

**Pneumatic Tools for Professionals:
Grinding Spindles and Robot Tools**



BIAX

**Experts know why they count
on BIAX tools:**
QUALITY wherever you look.



**BIAX – The brand
for professionals**

BIAX - Over 85 years of quality.

Schmid & Wezel was one of the pioneers focussing on pneumatic tools. Since 85 years the company presents the highest standard of precision, quality and cooperation to the customer. Over the world, when people talk about pneumatic tools these days, the one brand they often mention first is BIAX.

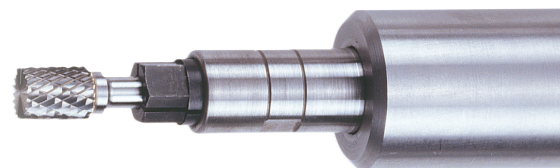
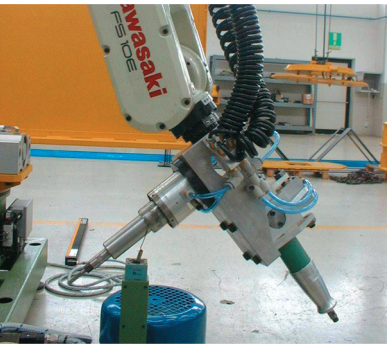
This is of course due to the outstanding quality of our products and our endless drive for technical perfection. Both characteristics have been the source and guarantee of our success, since 1919.

BIAX - Partner of Industry.

Companies developing and producing industrial tools need a „feel“ for the market. BIAX tools are always designed to meet the demands and wishes of our partners. It is of no surprise that BIAX has evaluated exciting innovations time and time again.

You can expect a lot from BIAX.

And this is why our research and development centre is creating the products that will set the standards of tomorrow. We estimate ourselves more and more as „service professionals“, who can offer a complete package of services and solutions. We can confidently claim to be better, more progressive and more capable than the competition.





BIAX - superior technology and impressive quality.

The superior technology of BIAX products does not only become obvious in the many well thought-out details, but also in the high-quality material used for all our products.

Look at the user-friendly design of our products, design that always incorporates the newest advances in ergonomics.

And of course the exceptional workmanship and guarantee of longterm use. For us, this is all a matter of fact - for you, indispensable!

BIAX-tools are simply the best that can be found on the market.

Into the future with BIAX.

Much of what your business requires in terms of automation with pneumatic tools, electric tools and accessories can be found in this publication. If you happen not to find what you are looking for, simply give us a call. If it is in our line of business, we will find a solution.

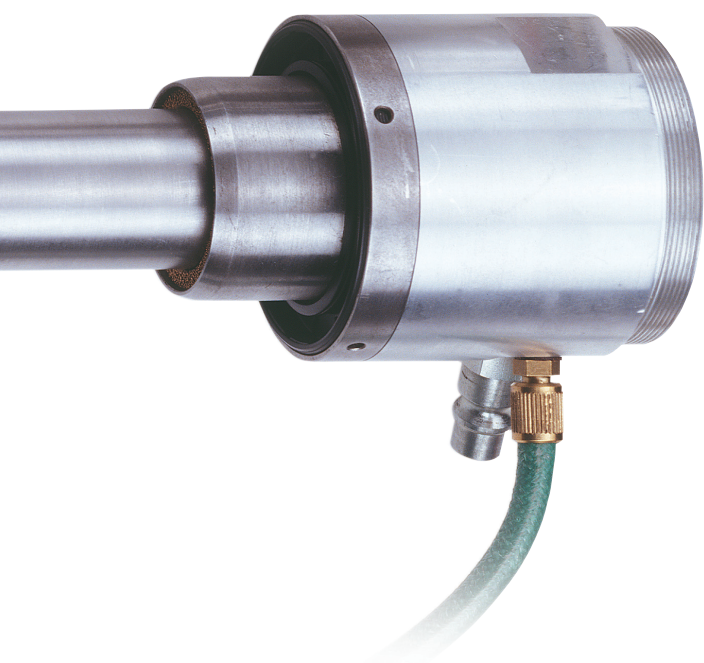
This is what we can promise already today!

BIAX pneumatic tools -

since only the best is good enough for the manufacturing of your quality products!

BIAX Pneumatic Tools.

In a Class of their own.



Driving with compressed air

Basic characteristic curves for a pneumatic motor without a controller:

- M = Torque [Nm]
- Q = Air consumption [l/min]
- P = Power [W]

The graph opposite shows the characteristic curves of a fixed-speed pneumatic motor.

Power, torque and air consumption are plotted as a function of speed.

The curve reveals that the power increases as the speed is reduced down to approximately 50% of idling speed before being reduced again as the motor comes to a standstill.

The torque increases continuously up to 100% at 50% of idling speed, reaching 200% when the motor stalls.

It should be noted that the stalling torque is approximately 200% and the starting torque only 150% of the rated torque.

The Formula:

$$P [w] = [Nm] \cdot \omega [1/s]$$

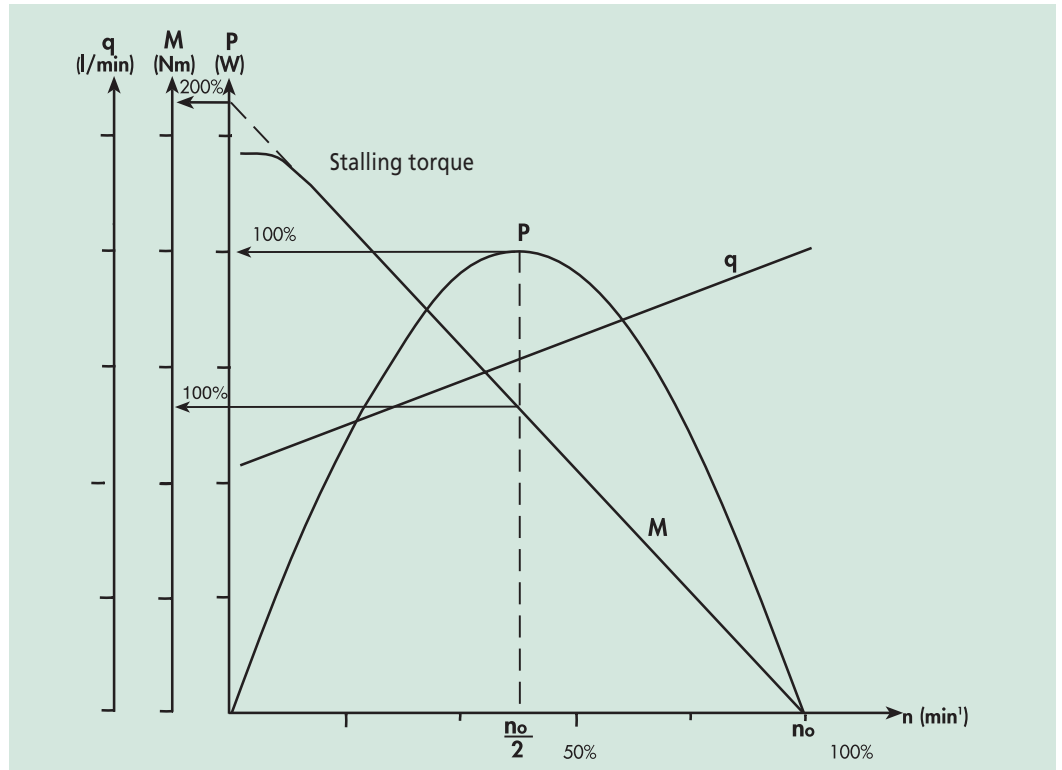
$$\omega = 2 \pi f$$

$$P [w] = [Nm] \cdot \frac{\pi \cdot n \cdot [1/m \text{ in}]}{30}$$

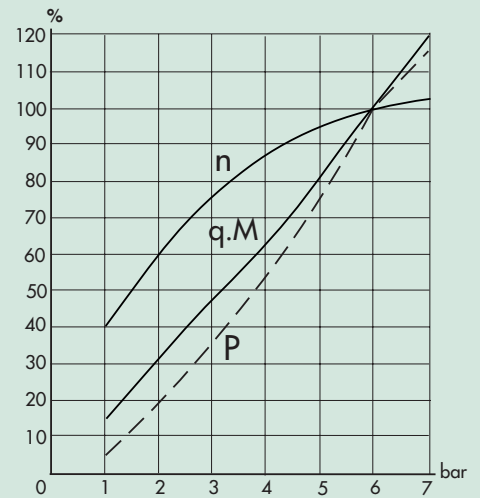
$$\omega = 2 \pi \frac{n}{60}$$

$$\omega = \frac{\pi n}{30}$$

Pneumatic motors from 100 to 600 W available on request.

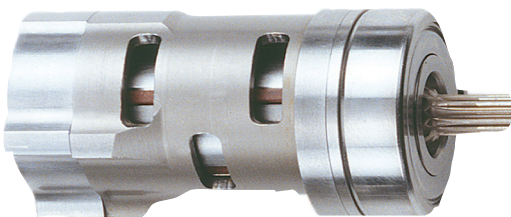


Characteristic values for deviating pressure

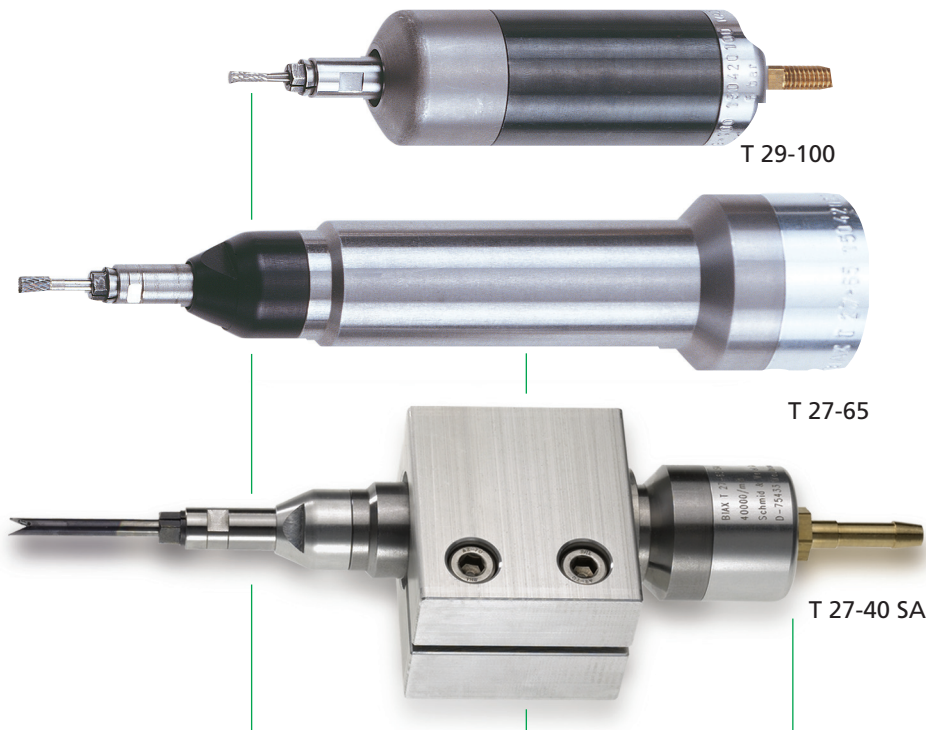


- n = Speed (min)
- q = Air consumption (m/min)
- M = Torque (Nm)
- P = Power (kW)

Please ask for performance curves for individual machines.



BIAX Pneumatic grinding spindles with oil-free turbine motor



T 27-40 SA

The Model T27-40 SA is particularly vibration-poor in the clamping block stored. By the reduced number of revolutions of 40,000 1/min. with 3 bar operating pressure it is very suitable to use this tool for drilling rubber.

The main advantages at a glance:

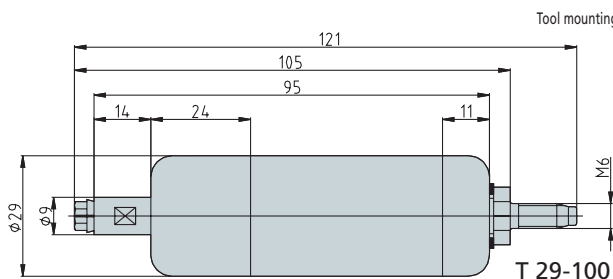
- Oil-free operation means no oil mist on the workpieces.
- High speeds, optimized for each tool, guarantee perfect grinding and milling patterns.
- Very accurate concentric running.
- Low noise level.
- The T 29-100 and T 27-65 turbine grinders are characterized by exceptional wear resistance and a long service life in continuous operation.

Accessories included:

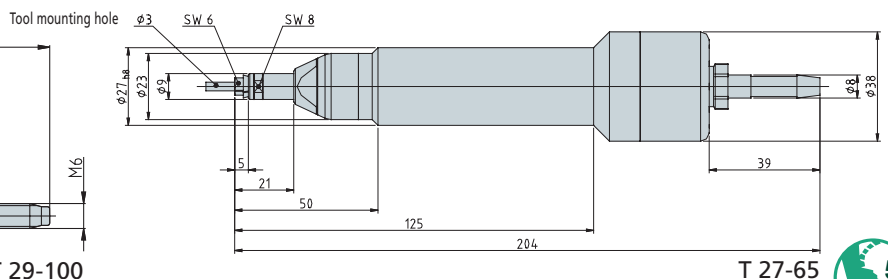
- Wrench set for tool changing

All collets in the ZG 5 series are available with diameters from 1 to 3 mm in steps of 0.5 mm; 3/32" and 1/8" sizes can also be supplied. Other special sizes available on request.

Type designation	T 29-100	T 27-65	T 27-40 SA
Motor type	Oil-free turbine motor	Oil-free turbine motor	Oil-free turbine motor
Order number	150 420 100	150 420 200	150 420 210
Speed	min ⁻¹ 100.000	65.000	40.000
Power	Watt 80		
Front bearing set	single	single	double
Collet type	mm ZG 5/3	ZG 5/3	ZG 4/5
Max. collet diameter	mm 3	3	5
Max. tool diameter			
Carbide tools	mm 3	6	5
Profile grinding wheels	mm 5	8	10
Direction of rotation	clockwise	clockwise	clockwise
Exhaust air direction	forward	rear	rear
Air consumption unter load	l/min 180	180	180
Noise level	dB (A) 70	70	70
Weight	g 290	485	510
Connection thread	R 1/8"	R 1/8"	R 1/8"
Hose unit			
Order number	001 366 537	001 366 502	001 366 502
Hose length	mm 1,5	3	3
Air hose diameter	mm 4,5	7	7
Hose unit included	no	no	no



T 29-100



T 27-65

Pneumatic grinding spindels with oil-free vane motor

The main advantages at a glance:

- Oil-free operation means no oil mist on the workpieces.
- High speeds, optimized for each tool, guarantee perfect grinding and milling patterns.
- Very accurate concentric running.
- Low noise level.
- Due to the vane motor, the lubricant-free drive of these grinding spindles is absolutely unique and patented.

Accessories included:

- Wrench set for tool changing

All collets in the ZG 4 series are available with diameters from 1 to 6 mm in steps of 0.5 mm; 3/32", 1/8" and 1/4" sizes can also be supplied. Other special sizes available on request.

All collets in the ZG 7 series are available with diameters from 1 to 8 mm in steps of 1 mm; 1/8" and 1/4" sizes can also be supplied. Other special sizes available on request.

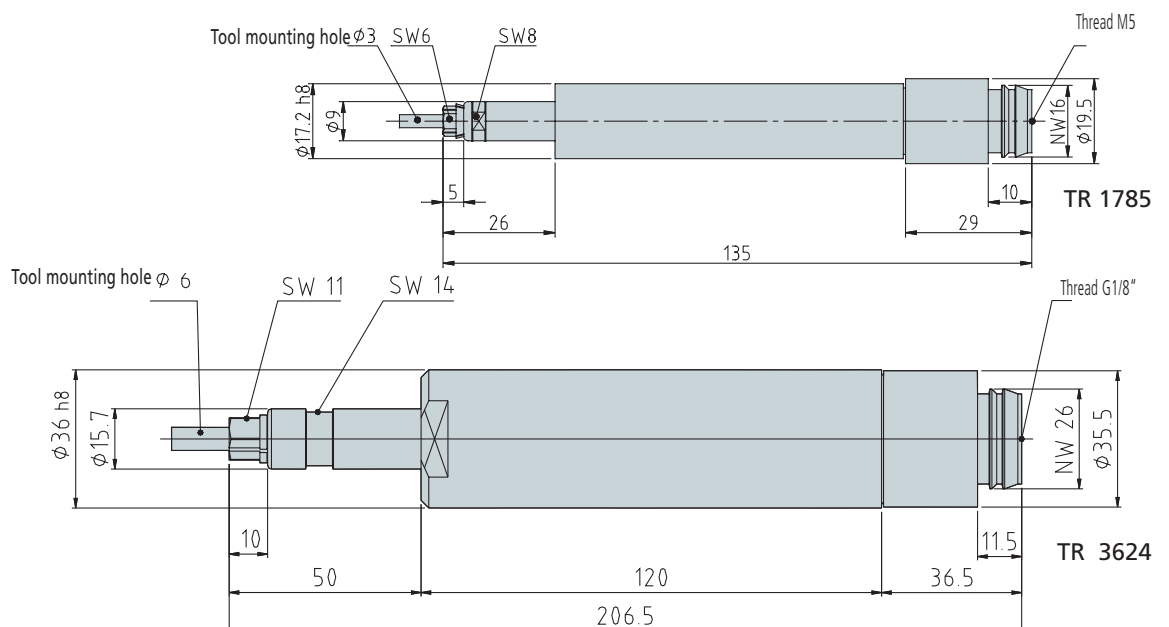


TR 1785



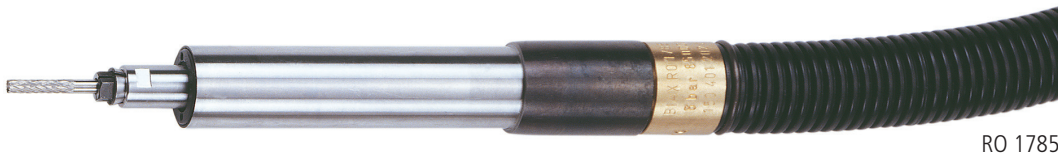
TR 3624

Type designation		TR 1785	TR 3624
Motor type		Oil-free vane motor	Oil-free vane motor
Order number		150 401 400	150 421 500
Speed	min ⁻¹	85.000	24.000
Power	Watt	100	300
Front bearing set		paired	single
Collet type	mm	ZG 5/3	ZG 7/6
Max. collet diameter	mm	3	8
Max. tool diameter			
Carbide tools	mm	4	12
Profile grinding wheels	mm	6	24
Direction of rotation		clockwise	clockwise
Exhaust air direction		rear	rear
Air consumption unter load	l/min	170	600
Noise level	dB (A)	70	74
Weight	g	130	750
Connection thread		M5	R 1/8"
Hose unit			
Order number		001 366 595	001 366 578
Hose length	mm	1,5	3
Air hose diameter	mm	4,5	7
Hose unit included		yes	no



Pneumatic grinding spindels

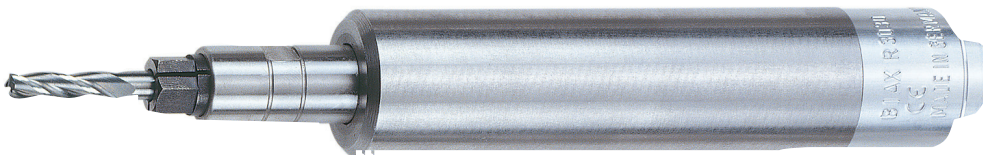
For installation in transfer lines, machine tools and fixtures



RO 1785



R 2732*



R 3030**/ R 3040

The main advantages at a glance:

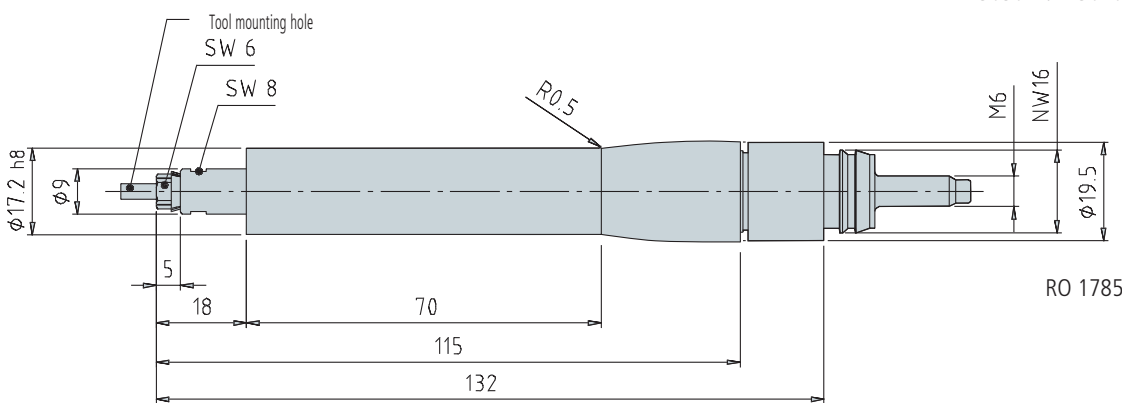
- Compact dimensions.
- High-powered vane motors.
- Very accurate concentric running.
- Loadable down to standstill.
- Low pollution due to central exhaust.
- Low noise level.
- Robust, clamping-type steel body.

Accessories included:

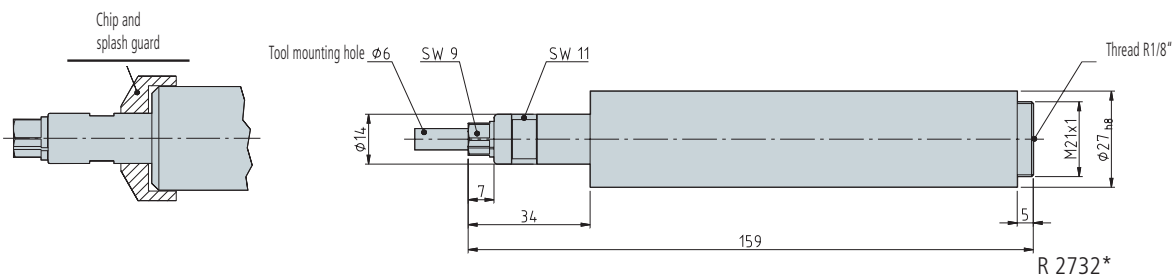
- Wrench set for tool changing

All the grinding spindles shown on this page can also be supplied with a revolving splash and chip guard on the front to protect the tool spindle (see drawing).

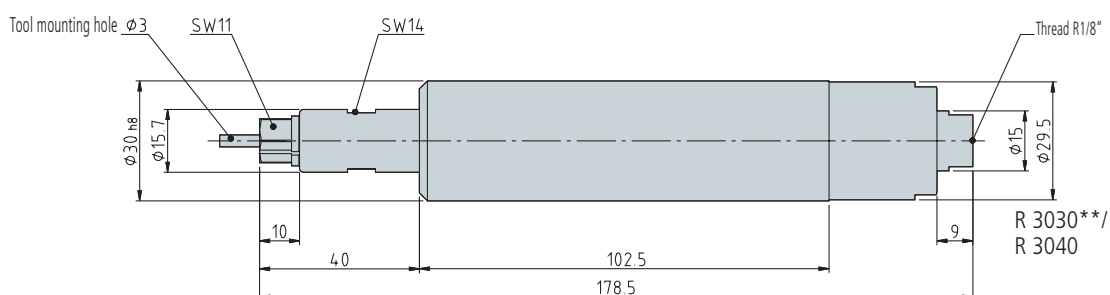
* technical data on page 8



RO 1785



R 2732*



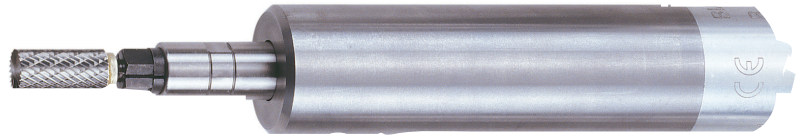
R 3030**/
R 3040

Pneumatic grinding spindles for installation in transfer lines, machine tools and fixtures.

* The **R 2732** and **R 3622** grinding spindles can also be supplied in a counterclockwise version. Their specifications are otherwise identical to those of the clockwise spindles.

RL 2732 Order-Nr. 150-412-801
RL 3622 Order-Nr. 150-425-220

** With single bearing set
RL 3030 Order-Nr. 150-414-100



R 3622*



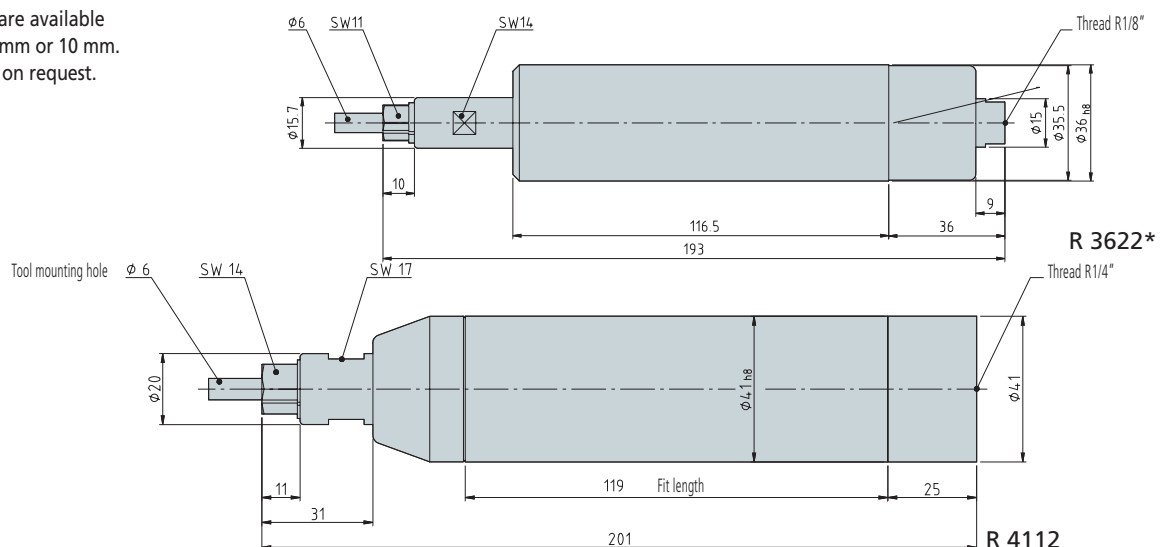
R 4112

Type designation	RO 1785	R 2732*	R 3040	R 3030**	R 3622*	R 4112
Order number	150 401 202	150 412 702	150 414 120	150 414 110	150 425 210	150 414 520
Speed min^{-1}	85.000	32.000	40.000	30.000	22.000	12.000
Power Watt	100	200	240	240	300	400
Front bearing set	paired	paired	paired	paired	paired	single
Collet type mm	ZG 5/3	ZG 4/6	ZG 7/6	ZG 7/6	ZG 7/6	ZG 8/6
Exhaust air direction	rear	rear	rear	rear	rear	rear
Max. collet diameter mm	3	6	8	8	8	10
Max. tool diameter						
Carbide tools mm	4	8	8	10	12	15
Profile grinding wheels mm	6	12	10	16	24	24
Direction of rotation	clockwise	clockwise	clockwise	clockwise	clockwise	clockwise
Air consumption unter load l/min	180	400	400	400	500	790
Noise level dB (A)	70	75	76	75	73	78
Weight g	200	365	420	420	640	750
Connection thread	M 6 extenal	R 1/8"	R 1/8"	R 1/8"	R 1/8"	R 1/4"

Please ensure adequate lubrication with a maintenance unit (water separator with oiler and pressure gauge).

Hose unit						
Order number	001 366 595	001 366 529	001 366 505	001 366 505	001 366 505	001 366 580
Hose length m	1,5	3	3	3	3	3
Air hose diameter mm	4,5	7	7	7	7	10
Hose unit included	yes	no	no	no	no	no

All collets in the ZG 8 series are available with a diameter of 6 mm, 8 mm or 10 mm. Other special sizes available on request.



Pneumatic spindles for brushing and drilling operations in transfer lines, machine tools and fixtures.



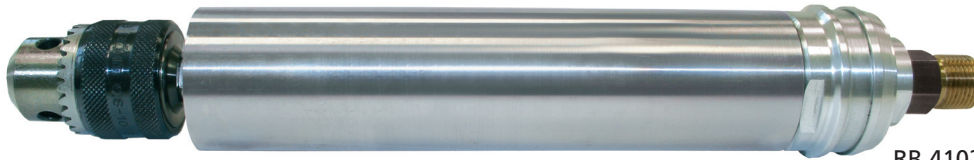
R 4105
R 4102

R 4102 R 4105 RB 4105

This spindles are very useful for all kind of brushing and drilling applications, due to the powerful engine.

R 4102 and **R 4105** are equipped with a collet.

RB 4105 comes with three-jaw chuck.



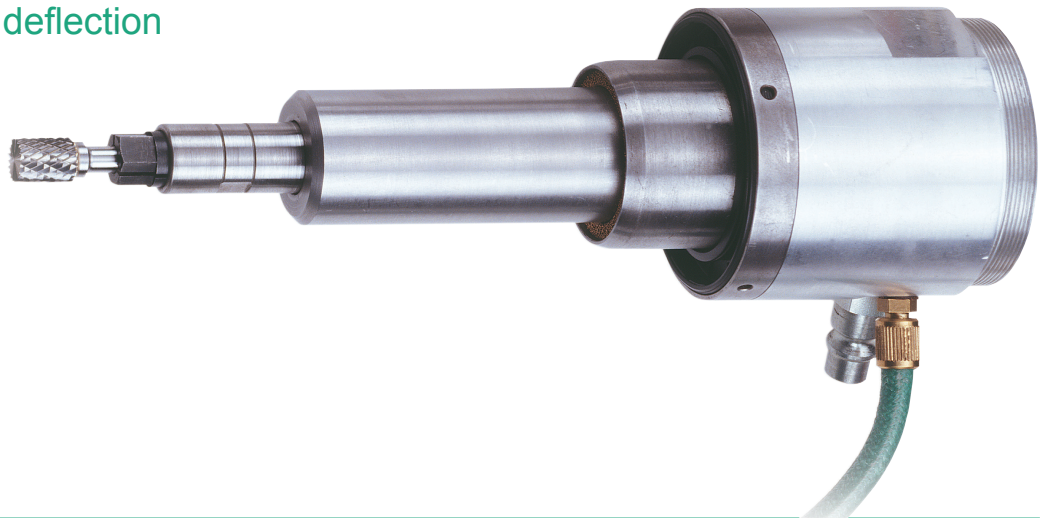
RB 4102

Type designation	R 4102	R 4105*	RB 4102	
Order number	150 414 540	150 414 530	150 414 545	
Speed	min ⁻¹	1700	5000	1700
Power	Watt	750	750	750
Front bearing set	paired	paired	paired	
Collet type	mm	ZG 8/6	ZG 8/6	chuck 1-10
Exhaust air direction		rear	rear	rear
Max. collet diameter	mm	10	10	10
Max. tool diameter		-	-	-
Drehrichtung		clockwise	clockwise	clockwise
Air consumption under load	l/min	850	850	850
Noise level	dB (A)	83	83	83
Weight	g	400	1400	1700
Connection thread		G 3/8"	G 3/8"	G 3/8"
Please ensure adequate lubrication with a maintenance unit (water separator with oiler and pressure gauge).				
Hose unit				
Bestell-Nummer	001 366 510	001 366 510	001 366 510	
Hose length	m	3	3	3
Air hose diameter	mm	10	10	10
Hose unit inclusive		no	no	no
Systems with other spindels and different speed on demand. Further technical details on demand.				

Robot system with deflection

The main advantages at a glance:

- Deflection force continuously adjustable by means of the compressed air.
- The compressed air applied to the piston ensures that the tool always returns to its starting position at the fixed stop following a deflection.



Type designation	RWA 2-40	RWA 2-30	RWA 2-22	RWA 5-12	RWA 2-24
Integrated grinding spindle	R 3040	R 3030	R 3622	R 4112	TR 3624
	Oil-lubricated	Oil-lubricated	Oil-lubricated	Oil-lubricated	dry run
Order number	150 830 835	150 830 820	150 830 825	150 830 885	150 830 860
Speed	min 40.000	30.000	22.000	12.000	24.000
Power	Watt 240	240	300	400	300
Tool mounting hole	max. 8	8	8	10	8
Collet type	mm Zg 7/6	Zg 7/6	Zg 7/6	Zg 8/6	Zg 7/6
Direction of rotation	clockwise	clockwise	clockwise	clockwise	rechts
Exhaust air direction	forwards	forwards	forwards	forwards	vorwärts
Weight	g 1120	1135	1400	2095	1465
Air inlet	R 1/8"	R 1/8"	R 1/8"	R 1/4"	R 1/8"
Overall L dimension X	mm 193	193	207	263	219
Grinding spindle L dimension S	mm 110	110	124	176	138
Tool mounting hole L dimension W	mm 83	83	83	87	81
Chop spindle L dimension Z	mm 41	41	41	31	51
Spindle diameter dimension D	mm 30	30	36	41	36

Table for deflection systems:

RWA 2-40, RWA 2-30, RWA 2-22,
RWA 2-24

Deflection force at measuring point
1 with spindle rotating

Air pressure	Force
2 bar	12 N
3 bar	20 N
4 bar	24 N
5 bar	28 N
6 bar	32 N

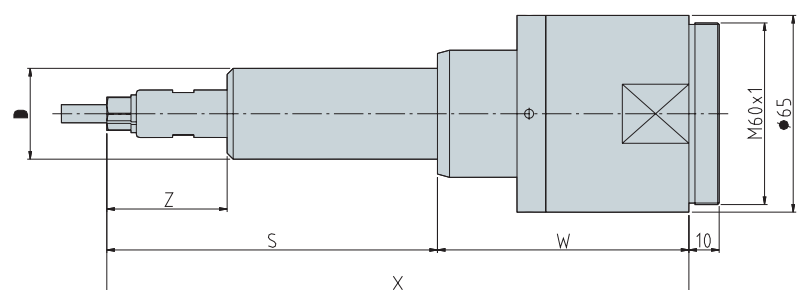
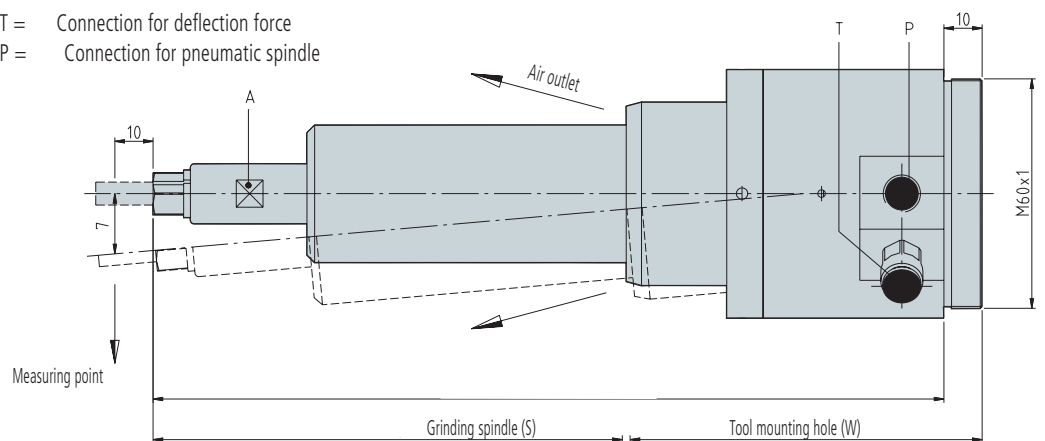
Table for deflection system:

RWA 5-12 with spindle rotating

Deflection force at measuring point
1 with spindle rotating.

Air pressure	Force
2 bar	26 N
3 bar	38 N
4 bar	50 N
5 bar	62 N
6 bar	70 N

T = Connection for deflection force
P = Connection for pneumatic spindle



Robot system with deflection and rapid change systems

ASV 100



ASV 100

This system offers the possibility of the parallel deflection of the spindles. Thus programming is simplified clearly. The tools reset themselves automatically into the zero-position.

BWS 2-22



BWS 2-22 BWSO 2-22

These robot systems permit the fast exchange of tools in robot cells. Different spindles with different numbers of revolutions are available.

BWSO 2-22



Type designation	ASV 100	BWS 2-22	BWSO 2-22
integrated grinding spindle	R 3622	R 3622	R 3622
	Oil-lubricated	Oil-lubricated	Oil-lubricated
Order number	150 832 000	150 830 940	150 831 030
Speed	min ⁻¹ 22.000	22.000	22.000
Power	Watt 300	300	300
Tool mounting hole	max, 8	8	8
Collet type	mm ZG 7/6	ZG 7/6	ZG 7/6
Direction of rotation	clockwise	clockwise	clockwise
Exhaust air direction	forwards	rear	rear
Weight	g 2420	2400	2350
Air inlet	2 x R 1/8"	robot sided	robot sided

Systems with further spindles and different numbers of revolutions on request available.
Further technical details on request.

Robot system with deflection and HSK tool fitting

RWA-HSK System

These tools are variant of the BIAX RWA line. (Page 10)

The HSK 100 or HSK 63 tool fitting allows the use of RWA spindles in machine tools. For the individual adjustment of the contact pressure the tools with or without regulating valve are available.



Type designation	RWA 2-40 - HSK	RWA 2-30 - HSK	RWA 2-22 - HSK	RWA 5-12 - HSK	RWA 2-24 - HSK
Integrated grinding spindle	R 3040	R 3030	R 3622	R 4112	TR 3624
	Oil-libricated	Oil-libricated	Oil-libricated	Oil-libricated	dry run
Order no. with regulating valve HSK 100	150 831 091	150 831 081	150 831 061	150 831 101	150 831 071
Order no. without regulating valve HSK100	150 831 090	150 831 080	150 831 060	150 831 100	150 831 070
Order no. with regulating valve HSK 63	on demand	on demand	150 831 063	on demand	on demand
Order no. without regulating valve HSK 63					
Speed	40.000	30.000	22.000	12.000	24.000
Power	240	240	300	400	300
Tool mounting hole	8	8	8	10	8
Collet type	Zg 7/6	Zg 7/6	Zg 7/6	Zg 8/6	Zg 7/6
Direction of rotation	clockwise	clockwise	clockwise	clockwise	clockwise
Exhaust air direction	forwards	forwards	forwards	forwards	forwards
Weight	4480	4480	4700	6500	4700
Air inlet	R 1/8"	R 1/8"	R 1/8"	R 1/4"	R 1/8"

Table for deflection systems:

RWA 2-40 - HSK, RWA 2-30 - HSK,
RWA 2-22 - HSK, RWA 2-24 - HSK

Deflection force at measuring point 1 with spindle rotating

Air pressure	Force
2 bar	12 N
3 bar	20 N
4 bar	24 N
5 bar	28 N
6 bar	32 N

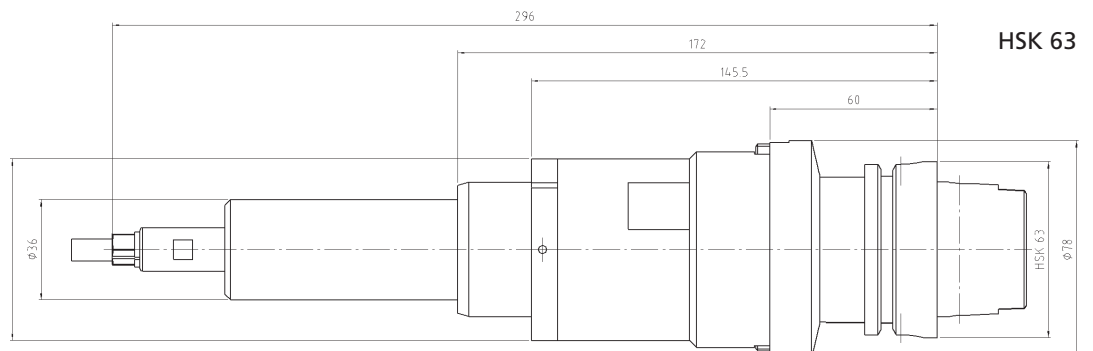
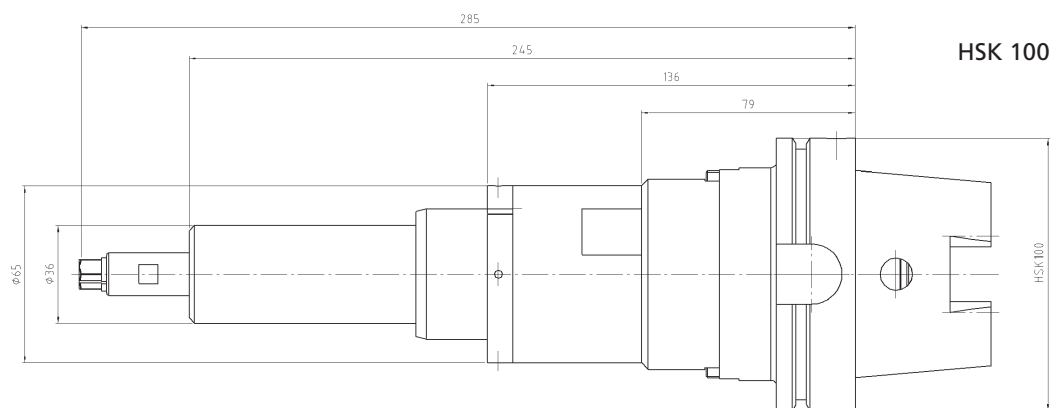
Table for deflection systems:

RWA 5-12 - HSK with spindle rotating

Deflection force at measuring point 1 with spindle rotating.

Air pressure	Force
2 bar	26 N
3 bar	38 N
4 bar	50 N
5 bar	62 N
6 bar	70 N

Further technical details for RWA 5-12-HSK on request.

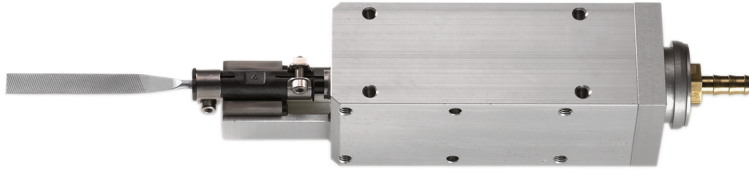


Oscillating drives

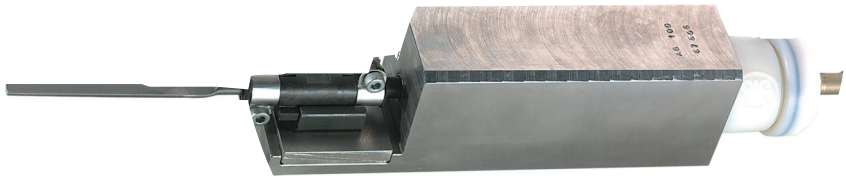
F 5-4 R
F 5-4 R SA



PLV 01



AG 90



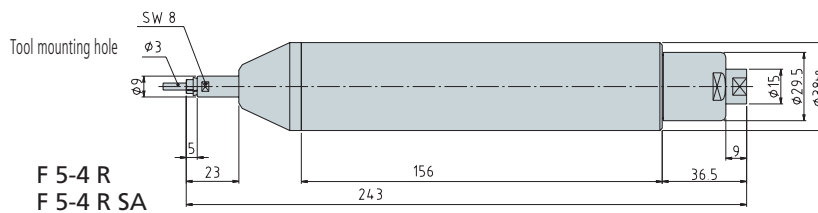
This oscillating drives are used, among other things:

- In plotters to cut cardboard, polystyrene, etc.
- To deburr parts when the workpiece is guided to the robot.

A straight-line pneumatic tool in a robot version is also available: the FR 8-2 filing tool (see page 21 of the BIAX Pneumatic Tools catalog for details).

Type designation	F 5-4 R	F 5-4 R SA	F 5-4 R SA	PLV 01	AG 90
Order number	150 310 820	150 310 825	150 310 830	150 310 910	150 310 900
Stroke rate	min 4.000	4.000	4.000	12.000	bis 12.000
Stroke length	mm 1-5	3	2	8-9	2-9
Drive type	Continuously adjustable fixed			Continuously adjustable	Continuously adjustable
	vane motor with swash plate drive			Reciprocating piston	Reciprocating piston
Tool mounting hole max.	mm 3	3	3	6	up to 6
Exhaust air direction	mm rear	rear	rear	rear	rear
Weight	g 960	960	960	1200	1.900
Matching hose unit	001 366 505	001 366 505	001 366 505	001 974 552	001 974 552

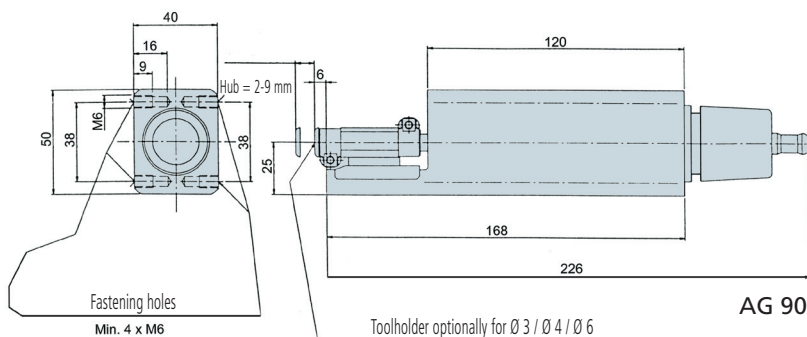
Further technical details for PLV 01 on request.



F 5-4 R
F 5-4 R SA

The following pneumatic tools from the BIAX Pneumatic Tools catalog are also available in a robot version:

- Straight grinder, type SBRH 818, page 12
- Angle grinder with collet, type WRD 6-20/3 Z, page 13
- Angle grinder with M 10 spindle, type WRD 10-20/3 S, page 13
- Angle grinder with collet, type WRD 6-20/2 ZL 90, page 13
- Angle grinder with collet, type WRD 6-20/2 ZL 45, page 14
- Belt grinder, type HBD 200, page 15

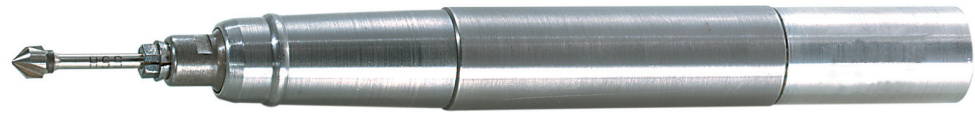


AG 90

Toolholder optionally for Ø 3 / Ø 4 / Ø 6

- These tools are supplied without opening and closing valves and are driven externally with air.
- The machines for mid-range motors are fitted with a polished steel sleeve for clamping in a clamping fixture.

Straight drilling deburrers optionally with push start or external start.



BE 309 R**



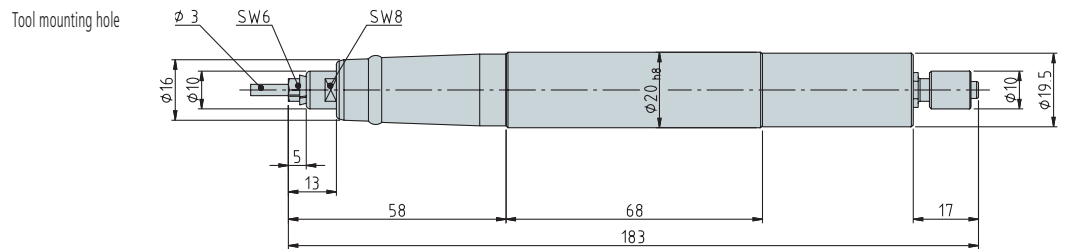
BE 805 R*

* The BE 805 R do not start until the countersink is pressed against the workpiece. This principle is referred to as „push start“. Advantage: Reduced air consumption

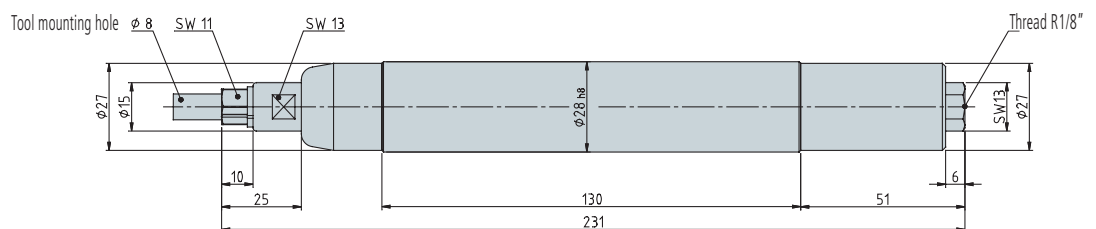
** The types BE 805 R-2 and BE 309 R are driven by means of an external valve.

The BE 805 is also ideal for brushing bore holes with sinks or slanted bore holes that need to be deburred. It operates with compressive and tensile loads.

Type designation		BE 309 R**	BE 805 R*	BE 805 R-2**
Order number		150 800 715	150 810 905	150 810 920
Speed	min ⁻¹	900	500	500
Start		external	Push start	external
Exhaust air direction	mm	rear	rear	rear
Air consumption	(L/min)	150	300	300
Collet type		ZG 5/3 mm	ZG 7/8 mm	ZG 7/8 mm
Noise level	db (A)	71	71	71
Weight	g	195	570	570
Max. collet diameter	mm	3	8	8
Min./max. countersink diameter	mm	2-5,5	3,5-14 5-24	3,5-14 5-24
Hose unit				
Order number		001 366 549	001 366 548	001 366 548
Hose length	m	1,5	1,5	1,5
Air hose diameter	mm	4,5	7	7
Exhaust air hose length	m	0,4	0,5	0,5
Hose unit included		yes	yes	yes



BE 309 R*



BE 805 R*
BE 805 R-2**

Angle Drilling deburrers with external start.

* BEW 309 R-1



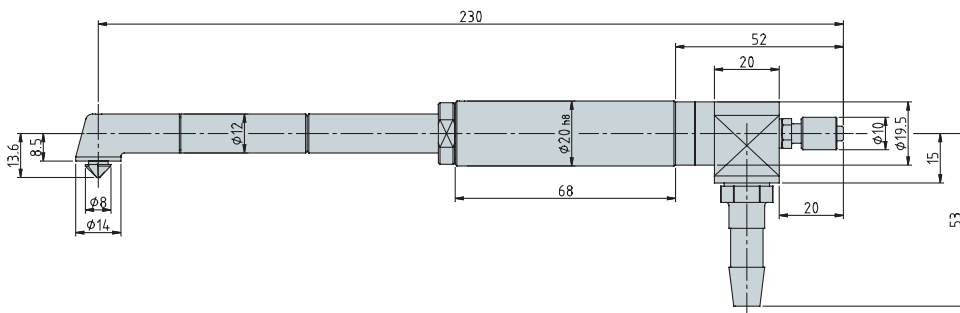
** BEW 605 R



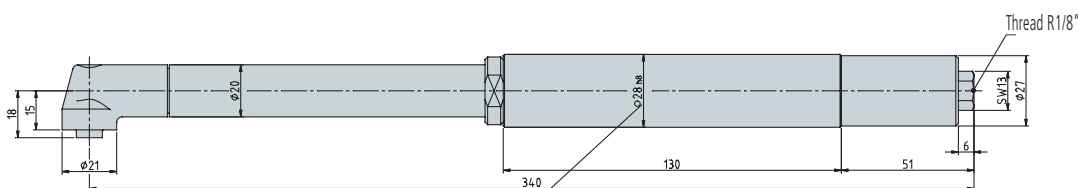
Type designation		* BEW 309 R-1	** BEW 605 R
Order number		150 800 740	150 810 935
Speed	min ⁻¹	900	500
Start		external	external
Exhaust air direction	mm	rear	rear
Air consumption	(L/min)	150	300
Collet type		3 mm / hex.	special collet Ø 6 mm
Noise level	db (A)	71	71
Weight	g	340	800
Max. collet diameter	mm	3 mm / hex.	6
Min./max. countersink diameter	mm	2-6 2-10	3,5-14 5-24
Head height with countersink	mm	20,5 21,5	40 48
Head height diameter	mm	14	21
Hose unit			
Order number		001 366 549	001 366 548
Hose length	m	1,5	1,5
Air hose diameter	mm	4,5	7
Exhaust air hose length	m	0,4	0,5
Hose unit included		yes (Pressure hose)	yes

* This angle drilling deburrer can also be supplied without an angle connector for the exhaust air hose. The tool has an overall length of 255 mm.
Designation: BEW 309 R
Order No. 150 800 730

** This angle drilling deburrer can also be supplied with a smaller angle head. In combination with a D 15 mm countersink the head has a height of 26.5 mm. The head diameter is 20 mm.
Designation: BEW 606 R
Order No. 150 810 980



* BEW 309 R



** BEW 605 R



**Schmid & Wezel GmbH & Co.
Maschinenfabrik**

Maybachstr. 2
D-75433 Maulbronn
Tel +49(0)7043/102-0
Fax +49(0)7043/102-78
biax-verkauf@biaxefa.com
www.biax-germany.com

**Druckluftwerkzeuge
Pneumatic Tools
Outils pneumatiques**



**CH
BIAX Maschinen GmbH**

Industrieplatz
CH-8212 Neuhausen/Rheinfall
Tel +41(0)52/674 79 79
Fax +41(0)52/674 65 64
info@biax.ch
www.biax-schweiz.com

**Schaber
Scrapers
Grattoirs**

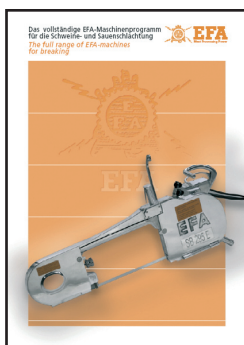
**Hartmetall-Werkzeuge
Carbide Tools
Outils en carbure de
tungstène**



**Schmid & Wezel
Hilsbach GmbH & Co.**

Breite Str. 38
D-74889 Sinsheim-Hilsbach
Tel +49(0)7260/91 33-0
Fax +49(0)7260/91 33-25
biax-hilsbach@biaxefa.com
www.biax-germany.com

**Biegsame Wellen
Flexible Shafts
Machines à arbre flexible**



**Schmid & Wezel GmbH & Co.
Maschinenfabrik**

Maybachstr. 2
D-75433 Maulbronn
Tel +49(0)7043/102-0
Fax +49(0)7043/102-78
biax-verkauf@biaxefa.com
www.biax-germany.com

**Fleischereimaschinen
Meat Processing Machines
Machines pour l'industrie de
la viande**

**I
BIAX Italia S.r.l.**

Via Cavour, 15
I-38068 Rovereto
Tel +39(0)464/43 31 24
Fax +39(0)464/48 99 52
biaxitalia@biaxitalia.com
www.biaxitalia.com