

Operating Instruction Booklet

Pneumatic Drill Spindle

104-010-1

104-110-1

104-210-1

104-310-1

302929 A

302929 B

302929 C

302929 D

Dear Customer:

This tool is the result of more than 70 years of experience in the design and manufacturing of pneumatic tools for the industrial market.

We kindly ask that you read these operating instructions carefully so that you will be able to use this tool safely and for many years to come. If you need additional information, please contact your DEPRAG

Representative, one of our international support offices or us direct at DEPRAG. We will be happy to answer any questions. Please visit our web site: www.deprag.com

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2 Safety Tips

2.1. General Safety Tips



Before operating tool make sure to carefully read and observe this operating instruction.

Generally, the operator of the equipment and/or machinery is responsible for the equipment's perfect condition and operation, while observing all necessary safety regulations. The equipment and/or machinery has been constructed in accordance with the newest level of technology while recognizing all necessary safety-related requirements. Nevertheless, while operating the equipment and/or machinery there is a risk of bodily harm to the operator as well as damage to equipment and/or machinery and other property.

Operate the equipment and/or machinery only if equipment/machinery

- Is used for the task it was designed for
- is in perfect working condition and safe to use.


It is important to observe the technical data of the equipment, especially in regards to the environmental temperatures. The designated area of use for this equipment is clearly described in chapter *Designated Equipment Use* and those requirements have to be observed as well. Prerequisite for the safe conduct and the uninterrupted operation of the equipment, is the knowledge of the basic safety tips and the safety regulations. Additionally, all current regulations for a safe operational area, for accident-prevention guidelines of electrical and mechanical installations, as well as noise suppression demands must be observed. During any maintenance or repair work, a clean work surface is recommended. Also, it is not recommended to either eat or smoke during repair or maintenance. Arbitrary changes made to the equipment, which alters its designated use, voids the warranty and cancels the manufacturers liability.

- The tool is not insulated to protect against an electrical power surge.
- It is not recommended to use this tool in explosive hazardous environments, unless it was specifically designed for such a use.
- During the disconnection or reconnection of the tool from the compressed air, an injury is possible because of a whipping pressure-hose.

The operating instruction booklet, especially the safety symbols and safety tips attached to the equipment or included in the documentation, must be observed at all times by all persons getting into contact with the equipment.

2.2. GENERAL SAFETY TIPS FOR DRILLS AND GRINDERS



- Use a secondary handle (side handle), if reaction torque cannot be safely supported by one hand.
 - If the machine locks-up, an increased reaction torque occurs. Reason for lock-up: Tool operates over capacity; jamming of the drill bit in material or when drill bit breaks through the material.
 - An unexpected motion of the tool or the breakage of a drill bit may cause an injury.
 - Uncomfortable or incorrect holding of tool, will not allow Operator to correctly react to an unexpected motion of the tool..
 - Disconnect tool from air supply, prior to changing inserts.
 - Prior to operating tool, make sure that collet and drill bit is securely installed.
 - Wear no loose clothing or jewelry, for movable parts [collet/bit] may seize them. Wear a hairnet if operator has long hair.
- 
- Use integrated or additionally supplied side-handles to reduce reaction torque.
 - Reduce down pressure, shortly before bit breaks through the material to be drilled.
 - Prior to operating tool, remove key from chuck.
 - If the tool is to be suspended from a Balancer, make sure it is securely attached to it.
 - Make sure to not exceed maximum operating pressure given by manufacturer. Add a pressure regulator to check operating pressure before reaching the actual tool.
 - Keep in mind that tool will continue to rotate, once it has been turned off. [inertia]
 - Turn tool off, if the airflow is suddenly disrupted.

2.3. User Obligation

The owner is obliged to only let persons operate the equipment, who

- are familiar with basic work environment safety rules and accident-preventing regulations. Also, those persons must have been instructed in the correct use of the equipment.
- have read and understood all safety and warning notifications in the Operating Instruction Booklet, as well as all other documentation pertaining to this equipment.
- check and confirm at regular intervals, that a safety oriented operation is guaranteed.

Only qualified and authorized personnel is allowed to operate, maintain and repair this equipment. A malfunction, which impairs operator safety, must be immediately removed.

2.4. Operator Obligation

Personnel, who is engaged in the operation of the equipment, must always be committed to

- observe the basic safety and accident preventing regulations,
- read and observe the safety and warning notifications of this operating instruction booklet.

2.5. Warranty and Liability

Unless otherwise specified, our “General Sales and Delivery Conditions” apply. Warranty and liability claims in regards to persons or equipment damages are invalid, if one or several of the following causes apply:

- Use of the equipment in a non-designated application.
- Improper installation, operation, service or maintenance of the machine.
- Operation of the machine with either defective or removed safety and protection devices.
- Non-observance of the requirements stated in the operating instruction booklet, in regards to transportation, storage, mounting, installation, operation, maintenance and service of the equipment.
- Structural change or adjustment on the equipment to a non-designated use.
- Inadequate supervision of wear parts.
- Improper repair, inspection or maintenance.
- Catastrophic cases because of a war, acts of god or other reasons which are beyond our control.

2.6. Symbol Description



Read and observe the Operating Instruction Booklet, prior to and during operation of tool.



DANGER

Reference to an immediate danger to a person. May lead to serious injuries or even death, if unobserved!



Waste Oil

Properly recycle environmentally damaging grease, cooling agents or detergents



RECOMMENDATIONS

Important or additional information on the equipment or in the documentation



Use eye protection or wear safety goggles



Wear hearing protection



Warning against hand-injuries.

Attention: Keep away your hands from areas, which are marked with this symbol!



Hands may be crushed, seized or otherwise injured.



ESD-protected area

Equipment may be damaged or destroyed by an electrostatic discharge.

Maintenance and repair on hydraulic and pneumatic equipment may only be performed by specially trained personnel!



Disconnect equipment from air supply, prior to repair of pneumatic or hydraulic equipment.

Provide regular preventive maintenance on hoses and airlines. Exchange hose lines, even if there is no visible damage! (Observe corresponding requirements of the manufacturer!)

After repair and maintenance, check the following items:

- make sure all detached and re-attached connections are solid.
- confirm that removed covers, screens or filters were re-installed
- During disconnecting or reconnecting of an air-operated equipment, injury may occur due to a whipping air-hose

After conclusion of maintenance or repair and prior to start of operation, make sure to

- remove all materials, tools and other supplies needed for the maintenance or repair from work area of the equipment
- remove leaking liquid or oils
- make sure all safety devices on the equipment work perfectly!

2.7. Observe Environmental Regulations



When working on or with the equipment, it is imperative to observe all requirements in regards to waste-disposal and proper recycling.

Especially during installation, repair or maintenance, water damaging agents such as

- lubricating grease and oil
- hydraulic fluid
- cooling agents
- solvent-containing cleaning agents

must not leak into the ground or into the sewage system!

Such materials must be stored, transported, contained and recycled in suitable containers.

3 Designated Equipment Use

The drill has been designed for drilling into steel, aluminium or other materials.

4 Installation

- Blow out air line and pressure hose, prior to connection it to the tool.
- Make sure, that all air lines have a sufficient cross-section (see technical data) and hoses must be free of bends and kinks. The hose length should not exceed 2 meters.
- All DEPRAG Motors, may be operated either with or without lubricated air. (see paragraph: Maintenance and Upkeep). Best results are achieved, when motor is lubricated with 1 – 2 drops of oil per 1m³. When motor is operated with dry air, a performance reduction of up to 20% occurs and maintenance increases!
- Connect the equipment as follows:
 - a) for standard operation connect to a maintenance unit consisting of filter with condensation reservoir, oiler and pressure regulator. When selecting a maintenance unit, make sure to observe the motor's air consumption requirement (see technical data).

Air Consumption	Thread Size	Part No.
0,05 - 0,5 m ³ /min	G 1/4	820454 A
0,15 – 1,5 m ³ /min	G 1/2	820455 A
0,8 – 4,0 m ³ /min	G 3/4	821608 A

- b) for the use with minimal lubrication connect equipment to a maintenance unit, consisting of Filter with condensation reservoir and Regulator

Air Consumption	Thread Size	Part No.
0,05 - 0,5 m ³ /min	G 1/4	822408 A
0,15 – 0,9 m ³ /min	G 3/8	826981 A
0,5 – 1,5 m ³ /min	G 1/2	822409 A
0,8 – 6,0 m ³ /min	G 3/4	826982 A

Each in connection with a Point-of-Use Oiler (Part No. 378077 A)

- c) For oilfree operation, connect to Filter/Regulator, consisting of Filter with condensation reservoir and Pressure Regulator.

Air Consumption	Thread Size	Part No.
0,05 - 0,5 m ³ /min	G 1/4	822408 A
0,15 – 0,9 m ³ /min	G 3/8	826981 A
0,5 – 1,5 m ³ /min	G 1/2	822409 A
0,8 – 6,0 m ³ /min	G 3/4	826982 A

In regards to air-quality according to ISO8573-1, we recommend:

	CLASS	RESIDUE OF OIL	RESIDUE OF DUST		RESIDUE OF WATER	
		Content mg/m ³	Particle Size µm	Concentration max. mg/m ³	Dew Point °C	Pressure Concentration max. g/m ³
Lubricated Air	4	5	15	8	+3	6
Dry Air	3	1	5	5	-20	0,88

5 Operation

Prior to operation, make sure that the drill bit is inserted into the collet as deep as possible and that collet has been securely tightened using the two wrenches (AF 7mm / AF 9mm). (see Safety Tips for Drills and Tappers)



Before operating the tool, test drill bit and make sure it is securely installed. A loose drill-bit causes injuries.

6 Handling and Start-Up

Use the equipment only while observing all safety tips and maintenance regulations.

The drill spindle starts by remote valve.

7 Assembly- Disassembly

Disassembly: (see Spare Parts Drawing)



Prior to disassembly, disconnect equipment from air-supply! Only experienced maintenance personnel may assemble or disassemble this equipment.

After repair or maintenance, verify that equipment runs to specification!

Principally, use only DEPRAG original spare parts. Otherwise, a reduction in equipment power output and an increased maintenance requirement will occur.

If NON-DEPRAG parts are installed, DEPRAG is entitled to void any existing warranty and liability obligations.



Note:

Do not open or clamp motor at screw joint 445163/1, because thus cylinder pin 824868 may be damaged. Open or clamp motor at motor housing and / or screw joint 445101/1 only!

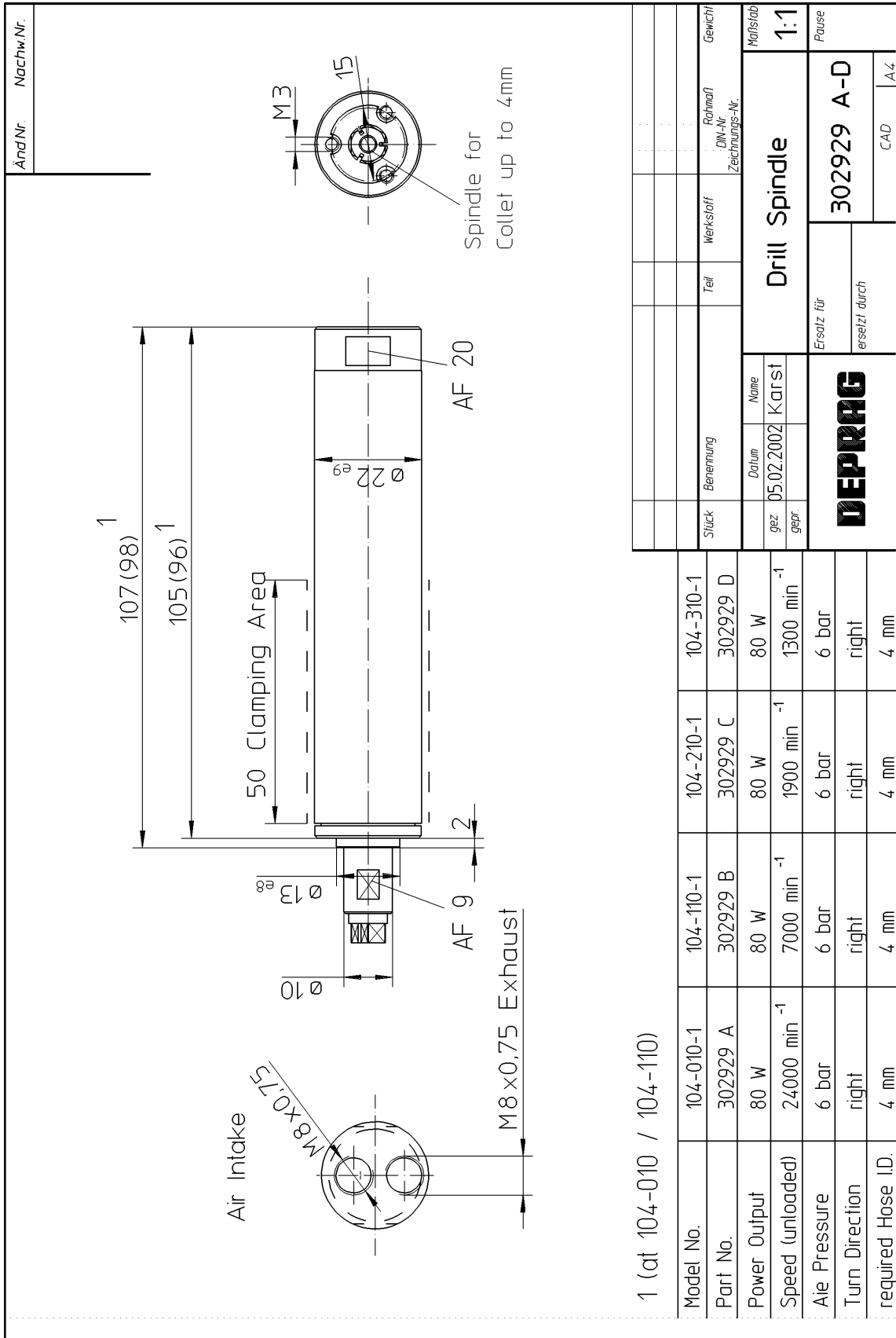
Disassembly continued:

1. Loosen collet 314406 (right-hand thread).
2. Unscrew threaded bushing 445101/1 (right-hand thread) from motor housing 445164/1 / 445164.
3. Slide motor 344199 G / H out of the motor housing 445164/1 / 445164.
4. Remove bearing cover 314841/1.
5. Remove and check vanes 328130/3 (5 pieces). Minimum width of vane should be 2.5 mm. Vanes, which have a smaller width or show visible damage, need to be replaced.

Assembly:

in reverse sequence

7.2. Dimensional Drawing



8 Special Repair Tools [Optional Equipment]

461754/1	Wrench	for threaded bushing 445101/1
461429	Plate	for gear assembly

9 Maintenance and Upkeep

Operator can perform inspection and maintenance. Only specialized personnel may perform assembly or disassembly of this equipment. Faulty assembly may lead to danger for the operator and to permanent damage of the equipment

This drill spindle requires little maintenance. If the following rules are observed, the tool reaches its promised high life span and remains in a safe condition to use.

- Regularly check equipment for external damage.
- Check the air filter (bleed water condensation on a regular basis) and the oil reservoir, as well as the oiler adjustment [if operated with lubricated air]. We recommend DEPRAG-Oil, Part No. 790081 E (250 cm³).
- After repair and prior to assembly, grease gearing parts with DEPRAG grease Part No. 807293 (tube: 100 g).
- After assembly, drip 2 – 3 drops of oil into the drill's air intake.
- The gearing, balls and needle bearing, as well as the seal rings, must be greased every 500 operating hours or at least once a year.
- If operated in an oilfree environment, this maintenance is necessary every 250 hours
- If machine has not been operated for some time, drip a couple drops of oil into the motor and let drill run for 5 – 10 seconds.
- If drill malfunctions, we recommend to send the machine to DEPRAG.

9.1. Wear Parts

QUANTITY	DESCRIPTION	PART No.
5	Vane	328130/3

9.2. Trouble Shooting

In the case of a malfunction, check and observe all instructions contained in this technical documentation. If necessary, adjust equipment as needed.

Possible faults and their causes are shown below:

FAULT	CAUSE	SOLUTION
Insufficient Power	Worn vanes	Exchange vanes
	Insufficient lubrication	Provide the required air-quality
Machine does not start	No air; shut-off valve is closed.	Open shut-off valve
	Worn vanes or vanes are jammed	Exchange vanes

If necessary, send the equipment to DEPRAG.

10 Delivery Capacity

Please check the delivery capacity in regards to its completeness.

QUANTITY	NAME	PART No.
1	Operating Instruction Booklet	011573 EN
1	Drill Spindle	302929 A/B/C/D

11 Storage

Unused machines should be stored in a dry, locked area.

12 Technical Data

Manufacturer: DEPRAG SCHULZ GMBH u. CO.
Address Kurfürstenring 12 - 18 PO Box 1352
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Fax 09621/371-120

Technical Data:

MODEL No.:	104-010-1	104-110-1	104-210-1	104-310-1
Part No.	302929 A	302929 B	302929 C	302929 D
Exhaust:	M8x0.75			
Air Intake:	M8x0.75			
Speed (unloaded) min⁻¹	24000	7000	1900	1300
Air Consumption, under load m³/min	0.23			
Power Output, W	80			
Diameter, mm	22			
Length, mm	117.5	117.5	126.5	126.5
Weight, kg				
Required Hose I.D., mm	4			
Noise Level dB(A)	82			
Vibration m/s²	< 2.5			
Oilfree operation possible	yes			

13 Disposal

Unused machines should be stored in a dry, locked area. Observe local and environmental regulations for the separation and recycling of materials.



Recycle waste oil to avoid environmental contamination!

14 Manufacturer's Declaration

CE-Manufacturer's Declaration according to the CE-Machine-Guideline 89/37/EWG, Amendment IIB

We,

DEPRAG SCHULZ GMBH u. CO.
Kurfürstenring 12 – 18 PO Box 1352
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hereby confirm, that the construction of the

Drill Spindles

104-010-1

104-110-1

104-210-1

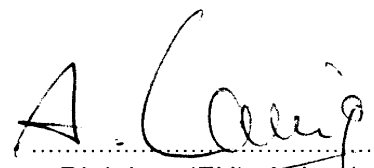
104-310-1

is designated for the integration into another machine and operation of this other machine is prohibited until it has been confirmed that it confirms with the CE-Machine-Guideline i.d. F.98/37/EC.

used standards

- EN 292

Amberg, 11.07. 2003


Dipl. Ing. (FH) A. Lanig
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