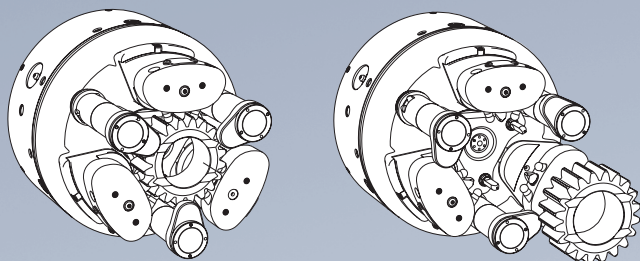


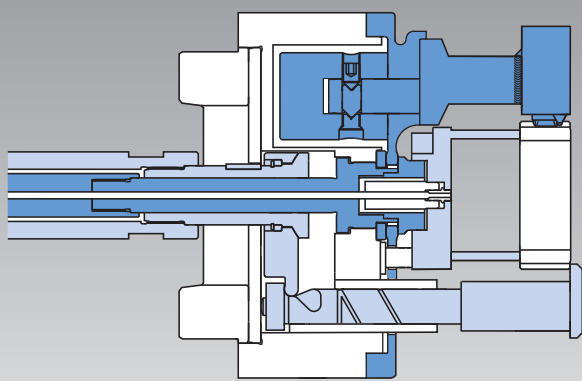
# Clamping of easily deformed / thin walled workpieces for hard turning or grinding



## D-KOMBI®

**proofline® series**  
fully sealed – low maintenance

### Principle of D-KOMBI®

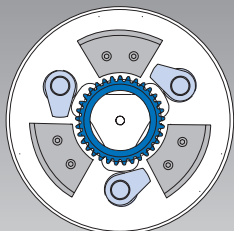


- Radial centering / clamping of the work piece with the diaphragm jaws, with quick jaw change system (same principle / characteristic as D-chuck page 254, however with additional face clamping)
- Axial clamping with swing clamps with axial compensation
- Actuation with double piston cylinder  
Separate actuation of the diaphragm jaws and the axial swing-clamps

**Jaws are factory finished and match any chuck with no loss of concentricity.**

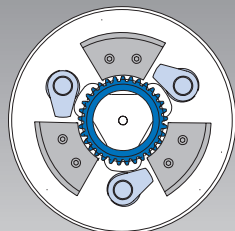
**No need to grind or bore jaws on the chuck anymore!  
TIR < 0.020 mm**

#### 1. Loading



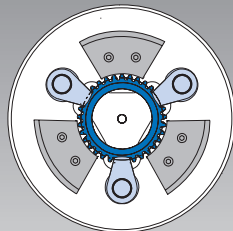
Centering jaws open.  
Swing-clamps open /  
swivel outwards

#### 2. Centering



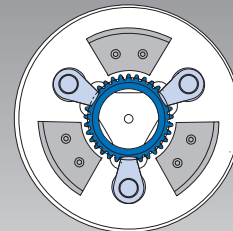
Centering jaws clamped

#### 3. Clamping



Swing-clamps swivel inward  
+ clamp axially. Centering  
jaws open (if requested)

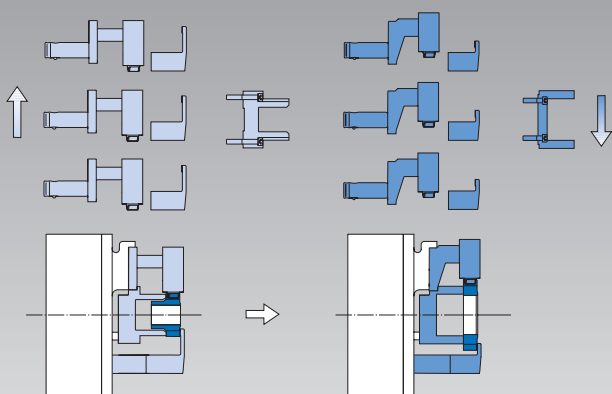
#### 4. Machining



Centering jaws open  
or closed

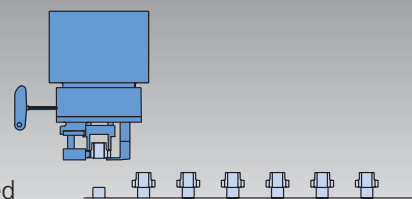
### Set-up time 5 minutes

for jaws, swing-clamps and workstop change  
TIR < 0.020 mm without boring/grinding

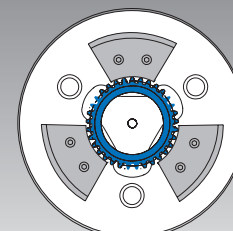


### Ideal for PICK-UP machines

Easy to operate,  
low maintenance,  
chuck completely sealed



**Radial clamping only  
is also possible =  
function like D-chuck**



Swing clamps are not mounted

# Clamping glossary

**Radial clamping:** Self-centering clamping of work pieces on the outside diameter. Depending on the necessary clamping force to drive the parts during machining thin walled components can be easily deformed.

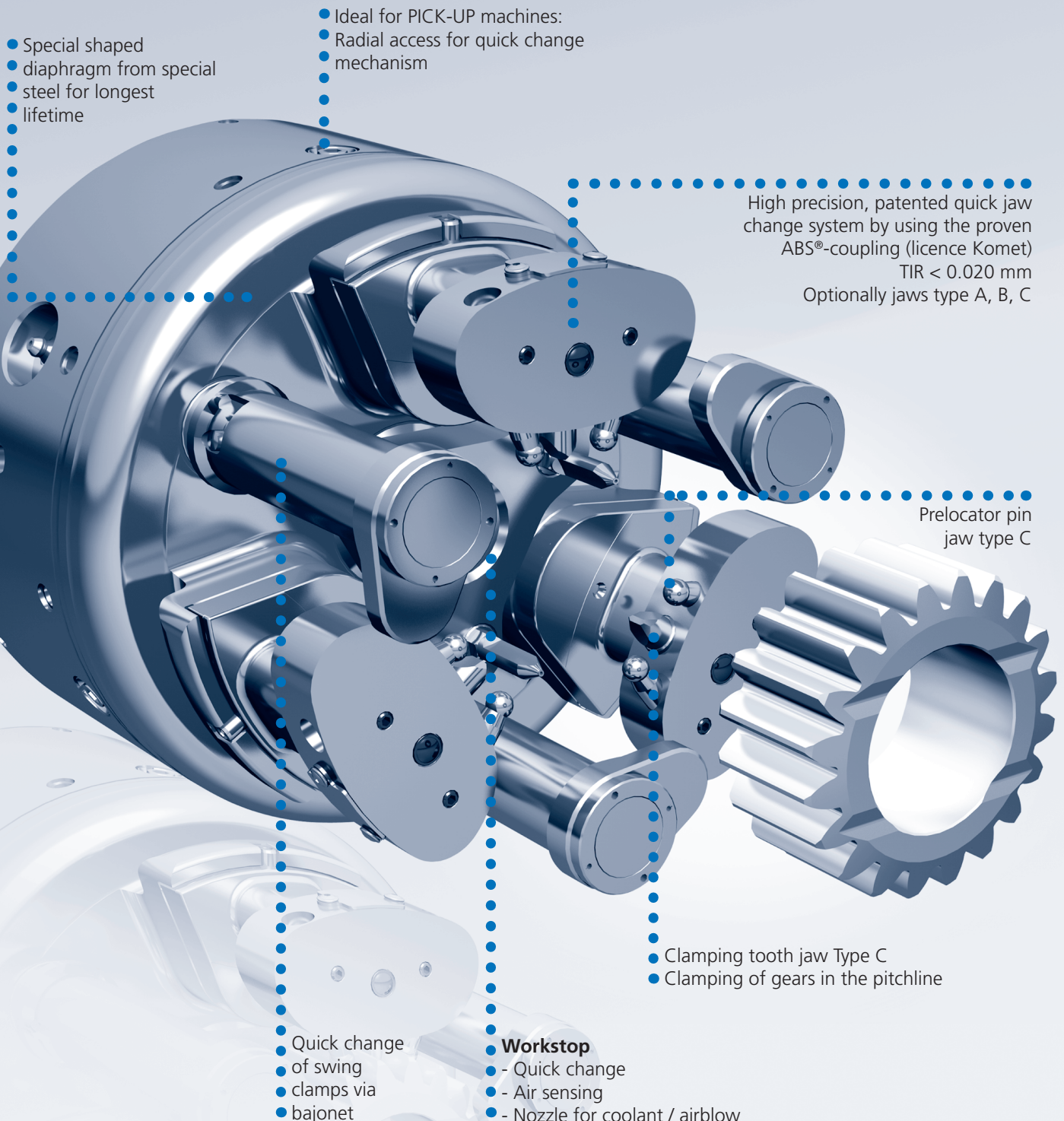
**Axial clamping:** Clamping of workpieces on their face sides. This method is used for thin walled components. The radial deformation of the diameter to be machined can be eliminated. However, this is not self-centering clamping so the work piece has to be positioned concentric.

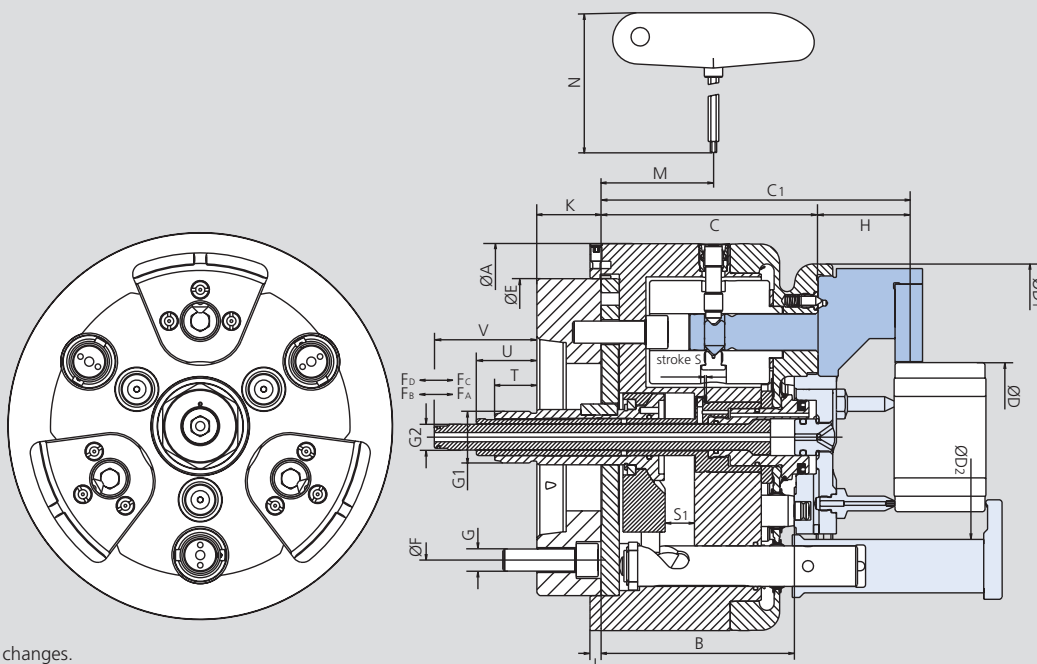
**Kombi clamping:** Chucks with centering jaws for centering the workpiece with the diaphragm and axial clamping with swing clamps. After the work piece is clamped with a swing-clamp, the centering jaws can be opened (double piston cylinder necessary). The **D-KOMBI** with quick jaw change ideally fulfills these requirements.

The proven design of the **D-CHUCK** is maintained completely. Additionally an axial clamping drive is integrated.

If requested the **D-KOMBI** can also be used just for radial clamping. In this case no clamping fingers are mounted and the clamping force is regulated by adjusting the pressure on the clamping cylinder.

**Double piston cylinder:** These are cylinders with two independent pistons. Piston 1 drives the swing-clamps, piston 2 releases the diaphragm or regulates the clamping force of the diaphragm. Depending on the application, it may be necessary to have the pressure in the supply lines for piston surfaces A / B / C / D individually adjustable by individual pressure regulating valves. The SMW-AUTOBLOK double piston cylinder **ZHVD-DFR** is specially designed for this application. Different rotating unions for 1 or 2 media (as an example air sensing and coolant) can be mounted to the standard cylinder. (see page 257 Installation)





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

SMW-AUTOBLOK Type			D-KOMBI 210		D-KOMBI 260		D-KOMBI 315		D-KOMBI 400	
Mounting	Size		A5	A6	A6	A8	A8		A8	A11
	<b>A</b>	mm	210		260		315		400	
	<b>B</b>	mm	105.5		111		116		123	
	<b>C</b>	mm	118.5		130		130		136	
	<b>C1</b>	mm	170.5		187		192		-	
Clamping range without fingers	<b>D</b>	mm	20 - 175		40 - 220		60 - 275		126 - 350	
	<b>D1</b>	mm	188		227		275		354	
Clamping range with fingers	<b>D2</b>	mm	100		142		190		254	
	<b>E</b>	mm	172		225		275		350	
	<b>F</b>	mm	104.8	133.4	133.4	171.4	171.4		171.4	235
	<b>G</b>		M10	M12	M12	M16	M16		M16	M20
	<b>G1</b>		M28 x 1.5		M28 x 1.5		M28 x 1.5		M28 x 1.5	
	<b>G2</b>		M14 x 1.0		M14 x 1.0		M14 x 1.0		M14 x 1.0	
Jaw height	<b>H</b>	mm	52		62		64		-	
	<b>J</b>	mm	6		6		6		6	
	<b>K</b>	mm	40		48		48		50	
	<b>M</b>	mm	61.4		61.9		61.9		66.5	
	<b>N</b>	mm	185		185		185		185	
Piston stroke	<b>S</b>	mm	1.0		1.5		1.5		1.5	
Axial stroke swing clamps	<b>S1</b>	mm	16		16		16		16	
	<b>T</b>	mm	18		10		10		8	
	<b>U</b>	mm	28		20		20		18	
	<b>V</b>	mm	51		43		43		41	
Jaw stroke at distance H		mm	1.0		1.1		1.2		0.87	
Draw pull min. / max.*	<b>Fd</b>	kN	0-25		0-25		0-25		0-25	
Draw push for chuck open	<b>Fc</b>	kN	20		20		20		20	
Draw pull swing clamps max.	<b>Fb</b>	kN	6		9		9		18	
Draw push swing clamps open	<b>FA</b>	kN	2		2		2		2	
Moment of inertia		kg·m <sup>2</sup>	0.16		0.45		0.75		2.26	
Weight without top tooling		kg	30		44		60		109	
Recommended actuating cylinder	Type		ZHVD-DFR		ZHVD-DFR		ZHVD-DFR		ZHVD-DFR	

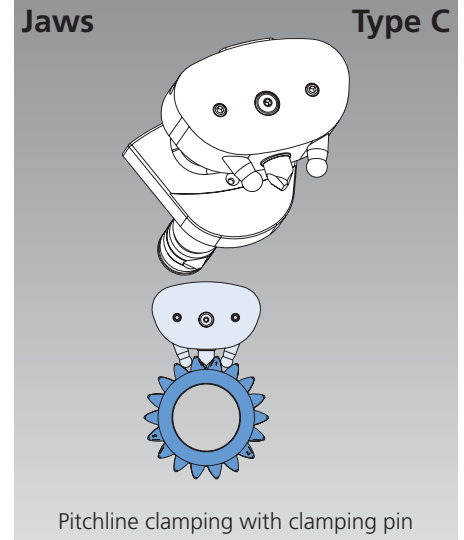
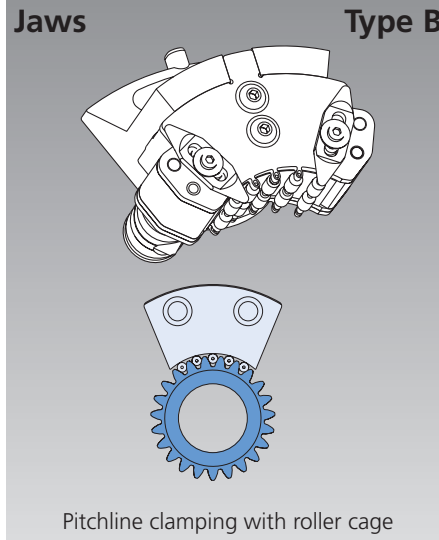
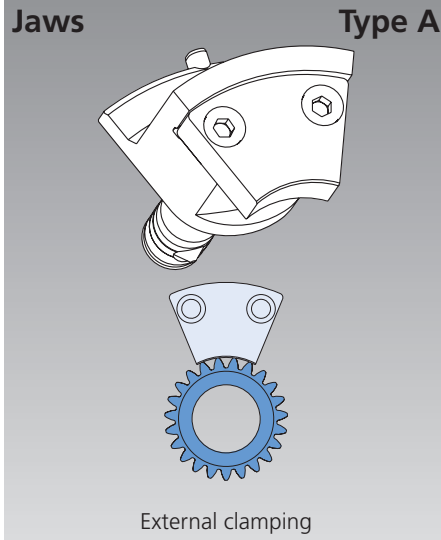
\* Additional draw pull to the diaphragme force actuated by the actuating cylinder.

**Advice:** The max. allowed speed for the application is permanently marked on the corresponding top jaws and must not be exceeded.

**Important:** Never rotate the chuck without inserted jaws, otherwise the centrifugal force compensation mechanism will get damaged.



- Clamping jaws
- Rotating double piston cylinder
- Installation



## Actuating cylinder ZHVD-DFR for D-KOMBI®

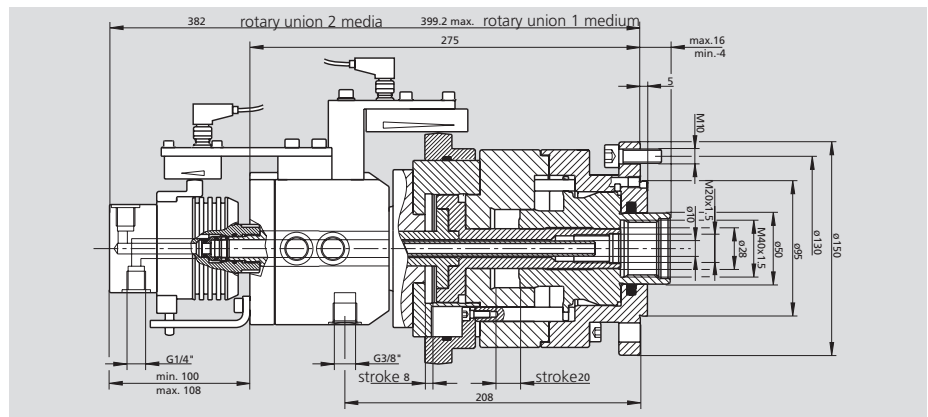
### Technical features

- Special double piston cylinder to actuate D-KOMBI
- 2 independent pistons for diaphragm jaws and axial swing clamp drive
- Rotating unions for 1 or 2 media
- 2 Linear Position Systems LPS 4.0 for monitoring of the piston strokes

### Standard equipment

- Cylinder with kit for LPS 4.0, without LPS 4.0 position sensor

LPS 4.0 see total catalog page 343



ZHVD-DFR for rotary union 1 medium Id. No. 046914 (without rotary union)\*

ZHVD-DFR with rotary union 2 media Id. No. 046887 (rotary union 2 media included)

Piston surface				Pressure min / max	Speed max	Leakage at 30 bar 50°C	Weight cylinder	Moment of inertia	Weight of rotary union	
Axial finger (K1)	Diaphragm (K2)								1 medium kg	2 media kg
A push cm²	B pull cm²	C push cm²	D pull cm²	bar	r.p.m.	dm³/min	kg	kg·m²		
17.6	30.6	40.6	39.2	3-60	4000	3.0	25	0.065	0.4	1.5

\* To be ordered separately!

## Installation

