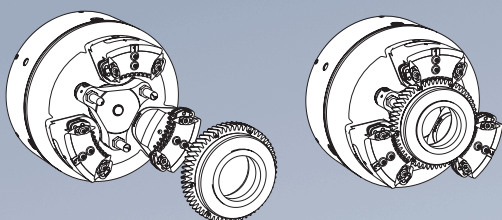


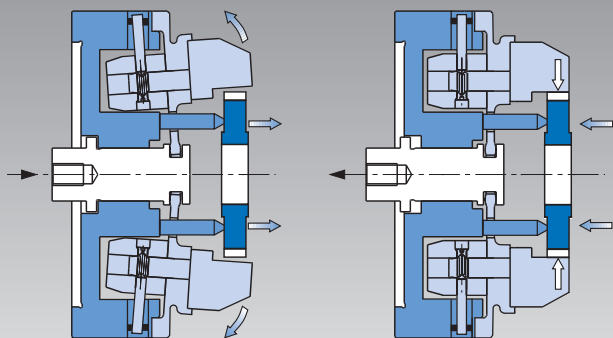
Diaphragm clamping technology with quick jaw change at its best - for hard turning, grinding, high precision turning

D-160 – 400



proofline® series
fully sealed – low maintenance

Operation of diaphragm system



The ultimate, easy principle:

The operation is based on elastic deformation of the diaphragm - this means

- no sliding parts
- no friction
- centrifugal force compensation
- **proofline® series** = fully sealed - low maintenance

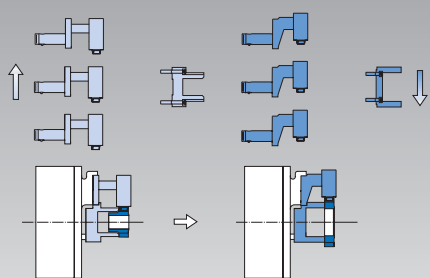
Jaws are factory finished and match any chuck with no loss of concentricity.

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

Setup time < 4 minutes

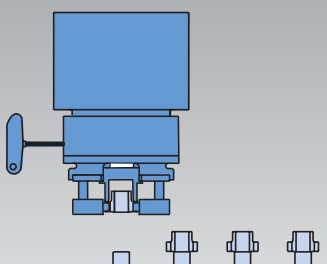
for jaws and locators

TIR < 0.020 mm without boring / grinding



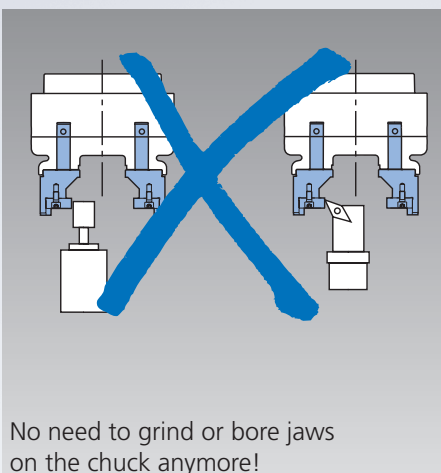
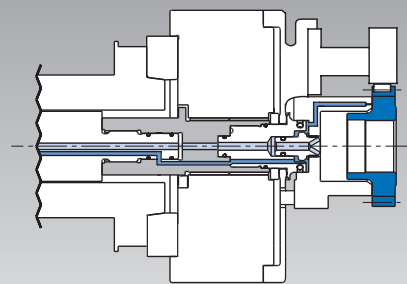
Ideal for PICK-UP machines

Radial access for quick change mechanism

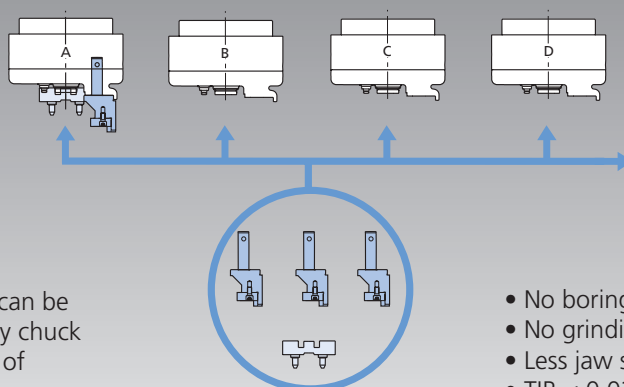


Media feed

Air sensing + air blow / coolant



Full interchangeability of the jaws



Any jaw set can be put on to any chuck without loss of concentricity

- No boring
- No grinding
- Less jaw sets needed
- TIR < 0.020 mm

Clamping glossary

ABS® connection: A connecting system for highest rigidity and accuracy. A version of this proven design is used for the quick jaw change on the **Type D** chuck.

Centrifugal force compensation: Underneath the diaphragm, counter balance weights are mounted which are connected to the clamping jaws. They completely compensate the centrifugal force caused by the jaws.

Roller cage clamping: Floating rollers are held in a roller cage. They extend from the location face of the clamping insert. In principle the workpiece is clamped like an external clamping but the steel rollers clamp in the pitch line. Special jaws with roller cages have been developed for the **Type D**. Since the clamping force is spread equally onto multiple tooth gaps easily deformed components can be clamped with less distortion.

Air sensing: Air is fed through the contact face of the work stop. When the workpiece is in contact with the work stop the airflow is stopped and converted into a signal. If the component is not correctly

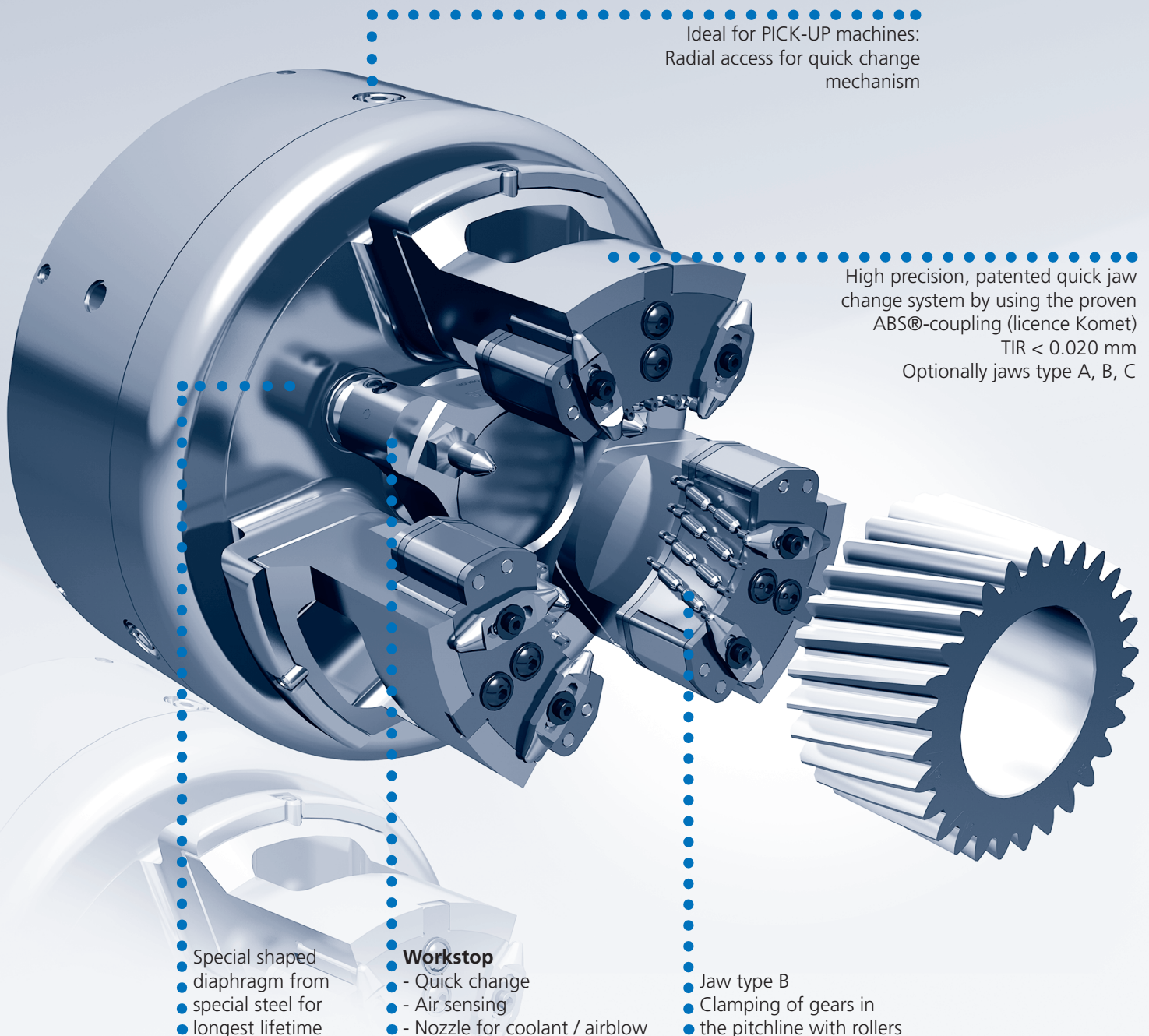
positioned or is lifted, the machine can not start or the spindle is stopped. This important feature is standard on all **Type D** chucks.

Medium supply: Coolant or air to clean / cool during the machining process come through the machine spindle/chuck. This important feature is also standard on all **Type D** chucks.

Diaphragm clamping technology: It is based on the elastic deformation of the diaphragm (like a large belleville washer). There are no sliding parts and the mechanism is completely maintenance free. The specially and patented diaphragm of the **Type D** allows a constant fine regulatable clamping force with the highest precision.

Pre-locaters: These protect the clamping pins during engagement into the serration especially during automatic loading.

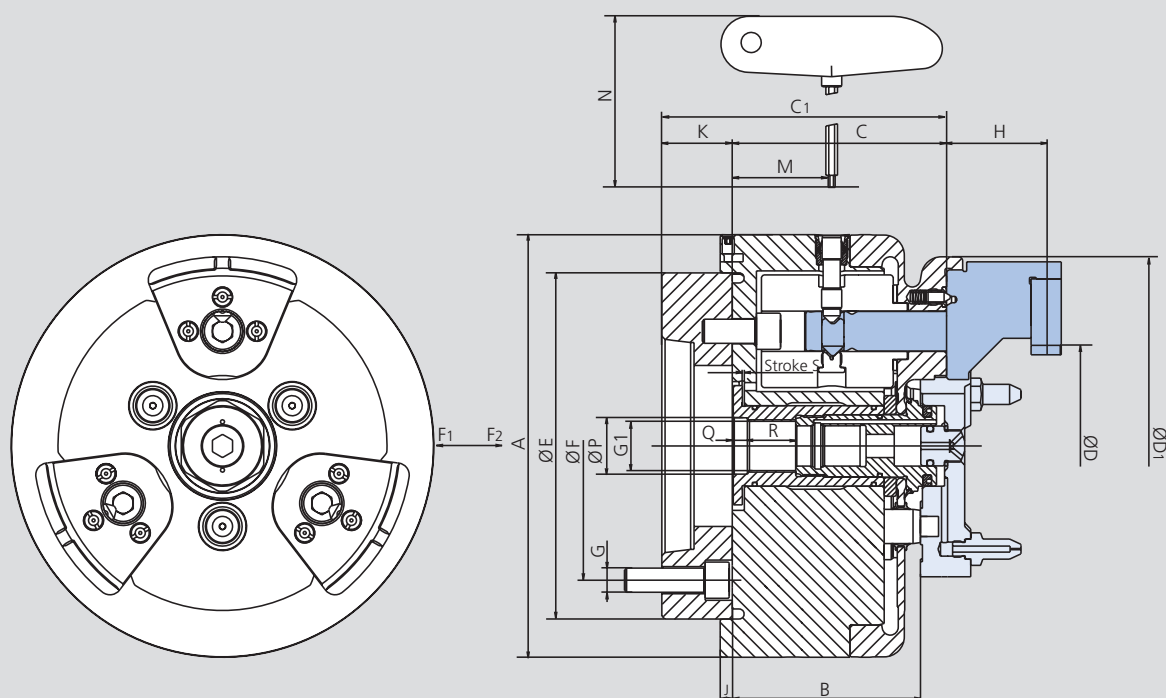
Pitch line clamping: Clamping gears in the pitch line with clamping pins, the radial datum for the bore to be machined is the pitch line. According to the application and customers request jaws with clamping pins to clamp in the pitch line are offered.



D

Diaphragm chuck QUICK JAW CHANGE SYSTEMS

■ Main dimensions and technical data



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

SMW-AUTOBLOK Type			D 160		D 210		D 260		D 315		D 400	
Mounting	Size		A5	A6	A5	A6	A6	A8	A8	A8	A8	A11
	A	mm	160		210		260		315		400	
	B	mm	79.5		93.5		111		111		118	
	C	mm	86.5		106.5		125		125		131	
	C1**	mm	116.5		146.5		156	170	173		181	
Clamping range min. / max.	D	mm	10 - 140***		15 - 195***		40 - 225***		55 - 275***		125 - 350***	
	D1	mm	143		188		227		275		354	
	E	mm	130		172		225		275		350	
	F	mm	104.8	133.4	104.8	133.4	133.4	171.4	171.4	171.4	235	
	G		M10	M12	M10	M12	M12	M16	M16	M16	M20	
	G1		M20 x 1.5		M26 x 1.5		M26 x 1.5		M30 x 1.5		M30 x 1.5	
Jaw height	H	mm	40.5		52		62		64		64	
	J	mm	6		6		6		6		6	
	K**	mm	30		40		48		48		50	
	M	mm	40.9		49.4		56.9		56.9		60.9	
	N	mm	185		185		185		185		185	
	P H8	mm	21		28		28		32		32	
	Q	mm	5		7		7		7		7	
	R	mm	21.7		24		23		28.5		34.5	
Piston stroke	S	mm	0.9		1.0		1.5		1.5		1.5	
Jaw stroke at distance H			0.93		1.2		1.4		1.2		0.87	
Draw pull min. / max.*	F1	kN	0 - 10		0 - 20		0 - 25		0 - 25		0 - 25	
Draw push for chuck open	F2	kN	13		30		30		30		20	
Moment of inertia		kg·m ²	0.04		0.16		0.45		0.75		2.09	
Weight without top tooling		kg	11.6		30		44		60		104	
Recommended actuating cylinders	Type		SIN-DFR		SIN-DFR		SIN-DFR		SIN-DFR		SIN-DFR	

* Additional actuation force to the diaphragm spring clamping force applied by the clamping cylinder.

** Rec. dimensions, exact dimensions are depending on the machine.

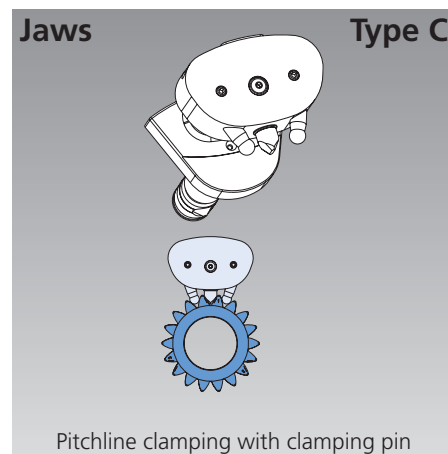
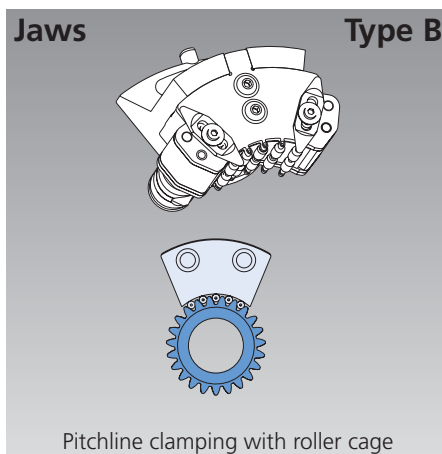
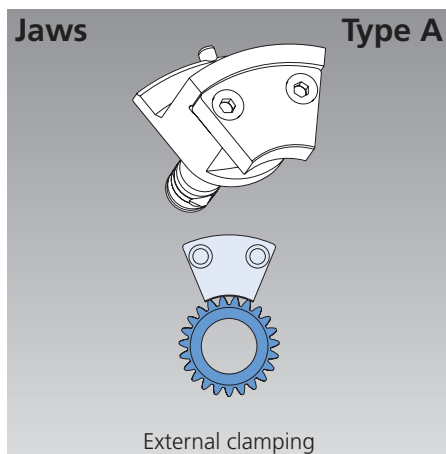
*** jaws typ A

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

Advice: Please note, it is important, that the cylinder force for pushing and pulling can be set to different values independently.

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

- Clamping jaws
- Centrifugal force compensation



Actuating cylinder SIN-DFR for diaphragm chuck Type D

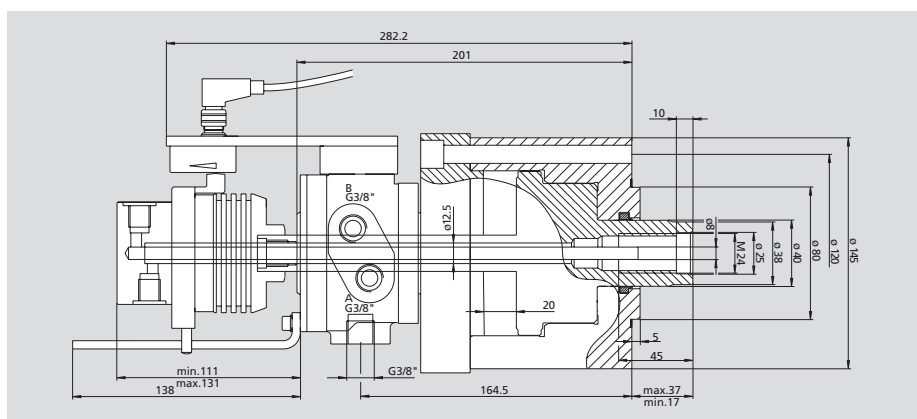
Technical features

- Special cylinder to actuate the diaphragm chuck
- Large / small piston area for opening / clamping
- Rotary unions for 1 or 2 media
- Linear positioning system LPS to monitor the piston stroke

Standard equipment

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

LPS 4.0 see general catalog page 343



SIN-DFR-LPS-4.0 / 48 for rotary union 1 medium Id. No. 046725 (without rotary union*)

SIN-DFR-LPS-4.0 / 48 with rotary union 2 media Id. No. 046706 (rotary union 2 media included)

Id. No.	Piston surface		Pressure		Pull min / max kN	Push min / max (36 bar max.) kN	Speed max. r.p.m.	Leakage at 30 bar 50°C dm³ / min	Weight cylinder kg	Moment of inertia kg·m²
	A pull cm²	B push cm²	A min / max bar	B min / max bar						
046725 / 046706	21	74	3 - 70	3 - 36	0.6 / 14	2.2 - 27	7000	1.5	9	0.016

* Please order separately!

Installation

