Features

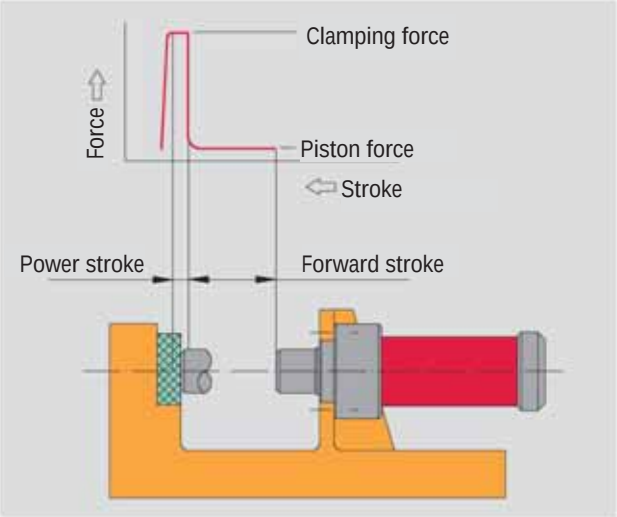
Your requirements

Power element of machines, tools and devices for the following applications:

- Clamping
- Punching
- Stamping
- Notching
- Coining
- Riveting
- Pressing
- Clinching

The solution

DE-STA-CO´s double acting power cylinder, which is based on the the wedge lever principle.



Special features

- Mechanical advantage: 10: 1
- Characteristic are the two steps of stroke: the **forward stroke** to move a certain distance and the **power stroke** with an amplified force on a short distance
- Exact positioning of cylinder by flange mount on cylinder's head
- Cylinder works in any position
- High durability because of solid and maintenance free wedge lever mechanics.
- End position control by magnetic field sensing

Technical Data

Power forces at 6 bar	4 – 60 kN
Forward strokes	15 – 200 mm
Power strokes	6 and 7 mm*
Air pressure	max. 6 bar, min 3 bar
Mechanical advantage	max. 10:1
Cylinders require clean, water- and oilfree air	

*power strokes up to max. 12 mm upon request

Round design: Type K and WK

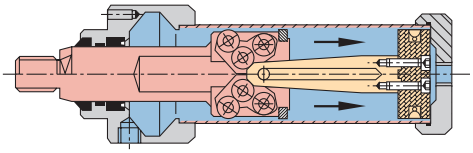
- Piston rod with male thread (Type K) or ISO fit (Type WK)

Rectangular design: Type WR

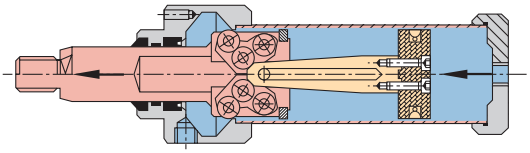
- Two piston rods prevent twisting

Application features

- Compressed air should be treated by filter, water separator and pressure regulator. Oiler is not allowed!
- For an adequate piston speed air hoses with 6mm I.D. should be used.
- Do not increase the max. air pressure of 6 bar, because this would reduce the cylinder´s life cycle considerably.
- The piston rods of type K and WK are not secured against twisting, an external device should be provided.
- Piston rod should not be subjected to transversal forces. Force should always be excerted by coaxial force through the piston rod to the work piece.
- For Type WR, force must be transmitted via the centre of the pressure plate.
- Connection between rod and tool should be performed as frictional connection (coupling), not as form fitting connection.
- For punching operations we recommend a force reserve of approx. 30 %.
- If the cylinder is used for positioning in the extended rod position you should consider that a possible counter-force will cause an axial deflection of approx. 1 mm. This feature is due to the cylinder's design because after the nominal power stroke the clamping force drops down to the level of the piston force (see force-stroke diagram left side).
- For further facts and additional application features see operating instruction MA PnKz – 1G.

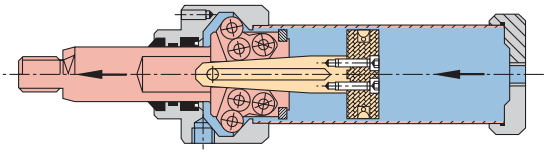


Basic position



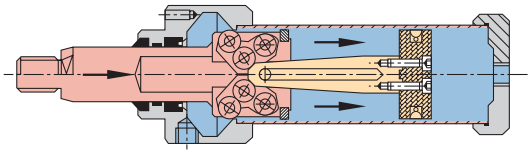
Forward stroke

Piston force is identical to the force of a common pneumatic cylinder with adequate piston diameter



Power stroke

Beginning of mechanical force amplification. Mechanical advantage max. 10:1



Return stroke

The return stroke can be initiated in any position of piston. The force during return stroke is approx. half of piston force.

Magnetic field sensing

Pneumatic power cylinders Type K und WK with end position control by magnetic field sensors.

■ **For the sizes**

K and WK 400…. , K and WK 1000….
K and WK 3000…, K and WK 4500…

■ **Change of model no.**

Indicate "-**A**" at the end of model no. instead of "-1" for standard version.

Example: K400 – 15 – 6 – 1 change to K400 – 15 – 6 – **A**
WK 3000 – 50 – 6 – 1 change to WK 3000 - 50 – 6 – **A**

■ **Change in construction**

Only the dimensions Ø D4, Ø D5, A/A1 and A9 are different to the standard version. See page 20.4 and 20.6

Technical data and differences of dimensions compared to standard version see Page 20.4 and 20.6

■ **Standard equipment** (as shown above)

Pneumatic power cylinders with "-**A**" at the end of model no. are completely furnished with a magnetic piston ring and with two mounted sensor sets (model no. SMB-102157, consisting of magnetic field sensor with 3m cable, clamp and strap)

See Page 20.4 and 20.6

Type K

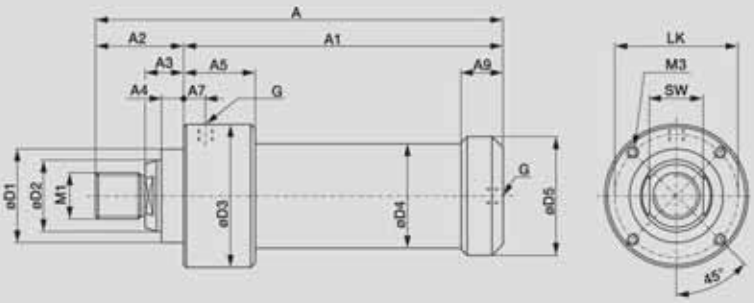
- Piston rod with male thread

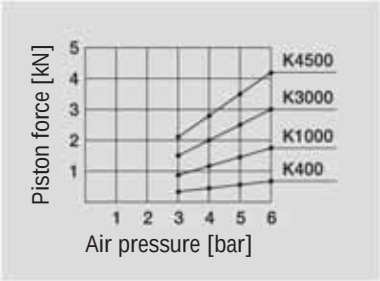
Note

Use only clean, water- and oilfree compressed air. Piston rod is not secured against twisting and should not be loaded transversal.

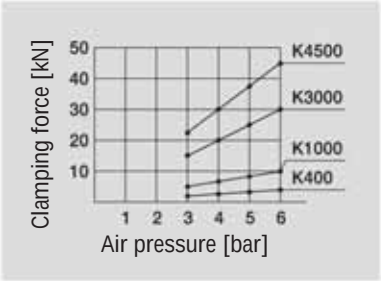
For further information see page 20.1

Type K in standard version





Return stroke force: half of piston force



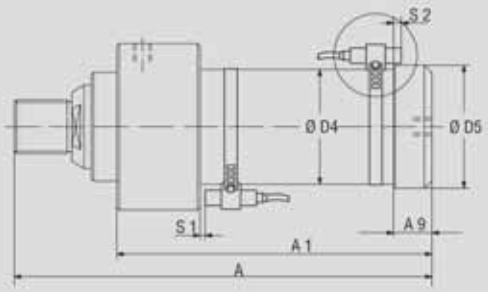
Air pressure: max. 6 bar; min. 3 bar

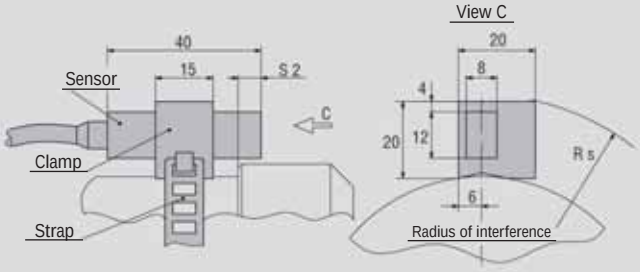
Model no.	Piston force within forward stroke at 6 bar [kN]	Forward stroke [mm]	Clamping force within power stroke at 6 bar [kN]	Power stroke [mm]	Piston dia. [mm]	Air consumption per double stroke at 6 bar [dm³]	Stroke frequency depending on total stroke [min⁻¹]	Temperature range [°C]	Weight [kg]
K 400-15-6-1	0,68	15	4,0	6	40	0,71	5 up to 30	-5 up to +75	1,20
K 400-30-6-1		30				0,89			1,25
K 400-50-6-1		50				1,14			1,30
K 400-70-6-1		70				1,38			1,35
K 400-120-6-1		120				1,98			1,50
K 400-200-6-1		200				2,94			1,70
K 1000-15-7-1	1,75	15	10	7*	63	2,20	5 up to 30	-5 up to +75	3,60
K 1000-30-7-1		30				2,66			3,80
K 1000-50-7-1		50				3,26			4,10
K 1000-70-7-1		70				3,85			4,40
K 1000-120-7-1		120				5,35			5,20
K 1000-200-7-1		200				7,74			6,40
K 3000-15-6-1	3,0	15	30	6*	85	4,48	5 up to 25	-5 up to +75	11,80
K 3000-30-6-1		30				5,20			12,50
K 3000-50-6-1		50				6,17			13,40
K 3000-70-6-1		70				7,13			14,30
K 3000-120-6-1		120				9,54			16,60
K 3000-200-6-1		200				13,40			20,20
K 4500-15-6-1	4,2	15	45	6*	100	6,18	5 up to 25	-5 up to +75	13,30
K 4500-30-6-1		30				7,17			14,00
K 4500-50-6-1		50				8,50			15,00
K 4500-70-6-1		70				9,83			15,80
K 4500-120-6-1		120				13,20			18,10
K 4500-200-6-1		200				18,50			21,70

* power strokes up to max. 12 mm upon request

Type K with sensing option,

further informations on page 20.2





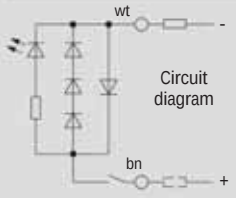
Switching points of sensors

**Differences of dimensions compared with standard version

For sizes	S 1*	S 2*	Ø D4	Ø D5	A/A 1	A9	Rs
K 400-...-A	5	12	-	49	+15	-	44
K 1000-...-A	10	18	-	74,5	+15	-	56
K 3000-...-A	5	14	90	97	-	30	67
K 4500-...-A	5	12	106	113	-	28,5	75

* Approx. data, because of magnet field variations. S1 refers to the max. power stroke and enlarges up to 60 mm, when smaller power strokes are used.

Circuit diagram and technical data of sensor set model no. **SMB-102157**, consisting of magnetic field sensor with 3 m cable, clamp and strap (2 sets per cylinder are standard equipment).



Switching voltage	10...250 VAC/DC
Switching current	0,5 A
Switching power	20 W/30 VA
Function	normally open contact
Protection class	IP 67 (DIN 40050)
Indicator	LED

Model no.	Dimensions for standard version of Type K **Differences of dimensions for cylinders with magnet piston rings see chart above																
	A	A_1	A_2	A_3	A_4	A_5	A_7	A_9	ø D_1	ø D_2	ø D_3	ø D_4	ø D_5	M_1	M_3	LK	SW	G
K 400-15-6-1	186	145	41	21	12	39	10	23,5	40_{h8}	25_{h7}	63	44	54	M16 x 1,5	M5, 10 mm deep	54	21	1/8
K 400-30-6-1	201	160																
K 400-50-6-1	221	180																
K 400-70-6-1	241	200																
K 400-120-6-1	291	250																
K 400-200-6-1	371	330																
K 1000-15-7-1	243	187	56	25	15	52	10	29	63_{h8}	40_{h8}	99,5	68	79	M24	M8, 12 mm deep	85	32	1/8
K 1000-30-7-1	258	202																
K 1000-50-7-1	278	222																
K 1000-70-7-1	298	242																
K 1000-120-7-1	348	292																
K 1000-200-7-1	428	372																
K 3000-15-6-1	315	235	80	35	20	70	20	45	85_{h8}	65_{h8}	130	95	108	M42	M10, 16 mm deep	112	55	1/4
K 3000-30-6-1	330	250																
K 3000-50-6-1	350	270																
K 3000-70-6-1	370	290																
K 3000-120-6-1	420	340																
K 3000-200-6-1	500	420																
K 4500-15-6-1	315	235	80	35	20	70	20	45	85_{h8}	65_{h8}	145	110	123	M42	M10, 16 mm deep	127	55	1/4
K 4500-30-6-1	330	250																
K 4500-50-6-1	350	270																
K 4500-70-6-1	370	290																
K 4500-120-6-1	420	340																
K 4500-200-6-1	500	420																

Type WK

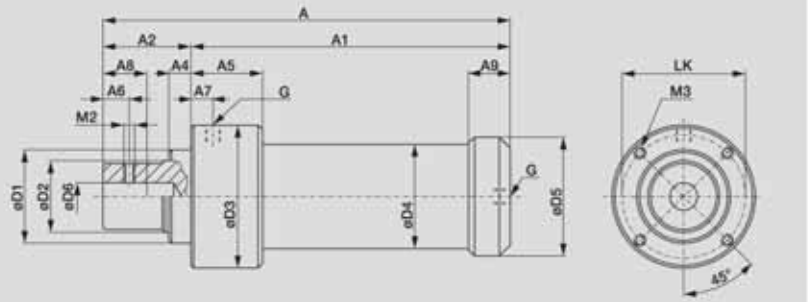
- Piston rod with ISO fit

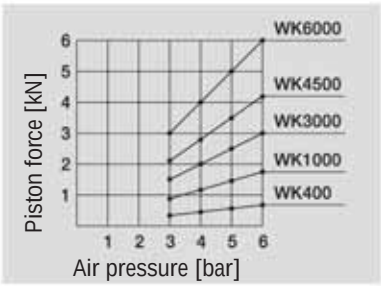
Note

Use only clean, water- and oilfree compressed air. Piston rod is not secured against twisting and should not be loaded transversal.

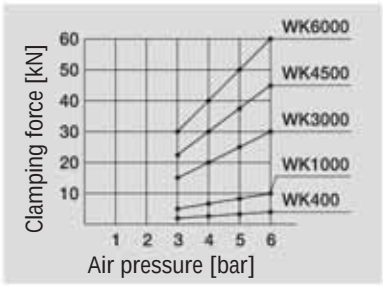
For further information see page 20.1

Type WK in standard version





Return stroke force: half of piston force



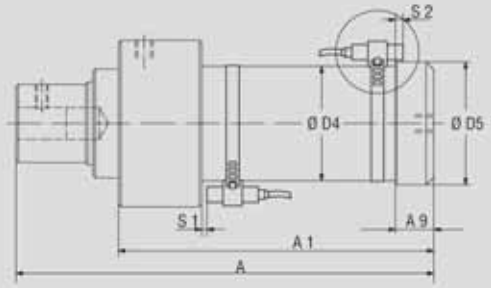
Air pressure: max. 6 bar; min. 3 bar

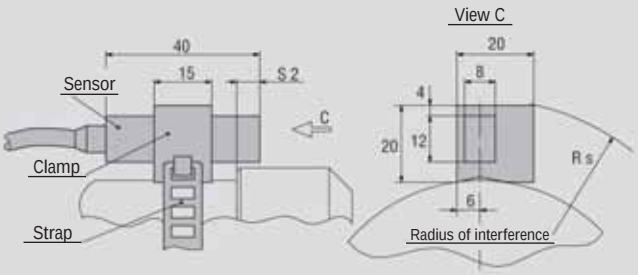
Model no.	Piston force within forward stroke at 6 bar [kN]	Forward stroke [mm]	Clamping force within power stroke at 6 bar [kN]	Power stroke [mm]	Piston dia. [mm]	Air consumption per double stroke at 6 bar [dm³]	Stroke frequency depending on total stroke [min⁻¹]	Temperature range [°C]	Weight [kg]
WK 400-15-6-1	0,68	15	4,0	6	40	0,71	5up to30	-5 up to +75	1,20
WK 400-30-6-1		30				0,89			1,25
WK 400-50-6-1		50				1,14			1,30
WK 400-70-6-1		70				1,38			1,35
WK 400-120-6-1		120				1,98			1,50
WK 400-200-6-1		200				2,94			1,70
WK 1000-15-7-1	1,75	15	10	7*	63	2,20	5up to30	-5 up to +75	3,60
WK 1000-30-7-1		30				2,66			3,80
WK 1000-50-7-1		50				3,26			4,10
WK 1000-70-7-1		70				3,85			4,40
WK 1000-120-7-1		120				5,35			5,20
WK 1000-200-7-1		200				7,74			6,40
WK 3000-15-6-1	3,0	15	30	6*	85	4,48	5up to25	-5 up to +75	11,80
WK 3000-30-6-1		30				5,20			12,50
WK 3000-50-6-1		50				6,17			13,40
WK 3000-70-6-1		70				7,13			14,30
WK 3000-120-6-1		120				9,54			16,60
WK 3000-200-6-1		200				13,40			20,20
WK 4500-15-6-1	4,2	15	45	6*	100	6,18	5up to25	-5 up to +75	13,30
WK 4500-30-6-1		30				7,17			14,00
WK 4500-50-6-1		50				8,50			15,00
WK 4500-70-6-1		70				9,83			15,80
WK 4500-120-6-1		120				13,20			18,10
WK 4500-200-6-1		200				18,50			21,70
WK 6000-30-6	6,0	30	60	6*	125	10,40	5up to25	-5 up to +75	24,00
WK 6000-50-6		50				12,85			24,50
WK 6000-70-6		70				15,17			25,00
WK 6000-120-6		120				21,15			26,50

* power strokes up to max. 12 mm upon request

Type WK with sensing option,

further informations on page 20.2





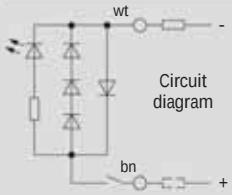
Switching points of sensors

**Differences of dimensions compared with standard version

For sizes	S 1*	S 2*	Ø D4	Ø D5	A/A 1	A9	Rs
WK 400-...-A	5	12	-	49	+15	-	44
WK 1000-...-A	10	18	-	74,5	+15	-	56
WK 3000-...-A	5	14	90	97	-	30	67
WK 4500-...-A	5	12	106	113	-	28,5	75

* Approx. data, because of magnet field variations. S1 refers to the max. power stroke and enlarges up to 60 mm, when smaller power strokes are used.

Circuit diagram and technical data of sensor set model no. **SMB-102157**, consisting of magnetic field sensor with 3 m cable, clamp and strap (2 sets per cylinder are standard equipment).



Switching voltage	10...250 VAC/DC
Switching current	0,5 A
Switching power	20 W/30 VA
Function	normally open contact
Protection class	IP 67 (DIN 40050)
Indicator	LED

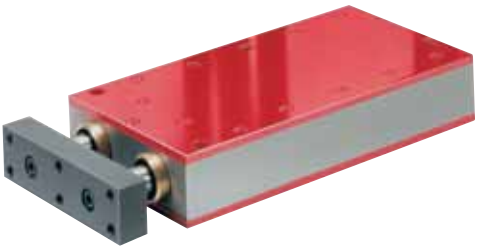
Dimensions for standard version of Type WK

**Differences of dimensions for cylinders with magnet piston rings see chart above

Model no.	A	A_1	A_2	A_4	A_5	A_6	A_7	A_6***	A_9	øD_1	øD_2	øD_3	øD_4	øD_5	øD_6	M_2	M_3	LK	G
WK 400-15-6-1	186	145	41	12	39	15	10	25	23,5	40_{h8}	25_{h7}	63	44	54	10^{H7}	M6	M5, 10 mm deep	54	1/8
WK 400-30-6-1	201	160																	
WK 400-50-6-1	221	180																	
WK 400-70-6-1	241	200																	
WK 400-120-6-1	291	250																	
WK 400-200-6-1	371	330																	
WK 1000-15-7-1	243	187	56	15	52	20	10	40	29	63_{h8}	40_{h8}	99,5	68	79	20^{H7}	M8	M8, 12 mm deep	85	1/8
WK 1000-30-7-1	258	202																	
WK 1000-50-7-1	278	222																	
WK 1000-70-7-1	298	242																	
WK 1000-120-7-1	348	292																	
WK 1000-200-7-1	428	372																	
WK 3000-15-6-1	315	235	80	20	70	24	20	40	45	85_{h8}	65_{h8}	130	95	108	25^{H8}	M10	M10, 16 mm deep	112	1/4
WK 3000-30-6-1	330	250																	
WK 3000-50-6-1	350	270																	
WK 3000-70-6-1	370	290																	
WK 3000-120-6-1	420	340																	
WK 3000-200-6-1	500	420																	
WK 4500-15-6-1	315	235	80	20	70	24	20	40	45	85_{h8}	65_{h8}	145	110	123	25^{H8}	M10	M10, 16 mm deep	127	1/4
WK 4500-30-6-1	330	250																	
WK 4500-50-6-1	350	270																	
WK 4500-70-6-1	370	290																	
WK 4500-120-6-1	420	340																	
WK 4500-200-6-1	500	420																	
WK 6000-30-6	365	285	80	20	84	24	22	40	53	85_{h8}	65_{h8}	178	135	148	25^{H8}	M10	M12, 18 mm deep	150	1/2
WK 6000-50-6	385	305																	
WK 6000-70-6	405	325																	
WK 6000-120-6	455	375																	

*** Usable depth of bore with ISO fit D_6

Type WR



- Piston rods prevent twisting

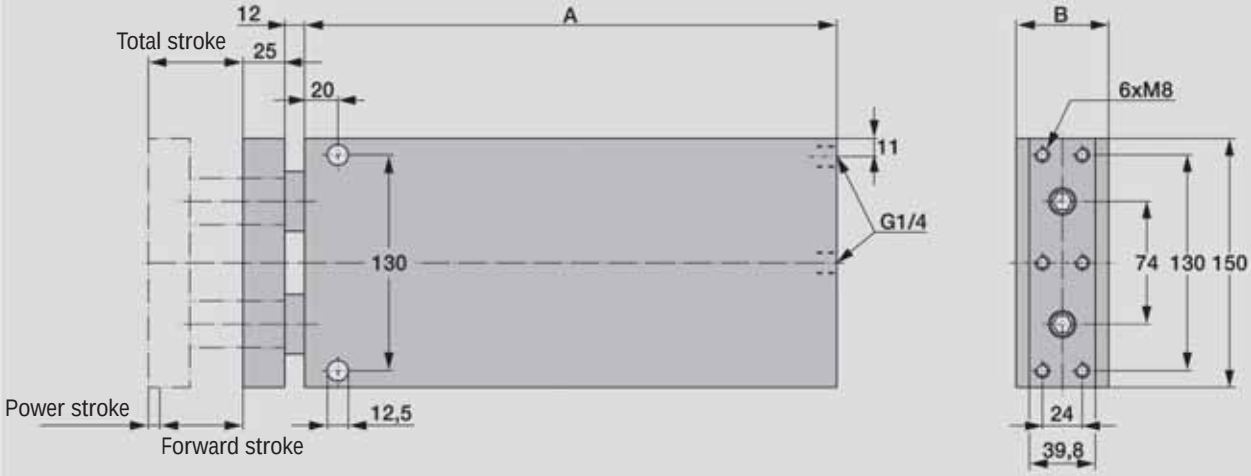
Note

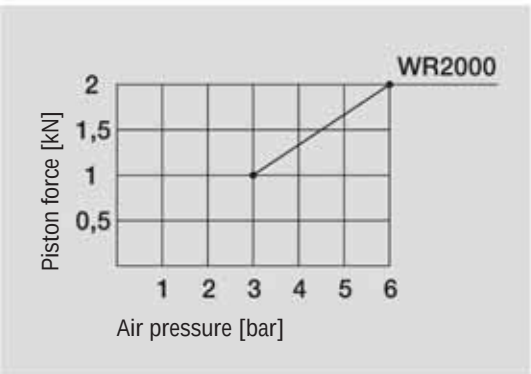
Use only clean, water- and oilfree compressed air. Force must be transmitted via the centre of the pressure plate. One-sided loading of the pressure plate should be avoided.

For punching applications contact our technical support!

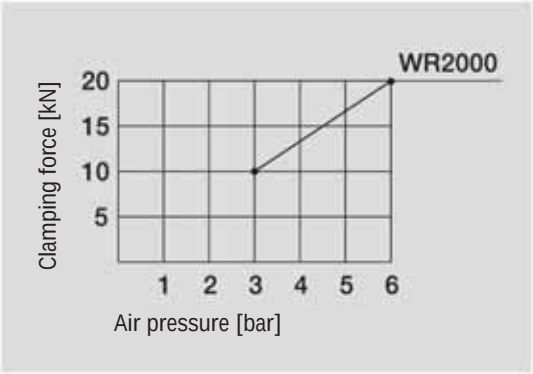
For further information see page 20.1

Type WR





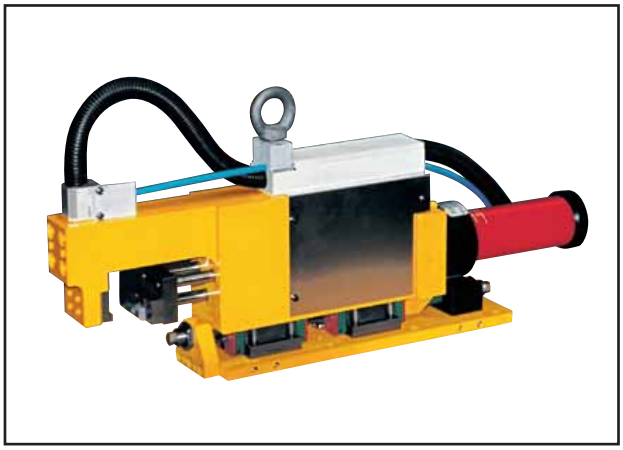
Return stroke force: half of piston force



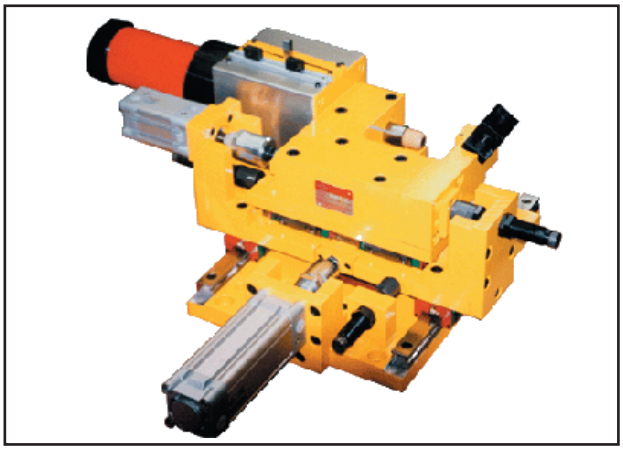
Air pressure: max. 6 bar; min. 3 bar

Model no.	Piston force within forward stroke at 6 bar [kN]	For-ward stroke [mm]	Clamping force within power stroke at 6 bar [kN]	Power stroke [mm]	Piston area ≙ piston dia. [mm]	Air consump-tion per double stroke at 6 bar [dm³]	Stroke frequen-cy depending on total stroke [min⁻¹]	Temperature range [°C]	Weight [kg]	A ±1	B ±2
WR 2000-15-7		15				2,44			12,5	285	51,6
WR 2000-30-7		30				2,95			14,0	300	51,6
WR 2000-50-7	2	50	20	7	70	3,62	5 - 25	-5up to+75	15,5	320	55,6
WR 2000-70-7		70				4,27			17,2	340	55,6
WR 2000-120-7		120				5,94			21,0	390	59,6

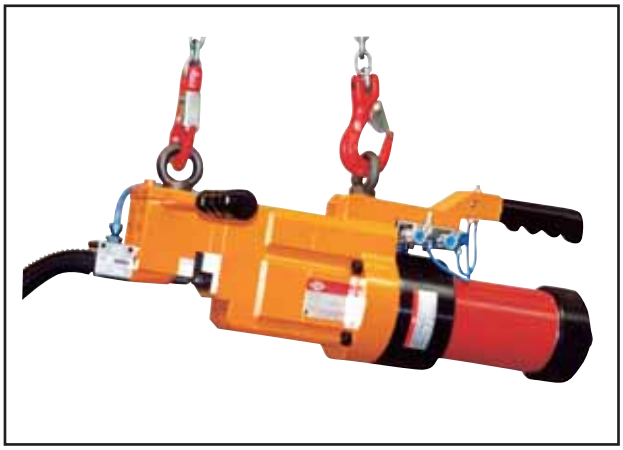
Radius clinching unit for profiled aluminium



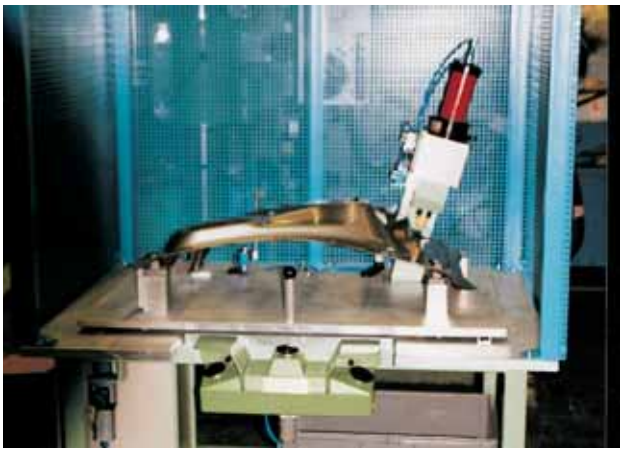
Special punching unit for 2 holes Ø 3,4 in steel 0,9 mm



Special device for 2 holes Ø 12 in steel 1,2 mm



Mobile punching unit for holes Ø 6,2 in crossbeams



Device for holes Ø 8 in sheet metal

Stamping units placed in line

Stamping units placed in line

Welding fixture for exhaust components