

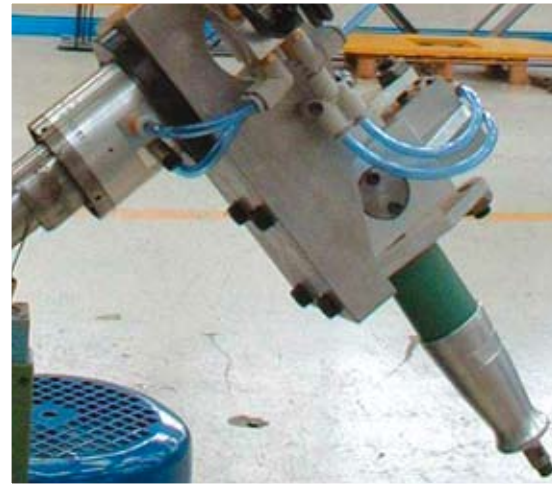
Pneumatic Tools for Professionals:
Grinding Spindles and Robot Tools



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





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!

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]

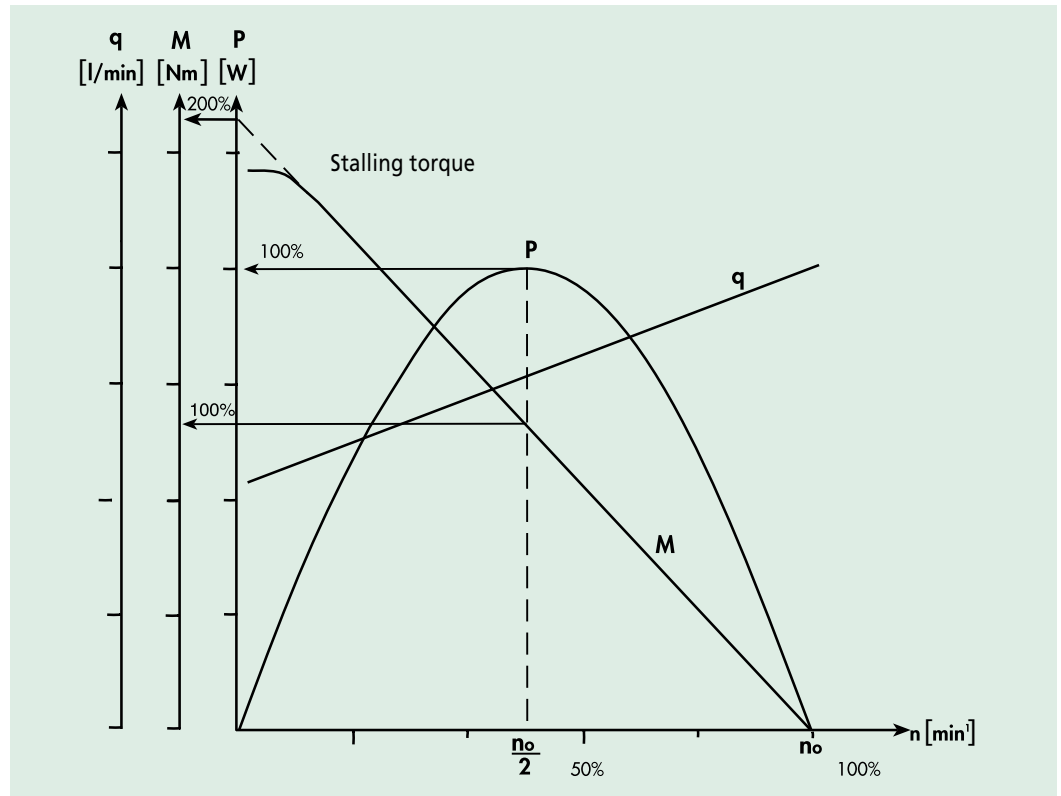
The graph opposite shows the characteristic curves of a fixed-speed pneumatic motor.

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. The power and torque can thus be read off directly at any operating speed.

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



The Formula:

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

$$\omega = 2 \pi f$$

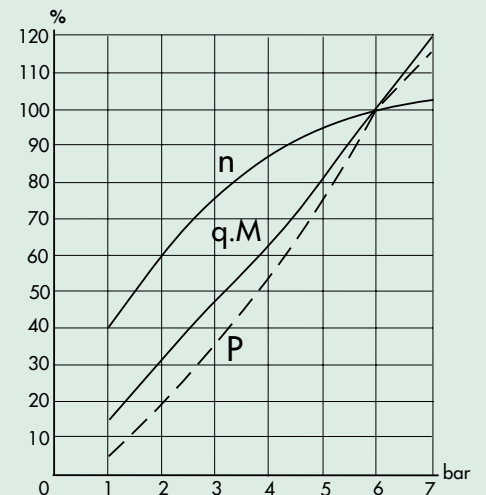
$$P [w] = M \cdot \frac{\pi \cdot n [1/min]}{30}$$

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

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

Pneumatic motors from 100 to 600 W available on request.

Characteristic values for deviating pressure

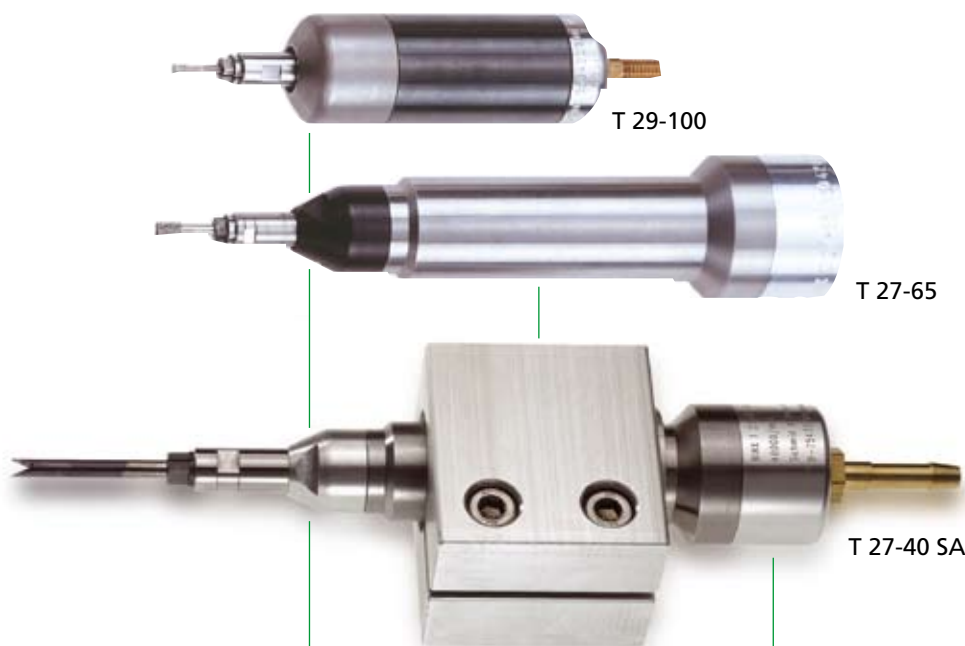


- n = Speed (min 1)
- q = Air consumption (l/min)
- M = Torque (Nm)
- P = Power (Watt)

Please ask for performance curves for individual machines.



BIAX Pneumatic grinding spindles with oil-free turbine motor



T 29-100

This turbine grinder with 100 000 min⁻¹ and a flexible storage at the front, is very suitable to mill and grind by parts with those a ratterfreie surface is required. Main operational area is drilling ruber with the Automobile suppliers, too.

T 27-40 SA

The Model T27-40 SA with 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 ruber. as example the shown clamping block stored is equipped with O-rings inside. By the flexible storage of the entire machine this turbine grinder works vibration-poor. In the machine the collet Type ZG 4 5 mm is inserted.

number to order collet:

008 011 390

further collets in the diameter 1-5 mm are in the gradations 0,5 mm on request available.

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 under 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	m		
	1,5	3	3
Air hose diameter	mm		
	4,5	7	7
Hose unit included	no	no	no

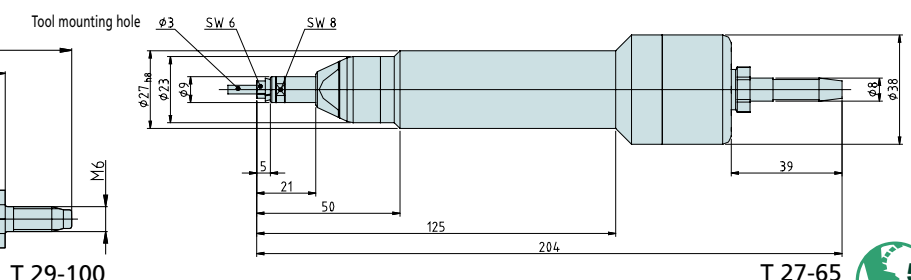
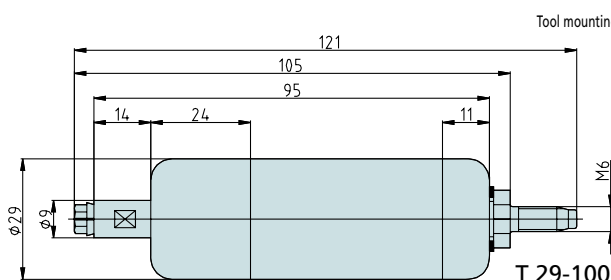
The main advantages at a glance:

- 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.



Pneumatic grinding spindels with oil-free vane motor

The main advantages at a glance:

- Oil-free operation means no oil mist on the work-pieces.
- 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 spindels 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.

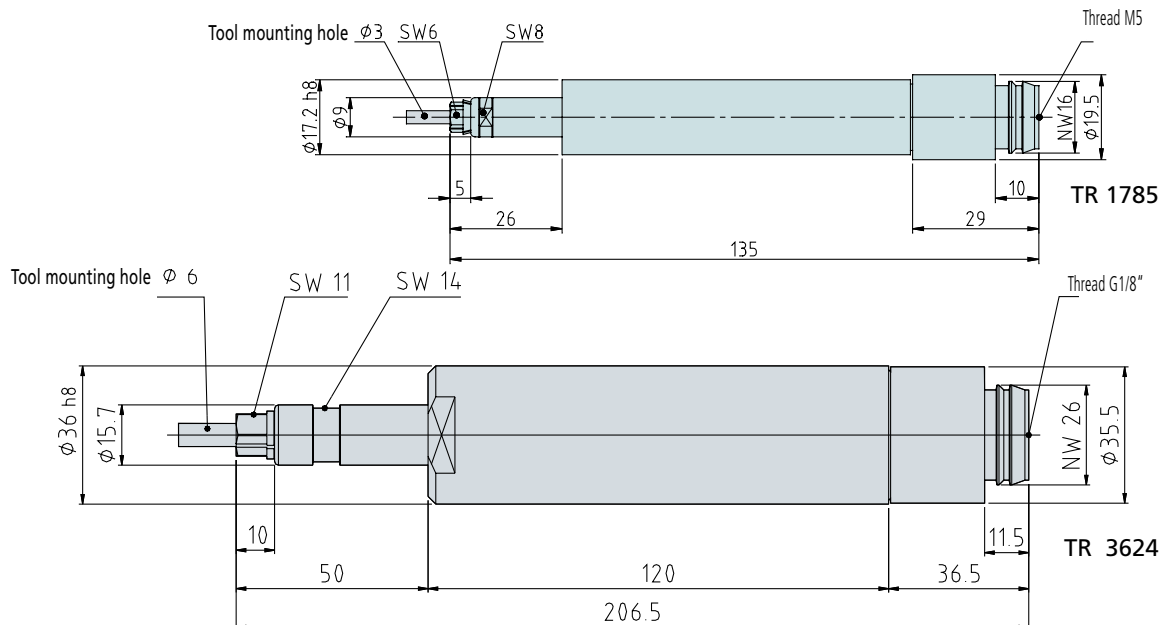


TR 1785



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 under 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	001 366 576	001 366 578
Hose length [m]:	1,5	3
Air hose diameter [mm]:	4,5	7
Hose unit included	yes	no



Pneumatic grinding spindels with oil-free vane motor

The main advantages at a glance:

- small dimensions
- High performance sliding-vane motors
- Very accurate concentric running.
- Maximum stress up to the stop
- Pollution free by exhaust from central air
- Low noise level.
- Sturdy steel bodies for clamping



RO 1785



R 2732*



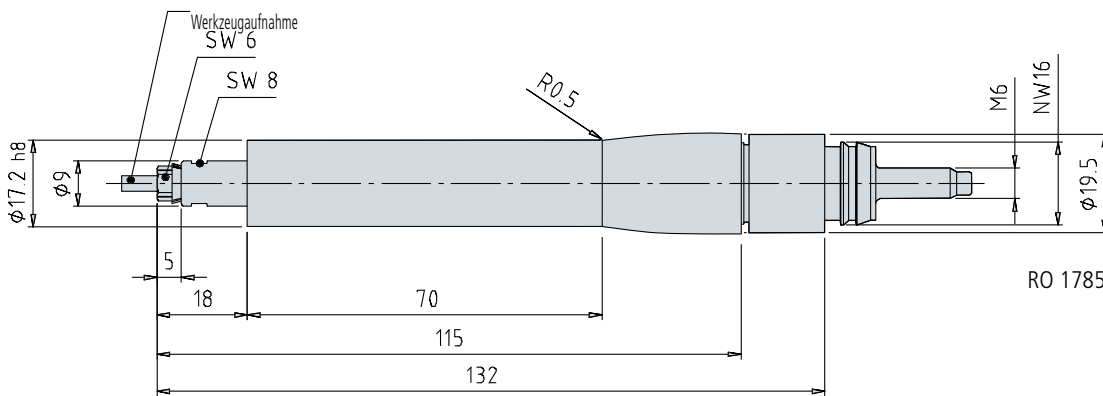
R 3030**/ R 3040

Accessories included:

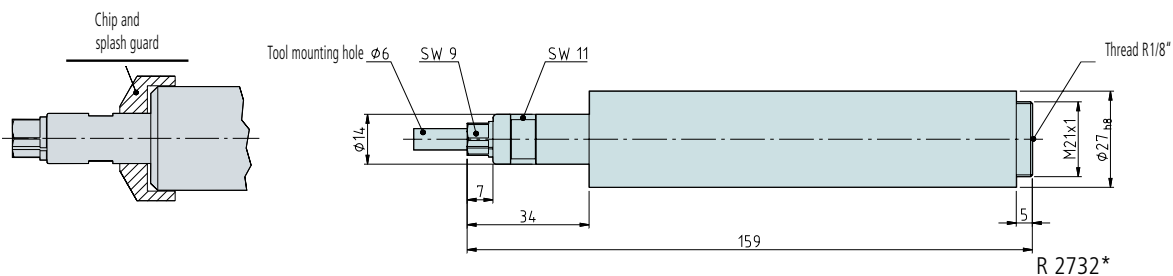
- Wrench set for tool changing

All on this page illustrated rotary arbors can be supplied, in front within the range of the toolspindles, with a turning splash-water protection and splinter protection (see design).

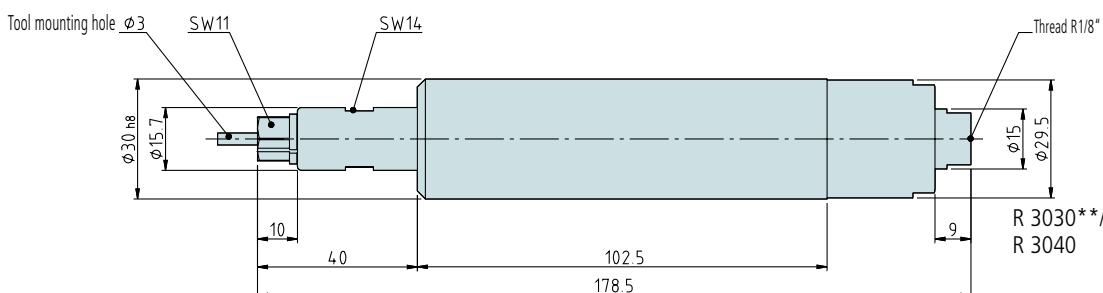
technical data on page 8



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*

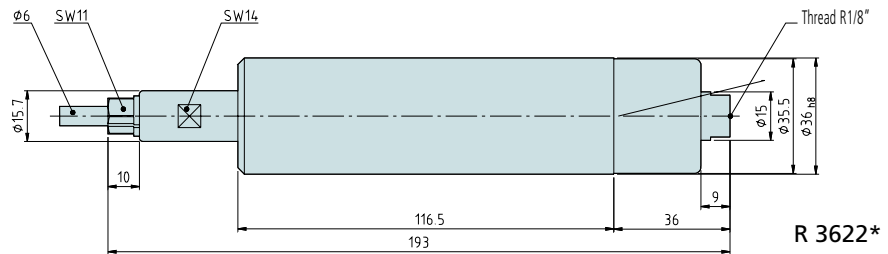
R 4112

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 under 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 external	R 1/8"	R 1/8"	R 1/8"	R 1/8"	R 1/4"

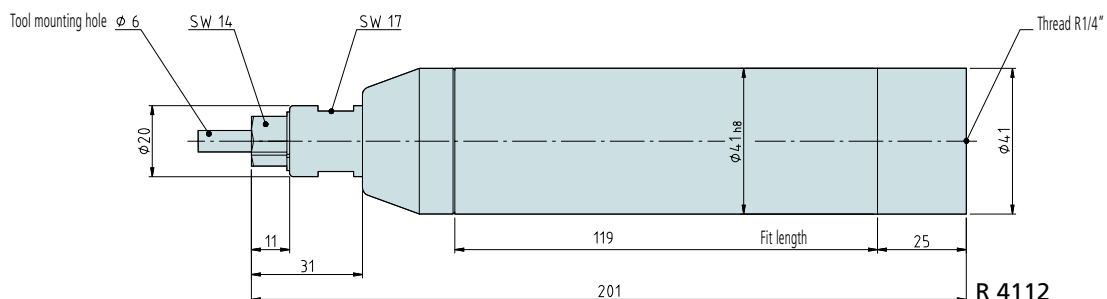
Please ensure adequate lubrication with a maintenance unit (water separator with oiler and pressure gauge).

Hose unit	RO 1785	R 2732*	R 3040	R 3030**	R 3622*	R 4112
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.



R 3622*



R 4112

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



R 4105
R 4102

R 4102 R 4105 RB 4102

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



RB 4102

R 4102 and R 4105 are equipped with a collet.

RB 4105 comes with three-jaw chuck.

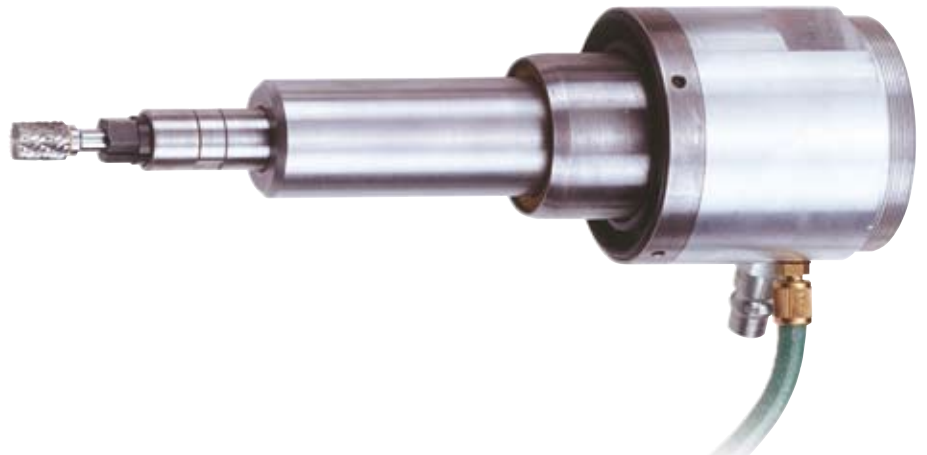
Type designation	R 4102	R 4105	RB 4102
Order number	150 414 540	150 414 530	150 414 545
Speed [min ⁻¹]:	1700	5000	1700
Power [Watt]:	500	500	500
Front bearing set	paired	paired	paired
Collet type [mm]:	ZG 8/6	ZG 8/6	Drill chuck 1-10
Exhaust air direction	rear	rear	rear
Max. collet diameter [mm]:	10	10	10
Max. tool diameter	-	-	-
Direction of rotation	clockwise	clockwise	clockwise
Air consumption under load [l/min]:	850	850	850
Noise level [dB (A)]:	83	83	83
Weight [g]:	1400	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 pressure gauge).			
Hose unit			
Order number	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 spindles 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 Oil-lubricated	R 3030 Oil-lubricated	R 3622 Oil-lubricated	R 4112 Oil-lubricated	TR 3624 Trockenlauf
Order number	150 830 835	150 830 820	150 830 825	150 830 885	150 830 860
Speed [min ⁻¹]:	40.000	30.000	22.000	12.000	24.000
Power [Watt]:	240	240	300	400	300
Tool mounting hole	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	clockwise
Exhaust air direction	forwards	forwards	forwards	forwards	forwards
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

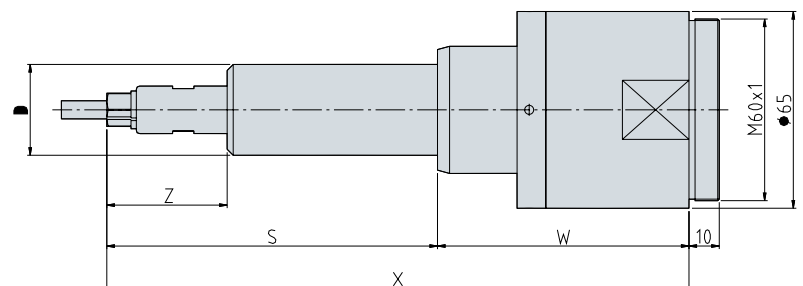
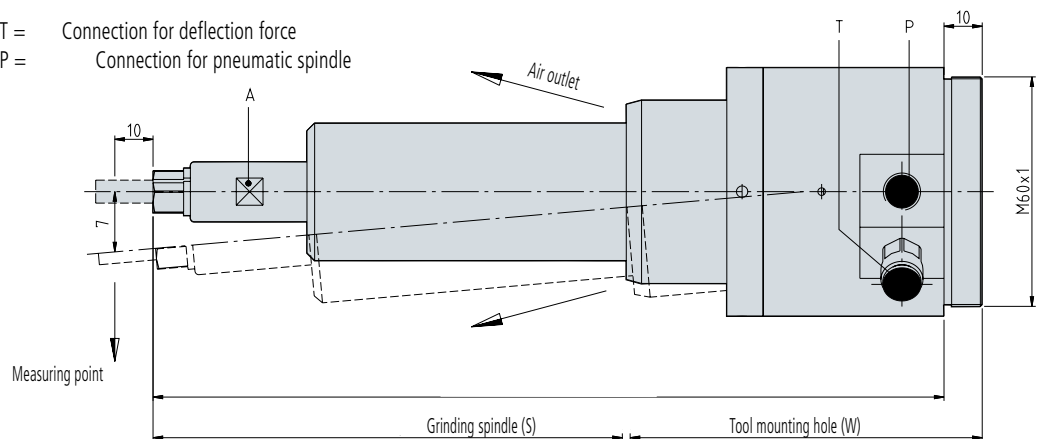
Table for deflection system:

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 deflections and rapid change systems



BWS 2-22

SWK 020

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

WW 80 F

	Tool change-over switch		Tool change-over	
Type designation	BWS 2-22	SWK 020	BWSO 2-22	WW 80 F
integrated grinding spindle	R 3622		R 3622	
	Oil-lubricated		Oil-lubricated	
Order number	150 830 940	001 626 003	150 831 030	001 626 001
Speed [min ⁻¹]:	22.000		22.000	
Power [Watt]:	300		300	
Tool mounting hole	8 8			
Collet type [mm]:	ZG 7/6		ZG 7/6	
Direction of rotation	clockwise		clockwise	
Exhaust air direction	forwards		forwards	
Weight [g]:	2400		2350	
Air inlet	Robot-laterally		Robot-laterally	

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

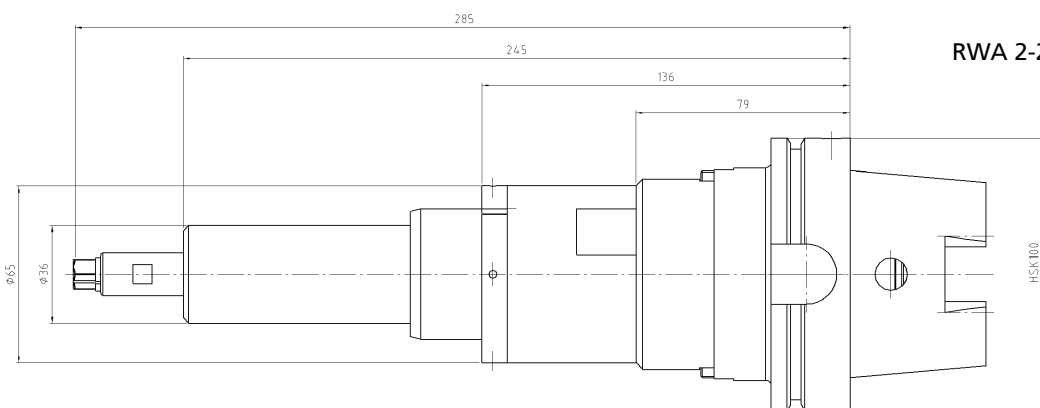
These tools are variant of the BIAX RWA line. (Page 10)

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.

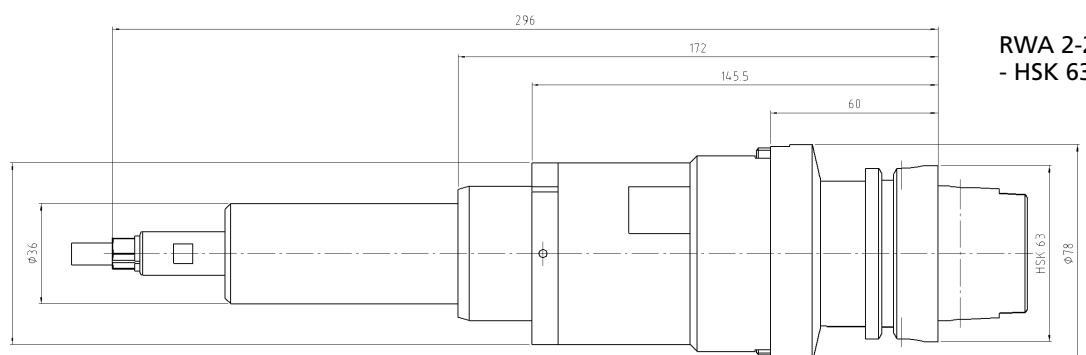


Type designation		RWA 2-40 - HSK	RWA 2-30 - HSK	RWA 2-22 - HSK	RWA 5-12 - HSK	RWA 2-24 - HSK
Integrated grinding spindle		R 3040	R 3030	R 3622	R 4112	TR 3624
		Oil-libricated	Oil-libricated	Oil-libricated	Oil-libricated	dry run
Order no. with regulating valve	HSK 100	150 831 091	150 831 081	150 831 061	150 831 101	150 831 071
Order no. without regulating valve	HSK 100	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	on demand	on demand	on demand	on demand	on demand
Speed [min ⁻¹]:		40.000	30.000	22.000	12.000	24.000
Power [Watt]:		240	240	300	400	300
Tool mounting hole		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	clockwise
Exhaust air direction		forwards	forwards	forwards	forwards	forwards
Weight [g]:		4480	4480	4700	6500	4700
Air inlet		R 1/8"	R 1/8"	R 1/8"	R 1/4"	R 1/8"

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



RWA 2-22 - HSK 100



RWA 2-22
- HSK 63

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: the FR 8-2 filing tool (see page 21 of the BIAx Pneumatic Tools catalog for details).

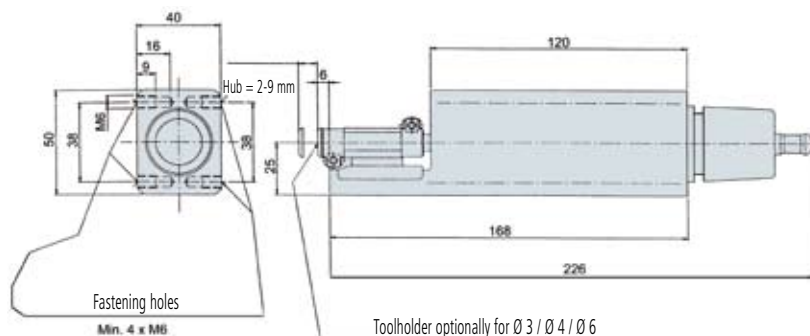
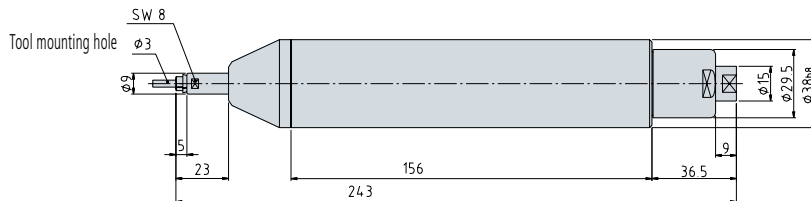
Type designation	F 5-4 R	F 5-4 R SA	F 5-4 R SA	PLV 01	AG 90
Order number	150 310 820	150 310 825	150 310 830	150 310 910	150 310 900
Stroke rate [min ⁻¹]:	4.000	4.000	4.000	12.000	till 12.000
Stroke length [mm]:	1-5	3	2	8-9	2-9
	Continuously adjustable	fixed	fixed	Continuously adjustable	Continuously adjustable
Drive type	vane motor with swash plate drive			Reciprocating piston	Reciprocating
Tool mounting hole max. [mm]:	3	3	3	6	till 6
Exhaust air direction	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..

The following pneumatic tools from the BIAx Pneumatic Tools catalog 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

F 5-4 R
F 5-4 R SA



AG 90

- 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 steel sleeve for clamping in a clamping fixture.

Straight drilling deburrers optionally with push start or external start.



BE 309 R**

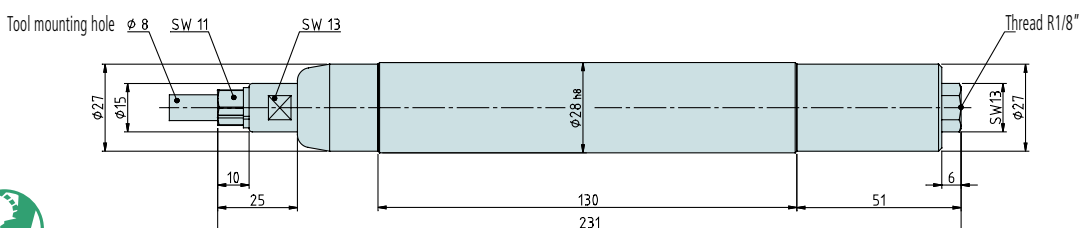
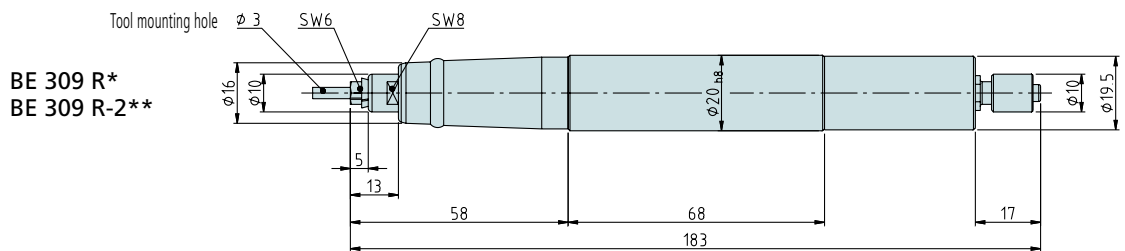


BE 805 R**

* 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. The equipment can be loaded axially on pressure and course.

Type designation	BE 309 R*	BE 309 R-2**	BE 805 R*	BE 805 R-2**
Order number	150 800 715	150 800 705	150 810 905	150 810 920
Speed [min ⁻¹]:	900	900	500	500
Start	Push start	external	Push start	external
Exhaust air direction [mm]	rear	rear	rear	rear
Air consumption [l/min]	150	150	300	300
Collet type [mm]:	ZG 5/3 mm	ZG 5/3 mm	ZG 7/8 mm	ZG 7/8 mm
Noise level [dB (A)]:	71	71	71	71
Weight [g]:	195	195	570	570
Max. collet diameter [mm]:	3	3	8	8
Min./max. countersink diameter [mm]:	2-5,5	2-5,5	3,5-14 5-24	3,5-14 5-24
Hose unit				
Order number	001 366 549	001 366 549	001 366 548	001 366 548
Hose length [m]:	1,5	1,5	1,5	1,5
Air hose diameter [mm]:	4,5	4,5	7	7
Exhaust air hose length [m]:	0,4	0,4	0,5	0,5
Hose unit included	yes	yes	yes	yes



Angle Drilling deburrers with external start.

* BEW 309 R-1



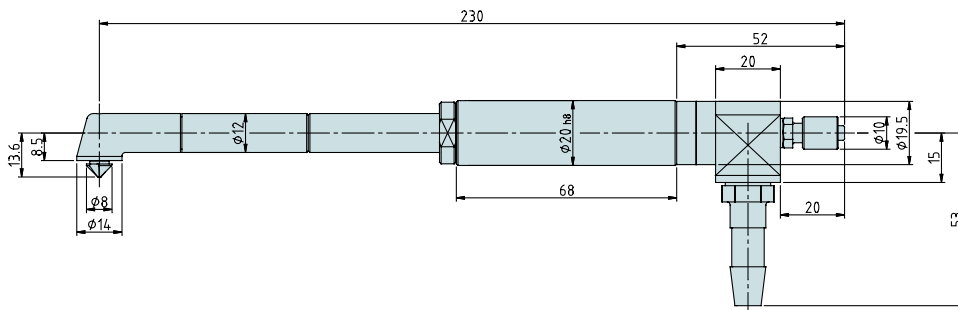
** BEW 605 R



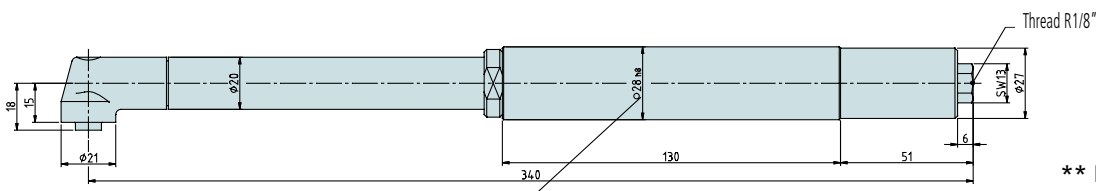
Type designation	* BEW 309 R-1	** BEW 605 R
Order number	150 800 740	150 810 935
Speed [min ⁻¹]:	900	500
Start	external	external
Exhaust air direction:	rear	rear
Air consumption [l/min]	150	300
Noise level [dB (A)]:	71	71
Weight [g]:	340	800
Tool mounting hole max. [mm]:	3 mm / 6 kant	ø 6
Min./max countersink diameter [mm]:	2-6 2-10	3,5-14 5-24
Head height with countersink - ø [mm]	20,5 21,5	40 48
Head height diameter	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



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