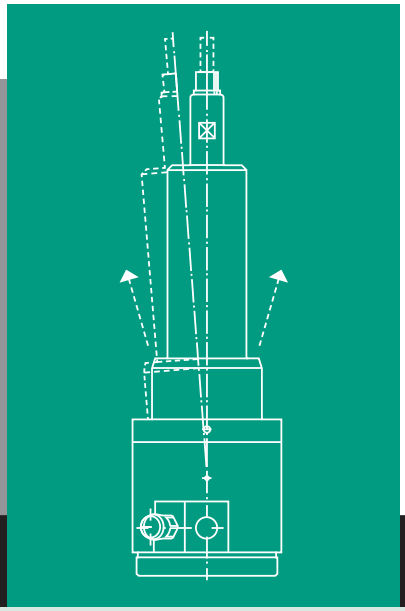
BIAX
Professional Power

PNEUMATIC TOOLS FOR PROFESSIONALS: GRINDING SPINDLES AND ROBOT TOOLS



Tough • Consistent • Proven

MADE IN GERMANY

Das Original

www.biax.de I 001 580 338

Production hall Maulbronn plant

Since 1919, Schmid & Wezel has stood for the highest precision, quality and reliable partnerships.

The company operates in four business divisions: BIAX pneumatic and electric tools, BIAX flexible shafts, BIAX carbide tools as well as EFA machines for meat processing.

All products are manufactured in three modern production facilities in Germany and Switzerland. In terms of product quality, Schmid & Wezel is the market leader – not least thanks to an exceptionally high vertical manufacturing depth of up to 90%.

Sustainable customer satisfaction is our top priority and at the same time the key driving force for continuous innovation and quality.

The particular strengths of Schmid & Wezel lie in tailor-made solutions, highest product quality and personal customer service.

BIAX Maulbronn

BIAX Hilsbach

BIAX Thayngen

Schmid & Wezel is ISO certified:

Schmid & Wezel has been awarded the BSFZ seal for innovation competence:

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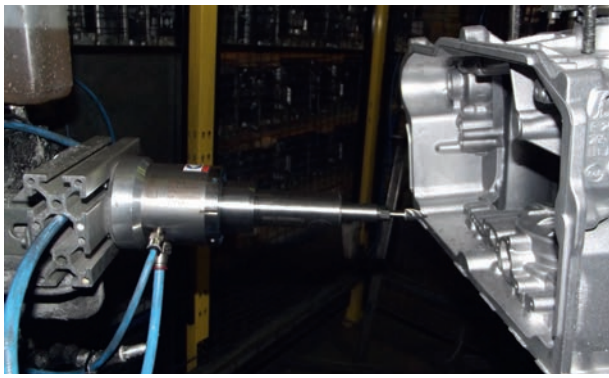

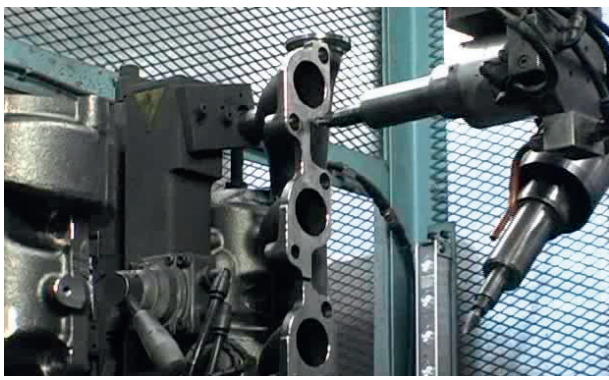

Grinding spindles and robot tools

BIAX is the world leader in pneumatic spindles for automation. Starting with simple stationary spindles in various speeds (also with oil-free motors), through filers and drill deburrers, up to spindles with deflection and quick-change systems: you can draw from an almost inexhaustible range of stationary pneumatic tools.

Especially in automation solutions, the quality and reliability of the components play a decisive role. BIAX pneumatic spindles have proven in a wide variety of installations worldwide that they are among the best on the market and more than capable of meeting the highest quality requirements.

For many years, BIAX has been working with specialized system integrators who have successfully automated countless deburring projects. We are happy to recommend our proven partners if you are looking for a complete solution.

At BIAX we also have a Fanuc cobot with which we carry out tests on components. This enables us to provide our customers with well-founded advice and to examine even the most demanding tasks. Contact us – we look forward to your enquiry.

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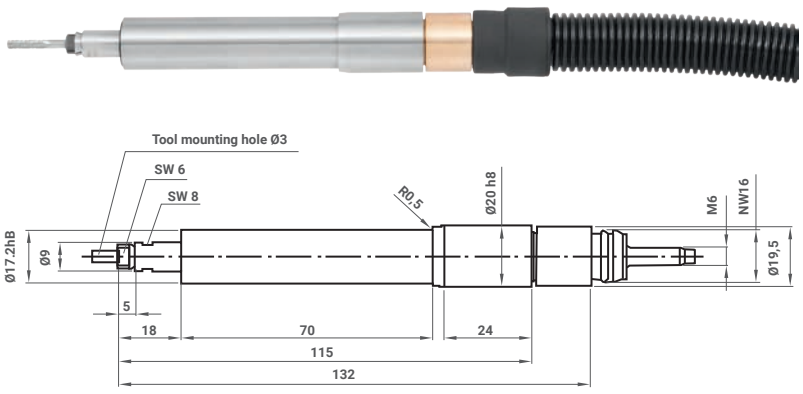
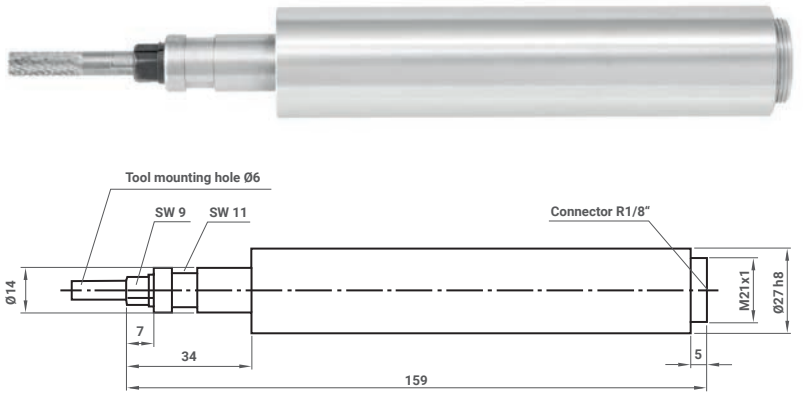
01 Pneumatic grinding spindles with vane motor. Operation with lubricated compressed air (6 bar)



RO 1785

The high speed and concentricity of this spindle produces a very clean grinding pattern and it is therefore ideally suited for fine grinding, milling and engraving. The paired high-performance bearings ensure long service life. This model already includes the BIAX hose unit with silencer.

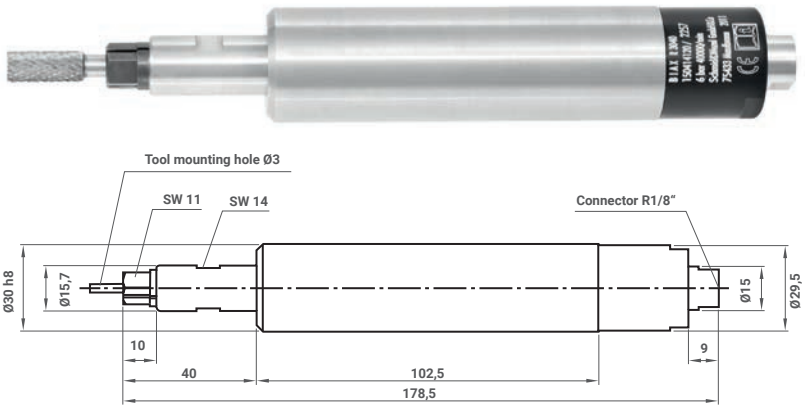
Also available:
- Different collets up to Ø 3 mm (see p. 19)



R 2732

This spindle is designed to be particularly compact yet still provides sufficient power for light grinding and milling work.

Also available:
- Different collets up to Ø 6 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 529)
- R 2732 with splash guard: 150 412 830
- RL 2732 with counterclockwise rotation: 150 412 801



R 3030 / R 3040

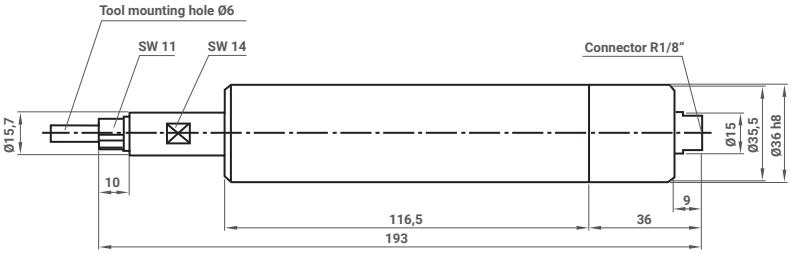
These two spindles are equipped with a more powerful motor than the R 2732 and are therefore designed for higher loads.

Also available:
- Different collets up to Ø 8 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 505)
- R 3030 with splash guard: 150 414 096
- R 3040 with splash guard: 150 414 125
- RL 3030 with counterclockwise rotation: 150 414 100
- RL 3040 with counterclockwise rotation: 150 414 121

R 3622

This spindle guarantees a high stock removal. The power of this spindle is sufficient to drive carbide tools up to 12 mm and profile grinding wheels up to 24 mm.

Also available:
- Different collets up to Ø 8 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 505)
- RL 3622 with counterclockwise rotation: 150 425 220

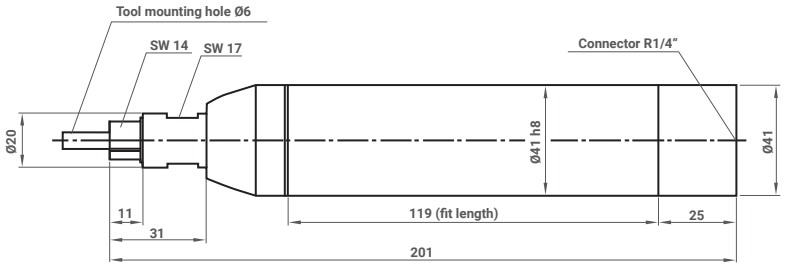


R 4112

This spindle achieves approx. 400 operating hours even without lubricated air!

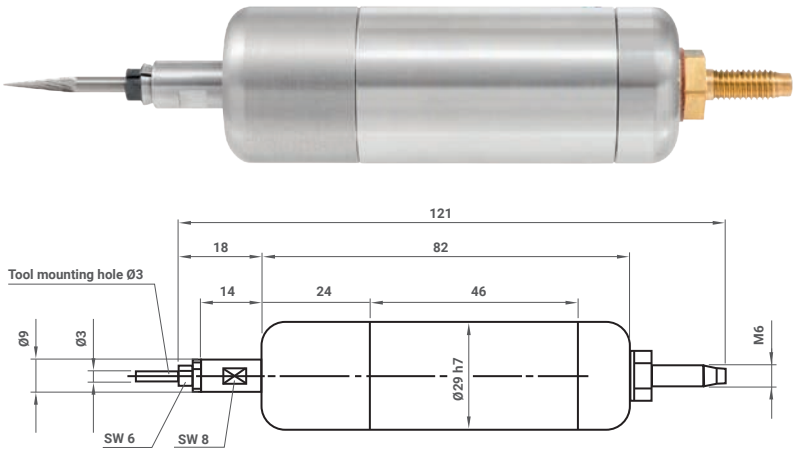
With its 12,000 rpm this spindle is particularly suitable for tools that require high torque at low speed. At 400 watts this is our most powerful milling and grinding spindle.

Also available:
- Different collets up to Ø 10 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 580)



Technical Data	RO 1785	R 2732	R 3030	R 3040	R 3622	R 4112
Order number	150 401 202	150 412 702	150 414 110	150 414 120	150 425 210	150 414 520
Speed [rpm]	85,000	32,000	30,000	40,000	22,000	12,000
Power [Watt]	100	200	240	240	300	400
Front bearing	Paired	Paired	Paired	Paired	Double	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	Backwards	Backwards	Backwards	Backwards	Backwards	Backwards
Max. collet diameter [mm]	3	6	8	8	8	10
Max. tool diameter						
Carbide tools [mm]	4	8	10	8	12	15
Profile grinding wheels [mm]	6	12	16	10	24	24
Air consumption under load [l/min]	180	400	400	400	500	790
Noise level [dB (A)]	70	75	75	76	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"
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

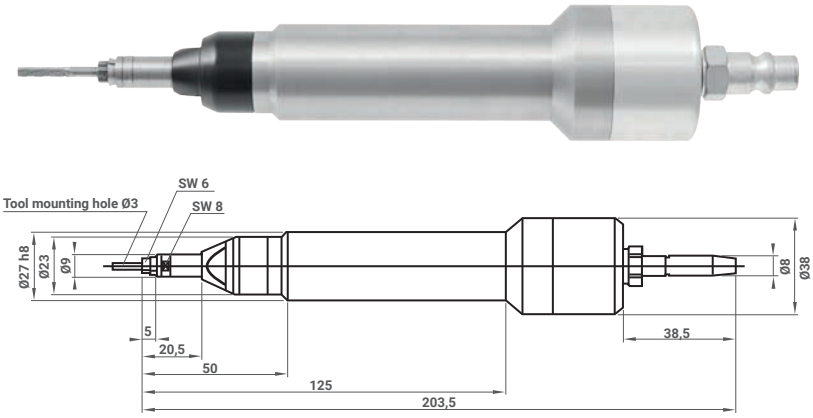
02 Pneumatic grinding spindles with oil-free turbine motor (6 bar)



T 29-100

This high-speed spindle is particularly suitable for the use with the finest milling and grinding tools. The elastic front bearing enables the production of surfaces of the highest quality. Another field of application is the drilling of rubber.

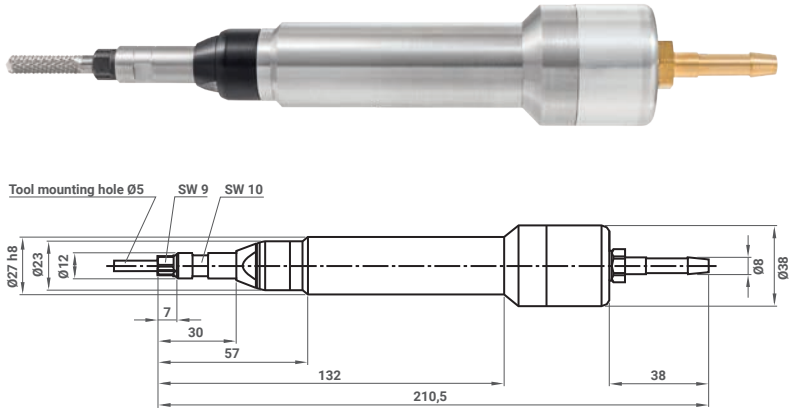
Also available:
- Different collets up to Ø 3 mm (see p. 19)
- Hose unit (1.5 m) (Order no. 001 366 537)



T 27-65

This spindle is ideal for fine grinding, milling and engraving work when the surface must not be contaminated with oil. The centrifugal governor ensures a constant speed and reduces air consumption.

Also available:
- Different collets up to Ø 3 mm (see p. 19)
- Hose unit (3 m) (Order no. 001 366 502)



T 27-40

Model T 27-40 with its reduced speed of 40,000 rpm at 3 bar is particularly suitable for drilling rubber. Drills up to 5 mm can be used for this application.

Also available:
- Different collets up to Ø 5 mm (see p. 19)
- Hose unit (3 m) (Order no. 001 366 502)

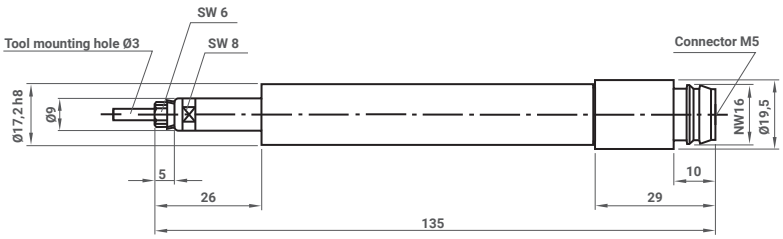
03 Pneumatic grinding spindles with oil-free vane motor (6 bar)

TR 1785

The lubricant-free drive of this grinding spindle based on a vane motor is unique and patented.

The great advantage:
It provides the high performance of a vane motor and can still work completely lubrication-free. This model already includes the BIAX hose unit with silencer.

Also available:
- Different collets up to Ø 3 mm
  (see p. 19)

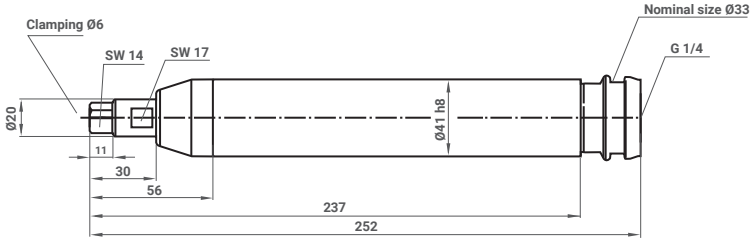


The main benefits at a glance:

- The oil-free operation means that there is no oil mist on the workpieces.
- High speeds, tailored to each tool, guarantee a perfect grinding and milling pattern.
- High concentricity
- Low noise level
- **Turbine motor**: The turbine grinders T 29 - 100, T 27 - 40 and T 27 - 65 are designed to be particularly resistant to wear and suitable for long continuous operation.
- **Oil-free vane motor**: Achieves the high performance of a vane motor but operates absolutely lubrication-free. This is unique and patented.

Technical Data	T 29-100	T 27-65	T 27-40	TR 1785
Motor type	Oil-free turbine motor	Oil-free turbine motor	Oil-free turbine motor	Oil-free vane motor
Order number	150 420 100	150 420 200	150 420 210	150 401 400
Speed [rpm]	100,000	65,000	40,000	85,000
Power [Watt]	80			100
Front bearing	Elastic	Single	Paired	Paired
Collet type [mm]	ZG 5/3	ZG 5/3	ZG 4/5	ZG 5/3
Max. collet diameter [mm]	3	3	5	3
Max. tool diameter				
Carbide tools [mm]	3	6	5	4
Profile grinding wheels [mm]	5	8	10	6
Exhaust air direction	Forwards	Backwards	Backwards	Backwards
Air consumption under load [l/min]	180	180	180	170
Noise level [dB (A)]	70	70	70	70
Weight [g]	290	485	510	130
Connection thread	R 1/8“	R 1/8“	R 1/8“	M5
Hose unit				
Order number	001 366 537	001 366 502	001 366 502	001 366 576
Hose length [m]	1.5	3	3	1.5
Air hose diameter [mm]	4.5	7	7	4.5
Hose unit included	No	No	No	Yes

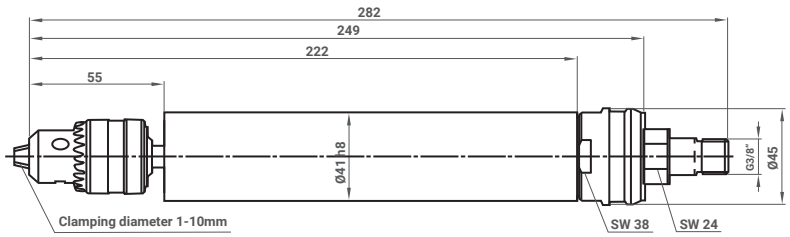
04 Pneumatic spindles for brushing and drilling. Operation with lubricated compressed air (6 bar)



R 4102/2 und R 4105/2

These spindles are particularly suitable for brushing and drilling as they are equipped with a high-torque motor. The integrated gearbox reduces the speed and increases the torque.

Also available:
- Different collets up to Ø 10 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 367 525)



RB 4102

The RB 4102 with 1,700 rpm has been specially equipped for drilling applications with a drill chuck. Tool shanks up to 10 mm can be clamped infinitely variably. The drilling and brushing spindles are fitted with double-row bearings that can absorb high forces.

Also available:
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 510)

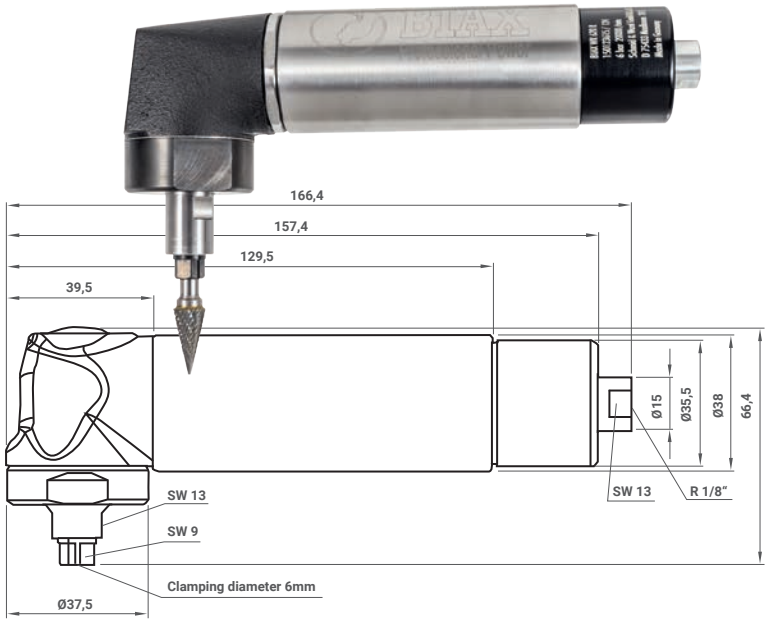
Technical Data	R 4102/2	R 4105/2	RB 4102
Order number	150 414 542	150 414 535	150 414 545
Speed [rpm]	2,000	5,000	1,700
Power [Watt]	490	520	500
Front bearing	Double-row	Double-row	Double-row
Collet type [mm]	ZG 8/6	ZG 8/6	Drill chuck 1–10
Exhaust air direction	Backwards	Backwards	Backwards
Max. collet diameter [mm]	10	10	10
Max. tool diameter	-	-	-
Air consumption under load [l/min]	900	900	850
Noise level [dB (A)]	75	74	83
Weight [g]	1,400	1,400	1,700
Connection thread	G 3/8“	G 3/8“	G 3/8“
Hose unit			
Order number	001 367 525	001 367 525	001 366 510
Hose length [m]	3	3	3
Air hose diameter [mm]	10	10	10
Hose unit included	No	No	No

05 Pneumatic spindles with angle head. Operation with lubricated compressed air (6 bar)

WR 620/2 R

This angle spindle is suitable both for surface finishing and for deburring work in difficult-to-reach areas. The robust gearbox and the double bearings make this spindle extremely wear-resistant despite its small size.

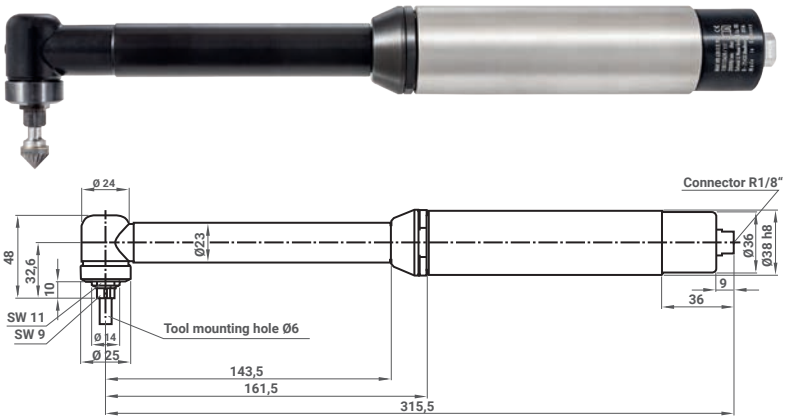
Also available:
- Different collets up to Ø 6 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 505)



WR 620 R ZL 90

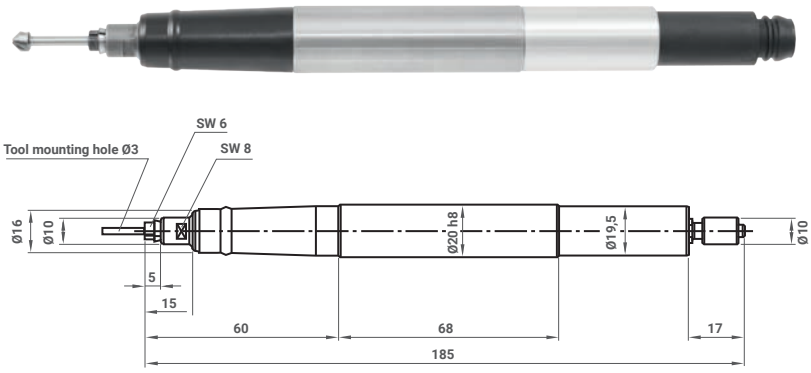
This version can provide a solution when space is particularly tight. With the same speed but with an extended neck and a much slimmer head, this version can reach into even the narrowest positions.

Also available:
- Different collets up to Ø 6 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 505)



Technical Data	WR 620/2 R	WR 620 R ZL 90
Order number	150 123 616	150 123 620
Speed [rpm]	20,000	20,000
Power [Watt]	300	300
Front bearing	Double	Single
Collet type [mm]	ZG 4/6 mm	ZG 4/6 mm
Exhaust air direction	Backwards	Backwards
Max. collet diameter [mm]	6	6
Max. tool diameter	-	-
Carbide tools [mm]	12	12
Profile grinding wheels [mm]	24	24
Air consumption under load [l/min]	500	500
Noise level [dB (A)]	74	78
Weight [g]	770	930
Connection thread	R1/8“	R1/8“
Hose unit		
Order number	001 366 505	001 366 505
Hose length [m]	3	3
Air hose diameter [mm]	8	8
Hose unit included	No	No

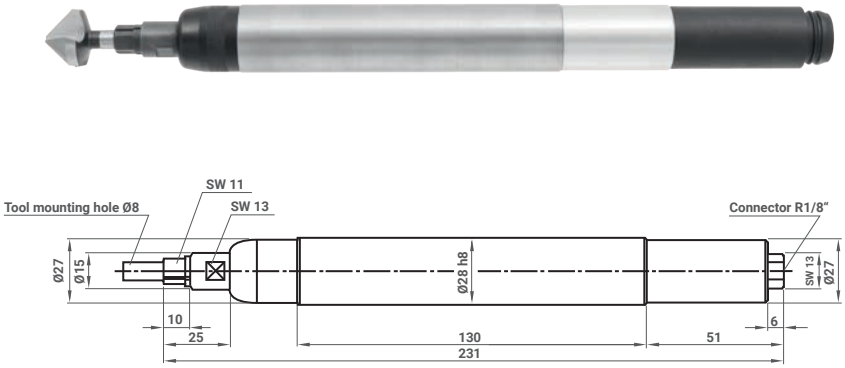
06 Pneumatic drilling hole deburring spindles. Operation with lubricated compressed air (6 bar)



BE 309 R / BE 309 R-2

These drilling hole deburring spindles can be used to deburr holes up to a diameter of 5.5 mm. The version BE 309 R features a push start, while the version BE 309 R-2 is switched on and off via the supply air. The BIAX hose unit is included with this model.

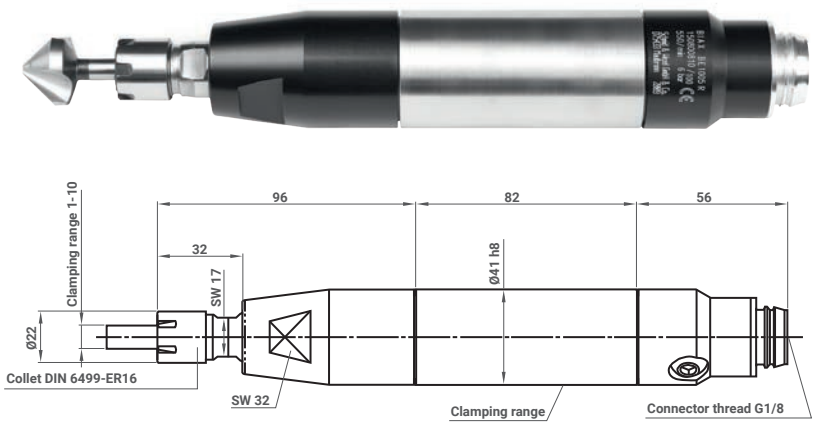
Also available:
- Different collets up to Ø 3 mm (see p. 19)
- HSS countersink range Ø 2-5.5 mm Order no. 001 950 292



BE 805 R / BE 805 R-2

These drilling hole deburring spindles can be used to deburr holes up to a diameter of 24 mm. The version BE 805 R features a push start, while the version BE 805 R-2 is switched on and off via the supply air. The BIAX hose unit is included with this model.

Also available:
- Different collets up to Ø 8 mm (see p. 19)
- HSS countersink range Ø 3.5-14 mm Order no. 001 950 290
- HSS countersink range Ø 5-24 mm Order no. 001 950 291



BE 1005 R

With a countersinking diameter of up to 29 mm and a speed of 550 rpm, the BE 1005 R is our largest and most powerful drilling hole deburring spindle. The machine is switched on and off via the supply air.

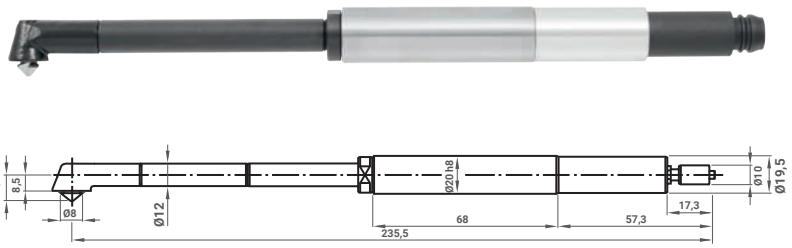
Also available:
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 578)
- HSS countersink range Ø 6-29 mm Order no. 001 950 341

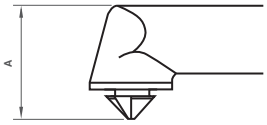
07 Pneumatic drilling hole deburring spindles with angle head. Operation with lubricated compressed air (6 bar)

BEW 309 R

Our top device when it comes to deburring holes in difficult-to-reach areas. The height of the drive head is only 20.5 or 21.5 mm (depending on the countersink version). The drive can be set between 0-900 rpm. The BIAX hose unit and an HSS countersink Ø 2-6 mm are included with this model.

Also available:
- HSS countersink range Ø 2-6 mm
  Order no. 001 950 293 (incl.)
  Order no. 001 950 299 (carbide)
- HSS countersink range Ø 2.5-10 mm
  Order no. 001 950 297

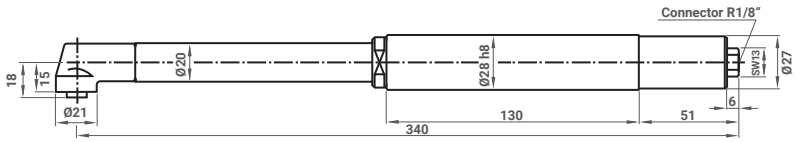




BEW 605 R

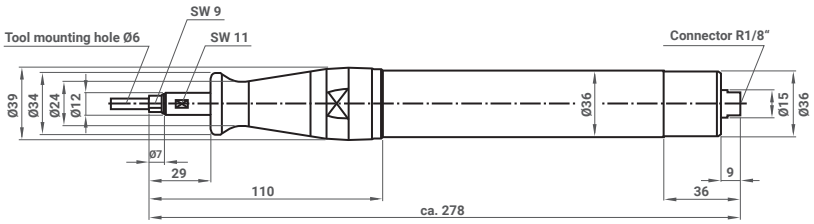
This machine in angle design enables the deburring of holes in difficult-to-reach places up to a countersinking diameter of 24 mm. Typically, these are holes with transverse bores. The BIAX hose unit is included with this model.

Also available:
- Countersink range Ø 3.5-14 mm
  Order no. HSS 001 950 295
- Countersink range Ø 5-24 mm
  Order no. HSS 001 950 296



Technical Data	BE 309 R	BE 309 R-2	BE 805 R	BE 805 R-2	BE 1005 R	BEW 309 R	BEW 605 R
Order number	150 800 715	150 800 705	150 810 905	150 810 920	150 800 810	150 800 730	150 810 935
Speed [rpm]	900	900	500	500	550	900	500
Start	Push start	External	Push start	External	External	External	External
Exhaust air direction	Backwards	Backwards	Backwards	Backwards	Backwards	Backwards	Backwards
Air consumption under load [l/min]	150	150	300	300	480	150	300
Collet type [mm]	ZG 5/3 mm	ZG 5/3 mm	ZG 7/8 mm	ZG 7/8 mm	ER 10 mm	-	-
Noise level [dB (A)]	71	71	71	71	78	71	71
Weight [g]	195	195	570	570	1370	340	800
Max. collet diameter [mm]	3	3	8	8	10	-	-
Sink diameter min./max [mm]	2-5.5	2-5.5	3.5-24	3.5-24	6-29	2-6 | 2.5-10	3.5-14 | 5-24
Max. tool holder [mm]	-	-	-	-	-	3 mm / 6 hex	Ø 6
Head A at sink - Ø min./max [mm]	-	-	-	-	-	20.5 | 21.5	40 | 48
Angle head diameter	-	-	-	-	-	14	21
Hose unit							
Order number	001 366 549	001 366 549	001 366 548	001 366 548	001 366 578	001 366 549	001 366 548
Hose length [m]	1.5	1.5	1.5	1.5	3	1.5	1.5
Air hose diameter [mm]	4.5	4.5	7	7	7	4.5	7
Hose unit included	Yes	Yes	Yes	Yes	No	Yes (pressure hose)	Yes

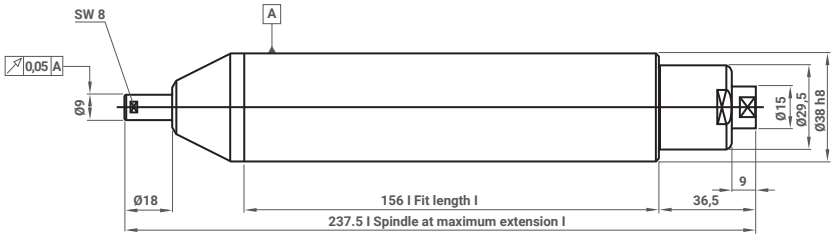
08 Oscillating drives with swash plate drive. Operation with lubricated compressed air (6 bar)



FR 8-2 R

If a long and high-torque stroke is required, this drive is exactly the right choice. The swash plate drive keeps the stroke length constant even under heavy load. Tools with shanks up to Ø 6 mm can be used.

Also available:
- Different collets up to Ø 6 mm (see p. 19)
- BIAX hose unit (3 m): reduces noise and guides compressed air in a controlled manner (Order no. 001 366 505)
- Matching files can be found in our “Accessories“ catalogue or at www.biax.de



F 5-4 R

This oscillating drive is distinguished by its small stroke combined with high torque. The stroke length is infinitely adjustable and remains constant even under heavy load. The drive can also be supplied with a fixed stroke of 2 mm (Order no. 150 310 830) or 3 mm (Order no. 150 310 825).

Also available:
- Different collets up to Ø 3 mm (see p. 19)
- BIAX hose unit: reduces noise and guides compressed air in a controlled manner (Order no. 001 366 505)
- Matching files can be found in our “Accessories“ catalogue or at www.biax.de

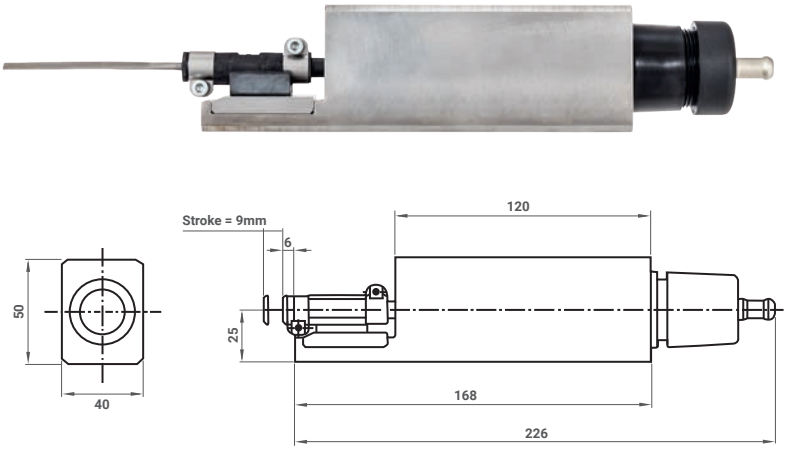
Technical Data	FR 8-2 R	F 5-4 R
Order number	150 322 613	150 310 820
Stroke number [rpm]	2,000	4,000
Stroke length [mm]	8	1-5
Drive type	Vane motor	Vane motor
Collet type [mm]	ZG 4/6 mm	ZG 5/3 mm
Max. tool holder [mm]	6	3
Exhaust air direction	Backwards	Backwards
Weight [g]	1,300	960
Suitable hose unit	001 366 505	001 366 505

Oscillating drives with a piston motor. Operation with lubricated compressed air (6-8 bar)

AG 90

This powerful multi-purpose device is optimally designed for filing, sawing, polishing and cutting. The low-wear piston motor is characterized by its high number of strokes. It reaches 12,000 strokes per minute with a maximum stroke length of 9 mm. Both can be adjusted by the user, which makes this machine extremely adaptable.

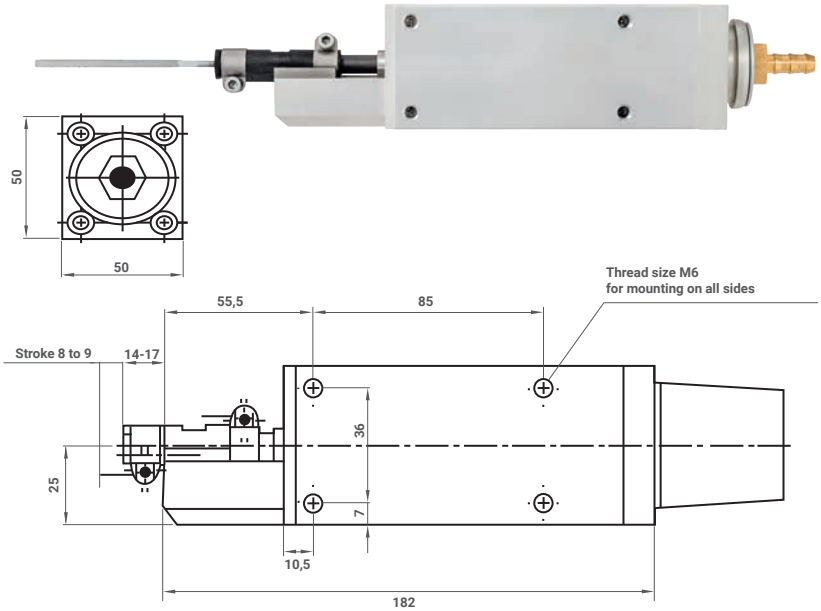
Also available:
- Tool holder with clamping diameter 3 mm (Order no. 001 974 430), 4 mm (installed, Order no. 001 974 411), 6 mm (Order no. 001 974 443)
- BIAX air supply hose with connectors (Order no. 001 974 552)
- Matching files can be found in our "Accessories" catalogue or at www.biax.de



PLV 01

Despite a stroke length of 8 mm and a stroke rate of 12,000 rpm, this unit produces virtually no vibration (patented vibration damping). The aluminium housing makes this machine particularly light. Pre-drilled holes on all sides allow rapid adaptation. Included in the delivery are tool holders with clamping diameter 3 mm (Order no. 001 974 430), 4 mm (Order no. 001 974 411), 6 mm (Order no. 001 974 443) as well as an exhaust hose for noise suppression.

Also available:
- BIAX air supply hose with connectors (Order no. 001 974 552)
- Matching files can be found in our "Accessories" catalogue or at www.biax.de



Technical Data	AG 90	PLV 01
Order number	150 310 900	150 310 910
Stroke number [rpm]	up to 12,000	12,000
Stroke length [mm]	2-9	8-9 (6-8 bar)
Drive type	Piston	Piston
Max. tool holder [mm]	6	6
Exhaust air direction	Backwards	Backwards
Weight [g]	1,900	1,200
Suitable hose unit	001 974 552	001 974 552

09 RSC Modularsystem

The system

Whether rigid or with deflection, whether rotating or oscillating, whether on a robot or in a machining centre – everything with just one system. This is unique. As the name suggests, our new spindle system is completely modular and can be configured in simple steps for the respective application. All components are interchangeable, giving you maximum flexibility. Contact us, we will be happy to help you compile the right package. Further information regarding use with robots or in machining centres can also be found on pages 16-17.

The extension
(Order no. 007 013 402)

An extension of 150 mm can be used between the coupling and the spindle package. This enables access to the most difficult places.

Wrench ER 40
(Order no. 001 624 812)

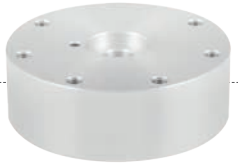
The spindle packages

Technical Data	RSC-S 16000	RSC-S 20000
Motor type	Vane motor	Vane motor
Order number	008 010 271	008 012 883
Stroke number [rpm]	16,000	20,000
Collet type	ZG8	ZG7
Air consumption [l/min]	800	600
Power [W]	550	350

The attachments

Properties	RSC-A U	RSC-A W	RSC-A HSK-A-100
Description	Universal adapter	Weldon adapter	HSK-A-100 adapter
Order number	003 012 895	003 013 505	001 626 014

RSC-S 30000	RSC-S 40000	RSC-S 85000	RSC-S 100000	RSC-S 20000 W90-1	RSC-PLV
Vane motor	Vane motor	Vane motor	Turbine (oil-free)	Vane motor	Piston motor
008 006 506	008 012 874	008 013 512	008 013 508	008 012 890	008 013 153
30,000	40,000	85,000	100,000	20,000	12,000
ZG7	ZG7	ZG5	ZG5	ZG4	4 mm
450	450	200	200	600	300
255	300	58	25	350	-



The spindle packages

Available for selection are straight spindles in different speeds as well as angled versions. An oscillating operation is also available. The spindle packages can be changed in just a few simple steps, so maintenance intervals or modifications can be carried out inexpensively and easily. A selection of our spindles can be found above. On request, spindles can also be supplied in counterclockwise rotation and with an ER collet.

The coupling (Order no. 007 012 878)

The coupling is the heart of the system and is always part of the equipment. It receives the spindle packages and connects them with an attachment or a deflection. The coupling also enables the system to be supplied with compressed air from the side.

The deflection (Order no. 007 014 003)

Depending on the application, the system can be made rigid or radially deflected. The deflection unit is mounted between the coupling and the attachment in just a few steps, immediately converting the rigid system into a flexible one. The deflection force can be adjusted between approx. 15 and 120 Newton using the adjusting ring. The deflection is generated by spring packs inside. The maximum deflection is approx. 12 mm, depending on the tool length.

The attachments

For many applications we have the right attachment in our programme. For machining centres, the common tool holders such as HSK and SK are available, as well as a Weldon adapter. These mountings also enable compressed air supply through the coolant channel. For stationary mounting or attachment to a robot, universal adapters are available. Also available is the Schunk quick-change system, which allows the spindle to be changed in process.

RSC-A HSK-A-63	RSC-A SK50	RSC-A SK40	RSC-A Sch
HSK-A-63 adapter	SK50 adapter	SK40 adapter	Schunk quick-change system
001 626 015	001 626 017	001 626 016	008 012 881

10 RSC Modular system for robot machining

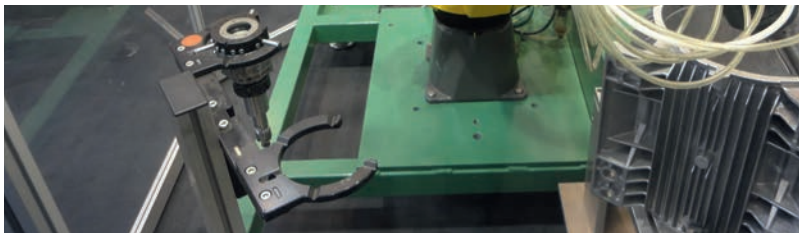
The main application area of the RSC system is deburring and reworking of components. This is often carried out in combination with industrial robots. For this area of use, the RSC system is the optimal spindle system. For almost all types of reworking there is a suitable configuration. We are happy to advise you.

Application example:
Deburring of cast parts

Due to the high component tolerances, cast parts often show deviations and inaccuracies in positioning. In many cases it is therefore necessary to use the system with deflection. Only in this way is it possible to guarantee consistent material removal. If, for example, the parts are precisely milled and the positioning is very accurate, the rigid version can be used. The RSC system offers both options. We will be glad to assist you in selecting the right configuration.

Application example:
Deburring of fibre composite materials

The oscillating spindle unit RSC-PLV in combination with deflection is particularly suitable for deburring fibre composite materials. Furthermore, it enables highly flexible deburring of all types of component geometries. Deburring of angled transitions can also be carried out without problems.



Example: Spindle storage and changing system

Example: Robot mounted system

Mounting options

The RSC system can be mounted either stationary (the component is guided to the spindle) or directly on the robot (most easily via our universal adapter RSC-A U). Due to the compact design, several spindles can be mounted directly on the robot, as shown in our example. In addition, we offer a quick-change system (RSC-A Sch) with which the spindles can be changed during the process.

11 RSC Modular system for CNC machining

The RSC system can also be used in machining centres.

The RSC system offers three decisive advantages:
- The system reaches speeds (up to 100,000 rpm) that most machining centres cannot achieve.
- Thanks to the deflection, undefined contours can also be machined cleanly.
- You protect your machining centre, since you do not have to operate it at speed limits.

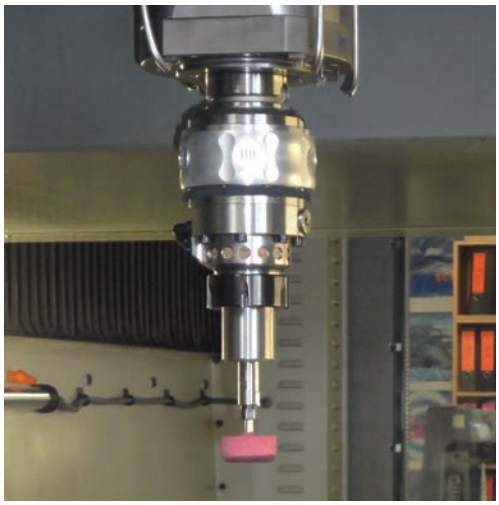
Whether HSK or SK holders, we offer the most common tool holders in our range. If you require a holder that we do not currently offer, please contact us. The RSC system can be supplied with compressed air via the internal cooling of the CNC machine. No hoses or cables need to be attached manually.

Applications: deburring, engraving, polishing, miniature milling

Due to the high speeds, deburring operations can be carried out particularly quickly and economically. With deflection, undefined contours can also be machined cleanly. In rigid design, the system can be used for engraving and miniature milling. Here too, the high speeds play an important role. Polishing, which normally follows milling as a manual operation, can also be automated. With deflection, the polishing tool is always guided over the surface with equal force. The result is a uniformly high surface quality.

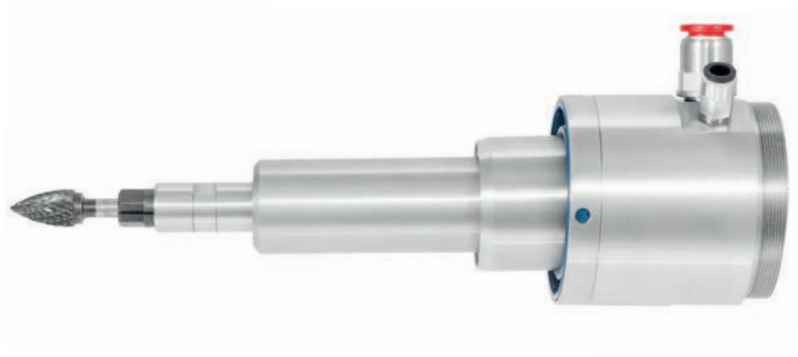
Example: RSC system in the magazine of a CNC machine

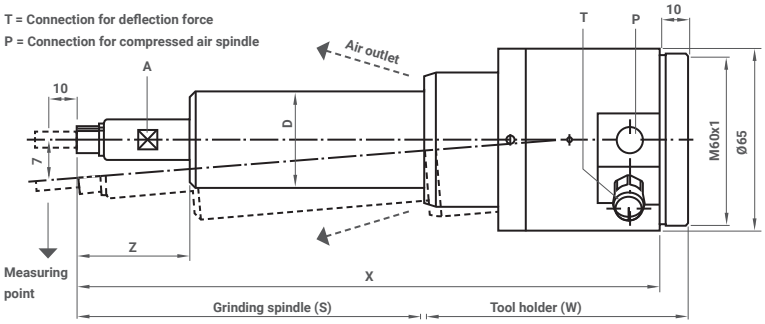
The system can be placed in the magazine of the CNC machine and automatically changed. Only a few manual steps are necessary to bring the system into use.



Example: RSC system in machining centre

12 Pneumatic spindles with radial deflection (pneumatic)
Operation with lubricated compressed air (6 bar)





RWA

With this deflectable pneumatic spindle, component and positioning tolerances can be compensated during machining. This means that it is possible to trace a component contour with constant contact pressure and thus achieve uniform material removal, even under fluctuating conditions. An optimal application area for this system is, for example, automated deburring of cast parts or machined components in combination with an industrial robot.

An adapter flange for simplified mounting of the system is available from us.

Order no. 003 012 557

Table for deflection system:	
RWA 5-12 with running spindle	
Deflection force at measuring point 1 with running spindle	
Air pressure	Force
2 bar	26 N
3 bar	38 N
4 bar	50 N
5 bar	62 N
6 bar	70 N

Table for deflection system:	
RWA 2-40, RWA 2-30, RWA 2-22, RWA 2-24	
Deflection force at measuring point 1 with running spindle	
Air pressure	Force
2 bar	12 N
3 bar	20 N
4 bar	24 N
5 bar	28 N
6 bar	32 N

The deflection force is separately adjustable via pressure (2-6 bar) even during machining. This allows you to optimally adapt the removal performance to the strength of the burr. A piston pressurised with compressed air ensures that the tool is always pressed into the zero position or against the workpiece stop. Hysteresis is zero.

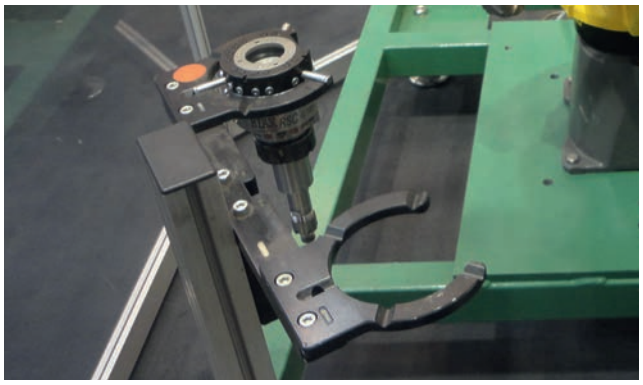
Technical Data	RWA 2-40	RWA 2-30	RWA 2-22	RWA 5-12
Integrated grinding spindle	R 3040	R 3030	R 3622	R 4112
Order number	150 830 835	150 830 820	150 830 825	150 830 885
Stroke number [rpm]	40,000	30,000	22,000	12,000
Power [Watt]	240	240	300	400
Noise level [dB (A)]	75	75	73	79
Max. tool holder [mm]	8	8	8	10
Collet type [mm]	ZG 7/6	ZG 7/6	ZG 7/6	ZG 8/6
Rotation direction	Clockwise	Clockwise	Clockwise	Clockwise
Exhaust air direction	Forward	Forward	Forward	Forward
Air consumption under load [l/min]	400	400	500	790
Weight [g]	1,520	1,535	1,850	2,320
Air connection	R1/8“	R1/8“	R1/8“	R1/4“
Overall length X [mm]	193	193	207	263
Grinding spindle length S [mm]	110	110	124	176
Tool holder length W [mm]	83	83	83	87
Collet spindle length Z [mm]	41	41	41	31
Spindle diameter D [mm]	30	30	36	41

13 Pneumatic spindles with quick-change system and radial deflection

BWS 2-22

This quick-change system allows the rapid exchange of spindles in robot cells. This means that components clamped in a stationary position can be machined with different spindles – using just one robot. On request, spindles with 12,000 rpm (Order no. 150 830 900), 30,000 rpm (Order no. 150 830 960) and 40,000 rpm (Order no. 150 830 980) are also available.

		Tool changer
Technical Data	**BWS 2-22**	**SWK 020**
Integrated grinding spindle	R 3622	
Order number	150 830 940	001 626 003
Stroke number [rpm]	22,000	
Power [Watt]	300	
Max. tool holder [mm]	8	
Collet type [mm]	ZG 7/6	
Rotation direction	Clockwise	
Exhaust air direction	Forward	
Weight [g]	2,400	
Air connection	Robot side	



Example: Spindle storage

14 Collets

Type	ZG 1	ZG 1 A	ZG 4	ZG 5	ZG 7	ZG 8
	Order no.	Order no.	Order no.	Order no.	Order no.	Order no.
Hole 0.5 mm	-	-	-	001 999 871	-	-
Hole 1.0 mm	-	-	001 999 957	001 999 989	001 999 868	-
Hole 1.5 mm	-	-	001 999 960	001 999 988	-	-
Hole 2.0 mm	001 999 932	-	001 999 959	001 999 987	001 999 867	-
Hole 2.5 mm	-	-	001 999 952	001 999 986	-	-
Hole 3.0 mm	001 999 999	001 999 995	001 999 991	001 999 985	001 999 982	-
Hole 3.5 mm	-	-	001 999 951	-	001 999 924	-
Hole 4.0 mm	001 999 998	001 999 949	001 999 961	-	001 999 973	-
Hole 5.0 mm	001 999 997	-	001 999 958	-	001 999 972	-
Hole 6.0 mm	001 999 996	001 999 994	001 999 990	-	001 999 981	001 999 977
Hole 7.0 mm	-	-	-	-	001 999 971	-
Hole 8.0 mm	-	001 999 993	-	-	001 999 980	001 999 976
Hole 10.0 mm	-	001 999 992	-	-	-	001 999 975
Hole 1/8“	-	-	001 999 964	001 999 983	001 999 979	-
Hole 1/4“	-	-	001 999 965	-	001 999 978	-
Hole 3/32“	-	-	001 999 970	001 999 984	-	-
Collet key	001 365 806 +retaining pin 002 000 069	001 365 811 +retaining pin 002 000 070	007 899 874 (size 9+11 in set)	007 899 751 (size 6+8 in set)	007 899 746 (size 11+14 in set)	007 899 721 (size 14+17 in set)

15 Pneumatic spindles with quick-change system and axial deflection

What the new system offers

With the integrated quick-change system, tool changes are performed fully automatically and without downtime. This allows the system to run for much longer periods without manual intervention – a major advantage, especially in applications with relatively short tool lifetimes. If a component requires machining with different tools, a single spindle may be sufficient. At the same time, the automatic replacement of worn tools delivers clear economic benefits. In every case, the quick-change system greatly enhances the flexibility of any installation.

Functionality

The high-quality system enables position-independent tool changes via a coupling. The spindle does not need to be rotated into a specific position. The change is carried out using a special changing station, which automatically slides back the coupling sleeve. This allows the spindle to be used both in stationary installations and in robot-mounted applications.

Quick-change insert SW ER 16

Quick-change insert SW ER 11

Quick-change insert SW ZG 7

Quick-change inserts are available in three sizes. The ER 11 insert can accommodate tools with a shank diameter up to 7 mm, the ER 16 insert collets up to 10 mm.
The insert SW ZG 7 allows the use of BIAX collets type ZG 7 (1.0 mm to 8.0 mm). An overview of the collets can be found on p. 19.

Spindle with quick-change system and axial deflection

The quick-change system can be combined with axial compliance, which compensates when using tools that operate in an axial direction, such as end brushes. This ensures that the tool is always applied to the component with nearly constant contact pressure, even as wear increases. As a result, the surface finish is improved, while the tools are used to a high degree of efficiency, ensuring uniform material removal across many components. In addition, rework is reduced, and the effort for adjustments via programming is significantly decreased. The contact pressure of the axial compliance can be individually adjusted between 5 N and 70 N using a hex key.

Standard spindles with quick-change system

Technical Data	R 4102 SW	R 4105 SW	R 4112 SW
Order number	150 414 610	150 414 600	150 414 620
Stroke number [rpm]	2,000	5,000	12,000
Power [Watt]	490	520	400
Exhaust air direction	Backwards	Backwards	Backwards
Air consumption under load [l/min]	900	900	790
Noise level [dB (A)]	75	74	78
Weight [g]	1,400	1,400	750
Hose unit with exhaust hose (not included)			
Order number	001 367 525	001 367 525	001 366 580
Hose length [m]	3	3	3
Air hose diameter [mm]	10	10	10

Spindles with quick-change system and axial deflection

Technical Data	R 4102 SW AX	R 4105 SW AX
Order number	150 414 710	150 414 700
Stroke number [rpm]	2,000	5,000
Deflection [mm]	10	10
Deflection force [N]	5-70 individually adjustable	5-70 individually adjustable
Power [Watt]	490	520
Exhaust air direction	Backwards	Backwards
Air consumption under load [l/min]	900	900
Noise level [dB (A)]	75	74
Weight [g]	1,600	1,600
Hose unit with exhaust hose (not included)		
Order number	001 367 525	001 367 525
Hose length [m]	3	3
Air hose diameter [mm]	10	10

Collets

ER11 D 6 mm	001 624 802
ER16 D 6 mm	001 624 807
ER16 D 8 mm	001 624 804
ER16 D 10 mm	001 624 811

Wrenches

ER11 Mini	001 624 805
ER16 Mini	001 624 806

Version for BIAX RSC system

(cannot be combined with deflection)

RSC-S 16,000 SW
008 015 208
16,000
550
Backwards
800
/
/

Quick-change station SW

Order number 001 985 501

Quick-change insert SW ER11

Order number 001 985 502

Quick-change insert SW ER16

Order number 001 985 503

Quick-change insert SW ZG7

Order number 001 985 526

The appropriate tools for deburring and finishing can also be found in our product range.

16 Electric spindles

RE 2860 Electric spindle

The new BIAX electric spindle RE 2860 offers outstanding capabilities for fine mechanical machining. It is particularly well suited for use in space-saving and energy-efficient systems. Weighing only 240 g, the spindle still delivers up to 300 W of power.

In addition, the RE 2860 provides the user with:

- Virtually silent operation
- Continuously adjustable speed up to 60,000 rpm (forward and reverse)
- Runout accuracy below 0.02 mm

The spindle is driven by a low-maintenance brushless DC motor that requires no additional cooling!

RE 2860 in combination with deflection unit CUR 10-50

To compensate for positioning inaccuracies and component tolerances, the spindle can be mounted in a radial deflection unit. For installation, it is simply inserted into the unit's clamping sleeve and secured with clamping screws.

The deflection force (approx. 10–50 Nm) can be precisely adjusted between 0 and 6 bar via pneumatic pressure.

The deflection unit must be ordered separately!

Technical Data	RE 2860 Electric spindle
Order number	160 110 010
Drive system	Brushless DC motor
Max. torque [Ncm]	11
Run-out accuracy [mm]	< 0.02
Diameter [mm]	28
Length [mm]	142
Weight without cable [g]	360
Collets [Ø mm]	6 (Standard – 001 611 731) 2.35 (3/32") (Optional – 001 611 734) 3 (Optional – 001 611 732) 3.175 (1/8") (Optional – 001 611 733)
Protection class	IP43
Wrenches for tool and collet change	001 611 723 and 001 365 804

Technical Data	CUR 10-50 Deflection unit
Order number	001 611 722
Deflection force [N]	10 - 50
Max. deflection angle [°]	5
Max. deflection path [mm]	>10
Air supply for deflection [bar]	0-6
Air connection pressure hose [mm]	Outer Ø 6
Height [mm]	104
Width [mm]	100
Depth [mm]	65
Weight [g]	1,172

Controllers

The spindle can be operated with 2 different controllers.

SE 1 or SE 3 control unit

For partial automation, two control units – SE 1 and SE 3 – are available, both operated manually by the user. Settings such as spindle speed or start/stop are controlled via rotary knobs and toggle switches. The spindle is connected to the control unit with the supplied plug-in cable and is immediately ready for operation.

The SE 3 is the more powerful version with an input power of 300 W (compared to 220 W for the SE 1). This provides greater load capacity and allows for a wider range of applications in deburring operations.

SER 60/2 control unit

With this controller, the spindle can be operated fully automatically. All spindle functions can be addressed, modified, and monitored via the corresponding input and output signals. The controller's straightforward design facilitates seamless integration into larger systems. As an alternative to the internal power supply, the SER 60/2 can also be operated with an external 48-volt supply.

Technical Data	SE 1	SE 3
Order number	001 611 730	001 611 725
Speed range [rpm]	200 - 50,000 resp. 1,000 - 100,000	200 - 60,000 resp. 1,000 - 100,000
Weight [g]	1,875	2,145
Dimensions [mm]	W 105 × H 205 × D 215	W 135 × H 250 × D 215
Operating voltage [Volt]	100 - 240	100 - 240
Nominal frequency [Hz]	50/60	50/60
Input power [Watt]	220	300
Drive system	Brushless DC motor	

Technical Data	SER 60/2
Order number	001 611 743
Operating voltage [V]	100–240 V or external with 48 V
Speed range [rpm]	1,000 - 60,000
Speed preset via input voltage [V]	0.25 - 4.75
Power [W]	300
Max. current [A]	6
Rotation direction	Reversible (CW/CCW)
Overload protection	Yes
Function monitoring	Yes
Protection class	IP 20
Width [mm]	180
Height [mm]	73
Depth [mm]	185
Weight [g]	1,440
Drive system	Brushless DC motor

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