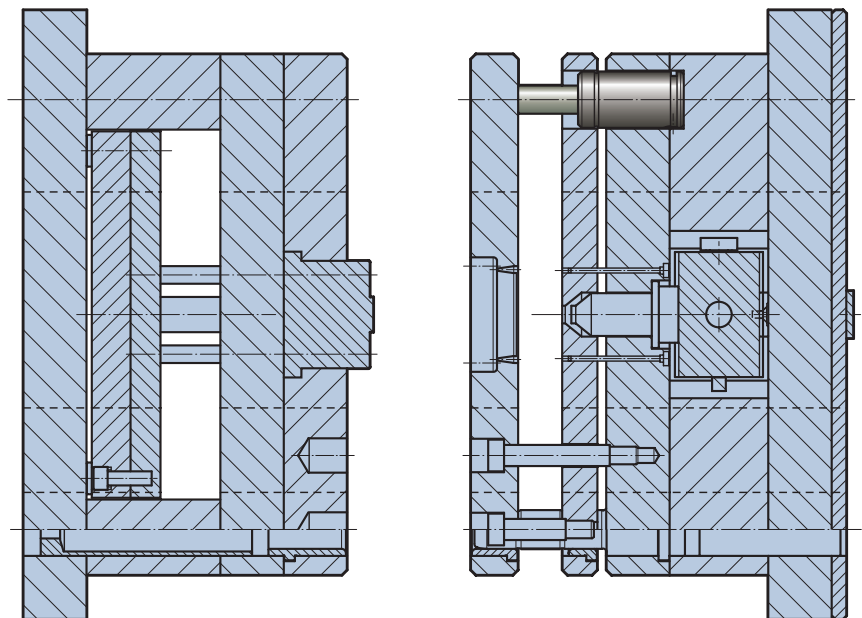
Ils sont conformes aux dernières directives européennes actuelles et bénéficient aussi de différentes sécurités de fonctionnement.

Ils peuvent être utilisés sans entretien jusqu'à 1 million de courses et ne nécessitent pas de lubrification.

La substitution de dispositifs d'ouverture de moule traditionnels par des ressorts à gaz permet un gain important en supprimant les usinages latéraux nécessaires pour fixer ces dispositifs. En cas de blocage d'un élément mobile, le dispositif d'ouverture normal peut entraîner des détériorations du moule.

Les ressorts à gaz neutralisent ce phénomène : si la force maximum du ressort est dépassée, il reste néanmoins en position sans endommager de composants.

Lorsque le blocage est supprimé, on peut reprendre la production sans délai.



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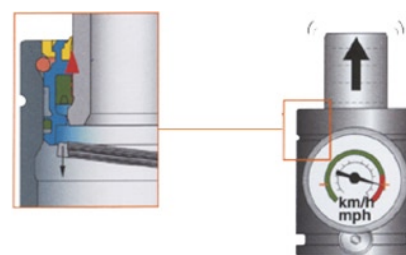
2487

Ces ressorts à gaz sont principalement utilisés pour des outillages sur presses. Permettant des grandes courses et des grandes forces, les premiers ressorts imposants et costauds ont d'abord été étudiés pour servir dans l'industrie automobile. Mais par la suite compte tenu des avantages techniques évidents les fabricants ont miniaturisé les modèles qui peuvent aujourd'hui être intégrés dans la plupart des matrices. Mais attention les modèles actuels sont le fruit de nombreux développements qui ont dû corriger des accidents graves survenus avec les premières générations. En effet, ces ressorts peuvent devenir dangereux et créer des dégâts considérables s'il ne remplissent pas des conditions de sécurité élevées.

Les ressorts à gaz Fibro garantissent le maximum de sécurité dans les 3 «scénario catastrophe» suivants :

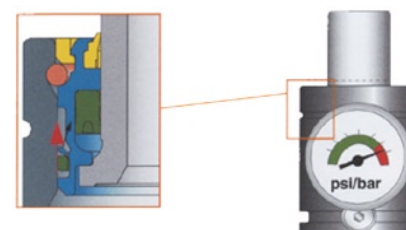
1. Sécurité contre une vitesse retour trop élevée :

En cas de vitesse de sortie de piston trop importante, un joint de sécurité intégré se brise laissant le gaz s'échapper sans danger vers l'extérieur et empêchant le «déboitement» de la tige.



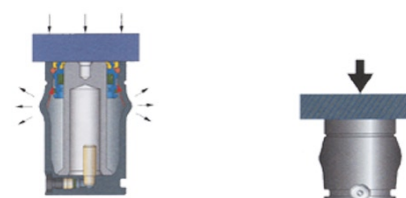
2. Sécurité contre une surpression interne :

Lorsque la pression interne autorisée est dépassée, une butée de sécurité se détériore laissant le gaz s'échapper sans danger vers l'extérieur et empêchant l'éclatement du corps du cylindre.



3. Sécurité contre un dépassement de la course :

Le corps du cylindre est construit d'une telle façon qu'il est capable de se déformer d'une manière prédéfinie en cas de course exagérée. Le gaz peut alors s'échapper sans danger vers l'extérieur empêchant une surpression .



Pour l'achat de ressorts à gaz les acheteurs ont le devoir de s'assurer :

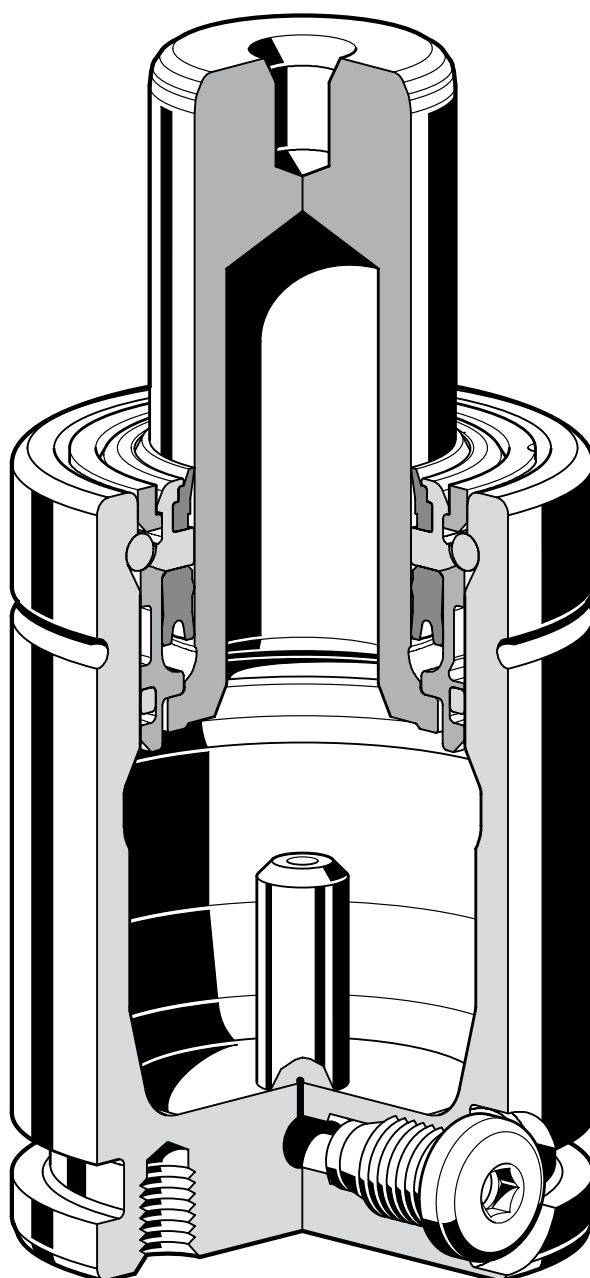
- 1) que le ressort est bien muni d'un joint de sécurité intégré en cas de vitesse de tige trop élevée.
- 2) que le ressort répond bien à la fabrication et au contrôle suivant la directive européenne pour les équipements sous pression DGRL 97/23/EG pour minimum 2 millions de cycles complets et pour :
 - la force de remplissage la plus élevée
 - la température admise la plus élevée
 - pour tous les moyens de fixation proposés; y compris par flasque suivant ISO 11901-2

Remarque : lorsque la pression maximum est supérieure à 0,5 bar, tous les ressorts à gaz produits, vendus et installés en Europe doivent respecter cette directive DGRL 97/23/EG

Les ressorts à gaz FIBRO répondent à ces différentes exigences !!!

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2487



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2487

Maintenance

FIBRO FML gas springs are designed for long-term maintenance-free operation. We recommend lightly oiling the piston rod before using. Sealing and guide elements can be replaced easily in very little time. They are available in a spare parts kit. Each spare parts kit comes with detailed instructions for maintenance of gas springs.

Caution!

Gas springs may only be charged with commercial Grade 5.0 nitrogen gas.

Accessories

The range of accessories for gas springs includes fastening devices, charging and control units, screw connections and lines for setting up compound systems.

Advantages of the

FIBRO Mould Line series:

- Very little calibration work required in the tool
- No lubrication required
- No maintenance required for up to 1,000,000 strokes¹
- Variably adjustable forces
- For mould temperatures of up to 120°C
- Approved as per the European Pressure Equipment Directive 97/23/EC (14th GSGV regulation for pressure vessels)
- Standard safety features (FIBRO Safer Choice)²
 - Safety piston rod
 - Excess pressure protection
 - Overstroke protection
- A pressure monitoring system makes it possible to recognise an impending failure at an early point (prevention)
- No tool breakage if the 2nd separation level is locked (the plate comes to a standstill; after the jam is removed, production can be resumed)
- Used worldwide in one million FIBRO gas springs
- Cost savings: approximately 60-70% (e.g. compared to a latch-locking unit)

¹ At 80°C to 120°C/ 500,000 strokes

² Depending on type of spring

Warning Signs

These are available on request. The signs should be affixed near the springs in as prominent a position as possible.

WARNING

This tool is equipped with ___ Gas Springs with a max. pressure of 150 or 180 bar, depending on spring type. Working pressure ___ bar. Read maintenance instructions before working on gas springs.

FIBRO GmbH · Division Standard Parts
DE-74851 Hassmersheim · Postfach 1120
Phone +49 (0) 6266-73-0* · Fax -237

Size 35x50 mm

Language	Order No
german	2480.00.035.050.1
english	2480.00.035.050.2
french	2480.00.035.050.3
italien	2480.00.035.050.4
spanish	2480.00.035.050.5

WARNING

This tool is equipped with ___ Gas Springs with a max. pressure of 150 or 180 bar, depending on spring type.

No. pcs.	spring type	fill.press./bar	force/daN
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
5	_____	_____	_____

Read maintenance instructions before working on gas springs.

FIBRO GmbH · Division Standard Parts
DE-74851 Hassmersheim · Postfach 1120
Phone +49 (0) 6266-73-0* · Fax +49 (0) 6266-73-237

Size 75x105 mm

language	Order No
german	2480.00.075.105.1
english	2480.00.075.105.2
french	2480.00.075.105.3
italian	2480.00.075.105.4
spanish	2480.00.075.105.5

Size 110x150 mm

language	Order No
german	2480.00.110.150.1
english	2480.00.110.150.2
french	2480.00.110.150.3
italian	2480.00.110.150.4
spanish	2480.00.110.150.5

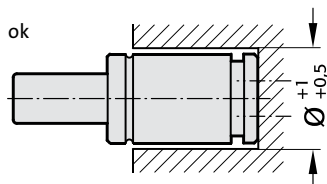
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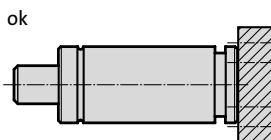
Mounting examples

Mounting possibilities for gas springs are listed below.

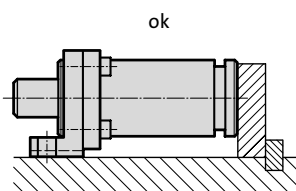
For additional information on mounting, see the corresponding pages in the catalogue.



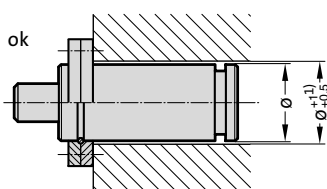
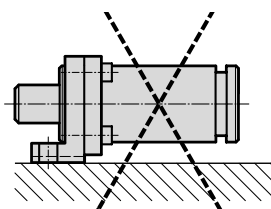
Screw mounted at the base



Screw mounted at the base with 2480.011.

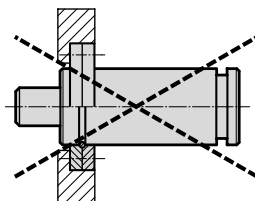


Fastened with 2480.044./045./047.

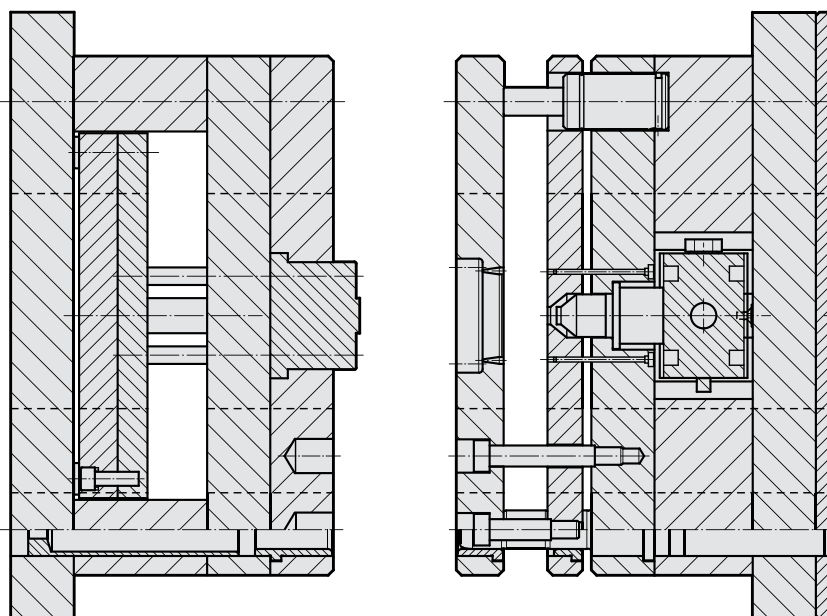


Fastened with 2480.055./057./064.

¹⁾ from $\varnothing 38$: $\varnothing +0,5$



Installation principle:

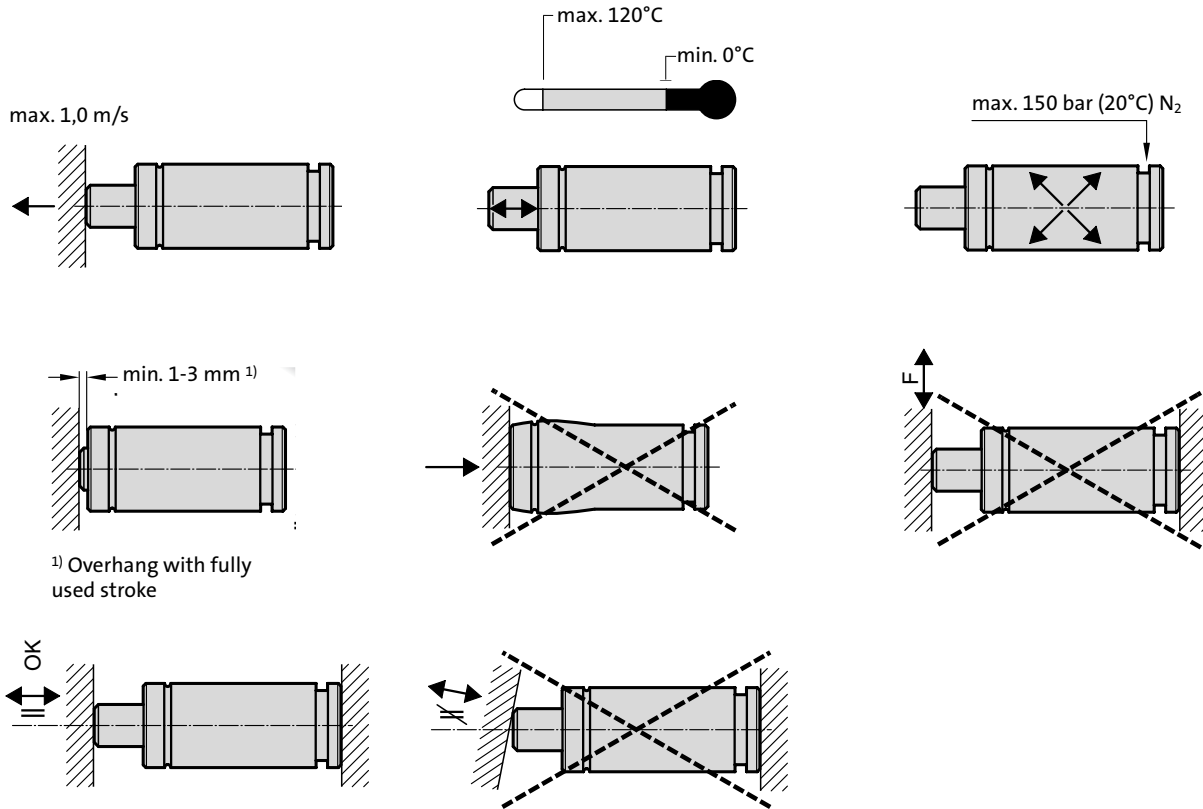


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2487

To achieve the best possible service life and safety for the gas springs, the installation instructions must be followed.

Mounting instructions



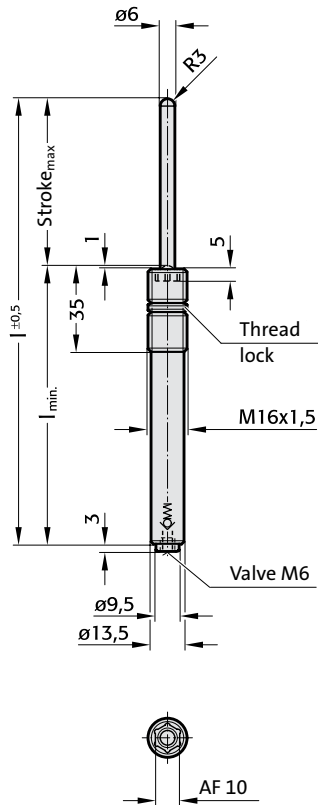
- Secure the gas spring in the tool/machine whenever possible using the threaded holes in the base of the spring or clamping elements.
Do not exceed the maximum tightening torques for the threads in the base of the gas spring:
(M6 = 10 Nm; M8 = 24 Nm; M10 = 45 Nm; M12 = 80 Nm)
- The threaded hole in the piston rod must not be used for fastening gas spring. It must only used for servicing the gas spring.
- Do not use the gas spring in such a way that the piston rod is released abruptly from the position in which it is pressed down (internal damage to the gas spring).
- Install the gas spring parallel to the direction of the compression stroke.
- The contact surface for activating the piston rod must be perpendicular to the direction of the compression stroke and must be sufficiently hardened.
- The gas spring must not be subjected to any forces acting from the side.
- Protect the piston rod against mechanical damage and contact with liquids.
- We recommend leaving an unused stroke reserve of 10% of the nominal stroke length or 5 mm.
- The maximum charging pressure as a function of the working temperature must not be exceeded. If it is, the safety of the system cannot be guaranteed.
- Exceeding the maximum permissible working temperature will reduce the service life of the gas spring significantly.
- The surface of the piston rod/piston should be completely charged.

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3749.030



3749.030.



3749.030.

The initial spring force at 150 bar/20°C is 42 daN

Order no.	Stroke max.	l min.	l
3479.030.00040.010	10	55	65
020	20	65	85
030	30	75	105
040	40	85	125
050	50	95	145
060	60	105	165
070	70	115	185
080	80	125	205

Longer stroke lengths on request

Description:

Spring-loaded plungers are used as ejectors, vibration damping bolts, position holding devices and ejector pins in various areas of engineering involving tools, devices, moulds and machines. Assembly is performed with a FIBRO insertion tool (2470.12.010.017.)

Note:

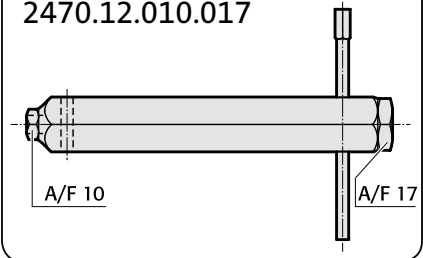
Do not repair worn springs; they have to be replaced completely

Pressure medium: Nitrogen - N₂
 max. filling pressure: see table
 min. filling pressure: 25 bar (20°C)
 Working temperature: 0°C to +120°C
 temperature-dependent force increase: $\pm 0.3\%/^{\circ}C$

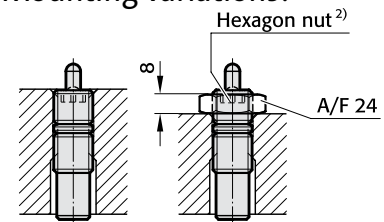
Recommended max. strokes/min.	Working temperature range	Max. filling pressure at 20°C in bar
20	at 0°C-80°C	150
15	at 80°C-100°C	125
10	at 100°C-120°C	115

Max. piston speed: 1.0 m/s

2470.12.010.017

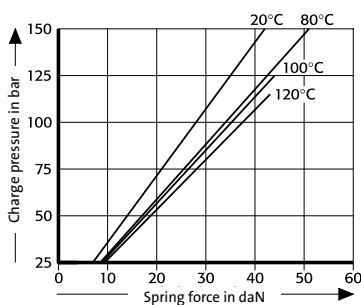


Mounting variations:



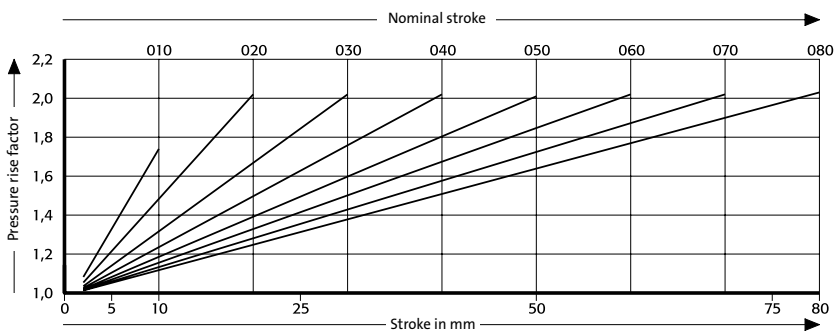
3749.030.

Initial spring force versus charge pressure and working temperature



3749.030.

Spring force Diagram displacement versus stroke rise



**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.032

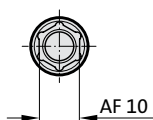
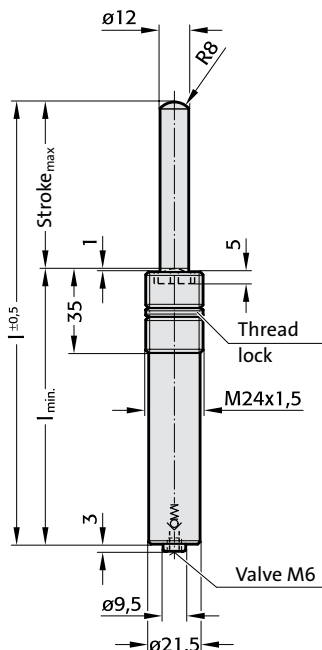
3479.032.

The initial spring force at 150 bar/20°C is 170 daN

Order no.	Stroke max.	l _{min.}	l
3479.032.00170.010	10	55	65
020	20	65	85
030	30	75	105
040	40	85	125
050	50	95	145
060	60	105	165
070	70	115	185
080	80	125	205

Longer stroke lengths on request

3479.032.



Description:

Spring-loaded plungers are used as ejectors, vibration damping bolts, position holding devices and ejector pins in various areas of engineering involving tools, devices, moulds and machines. Assembly is performed with a FIBRO insertion tool (2470.12.010.017.)

Note:

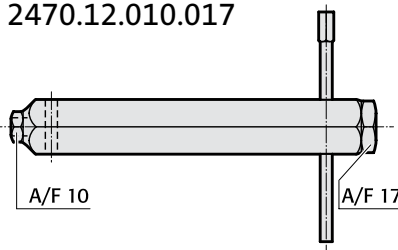
Do not repair worn springs; they have to be replaced completely

Pressure medium: Nitrogen – N₂
 max. filling pressure: see table
 min. filling pressure: 25 bar (20°C)
 Working temperature: 0°C to +120°C
 temperature-dependent force increase: ±0.3%/°C

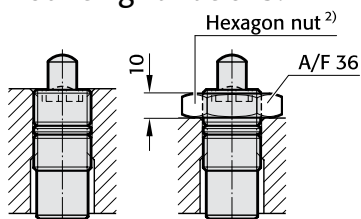
Recommended max. strokes/min.	Working temperature range	Max. filling pressure at 20°C in bar
20	at 0°C-80°C	150
15	at 80°C-100°C	125
10	at 100°C-120°C	115

Max. piston speed: 1.0 m/s

2470.12.010.017



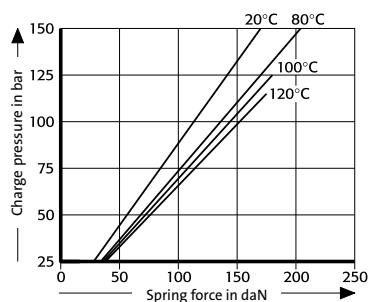
Mounting variations:



²⁾ Hexagon nut order supplementary: 2480.004.00170

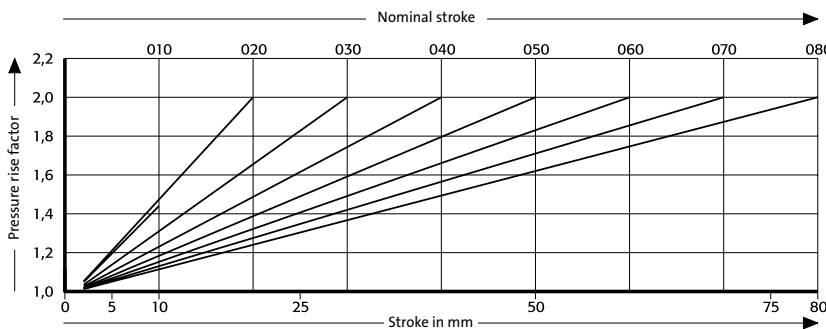
3479.032.

Initial spring force versus charge pressure and working temperature



3479.032.

Spring force Diagram displacement versus stroke rise



**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.00300

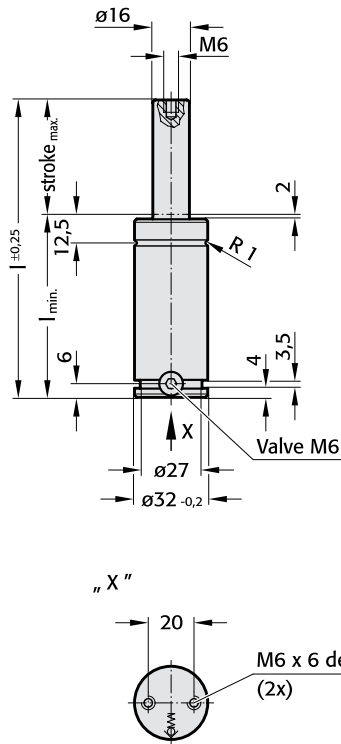
3487.12.00300.

The initial spring force at 150 bar/20°C is 300 daN

Order no.	Stroke		l
	max.	l _{min.}	
3487.12.00300.010	10	40	50
013	13	43	56
016	16	46	62
019	19	49	68
025	25	55	80
032	32	62	94
038	38	68	106
050	50	80	130
063	63	93	156
075	75	105	180
080	80	110	190
100*	100	130	230
125*	125	155	280

*On request

3487.12.00300.



Note:

Order No. for spare parts kit:
3487.12.00300

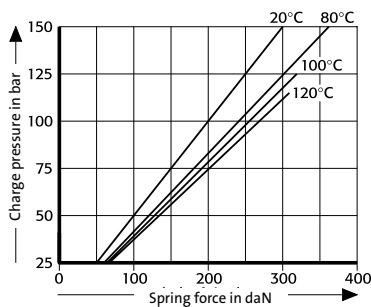
Pressure medium: Nitrogen - N₂
 max. filling pressure: see table
 min. filling pressure: 25 bar (20°C)
 Working temperature: 0°C to +120°C
 temperature-dependent
 force increase: $\pm 0.3\%/^{\circ}\text{C}$

Recommended max. Strokes/min.	working temperature range	Max. filling pressure at 20°C in bar
20	at 0°C- 80°C	150
15	at 80°C-100°C	125
10	at 100°C-120°C	115

Max. piston speed: 1.0 m/s

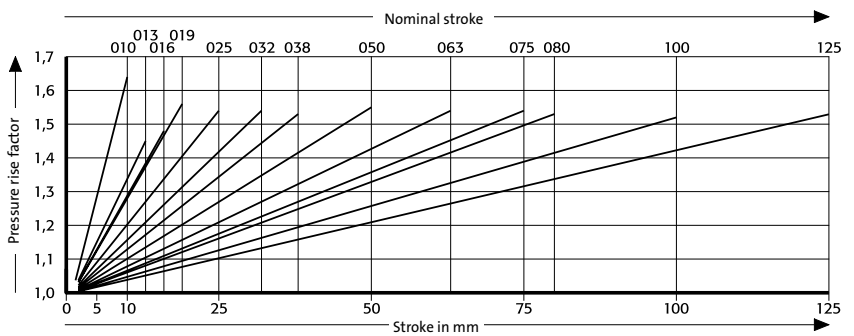
3487.12.00300.

Initial spring force versus charge pressure and working temperature



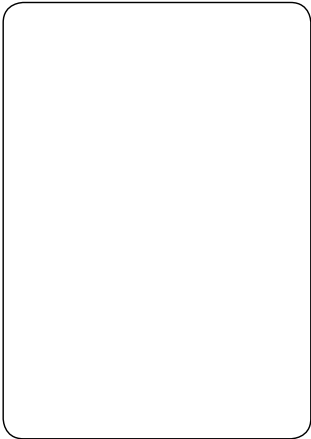
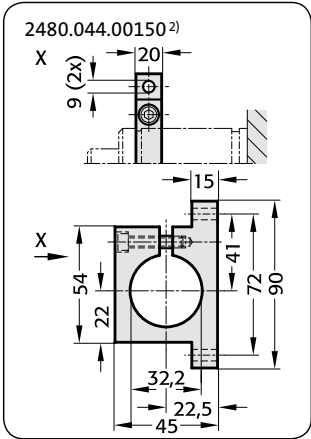
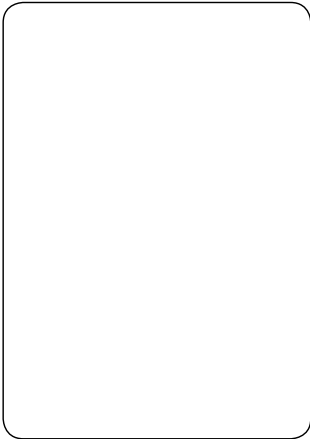
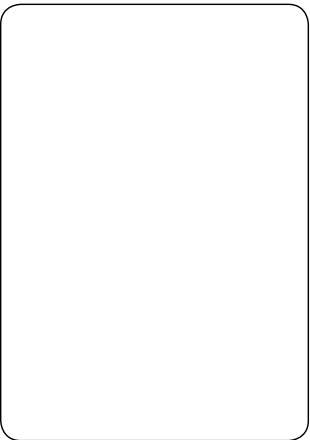
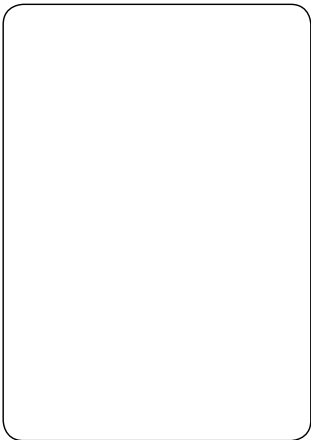
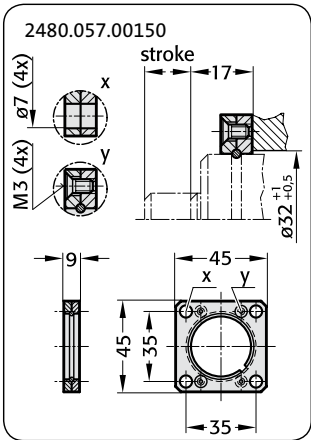
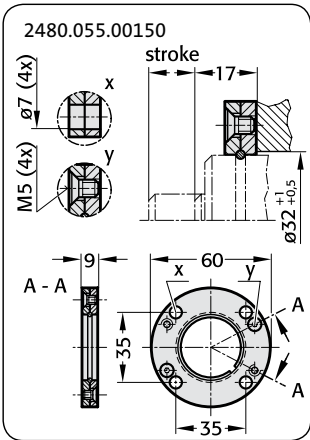
3487.12.00300.

Spring force Diagram displacement versus stroke rise



**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.0300



Note:
²⁾ Caution:
 Spring force must be absorbed
 by stop surface!

Mounting examples:

**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.00500

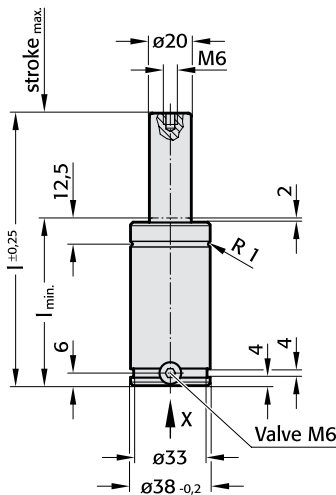
3487.12.00500.

The initial spring force at 150 bar/20°C is 500 daN

Order no.	Stroke max.	l _{min.}	l
3487.12.00500.010	10	40	50
013	13	43	56
016	16	46	62
019	19	49	68
025	25	55	80
032	32	62	94
038	38	68	106
050	50	80	130
063	63	93	156
075	75	105	180
080	80	110	190
100*	100	130	230
125*	125	155	280

*On request

3487.12.00500.



Note:

Order No. for spare parts kit:
3487.12.00500

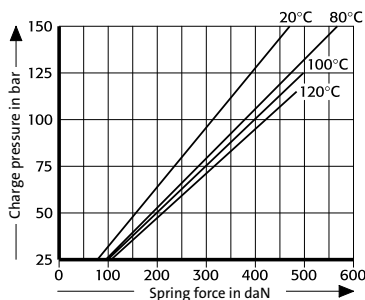
Pressure medium: Nitrogen - N₂
 max. filling pressure: see table
 min. filling pressure: 25 bar (20°C)
 Working temperature: 0°C to +120°C
 temperature-dependent
 force increase: ±0.3%/°C

Recommended max. Strokes/min.	working temperature range	Max. filling pressure at 20°C in bar
20	at 0°C-80°C	150
15	at 80°C-100°C	125
10	at 100°C-120°C	115

Max. piston speed: 1.0 m/s

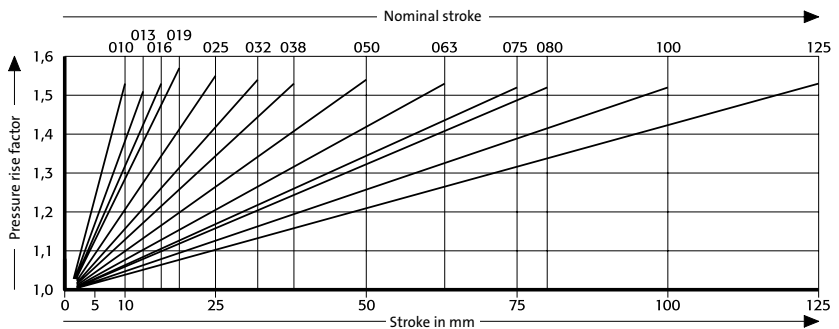
3487.12.00500.

Initial spring force versus charge pressure and working temperature



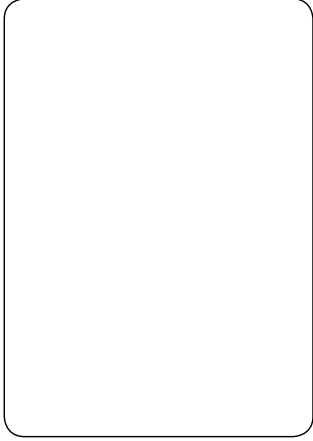
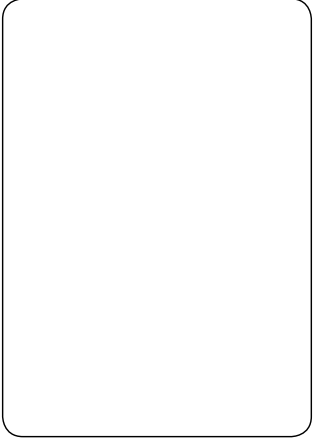
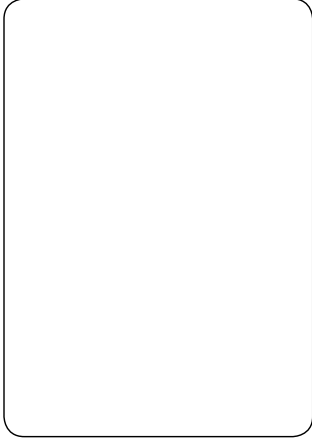
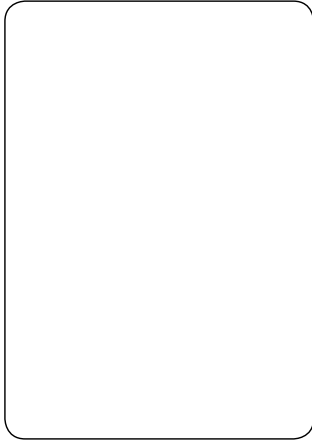
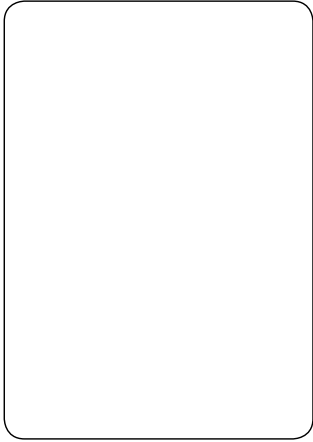
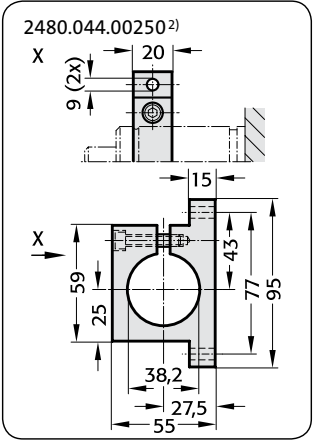
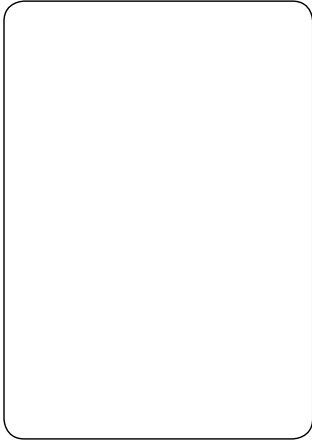
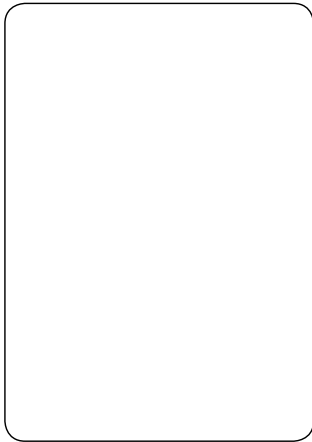
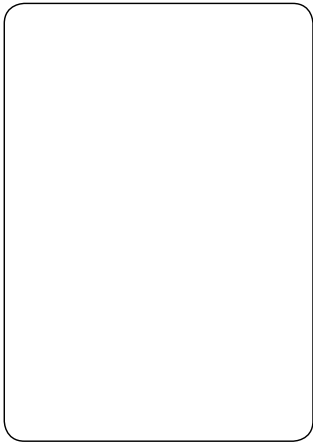
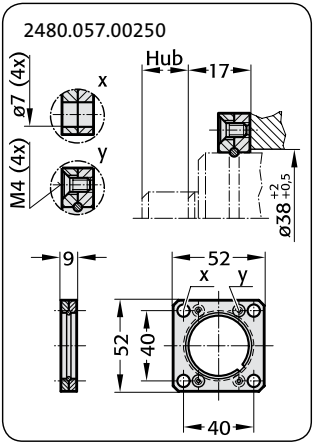
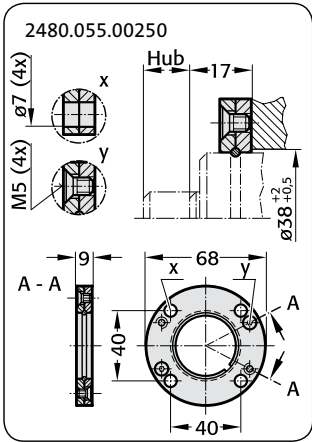
3487.12.00500.

Spring force Diagram displacement versus stroke rise



**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.00500



Note:
²⁾ Caution:
 Spring force must be absorbed
 by stop surface!

**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.00750

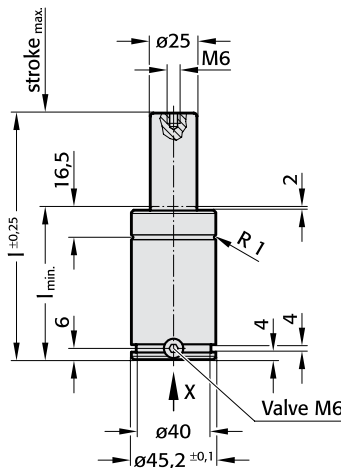
3487.12.00750.

The initial spring force at 150 bar/20°C is 750 daN

Order no.	Stroke max.	l _{min.}	l
3487.12.00750.010	10	42	52
013	13	45	58
016	16	48	62
019	19	51	70
025	25	57	82
032	32	64	96
038	38	70	108
050	50	82	132
063	63	95	158
075	75	107	182
080	80	112	192
100*	100	132	232
125*	125	157	282

*On request

3487.12.00750.



Note:

Order No. for spare parts kit:
3487.12.00750

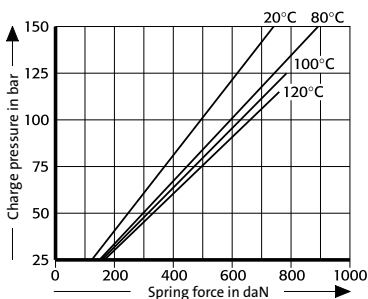
Pressure medium: Nitrogen - N₂
 max. filling pressure: see table
 min. filling pressure: 25 bar (20°C)
 Working temperature: 0°C to +120°C
 temperature-dependent
 force increase: ±0.3%/°C

Recommended max. Strokes/min.	working temperature range	Max. filling pressure at 20°C in bar
20	at 0°C- 80°C	150
15	at 80°C-100°C	125
10	at 100°C-120°C	115

Max. piston speed: 1.0 m/s

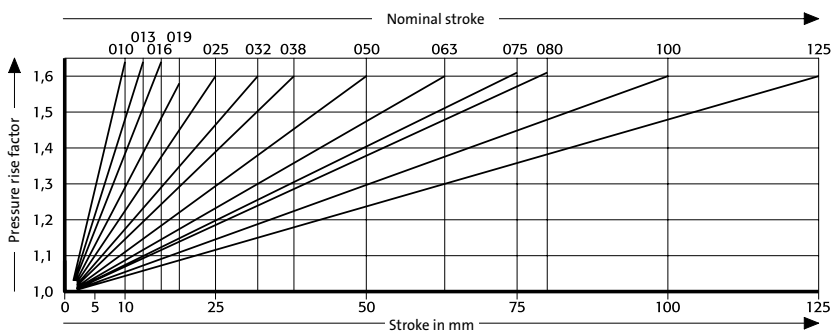
3487.12.00750.

Initial spring force versus charge pressure and working temperature



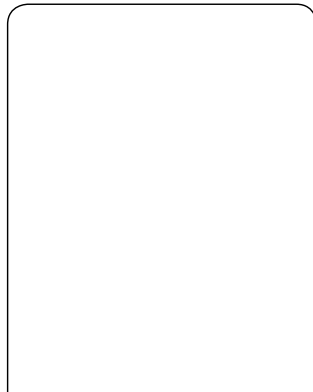
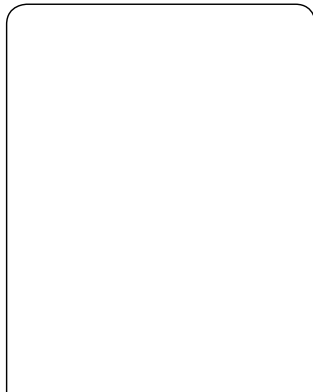
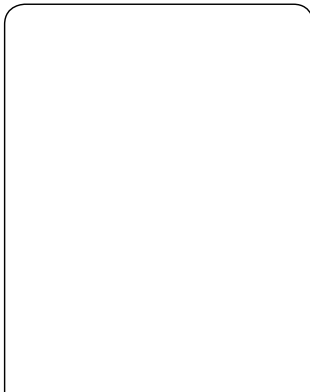
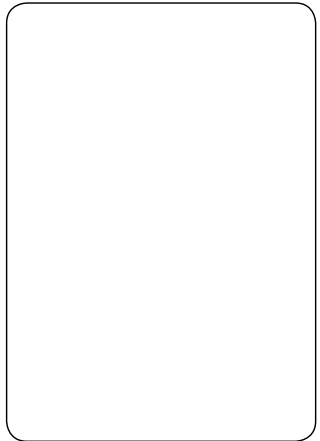
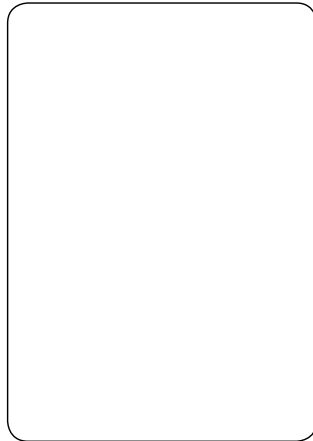
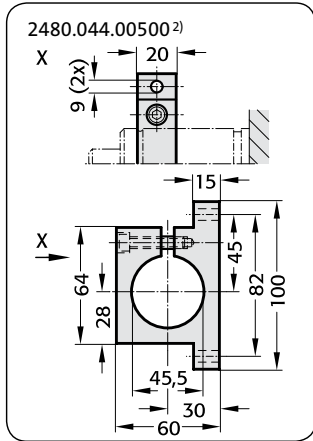
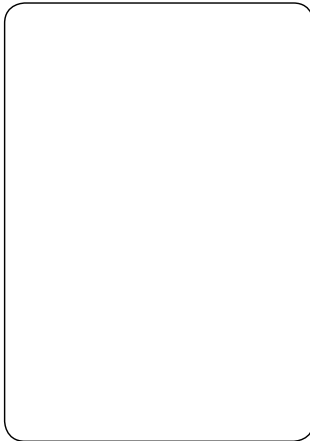
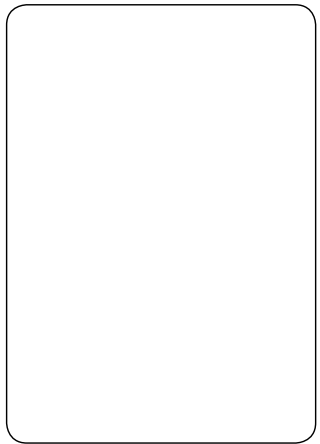
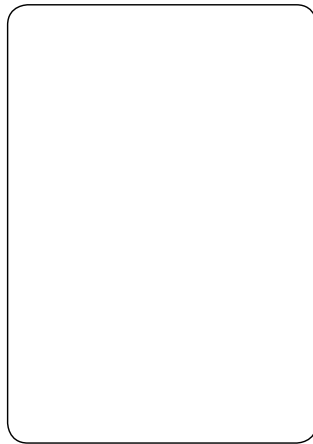
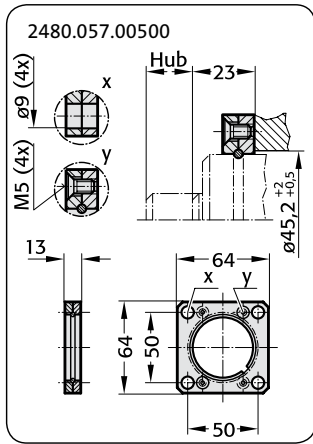
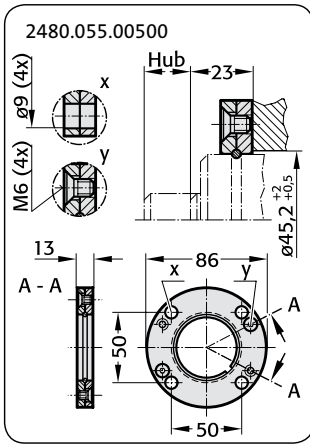
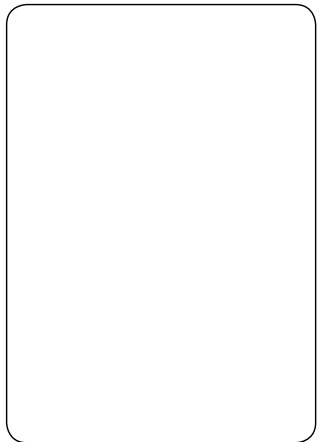
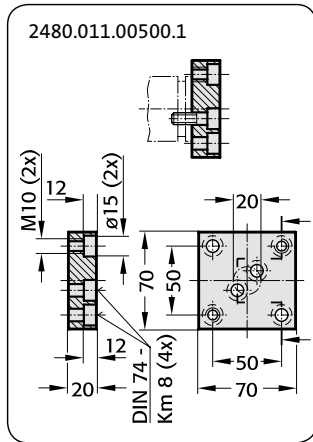
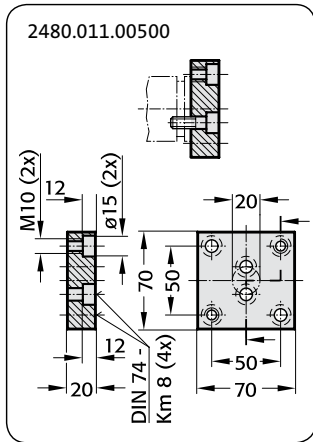
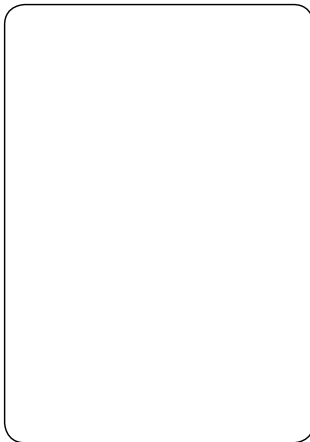
3487.12.00750.

Spring force Diagram displacement versus stroke rise



**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.00750



Note:
²⁾ Caution:
 Spring force must be absorbed
 by stop surface!

**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.01000

3487.12.01000.

The initial spring force at 150 bar/20°C is 1000 daN

Order no.	Stroke max.	l _{min.}	l
3487.12.01000.013	13	51	64
016	16	54	70
019	19	57	76
025	25	63	88
032	32	70	102
038	38	76	114
050	50	88	138
063	63	101	164
075	75	113	188
080	80	118	198
100*	100	138	238
125*	125	163	288

*On request

Note:

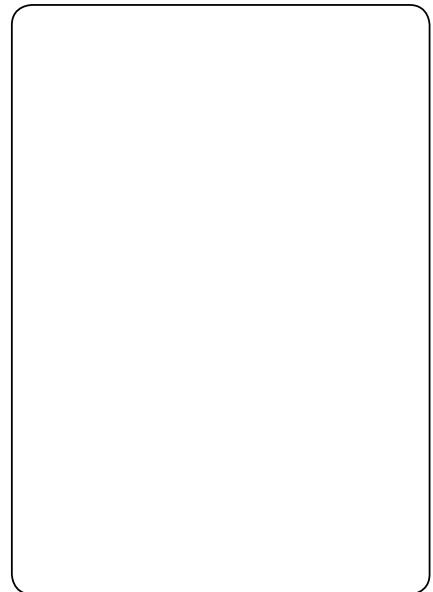
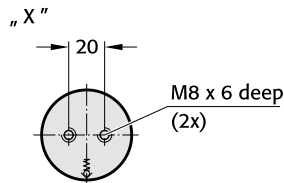
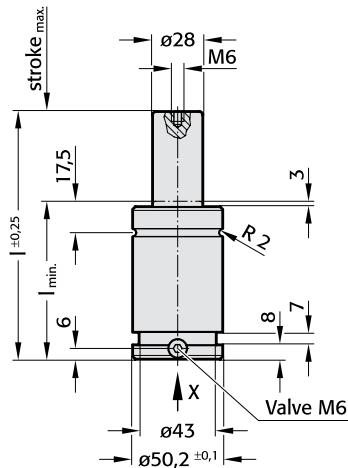
Order No. for spare parts kit:
3487.12.01000

Pressure medium: Nitrogen – N₂
 max. filling pressure: see table
 min. filling pressure: 25 bar (20°C)
 Working temperature: 0°C to +120°C
 temperature-dependent
 force increase: ±0.3%/°C

Recommended max. Strokes/min.	working temperature range	Max. filling pressure at 20°C in bar
20	at 0°C-80°C	150
15	at 80°C-100°C	125
10	at 100°C-120°C	115

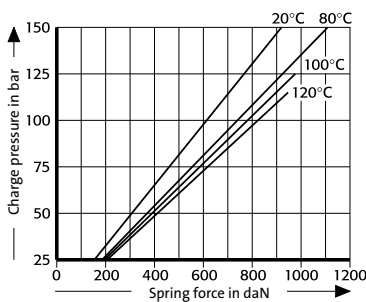
Max. piston speed: 1.0 m/s

3487.12.01000.



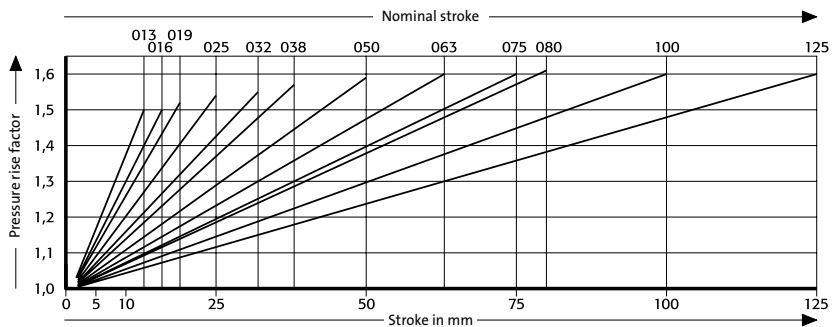
3487.12.01000.

Initial spring force versus charge pressure and working temperature



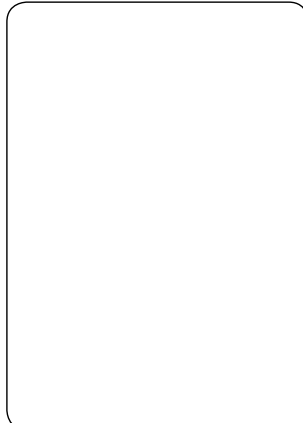
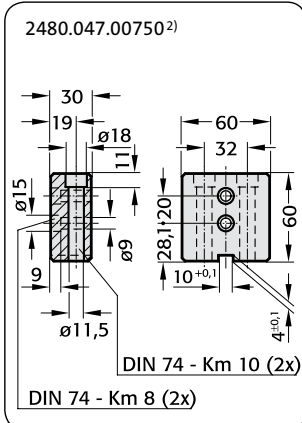
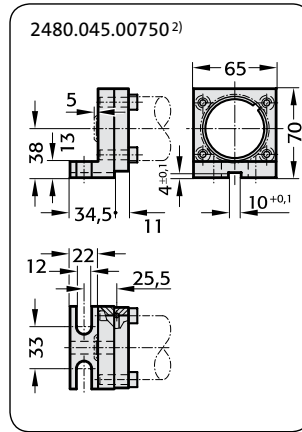
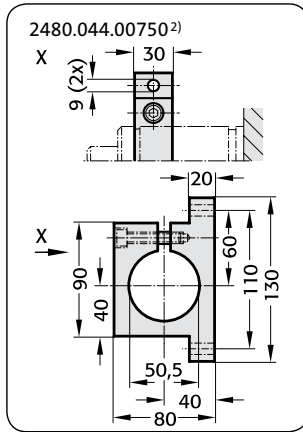
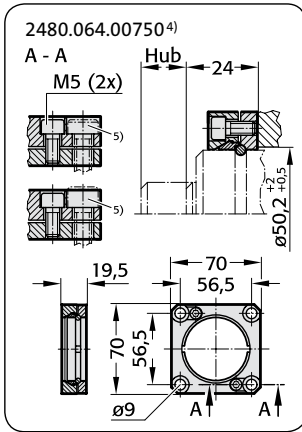
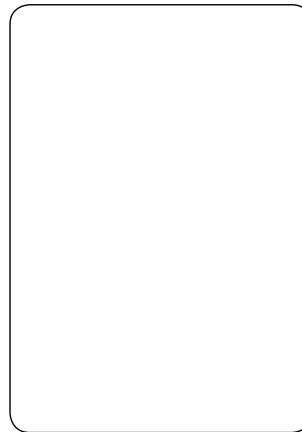
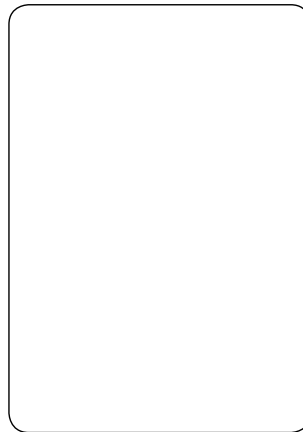
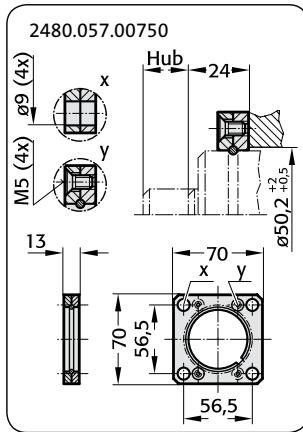
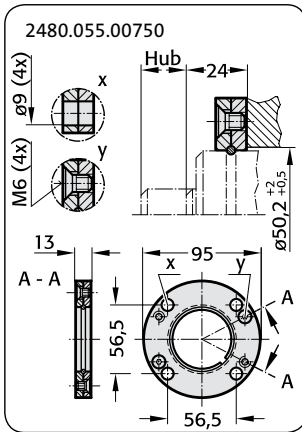
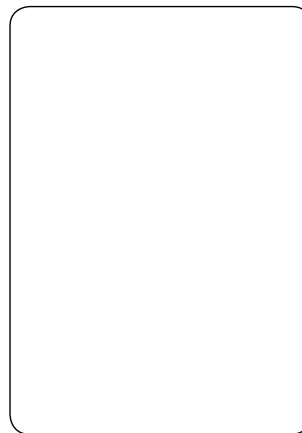
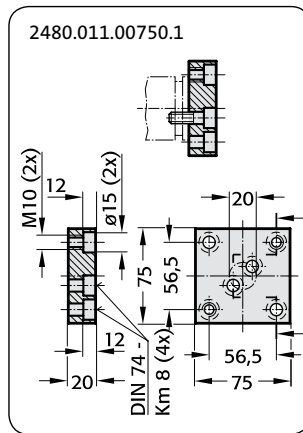
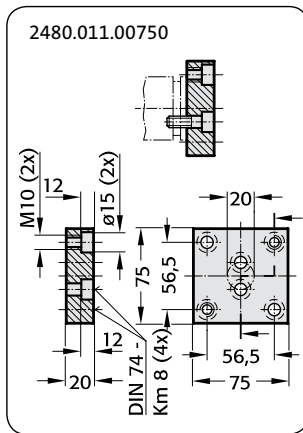
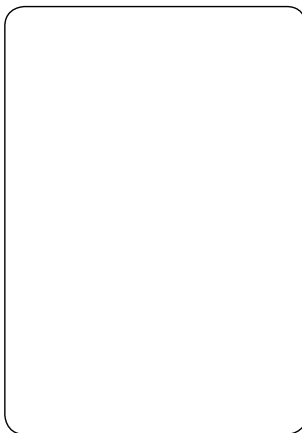
3487.12.01000.

Spring force Diagram displacement versus stroke rise



**RESSORT A GAZ
POUR MOULE D'INJECTION**

3749.12.01000



Note:

- ²⁾ Caution:
Spring force must be absorbed by stop surface!
- ⁴⁾ Square collar flange, anti-twist, fixing for collar connection.
- ⁵⁾ Socket head screws with internal hex (recommended: with low head).