Technical Documentation

QUADRO® - Collet Chuck

Dead Length Collet Chuck for NC and CNC lathes

with short taper mount acc. DIN 55026/27
or cylindrical flange acc. DIN 6353
for steel collets or Rubber-Flex® collets acc. DIN 6343

Content:

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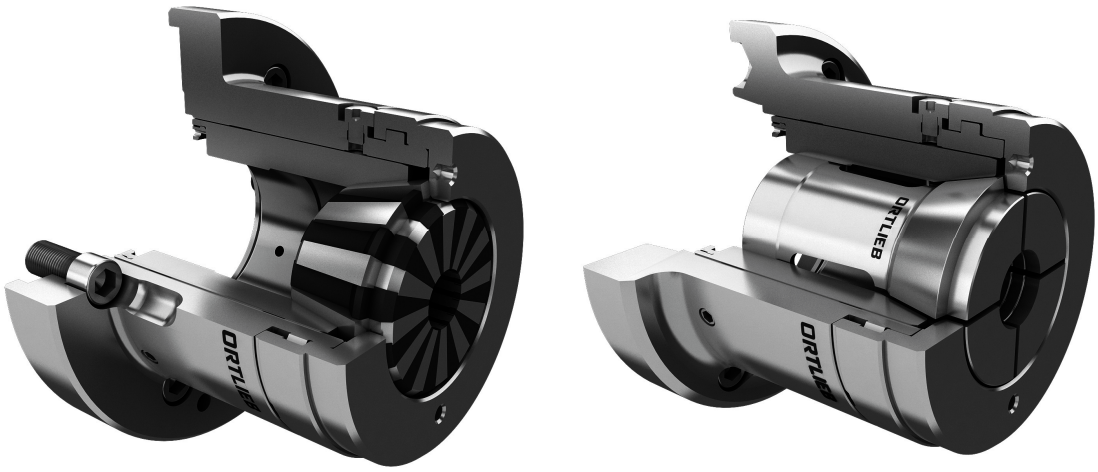
1 General



1.1 Introduction

This manual helps you to operate your Ortlieb product safely and to avoid potential dangers and risks

→ Please read this manual and the safety instructions before initial operation.

This technical documentation includes all files and data for initial operation, maintenance and service of your Ortlieb product. Ortlieb Präzisionssysteme GmbH & Co. KG does not guarantee any accountability for damages and operational disturbances, occurred by disregarding several issues.

Ortlieb Präzisionssysteme GmbH & Co. KG reserves the right for technical changes to increase the product usability and to improve quality. No accountability on print errors.

Please mind the regulations for the prevention of industrial accidents besides the indexed safety instructions while initial operation, operation and maintenance. Observing these regulations and advices avoids damages to persons, machines and to this Ortlieb product.

1.2 Guarantee

Products of Ortlieb Präzisionssysteme GmbH & Co. KG are produced according to national and international standards as well as company standards, supervised by a certified quality assurance.

For those products Ortlieb Präzisionssysteme GmbH & Co. KG assumes liability in the manner that parts with material or production defects proven within 12 month after purchasing were repaired free-of-charge, replaced by new ones or taken back to the charged price.

In the event of improper assembly and operation, use of non-original spare parts, unauthorized modifications to our product we shall assume no liability for personal injury or damage to machinery and our product.

We shall assume no liability for damage of any type resulting from the removal of safety devices. We take the initial start-up of our products on appropriate and technically flawless machines by qualified and continuous trained personal for granted.

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1.3 Intended Use

Use the collet chucks only for the intended use. Insufficiently clamped tools or work-pieces, failure to comply „safety and accident prevention regulations“, and the use of work-pieces and our products on machines that are not intended for this propose, can result in personal injury and damages to the clamping devices. In this case, we shall assume no liability. Do not apply force during assembly, disassembly and operation; this could damage the clamping device or the machine.

1.4 Initial start-up

A function check is implicitly before initial operation of the collet chuck. To ensure a safe and precise operation of the collet chuck during machining, a sufficient clamping force must be provided. Check the clamping force.

The collet chuck, especially the function surfaces must be clean and lubricated sufficiently.

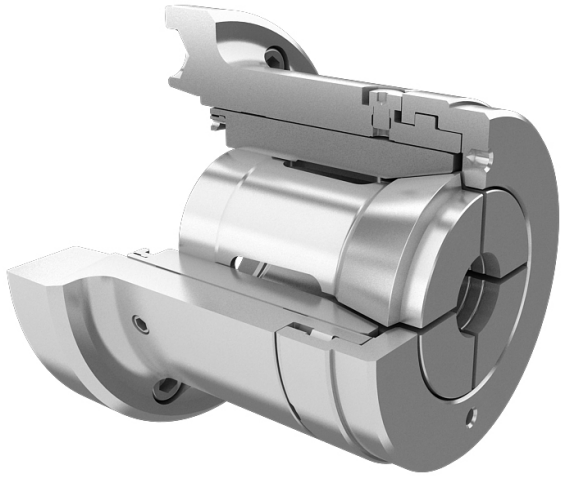
Never exceed the axial and radial forces specified on the chuck. Pay attention to the max. RPM. Check the clamping force regularly!

Do not operate the chuck without a bayonet nut mounted. The safety screw to prevent rotation to the pressure sleeve might get damaged.

Tighten screws with the torque shown in the table below:

	8.8		10.9		12.9	
	F [kN]	M [Nm]	F [kN]	M [Nm]	F [kN]	M [Nm]
M6	10	12	12	14	14	16
M8	16	24	24	35	28	40
M10	26	45	38	75	45	77
M12	38	77	56	128	65	135
M14	52	125	75	182	90	215
M16	72	190	106	314	123	330
M20	117	430	116	615	194	720
M24	168	743	238	1060	280	1240

2 Product description



QUADRO® Dead length collet chucks

The main range of application of the QUADRO® dead length collet chucks are NC / CNC-machines, lathes, special machines etc. The clamping pressure is hydraulically transferred by a pressure tube on the pressure sleeve.

The high quality-standard and the universal range of application are reasons that QUADRO® - dead length collet chucks are counting to the first class products in the clamping technology.

Your benefit:

- No axial movement of workpieces due to clamping by pressure
- It is possible to use Rubber-Flex® collets as well as steel collets acc. DIN 6343.
- Short changeover time for collet change due to bayonet nut
- It is possible to change to vibration-free twin-chucking system with Rubber-Flex® collets.

On request we are modifying the dead length collet chucks according to your special clamping application. Contact us for additional information!

Of course we are pleased to produce the adapter for your machine. Please send us your spindle dimensions.

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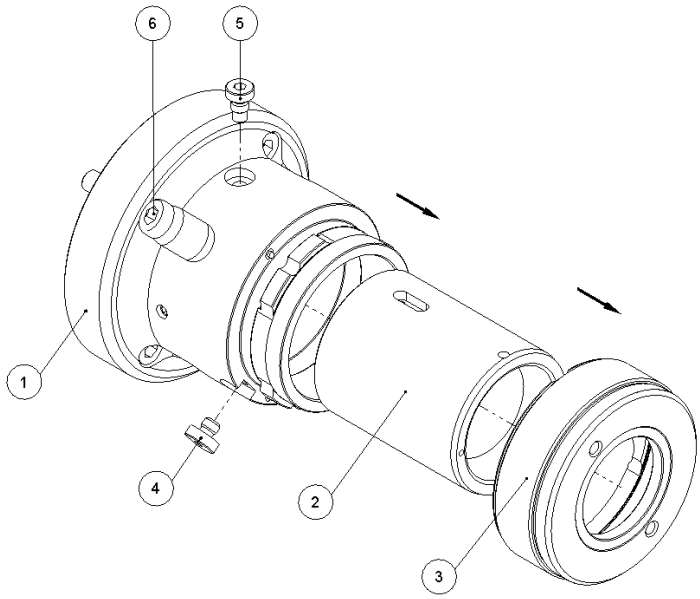
2.1 Component-overview



Components

1 – chuck body

2 – pressure sleeve

3 – bayonet nut

4 – nut-lock screw

5 – safety screw

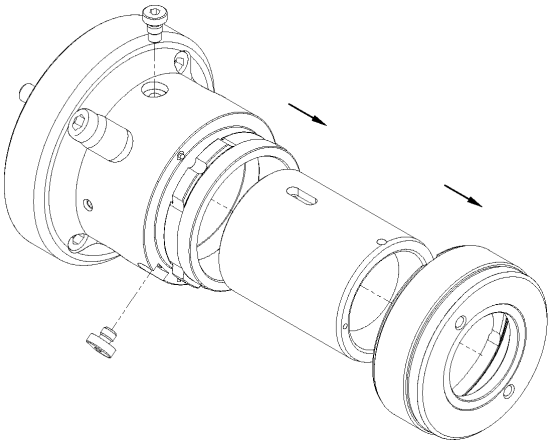
6 – mounting screws

2.2 Technical Data

Type	Art. Nr.	Fmax	rpm	Kg	Collet
KSFB 26/4	036.000.2.157	15 kN	6000 1/min	4,2 Kg	161E
KSFB 30/4	036.000.2.159	15 kN	6000 1/min	4,2 Kg	163E
KSFB 40/5	036.000.2.161	25 kN	6000 1/min	6,0 Kg	173E
KSFB 40/6	036.000.2.163	25 kN	6000 1/min	6,5 Kg	173E
KSFB 60/6	036.000.2.165	30 kN	5000 1/min	11,0 Kg	185E
KSFB 60/8	036.000.2.167	30 kN	5000 1/min	14,0 Kg	185E
KSFB 80/8	036.000.2.169	35 kN	4000 1/min	19,0 Kg	193E
KSFB 26/100	036.000.2.171	15 kN	6000 1/min	4,2 Kg	161E
KSFB 30/100	036.000.2.173	15 kN	6000 1/min	4,2 Kg	163E
KSFB 40/88	036.000.2.185	25 kN	6000 1/min	5,5 Kg	173E
KSFB 40/140	036.000.2.175	25 kN	6000 1/min	5,5 Kg	173E
KSFB 60/115	036.000.2.186	30 kN	5000 1/min	9,0 Kg	185E
KSFB 60/170	036.000.2.177	30 kN	5000 1/min	11,5 Kg	185E
KSFB 60/220	036.000.2.179	30 kN	5000 1/min	15,5 Kg	185E

2.3 Mounting instructions

1.

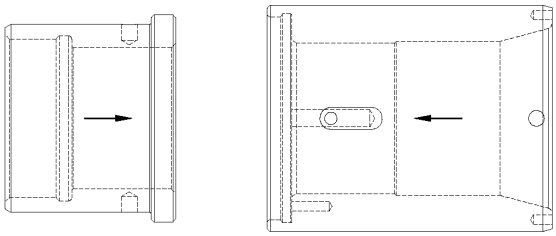


- Disassemble the collet chuck (1)

- Mount the adaptor to the pressure sleeve (glue with thread glue) (2)

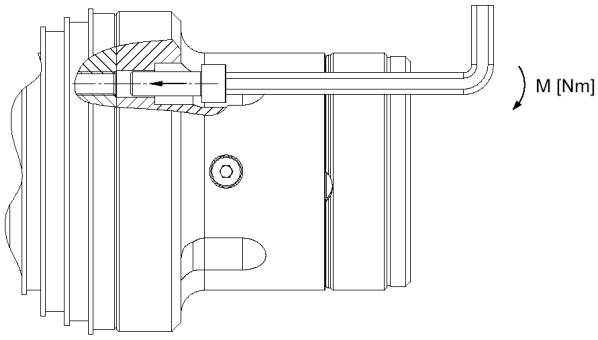
- Drive pressure tube to the front position
- Mount the chuck body to the machine spindle. Check run-out (TIR). Adjust, if necessary.
- Mind the proper toque! (3)

2.



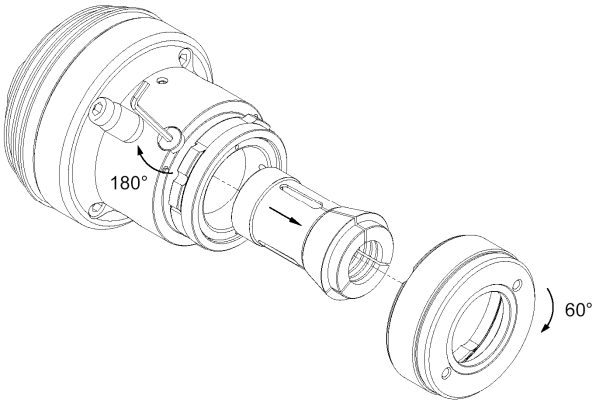
size	class 8.8		class 12.9	
	F [kN]	M [Nm]	F [kN]	M
M6	10	12	14	16
M8	16	24	28	40
M10	26	45	45	77
M12	38	77	65	135
M14	52	125	90	215
M16	72	190	123	330

3.



- Mount the pressure sleeve with the adapter to the pressure tube
- Drive pressure tube in rear position
- Mount the safety screws
- Insert collet (4)

4.



- Attach the bayonet nut and turn it about 60° till it locks
- Tighten the nut-lock screw

→ The chuck is now ready for operation.

→ Do not operate the chuck without a bayonet nut mounted. The safety screw to prevent rotation to the pressure sleeve might get damaged.

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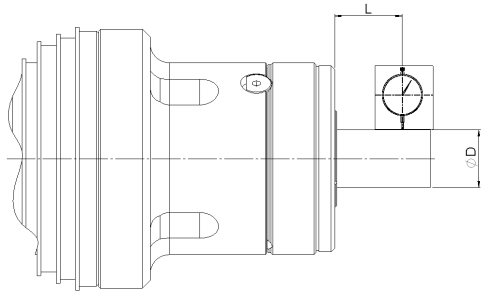
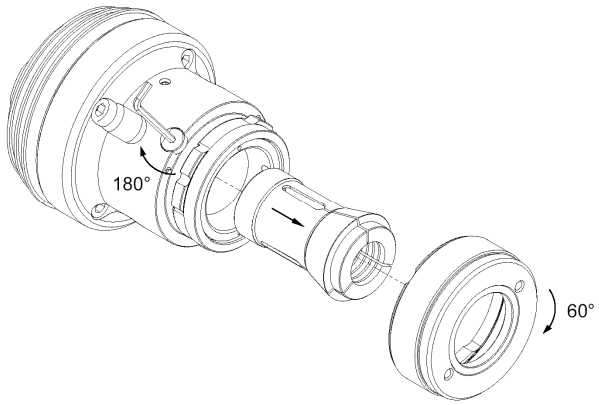
2.4 Check run-out

To provide best possible run-out results, it is necessary to adjust the clamping device. Therefore loose the mounting screws between chuck and machine spindle. Check the TIR with a dial indicator in the taper of the pressure sleeve. After adjusting the chuck, do not forget to retighten the mounting screws with the proper torque.

TIR-check acc. DIN 6343



2.5 Change the collet



- Loose nut-lock screw about 180°
- Turn bayonet nut about 60°
- Remove collet
- Clean the collet-carrier, regrease slightly
- Insert collet
- Attach the bayonet nut, make sure it locks
- Retighten the nut-lock screw

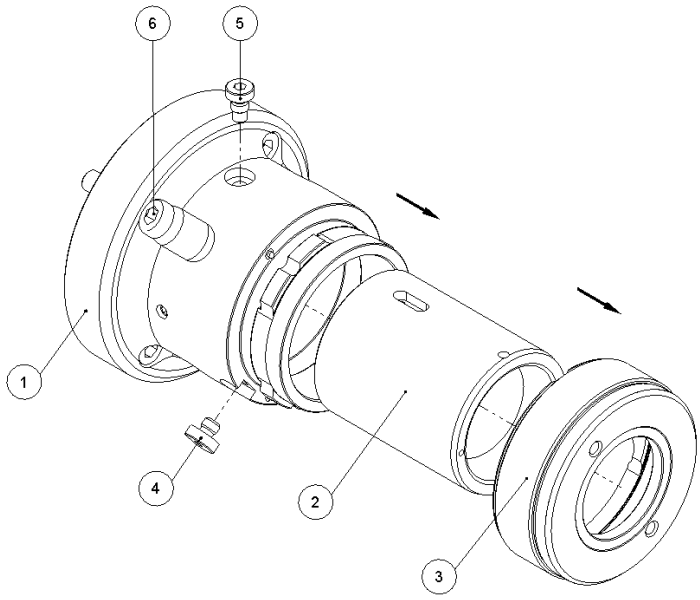
→ Important:

Please pay attention to a clean collet-carrier, free of dirt and chips, especially when the collet is changed. Only use intact, clean and slightly greased collets. Before operation, make sure the nut-lock screw is tightened and the bayonet nut cannot get loose!

→ Do not operate the chuck without a bayonet nut mounted. The safety screw to prevent rotation to the pressure sleeve might get damaged.

3 Accessory

3.1 Spare parts



Components

1 – chuck body

2 – pressure sleeve

3 – bayonet nut

4 – nut-lock screw

5 – safety screw

6 – mounting screws

Type	Art. Nr.	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6
KSFB 26/4	036.000.2.157	036.117/1	036.097/0	036.111/2	036.118/1	036.118/0	3x M10
KSFB 30/4	036.000.2.159	036.117/1	036.092/0	036.110/2	036.118/1	036.118/0	3x M10
KSFB 40/5	036.000.2.161	036.170/1	036.065/01	036.179/0	036.118/1	036.020/0	4x M10
KSFB 40/6	036.000.2.163	036.171/1	036.065/01	036.179/0	036.118/1	036.020/0	4x M10
KSFB 60/6	036.000.2.165	036.134/0	036.066/01	036.135/0	036.118/1	036.020/1	4x M12
KSFB 60/8	036.000.2.167	036.172/0	036.066/01	036.135/0	036.118/1	036.020/1	4x M16
KSFB 80/8	036.000.2.169	036.260/1	036.228/1	036.208/0	036.118/1	036.020/2	4x M16
KSFB 26/100	036.000.2.171	036.215/1	036.097/0	036.111/2	036.118/1	036.118/0	3x M10
KSFB 30/100	036.000.2.173	036.215/1	036.092/0	036.110/2	036.118/1	036.118/0	3x M10
KSFB 40/88	036.000.2.185	036.416/6	036.065/01	036.179/0	036.118/1	036.020/0	6x M8
KSFB 40/140	036.000.2.175	036.174/1	036.065/01	036.179/0	036.118/1	036.020/0	3x M10
KSFB 60/115	036.000.2.186	036.416/7	036.066/01	036.135/0	036.118/1	036.020/1	8x M8
KSFB 60/170	036.000.2.177	036.175/1	036.066/01	036.135/0	036.118/1	036.020/1	6x M12
KSFB 60/220	036.000.2.179	036.182/1	036.066/01	036.135/0	036.118/1	036.020/1	6x M16

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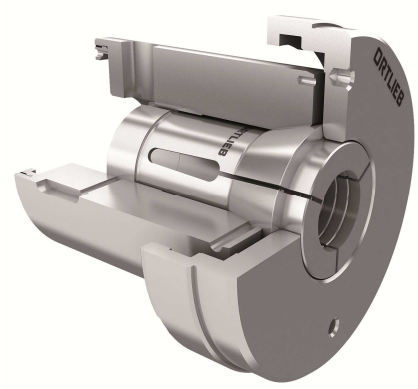
3.2 Reduction parts

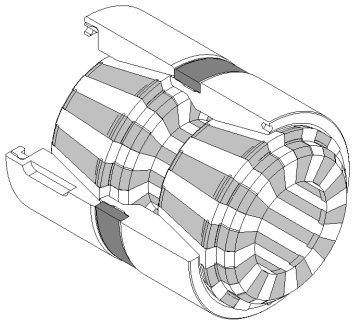
The reduction parts allow the use of smaller Rubber-Flex® collets or steel collets acc. DIN 6343 in the same chuck body. Your require a suitable pressure sleeve and bayonet nut..



	Collet		sleeve	bayonet nut
KSFB 30	161E	RFC 20	036.111/0	036.111/2
	163E	RFC 24	036.110/0	036.110/2
KSFB 40	161E	RFC 20	036.072/0	036.179/2
	163E	RFC 24	036.073/0	036.214/0
	173E	RFC 36	036.010/0	036.179/0
KSFB 60	173E	RFC 36	036.012/1	036.136/0
	177E	-	036.378/0	036.304/2
	185E	RFC 52	036.012/0	036.135/0
KSFB 80	173E	RFC 36	036.013/5	036.208/2
	185E	RFC 52	036.013/4	036.208/1
	193E	-	036.013/0	036.208/0

3.3 Twin-chucking

Two Rubber-Flex® collets RFC 36 or RFC 52 behind each other guarantee maximum vibration-free chucking of bar material. Furthermore, twin-chucking is absorbing vibrations during operation. The clamping length is 90 mm respective 110 mm! Twin-chucking is recommended with increasing diameters and higher machining forces.



chuck	Rubber-Flex®		Sleeve
KSFB 40	Rubber-Flex®	RFC 36	036.014/0
KSFB 60	Rubber-Flex®	RFC 52	036.015/0

4 General Safety Instructions

1. Safety requirements to machines

- Operation of the machine spindle is only allowed, when the clamping pressure and clamping force is in the acceptable range.
- Do not rotate the spindle without a workpiece clamped.
- On a breakdown of the clamping power a signal must stop the machine spindle and the workpiece has to be clamped till a complete stop of the spindle.
- After a power breakdown and on return of the power, a changing over must not occur.
- During operation, the spindle and the clamped workpiece must be secured by a safety facility.
- The opening of the safety doors is only possible if the machine spindle stands still.
- All operations and maintenance to the spindle and the tool-gripper are only allowed if the spindle stands still.
- Do not operate the chuck without a bayonet nut mounted. The safety screw to prevent rotation to the pressure sleeve might get damaged.

2. Operation cylinders, machine spindles

To operate the collet chucks, please use only appropriate cylinders according the safety and accident preventions regulations. Mounting the collet chuck to a spindle with an existing operating cylinder, make sure that the clamping power is sufficient to clamp the workpiece and the maximum clamping force is not exceeded! Connection parts and adapters must be designed to endurance strength. Set and check the limit switch to check the stroke before initial operation.

3. Operating data

The allowed operating data, maximum clamping force and maximum revolutions shown on the technical data sheet (Technical Data p.7) may not be exceeded. The minimum clamping force depends on cutting rates.

4. Tools

Please use solely suitable steel collets and Rubber-Flex® collets according DIN 6343, matching your chuck (see: Technical Data p.7).

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5. Residual risks

The system machine tool – collet chuck – workpiece is mainly influenced by the properties of the tool (shape, weight, unbalance, material, etc.) as well as the cutting parameters which can cause residual risks. Those remaining dangers must be considered by the worker and eliminated by appropriate means.

6. Maintenance

Accurate and regularly maintenance (quarter annually) increases the natural life of the QUADRO® dead length collet chuck. Please keep the following advices:

- Clean the chuck frequently, especially when changing the collet.
- Make sure the collet-carrier is clean and free of dirt and chips. Dirt reduces the runout accuracy and reduces the clamping force.
- Slightly greased collets increase the clamping force and reduce wear
- Do not use polar or ester-containing solvents to clean the spindle and the collet chuck. Sealings and the rubber-bonded parts could be damaged.
- Avoid cleaning with compressed-air gun.
- On disassembly, check for cracks and other damages. Renew, if necessary.
- After a crash, a complete check is essential. You will find spare parts on page 10.
- Replace damaged parts only by original spare-parts. Otherwise guarantee is expired.
- Store the collet chuck clean and protect it from dust or similar influences. Spray it slightly with anti-corrosion agent. Choose a dry place to store.

→ To provide longterm function and accuracy, depending on application conditions, it is necessary to disassemble the chuck and to clean it completely. Check all parts for cracks or damages. Regrease before reassembly.

→ Remember that your chuck should operate precisely and reliably.

5 Troubleshooting

Below, you will find some of the most frequently asked questions. If an error cannot be eliminated with the methodes below, please contact your technical support team. Always name the accurate article-number and the description in case of questions or re-order.

Problem	Possible cause	Remedy
Radial runout fault to the workpiece	Chuck is not adjusted properly or soiled	Adjust the chuck with a dial indicator. Mind to tighten the mounting screws after adjusting
Axial runout fault to the workpiece	Dirt on the front plane to the spindle	Unmount the chuck, clean, mount and readjust
Shape-fault to the workpiece	Workpiece is elastic deformed during clamping	Reduce clamping force, pay attention to cutting force
Markings on the clamping surface	Punctual or linear workpiece clamping	Wide difference between clamping diameter and collet bore. Eventually rework or regrind the collet bore
Too low clamping force	Wrong collet	Mount suitable collet
	Soiled collet chuck	Disassemble the chuck, clean parts and check for damages. Reassemble and regrease.
	Low hydraulics pressure	Check the pressure to your operating cylinder. Check for leaks. Increase pressure
	Damaged operation cylinder	Check operating cylinder for leaks and damages. Replace sealings.
Workpiece not clamped properly	Wrong swiching position	Clamping occurs on pushing. Swich machine control to: „I.D. clamping“
	Pressure sleeve got loose, relocation of clamping position	Make sure, the safety screw is mounted and not damaged.

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6 Assembly declaration

for an incomplete machine (acc. machine directive 2006/42/EG)

Name of the company and producer:

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The **QUADRO® Dead length collet chuck** is described as a incomplete machine according article 2g of the machine directive and designated only to be mounted into or with an other machine or equipment.

The following fundamental safety and health-protection requirements according attachment 1 of the machine directive were used, are valid and adhered:

Nr. 1.1.3, Nr. 1.3.2, Nr. 1.5.4, Nr. 1.6.1

The following standards (or extracts of these standards) are used:

DIN 55026/27, DIN 6352, DIN 6343

The start-up of this product is forbidden until it is proven, that the machine in which the above named incomplete machine is mounted to conforms the regulations according the machine directive 2006/42/EG.

The special technical documentations according attachment VII part B have been complied. The producer obligates to provide these documentations in written form to public authorities if their request is justified.

Only the management of Ortlieb Präzisionssysteme GmbH & Co. KG, represented by Mr. Dirk Laubengeiger, is authorized to comply the relevant technical documents according attachment VIII B to this product

Zell unter Aichelberg,

Dirk Laubengeiger, CEO

7 Shipping data

Article-No.: .....

Serial No.: .....

Delivery date: .....

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