

FLENDER COUPLINGS

FASTEX

Compact assembly and operating instructions 3908en

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FASTEX IN110

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FASTEX IN110 Clamping elements 3908en


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.

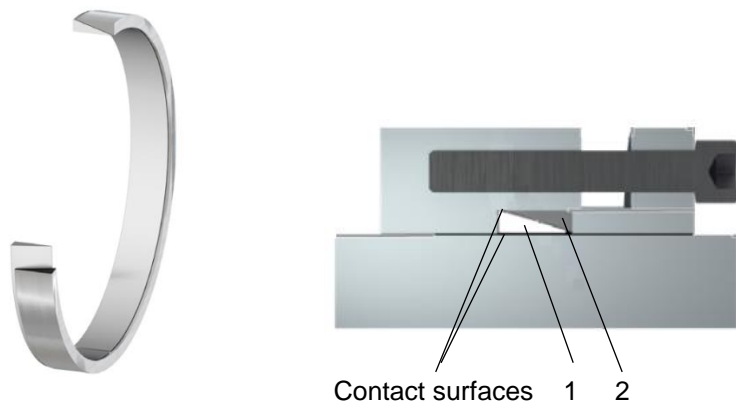
2 Description

The clamping elements described here are universally applicable, not-self-centering clamping elements whose function is the tensionally locked transmission of torque between shaft and hub.

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 14).



- 1 Inner ring
- 2 Outer ring

Figure 2-1 Construction of the clamping element FASTEX IN110

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
<p>Danger due to bursting of the assembly group</p> <p>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.</p> <ul style="list-style-type: none"> • 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	D1 ≤ 38 mm h6	D1 > 38 mm h8	Ra ≤ 1,0 μm
Bore tolerance	D2 H7	D2 H8	Ra ≤ 1,0 μm

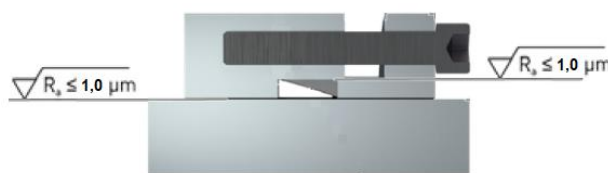


Figure 4-1 Fit assignment

4.1 Assembling the clamping element

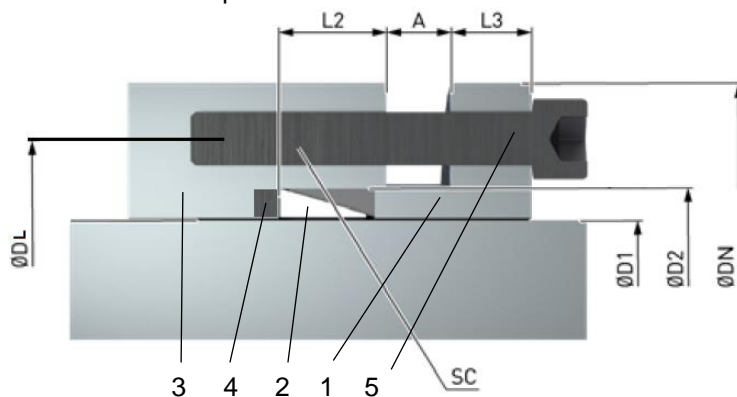


WARNING

The design torque T_{C1} 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. Clean the contact surfaces as well as the shaft and hub.
3. Slightly oil the contact surfaces. Do not use any grease or oil that contains molybdenum disulfide or other additives that significantly reduce the coefficient of friction.
4. If there is a relief stitch in the hub (3), it must be bridged with a spacer ring (4) (Figure 4-2).
5. Check the correct design of the pressure flange (Figure 4-2) using the geometric data from the appendix.
6. Determine the maximum transmittable torque if several clamping elements are positioned one after the other (Table 4-2). A maximum of 4 clamping elements are to be positioned one after the other.



$$L2 \geq 1,5 \times LG$$

$$DL = D2 + 12 + SC$$

$$L3 = SC \times 1,3 \text{ (8.8 screw)}$$

$$L3 = SC \times 1,8 \text{ (10.9 and 12.9 screw)}$$

- 3
 - 4
 - 2
 - 1
 - 5
1. Pressure flange
2. Clamping element
3. Hub
4. Spacer ring
5. Cylinder-head screw

Figure 4-2 Undercut with spacer ring, design pressure flange

Table 4-2 Calculation of max. transmittable torque with N clamping elements

1 Clamping element	$T_{max} = T_{Cl} \times 1,00$
2 Clamping elements	$T_{max} = T_{Cl} \times 1,55$
3 Clamping elements	$T_{max} = T_{Cl} \times 1,85$
4 Clamping elements	$T_{max} = T_{Cl} \times 2,02$

Assemble

1. Position the hub (3) on the shaft (4).
2. Position the preassembled clamping element (2) in the hub bore. Make sure that the clamping element can be moved easily.
3. If several clamping elements are positioned one behind the other, make sure that the inner and outer rings are correctly aligned (Figure 4-3).
4. Place the pressure flange (1) on the shaft.
5. Tighten the cylinder-head screws (5) slightly so that the clamping element can still be moved.
6. Align the clamping element on the shaft.
7. Tighten the cylinder-head screws (5) crosswise in several turns. The specified tightening torque can be found in the Tightening torques and widths A/F section. The shaft (4) must fill the complete length of the hub (3) and the pressure flange (1).

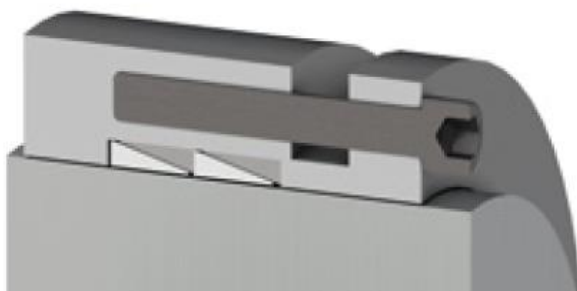


Figure 4-3 Positioning of shaft-hub connections with multiple clamping elements

5 Disassembly

Procedure

1. Loosen and remove all cylinder-head screws (5) one after the other.
2. Remove the clamping element. Use suitable lifting gear when doing this.
3. Check the hub bore and the shaft for damage and protect them against corrosion.

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.:

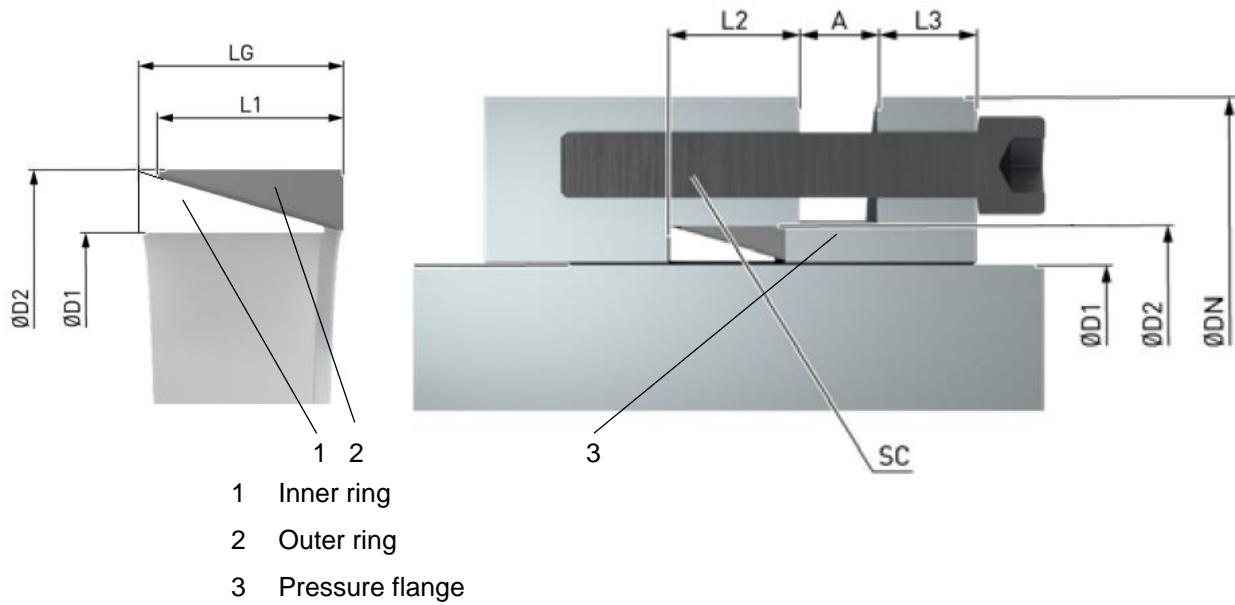


Figure 7-1 Parts overview FASTEX IN110

Table 7-1 Geometry data, weights, tightening torques

D ₁ x D ₂	L _G	L ₁	Spacing dimension A for N clamping elements				F _{Pre}	T _{Cl}	F _a	P _{SN}	P _{SW}	m	cut version one line lower
			1	2	3	4							
mm	mm	mm	mm				kN	Nm	kN	N/mm ²	N/mm ²	kg	
6 x 9	4,5	3,7	3	3	3	4	11	2	0,8	75	113	0,0015	●
6 x 9	4,5	3,7	3	3	3	4	3	2	0,8	75	113	0,0015	
7 x 10	4,5	3,7	3	3	3	4	14	4	1	84	117	0,0014	●
7 x 10	4,5	3,7	3	3	3	4	5	4	1	84	117	0,0014	
8 x 11	4,5	3,7	3	3	3	4	14	5	1	90	112	0,0015	●
8 x 11	4,5	3,7	3	3	3	4	6	5	1	90	112	0,0015	
9 x 12	4,5	3,7	3	3	3	4	16	8	1,6	95	142	0,0017	●
9 x 12	4,5	3,7	3	3	3	4	8	8	1,6	95	142	0,0017	
10 x 13	4,5	3,7	3	3	3	4	16	10	2	100	143	0,0018	●
10 x 13	4,5	3,7	3	3	3	4	9	10	2	100	143	0,0018	
11 x 14	4,5	3,7	3	3	3	4	15	10	2	95	119	0,0020	
12 x 15	4,5	3,7	3	3	3	4	15	11	2	90	110	0,0022	●
12 x 15	4,5	3,7	3	3	3	4	9	11	2	90	110	0,0022	
13 x 16	4,5	3,7	3	3	3	4	16	13	2,1	105	110	0,0023	●
13 x 16	4,5	3,7	3	3	3	4	10	13	2,1	105	110	0,0023	
14 x 18	6,3	5,3	3	4	4	5	26	22	3	90	112	0,0049	●
14 x 18	6,3	5,3	3	4	4	5	15	22	3	90	112	0,0049	
15 x 19	6,3	5,3	3	4	4	5	26	25	3	90	111	0,0053	●
15 x 19	6,3	5,3	3	4	4	5	16	25	3	90	111	0,0053	
16 x 20	6,3	5,3	3	4	4	5	25	26	3	90	102	0,0055	
17 x 21	6,3	5,3	3	4	4	5	26	30	3	90	104	0,0058	●
17 x 21	6,3	5,3	3	4	4	5	16	30	3	90	104	0,0058	
18 x 22	6,3	5,3	3	4	4	5	26	33	3	90	102	0,0061	●
18 x 22	6,3	5,3	3	4	4	5	17	33	3	90	102	0,0061	
19 x 24	6,3	5,3	3	4	4	5	32	40	4	90	111	0,0078	●
19 x 24	6,3	5,3	3	4	4	5	20	40	4	90	111	0,0078	
20 x 25	6,3	5,3	3	4	4	5	32	44	4	90	110	0,0082	
22 x 26	6,3	5,3	3	4	4	5	30	50	4	90	103	0,0072	●
22 x 26	6,3	5,3	3	4	4	5	21	50	4	90	103	0,0072	
24 x 28	6,3	5,3	3	4	4	5	34	68	6	100	118	0,0079	●
24 x 28	6,3	5,3	3	4	4	5	26	68	6	100	118	0,0079	
25 x 30	6,3	5,3	3	4	4	5	37	75	6	100	120	0,0100	●
25 x 30	6,3	5,3	3	4	4	5	28	75	6	100	120	0,0100	
28 x 32	6,3	5,3	3	4	4	5	37	90	6	100	115	0,0090	●
28 x 32	6,3	5,3	3	4	4	5	30	90	6	100	115	0,0090	
30 x 35	6,3	5,3	3	4	4	5	39	100	7	100	111	0,012	
32 x 36	6,3	5,3	3	4	4	5	42	120	7	100	117	0,01	●
32 x 36	6,3	5,3	3	4	4	5	35	120	7	100	117	0,01	
35 x 40	7	6	3	4	4	5	55	160	9	100	115	0,02	●
35 x 40	7	6	3	4	4	5	42	160	9	100	115	0,02	
36 x 42	7	6	4	5	5	6	58	170	9,5	100	116	0,02	
38 x 44	7	6	4	5	5	6	60	190	10	100	116	0,02	●
38 x 44	7	6	4	5	5	6	46	190	10	100	116	0,02	
40 x 45	8	6,6	4	5	5	6	67	230	11	100	116	0,02	●
40 x 45	8	6,6	4	5	5	6	53	230	11	100	116	0,02	
42 x 48	8	6,6	4	5	5	6	73	260	12	100	118	0,03	●
42 x 48	8	6,6	4	5	5	6	57	260	12	100	118	0,03	
45 x 52	10	8,6	4	5	5	6	106	390	17	100	119	0,05	
48 x 55	10	8,6	4	5	5	6	107	430	18	100	115	0,05	
50 x 57	10	8,6	4	5	5	6	110	470	19	100	116	0,05	●
50 x 57	10	8,6	4	5	5	6	87	470	19	100	116	0,05	
55 x 62	10	8,6	4	5	5	6	119	580	21	100	118	0,05	●
55 x 62	10	8,6	4	5	5	6	97	470	19	100	118	0,05	
56 x 64	12	10,4	4	5	5	6	151	740	24	100	120	0,07	
60 x 68	12	10,4	4	5	6	7	156	840	28	100	119	0,07	

D ₁ x D ₂	L _G	L ₁	Spacing dimension A for N clamping elements				F _{Pre}	T _{Cl}	F _a	P _{SN}	P _{SW}	m	cut version one line lower
			1	2	3	4							
mm	mm	mm	mm				kN	Nm	kN	N/mm ²	N/mm ²	kg	
63 x 71	12	10,4	4	5	6	7	160	920	29	100	118	0,08	
65 x 73	12	10,4	4	5	6	7	167	1000	30	100	121	0,08	
70 x 79	14	12,2	4	5	6	7	202	1300	38	100	115	0,11	●
70 x 79	14	12,2	4	5	6	7	171	1300	38	100	115	0,11	
71 x 80	14	12,2	4	5	6	7	212	1400	39	100	121	0,11	
75 x 84	14	12,2	4	5	6	7	218	1500	41	100	116	0,12	
80 x 91	17	15	5	6	7	8	289	2100	54	100	116	0,12	●
80 x 91	17	15	5	6	7	8	242	2100	54	100	116	0,12	
85 x 96	17	15	5	6	7	8	305	2400	57	100	117	0,20	●
85 x 96	17	15	5	6	7	8	260	2400	57	100	117	0,20	
90 x 101	17	15	5	6	7	8	319	2700	61	100	118	0,20	●
90 x 101	17	15	5	6	7	8	276	2700	61	100	118	0,20	
95 x 106	17	15	5	6	8	9	331	3000	64	100	118	0,22	
100 x 114	21	18,7	5	6	8	9	447	4200	84	100	119	0,40	●
100 x 114	21	18,7	5	6	8	9	386	4200	84	100	119	0,40	
110 x 124	21	18,7	5	6	8	9	458	4700	86	90	110	0,40	●
110 x 124	21	18,7	5	6	8	9	393	4700	86	90	110	0,40	
120 x 134	21	18,7	5	6	8	9	451	5100	88	90	100	0,50	●
120 x 134	21	18,7	5	6	8	9	391	5100	88	90	100	0,50	
130 x 148	28	25,3	6	7	9	11	669	8100	125	90	101	0,85	
140 x 158	28	25,3	6	7	9	11	707	9400	135	90	101	0,91	●
140 x 158	28	25,3	6	7	9	11	618	9400	135	90	101	0,91	
150 x 168	28	25,3	6	7	9	11	758	11000	145	90	103	0,97	
160 x 178	28	25,3	6	7	9	11	912	14500	180	105	119	1,02	●
160 x 178	28	25,3	6	7	9	11	833	14500	180	105	119	1,02	
170 x 191	33	30	7	8	10	12	1172	19500	228	105	119	1,50	
180 x 201	33	30	7	8	10	12	1194	21200	235	105	116	1,60	
180 x 201	33	30	7	8	10	12	1083	21200	235	105	116	1,60	
190 x 211	33	30	7	9	10	12	1272	24100	250	110	118	1,70	
200 x 224	38	34,5	7	9	11	13	1558	31000	310	105	118	2,30	●
200 x 224	38	34,5	7	9	11	13	1425	31000	310	105	118	2,30	
210 x 234	38	34,5	7	9	11	13	1659	35000	332	109	121	2,50	
220 x 244	38	34,5	7	9	11	13	1709	38000	344	108	120	2,50	●
220 x 244	38	34,5	7	9	11	13	1588	38000	344	108	120	2,50	
230 x 257	43	39,5	7	9	12	14	1744	39500	242	90	100	3,40	
240 x 267	43	39,5	7	9	12	14	1960	47000	391	99	110	3,50	●
240 x 267	43	39,5	7	9	12	14	1800	47000	391	99	110	3,50	
250 x 280	48	44	8	10	13	16	2100	52000	415	90	100	4,70	●
250 x 280	48	44	8	10	13	16	2100	52000	415	90	100	4,70	
260 x 290	48	44	8	10	13	16	2178	56500	435	90	100	4,80	●
260 x 290	48	44	8	10	13	16	2000	56500	435	90	100	4,80	
270 x 300	48	44	8	10	13	16	2250	61000	450	90	100	4,90	
280 x 313	53	49	9	11	14	17	2586	72500	518	90	100	6,30	●
280 x 313	53	49	9	11	14	17	2380	72500	518	90	100	6,30	
290 x 323	53	49	9	11	14	17	2678	77500	534	90	100	6,50	
300 x 333	53	49	9	11	14	17	2758	83000	553	90	100	6,70	
320 x 360	65	59	10	15	20	25	3566	114000	719	89	100	10,90	●
320 x 360	65	59	10	15	20	25	3275	114000	719	89	100	10,90	
340 x 380	65	59	10	15	20	25	3749	128500	778	89	100	11,50	
360 x 400	65	59	10	15	20	25	3938	144000	800	87	100	12,20	●
360 x 400	65	59	10	15	20	25	3677	144000	800	87	100	12,20	
380 x 420	65	59	10	15	20	25	4139	160000	845	90	100	12,80	●
380 x 420	65	59	10	15	20	25	3871	160000	845	90	100	12,80	
400 x 440	65	59	10	15	20	25	4347	178000	890	91	100	13,50	●
400 x 440	65	59	10	15	20	25	4095	178000	890	91	100	13,50	

$D_1 \times D_2$	L_G	L_1	Spacing dimension A for N clamping elements				F_{Pre}	T_{Cl}	F_a	P_{SN}	P_{SW}	m	cut version one line lower
			1	2	3	4							
mm	mm	mm	mm				kN	Nm	kN	N/mm ²	N/mm ²	kg	
420 x 460	65	59	10	15	20	25	4534	196000	933	91	100	14,10	
440 x 480	65	59	10	15	20	25	4726	215000	977	92	100	14,70	
460 x 500	65	59	10	15	20	25	4920	235000	1022	92	100	15,30	
480 x 520	65	59	10	15	20	25	5141	256000	1070	92	100	16,00	
500 x 540	65	59	10	15	20	25	5340	278000	1112	93	100	16,60	

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