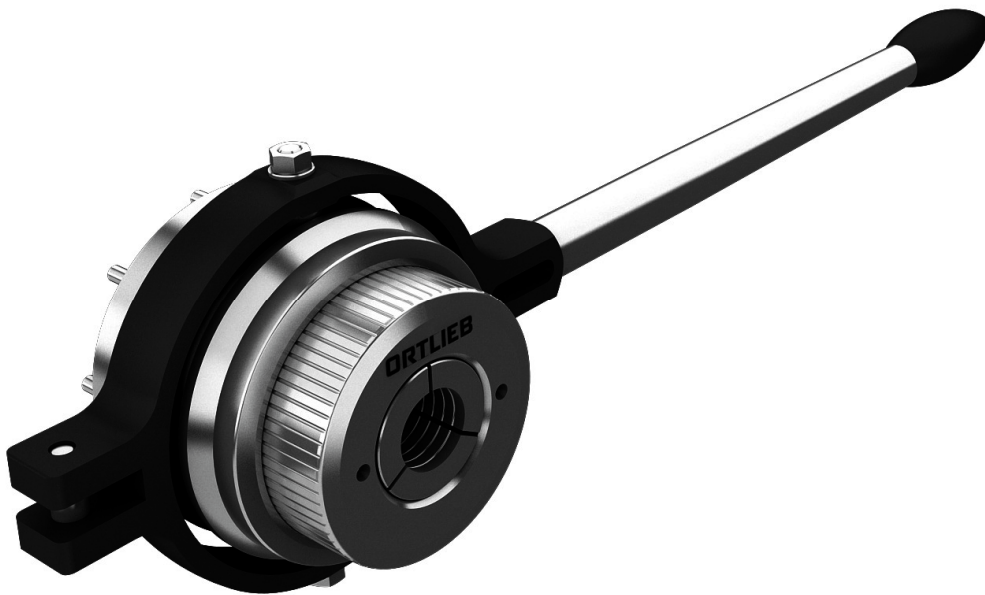


Technical Documentation



Lever-operated Chuck

Lever-operated dead-length collet chuck for lathes

With short taper mount acc. 55026/27/29
or cylindrical flange acc. DIN 6353
for steel collets or Rubber-Flex® collets acc. DIN 6343

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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. General

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.

1. General

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.

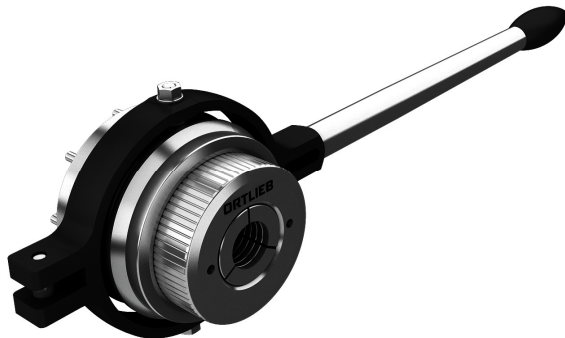
Never exceed the axial and radial forces specified on the chuck. Pay attention to the max. RPM. Check the clamping force regularly!

Avoid pressure to the lever during operation. The bearing jaws and the curve rollers run hot and get damaged quickly.

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



Lever-operated chuck SSF

This collet chuck is especially designed for machines without an operating cylinder. Usually, the clamping force is initiated manually to the lever. On larger production series, the chuck can be automated by a lever, operated by a compressed air cylinder.

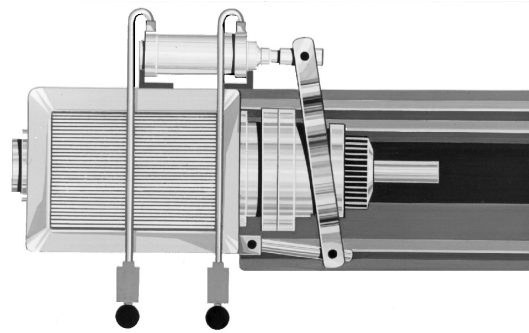
Function:

The lever pushes the exterior sleeve axial to the front. Thereby, the operating force is transmitted via ball-bearing balls onto the interior pressure sleeve which closes the collet. Clamping occurs with a self-locking effect. Avoid pressure to the lever during operation of the chuck (rotation). The bearing jaws and the curve rollers run hot and get damaged quickly which increases wear.

Your benefit:

- Designated to machines without an operating cylinder, also intended as clamping device on indexing tables.
- 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.
- With the use of Rubber-Flex® RFC collets, workpiece-diameter tolerances of 0.7 mm can be equalized without adjusting the cap.
- Automatable by the use of a pneumatic cylinder

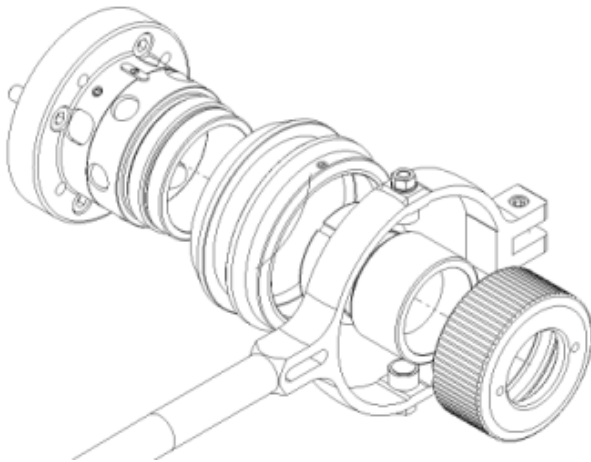
On request we are modifying the lever-operated chucks according to your special clamping application. Contact us for additional information!



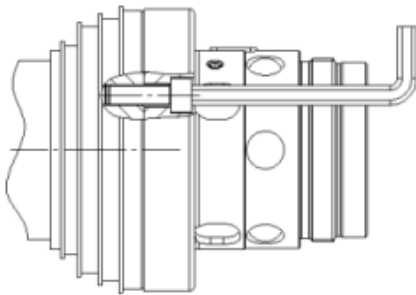
3. Mounting instructions

3 Mounting instructions

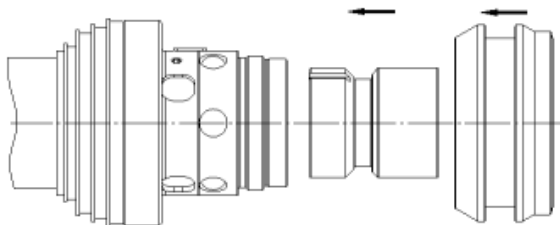
1.



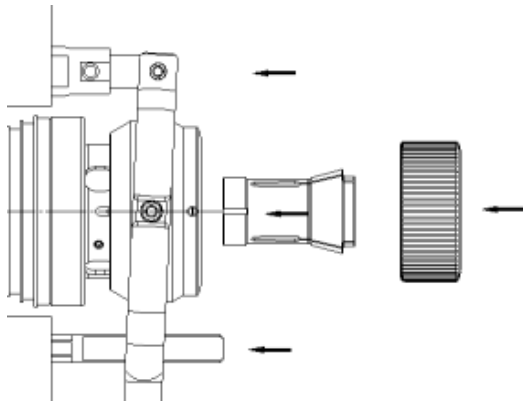
2.



3.



4.



- Disassemble the chuck (1)
(Lever, cap, sleeve)
- Pay attention Do not loose any ball-bearing balls!
- Mount the main body onto the spindle nose.
Check run-out (2)
(See:Check run-out p.9).

- Mind the proper torque! (3)

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

- Insert the pressure sleeve, (3)
attach all ball-bearing balls; move the sleeve over the main body
 - Mount the swivel joint yoke and bolt to the machine. Attach the lever to the sleeve and connect it to the joint bar
 - Insert collet, then mount the cap
(→Change the collet p.9)
- The collet chuck is now ready for operation

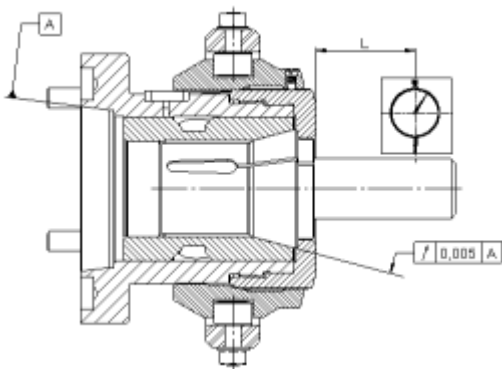
→ Avoid pressure to the lever during operation of the chuck (rotation). The bearing jaws and the curve rollers run hot and get damaged quickly.

3. Mounting instructions

3.1 Check run-out

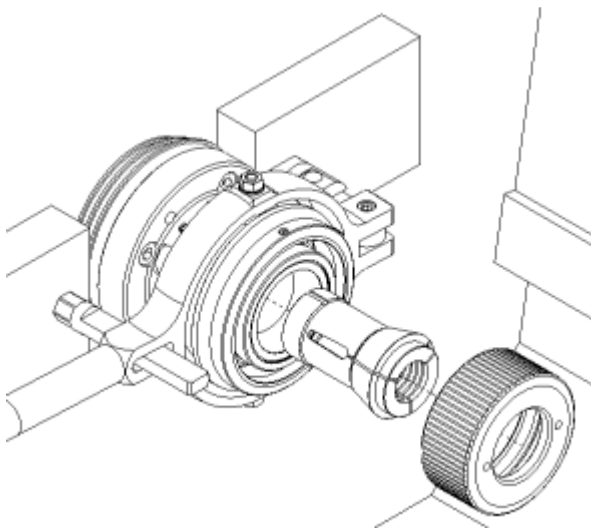
To provide best possible run-out results, it is necessary to adjust the clamping device. Therefore loose the mounting screws between chuck and machine spindle. Check the TIR with a dial indicator in the taper of the pressure sleeve. After adjusting the chuck, do not forget to retighten the mounting screws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

TIR-check acc. DIN 6343



Clamping diameter	length	Standard	High-
ØD [mm]	L [mm]	accuracy	accuracy
4 - 6	16	0,020	0,015
6 - 10	25	0,020	0,015
10 - 18	40	0,020	0,015
18 - 24	50	0,030	0,020
24 - 30	60	0,030	0,020
30 - 50	80	0,040	0,030
50 - 65	100	0,040	0,030

3.2 Change the collet



- Move lever in release position (rear)
- Remove the cap
- Remove the collet
- Clean the collet carrier, regrease slightly
- Insert collet
- Screw the cap onto the main body up to the back-stop
- Check clamping; eventually turn the cap in reverse direction
(cap is locked by a detent)

→ Important:

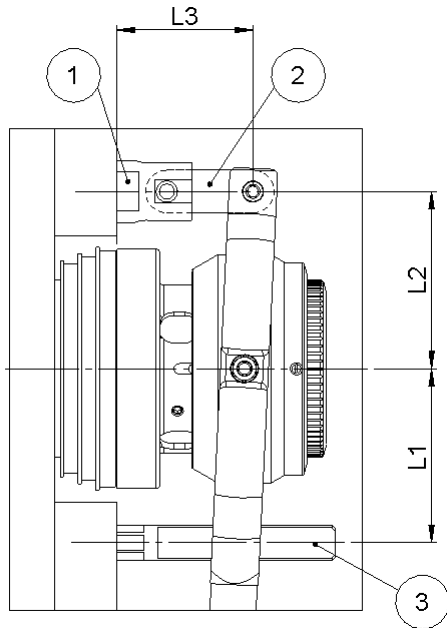
Please pay attention to a clean collet-carrier, free of dirt and chips, especially when the collet is changed. Only use intact, clean and slightly greased collets. Before operation, make sure the cap is locked by the detent!

3. Mounting instructions

3.3 Installation measures

To swivel the lever in the machine, further parts are required. Because of the fact, that different planes are used in different machines, those parts are **not** included.

→ Swivel joint yoke (Pos.1), joint bar (Pos.2) bolt (Pos.3) on request



Type	L1	L2	L3
SSF 30/5	85	75	64
SSF 40/5	98	100	73
SSF 40/6	98	100	76
SSF 60/6	113	102	78
SSF 60/8	113	102	81
SSF 16z	-	55	34
SSF 20z	71,5	62	47
SSF 30z	85	75	51
SSF 40z	98	100	61
SSF 60z	113	102	65
SSF 80z	127	120	65

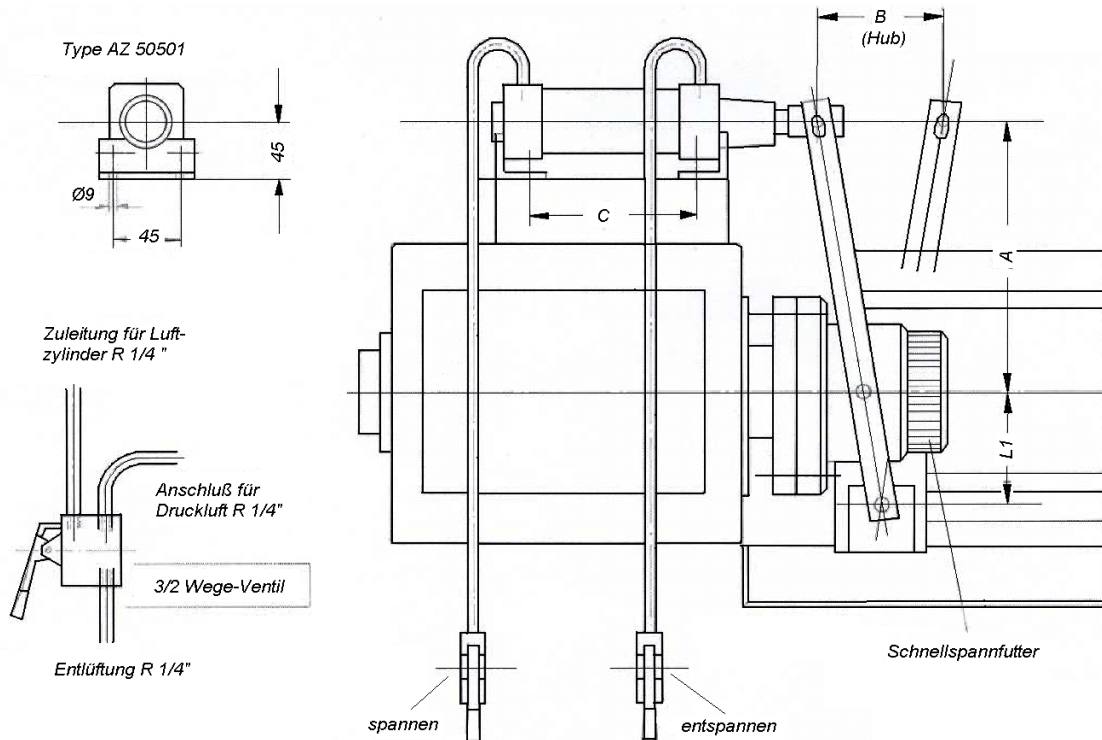
→ We are pleased to offer all the connection parts you need to mount the chuck to your machine.

Please contact us!

4. Pneumatic operation

4 Pneumatic operation

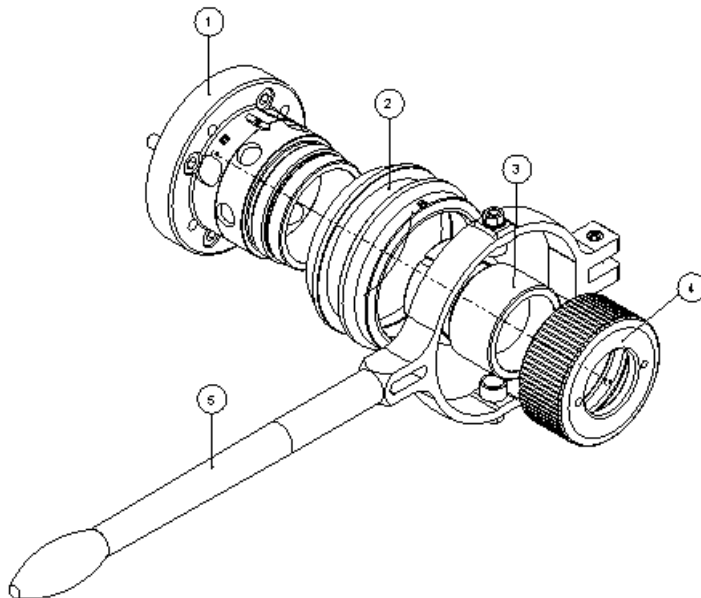
In case of larger production series, it is strongly recommended to replace the manual lever by a lever with a pneumatic cylinder.



Type	A	B (stroke)	C	L1	pressure	cylinder	valve
SSF 16	120	50	148	55	4 bar	DZ 1050-100	3/2-way-valves
	150	58			3 bar		
	175	68			2 bar		
SSF 20	175	68	62	62	5 bar	piston-Ø50 mm stroke 100mm force 5bar = 0,9 kN	Type K9 314 RF-1/8
	200	80			4 bar		
	225	90			3 bar		
SSF 30	200	80	75	75	5 bar	DZ 1050-160	
	225	90			4 bar		
	250	100			3 bar		
SSF 40	225	90	100	100	5 bar		
	250	100			4 bar		
	300	115			3 bar		
SSF 60	300	115	208	102	5 bar		
	350	135			4 bar		
SSF 80	350	135		120	5 bar		

5 Accessories

5.1 Spare parts



Components

- 1 – main body
- 2 – sleeve
- 3 – pressure sleeve
- 4 – cap
- 5 – lever

Type	Art. Nr.	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5
SSF 30/5	SSF 30-05	SSF30-05/1	BSK1475/2	BSK1475/3	BSK1475/4	BSK1475/8
SSF 40/5	SSF 40-05	SSF40-05/1	BSK1476/2	BSK1476/3	BSK1476/4	BSK1476/8
SSF 40/6	SSF 40-06	SSF40-06/1	BSK1476/2	BSK1476/3	BSK1476/4	BSK1476/8
SSF 60/6	SSF 60-06	SSF60-06/1	BSK1477/2	BSK1477/3	BSK1477/4	BSK1477/8
SSF 60/8	SSF 60-08	SSF60-08/1	BSK1477/2	BSK1477/3	BSK1477/4	BSK1477/8
SSF 16Z	SSF 16	SSF16/1	BSK1473/2	BSK1473/3	BSK1473/4	BSK1473/8
SSF 20Z	SSF 20	SSF20/1	BSK1474/2	BSK1474/3	BSK1474/4	BSK1474/8
SSF 30Z	SSF 30	SSF30/1	BSK1475/2	BSK1475/3	BSK1475/4	BSK1475/8
SSF 40Z	SSF 40	SSF40/1	BSK1476/2	BSK1476/3	BSK1476/4	BSK1476/8
SSF 60Z	SSF 60	SSF60/1	BSK1477/2	BSK1477/3	BSK1477/4	BSK1477/8
SSF 80Z	SSF 80	SSF80/1	BSK735/2	BSK735/3	BSK735/4	BSK 735/8

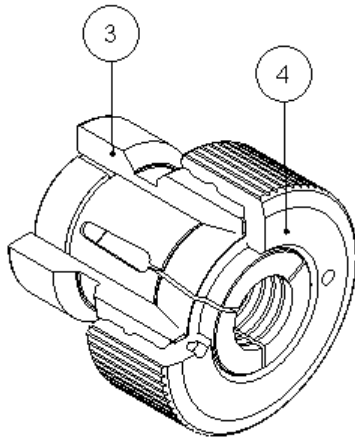
The chucks type SSF16 – SSF30 have bearing jaws to transfer the force from the lever to the sleeve. The chucks type SSF40 and larger use curve rollers. The maximum allowed RPM of the chuck is limited by the max. RPM of the curve rollers.

Please note, the shown levers in the table refer to the standard.

→ If you need higher allowed revolutions, contact us. We have a special design using bearing jaws with ceramic pins!

5.2 Reduction parts

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



	collet		Pos. 3	Pos. 4
SSF 16	140E	RFC 12	BSK1473/3	BSK1473/4
SSF 20	148E	RFC 18	BSK1474/3	BSK1474/4
SSF 30	163E	RFC 24	BSK1475/3	BSK1475/4
SSF 40	161E	RFC 20	BSK1476S6/3	BSK1473S20/4
	163E	RFC 24	BSK1476S6/3	BSK1476S5/4
	173E	RFC 36	BSK1476/3	BSK1476/4
SSF 60	171E	-	BSK1777S4/3	BSK1477S6/4
	173E	RFC 36	BSK1477/5	BSK1477/6
	185E	RFC 52	BSK1477/3	BSK1477/4
SSF 80	173E	RFC 36	BSK735/13	BSK735/14
	185E	RFC 52	BSK735/15	BSK735/16
	193E	-	BSK735/3	BSK735/4

5.3 Variants

Besides the standards several varieties are possible::

- Chucks with cylindrical flange acc. DIN 6353
- Chucks with short taper mount acc. DIN 55026
- Chucks with short taper mount and stud bolts DIN 55027
- Chucks with short taper mount and camlock bolts DIN 55029

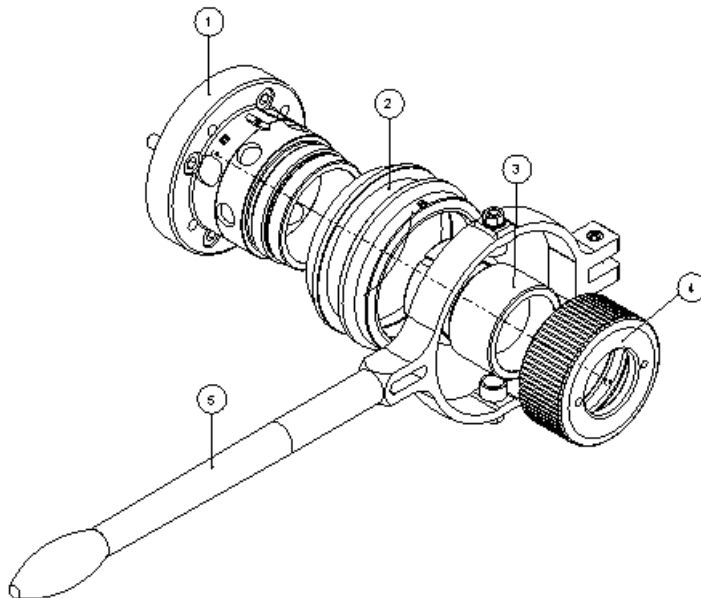
- Chucks with shorter lever
- Chucks with lever for pneumatic operation

- Chucks with bronze bearing jaws
- Chucks with curve rollers
- Chucks with bearing jaws with ceramic pins

On request we are modifying the lever-operated chucks according to your special clamping application. Contact us for additional information!

6 Technical data

6.1 Component overview



Components

- 1 – main body
- 2 – sleeve
- 3 – pressure sleeve
- 4 – cap
- 5 – lever

Type	Art. Nr.	Fmax	rpm	Kg	collet
SSF 30/5	SSF 30-05	10 kN	4000 1/min	7,0 Kg	163E
SSF 40/5	SSF 40-05	10 kN	4000 1/min	8,0 Kg	173E
SSF 40/6	SSF 40-06	10 kN	4000 1/min	8,5 Kg	173E
SSF 60/6	SSF 60-06	10 kN	3000 1/min	10,0 Kg	185E
SSF 60/8	SSF 60-08	10 kN	3000 1/min	10,5 Kg	185E
SSF 16z	SSF 16	10 kN	5000 1/min	2,2 Kg	140E
SSF 20z	SSF 20	10 kN	5000 1/min	3,2 Kg	148E
SSF 30z	SSF 30	10 kN	4000 1/min	4,5 Kg	163E
SSF 40z	SSF 40	10 kN	4000 1/min	8,0 Kg	173E
SSF 60z	SSF 60	10 kN	3000 1/min	11,0 Kg	185E
SSF 80z	SSF 80	10 kN	2500 1/min	12,5 Kg	193E

The chucks type SSF16 – SSF30 have bearing jaws to transfer the force from the lever to the sleeve. The chucks type SSF40 and larger use curve rollers. The maximum allowed RPM of the chuck is limited by the max. RPM of the curve rollers.

Please note, the shown levers in the table refer to the standard.

→ If you need higher allowed revolutions, contact us. We have a special design using bearing jaws with ceramic pins!

6.2 Safety advices

- To change the collet, remove the nut (4). Clean the thread of the cap (4) before reassembly. The detent in the sleeve (2) prevents the cap (4) from getting loose during operation
- The bearing jaws (curved rollers) were held by two screws in the lever (5). Avoid pressure during operation of the chuck (rotation). Also leaning against the lever is not allowed because the jaws / rollers run hot and get damaged.
- Regrease / lubricate the bearing jaws regularly through the lubrication boring in the screw.
- Too much oiling is wrong because gratuitous oil is centrifuged during operation.

6.3 Maintenance advices

- It is strongly recommended to clean the chuck regularly (quarter annually) Therefore remove the cap (4), disassemble the sleeve (5) with the bearing jaws and the lever and wash properly.
- Usually, dirt cannot penetrate between main body (1) and pressure sleeve (3). But it is recommended to wash out used grease and to regrease. Should the pressure sleeve (3) been taken apart, remove the pin first.
- On reassembly, make sure all ball-bearing balls are surrounded with grease.
- Do not apply force during disassembly or reassembly!
All components are hardened and grinded.
- The sleeve (2) has two notches. One of these notches must fit to the flat key in the main body.

Special:

- The chuck type SSF 30 and larger use curved rollers instead of bearing jaws.
- If higher revolutions are demanded, we can provide you with bearing jaws with ceramic pins.
Contact us!

7 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. (Operating with a pneumatic cylinder)
- 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.
- Make sure, that during operation no force impacts on the lever. A lever under pressure increases friction between the chuck and the bearing jaws which leads to increased wear and the chuck runs hot and gets damaged.
- Regrease / lubricate the bearing jaws / curved rollers regularly.

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 (see: Technical data p.14) may not be exceeded. The minimum clamping force depends on cutting rates.

4. Collets

Please use solely suitable steel collets and Rubber-Flex® collets according DIN 6343, matching your chuck (see: Technical data p.14).

7. General Safety Instructions

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® lever-operated 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 run-out 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 12.
 - 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 long-term 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.

8 Troubleshooting

Below, you will find some of the most frequently asked questions. If an error cannot be eliminated with the methods 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 run-out 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 run-out 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 pneumatic pressure	Check the pressure to your operating cylinder. Check for leaks. Increase pressure
	Wrong adjustment of the cap	Check clamping by turning the cap.
Workpiece not clamped properly	Wrong switching position	Clamping occurs on pushing. Switch machine control to: „I.D. clamping“
	Pressure sleeve got loose, relocation of clamping position	Make sure, the safety screw is mounted and not damaged.

9. Assembly declaration

9 Assembly declaration

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

Name of the company and producer:

Ortlieb Präzisionssysteme GmbH & Co. KG
Jura Str. 11
73119 Zell u. Aichelberg – Germany
Phone: +49 (0) 7164 79701 0
FAX: +49 (0) 7164 79701 51

The **QUADRO® lever-operated 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, Geschäftsführer

10. Shipping data

10 Shipping data

Article-No.:

Serial No.:

Delivery date:
