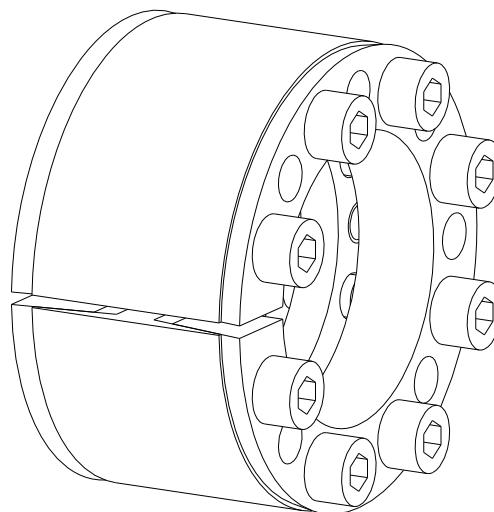



CLAMPEX® KTR 401



The **CLAMPEX® clamping set** is a frictionally engaged, detachable shaft-to-shaft connection for cylindrical shafts and bores without feather key.

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1 Technical data

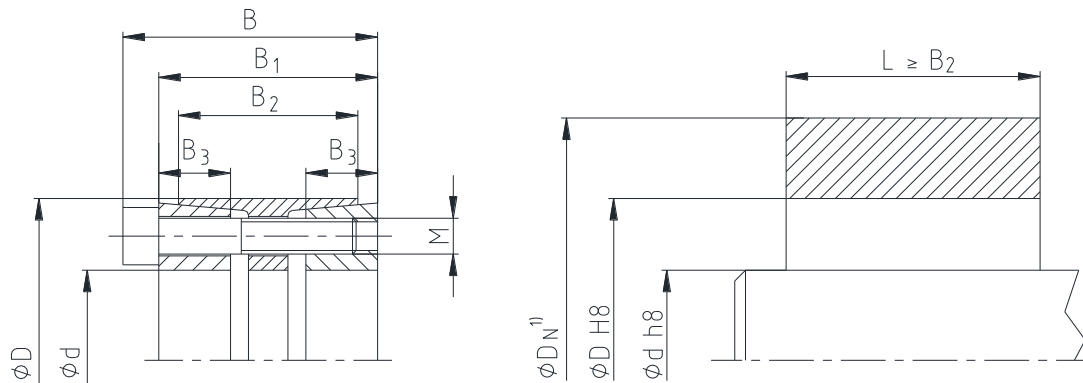


Illustration 1: CLAMPEX® KTR 401

Table 1:

Dimensions [mm]					Clamping screws DIN EN ISO 4762 – 12.9 $\mu_{total} = 0.12$			Transmittable torque or axial force		Surface pressure between clamping set [N/mm ²]		Weight ~ kg
d x D	B	B ₁	B ₂	B ₃	M x l	z quantity	T _A [Nm] ²⁾	T [Nm]	F _{ax} [kN]	Shaft P _w	Hub P _N	
70 x 110	72	62	50	20	M10x50	8	83	7270	207	197	125	2.30
75 x 115	72	62	50	20	M10x50	8	83	7780	207	183	120	2.40
80 x 120	72	62	50	20	M10x50	10	83	10350	258	214	143	2.50
85 x 125	72	62	50	20	M10x50	10	83	11000	258	202	137	2.70
90 x 130	72	62	50	20	M10x50	11	83	12800	284	210	145	2.80
95 x 135	72	62	50	20	M10x50	11	83	13500	284	198	140	2.90
100 x 145	84	72	60	24	M12x60	10	145	19400	388	214	148	4.00
110 x 155	84	72	60	24	M12x60	10	145	21400	389	195	139	4.40
120 x 165	84	72	60	24	M12x60	11	145	25600	426	196	143	4.70
130 x 180	94	82	65	27	M12x70	14	145	35400	544	206	149	6.30
140 x 190	94	82	65	27	M12x70	15	145	40800	582	205	151	6.70
150 x 200	94	82	65	27	M12x70	15	145	43700	582	191	143	7.10
160 x 210	94	82	65	27	M12x70	16	145	49800	622	191	146	7.60
170 x 225	107	93	78	32	M14x80	15	230	67500	794	194	146	10.50
180 x 235	107	93	78	32	M14x80	15	230	71500	794	183	140	11.00
190 x 250	119	105	88	38	M14x80	16	230	80500	847	156	118	14.20
200 x 260	119	105	88	38	M14x80	18	230	95000	950	166	128	14.80
220 x 285	127	111	96	41	M16x90	15	355	119000	1081	159	123	19.10
240 x 305	127	111	96	41	M16x90	20	355	173500	1445	195	153	20.50
260 x 325	127	111	96	41	M16x90	21	355	197500	1519	189	151	28.20
280 x 355	131	111	96	38	M20x90	15	690	236000	1685	210	166	27.60
300 x 375	131	111	96	38	M20x90	15	690	270000	1800	209	168	29.40
320 x 405	156	136	124	48	M20x110	20	690	360000	2250	194	154	43.30
340 x 425	156	136	124	48	M20x110	20	690	382000	2247	183	146	45.80
360 x 455	177	155	140	57.5	M22x130	20	930	501000	2783	178	141	63.70
380 x 475	177	155	140	57.5	M22x130	20	930	529000	2784	169	135	66.80
400 x 495	177	155	140	57.5	M22x130	22	930	613000	3065	177	143	69.80
420 x 515	177	155	140	57.5	M22x130	24	930	702000	3342	184	150	72.70
440 x 535	177	155	140	57.5	M22x130	24	930	735000	3340	175	144	75.90
460 x 555	177	155	140	57.5	M22x130	24	930	769000	3343	168	139	76.80
480 x 575	177	155	140	57.5	M22x130	25	930	835000	3479	167	140	82.20
500 x 595	177	155	140	57.5	M22x130	25	930	870000	3480	161	135	85.40
520 x 615	177	155	140	57.5	M22x130	28	930	1014000	3900	173	146	88.00
540 x 635	177	155	140	57.5	M22x130	28	930	1053000	3900	167	142	90.80
560 x 655	177	155	140	57.5	M22x130	30	930	1170000	4178	172	147	92.80
580 x 675	177	155	140	57.5	M22x130	30	930	1210000	4172	166	143	95.60
600 x 695	177	155	140	57.5	M22x130	30	930	1250000	4166	160	138	98.40

¹⁾ Dimension D_N: For calculation of hub see catalogue "Drive Technology"

²⁾ These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the figures specified, with T, F_{ax}, P_w and P_N declining proportionally.

Please observe protection note ISO 16016.	Drawn:	2016-09-09 Shg/Jh	Replacing:	KTR-N dated 2016-06-01
	Verified:	2016-09-09 Shg	Replaced by:	



1 Technical data

Tolerances, surfaces

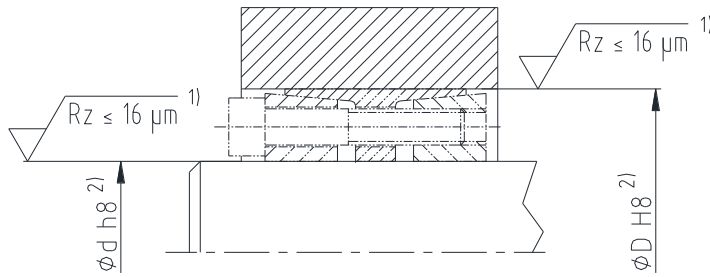


Illustration 2: Tolerances and surfaces

- 1) One proper turning process is sufficient ($Rz \le 16 \mu m$).
- 2) Highest permissible tolerance of the hub or shaft.

2 Advice

2.1 General advice

Please read through these operating/assembly instructions carefully before you mount the clamping set. Please pay special attention to the safety instructions!
The operating/assembly instructions are part of your product. Please store them carefully and close to the clamping set. The copyright for these operating/assembly instructions remains with KTR.

2.2 Safety and advice symbols



Warning of potentially explosive atmospheres

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death caused by explosion.



Warning of personal injury

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death.



Warning of product damages

This symbol indicates notes which may contribute to preventing material or machine damage.



General advice

This symbol indicates notes which may contribute to preventing adverse results or conditions.

2.3 General hazard warnings



With assembly and disassembly of the clamping set it has to be made sure that the entire drive train is secured against accidental switch-on. You may be seriously hurt by rotating parts. Please make absolutely sure to read through and observe the following safety indications.

- All operations on and with the clamping set have to be performed taking into account "safety first".
- Please make sure to switch off the power pack before you perform your work on the clamping set.
- Secure the power pack against accidental switch-on, e. g. by providing warning signs at the place of switch-on or removing the fuse for current supply.
- Do not reach into the operation area of the machine as long as it is in operation.
- Please secure the rotating drive components against accidental contact. Please provide for the necessary protection devices and covers.

Please observe protection note ISO 16016.	Drawn:	2016-09-09 Shg/Jh	Replacing:	KTR-N dated 2016-06-01
	Verified:	2016-09-09 Shg	Replaced by:	

2 Advice

2.4 Intended use

You may only assemble and disassemble the clamping set if you

- have carefully read through the operating/assembly instructions and understood them
- had technical training
- are authorized by your company

The clamping set may only be used in accordance with the technical data (see chapter 1). Unauthorized modifications on the clamping set are not admissible. We will not assume liability for any damage that may arise. In the interest of further development we reserve the right for technical modifications.

The clamping set described in here corresponds to the technical status at the time of printing of these operating/assembly instructions.

3 Storage, transport and packaging

3.1 Storage

The clamping sets are supplied in preserved condition and can be stored at a dry and covered place for 6 - 9 months.



**Humid storage rooms are not suitable.
Please make sure that condensation is not generated.**

3.2 Transport and packaging



In order to avoid any injuries and any kind of damage please always make use of proper transport and lifting equipment.

The clamping sets are packed differently each depending on size, quantity and kind of transport. Unless otherwise contractually agreed, packaging will follow the in-house packaging specifications of KTR.

4 Assembly

Generally the clamping set is supplied in mounted condition. Before assembly the clamping set has to be inspected for completeness.

4 Assembly

4.1 Components of clamping set CLAMPEX® KTR 401

Component	Quantity	Description
1	1	Front pressure ring
2	1	Rear pressure ring
3	1	External ring
4	see table 1	Cap screw DIN EN ISO 4762 - 12.9

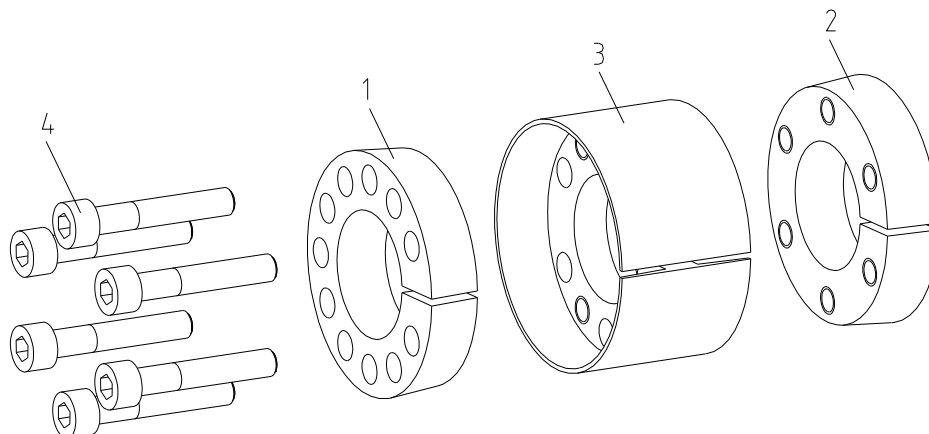


Illustration 3: CLAMPEX® KTR 401



Before assembly of the clamping set make sure that the slots of components 1, 2 and 3 are flush.

4.2 Advice on clamping set



Provide for some space between the rear pressure ring and shaft/hub for reason of subsequent disassembly.

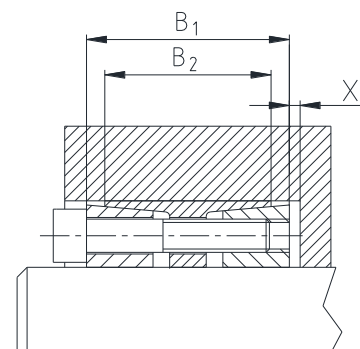


Illustration 4: Space for disassembly

Formula to calculate the space x for disassembly:

$$x = \frac{(B_1 - B_2)}{2}$$

Figures for B₁ and B₂ see table 1.

**4 Assembly****4.3 Assembly of the clamping set**

Dirty or used clamping sets have to be disassembled and cleaned before assembly. Afterwards apply thin fluid oil lightly (e. g. Ballistol Universal oil or Klüber Quietsch-Ex).

- Inspect the fit of shaft and hub for the tolerance specified (illustration 2).
- Clean the surfaces of the clamping set marked in illustration 5 as well as of shaft and hub and afterwards apply thin fluid oil lightly (e. g. Ballistol Universal oil or Klüber Quietsch-Ex).



Illustration 5: Cleaning and lubricating the surfaces



Oils and greases with molybdenum disulphide or other high-pressure additives, additives of Teflon and silicone as well as internal lubricants reducing the coefficient of friction significantly must not be used. When mounting the tapers of the clamping set free from oil the tabular and calculated parameters deviate.

- Unscrew the clamping screws by several revolutions so that the pressure rings lightly detach from the external ring.
- To facilitate the assembly fasten the front and rear pressure ring by two clamping screws each via the pull-off threads (see illustration 6 and 7). Afterwards insert the clamping set KTR 401 between shaft and hub.

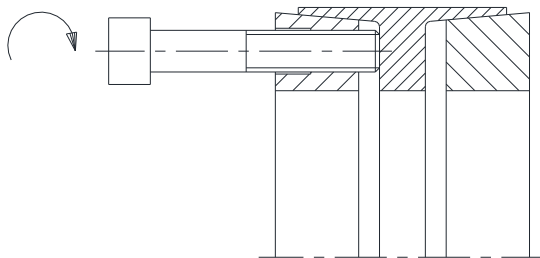


Illustration 6: Fastening the front pressure ring

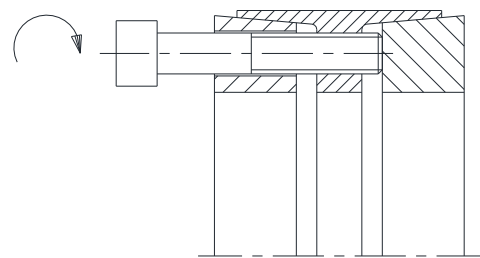


Illustration 7: Fastening the rear pressure ring

- Remove the pressure screws used for fastening and screw them into the thread of the rear pressure ring (component 2).
- Hand-tighten the clamping screws for the time being and align the internal clamping ring along with the hub.
- With KTR 401 make sure that the pressure rings are in parallel with one another and have an angle of 90° versus the shaft/hub.
- Tighten the clamping screws evenly crosswise step by step and with several revolutions to the tightening torque specified in table 1. Repeat this process until all clamping screws have reached the tightening torque.



During assembly the hub is lightly displaced axially versus the shaft.

**4 Assembly****4.4 Disassembly of clamping set**

Driving components released or falling down may cause injury to persons or damage on the machine.

Secure the driving components before disassembly.

- Untighten and unscrew all clamping screws evenly and one after another.
- Screw the clamping screws into the pull-off threads of the front pressure ring (component 1) and the pull-off threads of the external ring (component 3) (see illustration 8 and 9).
- Tighten the clamping screws evenly crosswise. Increase the pull-off torque stepwise until the front pressure ring (component 1) and external ring (component 3) as well as the rear pressure ring (component 2) and external ring are separated.
- Take out the clamping set released between shaft and hub.

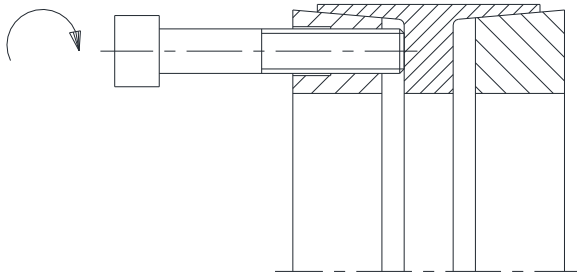


Illustration 8: Unscrewing the front pressure ring

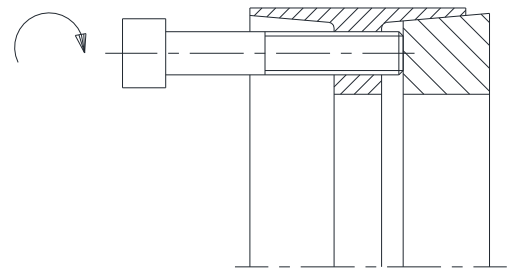


Illustration 9: Unscrewing the rear pressure ring



If these hints are not observed or operating conditions are not taken into account with the selection of the clamping set, the operation of the clamping set may be affected.



Used clamping sets have to be disassembled and cleaned before assembly. Afterwards apply thin fluid oil lightly (e. g. Ballistol Universal oil or Klüber Quietsch-Ex).

5 Disposal

In respect of environmental protection we would ask you to dispose of the packaging or products on termination of their service life in accordance with the legal regulations and standards that apply, respectively.

All clamping sets consist of metal. Any metal components have to be cleaned and disposed of by scrap metal.

6 Spares inventory, customer service addresses


A basic requirement to ensure the operational readiness of the drive components is a stock of some clamping sets on site.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage at www.ktr.com.



KTR does not assume any liability or warranty for the use of spare parts and accessories which are not provided by KTR and for the damages which may incur as a result.



7 Advice regarding the use in  hazardous locations according to EU directive 2014/34/EU

If used in hazardous locations the type and size of the clamping set (for category 3 only) has to be selected such that the difference between the peak torque of the machine including all operating parameters and the rated torque of the clamping hub at least corresponds to a safety factor of $s = 2$.

CLAMPEX® clamping sets are not part of EU directive 2014/34/EU, since

- this product is a torsionally rigid, backlash-free, frictionally engaged connection with one or more taper clamping ring(s) by means of several screws.
(Clamping screws have to be secured, e. g. by means of a medium strength adhesive.)
- due to the design of clamping sets a fracture/failure is not likely (frictional heat is only caused by improper assembly/tightening torques, i. e. not with intended use).