

FLENDER COUPLINGS

FASTEX

Compact assembly and operating instructions 3911en

Edition 05/2022

FASTEX EC220

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FASTEX EC220 Clamping elements 3911en


Compact assembly and
operating instructions


| | |
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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

| |
|---|
|  DANGER |
| indicates that death or severe personal injury will result if proper precautions are not taken |

| |
|---|
|  WARNING |
| indicates that death or severe personal injury may result if proper precautions are not taken. |

| |
|--|
|  CAUTION |
| indicates that minor personal injury can result if proper precautions are not taken. |

| |
|--|
| NOTICE |
| indicates that property damage can result if proper precautions are not taken. |


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Flender products

Note the following:

| |
|--|
|  WARNING |
| Flender products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Flender. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed. |

Trademarks

All names identified by ® are registered trademarks of Flender GmbH. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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1 Introduction

1.1 Main operation instructions

These instructions are only valid in conjunction with the associated operating instructions from the component supplier.

1.2 General information

Instructions











Notice the information and regulations in these installation instructions and in the main operating instructions from the component supplier.

Please make sure that every person who is commissioned to work on the clamping element has read and understood these instructions prior to handling the clamping element and observes all of the points.

Only the knowledge of these instructions can avoid faults on the clamping element and ensure fault-free and safe operation. Non-adherence to the instructions can cause product or property damage or personal injury. Flender does not accept any liability for damage or operating failures that are due to non-adherence to these instructions.

Symbols

Table 1-1 General warnings

| ISO | ANSI | Warning |
|---|---|--|
|  |  | Warning - hazardous electrical voltage |
|  | | Warning - explosive substances |
|  | --- | Warning - entanglement hazard |
|  | --- | Warning - hot surfaces |
|  | --- | Warning - substances that are harmful to health or are irritants |
|  | --- | Warning - corrosive substances |
|  | --- | Warning - suspended load |
|  | --- | Warning - hand injuries |
|  | | ATEX certification |

Explanation regarding Machinery Directive 2006/42/EG

The clamping elements described here are components in accordance with the Machinery Directive and do not require a declaration of incorporation.

Work on the clamping element

Only carry out work on the clamping element when it is not in operation and is not under load. Secure the drive unit against being switched on accidentally. Attach a notice to the switch stating clearly that work is being carried out on the clamping element. Ensure that the entire unit is not under load..

1.3 Intended use

Only use the clamping element according to the conditions specified in the service and delivery contract and the technical data in the annex. Deviating operating conditions are considered improper use. The user or owner of the machine or plant is solely liable for any resulting damage.

When using the clamping element please specifically observe the following:

- Do not make any modifications to the clamping element that go beyond the permissible machining described in these instructions. This also applies to touch protection facilities.
- Do not use the clamping element as a torque-limiting safety element.

If you have any queries, please contact our customer service (see Service and support (Page 12)).

1.4 Safety instructions for a clamping element for use in potentially explosive atmospheres



The assembly supplier is responsible for the guideline-compliant design of the system clamping element with all associated components. In potentially explosive areas, it must be ensured that the design torque T_{Cl} according to Table 7-1 is not exceeded at any operating point. The identification and information on the conditions of use can be found in the main operating instructions of the assembly supplier.

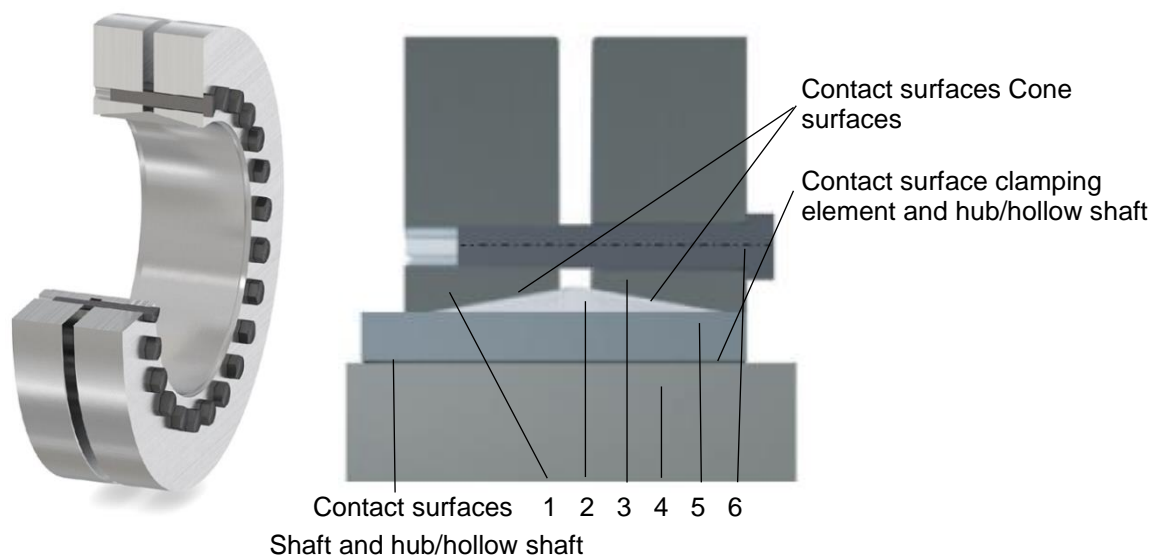
2 Description

The clamping elements described here are universally applicable, self-centering clamping elements whose function is the tensionally locked transmission of torque between shaft and hub/hollow shaft.

The installation and operation of the specified clamping elements in combination with cylindrically bored hubs is described in these instructions.

Design

Detailed information on the dimensions can be found in Appendix A Technical data (Page 13).



- 1 Rear cone ring
- 2 Inner ring
- 3 Front cone ring
- 4 Shaft
- 5 Hollow shaft/hub
- 6 Hexagon head screws

Figure 2-1 Construction of the clamping element FASTEX EC220

3 Application planning

Check the delivery for damage and for completeness. Report any damage and/or missing parts to Flender immediately.

The coupling is delivered in preassembled groups. These may be dismantled.

3.1 Transport of the clamping element



WARNING

Severe personal injury due to improper transport

Severe personal injury due to falling components or due to crushing. Damage to clamping element parts possible due to use of unsuitable transport means.

- Only use lifting gear and load suspension devices with sufficient load bearing capacity for transport.
- Please observe the symbols applied on the packaging.

3.1 Storage of the clamping element

The clamping element, unless not specifically ordered otherwise, is supplied with preservation and can be stored for up to 12 months in a dry and dust-free storage room.

4 Assembly



DANGER

Danger due to bursting of the assembly group

If not used as intended, the assembly can burst. There is a risk of fatal injury from flying fragments. Bursting of the assembly can lead to an explosion in potentially explosive atmospheres.

- Use the clamping element as intended

Note

Information about the assembly of the clamping element

- Only use undamaged components for the assembly of the clamping element.
- Follow the assembly sequence.
- Please ensure that there is sufficient space at the assembly location and that the location is tidy and clean in order to be able to assemble and maintain the clamping element without any risk.
- If a dimension drawing has been created for the clamping element, please observe the information it contains as a matter of priority

Recommended assigned fits

In the following table you will find the permissible fits of the clamping element and the shaft.

Table 4-1 Recommended assigned fits

| component | tolerance | surface quality |
|-----------------|---|---------------------|
| Shaft tolerance | j6 (DS 10 bis 30 mm), h6 (DS 31 bis 50 mm), g6 (DS 51 bis 500 mm) | $Ra \leq 3,2 \mu m$ |
| Bore tolerance | H6 (DS 10 bis 38 mm), H7 (DS 81 bis 500 mm) | $Ra \leq 3,2 \mu m$ |

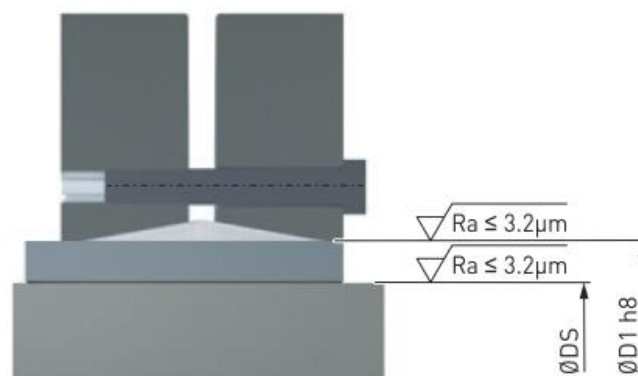


Figure 4-1 Fit assignment

4.1 Assembling the clamping element



WARNING

The design torque T_{CI} must not be exceeded at any operating point. It must be ensured that the cylinder head bolts are tightened with the tightening torques according to Table 7-1

Preparatory work

1. Make sure the surfaces to be joined are in perfect condition.
2. Reused clamping sets must be disassembled and cleaned before being used again. The conical surfaces and threads as well as the screw head contact surfaces must be greased with Molykote MoS₂.
3. Clean the contact surfaces as well as the shaft (4) and hollow shaft/hub (5).
4. the contact surface between shaft (4) and hub/hollow shaft (5) must not be oiled or greased. The contact surface between clamping set and hub/hollow shaft may be greased.
5. Place the inner ring (2) between the rear taper ring (1) and the front taper ring (3)
6. Screw the rear conical ring (1) and front conical ring (3) together without tightening the hexagon head screws (6)

Assemble

1. Position the preassembled clamping element on the hollow shaft/hub (5) and then guide both parts onto the shaft (4).
2. Tighten the hexagon head screws (6) slightly so that the clamping element can still be moved.
3. Align the clamping element on the shaft (4).
4. The shaft must fill the entire length of the clamping set.
5. Tighten the hexagon head screws (6) one after the other in several turns. The prescribed tightening torque can be found in the section Tightening torques and wrench sizes.

5 Disassembly

Procedure

1. unscrew all hexagon head screws (6) one after the other. These must not be unscrewed completely.
2. f the rear conical ring (1) and the front conical ring (3) do not loosen, apply pressure at several points around the circumference of the conical rings.
3. Remove the clamping set with the hollow shaft/hub (5) from the shaft (4). Use suitable lifting devices for this purpose.
4. Remove the clamping set from the hollow shaft/hub (5). Use suitable lifting devices for this purpose.

When reinstalling the clamping element please observe the information in the chapter Assembly (Page 10).

6 Disposal

Dispose of the clamping element parts according to applicable national regulations or recycle them.

7 Service und support

When ordering spare parts, requesting a customer service technician or in the case of technical queries, please contact our factory or one of our customer service addresses:

Flender GmbH

Schlavenhorst 100

46395 Bocholt

Deutschland

Tel.: +49 (0)2871/92-0

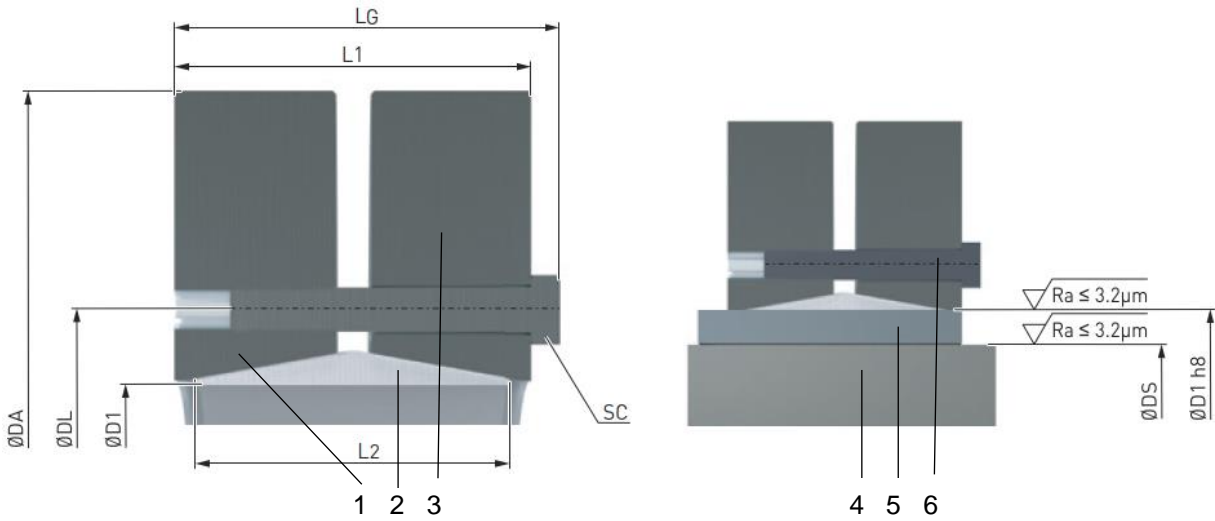
Fax.: +49 (0)2871/92-2596

Flender GmbH (<http://www.flender.com>)

A Technical data

A.1 Geometry data and tightening torques

In this section you can find dimension drawings and technical data for the Flender clamping elements.:



- 1 Rear cone ring
- 2 Inner ring
- 3 Front cone ring
- 4 Shaft
- 5 Hollow shaft/hub
- 6 Hexagon head screws

Figure 7-1 Parts overview FASTEX EC220

Table 7-1 Geometry data, weights, tightening torques

| Size | Dimensions | | | | | Limit Torque | hexagon head screw DIN EN ISO 4014 - 10.9 | | | | | Weight |
|---------------------------------|----------------|-----|----------------|----------------|----------------|----------------|---|-------------------|----------|----------------|-----------|--------|
| | | | | | | | Screw size | Tightening torque | Quantity | Screwlength | widht A/F | |
| D ₁ x D ₂ | D _s | DL | L _G | L ₁ | L ₂ | T _G | SC | T _A | | L _s | SW | m |
| mm | mm | mm | mm | mm | mm | Nm | mm | Nm | | mm | mm | kg |
| 14 x 38 | 10 | 24 | 14,5 | 11 | 9 | 28 | M5 | 3,5 | 4 | 10 | 8 | 0,1 |
| | 11 | 24 | 14,5 | 11 | 9 | 38 | M5 | 3,5 | | | | 0,1 |
| | 12 | 24 | 14,5 | 11 | 9 | 50 | M5 | 3,5 | | | | 0,1 |
| 16 x 41 | 12 | 26 | 18,5 | 15 | 11 | 50 | M5 | 4 | 5 | 14 | 8 | 0,2 |
| | 13 | 26 | 18,5 | 15 | 11 | 70 | M5 | 4 | | | | 0,2 |
| | 14 | 26 | 18,5 | 15 | 11 | 90 | M5 | 4 | | | | 0,2 |
| 18 x 44 | 14 | 29 | 18,5 | 15 | 12 | 85 | M5 | 4 | 5 | 12 | 8 | 0,2 |
| | 15 | 29 | 18,5 | 15 | 12 | 100 | M5 | 4 | | | | 0,2 |
| | 16 | 29 | 18,5 | 15 | 12 | 130 | M5 | 4 | | | | 0,2 |
| 20 x 50 | 15 | 36 | 22,5 | 19 | 14 | 130 | M5 | 4 | 6 | 18 | 8 | 0,2 |
| | 16 | 36 | 22,5 | 19 | 14 | 150 | M5 | 4 | | | | 0,2 |
| | 18 | 36 | 22,5 | 19 | 14 | 200 | M5 | 4 | | | | 0,2 |
| 24 x 50 | 19 | 36 | 22,5 | 19 | 14 | 180 | M5 | 5 | 6 | 18 | 8 | 0,2 |
| | 20 | 36 | 22,5 | 19 | 14 | 210 | M5 | 5 | | | | 0,2 |
| | 21 | 36 | 22,5 | 19 | 14 | 250 | M5 | 5 | | | | 0,2 |
| 30 x 60 | 24 | 44 | 24,5 | 21 | 16 | 310 | M5 | 6 | 6 | 18 | 8 | 0,3 |
| | 25 | 44 | 24,5 | 21 | 16 | 340 | M5 | 6 | | | | 0,3 |
| | 26 | 44 | 24,5 | 21 | 16 | 380 | M5 | 6 | | | | 0,3 |
| 36 x 72 | 28 | 52 | 27 | 23 | 18 | 460 | M6 | 12 | 5 | 20 | 10 | 0,4 |
| | 30 | 52 | 27 | 23 | 18 | 590 | M6 | 12 | | | | 0,4 |
| | 31 | 52 | 27 | 23 | 18 | 630 | M6 | 12 | | | | 0,4 |
| 44 x 80 | 32 | 61 | 29 | 25 | 20 | 630 | M6 | 12 | 7 | 22 | 10 | 0,6 |
| | 35 | 61 | 29 | 25 | 20 | 780 | M6 | 12 | | | | 0,6 |
| | 36 | 61 | 29 | 25 | 20 | 860 | M6 | 12 | | | | 0,6 |
| 50 x 90 | 38 | 70 | 31 | 27 | 22 | 940 | M6 | 12 | 8 | 22 | 10 | 0,8 |
| | 40 | 70 | 31 | 27 | 22 | 1100 | M6 | 12 | | | | 0,8 |
| | 42 | 70 | 31 | 27 | 22 | 1300 | M6 | 12 | | | | 0,8 |
| 55 x 100 | 42 | 75 | 34 | 30 | 23 | 1200 | M6 | 12 | 8 | 25 | 10 | 1,1 |
| | 45 | 75 | 34 | 30 | 23 | 1500 | M6 | 12 | | | | 1,1 |
| | 48 | 75 | 34 | 30 | 23 | 1900 | M6 | 12 | | | | 1,1 |
| 62 x 110 | 48 | 86 | 34 | 30 | 23 | 1800 | M6 | 12 | 10 | 25 | 10 | 1,3 |
| | 50 | 86 | 34 | 30 | 23 | 2200 | M6 | 12 | | | | 1,3 |
| | 52 | 86 | 34 | 30 | 23 | 2400 | M6 | 12 | | | | 1,3 |
| 68 x 115 | 50 | 86 | 34 | 30 | 23 | 2000 | M6 | 12 | 10 | 25 | 10 | 1,4 |
| | 55 | 86 | 34 | 30 | 23 | 2500 | M6 | 12 | | | | 1,4 |
| | 60 | 86 | 34 | 30 | 23 | 3100 | M6 | 12 | | | | 1,4 |
| 75 x 138 | 55 | 100 | 37,5 | 32 | 25 | 2500 | M8 | 30 | 7 | 30 | 13 | 1,8 |
| | 60 | 100 | 37,5 | 32 | 25 | 3200 | M8 | 30 | | | | 1,8 |
| | 65 | 100 | 37,5 | 32 | 25 | 3900 | M8 | 30 | | | | 1,8 |
| 80 x 145 | 60 | 100 | 37,5 | 32 | 25 | 3200 | M8 | 30 | 7 | 30 | 13 | 2,6 |
| | 65 | 100 | 37,5 | 32 | 25 | 3900 | M8 | 30 | | | | 2,6 |
| | 70 | 100 | 37,5 | 32 | 25 | 4600 | M8 | 30 | | | | 2,6 |
| 85 x 155 | 65 | 114 | 44,5 | 39 | 30 | 4800 | M8 | 30 | 10 | 35 | 13 | 4 |
| | 70 | 114 | 44,5 | 39 | 30 | 6100 | M8 | 30 | | | | 4 |
| | 75 | 114 | 44,5 | 39 | 30 | 7400 | M8 | 30 | | | | 4 |
| 90 x 155 | 65 | 114 | 44,5 | 39 | 30 | 4700 | M8 | 30 | 10 | 35 | 13 | 3,8 |
| | 70 | 114 | 44,5 | 39 | 30 | 6000 | M8 | 30 | | | | 3,8 |
| | 75 | 114 | 44,5 | 39 | 30 | 7200 | M8 | 30 | | | | 3,8 |
| 100 x 170 | 70 | 124 | 49,5 | 44 | 34 | 6900 | M8 | 30 | 12 | 35 | 13 | 4,7 |
| | 75 | 124 | 49,5 | 44 | 34 | 7500 | M8 | 30 | | | | 4,7 |
| | 80 | 124 | 49,5 | 44 | 34 | 9000 | M8 | 30 | | | | 4,7 |

| Size | Dimensions | | | | | Limit Torque | hexagon head screw DIN EN ISO 4014 - 10.9 | | | | | Weight |
|---------------------------------|----------------|-----|----------------|----------------|----------------|-----------------|---|-------------------|----------|----------------|-----------|--------|
| | | | | | | | Screw size | Tightening torque | Quantity | Screwlength | widht A/F | |
| D ₁ x D ₂ | D _S | DL | L _G | L ₁ | L ₂ | T _{Cl} | SC | T _A | | L _S | SW | m |
| mm | mm | mm | mm | mm | mm | Nm | mm | Nm | | mm | mm | kg |
| 110 x 185 | 75 | 136 | 56,5 | 50 | 39 | 7200 | M10 | 59 | 9 | 40 | 16 | 6 |
| | 80 | 136 | 56,5 | 50 | 39 | 9000 | M10 | 59 | | | | 6 |
| | 85 | 136 | 56,5 | 50 | 39 | 11000 | M10 | 59 | | | | 6 |
| 115 x 188 | 80 | 141 | 56,5 | 50 | 39 | 8500 | M10 | 59 | 9 | 40 | 16 | 5 |
| | 85 | 141 | 56,5 | 50 | 39 | 10000 | M10 | 59 | | | | 5 |
| | 90 | 141 | 56,5 | 50 | 39 | 12000 | M10 | 59 | | | | 5 |
| 120 x 215 | 80 | 160 | 58,5 | 52 | 42 | 10500 | M10 | 59 | 12 | 40 | 16 | 5,9 |
| | 85 | 160 | 58,5 | 52 | 42 | 13200 | M10 | 59 | | | | 5,9 |
| | 90 | 160 | 58,5 | 52 | 42 | 14400 | M10 | 59 | | | | 5,9 |
| 125 x 215 | 85 | 160 | 58,5 | 52 | 42 | 11000 | M10 | 59 | 12 | 40 | 16 | 8,5 |
| | 90 | 160 | 58,5 | 52 | 42 | 13000 | M10 | 59 | | | | 8,5 |
| | 95 | 160 | 58,5 | 52 | 42 | 15000 | M10 | 59 | | | | 8,5 |
| 130 x 215 | 90 | 160 | 58,5 | 52 | 42 | 13700 | M10 | 59 | 12 | 40 | 16 | 9 |
| | 95 | 160 | 58,5 | 52 | 42 | 15800 | M10 | 59 | | | | 9 |
| | 100 | 160 | 58,5 | 52 | 42 | 18200 | M10 | 59 | | | | 9 |
| 140 x 230 | 95 | 175 | 67,5 | 60 | 46 | 15000 | M12 | 100 | 10 | 45 | 18 | 11 |
| | 100 | 175 | 67,5 | 60 | 46 | 17000 | M12 | 100 | | | | 11 |
| | 105 | 175 | 67,5 | 60 | 46 | 20000 | M12 | 100 | | | | 11 |
| 155 x 265 | 105 | 192 | 71,5 | 64 | 50 | 20000 | M12 | 100 | 12 | 50 | 18 | 15 |
| | 110 | 192 | 71,5 | 64 | 50 | 23000 | M12 | 100 | | | | 15 |
| | 115 | 192 | 71,5 | 64 | 50 | 26000 | M12 | 100 | | | | 15 |
| 160 x 265 | 110 | 192 | 71,5 | 64 | 50 | 22500 | M12 | 100 | 12 | 50 | 18 | 14 |
| | 115 | 192 | 71,5 | 64 | 50 | 25500 | M12 | 100 | | | | 14 |
| | 120 | 192 | 71,5 | 64 | 50 | 28600 | M12 | 100 | | | | 14 |
| 165 x 290 | 115 | 210 | 81 | 71 | 56 | 36000 | M16 | 250 | 8 | 60 | 24 | 25 |
| | 120 | 210 | 81 | 71 | 56 | 39000 | M16 | 250 | | | | 25 |
| | 125 | 210 | 81 | 71 | 56 | 44000 | M16 | 250 | | | | 25 |
| 170 x 290 | 120 | 210 | 81 | 71 | 56 | 31700 | M16 | 250 | 8 | 60 | 24 | 24 |
| | 125 | 210 | 81 | 71 | 56 | 35800 | M16 | 250 | | | | 24 |
| | 130 | 210 | 81 | 71 | 56 | 40000 | M16 | 250 | | | | 24 |
| 175 x 300 | 125 | 220 | 81 | 71 | 56 | 40000 | M16 | 250 | 8 | 60 | 24 | 27 |
| | 130 | 220 | 81 | 71 | 56 | 44000 | M16 | 250 | | | | 27 |
| | 135 | 220 | 81 | 71 | 56 | 49000 | M16 | 250 | | | | 27 |
| 180 x 300 | 130 | 220 | 81 | 71 | 56 | 36800 | M16 | 250 | 8 | 60 | 24 | 26 |
| | 135 | 220 | 81 | 71 | 56 | 42000 | M16 | 250 | | | | 26 |
| | 140 | 220 | 81 | 71 | 56 | 46000 | M16 | 250 | | | | 26 |
| 185 x 330 | 135 | 236 | 96 | 86 | 71 | 55000 | M16 | 250 | 10 | 65 | 24 | 36 |
| | 140 | 236 | 96 | 86 | 71 | 60000 | M16 | 250 | | | | 36 |
| | 145 | 236 | 96 | 86 | 71 | 65000 | M16 | 250 | | | | 36 |
| 190 x 330 | 140 | 236 | 96 | 86 | 71 | 53300 | M16 | 250 | 10 | 65 | 24 | 35 |
| | 145 | 236 | 96 | 86 | 71 | 58500 | M16 | 250 | | | | 35 |
| | 150 | 236 | 96 | 86 | 71 | 63500 | M16 | 250 | | | | 35 |
| 195 x 350 | 140 | 246 | 96 | 86 | 71 | 66000 | M16 | 250 | 12 | 65 | 24 | 38 |
| | 150 | 246 | 96 | 86 | 71 | 76000 | M16 | 250 | | | | 38 |
| | 155 | 246 | 96 | 86 | 71 | 82000 | M16 | 250 | | | | 38 |
| 200 x 350 | 150 | 246 | 96 | 86 | 71 | 73700 | M16 | 250 | 12 | 65 | 24 | 41 |
| | 155 | 246 | 96 | 86 | 71 | 79800 | M16 | 250 | | | | 41 |
| | 160 | 246 | 96 | 86 | 71 | 85800 | M16 | 250 | | | | 41 |
| 220 x 370 | 160 | 270 | 114 | 104 | 88 | 95000 | M16 | 250 | 15 | 80 | 24 | 54 |
| | 165 | 270 | 114 | 104 | 88 | 102000 | M16 | 250 | | | | 54 |
| | 170 | 270 | 114 | 104 | 88 | 110000 | M16 | 250 | | | | 54 |

| Size | Dimensions | | | | | Limit Torque | hexagon head screw DIN EN ISO 4014 - 10.9 | | | | | Weight |
|---------------------------------|----------------|-----|----------------|----------------|----------------|-----------------|---|-------------------|----------|----------------|-----------|--------|
| | | | | | | | Screw size | Tightening torque | Quantity | Screwlength | widht A/F | |
| D ₁ x D ₂ | D _S | DL | L _G | L ₁ | L ₂ | T _{Cl} | SC | T _A | | L _S | SW | m |
| mm | mm | mm | mm | mm | mm | Nm | mm | Nm | | mm | mm | kg |
| 240 x 405 | 170 | 295 | 121,5 | 109 | 92 | 120000 | M20 | 490 | 12 | 80 | 30 | 67 |
| | 180 | 295 | 121,5 | 109 | 92 | 140000 | M20 | 490 | | | | 67 |
| | 190 | 295 | 121,5 | 109 | 92 | 160000 | M20 | 490 | | | | 67 |
| 250 x 405 | 180 | 295 | 120,5 | 108 | 92 | 160000 | M20 | 490 | 14 | 85 | 30 | 64 |
| | 190 | 295 | 120,5 | 108 | 92 | 180000 | M20 | 490 | | | | 64 |
| | 200 | 295 | 120,5 | 108 | 92 | 200000 | M20 | 490 | | | | 64 |
| 260 x 430 | 190 | 321 | 132,5 | 120 | 103 | 165000 | M20 | 490 | 14 | 90 | 30 | 82 |
| | 200 | 321 | 132,5 | 120 | 103 | 185000 | M20 | 490 | | | | 82 |
| | 210 | 321 | 132,5 | 120 | 103 | 204000 | M20 | 490 | | | | 82 |
| 280 x 460 | 210 | 346 | 146,5 | 134 | 114 | 216000 | M20 | 490 | 16 | 100 | 30 | 102 |
| | 220 | 346 | 146,5 | 134 | 114 | 245000 | M20 | 490 | | | | 102 |
| | 230 | 346 | 146,5 | 134 | 114 | 270000 | M20 | 490 | | | | 102 |
| 300 x 485 | 230 | 364 | 154,5 | 142 | 122 | 274000 | M20 | 490 | 18 | 100 | 30 | 118 |
| | 240 | 364 | 154,5 | 142 | 122 | 296000 | M20 | 490 | | | | 118 |
| | 245 | 364 | 154,5 | 142 | 122 | 316000 | M20 | 490 | | | | 118 |
| 320 x 520 | 240 | 386 | 154,5 | 142 | 122 | 311000 | M20 | 490 | 20 | 100 | 30 | 131 |
| | 250 | 386 | 154,5 | 142 | 122 | 340000 | M20 | 490 | | | | 131 |
| | 260 | 386 | 154,5 | 142 | 122 | 375000 | M20 | 490 | | | | 131 |
| 330 x 520 | 250 | 386 | 154,5 | 142 | 122 | 352000 | M20 | 490 | 22 | 100 | 30 | 126 |
| | 260 | 386 | 154,5 | 142 | 122 | 385000 | M20 | 490 | | | | 126 |
| | 270 | 386 | 154,5 | 142 | 122 | 420000 | M20 | 490 | | | | 126 |
| 340 x 570 | 250 | 408 | 168,5 | 156 | 134 | 389000 | M20 | 490 | 24 | 110 | 30 | 186 |
| | 260 | 408 | 168,5 | 156 | 134 | 422000 | M20 | 490 | | | | 186 |
| | 270 | 408 | 168,5 | 156 | 134 | 459000 | M20 | 490 | | | | 186 |
| 350 x 580 | 270 | 432 | 174,5 | 162 | 140 | 443000 | M20 | 490 | 24 | 110 | 30 | 195 |
| | 280 | 432 | 174,5 | 162 | 140 | 480000 | M20 | 490 | | | | 195 |
| | 285 | 432 | 174,5 | 162 | 140 | 500000 | M20 | 490 | | | | 195 |
| 360 x 590 | 280 | 432 | 174,5 | 162 | 140 | 462000 | M20 | 490 | 24 | 110 | 30 | 204 |
| | 290 | 432 | 174,5 | 162 | 140 | 500000 | M20 | 490 | | | | 204 |
| | 300 | 432 | 174,5 | 162 | 140 | 530000 | M20 | 490 | | | | 204 |
| 380 x 645 | 290 | 458 | 183 | 168 | 144 | 570000 | M24 | 840 | 20 | 120 | 36 | 239 |
| | 300 | 458 | 183 | 168 | 144 | 610000 | M24 | 840 | | | | 239 |
| | 310 | 458 | 183 | 168 | 144 | 660000 | M24 | 840 | | | | 239 |
| 390 x 660 | 300 | 468 | 183 | 168 | 144 | 625000 | M24 | 840 | 21 | 120 | 36 | 260 |
| | 310 | 468 | 183 | 168 | 144 | 670000 | M24 | 840 | | | | 260 |
| | 320 | 468 | 183 | 168 | 144 | 720000 | M24 | 840 | | | | 260 |
| 400 x 680 | 315 | 480 | 183 | 168 | 144 | 671000 | M24 | 840 | 21 | 120 | 36 | 280 |
| | 320 | 480 | 183 | 168 | 144 | 695000 | M24 | 840 | | | | 280 |
| | 330 | 480 | 183 | 168 | 144 | 745000 | M24 | 840 | | | | 280 |
| 420 x 690 | 330 | 504 | 203 | 188 | 164 | 782000 | M24 | 840 | 24 | 130 | 36 | 316 |
| | 340 | 504 | 203 | 188 | 164 | 841000 | M24 | 840 | | | | 316 |
| | 350 | 504 | 203 | 188 | 164 | 902000 | M24 | 840 | | | | 316 |
| 440 x 750 | 340 | 527 | 217 | 202 | 177 | 805000 | M24 | 840 | 24 | 140 | 36 | 408 |
| | 350 | 527 | 217 | 202 | 177 | 861000 | M24 | 840 | | | | 408 |
| | 360 | 527 | 217 | 202 | 177 | 920000 | M24 | 840 | | | | 408 |
| 460 x 770 | 360 | 547 | 217 | 202 | 177 | 1000000 | M24 | 840 | 28 | 140 | 36 | 420 |
| | 370 | 547 | 217 | 202 | 177 | 1073000 | M24 | 840 | | | | 420 |
| | 380 | 547 | 217 | 202 | 177 | 1141000 | M24 | 840 | | | | 420 |
| 470 x 800 | 380 | 570 | 228 | 213 | 188 | 1214000 | M 24 | 840 | 30 | 140 | 36 | 515 |
| | 390 | 570 | 228 | 213 | 188 | 1285000 | M 24 | 840 | | | | 515 |
| | 400 | 570 | 228 | 213 | 188 | 1365000 | M 24 | 840 | | | | 515 |
| 480 x 800 | 380 | 570 | 228 | 213 | 188 | 1175000 | M24 | 840 | 30 | 140 | 36 | 505 |
| | 390 | 570 | 228 | 213 | 188 | 1250000 | M24 | 840 | | | | 505 |
| | 400 | 570 | 228 | 213 | 188 | 1312000 | M24 | 840 | | | | 505 |
| 500 x 850 | 400 | 590 | 230 | 213 | 188 | 1314000 | M27 | 1250 | 24 | 150 | 41 | 575 |
| | 410 | 590 | 230 | 213 | 188 | 1382000 | M27 | 1250 | | | | 575 |
| | 420 | 590 | 230 | 213 | 188 | 1460000 | M27 | 1250 | | | | 575 |

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[Flender GmbH](#)
Alfred-Flender-Straße 77
46395 Bocholt
Germany

flender.com

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