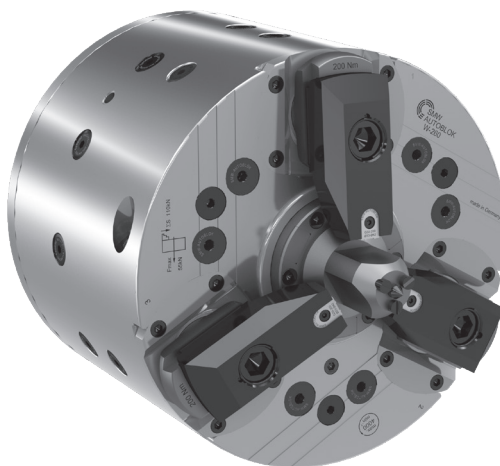


COPY OF THE  
ORIGINAL

# SHAFT CHUCK

## Type W



worldwide • weltweit • worldwide

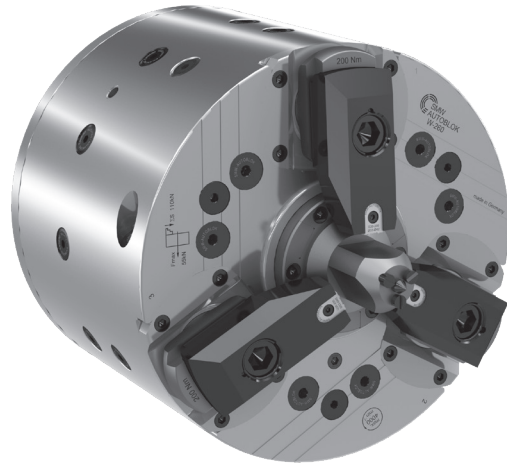
Date: 2018-01  
Version: 11  
Language: English





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## INSTRUCTION MANUAL Shaft chuck Type W

**Thank you for purchasing an Original-SMW-AUTOBLOK chuck type W.**

This **instruction manual** contains the installation, the use and the maintenance instructions of the work holding „W“.

**SMW-AUTOBLOK** reserves the right to make changes **without notice**.

This **instruction manual is a part of the work holding** and must be passed to the new owner in case of sale.

This **instruction manual may not be** -in whole or in part- **copied** without our written agreement.



Please read the instruction manual carefully before installation and use and always follow the regulations.

Please note especially the sections which are marked with the following signs:



- Danger of injury or danger to life if instructions are not followed.
- Danger of damage to the work holding, the machine or the components.

## Declaration of incorporation for an incomplete machine Machinery Directive 2006/42/EC, Annex II, B

The manufacturer: SMW-AUTOBLOK Spannsysteme GmbH  
Wiesentalstrasse 28  
88074 Meckenbeuren  
Deutschland / Germany

herby declares, that the following product:

Product description: Shaft chuck  
Application range: Installation in machine tool  
Type: W

is intended to be installed into a completed machine. It must not be put into service until the final machine into which the partly completed machinery it is to be incorporated has been declared in conformity with the provisions of the EU machine directive (2006/42/EC) Annex II, B.

Applied harmonized norms:

- DIN EN 1550 (2008)
- DIN ISO 13857 (2008)

The following basic requirements of Annex I, 2006/42/EC are complied with:

- No. 1, 1.1, 1.1.1, 1.1.2, 1.1.3
- No. 1.3.2, 1.3.3, 1.3.4, 1.3.7, 1.3.8
- No. 1.5, 1.6.1
- No. 1.7.1, 1.7.3, 1.7.4

The special technical documents have been created in accordance with Annex VII, Part B. These documents will be made available electronically on a reasoned request by the national authorities.

Responsible for documentation: Schilling Rainer  
Chief designer

Place: Meckenbeuren (Germany)  
Date: 29.12.2009

  
Eckhard Maurer  
President





**Danger!**



**Danger to the environment!**



**General precept sign!**



**Follow the instructions!**



**General warning sign!**



**Warning of risk of crushing!**



**Warning of hand injuries!**



**Warning of suspended load!**



## 1. Correct use

SMW-AUTOBLOK chucks work safely and trouble free if they are used according to their specifications i.e. to clamp components on turning machines.  
Any other use can be hazardous.



## 2. Demands on operators

SMW-AUTOBLOK chucks must be installed, operated and maintained only by qualified and regularly trained personnel.



## 3. Visual inspection

Please check the product for visible damage prior to use!



## 4. Transport

Please use suitable lifting gear for product heavier than 16 kg!



## 5. Safety precautions for the machine

- The machine spindle must only start if the hydraulic pressure in the cylinder is fully reached and the component is clamped within the permissible working range.
- Chuck can only be opened when the machine spindle is stopped.
- A signal must stop the machine spindle in case of a failure of the clamping pressure and the workpiece must remain safely clamped until the machine spindle stops.
- Repowering after a power failure must not change the original clamping mode.
- During machining, the chuck and the clamped component must be protected by safety guards of the machine.
- Opening the machine door must be possible only when the machine spindle is completely stopped.
- Maintenance and actuation of the chuck must only be carried out when the machine spindle is stopped.



## 6. Max. data for actuating force F and speed n

The data for maximum actuating force F and maximum spindle speed n are engraved on the chuck body.



## 7. Jaws

Always use original SMW-AUTOBLOK top jaws. Jaws of other manufacturers can cause damage to the chuck or accidents. SMW-AUTOBLOK top jaws are permanently marked with the max. allowed actuating force F and the max. speed n. These values must not be exceeded due to the danger of accidents! Top jaws must be mounted with socket head cap screws of class 12.9 only. Tighten with the specified torque. Always ensure sufficient length of thread engagement (min. 1.25 x thread dia.)! The mounting bolts must be checked for damage and wear in regular intervals, and have to be replaced if necessary. They have to be replaced not later than after maximum 100000 clamping cycles! At reduced actuating force, the max. speed must also be reduced accordingly!



## 8. Actuating cylinder

The actuation of the chuck must only be carried out by suitable cylinders in accordance with safety precautions and regulations. When installing the chuck on the machine with an existing cylinder, be sure that the actuating force of the cylinder does not exceed the max. permitted actuating force of the chuck. If necessary, reduce the actuating force of the cylinder. Connecting and adapter parts must be specified for permanent load. Adjust and check the proximity switches for the stroke control before starting production. The adjusted operating pressure / actuating force must be secured against unauthorized change (for example with a lockable pressure regulator).



## 9. Crash / damages of the clamping chuck

In case of damage to the chuck, for example, after a collision, use of wrong top jaws or actuation with unpermitted operating data the chuck has to be returned immediately for safety reasons to SMW-AUTOBLOK for inspection.



## 10. Residual risks

The type of components (shape, weight, unbalance, material etc.) has a large influence on the system "machine tool - chuck - component". For that reason there is always a residual risk. These residual risks must be considered by the user and must be eliminated by suitable actions.



## 11. Maintenance

The power chuck must be maintained at regular intervals. Check the conditions by measuring the gripping force with a grip force meter (e.g. GFT-X with head M4 for 6 jaws). Replace damaged parts with original SMW-AUTOBLOK spare parts only. Maintenance must only be carried out at spindle stop of the machine.



## 12. Environment protection

Danger for environment when handling incorrect! Incorrect handling of environment hazardous materials, especially the disposal, may result in environmental damage.

- Always follow below instructions.
- In case environmentally hazardous material polluted the environment always take suitable actions immediately. If in doubt, inform the local authority about the pollution.

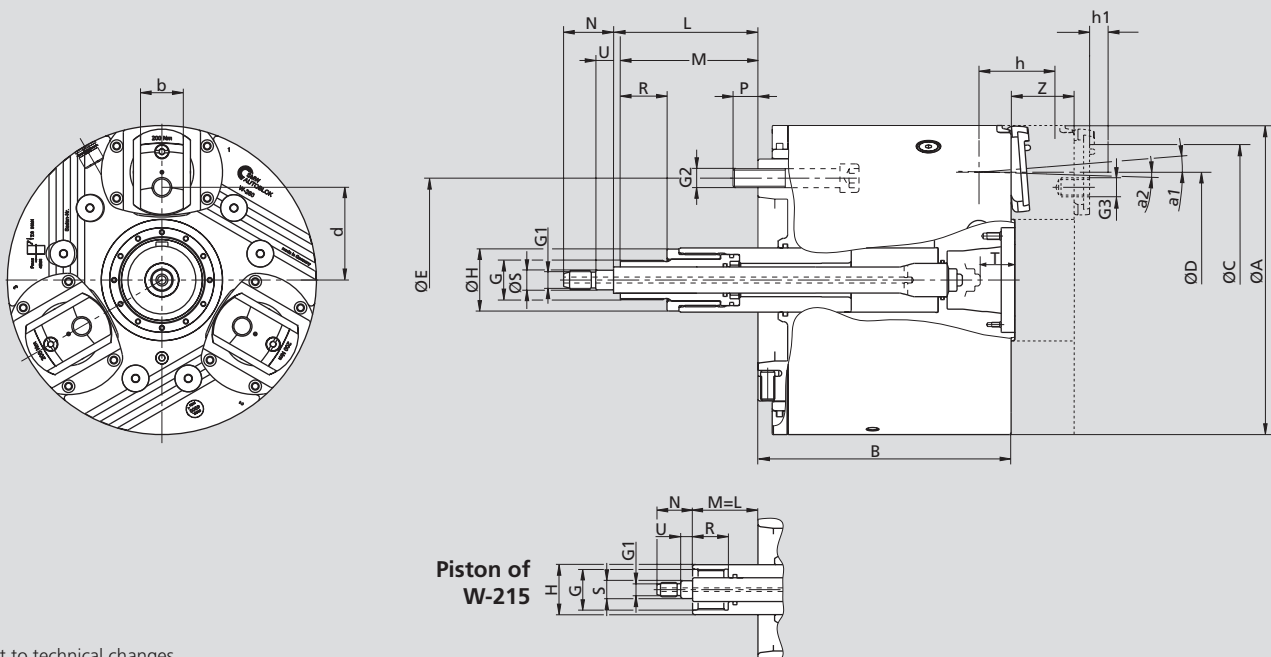
The following hazardous materials are used: Lubricants such as oil and grease can contain poisonous agents. They must not pollute the environment. The disposal must be carried out by a suitable waste management company. For a proper function of the work holding, use original SMW-AUTOBLOK lubricant only.



**In case of doubts or questions please ask SMW-AUTOBLOK or one of our authorized offices.**

Shaft chuck with retractable jaw carrier  
Face driver

Main dimensions and technical data



Subject to technical changes.  
For more detailed information please ask our customer service.

SMW-AUTOBLOK Type		W-215		W-260		W-325		W-460	
Mounting		A6	A8	A6	A8	A8	A11	A11	A15
Chuck outside dia.	A	215		260		325		460	
Chuck height	B	176	211	238	213	285	251	344	309
In clamping position (radius)	C	R92		R115		R143		R205	
Max. clamping dia.	D	145		175		220		335	
	E	133.4	171.4	133.4	171.4	171.4	235	235	330.2
	G	M34 x 1.5		M33 x 1.5		M45 x 1.5		M85 x 2	
	G1	M12		M16		M16		M55 x 2	
	G2	M12	M16	M12	M16	M16	M20	M20	M24
	G3	M12 x 20		M16 x 24		M20 x 30		M24 x 45	
	H	42		54		70		110	
Push rod face driver min./max.	L	55/40	20/5	96.5/51.5	121.5/106.5	106/91	140/125	119/104	154/139
Min./max.	M	55/-4	20/-39	96.5/26.5	121.5/51.5	106/26.8	140/60.8	119/24.4	154/56.5
	N	30		42		42		42	
	P	15.5	22	18	21	24	26	26	34
	R	30		45		50		50	
	S <sub>16</sub>	15		16.5		16.5		56.5	
Push rod pos. check dimension	T	22		29		46		60	
	U	10		15		15		15	
Axial movement/jaw carrier	Z	44		53		58		65	
Piston stroke for jaw clamping	Z <sub>1</sub>	15		17		22		32.5	
Opening/residual stroke angle	a <sub>1</sub> /a <sub>2</sub>	4.5°/1.5°		4.5°/1.3°		4.5°/1.3°		5°/2°	
Opening/residual stroke at distance h <sub>1</sub>	h <sub>1</sub>	4.0/1.3		4.5/1.3		5.7/1.9		7.7/3.1	
Max. jaw stroke at distance h*	mm	5.3		5.8		7.6		10.8	
Max. compensating / jaw Type C	mm	± 0.6		± 1.0		± 1.5		± 3.3	
	b	30		36		44		52	
	d	65		78		96.5		150.5	
Reference height	h	50		57		72		88	
Oil volume horizontal use	l	0.25		0.50		0.75		1.50	
Oil volume vertical use	l	0.50		1.00		1.50		3.00	
Max. speed	r.p.m.	5000		4000		3200		1800	
Max. draw pull	kN	30		55		75		100	
Max. grip force at reference distance h*	kN	60		110		150		200	
Moment of inertia	kg·m <sup>2</sup>	0.236	0.271	0.639	0.606	1.872	1.734	9.35	8.91
Weight (without top jaws)	kg	40	45	75	70	140	127	364	336

\* When exceeding distance h gripping force/speed must be reduced accordingly.



JAWS-CATALOG

Request or  
download:  
[www.smw-autoblok.de](http://www.smw-autoblok.de)

## Shaft chuck Ø 215 - 460 mm

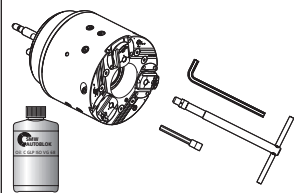
# W

Shaft chuck with retractable jaw carrier  
Face driver

### Ordering review

#### Supply range:

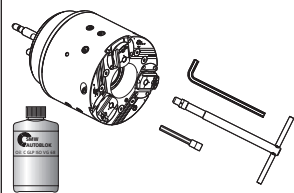
**Compensating clamping (Type C)** chuck with mounting bolts and mounting keys, oil\*



Spindle mounting \ Type C	W-215	W-260	W-325	W-460
A6	069930	069527		
A8	069932	069444	069525	
A11		069815	068981	069602
A15				069600

#### Supply range:

**Self centering clamping (Type S)** chuck with mounting bolts and mounting keys, oil\*



Spindle mounting	Type S	W-215	W-260	W-325	W-460
	A6	069934	069542		
	A8	069936	069546	069552	
	A11		069817	069554	069606
	A15				069604

#### \* Attention:

The W-chucks in this ordering review are for the use of power operated face drivers only (Type 1).

To use face drivers with spring loaded center, a different chuck (Type 2) has to be used.

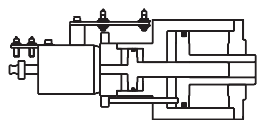
Please ask our engineers for the corresponding Id. No. and the matching cylinders.

Power operated face drivers and face drivers with spring loaded center **cannot** be used alternating on the same chuck.

#### Attention:

Shaft chuck for vertical machines on request.

### Actuating cylinder



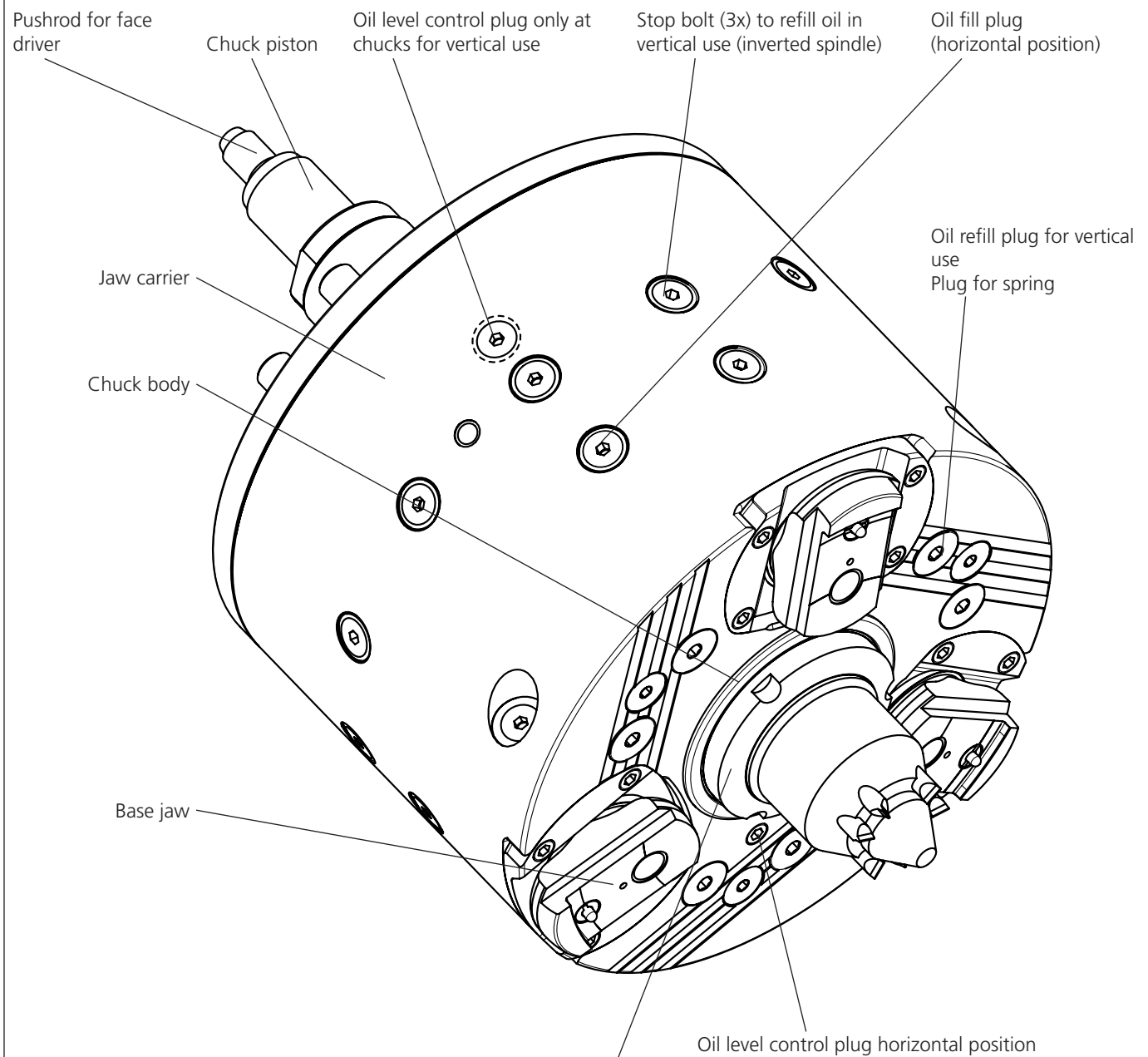
Type	W-215	W-260	W-325	W-460
Double piston cylinder				
ZHVD-SZ	68-17	110-25	110-25/240-40	240-40
Id. No.	044429	045297	045297/045298	045298
DCN			170-40/95-50	
Id. No.			33705215	

### Oil

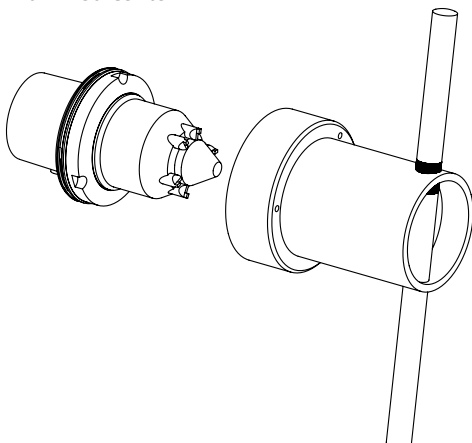


#### Oil for permanent oil bath lubrication

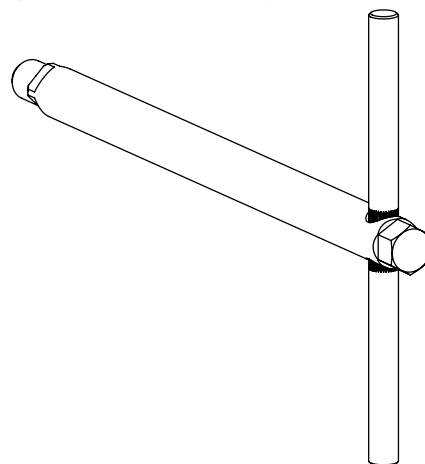
Oil specification	CGLP ISO VG 68
Contents	1 liter/1.05 quart (U.S.)
Id. No.	197859



Power operated face driver (Version Morse taper, only W-215 / W-260) with fixed center



Mounting key (from chuck size 260 up)



The shaft chuck type W is available as a compensating or as a self centering jaw version.

The shaft chuck type W has a retractable jaw carrier to allow complete machining of shafts in one operation.

It is completely sealed and permanently lubricated by an oil bath.

The face driver is quick change with a taper for centering.

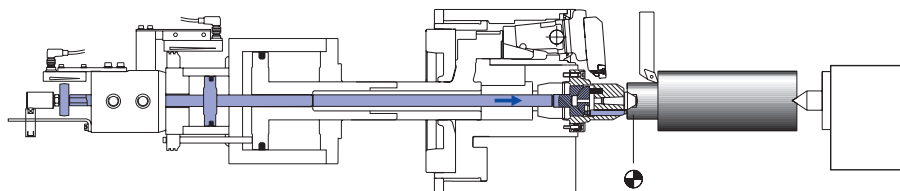
The chuck and the power operated face driver are actuated by a double piston cylinder.

## Conditions:

- The work pieces need to be faced and centered before loading into to the chuck.
- Runout of the center bores to the clamping dia. can be max. (at compensating jaw chuck).

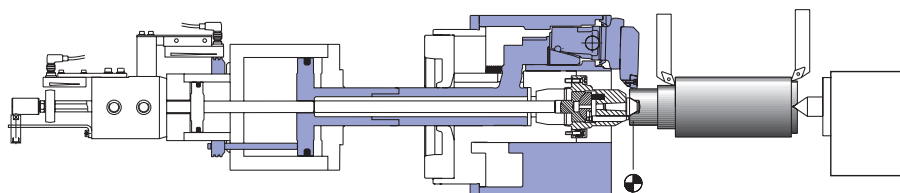
Chuck size	W-215	W-260	W-325	W-460
Center offset	< 0.6 mm	< 1 mm	< 1.5 mm	< 4 mm

## The application: Complete machining of shafts in one setup



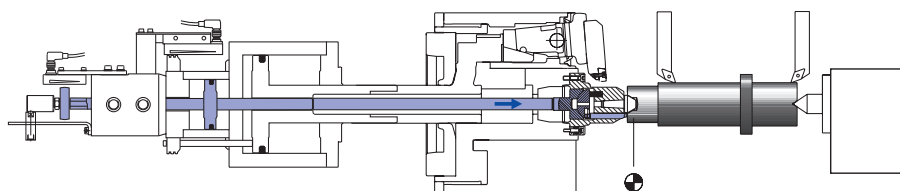
### 1. Machine clamping dia. (only necessary when using the self centering chuck):

The jaws are retracted. The component is clamped between centers and driven by the face driver. This operation can be eliminated if the clamping dia. is already machined when the center bore is manufactured. This operation is not necessary when using the chuck with floating jaws.



### 2. Rough machining:

The part is driven with the high gripping force of the jaws. High chip removal is possible.



### 3. Finish machining:

The chuck body is retracted. The part is clamped between centers and driven by the face driver. The complete outline can be machined with perfect concentricity.

## Confirm prior to installation

### Check!

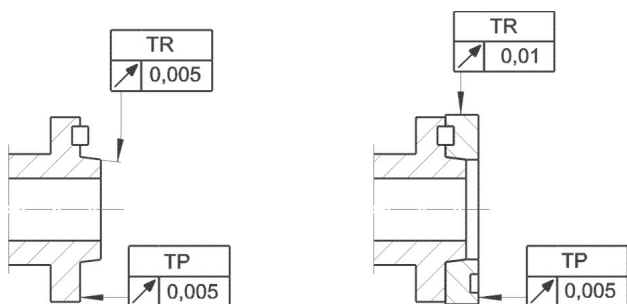
- The max. drawpull of the cylinder must not exceed the allowed max. drawpull of the chuck!
- If necessary, drawpull must be reduced and locked to that value.

### Check!

- All adapter parts must be designed for permanent use!

### 1 Check the spindle nose!

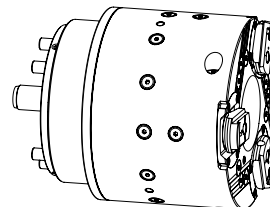
- Spindle adapters need to be dialed in to these max. values.



### 2 Draw bar position!

- The chuck is in a transport position with the jaw carrier advanced, and the master jaws in an intermediate position.

- The actuating cylinder has to be in complete forward end position (drawtube fully extended); machine signal "chuck clamped".



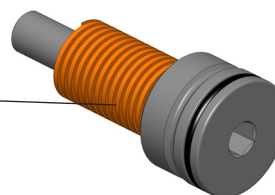
### Attention!

- For the chuck W-215, this alternative procedure is valid.
- This chuck size has a different method of installation not requiring the use of a mounting wrench.
- See fig. 3A and 3B only.

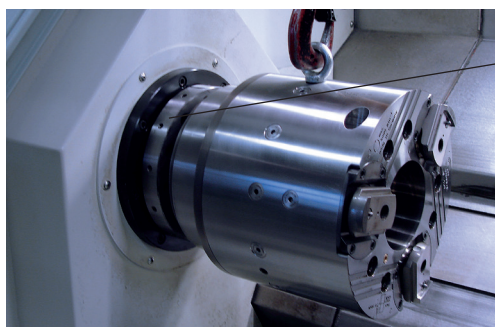
### 3A Preparation to install W-215



- Lift the chuck and position it concentrically in front of the spindle.
- Remove all plugs with the spring packs from the chuck.



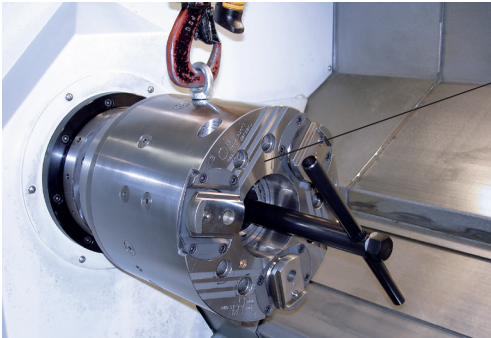
### 3B Connect the draw bar thread W-215



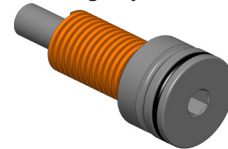
- Rotate the spindle by hand to connect the thread of the draw bar and the thread of the chuck piston.



### 3C Preparation for installation W-260 / W-325 / W-460



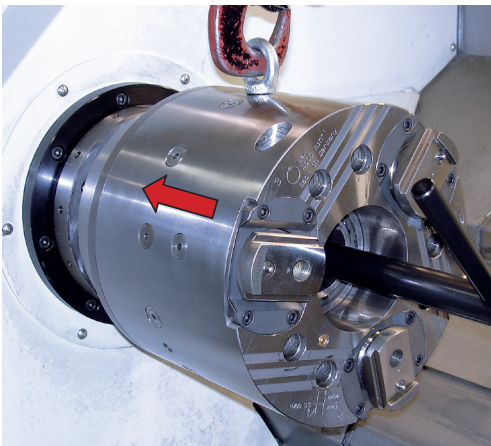
- Lift the chuck and position it concentrically in front of the spindle.
- Remove all plugs with the spring packs from the chuck.
- Lock the spindle against rotation.
- Screw the rotating drawnut of the chuck into the thread of the drawbar with the mounting key.



#### Attention!

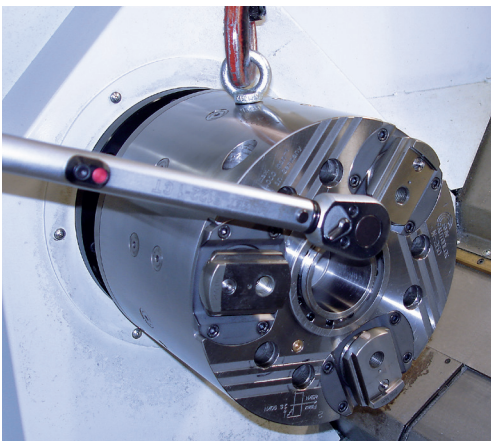
- Always use safe and appropriate lifting tools!
- Danger of damage!
- Do not cross thread!
- Never apply force!
- Never switch on the spindle drive!

### 4 Pull the chuck onto the spindle



- Match the bolt pattern of the chuck mounting bolts to the threads in the spindle.
- Observe the position of the drive button!
- Switch on the hydraulic power unit of the machine and set it to the lowest possible pressure.
- Pull the chuck towards the spindle with the lowest force possible.

### 5 Attaching the chuck to the spindle



- Use the long mounting key that comes with the chuck to put the mounting bolts into the chuck.
- Loosely tighten the mounting bolts.
- Switch on the hydraulic power unit again, and pull the chuck completely onto the spindle.

### 6 Check the chuck for concentricity



- Position the dial indicator at the outer rim of the body, and check the chuck for concentricity.



### 7 Dial in the chuck



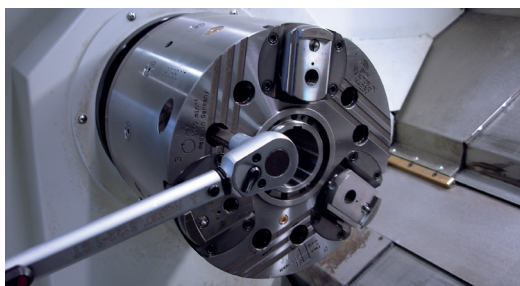
- Adjust in the chuck carefully with a rubber mallet. TR should be  $\leq 0.005$



#### Attention!

- To dial in the chuck use the lowest actuating pressure possible for the cylinder. Only low forces must act onto the chuck!

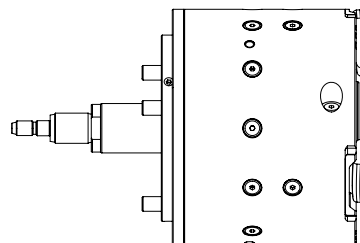
### 8 Mounting the chuck



- Tighten the mounting bolts of the chuck with the correct torque one after another, after checking the concentricity (pic. 10). Use the hexagonal bit that comes with the chuck.
- After that double check the concentricity.
- For best concentricity the torque for the individual mounting bolts can be varied.

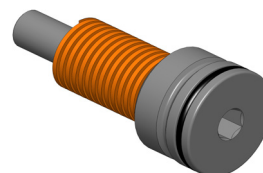
Chuck size	W-215	W-260	W-325	W-460
Bolt	M12	M16	M20	M24
Torque (Nm)	125	250	400	500

### 9 Locking the radial chuck runout



- Tighten the locking set screws for the taper locking system.
- Double check the concentricity.

### 10 Insert the plugs with the springs



Chuck size	W-215	W-260	W-325	W-460
Torque (Nm)	35	35	35	65

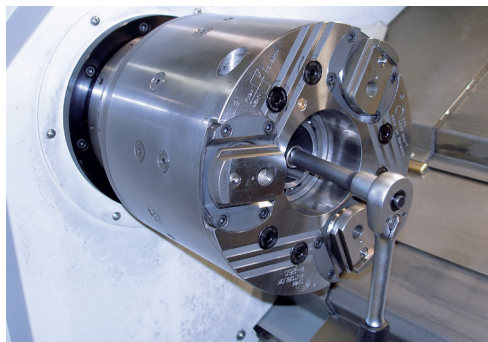


# Installation

Mounting the push rod  
Refilling the oil



## 11 Mounting push rod

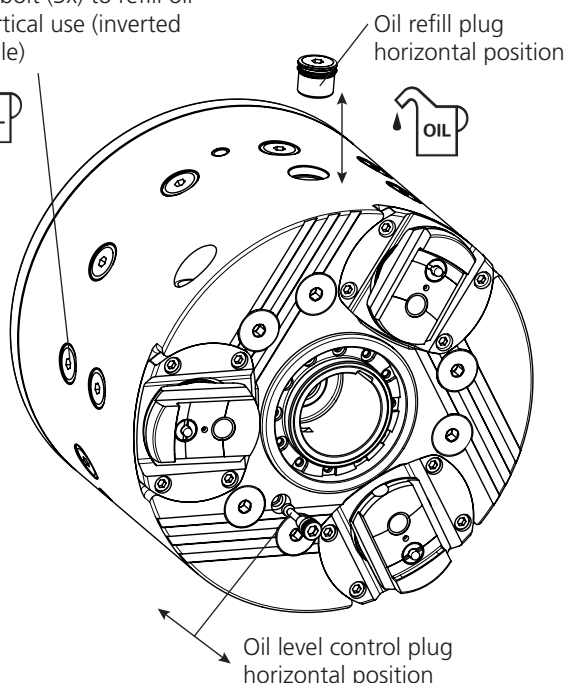


- Mount the push rod to actuate the face driver with a suitable torque wrench. Observe the checking dimension T (see technical details dim. T) from the front face of the push rod to the front face of the chuck body. This must be measured with the small piston of the double piston cylinder in its complete forward end position.

Chuck size	W-215	W-260	W-325	W-460
Dimension (mm)	22	29	46	60
Torque (Nm)	20	85	85	85

## 12A Filling the chuck with oil (horizontal, vertical use, inverted spindle)

Stop bolt (3x) to refill oil  
in vertical use (inverted  
spindle)



- Fill the chuck with the oil supplied with the jaw carrier in the retracted position, the cylinder in the rear position and with the push rod installed.
- To refill oil put jaw No. 3 in 9.00 O'clock position (on horizontal machines).
- Oil type: CGLP ISO VG 68
- Oil recommended by SMW-AUTOBLOK: Castrol Gleitbahnöl Magnaglide D68

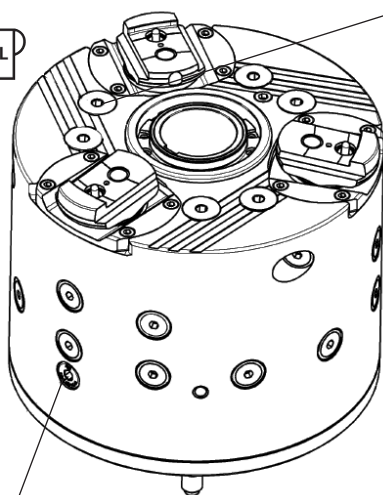
Chuck size	215	260	325	460
Oil qty. (horizontal)	~250 ml	~500 ml	~1.000 ml	~1.500 ml
Oil qty. (vertical use, inverted spindle)	~500 ml	~1.000 ml	~1.700 ml	~3.000 ml



### Attention!

Information for oil level check can be found on page 20.

## 12B Refilling of oil (vertical use; the chuck is a special vertical version with an additional oil level control plug)



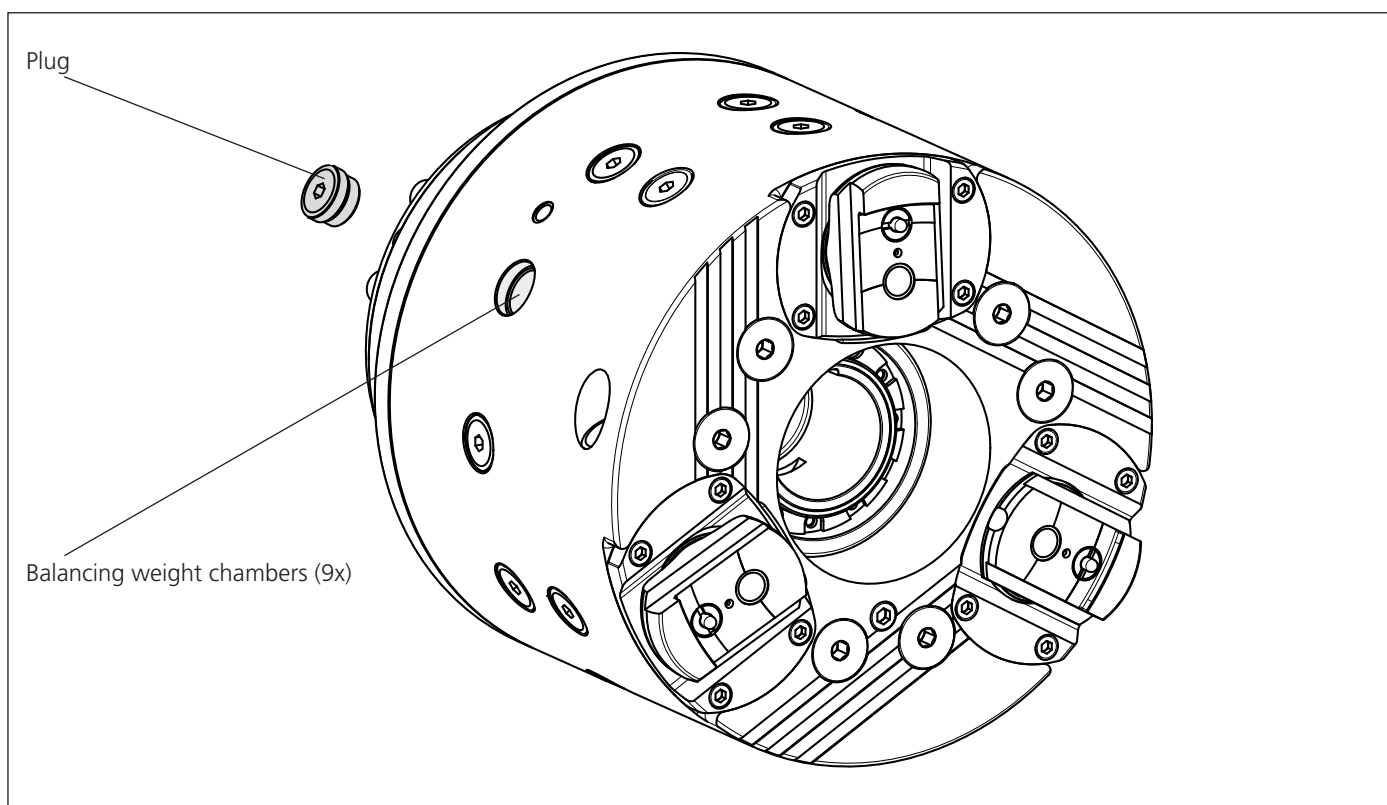
- Remove one spring pack in position „chuck open“ (chuck piston and jaw carrier retracted in left end position).
- Close the chuck (Jaws closed and jaw carrier in forward right end position), and fill in oil according to the table, until oil flows out from the oil control plug.
- Open the chuck again, and install the spring pack again.

Chuck size	215	260	325	460
Oil qty. (vertical use)	~ 350 ml	on request	~1.700 ml	on request



### Attention!

Information for oil level check can be found on page 21.



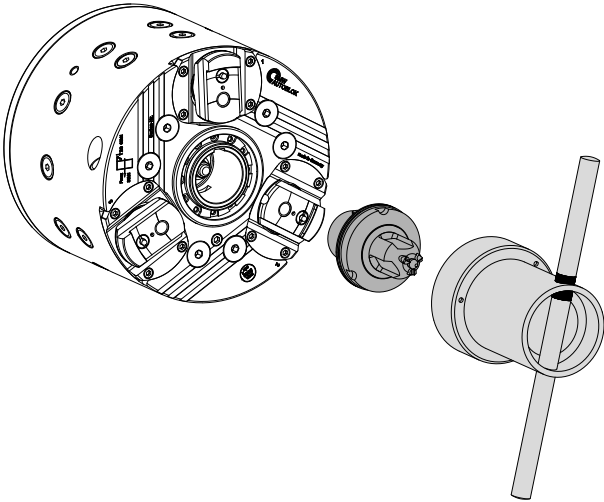
- For high demands of accuracy and surface quality the chuck must be fine balanced after installation.
- **Balancing only with the jaw carrier retracted!**
- The chuck has 9 balancing weight chambers equally spaced around the jaw carrier.
- The balancing weight chambers are filled with washers.

	Weight per washer		Weight per chamber	Total weight
<b>W-215</b>	Ø14.0 = 0.6 g	Ø16.2 = 0.8 g	13 g	117 g
<b>W-260</b>	Ø14.0 = 0.6 g	Ø16.2 = 0.8 g	17 g	153 g
<b>W-325 / W-460</b>	Ø16.2 = 0.8 g	Ø20.5 = 2.6 g	39 g	351 g

- Check the imbalance of the chuck with a suitable balancing unit.
- Eliminate the imbalance measured **by removing** washers accordingly.
- Put a little grease into the chamber after removing the washers to eliminate rattling.

### Mounting the face driver (Version Morse taper) and the top jaws W-215 / W-260

#### 1 Face driver (Version Morse taper)



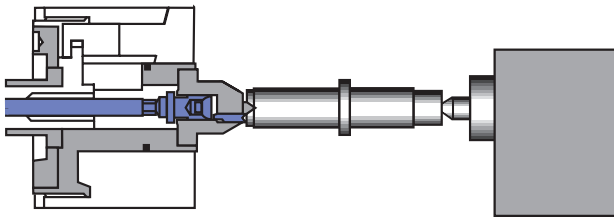
- Clean the inside taper of the chuck and the outside taper of the face driver thoroughly.



Even smallest particles can cause runout!

- Do not oil the taper!
- Mount the face driver to the chuck using the mounting wrench that comes with the chuck. Observe the position of the orientation slot. Tighten the locking nut with the mounting wrench.
- **Reachable runout on the center point 0.02mm TIR!**

#### 2 Mounting the face driver (Version Morse taper)

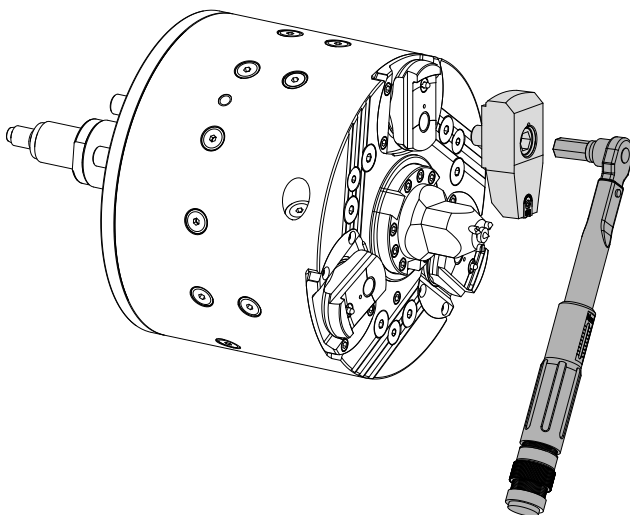


- To achieve a perfect concentricity use a work piece to push against the face driver using the force of the tailstock. After that manually retighten the locking nut with the mounting wrench.



Do not use a hammer or extensions.

#### 3 Mounting the top jaws W-215 / W-260 / W-325 / W-460



- Clean the mounting faces of the master jaws and the top jaws thoroughly. When bolting the top jaws to the master jaws the spring loaded pin in the master jaw automatically pushes the top jaw against the radial location shoulder.
- Always observe correct seating of the top jaws on the master jaws.



#### Attention!

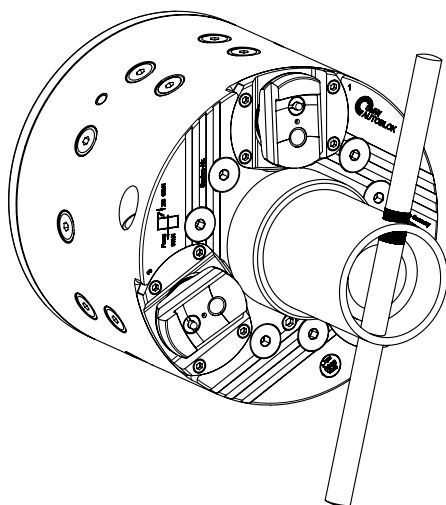
- Always use a torque wrench.

Chuck size	W-215	W-260	W-325	W-460
Bolt	M12	M16	M20	M24
Torque (Nm)	100	200	400	500

- Original SMW-AUTOBLOK top jaws have capture bolts.

### Dismounting the face driver (Version Morse taper) W-215 / W-260

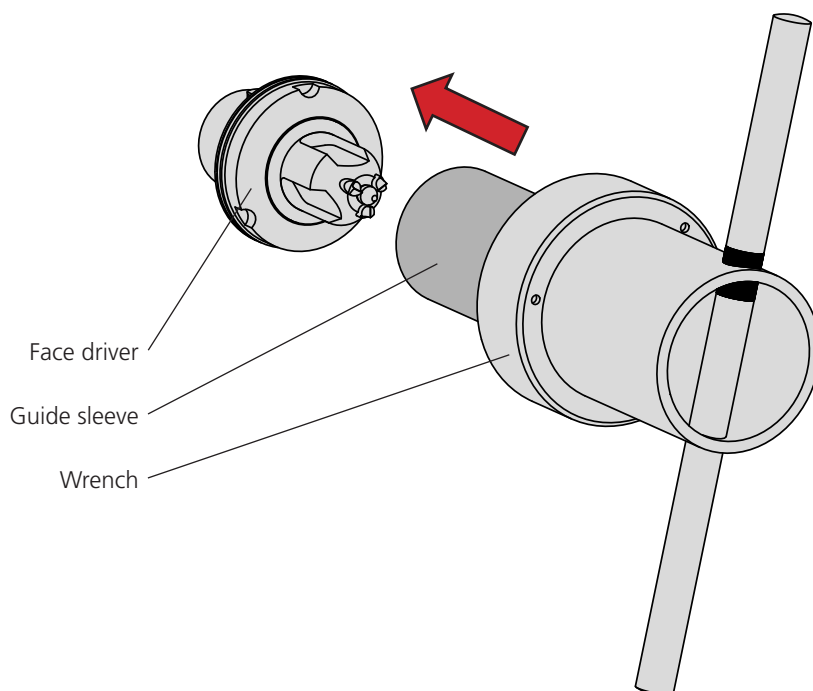
#### 1 Face driver (Version Morse taper)



To remove the face driver, first remove the top jaws.

- Use the mounting wrench to open the locking nut.
- In order to help guide the mounting wrench, the jaw carrier can be brought into its forward, end position.

#### 2 Face driver and guide sleeve (Version Morse taper)



- In order to have a better guide for the wrench, especially when removing the face driver, use the guide sleeve on the outside dia. of the face driver.
- The ID of the sleeve matched to the OD of the corresponding face driver.

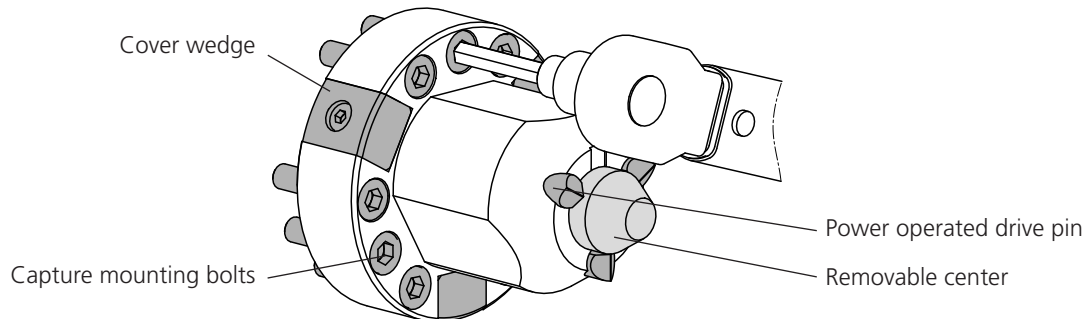
# Operation

## Adjustment of the face driver (Standard)

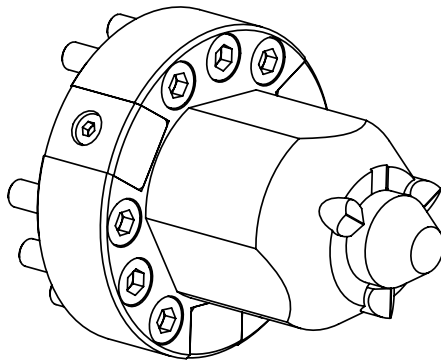
### Standard: Mounting of the face driver: Version short taper, radially not adjustable

(Radially not adjustable = short taper of the face driver with tight fit to the short taper of the chuck for self centering installation)

#### 1 Face driver (Version short taper not adjustable)



#### 2 Mounting of the face driver (Version short taper not adjustable)



- Tighten the bolts alternately. Double check the concentricity.
- **Reachable runout on the center point 0.02mm TIR!**

Chuck size	W-215	W-260	W-325	W-460
Bolt	M6	M6	M8	M10
Torque (Nm)	15	15	36	72



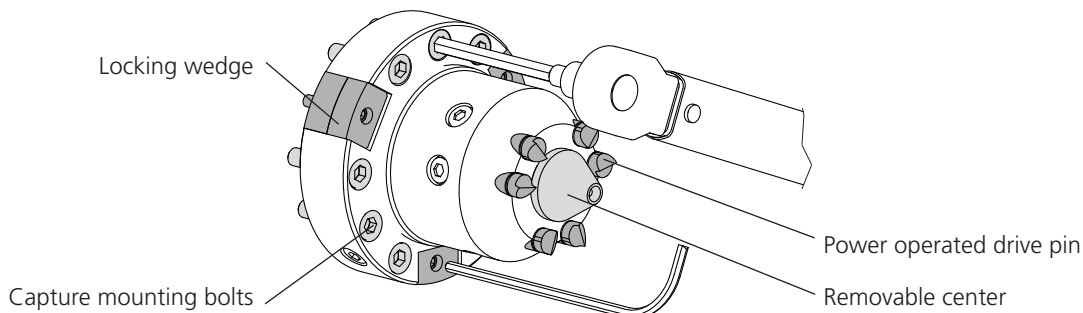
#### Attention!

- **Danger of injury!** Cover the driving pins / centerpoint or use suitable protection gloves when changing the face driver!

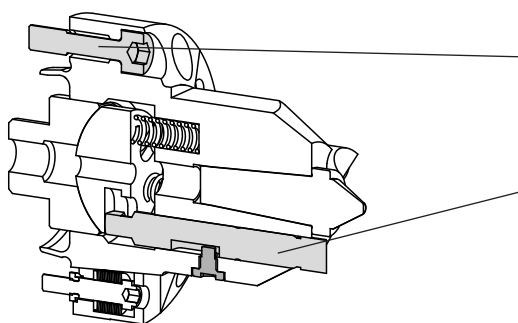
## Option: Mounting and adjusting of the face driver: Version short taper, radially adjustable

(Radially adjustable = short taper of the face driver with clearance to the short taper of the chuck for manual radial fine adjustment)

### 1 Face driver (Version short taper adjustable)

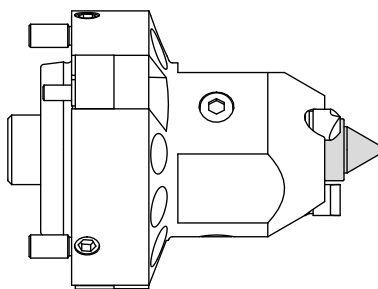


### 2 Mounting and adjusting of the face driver (Version short taper adjustable)



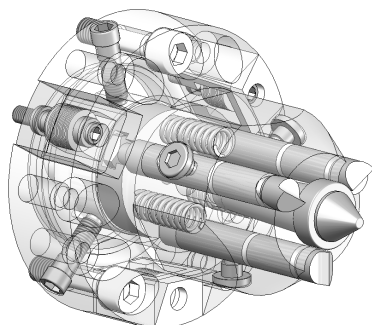
- Insert the face driver into the chuck and loosely tighten the mounting bolts.

### 3 Mounting and adjusting of the face driver (Version short taper adjustable)



- Check the runout of the center point with a dial indicator. Adjust the runout by using a rubber mallet.  $TIR \leq 0.005 \text{ mm}$  (Only when using the version for an adjustable face driver).

### 4 Mounting and adjusting of the face driver (Version short taper adjustable)



- Tighten the bolts alternately. Double check the concentricity.

Chuck size	W-215	W-260	W-325	W-460
Bolt	M6	M6	M8	M10
Torque (Nm)	15	15	36	72

- Insert the locking wedges and tighten with max. 3.5 Nm torque. Double check the concentricity.

#### ⚠ Attention!

- Do not overtighten the bolts of the locking wedges. The bolts can break! The face driver will be locked in the chuck!
- **Danger of injury!** Cover the driving pins / centerpoint or use suitable protection gloves when changing the face driver!

### Checklist

Before starting production check the following:

#### Top jaws

- Are the mounting bolts of the top jaws tightened properly?
- Retighten the mounting bolts with a torque wrench if needed!
- Does the clamping diameter of the jaws match the work piece dia.?
- Is there enough residual jaw stroke?

#### Clamping pressure

- Does the hydraulic pressure and the resulting grip force match the data engraved on the top jaws?
- **Never exceed the values stated on the top jaws!**

#### Speed

- Does the max. speed in the CNC program match the max. speed engraved on the top jaws?
- **Never exceed the values stated on the top jaws!**

#### Face driver

- Is the concentricity of the center point of the face driver correct?
- Is the locking nut tightened correctly?
- Retighten if necessary.

#### Imbalance

- Is there any vibration caused by imbalance?
- **Increase the spindle speed to machining speed in small increments and eliminate imbalance if needed.**



### Attention!

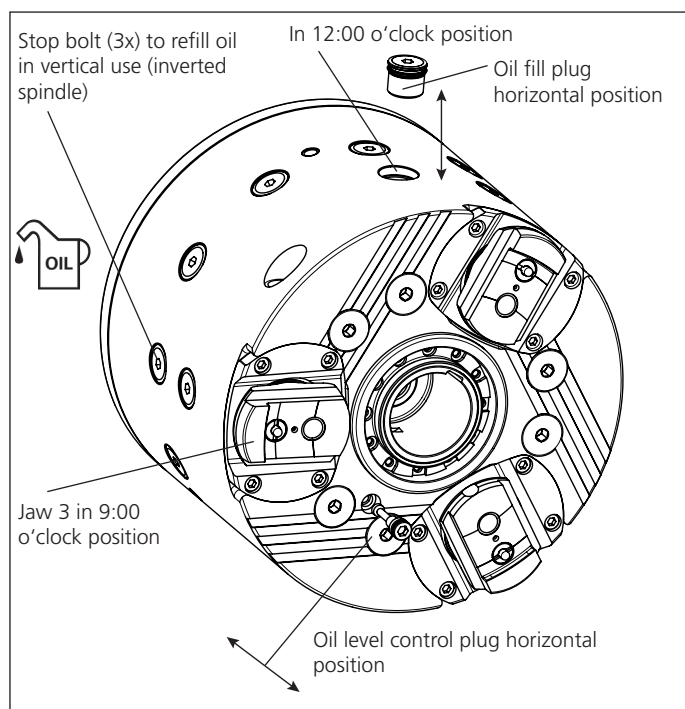
- Regular maintenance is important for the safe function, long lifetime, precision and grip force of the chuck.
- Check the grip force of the chuck regularly with the SMW-AUTOBLOK GFT-X grip meter!
- Do not use any liquids that can damage or destroy the chuck seals!
- Make sure the coolant used will not damage or destroy the chuck seals!

## Maintenance plan

	daily	weekly	monthly	yearly
Visible leakage	•			
Oil level check / refill oil		•		
Measuring of grip force			•	
Cleaning outside		•		
Check jaw carrier and master jaws for smooth movement *			•	
Revision consisting of: Disassembling the chuck, Changing all seals and wear parts, Checking for cracks, Refilling with fresh oil				•

\* **Advice for checking method:** At lowest hydraulic pressure possible, the jaw carrier and the master jaws must move smoothly without chattering.

## Checking of oil level (horizontal and vertical use)



### Attention!

Checking the oil level must be carried out only when the jaw carrier is fully retracted!

### Refill oil (on horizontal machines)

1. Bring the oil refill plug to the 12.00 O'clock position.  
Jaw No. 3 will be in 9.00 O'clock position.
2. Open the oil refill and the oil level control plug.
3. Refill oil (CGLP ISO VG 68) until it flows out from the oil control plug port.
4. Close the oil refill and the oil level control plug.

### Refill oil (on vertical machines with inverted spindle)

1. Open one (only one out of the 3) stop bolts.
2. Refill oil (CGLP ISO VG 68) until it flows out from the oil refilling plug port (bottom edge of port).
3. Close the stop bolt port.



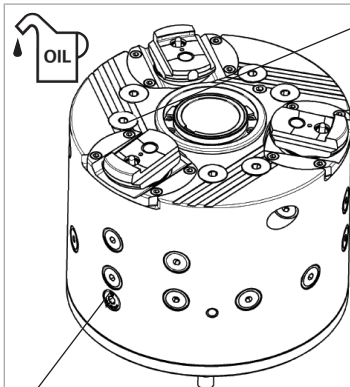
### Attention!

- Wear of the seals can increase normal oil consumption!
- In case the refill volume exceeds the max values in the table below, the chuck must be checked and the seals must be changed.

Chuck size	215	260	325	460
Oil qty. (horizontal)	~ 250 ml	~ 500 ml	~ 1000 ml	~ 1500 ml
Oil qty. (vertical use, inverted spindle)	~ 500 ml	~ 1000 ml	~ 1700 ml	~ 3000 ml
Max. oil consumption / refill volume	100 ml	200 ml	400 ml	800 ml



Checking the oil level vertical (the chuck is a special version for vertical use with an additional oil level control plug)



### Oil control plug (vertical upright)

Open the screw carefully in chuck closed position. If oil flows out, the oil volume is sufficient. If no oil flows out, refill oil (according to table) at the bore of the spring pack that has been removed, until oil flows out.

- Remove one spring pack in position „chuck open“ (chuck piston and jaw carrier retracted in left end position).
- Close the chuck (Jaws closed and jaw carrier in forward right end position), and fill in oil according to the table, until oil flows out from the oil control plug.
- Open the chuck again, and install the spring pack again.

### Refill oil (vertical upright)

1. Remove one spring pack in position „chuck open“ (chuck piston and jaw carrier retracted in left end position).
2. Close the chuck (Jaws closed and jaw carrier in forward right end position), and fill in oil according to the table, until oil flows out from the oil control plug.
3. Open the chuck again, and install the spring pack again.

Chuck size	215	260	325	460
Oil qty. (vertical use)	~ 350 ml	on request	~ 1.700 ml	on request
max. oil consumption and refill volume	100 ml	on request	400 ml	on request

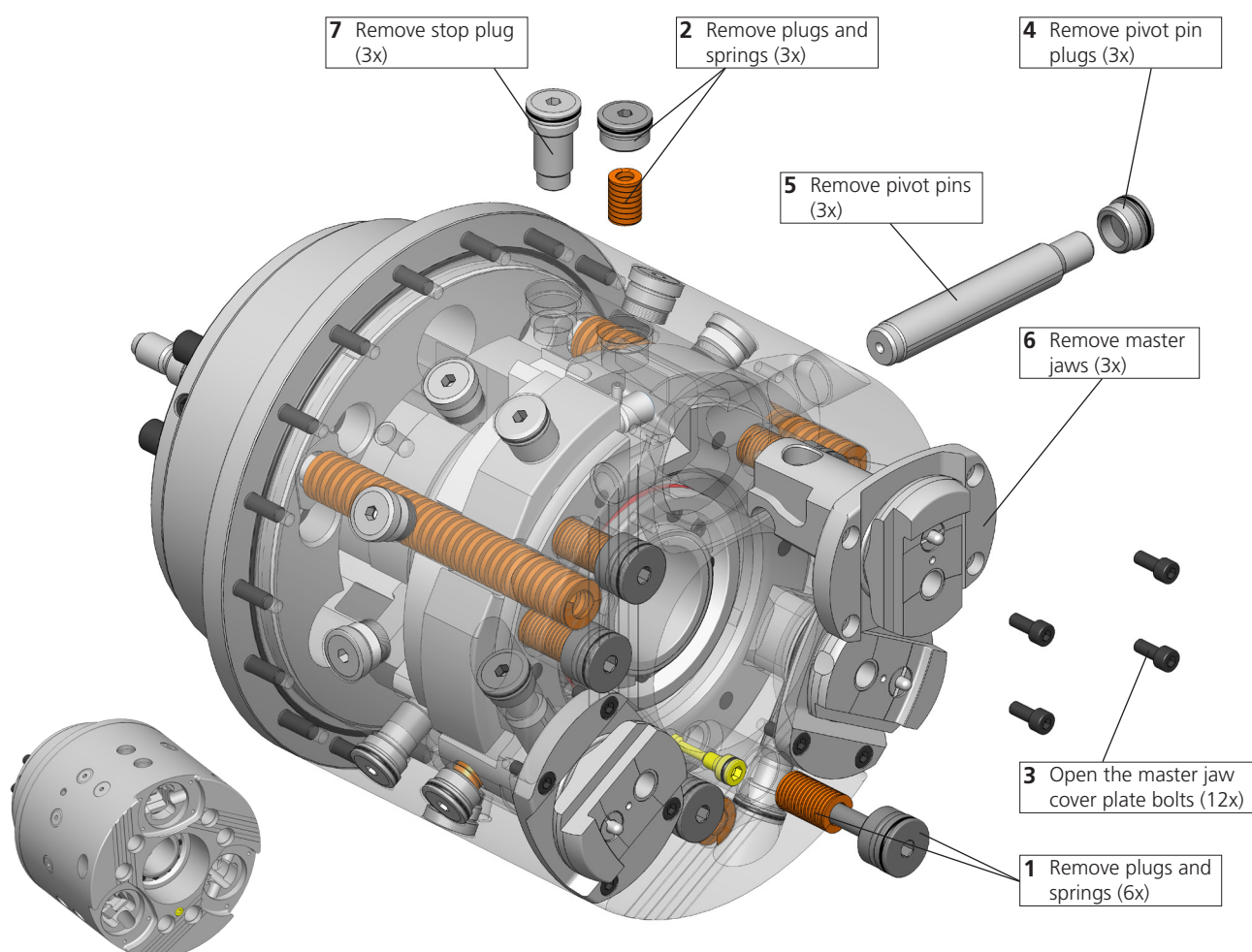


### Attention!

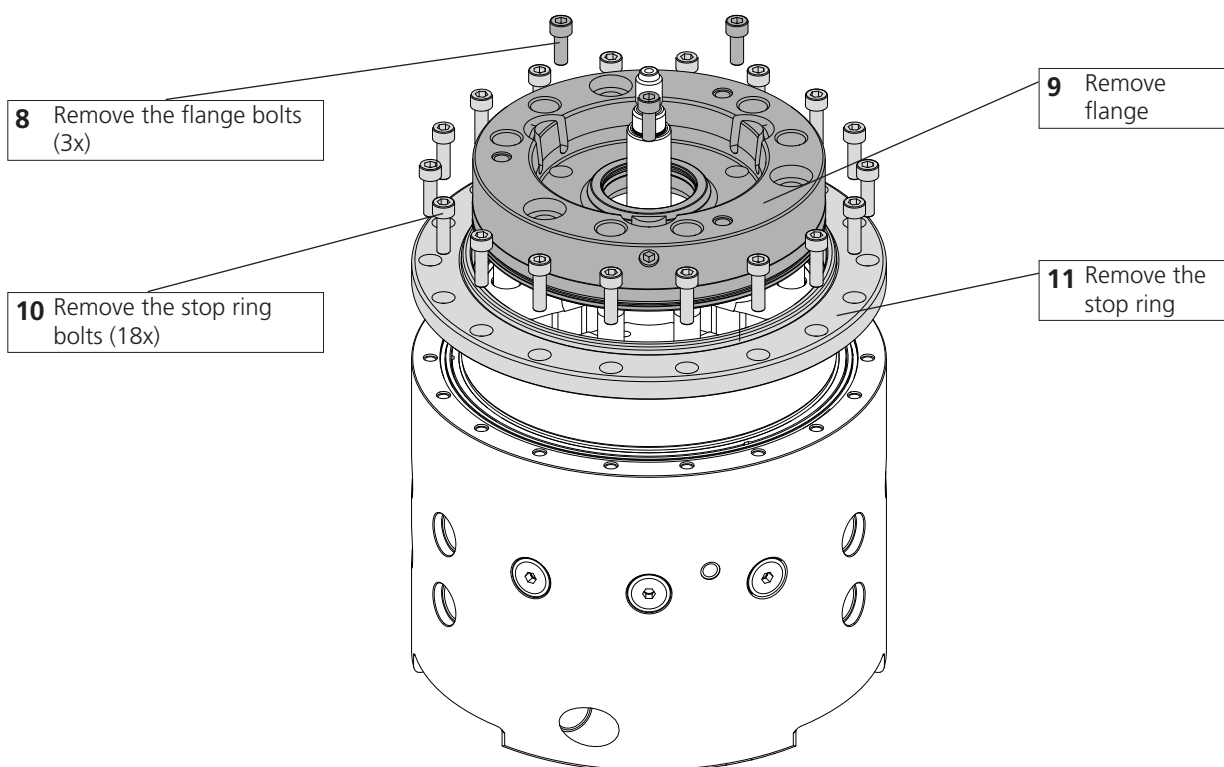
- The wear of the seals may affect the normal oil consumption.
- In case the oil consumption exceeds the max. volumes shown in the table, the chuck has to be inspected and the seals need to be changed.

## Disassembling

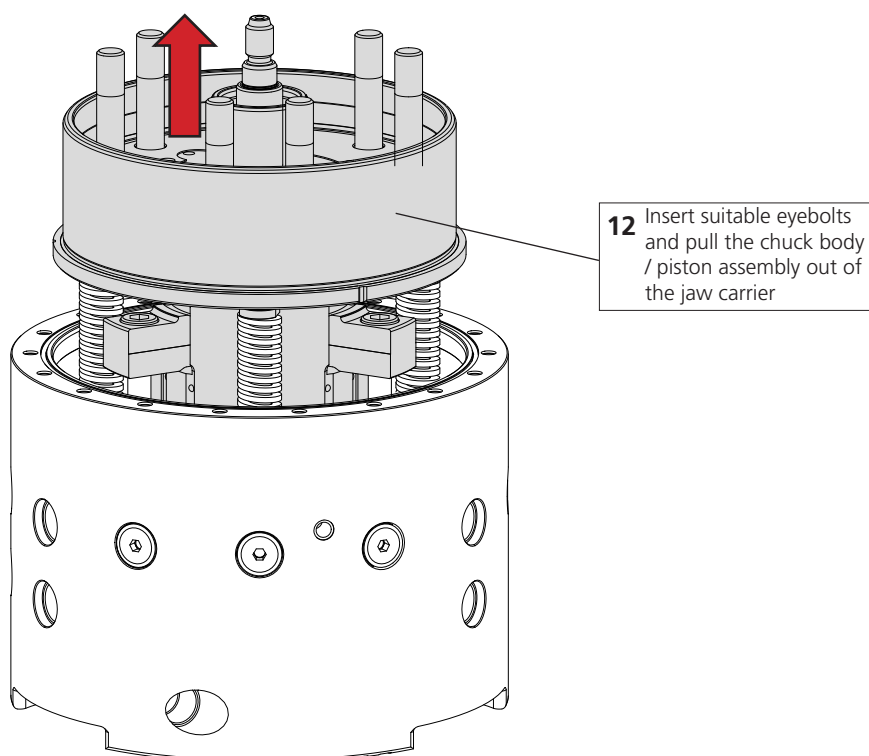
### 1 Disassembling of master jaws and plugs



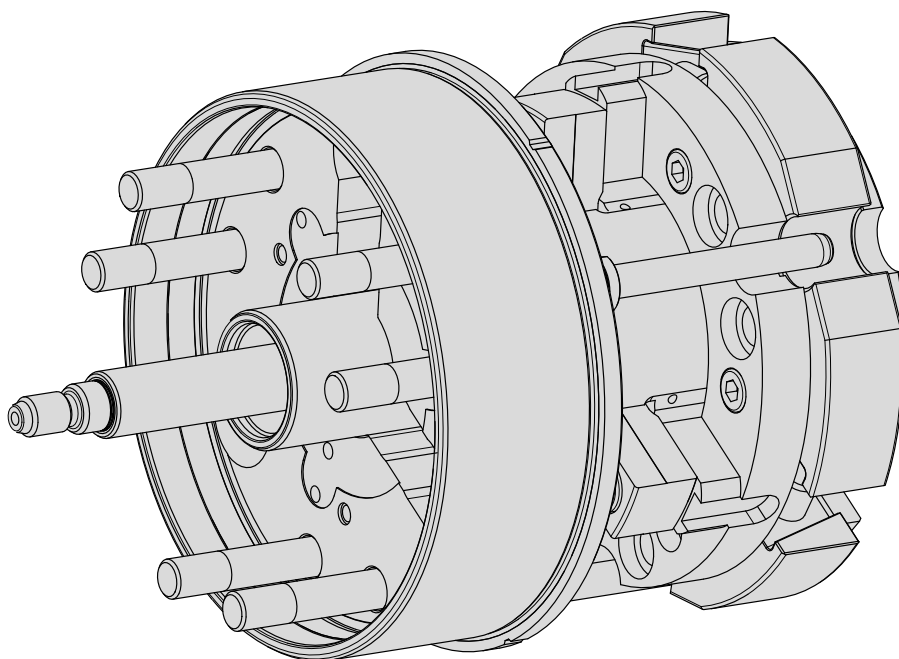
## 2 Disassembling of the stop ring



## 3 Disassembling of chuck body and jaw carrier



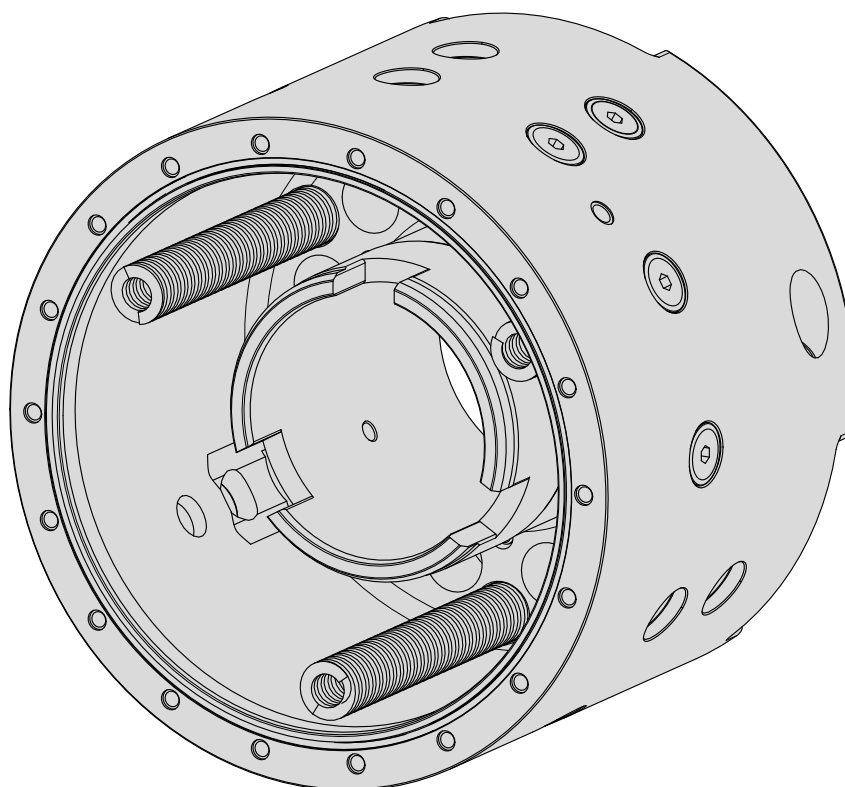
### 4 Assembly: Chuck body with ring piston



#### Attention!

- This assembly must not be disassembled!

### 5 Assembly: Jaw carrier





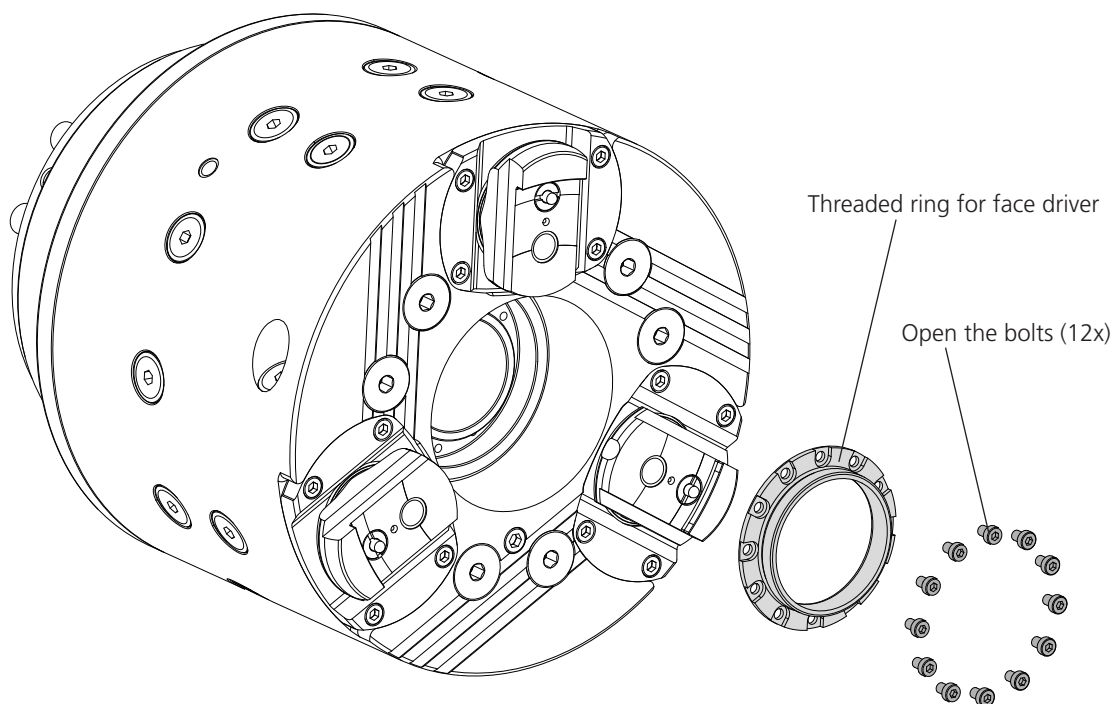
## Attention!

- Danger of damage to the chuck.
- Never apply force!
- When disassembling / assembling do not damage the seals.
- Clean all parts with suitable fluid.
- Do not use gasoline or diesel for cleaning.
- Dispose of cleaning liquid properly.
- Replace damaged or worn parts with original SMW-Autoblok spare parts only.



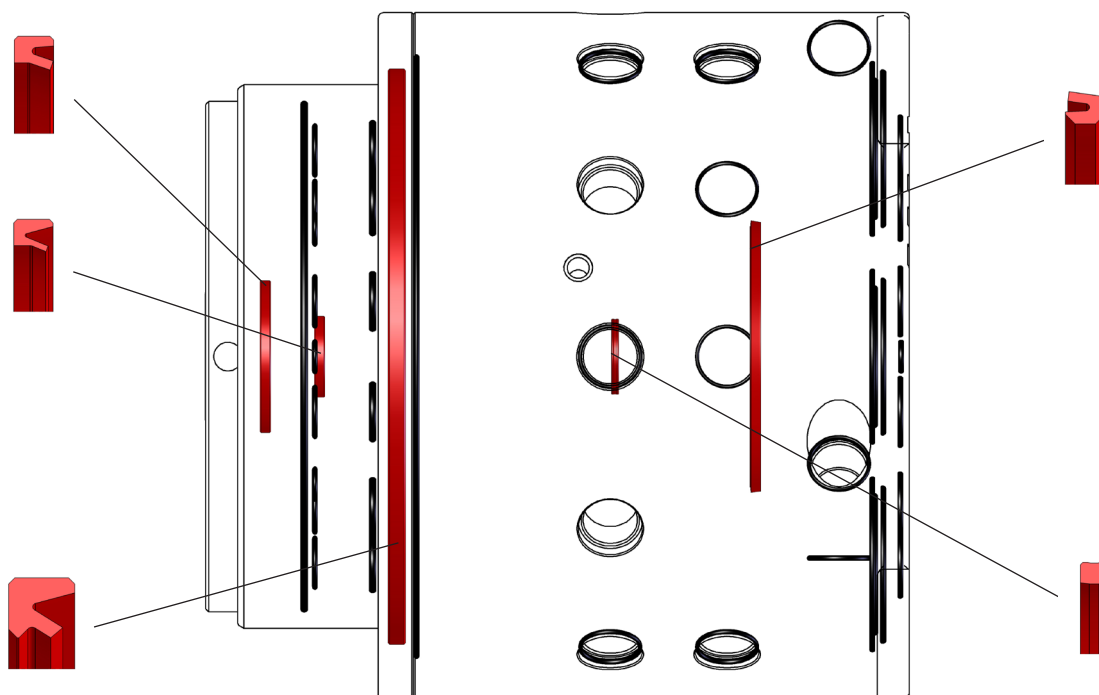
- Clean all parts and check for wear or damage.
- Remove all seals clean and check.
- We recommend using a new seal kit every time when assembling the chuck (see spare part list page 32).
- Oil all parts before assembling.

## Changing the face driver threaded ring W-215 / W-260 (only version Morse taper)



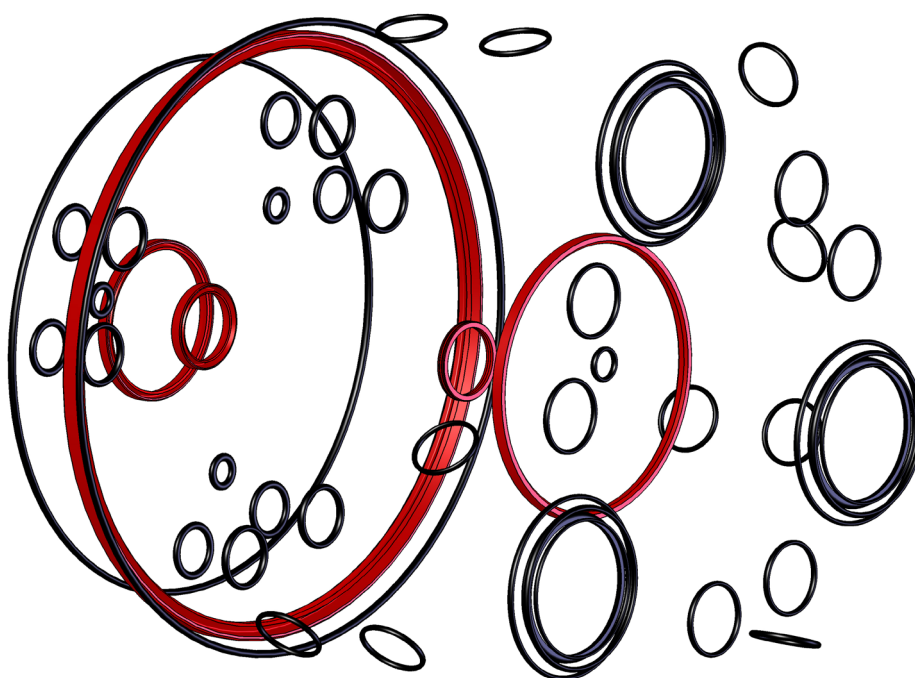
- The threaded ring has 4 tapped jack holes marked with the thread size.
- The thread size is given.
- Insert bolts with corresponding thread and remove the threaded ring.
- Insert new threaded ring and tighten the bolts with correct torque.

### Overview assembling - Seals

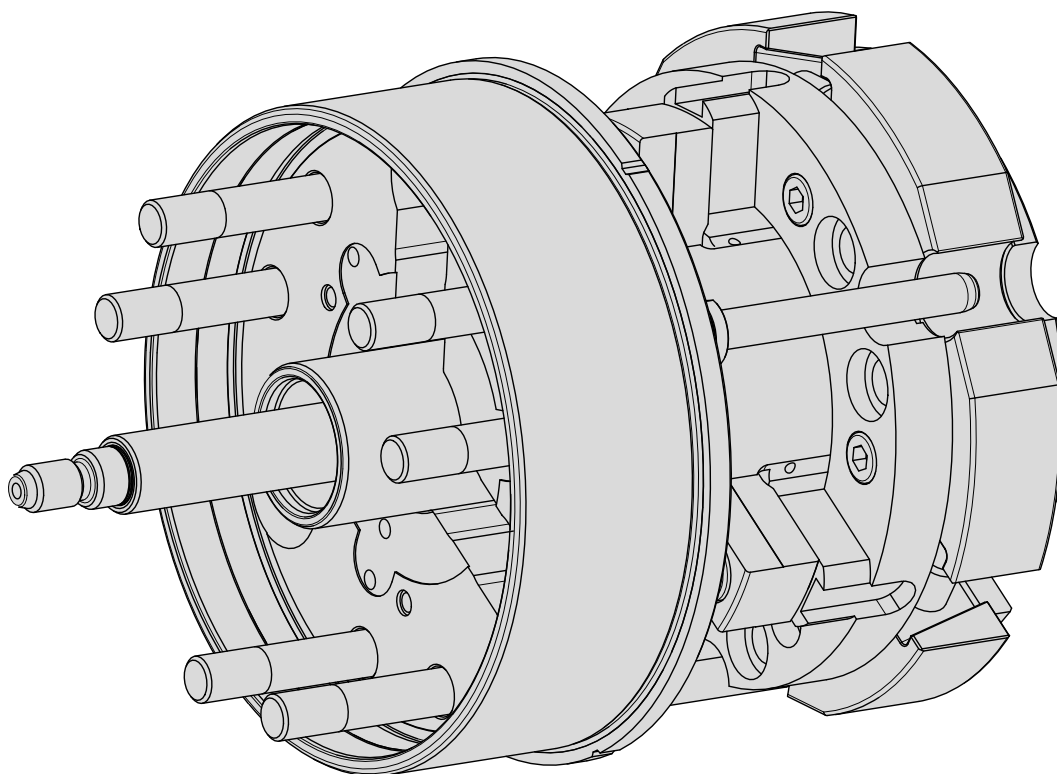


- Observe correct position when mounting the seals!

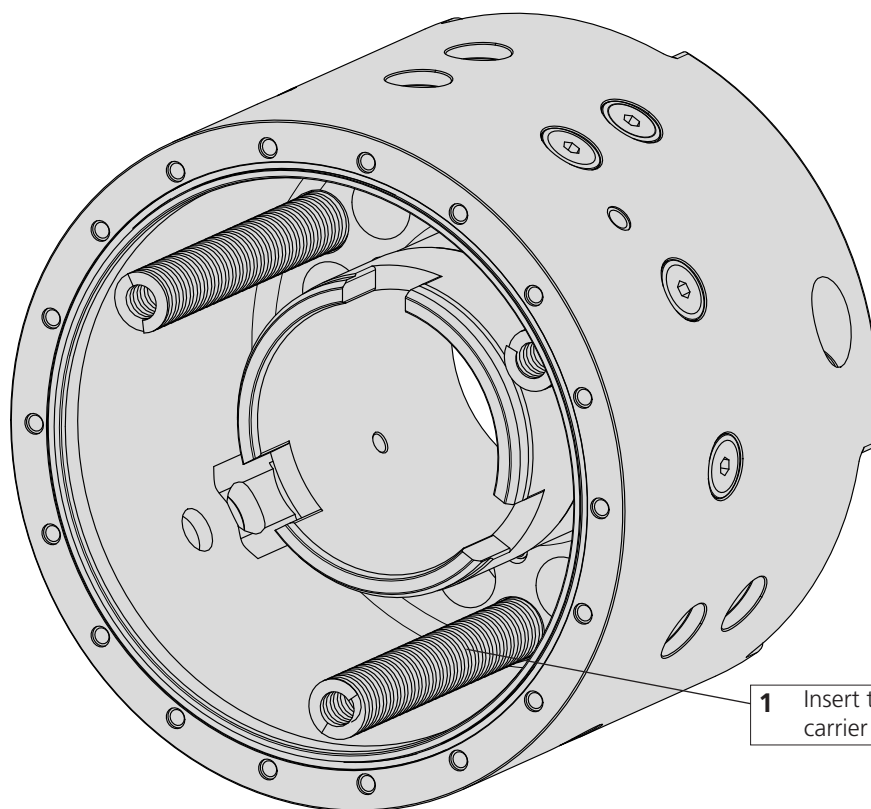
### Overview assembling - Seals



**1 Assembly: Chuck body with ring piston**



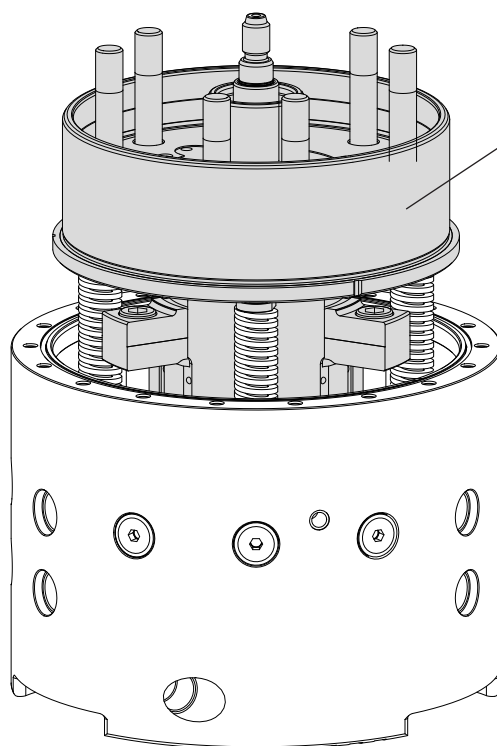
**2 Assembly: Jaw carrier**



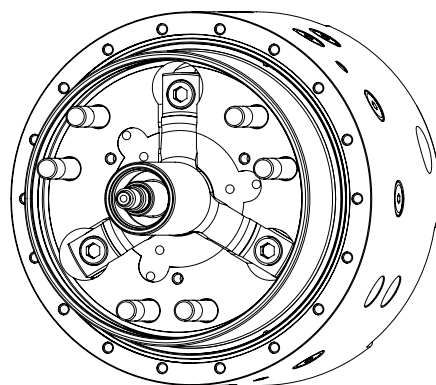
**1** Insert the springs into the jaw carrier (3x)



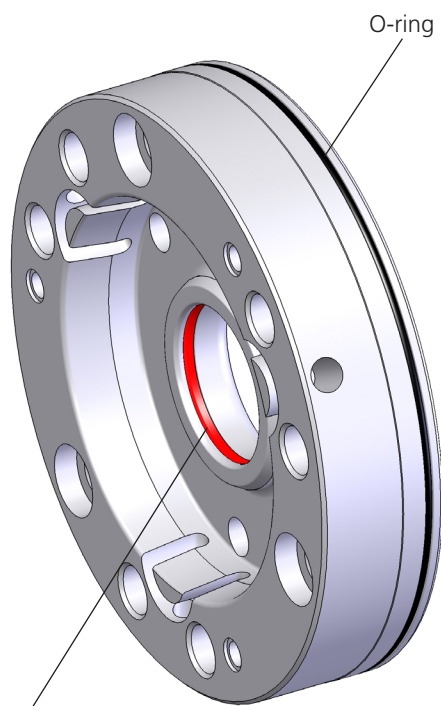
### 3 Assembling jaw carrier with chuck body



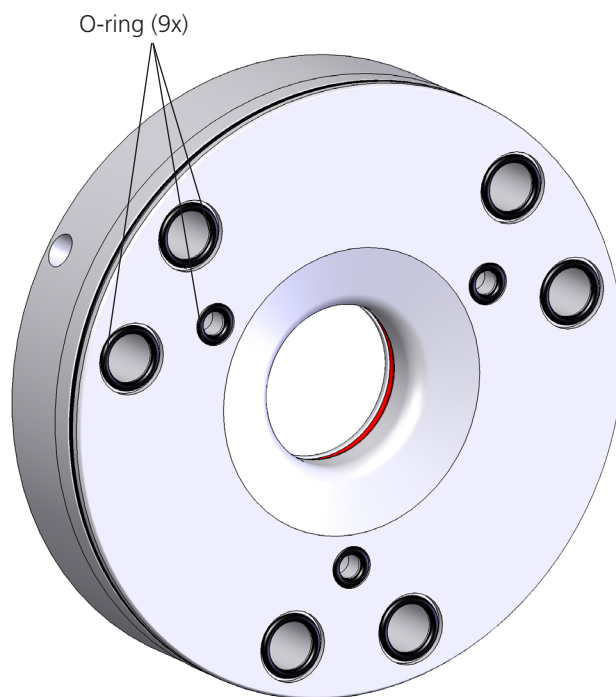
2 Assembling of jaw carrier with chuck body /ring piston assembly



### 4 Back flange with seals

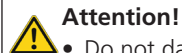


O-ring



O-ring (9x)

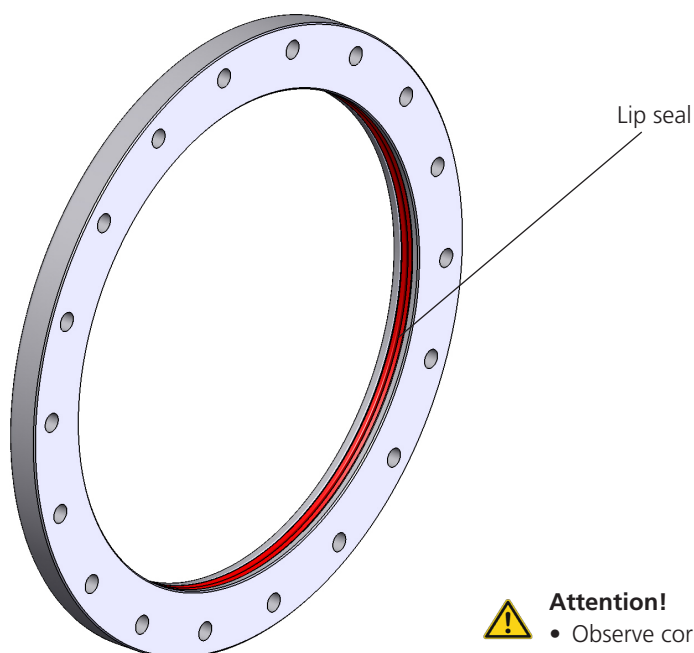
Lip seal



#### Attention!

- Do not damage the seals when assembling!

## 5 Stop ring with seal

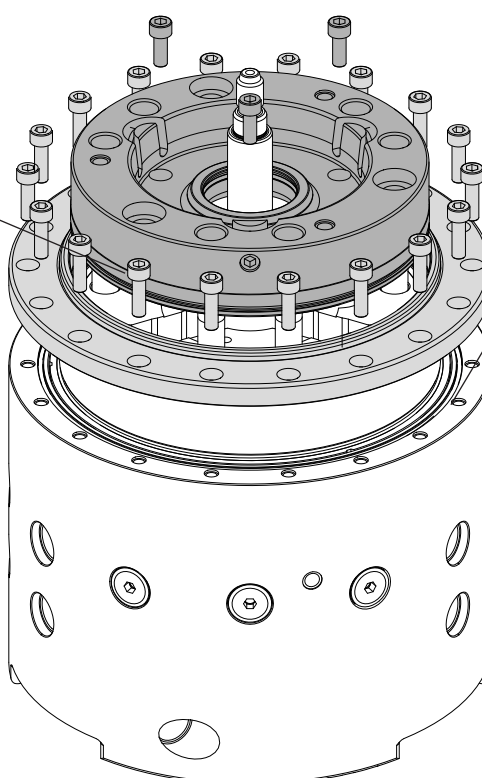


### Attention!

- Observe correct position when mounting the lip seal!

## 6 Mounting of back flange and stop ring

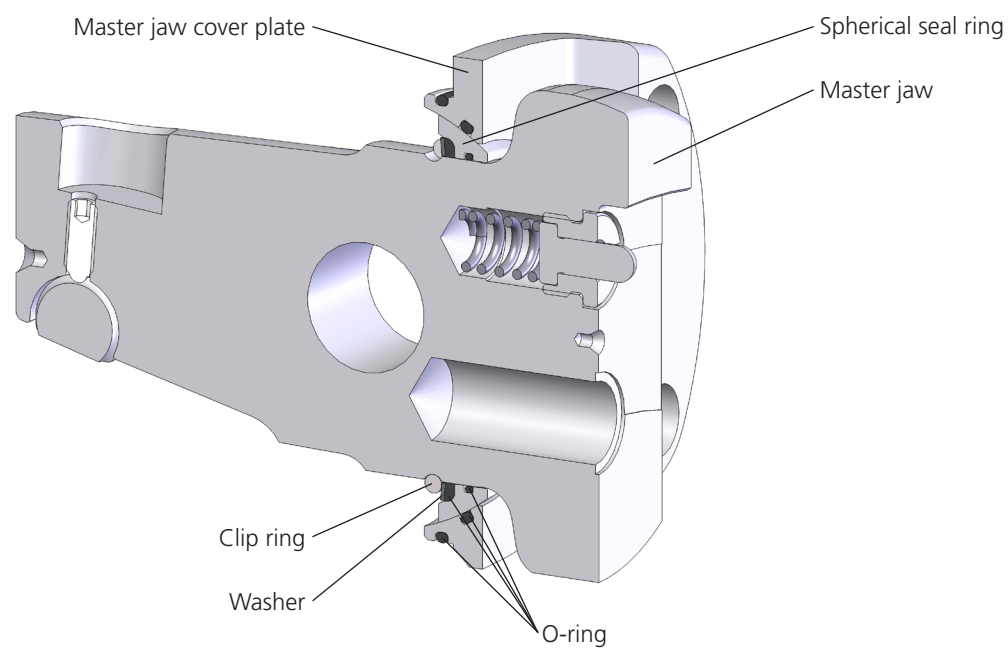
**3** Insert flange and tighten the bolts



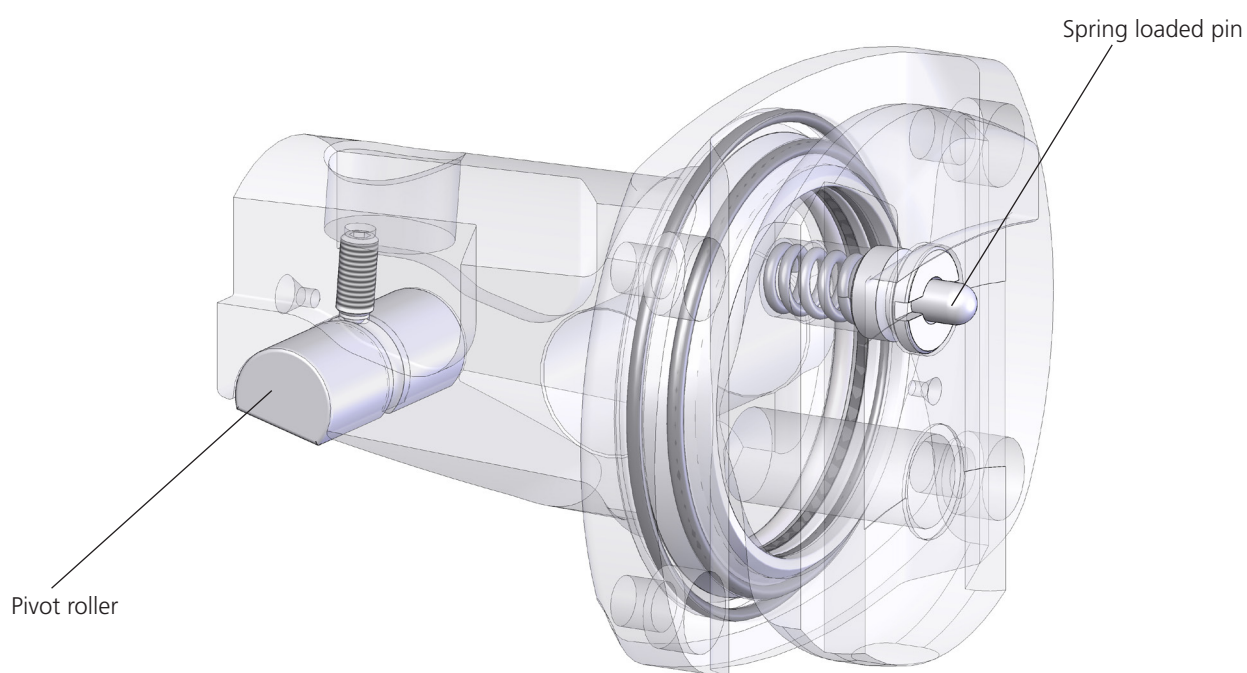
**4** Insert the stop ring and tighten the bolts



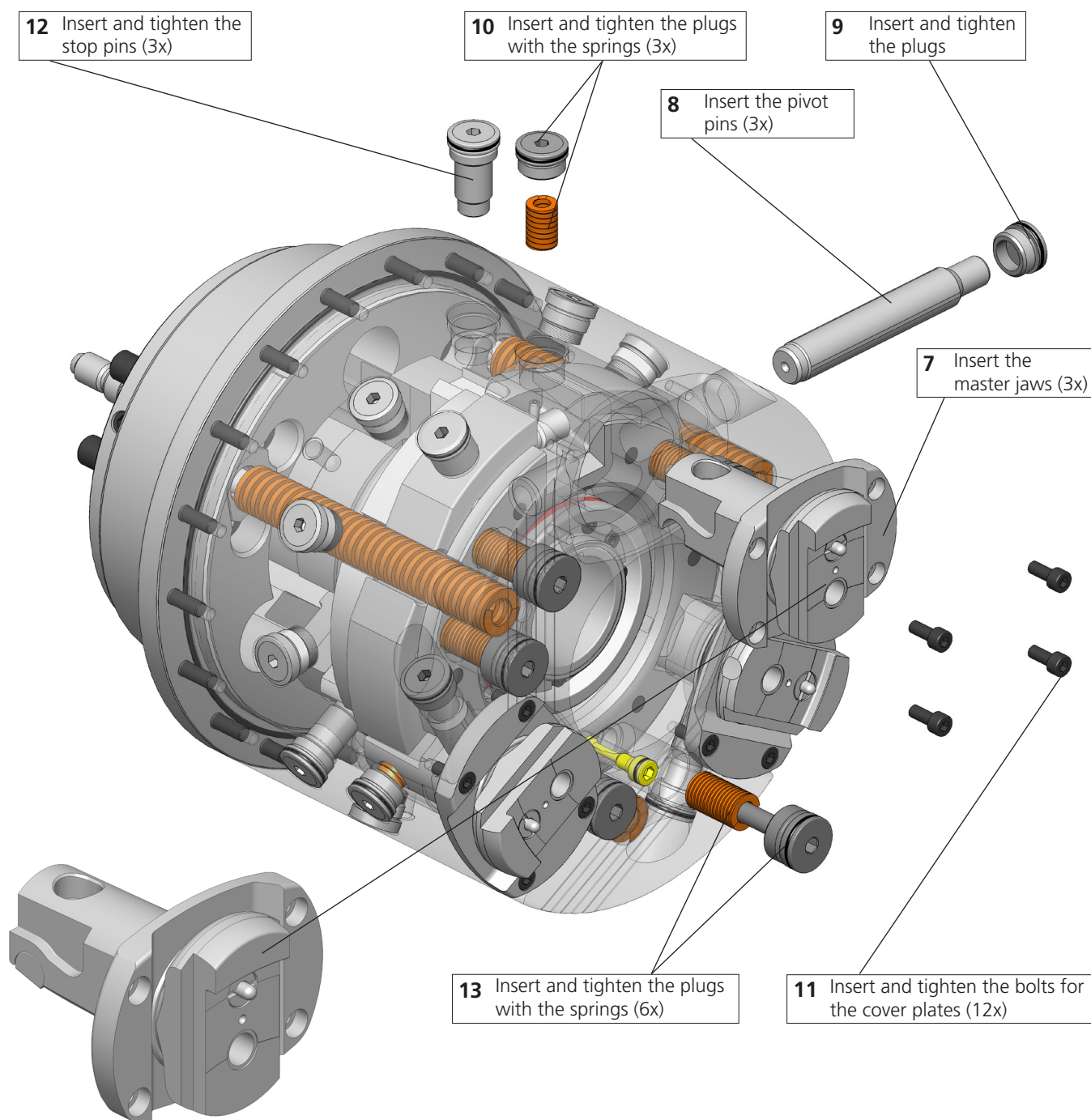
## 7 Assembling the master jaws



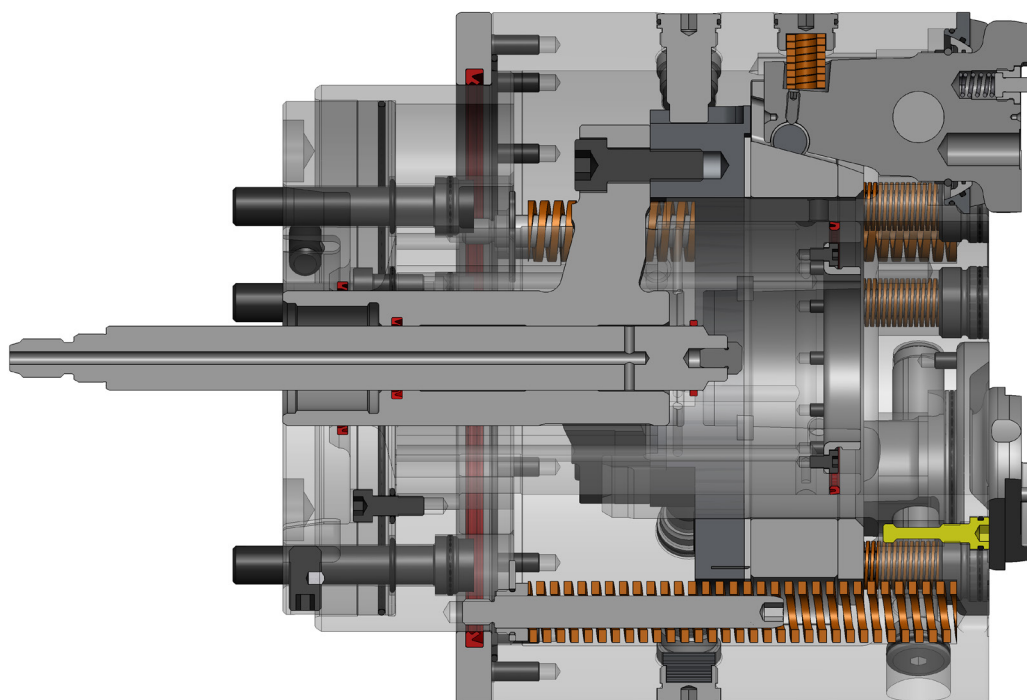
## 8 Assembling the master jaws



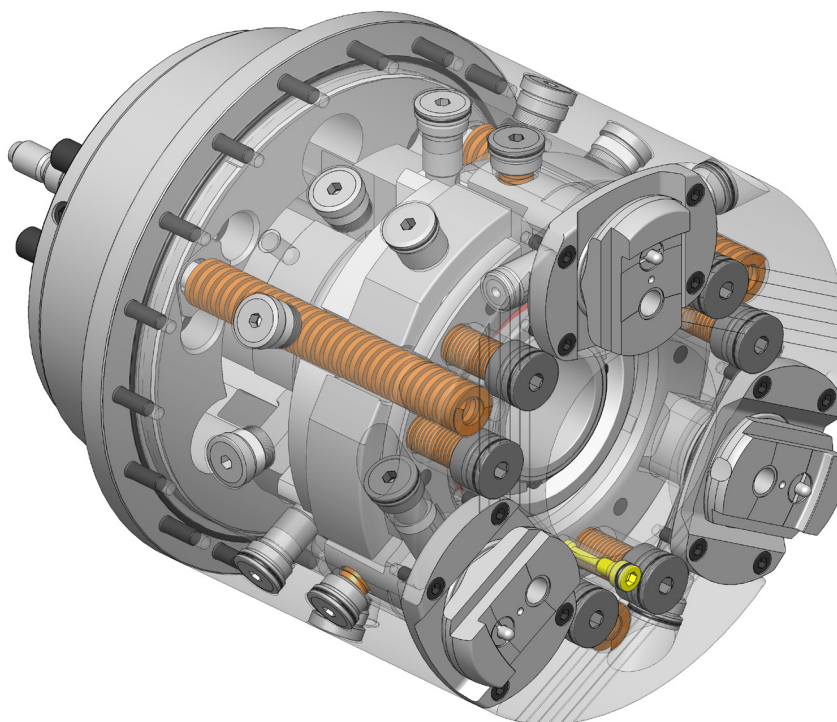
## 8 Master jaws and plugs

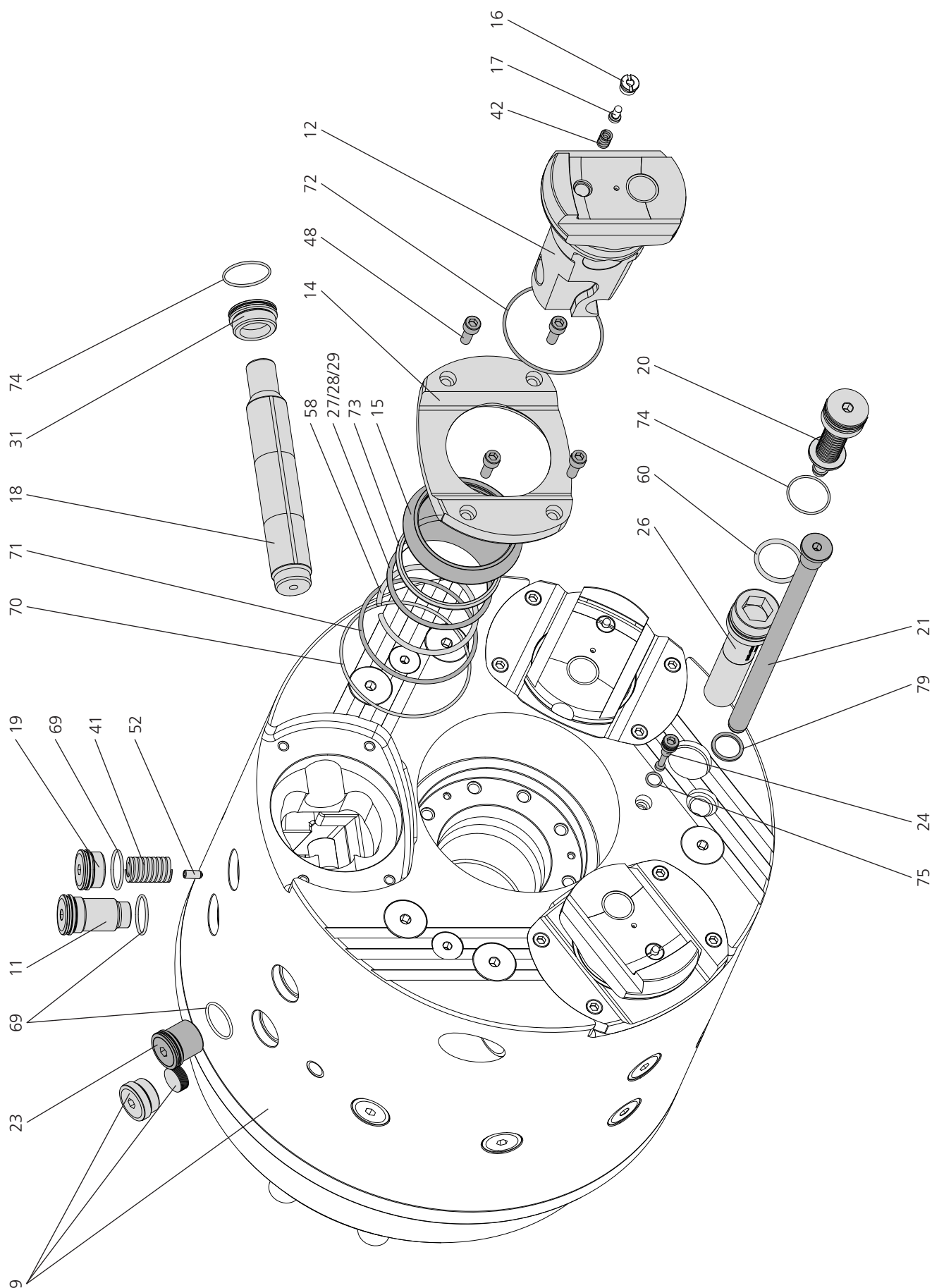


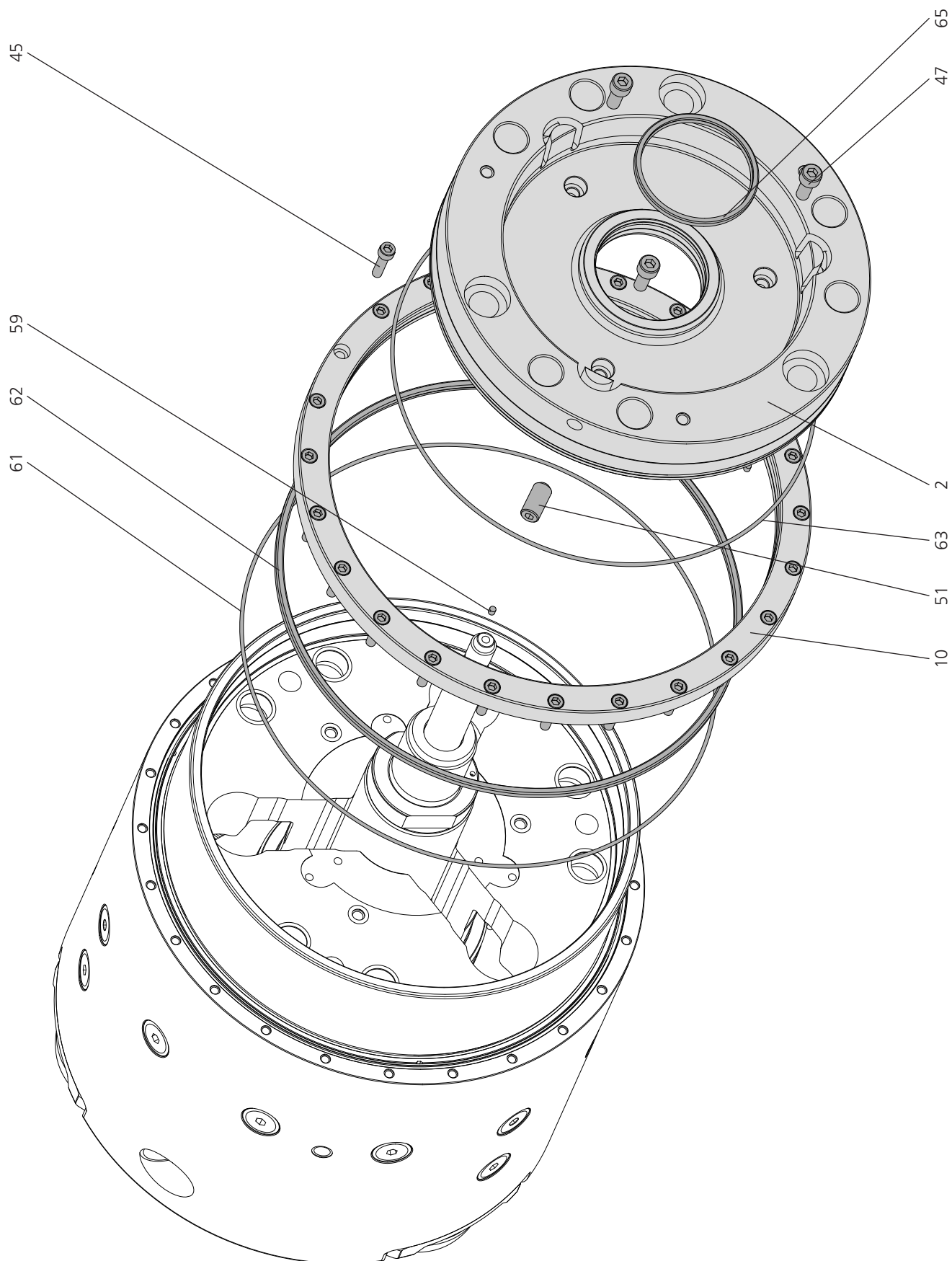
Chuck sectional drawing



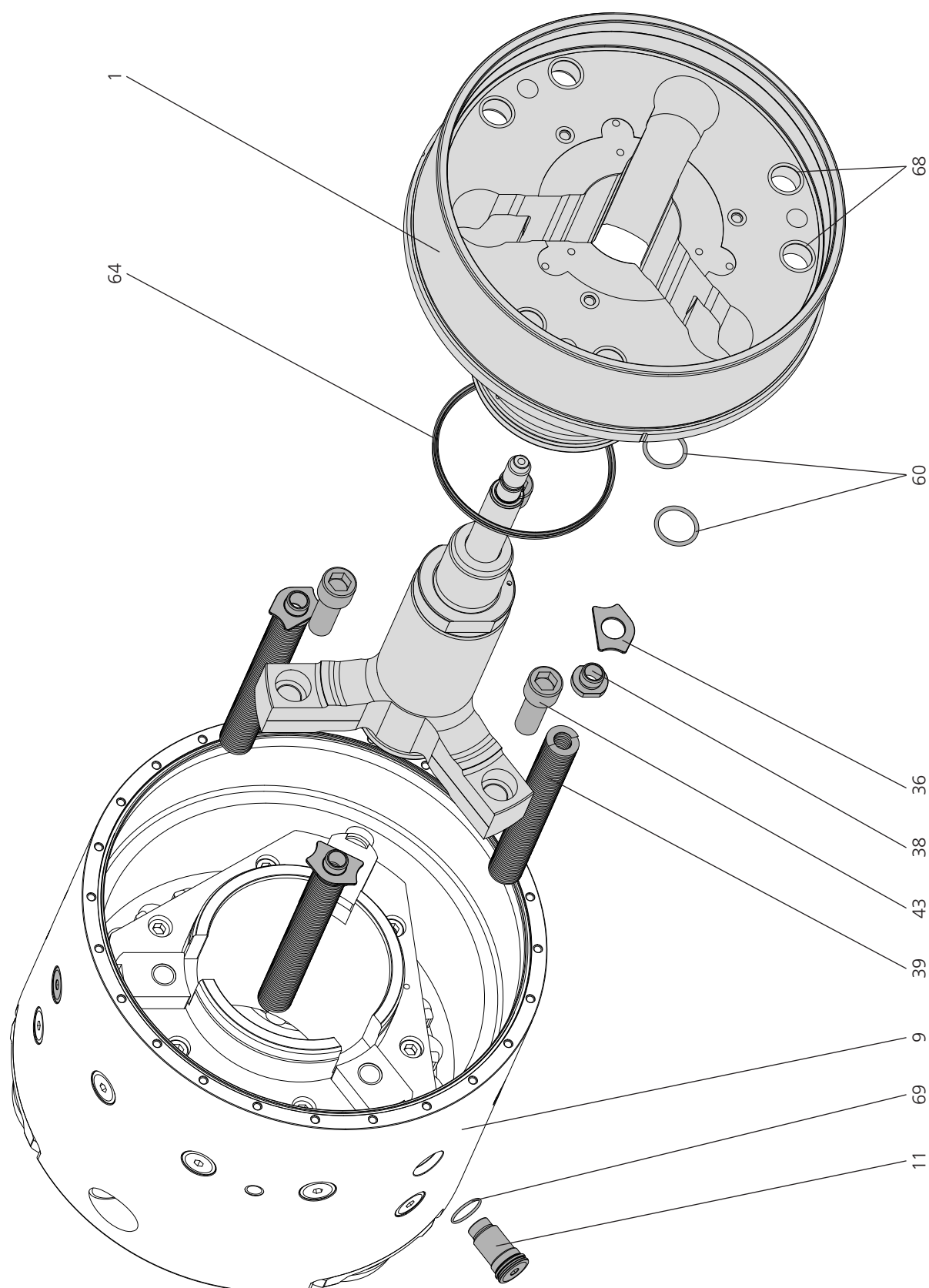
Chuck transparent view

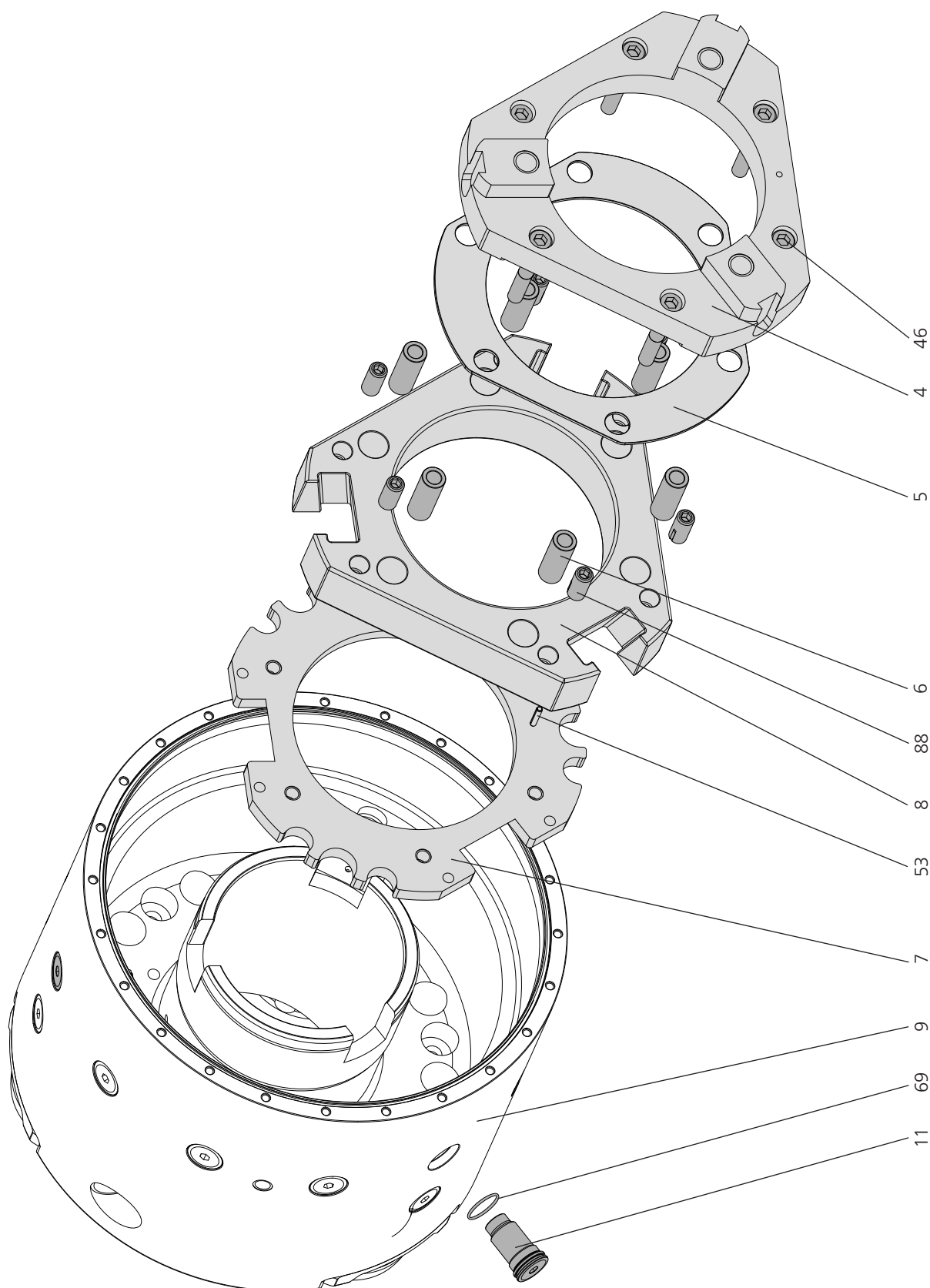


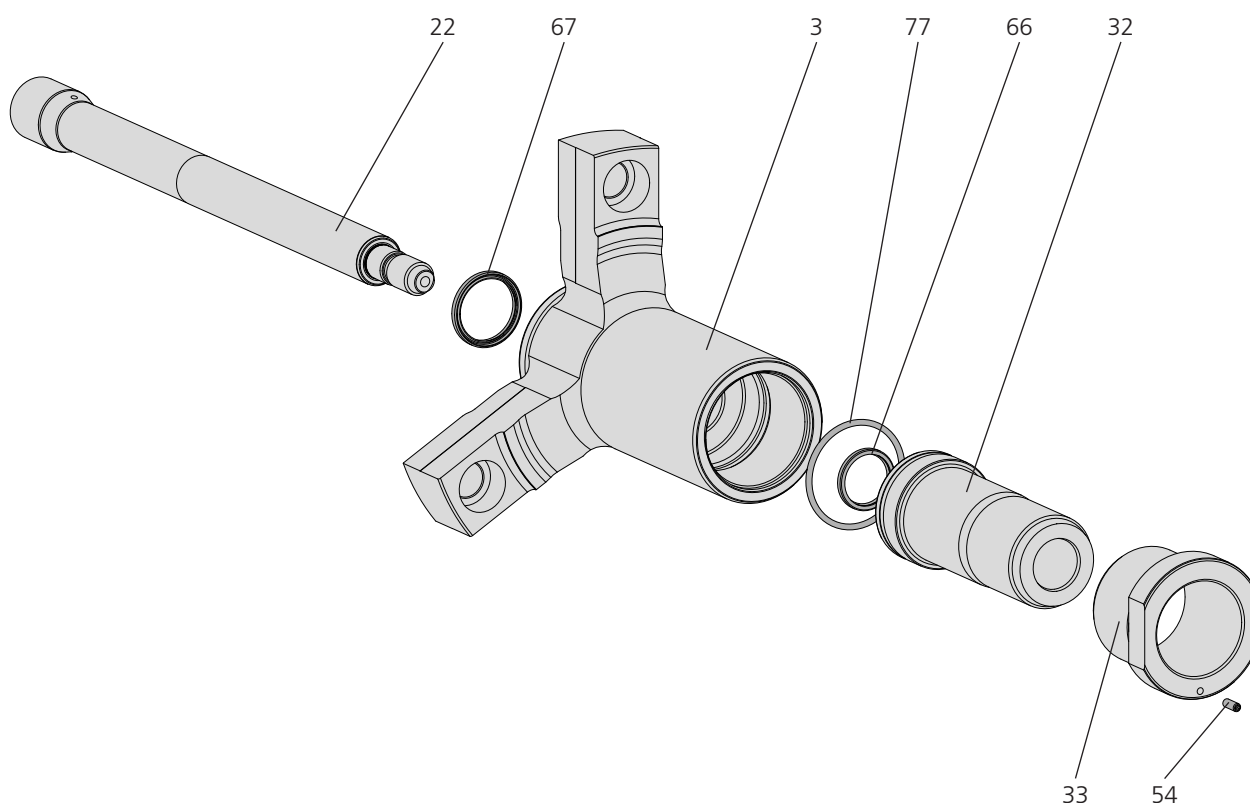












Spare part list seal kit (Pos. 80)

SMW-AUTOBLOK Type		W-215		W-260		W-325		W-460	
Pos.	Description	Qty.	Id. No.	Qty.	Id. No.	Qty.	Id. No.	Qty.	Id. No.
60	O-ring	6	197337	6	195369	6	089037	6	197494
61	O-ring	1	197149	1	197314	1	197685	1	199049
62	Lip seal	1	197021	1	197313	1	197581	1	199030
63	O-ring	1	197150	1	085575	1	197578	1	199059
64	Piston seal	1	197151	1	197315	1	197582	1	199029
65	Lip seal	1	197152	1	197316	1	197583	1	199028
66	Lip seal	1	197153	1	197317	1	197584	1	199027
67	Lip seal	1	197154	1	197318	1	197585	1	199026
068N	O-ring	6	197337	6	199536	6	199537	6	199538
068A	O-ring	6	197155	6	197327	6	197336	-	-
69	O-ring	10	012378	7	012378	7	197172	7	197172
70	O-ring	3	197475	3	197362	3	197837	3	198981
71	O-ring	3	202542	3	202543	3	197838	3	198980
72	O-ring	3	197158	3	197360	3	197832	3	195407
73	O-ring	3	197159	3	197361	3	197833	3	198988
74	O-ring	6	197172	9	197172	9	197705	9	199665
75	O-ring	1	197205	1	197205	1	197205	1	197205
76	O-ring	3	197328	3	197328	3	085841	3	194572
77	O-ring	-	-	1	197359	1	196486	1	199056
78	O-ring	-	-	6	197337	6	195369	-	-
79	Sealing ring	-	-	3	085243	3	085243	3	016391



## Spare part list chuck

SMW-AUTOBLOK Type		W-215		W-260		W-325		W-460	
Pos.	Description	Qty.	Id. No.	Qty.	Id. No.	Qty.	Id. No.	Qty.	Id. No.
1	Chuck body	1	069938	1	069441	1	069032	1	069565
2	Back flange	1	068622	1	068797	1	068987	1	069566
3	Piston	1	068624	1	068799	1	068989	1	069567
4	Ring piston	1	068951	1	068800	1	068990	1	069568
5	Start disc	1	068626	1	068801	1	068991	-	-
6	Spacer sleeve	6	068627	6	068802	6	068992	6	069570
7	Retaining plate	1	068628	1	068803	1	068993	1	069571
8	Ring piston-c	1	068629	1	068804	1	068994	1	069572
9	Jaw carrier complete	1	069490	1	069492	1	069494	1	069613
10	Stop ring	1	068631	1	068806	1	068996	1	069575
11	Stop bolt	3	068632	3	068632	3	068997	3	069576
12	Base jaw	1 set	068633	1 set	068808	1 set	068998	1 set	069577
13	Squeeze roll	3	068634	3	068809	3	068999	3	069578
14	Cover plate	3	068940	3	068810	3	069000	3	069579
15	Spherical seal ring	3	068636	3	068811	3	069001	3	069580
16	Thrust bolt guide	3	063551	3	063551	3	063551	3	063551
17	Thrust bolt	3	067155	3	067155	3	067155	3	067155
18	Pivot pin	3	068637	3	068812	3	069002	3	069583
19	Lock screw	6	068638	3	068638	3	069003	3	069003
20	Lock screw complete	6	068639	6	068807	6	069004	6	069584
21	Pressure guide	3	069990	3	069991	3	069992	3	069993
22	Push rod	1	068641	1	068816	1	069006	1	069586
23	Oil fill plug	1	068642	1	068818	1	069008	1	069569
24	Oil level control plug	1	068643	1	068643	1	068643	1	068643
26	Fixing screw	6	069041	6	068820	6	069010	6	069590
27	Pressure plate	-	-	-	-	-	-	6	069591
28	Pressure plate	-	-	-	-	-	-	3	069592
29	Pressure plate	3	068649	3	068824	3	069014	3	069593
31	Lock screw axis	-	-	3	068813	3	069015	3	069594
32	Pull sleeve	-	-	1	065497	1	066181	1	069595
33	Lock nut	-	-	1	060898	1	069324	1	069596
36	Holding plate	3	069984	3	069985	3	069986	3	069987
38	Retainer sleeve	-	-	3	069995	3	069996	3	069997
39	Pressure spring	3	196520	3	197344	3	197760	3	199645
41	Pressure spring	3	196198	3	197347	3	084174	3	083033
42	Pressure spring	3	196192	3	196192	3	196192	3	196192
43	Cylinder head screw	3	010198	3	010209	3	010448	3	010449
45	Cylinder head screw	18	010806	21	010806	24	010171	27	010184
46	Cylinder head screw	6	018074	6	014018	6	010586	6	193401
47	Cylinder head screw	3	010167	-	-	3	010182	-	-
48	Cylinder head screw	12	010154	12	010167	12	010167	12	010806
51	Set screw	3	068983	3	068984	3	068984	-	-
52	Ball-type screw	3	196657	3	196657	3	088272	3	088272
53	Clamping sleeve	1	080480	1	010227	1	010227	-	-
54	Set screw	-	-	1	019090	1	080201	1	080201
58	Clip ring	3	196573	3	197300	3	197695	3	198986
59	Thread lock	3	069025	3	069025	3	069025	-	-
80	Seal kit complete	1	197476	1	197319	1	197779	1	199783
81	Hexagon socket insert	1	196209	1	197436	1	197717	1	199837
82	Socket head wrench	1	197203	1	197437	1	197718	1	198847
83	Mounting key complete	-	-	1	068866	1	068963	1	069598
86	Chuck lubrication	1	197859	1	197859	1	197859	2	197859
88	Pressure piece	6	198903	6	198903	6	198817	6	199732

$F_{sp}$	= req. static chuck grip force	N	$F_s$	= main cutting force	N
$F_{spd}$	= dyn. chuck grip force	N	$F_c$	= centrifugal force of jaws	N
$M_{dz}$	= machining torque	Nm	$M_{dsp}$	= chuck clamping torque	Nm
$a$	= depth of cut	mm	$d_{sp}$	= clamping diameter	m
$d_z$	= machining diameter	m	$f$	= feed	mm/rev.
$k_s$	= specific cutting force (see diagram)	N/mm <sup>2</sup>	$m_B$	= mass jaws per set	kg
$n$	= speed	min <sup>-1</sup>	$r_s$	= cent. of gravity radius jaw	m
$\mu_{sp}$	= coefficient of friction (see diagram)		$S$	= safety factor (1.5 - 2)	

req. static chuck grip force:

$$F_{sp} = \frac{F_s \cdot S}{\mu_{sp}} \cdot \frac{d_z}{d_{sp}} \text{ [N]}$$

centrifugal force of jaws:

$$F_c = \Sigma(m_B \cdot r_s) \cdot \left( \frac{\pi \cdot n}{30} \right)^2 \text{ [N]}$$

machining torque:

$$M_{dz} = \frac{F_s \cdot d_z}{2} \text{ [Nm]}$$

main cutting force:

$$F_s = f \cdot a \cdot k_s \text{ [N]}$$

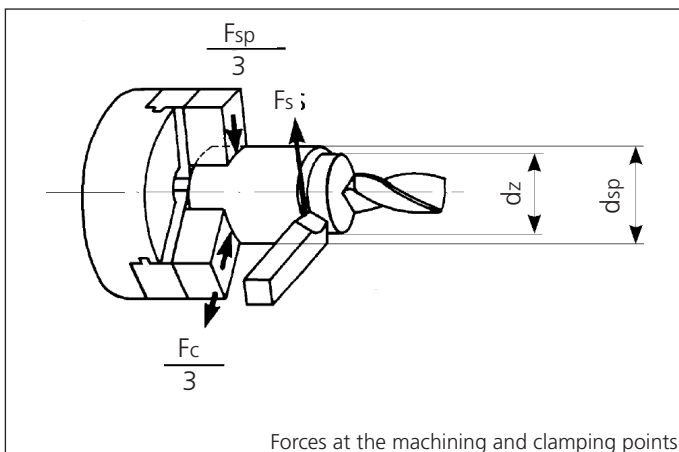
dyn. chuck grip force:

$$F_{spd} = F_{sp} - F_c \text{ [N]}$$

chuck clamping torque:

$$M_{dsp} = \frac{F_{sp} \cdot \mu_{sp} \cdot d_{sp}}{2} \text{ [Nm]}$$

The dynamic grip force **F<sub>spd</sub>** is calculated from the static grip force **F<sub>sp</sub>** less total centrifugal force of jaws **F<sub>c</sub>**.



## Tolerance classes

The axial and radial runout tolerances are according to the Technical Terms of Delivery for power operated lathe chucks **DIN 6386** of tolerance class 1.

## Permissible unbalance

The max. permissible unbalance for lathe chucks is according the Technical Terms of Delivery for power operated lathe chucks **DIN 6386** of tolerance class 1.



**Determination of the permissible speed of lathe chucks (jaw chucks) has to be carried out according to VDI 3106!**

## Specific cutting forces $k_s$ N/mm<sup>2</sup>

Specific cutting force  $k_s$  at feed  $s$  and setting angle of 45°

Material	Strength N/mm <sup>2</sup>	Feed $s$ (mm)					
		0.16	0.25	0.40	0.63	1.00	1.60
Steels	St42	... - 500	2600	2400	2200	2050	1900
	St50	520	3500	3100	2750	2450	2150
	St60	620	3050	2800	2600	2400	2200
	C45	670	3050	2800	2600	2400	2200
	C60	770	3050	2800	2600	2400	2200
	St70	720	4350	3800	3300	2900	2500
	18CrNi6	630	4350	3800	3300	2900	2500
	42CrMo4	730	4350	3900	3450	3100	2750
	16MnCr5	770	3750	3300	2950	2600	2300
	Mn, CrNi	850 - 1000	3700	3400	3100	2800	2550
Cast iron materials	Mn-hardened		5400	4900	4400	4000	3600
	GS45	300 - 500	2300	2100	1950	1800	1700
	GS52	500 - 700	2550	2350	2200	2050	1900
	GG16	HB 2000	1500	1350	1200	1100	1000
	GG25	HB 2000 - 2500	2050	1800	1600	1450	1300
Non ferrous metals	Cast bronze		2550	2350	2200	2050	1900
	Gunmetal		1100	1000	900	800	700
	Brass	HB 800 - 1200	1200	1100	1000	900	800
	Cast alu.	300 - 420	1100	1000	900	800	700

## Coefficient of friction $\mu_{sp}$ for steel parts

Surface of workpiece	Gripping surface of jaws		
	smooth	diamond style	serrated
smooth mach. finish ground	0.07	0.12	0.20
rough to med. machined	0.10	0.20	0.35
unmachined	0.15	0.30	0.45
Correction factors	Aluminium alloy = 0.95 Brass = 0.90 Grey cast iron = 0.80		

Trouble	Caused by		Action
Crash/damage of the chuck or the top jaws	<b>A</b>	Collision with the turret etc.	For safety reasons the chuck must be sent back to SMW-AUTOBLOK for inspection.
Vibration on the machine spindle	<b>A</b>	Imbalance caused by the work piece	When the values for the offset of the clamping dia. to the center line exceed the max. allowed values (max. compensation) shown on page 9 of this manual, the clamping dia. must be machined prior to clamping.
	<b>B</b>	Installation imbalance: <ul style="list-style-type: none"> <li>• machine spindle</li> <li>• drive</li> <li>• clamping cylinder</li> <li>• cylinder adapter</li> <li>• chuck spindle adapter</li> <li>• drawbar / tube</li> </ul>	Check concentricity of all parts. Check balance of all parts after installing. Balance or replace if necessary.
	<b>C</b>	Imbalance caused by a crash	For safety reasons the chuck must be sent back to SMW-AUTOBLOK for inspection.
Loss of gripping force	<b>A</b>	Lubrication is insufficient	Check the oil level
	<b>B</b>	Malfunction of the chuck	For safety reasons the chuck must be sent back to SMW-AUTOBLOK for inspection.
	<b>C</b>	Clamping cylinder is defective	Check the axial force of the cylinder at different pressures.
Repeatability	<b>A</b>	Mounting to the spindle	Check the correct torque of the mounting bolts. Check if the locking screws of the radial spindle locking are tightened correctly
Insufficient jaw stroke	<b>A</b>	Cylinder stroke is too short	Use longer stroke cylinder
	<b>B</b>	Incorrect draw tube length	Correct draw tube length
	<b>C</b>	Draw tube connector has become loose	Retighten draw tube connector
	<b>D</b>	Top jaws interfere with face driver	Correct the dimensions
Actuating speed is becoming slower	<b>A</b>	Hydraulic pressure too low	Check actuating speed of the cylinder at different pressures
Jaw carrier moves slowly	<b>A</b>	Cylinder defective	For safety reasons the chuck must be sent back to SMW-AUTOBLOK for inspection.
Work piece is spinning on the face driver	<b>A</b>	Force of the cylinder is too low	Check cylinder and hydraulic pressure
	<b>B</b>	Driving pins have insufficient stroke	Check the length of the push rod, check length of the driving pins (page 13)
	<b>C</b>	Stroke is correct but driving pins do not hit the work piece face	Wrong center point installed on the face driver. Wrong centerbore on workpiece, check both
	<b>D</b>	Driving pins are worn out	Replace the driving pins
	<b>E</b>	Tail stock force too low	Check the tail stock force and adjust accordingly
	<b>F</b>	Cutting forces too high	Reduce cutting force
Runout at the work piece	<b>A</b>	Face driver mounted incorrectly	Clean the taper of the chuck and the face driver
	<b>B</b>	Center bores of the work piece are damaged	Remachine or clean the center bores

## 12 months warranty

**Product:**    **Shaft chuck**

SMW-AUTOBLOK provides a warranty on the purchased product for 12 months from the date of purchase as stipulated in our General Terms of Sale in the following cases:

- The defect was not known to the customer at the time of purchase.
- The defect is not due to wear as a result of use.
- The customer has not been negligent by improperly operating or incorrectly maintaining of our product. Refer to the enclosed instruction manual for operation and maintenance information.
- It is not a wear part such as seals, rollers or valves.
- Especially work piece touching parts such as jaws, locators, inserts, rollers and face drivers are excluded from warranty.
- Only original SMW-Autoblok parts have been used such as spare parts, seals, rollers, valves, jaws, locators, inserts and face drivers.
- There is evidence that the maintenance intervals in the operating instructions have been followed. The customer must provide maintenance documentation for this purpose. The maintenance performed must be documented in the maintenance section of the operating instructions and signed by a properly authorized person.

Please note that, if the above requirements are not met, the warranty is only invalid if the defect already existed at the time of transfer of risk, which is usually upon delivery of the product, unless the customer was aware of the defect at the time of transfer of risk.

## 24-months warranty -optional-

**Product: Shaft chuck**

**Against additional fee,** SMW-AUTOBLOK offers a warranty on the purchased product for 24 months from date of purchase as a modification to the 12-month limitation period stipulated in our General Terms of Sale if the following conditions are met:

- An extension of the warranty from 12 to 24 months has been agreed upon in writing with SMW-AUTOBLOK.
- There is no defect due to wear as a result of use.
- The defect was not known to the customer at the time of purchase.
- The customer has not been negligent by improperly operating or incorrectly maintaining of our product. Refer to the enclosed instruction manual for operation and maintenance information.
- It is not a wear part such as seals, rollers or valves.
- Especially work piece touching parts such as jaws, locators, inserts, rollers and face drivers are excluded from warranty.
- Only original SMW-Autoblok parts have been used such as spare parts, seals, rollers, valves, jaws, locators, inserts and face drivers.
- There is evidence that the maintenance intervals in the operating instructions have been followed. The customer must provide maintenance documentation for this purpose. The maintenance performed must be documented in the maintenance section of the operating instructions and signed by a properly authorized person.
- Paid inspection by or at SMW-AUTOBLOK is mandatory.  
Minimum interval with maintenance documentation by SMW-AUTOBLOK.

Single shift operation	once in 24 months
2- and 3-shift operation	once in 12 months

The customer is responsible for having inspections performed on time.


- The delivery location and machine location are within Germany.


Product: \_\_\_\_\_


Serialno.: \_\_\_\_\_




Regular and documented maintenance conserves the value of your work holding, and ensures warranty!

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		


Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		


Product: \_\_\_\_\_


Serialno.: \_\_\_\_\_




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Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
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Remarks		

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Operating hours		
Name		
Date		
Signature		
Remarks		

Maintained according to instruction manual	YES <input type="checkbox"/>	
Operating hours		
Name		
Date		
Signature		
Remarks		







# Empfangsbestätigung für die Betriebsanleitung Confirmation of receipt of the instruction manual



Hiermit bestätigt die vom Betreiber/ Anwender beauftragte Person

This certifies the operator assigned by the operating company

Herr / Frau

Mr. / Mrs.

den Erhalt der Betriebsanleitung sowie deren Inhalte, insbesondere das Kapitel Sicherheit gelesen und verstanden zu haben.

hereby confirms to have received the instruction manual and to have read and understood the content, especially the chapters concerning safety.

Bediener

Datum

Operator

Date

Betreiber / Sachbeauftragter

Datum

Operating Company /  
Authorised person

Date



Id.Nr. / Id. No.

:

Artikelbez. / Item

:

Gewicht / Weight

:

Seriennr. / Serialno.

:

Bitte ausgefüllt zurückschicken an:

Please send the filled in form back to:

**SMW-AUTOBLOK**

**Spannsysteme GmbH**

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**D-88074 Meckenbeuren**

**Fax: +49 (0) 7542 - 405 181**

**Mail: sales@smw-autoblok.de**





Id. No. :

Item :

Weight :

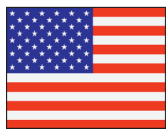
Serialno. :

**Germany**

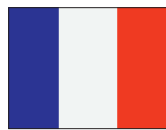
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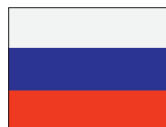
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