Diaphragm chucks

Page 214

D

Diaphragm chuck – quick jaw change

- Ø 210 - 315 mm
- O.D. or pitch line clamping
- centrifugal force compensation
- **proofline® chucks** = fully sealed – low maintenance

Page 217

SIN-DFR

Closed center
Rotating hydraulic cylinder

- special cylinder to actuate diaphragm chuck
- up to 70 bar
- large piston area for opening
  small piston area for clamping
- central bore for air/coolant, 1 or 2 media
- stroke control via LPS-XS

Page 218

D-KOMBI®

Diaphragm chuck with pull-down fingers
jaw/pull-down finger quick change

- Ø 210 - 400 mm
- radial and axial clamping
- flat gripping force curve
- **proofline® chucks** = fully sealed – low maintenance

Page 221

ZHVD-DFR

Double piston
Rotating hydraulic cylinder

- special cylinder to actuate diaphragm KOMBI chucks
- up to 60 bar
- 1 piston for actuating diaphragm
- 1 piston for actuating axial clamping
- central bore for air/coolant, 1 or 2 media
- stroke control via 2 x LPS-X

Page 222

D-PLUS

Diaphragm chuck – open center

- Ø 260 - 315 mm
- radial O.D. or pitch line clamping
- with through hole
- centrifugal force compensation
- **proofline® chucks** = fully sealed – low maintenance

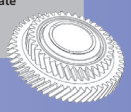
Page 224

D-Vario

Diaphragm chuck

- Ø 215 mm
- Fine adjustment of the center line
- Key Lock System = Quick positioning of jaws for gears with different number of teeth
- Modular system with jaws for pitch line or outside clamping
- **proofline® chucks** = fully sealed – low maintenance

D-Vario Configurator
free application to configurate your set up
www.smw-autoblok.de



Page 231

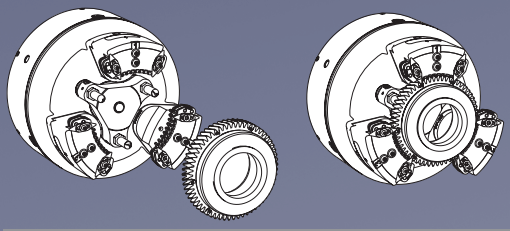
RU-2-20

Rotary union for 2 media for
double piston rotating cylinder ZHVD-DFR

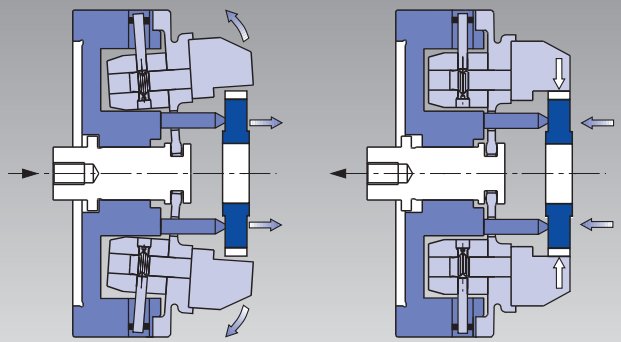
- universal for air, oil or coolant

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

D-210® · D-260 · D-315



Operation of diaphragm system



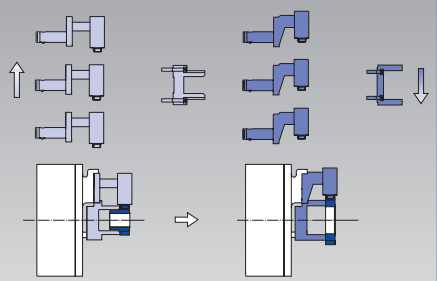
The ultimate, easy principle:

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.
Never, ever grind or bore jaws on the chuck!
TIR < 0.020 mm

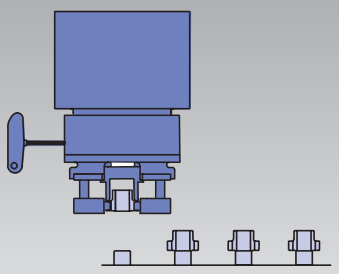
Setup time < 4 minutes

for jaws and locators
TIR < 0.020 mm without boring/grinding



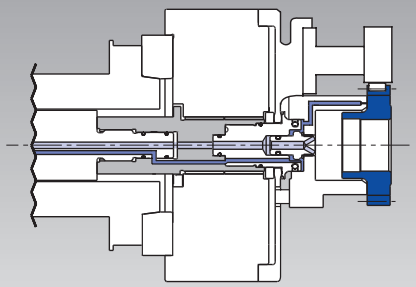
Ideal for PICK-UP machines

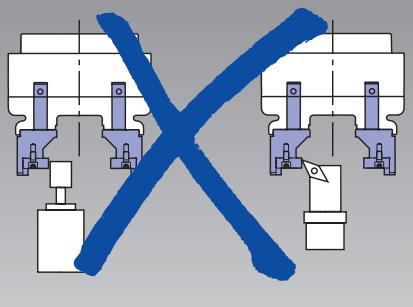
Radial access for quick change mechanism



Media feed

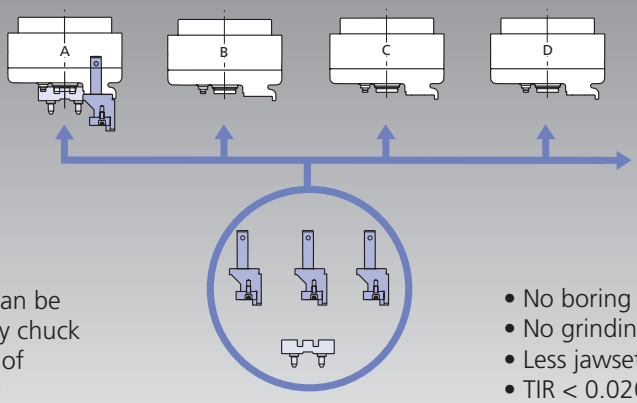
Air sensing + air blow/coolant





Never, ever grind or bore jaws on the chuck.

Full interchangeability of the jaws



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

- No boring
- No grinding
- Less jawsets needed
- TIR < 0.020 mm

Clamping glossary

ABS® connection: A connecting system, developed by the Komet company 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 made of heavy metal are mounted which are connected to the clamping jaws. They completely compensate the centrifugal force caused by the jaws.

Roller cage clamping: Floating vollers are held in a voller cage. They extend from the location face of the clamping insert. In principle the work-piece 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 without distortion.

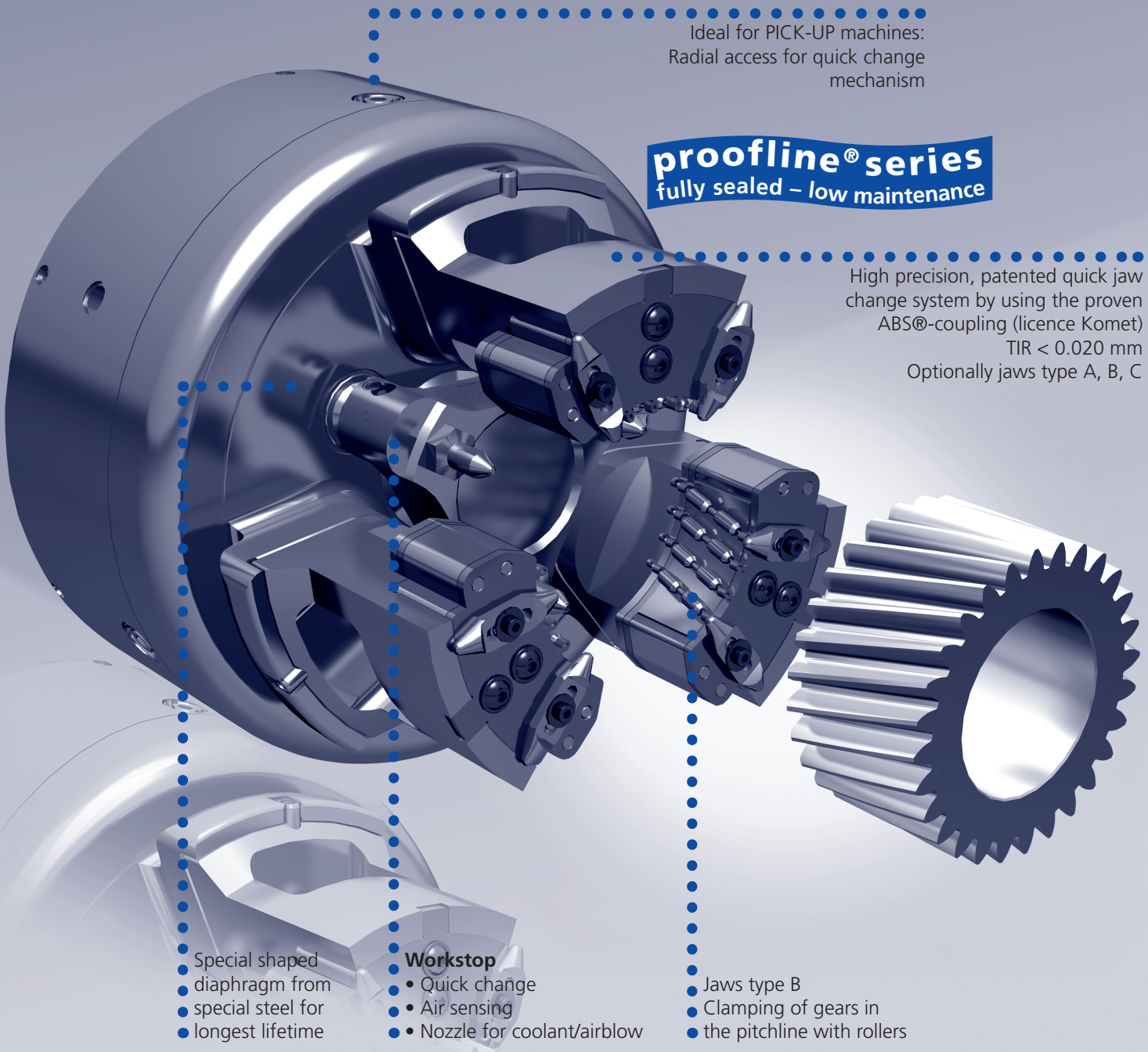
Air sensing: Air is fed through the contact face of the work stop. When the work-piece is in contact with the work stop the airflow is stopped and converts into a signal. If the component is not correctly positioned or is lifted, the machine can not start or the spindle is stopped. This important feature 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 standard on all **Type D** chucks.

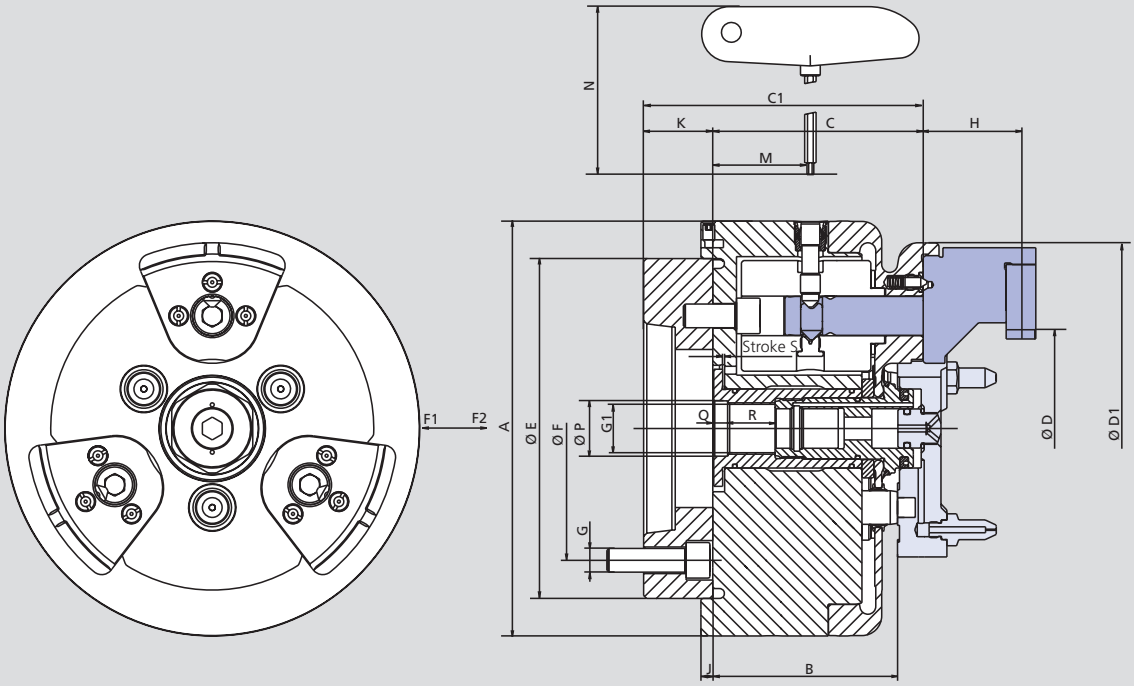
Diaphragm clamping technology: It is based on the elastic deformation of the diaphragm (like a large belleville washer). There are no sliding parts and the mechanism is completely maintenance free. The specially and patented diaphragm of the **Type D** allows a constant fine regulatable clamping force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



Main dimensions and technical data



Subject to technical changes.
For more detailed information please ask for customer drawing.

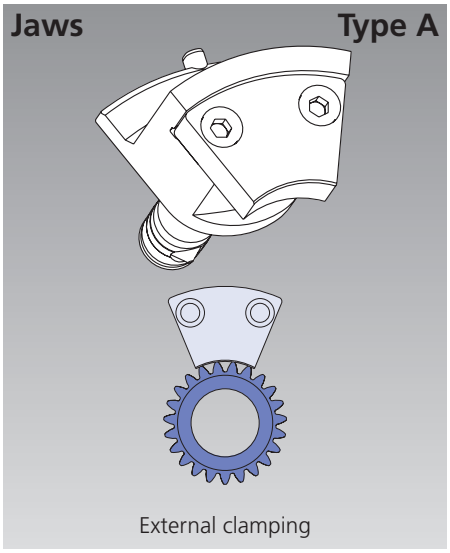
SMW-AUTOBLOK Type			D-210		D-260		D-315
Mounting		Size	A5	A6	A6	A8	A8
	A	mm	210		260		315
	B	mm	93.5		108		111
	C	mm	106.5		120		125
	C1	mm	146.5		156		173
Clamping range min./max.	**D**	mm	20-175		40-220		60-275
	D1	mm	188		227		275
	E	mm	172		225		275
	F	mm	104.8	133.4	133.4	171.4	171.4
	G		M10	M12	M12	M16	M16
	G1		M26 x 1.5		M26 x 1.5		M30 x 1.5
Jaw height	**H**	mm	52		62		64
	J	mm	6		6		6
	K	mm	40		48		48
	M	mm	49.4		53		57
	N	mm	185		185		185
	P H6	mm	28		28		32
	Q	mm	7		7		7
	R	mm	24		24		29.5
Piston stroke min./max.	**S**	mm	1.0		1.5		1.7
Jaw stroke at distance H			1.0		1.1		1.2
Draw pull min./max.*	**F1**	kN	0-25		0-25		0-25
Draw push for chuck open	**F2**	kN	30		30		30
Moment of inertia		$kg \cdot m^2$	0.16		0.45		0.75
Weight without top tooling		kg	30		44		60
Recommended actuating cylinders		**Type**	**SIN-DFR**		**SIN-DFR**		**SIN-DFR**

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

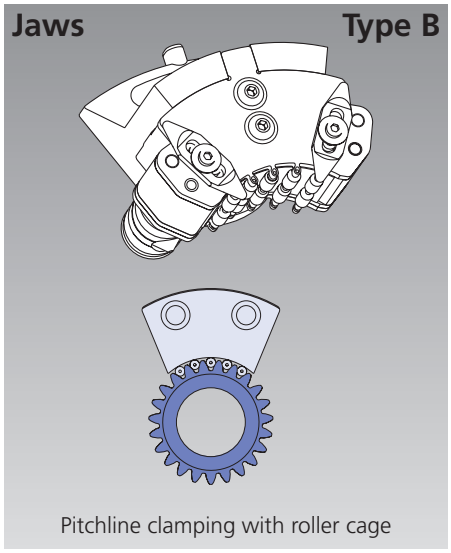
Advice: The max. allowed speed for the application is permanently marked on the corresponding top jaws and must not be exceeded.

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

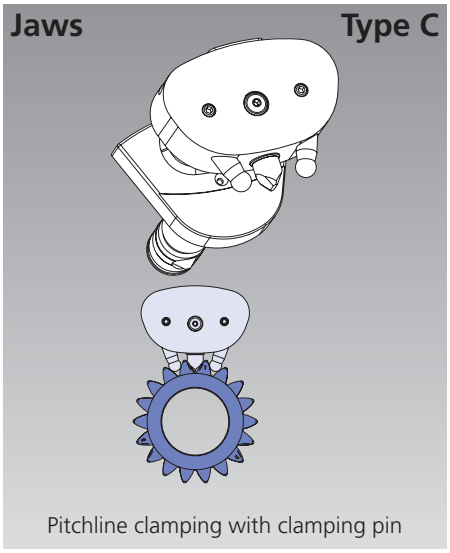
Important: Never rotate the chuck without inserted jaws, otherwise the centrifugal force compensation mechanism will get damaged.



External clamping



Pitchline clamping with roller cage



Pitchline clamping with clamping pin

Actuating cylinder SIN-DFR for diaphragm chuck Type D

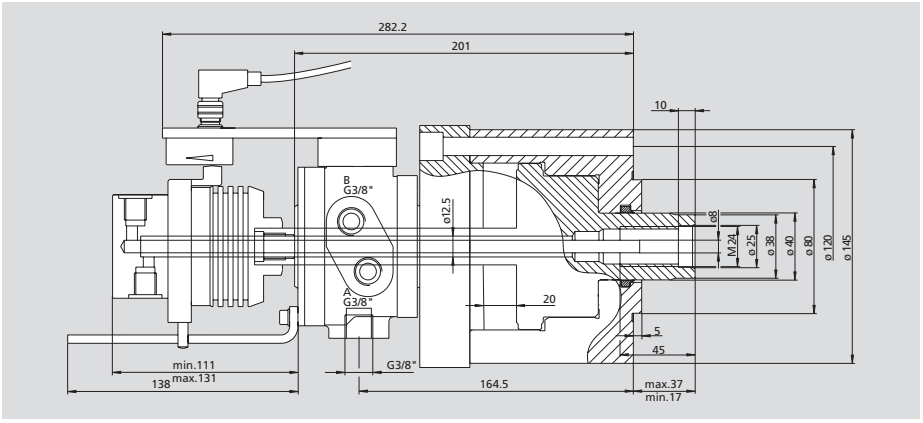
Technical features

- 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-XS installation without LPS-XS position sensor

LPS-XS see general catalog page 275

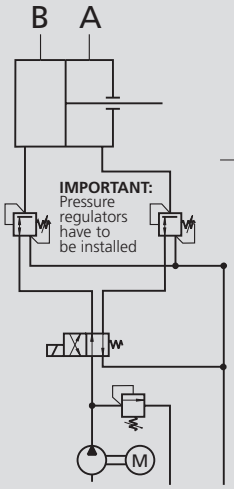


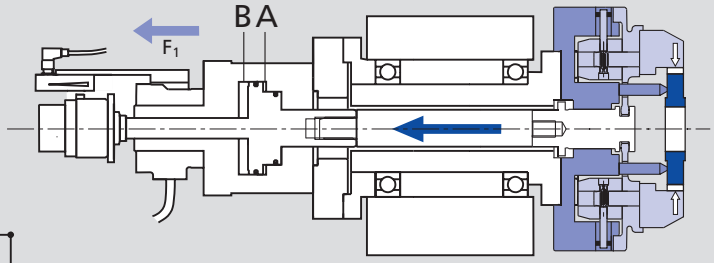
SIN-DFR-LPS-XS for rotary union 1 medium Id. No. 044860 (without rotary union*)
SIN-DFR-LPS-XS with rotary union 2 media Id. No. 044861 (rotary union 2 media included)

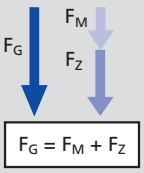
Piston surface A pull cm²	Piston surface B push cm²	Pressure A min/max bar	Pressure B min/max bar	Pull min./max. kN	Push min./max. (36 bar max.) kN	Speed max. r.p.m.	Leakage at 30 bar 50°C dm³/min	Weight cylinder kg	Moment of inertia kg·m²	Weight of rotary union 1 medium kg	Weight of rotary union 2 media kg
21	74	3-70	3-36	0.6/14	2.2-27	7000	1.5	9	0.016	0.4	1.5

* Please order separately!

Installation







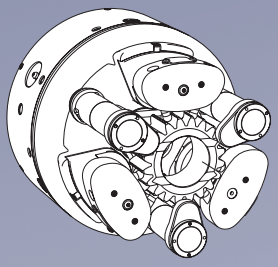
F_G = total clamping force
F_M = diaphragm clamping force
F_Z = additional clamping force applied by the actuating cylinder

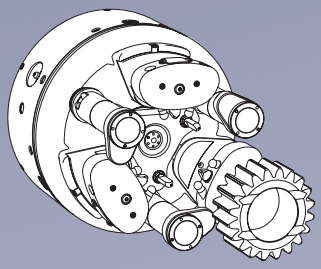
The total clamping force (FG) is the total of the diaphragm clamping force and the clamping force (FZ), created by the draw pull (F1) of the actuating cylinder.

Thus the clamping force FG can be regulated by adjusting the pressure of the actuating cylinder.

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

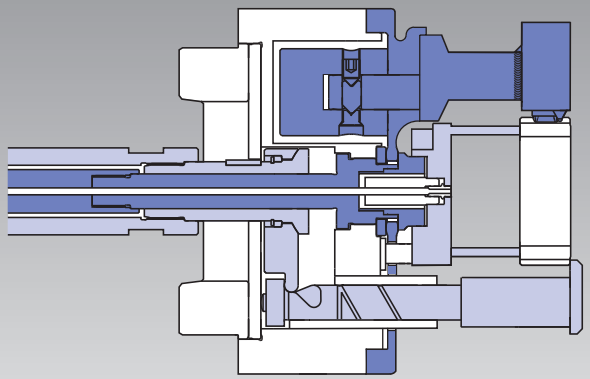
Clamping of easily deformed thin walled workpieces for hard turning or grinding





D-KOMBI®

Principle of D-KOMBI®

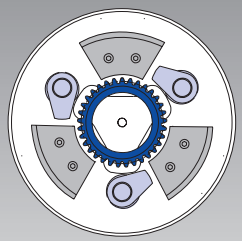


- Radial centering/clamping of the work piece with the diaphragm jaws, with quick jaw change system (same principle/characteristic as D-chuck page 214, however with additional face clamping).
- Axial clamping with swing clamps with axial compensation.
- Actuation with double piston cylinder.
  Separate actuation of the diaphragm jaws and the axial swing-clamps.

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

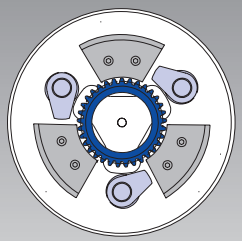
Never, ever grind or bore jaws on the chuck!
TIR < 0.020 mm

1. Loading



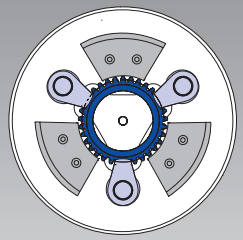
Centering jaws open.
Swing-clamps open/swivel outwards.

2. Centering



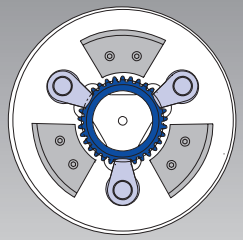
Centering jaws clamped.

3. Clamping



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

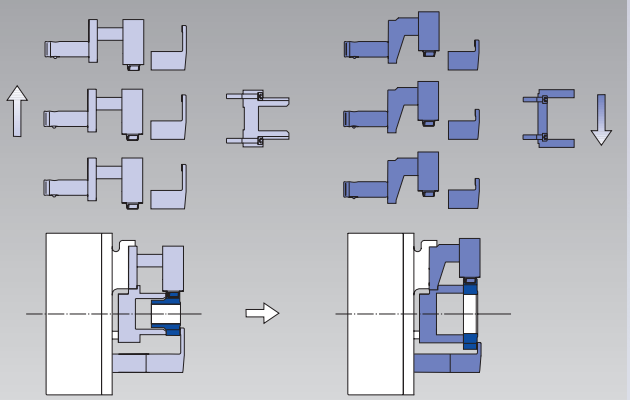
4. Machining



Centering jaws open or closed.

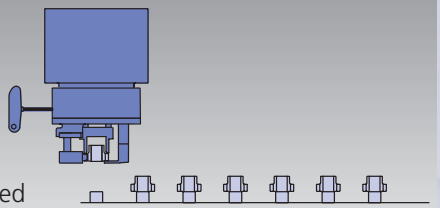
Set-up time 5 minutes

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

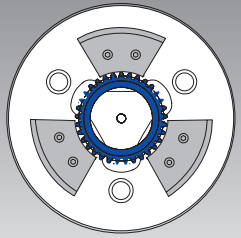


Ideal for pick up machines

Easy to operate,
low maintenance,
chuck completely sealed



Radial clamping only is also possbile = function like D-chuck



Swing clamps are not mounted.

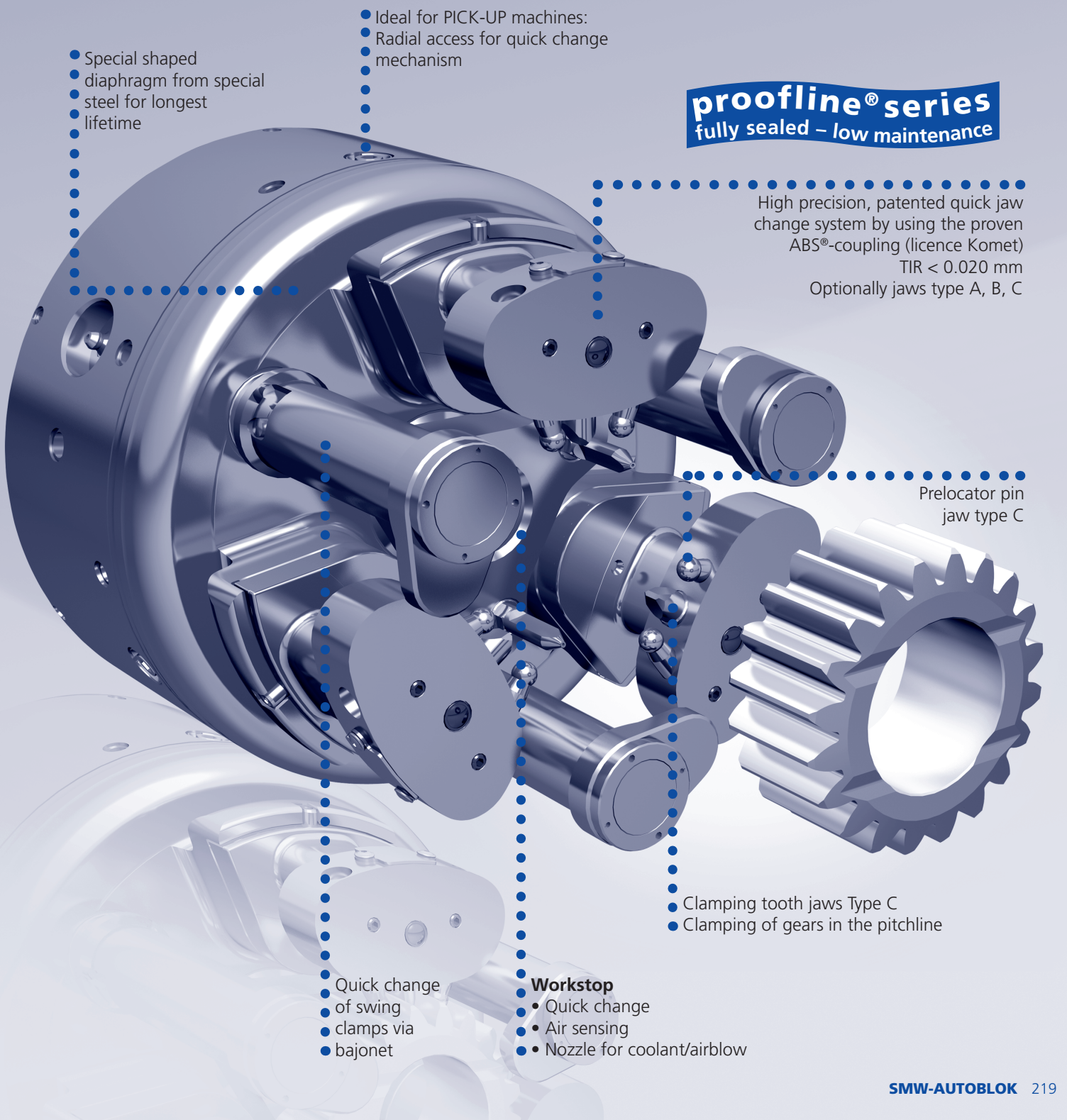
Clamping glossary

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 work pieces on their face. This method is used for thin walled components. The radial deformation of the diameter to be machined can be eliminated. This is not self-centering clamping so that 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 swingclamps. 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.

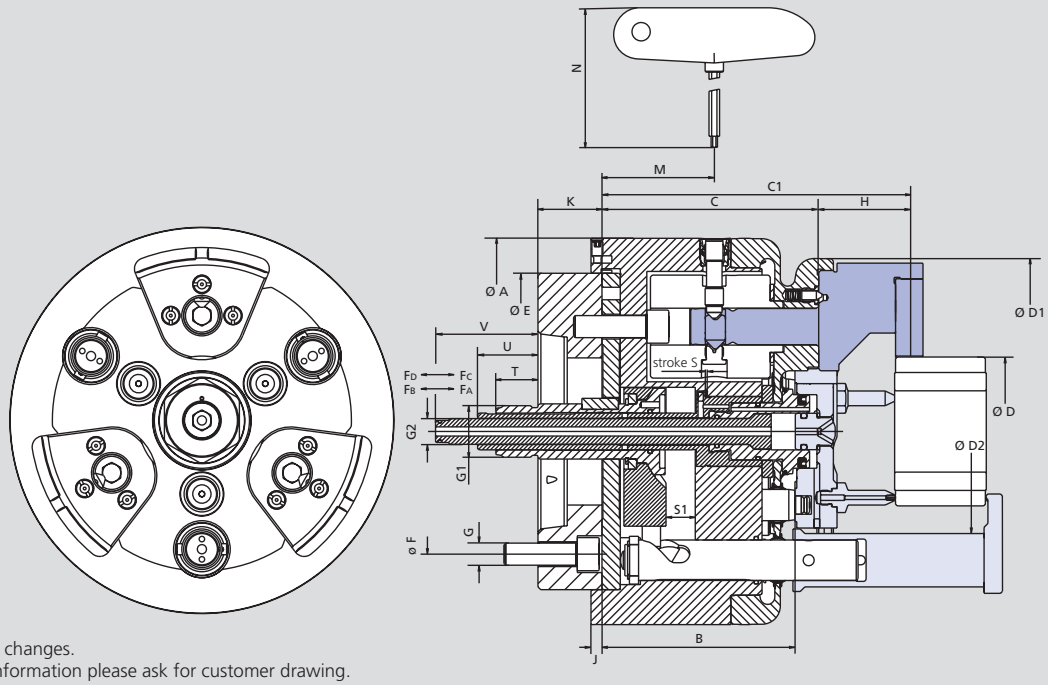
Double piston cylinder: These are cylinders with two independent pistons. Piston A drives the swing-clamps, piston B releases the diaphragm or regulates the clamping force of the diaphragm. Depending on the application, it may be necessary to have the pressure in the supply lines for piston surfaces A/B/C/D individually adjustable by individual pressure regulating valves. The SMW-AUTOBLOK double piston cylinder **ZHVD-DFR** is special 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.



D-KOMBI®

Radial-axial clamping
QUICK JAW CHANGE SYSTEMS

Main dimensions and technical data



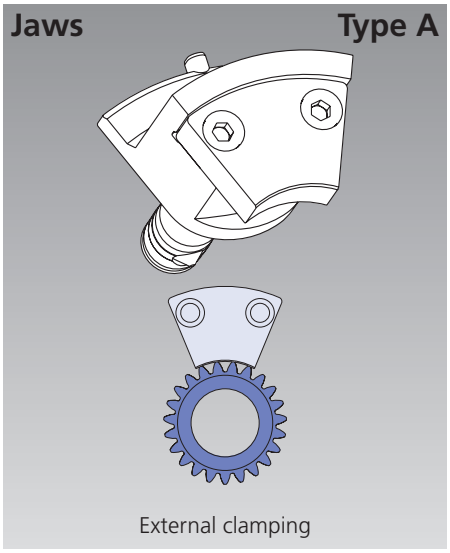
Subject to technical changes.
For more detailed information please ask for customer drawing.

SMW-AUTOBLOK Type			D-210 KOMBI		D-260 KOMBI		D-315 KOMBI	D-400 KOMBI	
Mounting	**Size**		**A5**	**A6**	**A6**	**A8**	**A8**	**A8**	**A11**
	A	mm	210		260		315	400	
	B	mm	105.5		111		116	123	
	C	mm	118.5		130		130	136	
	C1	mm	170.5		187		192	-	
Clamping range without fingers	**D**	mm	20-175		40-220		60-275	126-350	
	D1	mm	188		227		275	354	
Clamping range with fingers	**D2**	mm	111		153		203	268	
	E	mm	172		225		275	350	
	F	mm	104.8	133.4	133.4	171.4	171.4	171.4	235
	G		M10	M12	M12	M16	M16	M16	M20
	G1		M28 x 1.5		M28 x 1.5		M28 x 1.5	M28 x 1.5	
	G2		M14 x 1.0		M14 x 1.0		M14 x 1.0	M14 x 1.0	
Jaw height	**H**	mm	52		62		64	-	
	J	mm	6		6		6	6	
	K	mm	40		48		48	50	
	M	mm	61.4		61.9		61.9	66.5	
	N	mm	185		185		185	185	
Piston stroke	**S**	mm	1.0		1.5		1.5	1.5	
Axial stroke swing clamps	**S1**	mm	16		16		16	16	
	T	mm	18		10		10	8	
	U	mm	28		20		20	18	
	V	mm	51		43		43	41	
Jaw stroke at distance H		mm	1.0		1.1		1.2	0.87	
Draw pull min./max.*	**FD**	kN	0-25		0-25		0-25	0-25	
Draw push for chuck open	**FC**	kN	20		20		20	20	
Draw pull swing clamps max.	**FB**	kN	6		9		9	18	
Draw push swing clamps open	**FA**	kN	2		2		2	2	
Moment of inertia		kg·m²	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**	

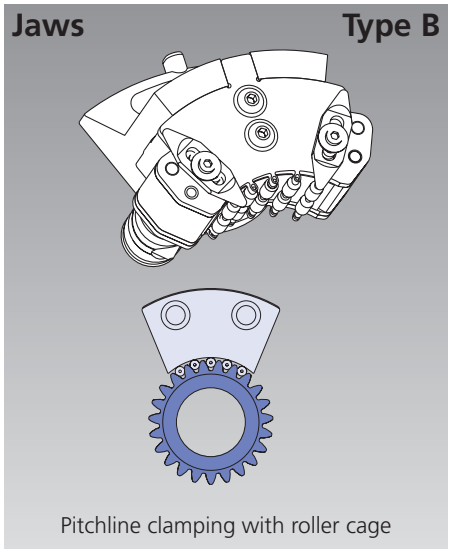
* Additional draw pull to the diaphragme force actuated by the actuating cylinder

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

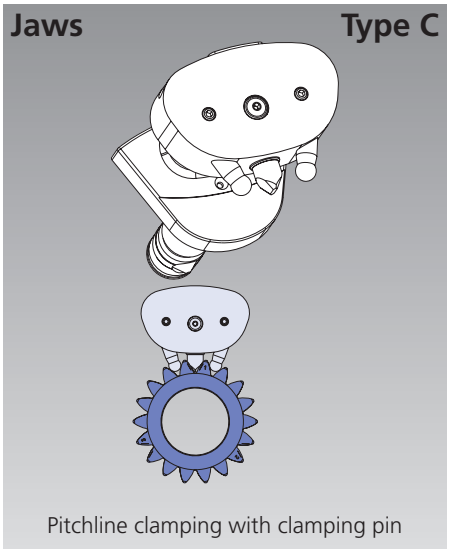
Important: Never rotate the chuck without inserted jaws, otherwise the centrifugal force compensation mechanism will get damaged.



External clamping



Pitchline clamping with roller cage



Pitchline clamping with clamping pin

Actuating cylinder ZHVD-DFR for D-KOMBI®

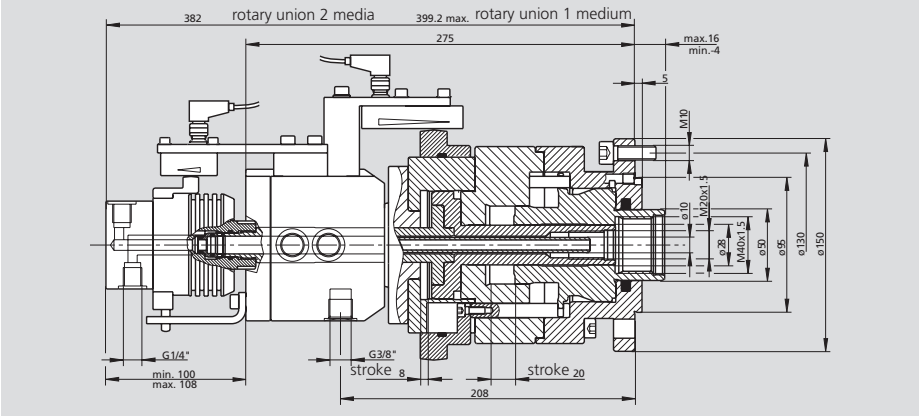
Technical features

- 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 for monitoring of the piston strokes

Standard equipment

- Cylinder with kit for LPS, without LPS position sensor

LPS see total catalog page 275

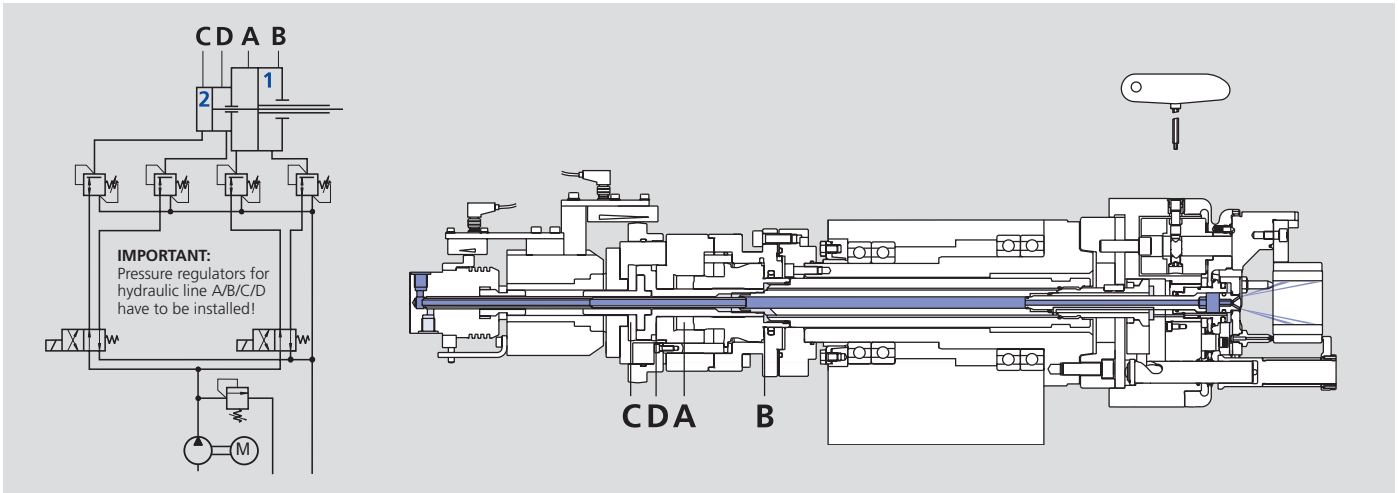


ZHVD-DFR for rotary union 1 medium Id. No. 044865 (without rotary union)*
ZHVD-DFR with rotary union 2 media Id. No. 044866 (rotary union 2 media included)

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

* To be ordered seperately!

Installation

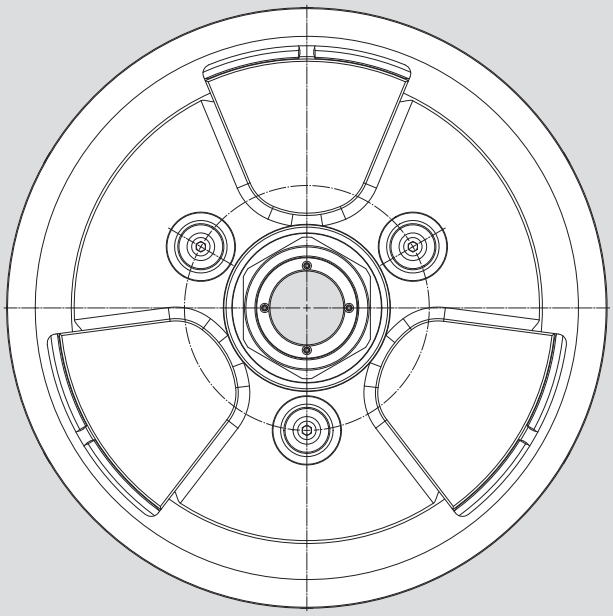


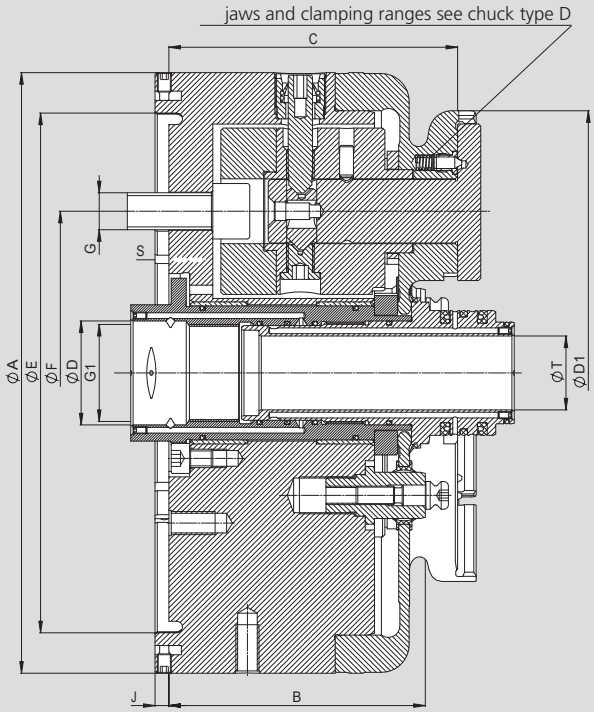
D-PLUS

Diaphragm chuck
QUICK JAW CHANGE SYSTEMS

Open center diaphragm chuck

Main dimensions and technical data





Subject to technical changes.
For more detailed information please ask for customer drawing.

SMW-AUTOBLOK Type			D-PLUS-260	D-PLUS-315
Mounting		**Size**	**225**	**275**
	A	mm	260	315
	B	mm	111	111
	C	mm	125	125
	D_1	mm	227	275
	E	mm	225	275
	F	mm	140	171.4
	G		M16	M16
	G_1		M42x1.5	M60x1.5
	J	mm	6	6
	P H6	mm	45	63
Piston stroke	**S**	mm	1.5	1.5
Through hole	**T**	mm	32	50
Draw pull min./max.*	**F_1**	kN	0-25	0-30
Draw push for chuck open	**F_2**	kN	25	30
Moment of inertia		$kg \cdot m^2$	0.45	0.75
Weight without top tooling		kg	44	65
Recommended actuating cylinders		**Type**	**SIN-DFR**	**SIN-DFR**

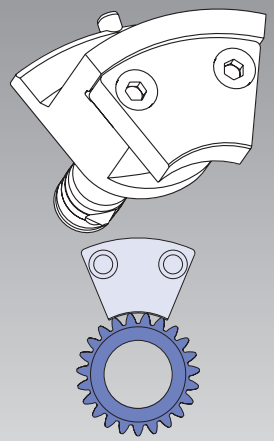
* Additional actuation force to the diaphragm spring clamping force applied by the clamping cylinder.

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

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

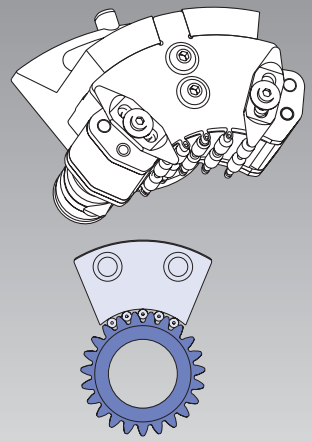
Important: Never rotate the chuck without inserted jaws, otherwise the centrifugal force compensation mechanism will get damaged.

Jaws Type A



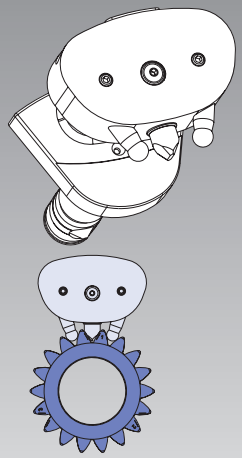
External clamping

Jaws Type B



Pitchline clamping with roller cage

Jaws Type C



Pitchline clamping with clamping pin

Actuating cylinder SIN-DFR for diaphragm chuck Type D-PLUS

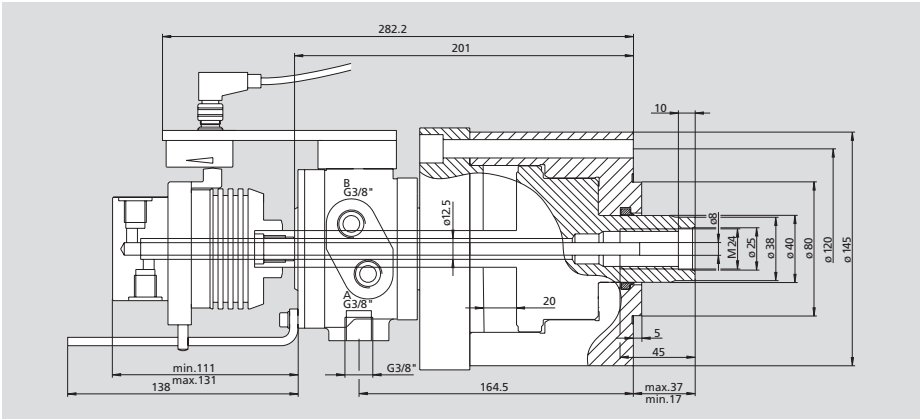
Technical features

- 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-XS installation without LPS-XS position sensor

LPS-XS see total catalog page 275

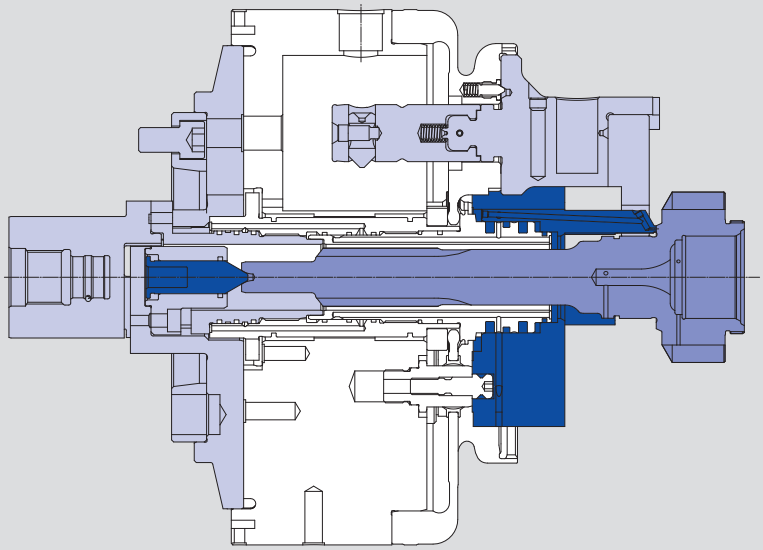


SIN-DFR-LPS-XS for rotary union 1 medium Id. No. 044860 (without rotary union*)
SIN-DFR-LPS-XS with rotary union 2 media Id. No. 044861 (rotary union 2 media included)

Piston surface A pull cm²	Piston surface B push cm²	Pressure A min/max bar	Pressure B min/max bar	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	Weight of rotary union 1 medium kg	Weight of rotary union 2 media kg
21	74	3-70	3-36	0.6/14	2.2-27	7000	1.5	9	0.016	0.4	1.5

* To be ordered seperately!

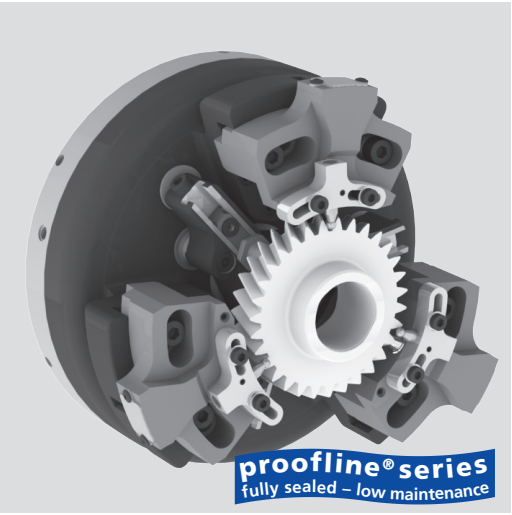
Example of application



D-VARIO

Diaphragm chuck
FLEXIBLE MODULAR SYSTEM

Main dimensions and technical data



Application/customer benefits

- Flexible solution for grinding with quick adjustment for short set up times

Technical features

- Adjustable, modular jaw system for clamping different work pieces with the same jaws
- Key Lock System for quick positioning of the pitch of different work pieces
- Micrometer fine adjustment of the center line
- For small, medium and large batch sizes
- Workstop with medium feed for air sensing and integrated coolant nozzles optional
- Jaws for O.D. clamping (Type A) optional
- D-Vario Configurator: free application to configurate your set up (www.smw-autoblok.de/qr/vario)

Standard equipment

Diaphragm chuck D-Vario (with mounting bolts)

Optional accessories in the modular system:

Pitch line clamping

- 6 different jaw sets for different outside diameters
- Key Lock System for different pitches of gears (see figure A, B and C)
- Clamping pins for different modules (Dia. of ball Ø 3,0 mm to 6,0 mm)
- Locators

O.D. clamping (Type A)

- 4 different jaw blanks for different outside diameters
- Factory finished jaws
- Locators

D-VARIO Configurator Software:

- Safe and quick configuration of all set-ups for different gears
- Web-APP: from anywhere with any device feasible (internet access needed)
- Data export possible

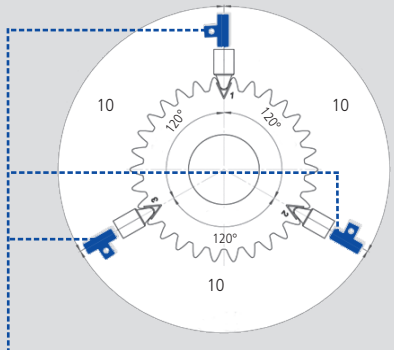
With this free of charge D-Vario configurator a complete top jaw and the corresponding locator with the locator pins can be configured for your gears.

The export function allows you to safe your results on your PC.

Start Web-App: **www.smw-autoblok.de/qr/dvario**

A: Number of teeth is divisible by 3

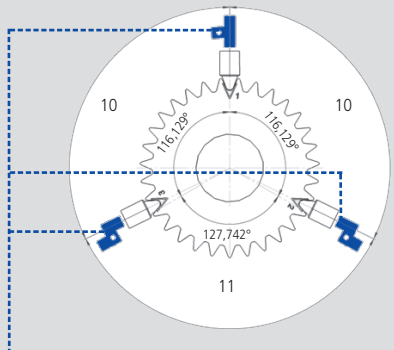
Example of application:
gear with number of teeth [z] = 30



▶ Specification of Key Lock System:
3x Key straight

B: Number of teeth is not divisible by 3

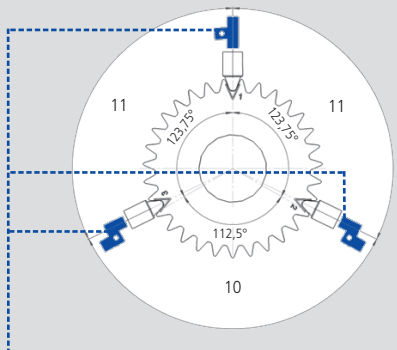
Example of application:
gear with number of teeth [z] = 31



▶ Specification of Key Lock System:
1x Key straight,
2x Key for number of teeth 31

C: Number of teeth is not divisible by 3

Example of application:
gear with number of teeth [z] = 32

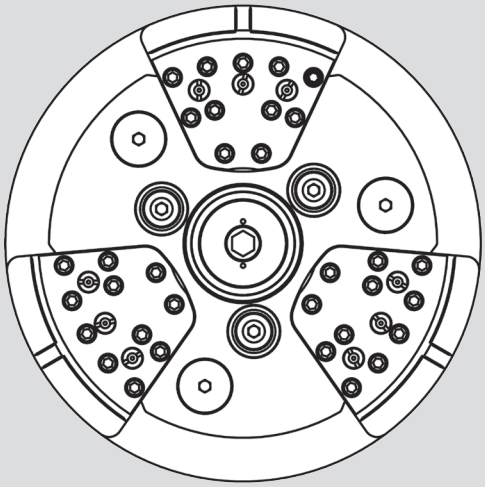


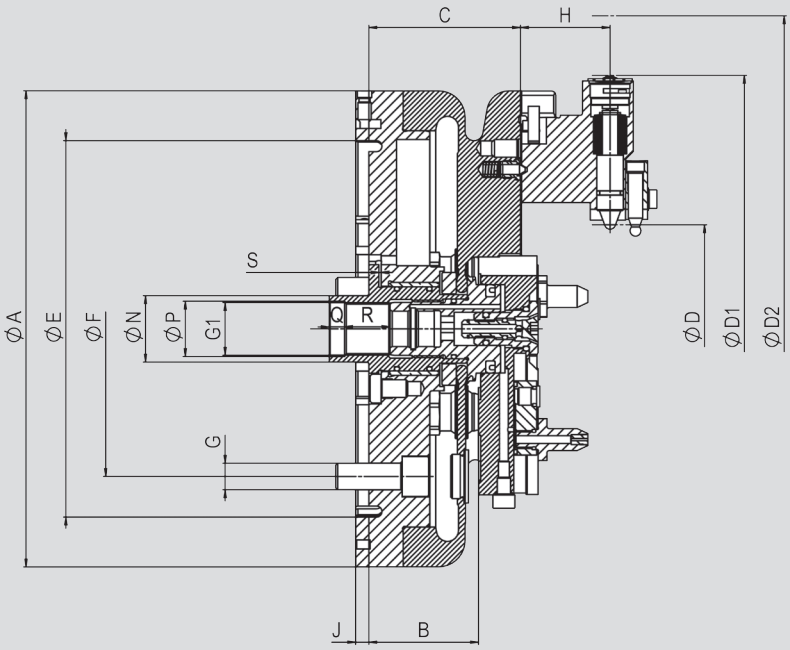
▶ Specification of Key Lock System:
1x Key straight,
2x Key for number of teeth 32

D-VARIO

Diaphragm chuck
FLEXIBLE MODULAR SYSTEM

Top jaws and locator base are optional.





Subject to technical changes.
For more detailed information please ask for customer drawing.

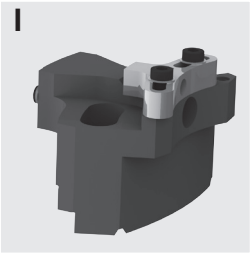
SMW-AUTOBLOK Type			D-VARIO 215
Mounting			**Z170**
Id. No.			069100
	A	mm	215
Locating Face for Locator	**B**	mm	49.5
	C	mm	68.5
Clamping range min./max.	**D**	mm	24 - 144
Swing min.	**D1**	mm	215
Swing max.	**D2**	mm	264
	E	mm	170
	F	mm	133.4
	G		M12
	G1		M24x1.5
Jaw height	**H**	mm	40.5
	J	mm	6
	P H8	mm	25
	Q	mm	7
	R	mm	20
Piston stroke	**S**	mm	1.0
Jaw stroke at distance H		mm	0.95
Draw pull min./max.*		kN	0-15
Draw push for chuck open		kN	15
Moment of inertia		kg·m²	0.082
Weight without top tooling		kg	12.2
Recommended actuating cylinders		**Type**	**SIN-DFR**

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

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

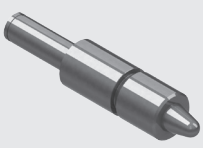
Configuration of the set up for pitch line clamping within only 5 steps:

I



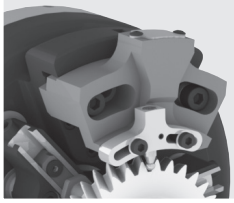
First you have to choose your matching top jaw (size 1 - 6) for the outside diameter [da] of the gear to be machined. Each size of top jaw can cover 20 mm outside diameter using two different types of clamping pins (Type A and B).
One set of top jaw consists of 3 pieces including 1 straight Key Lock insert.

II



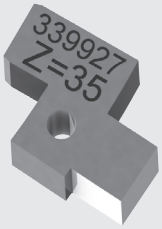
The determination of the spherical clamping pins is made according to the ball dimension of the gear.
There are 2 types of clamping pins:
Type A for the first 10 mm of the clamping range of the top jaws.
Type B for the second 10 mm of the clamping range of the top jaws.

III



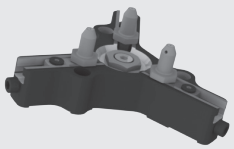
Optionally prelocator pins are available.
Prelocator pins are used at automatic loading.
The determination is made according to the clamping pins used.

IV



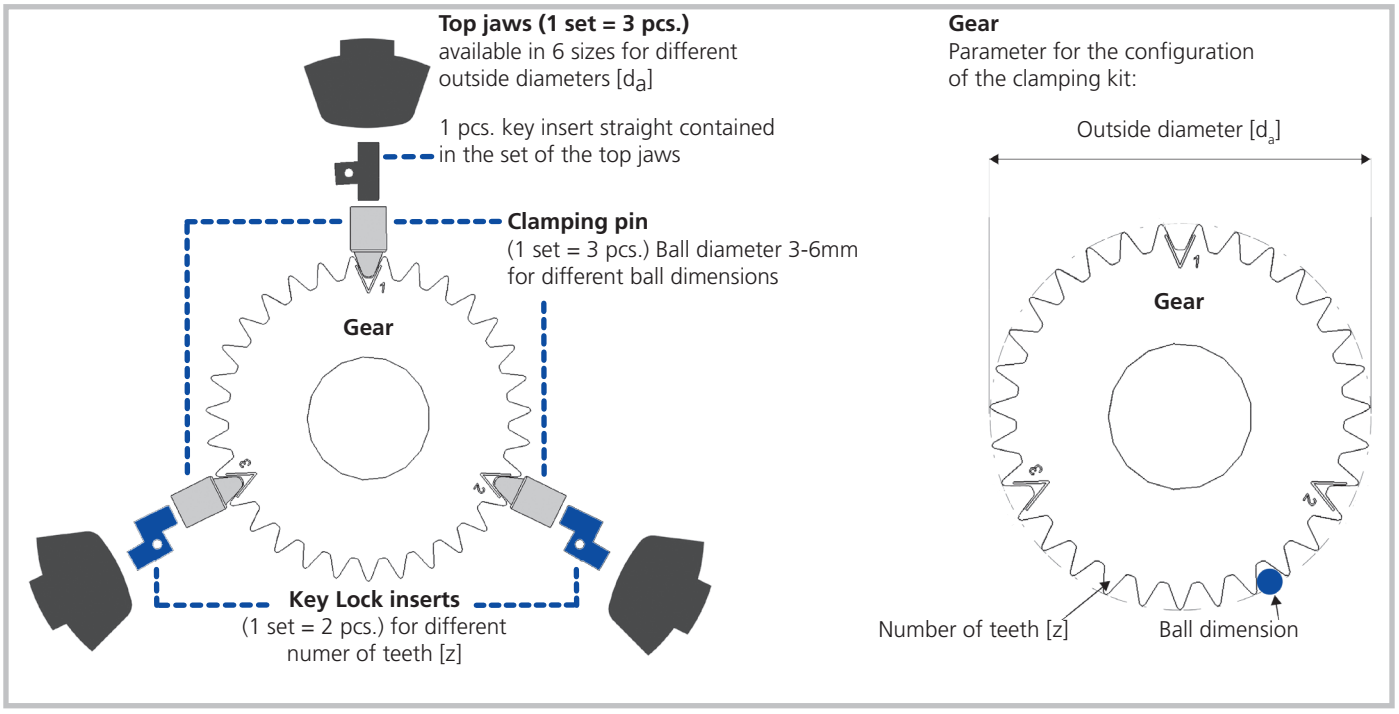
One set of Key Lock insert consists of 2 keys. Gears, which number of teeth that is divisible by 3 can be machined with 3 of the same type Key Lock insert (straight).
For all gears, which number of teeth is not divisible by 3, there are different key insert sets available according to the number of teeth. The Key Lock inserts are the same for all 6 sizes of top jaws.

V



The following types of locator bases are available:
Type A: without air sensing / without nozzle for coolant
Type B: without air sensing/with nozzle for coolant
Type C: with air sensing / with nozzle for coolant
The height of the locator posts is depending on the gear.

Overview of the clamping kit:



D-Vario Configurator
free application to configurate your set up
www.smw-autoblok.de

I. Determination of the top jaws

Top Jaws	Size	1	2	3	4	5	6
Outside diameter of gear d_a	mm	**24-44**	**44-64**	**64-84**	**84-104**	**104-124**	**124-144**
Number of teeth z	number	16-37	14-44	13-86	13-86	13-86	13-86
Inside clearance diameter of jaws	mm	48	68	88	108	128	148
Swing diameter	mm	164	184	204	224	244	264
Weight / set	kg	2.9	3.0	3.0	3.1	3.1	3.1
Order number / set of 3 pieces	Id. No.	**630741**	**630742**	**630743**	**630744**	**630745**	**630746**

Clamping pin Type		A	B	A	B	A	B	A	B	A	B	A	B
Clamping range	mm	24-34	34-44	44-54	54-64	64-74	74-84	84-94	94-104	104-114	114-124	124-134	134-144

II. / III. Determination of the clamping pins (and optional prelocator pins)

Clamping pin type	Set	Type A	Available prelocator pins	Type B	Available prelocator pins
Ball diameter Ø 3,0	Id. No.	**630851B**	339835	**630844B**	339843
Ball diameter Ø 3,5	Id. No.	**630852B**	339836	**630845B**	339844
Ball diameter Ø 4,0	Id. No.	**630853B**	339837	**630846B**	339845
Ball diameter Ø 4,5	Id. No.	**630854B**	339838	**630847B**	339846
Ball diameter Ø 5,0	Id. No.	**630855B**	339839	**630848B**	339847
Ball diameter Ø 5,5	Id. No.	**630856B**	339840	**630849B**	339848
Ball diameter Ø 6,0	Id. No.	**630857B**	339841	**630850B**	339849

Clamping pins

Clamping pin type A

Ball diameter
Ø 3; 3,5; 4; 4,5; 5; 5,5; 6

Top jaw 1	**Ø 24-34 mm**
Top jaw 2	**Ø 44-54 mm**
Top jaw 3	**Ø 64-74 mm**
Top jaw 4	**Ø 84-94 mm**
Top jaw 5	**Ø 104-114 mm**
Top jaw 6	**Ø 124-134 mm**

Clamping pin type B

Ball diameter
Ø 3; 3,5; 4; 4,5; 5; 5,5; 6

Top jaw 1	**Ø 34-44 mm**
Top jaw 2	**Ø 54-64 mm**
Top jaw 3	**Ø 74-84 mm**
Top jaw 4	**Ø 94-104 mm**
Top jaw 5	**Ø 114-124 mm**
Top jaw 6	**Ø 134-144 mm**

▸ **Clamping pin type A**
For the first 10 mm of the clamping range of the top jaws.

▸ **Clamping pin type B**
For the second 10 mm of the clamping range of the top jaws.

▸ **Compatibility**
All types and sizes of clamping pins are compatible to all top jaws.

IV. Key Lock inserts for different number of teeth of gears

Id. No. Key Lock insert for gears which number of teeths is not divisible by 3 (1 set = 2 pcs.)									
z = 10	**z = 11**	**z = 13**	**z = 14**	**z = 16**	**z = 17**	**z = 19**	**z = 20**	**z = 22**	**z = 23**
339911	339912	339913	339914	339915	339916	339917	339918	339919	339920
z = 25	**z = 26**	**z = 28**	**z = 29**	**z = 31**	**z = 32**	**z = 34**	**z = 35**	**z = 37**	**z = 38**
339921	339922	339923	339924	338725	339925	339926	339927	339928	339929
z = 40	**z = 41**	**z = 43**	**z = 44**	**z = 46**	**z = 47**	**z = 49**	**z = 50**	**z = 52**	**z = 53**
339930	339931	339932	339933	339934	339935	339936	339937	339938	339939
z = 55	**z = 56**	**z = 58**	**z = 59**	**z = 61**	**z = 62**	**z = 64**	**z = 65**	**z = 67**	**z = 68**
339940	339941	339942	339943	339944	339945	339946	339947	339948	339949
z = 70	**z = 71**	**z = 73**	**z = 74**	**z = 76**	**z = 77**	**z = 79**	**z = 80**	**z = 82**	**z = 83**
339950	339951	339952	339953	339954	339955	339956	339957	339958	339959
z = 85	**z = 86**								
339960	339961								

Id. No. Key Lock insert for gears which number of teeths is divisible by 3 (1 set = 2 pcs.)									
straight									
338724									

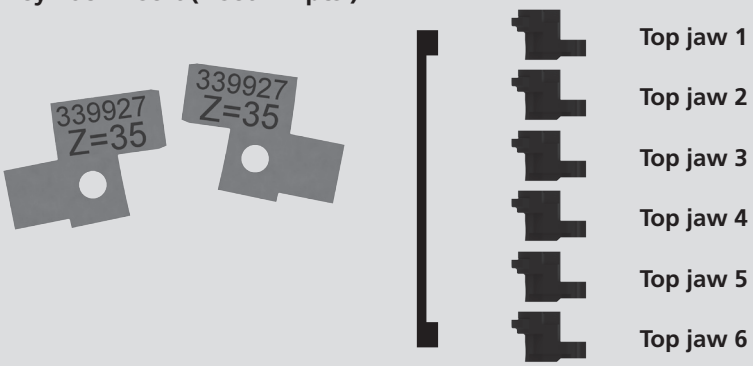
Order Example:

Gear with number of teeth 32
- not divisible by 3
- Id. No. 339925 (1 set = 2 pcs.)

Gear with number of teeth 33
- divisible by 3
- Id. No. 338724 (1 set = 2 pcs.)

1 straight Key Look that comes with the chuck always remains in use.

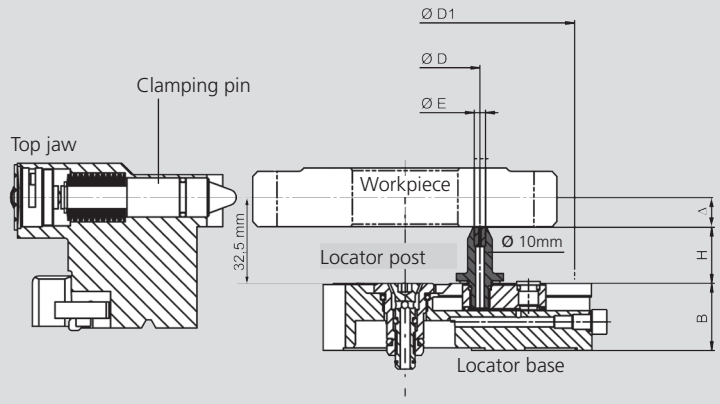
Key Lock insert (1 set = 2 pcs.)

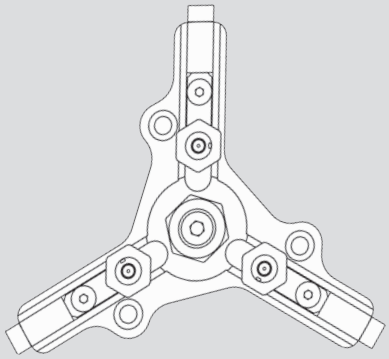


- **Compatibility**
  All Key Lock inserts are compatible to all top jaws.

V. Locator base

Locator base





Determination of height of locator posts:
Δ = Distance between clamping position and locating face
Height of locator posts [H] = 32,5 mm - Δ

Clamping position = 1/2 serration length / at longer serrations it is the requested clamping position.
In case the lowest face is not the locating face, please ask our customer service.

Locator base			Type A	Type B	Type C
Medium feed for air sensing			-	-	X
Noozle for coolant			-	X	X
Locating diameter min.	**D**	min.	22	47	47
Locating diameter max.	**D1**	max.	136	136	136
Width	**B**	mm	27	27	27
Order Number		Id. No.	339860	339859	339858

Locator posts with contact face diameter [E] 2.5 mm	
Height [H] = 12.5 mm	339861
Height [H] = 15.0 mm	339862
Height [H] = 17.5 mm	339863
Height [H] = 20.0 mm	339864
Height [H] = 22.5 mm	339865
Height [H] = 25.0 mm	339866
Height [H] = 27.5 mm	339867
Height [H] = 30.0 mm	339868
Height [H] = 32.5 mm	339869
Height [H] = 35.0 mm	339870
Height [H] = 37.5 mm	339871
Height [H] = 40.0 mm	339872
Height [H] = 42.5 mm	339873
Height [H] = 45.0 mm	339874
Height [H] = 47.5 mm	339875
Height [H] = 50.0 mm	339876

I.D. Number is for one set (=3 pieces)

Locator posts with contact face diameter [E] 4.5 mm	
Height [H] = 12.5 mm	339877
Height [H] = 15.0 mm	339878
Height [H] = 17.5 mm	339879
Height [H] = 20.0 mm	339880
Height [H] = 22.5 mm	339881
Height [H] = 25.0 mm	339882
Height [H] = 27.5 mm	339883
Height [H] = 30.0 mm	339884
Height [H] = 32.5 mm	339885
Height [H] = 35.0 mm	339886
Height [H] = 37.5 mm	339887
Height [H] = 40.0 mm	339888
Height [H] = 42.5 mm	339889
Height [H] = 45.0 mm	339890
Height [H] = 47.5 mm	339891
Height [H] = 50.0 mm	339892

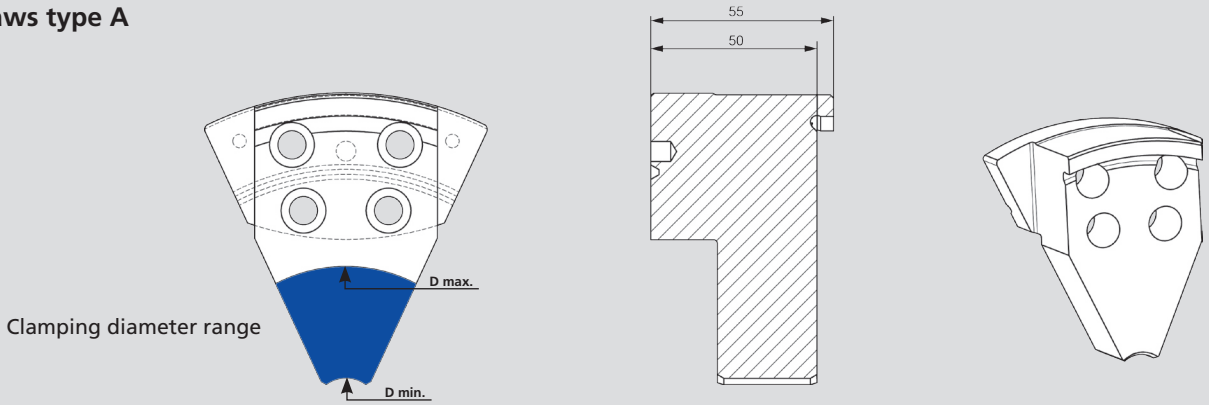
I.D. Number is for one set (=3 pieces)

D-VARIO

Diaphragm chuck
FLEXIBLE MODULAR SYSTEM

■ Jaws type A for O.D. clamping

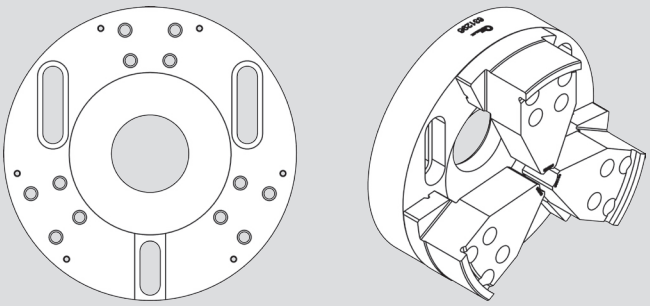
Jaws type A



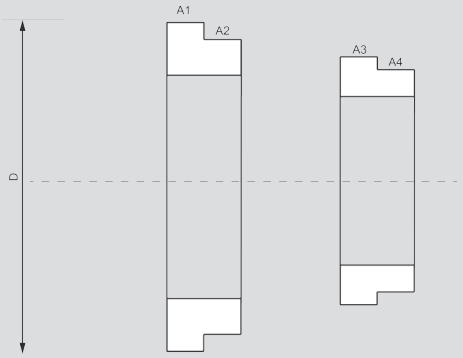
Jaws type A		1	2	3	4	5	6
Clamping Range Ø D min. - D max.	mm	20-40	40-60	60-80	80-100	100-120	120-140
Weight / set	kg	1.1	1.1	1.0	1.0	1.0	0.8
Blank jaws (set of 3 pcs.)	Id. No.	631484		631485		631486	631487
Jaws factory finished* (set of 3 pcs.)	Id. No.	631488	631489	631490	631491	631492	631493

* Jaws are factory finished according to the specified clamping diameter.
Note: The clamping diameter must be specified in case of order.

Device



Grinding rings (1 Set = 2 pcs.)



Device for machining of the blank jaws type A	
Jaws type A sizes 1 - 6	631296

The device is needed to pre-machine the blank jaws type A.
Then, the jaws must be finish ground to the clamping diameter on the D-Vario chuck. For this operation, the jaws have to be clamped with the grinding rings.

Recommended grinding rings (1 Set = 2 pcs.)	
Jaws type A sizes 1 - 6	631309

Grinding data:

1. Grinding	A1	D = 177.0 mm	residual jaw stroke 0.25 mm
2. Grinding	A2	D = 176.9 mm	residual jaw stroke 0.20 mm
3. Grinding	A3	D = 176.8 mm	residual jaw stroke 0.15 mm
4. Grinding	A4	D = 176.7 mm	residual jaw stroke 0.10 mm

The clamping diameter A1 is used for the first finish grinding process. The smaller clamping diameter of the grinding rings (A2-A4) are used to regrind worn or damaged existing jaws.

Rotary union for 2 media

■ For double piston cylinder ZHVD-DFR for D-chucks

RU-2-20

Application/customer benefits

- Rotary union for media supply for rotating cylinders
- Universal for air + oil/air + coolant
- Can also rotate dry (without medium applied)

Technical features

- Rotary union for 2 media
- Port A for air, oil and coolant
- Port B for air

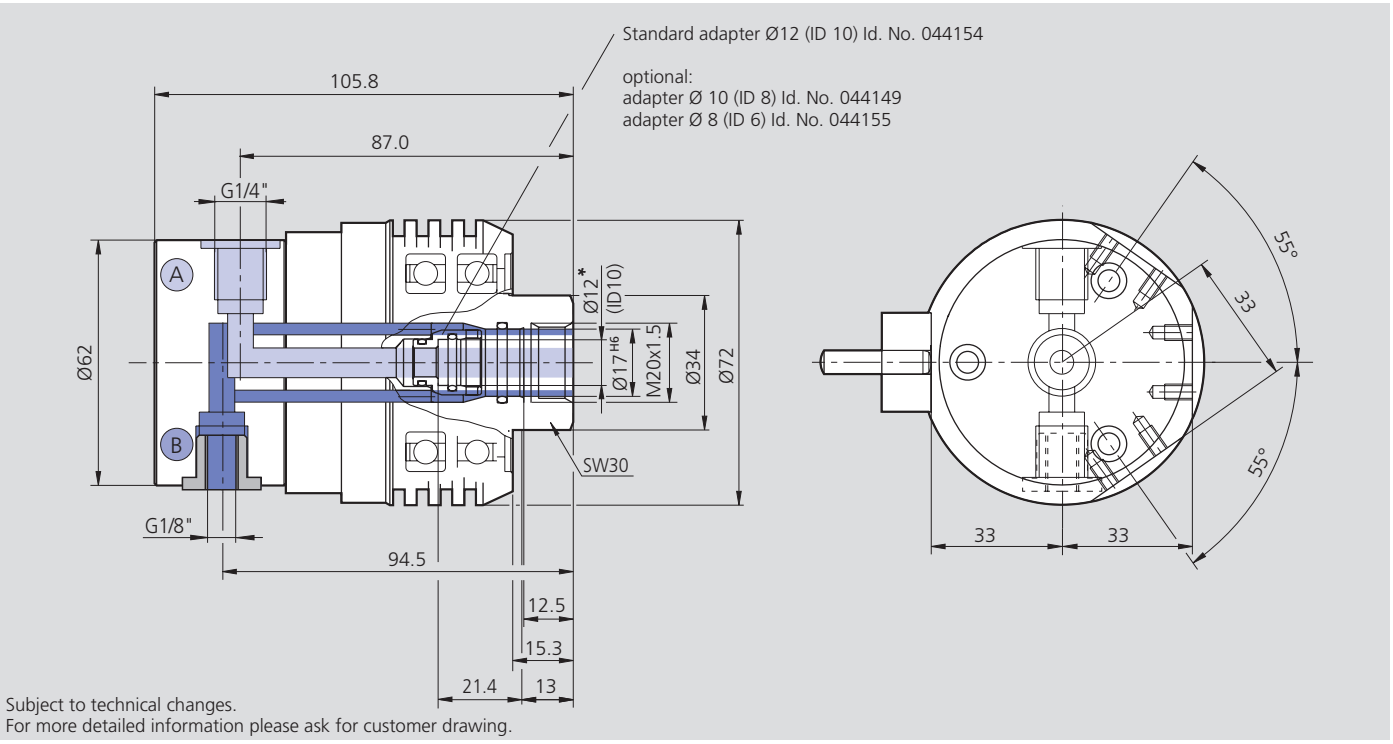
Note: The medium must be free of contamination
Filter 25 µm requested

Standard equipment

RU-2-20
Anti rotation pinblok
Adapter for tube Ø 12 mm (ID = 10 mm) Id. No. 044154

Option

Adapter for tube Ø 10 mm (ID = 8 mm) Id. No. 044149
Adapter for tube Ø 8 mm (ID = 6 mm) Id. No. 044155



Subject to technical changes.
For more detailed information please ask for customer drawing.

Technical data

SMW-AUTOBLOK Type	Id. No.	max. speed	max. pressure port A media: air, oil, coolant		max. pressure port B media: air only		Weight	Filter requested
		r.p.m.	bar	psi	bar	psi	kg	µm
RU-2-20	044972	4000	40	580	10	145	0.94	25