

011354EN

DEPRAG

Operating Instruction Booklet

Pneumatic Grinding Machine

211-43HA

314740 E

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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1 Safety Tips

1.1. 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.

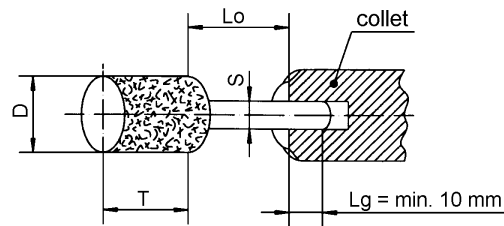
The operating instruction booklet, especially the safety symbols and safety tips attached to the equipment or included in the documentation, must be observed at all times by all persons getting into contact with the equipment.

1.2. Safety Tips for Grinders and their corresponding Grinding Inserts



- Use only approved grinding inserts with a correct shaft diameter.
- Make sure the rated speed of the insert is higher than the speed of the grinder.
- It is especially important to keep in mind, that the allowable speed of the installed grinding insert is reduced, if the distance between the end of the collet and the bottom of the insert (overhang “Lo”) is increased. A minimum shaft insertion length “Lg” has to be guaranteed.

Lo = overhang
S = shaft diameter
D = insert diameter
T = insert length
Lg = shaft insertion length



- Dust or steam may occur when grinding certain materials; those gases may create an explosive hazardous environment.
 - The shaft diameter of the insert and collet capacity has to be the same.
 - Strong vibrations may occur because of loose or damaged grinding inserts.
 - Do not exceed the maximum allowable air pressure. A pressure regulator has to be installed, which regulated the air pressure before reaching the tool.
 - After turning-off the grinder, the tool will continue to rotate (inertia).
 - Do not wear wide clothing or jewelry, for they can be seized by movable parts. Wear a hairnet if operator has long hair.
 - Do not use the grinder in close proximity of combustible liquids or gases.
- i**
- Wear eye- and hearing protection. It is also recommended to wear gloves and safety clothing.
 - Disconnect grinder from air supply prior to changing grinding inserts.
- Dependent on the materials to be processed, personal safety equipment must be used and a dust removal system should be installed.

- Stored energy in form of gas or liquid may cause a danger to Operator.
- Use the DEPRAG recommended lubrication oil only.
- In case of a power interruption, the grinder must be disconnected from the air supply.

1.3. Owner 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.

1.4. 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.

1.5. 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.

1.6. 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!



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

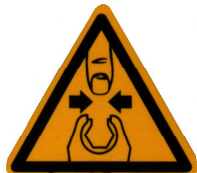


Wear hearing protection



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!

1.7. 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.

2 Designated Equipment Use

This midget grinder is used preferably with grinding pins or milling inserts, mainly for the treatment of plastic and metals in foundries, in the entire mechanical engineering industry, the tool- and die industry, the appliance-industry to level, de-burr or treat cast-iron parts.

3 Installation

- Blow out air line and pressure hose, prior to connection it to the equipment.
- The hoses must be free of bends and kinks.
- Make sure, that all air lines have a sufficient cross-section and remove possible throttle areas.
- Connect Grinders or Polishers as follows:
 - a) for standard operation connect equipment to a maintenance unit, consisting of Filter with condensation reservoir, Regulator and Oiler. When choosing a maintenance unit, observe air consumption of the machine (see Technical Data).

Air Consumption	Thread Size	Part No.
0,05 - 0,5 m ³ /h	¼ "	820454 A
0,15 – 1,5 m ³ /h	½ "	820455 A
0,8 – 6,0 m ³ /h	¾ "	821608 A

- b) for the use with minimal lubrication connect to a filter-regulator consisting of Filter with condensation reservoir and pressure regulator

Air Consumption	Thread Size	Part No.
0,05 - 0,5 m ³ /h	¼ "	822408 A
0,15 – 0,9 m ³ /h	3/8 "	826981 A
0,5 – 1,5 m ³ /h	½ "	822409 A
0,8 – 6,0 m ³ /h	¾ "	826982 A

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

- Check air pressure at F/R/L outlet. The Regulator needs to be adjusted to an airflow of 6,3 bar (90 PSI). A higher pressure than 6,3 bar leads to increased wear and tear. Pressure below 6,3 bar leads to performance loss.

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

4 Operation

Prior to commissioning, be sure to insert the tool as deeply as possible into the spring chuck and fasten it using the single-ended open-jawed wrench included in the delivery.

(see the Safety Instructions for Grinding Machines for Grinding Pin)

Attention



Before operating the tool, check that grinding insert is securely fastened. A loose grinding insert may cause an injury.

Use only acceptable grinding inserts. Check and make sure that the allowable speed of the grinding insert is higher than the speed of the grinder

Keep the pressure light during milling. High speeds at low pressure are preferable over low speeds with high pressure. When selecting a milling cutter mould, make sure that the work piece radius of boreholes or angles is always larger than the milling cutter radius, as the milling cutter otherwise get stuck and jag. When milling in recesses and slits, the milling cutter should be moved marginally back and forth during the process.

Be sure to guide the machine in a manner ensuring that neither spring chuck nor spindle touch the workpiece to avoid unnecessary wear and tear of these parts and the ball bearings.

5 Handling

Push lever valve 314819/1 B, machine starts.

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

Disassembly:

1. Disconnect machine from air supply.
2. Unscrew valve housing 314736 from motor housing 314734 (right-hand thread).
3. Remove threaded fitting 314815 (left-hand thread) from motor housing 314734 and pull out motor 314818 A completely.
4. Unscrew hose connection 314856/1 from valve housing 314736 (right-hand thread).
5. Unscrew hose nozzle 804307 and fuel hose 806114/1.
6. Pull off sleeve 313834/1 with lever 302860 A.
7. Unscrew plug 312046 with o-ring 803374 from valve housing 314736.
8. Remove pressure spring 312051, valve pin 322685, ball 802182 and o-ring 802501 (wear part).
9. Pull out intermediate ring 314814, washer 823493 and spacer ring 313755.
10. Clamp rotor cylinder 314730 into protective jaws and pull off groove ball bearing 801972.
11. Pull off bearing cover 314733 and spacer ring 313755. Remove rotor cylinder 314730.
12. Remove vanes 314744/3 and check them thoroughly. Vanes that are too narrow or damaged have to be replaced **in sets**. Clean rotor 314731.



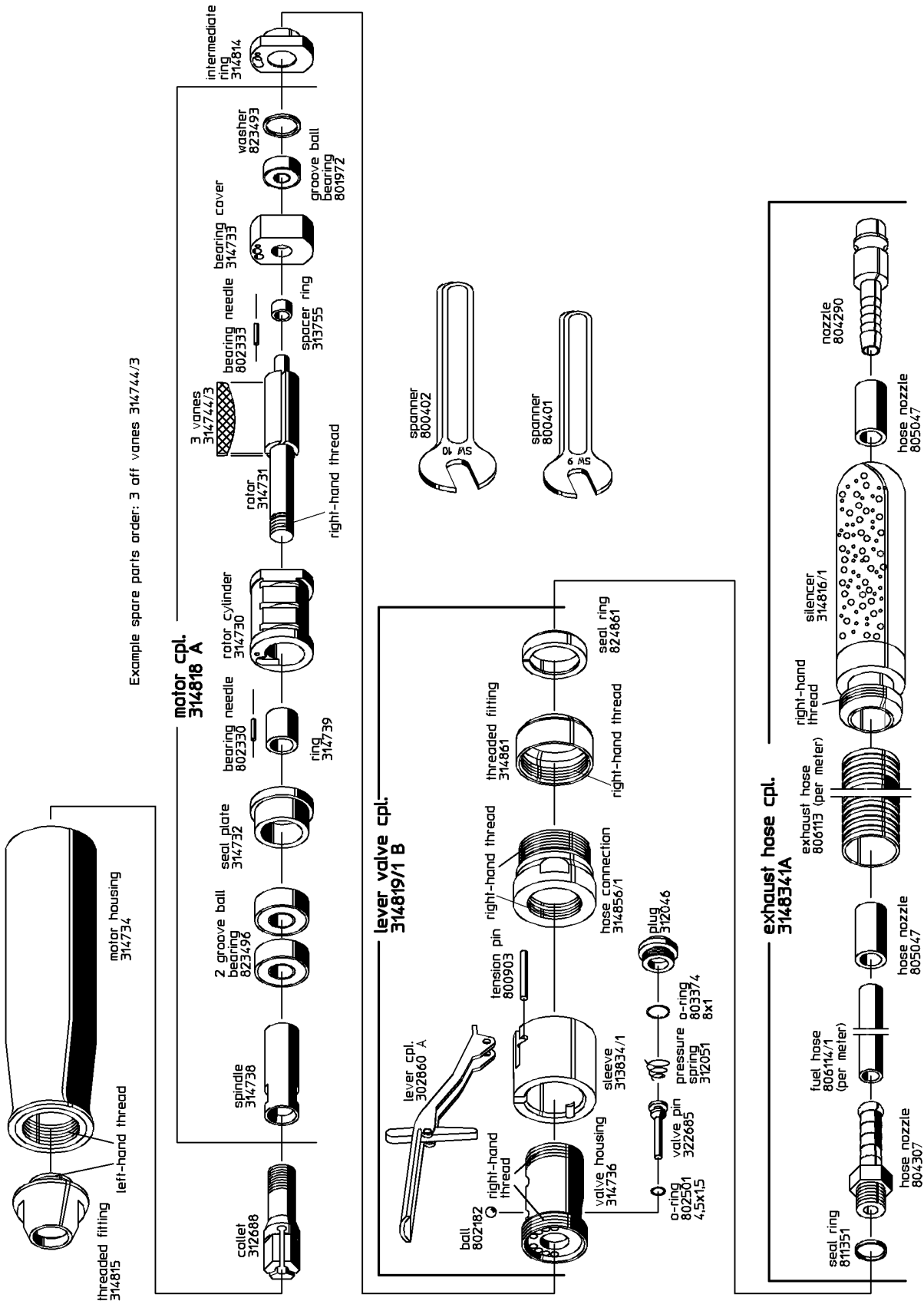
Attention:

Spring 803058 may cause ball 802182 to come loose.

Assembly:

The other way round .

6.1. Spare Parts Drawing



6.2. Special Repair Tools (Optional Equipment)

NAME	PART No.
Chucking Jaws (for motor housing 314734)	461722
Speedometer (measurement range 40-50000 min ⁻¹)	807416
Wrench (for spindle 314738)	462217

7 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 grinder 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).
- We recommend a maintenance interval of every 1000 operating hours. Vanes have to be checked and if needed, replaced.
- After re-assembly, drip 2 – 3 drops of oil into the air inlet.
- If grinder malfunctions, we recommend to send the machine to DEPRAG.

7.1. Wear Parts

QUANTITY	NAME	PART No.
3	Vanes	314744/3
1	Silencer	314816/1
1	O-Ring	802501

8 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 fault and their causes are shown below:

FAULT	CAUSE	SOLUTION
Insufficient Power	Air pressure too low	Minimum air pressure should be 90 PSI for maximum performance
	Restriction in air hose	Remove bends or other restrictions
	Hose I.D. is too small	Use required hose I.D. LW 6 mm
	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
Grinder does not want to stop	Worn o-ring	Replace o-ring

If necessary, send the equipment to DEPRAG.

9 Delivery Capacity

Please check the delivery capacity in regards to its completeness.

QUANTITY	NAME	PART No.
1	Grinder	314740 E
1	Spanner AF 9	800401
1	Spanner AF 10	800402
1	Operating Instruction Booklet	011354EN

10 Storage

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

11 Technical Data

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Phone 09621/371-0
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Technical Data:

CONSTRUCTION	GRINDER
TYPE:	211-43HA
PART No.	314740 E
Grinding Insert (Head-\varnothing mm/in.)	Max. 16 / $\frac{5}{8}$
Milling Insert, high-grade steel (Head-\varnothing mm/in.)	Max. 6 / $\frac{1}{4}$
Speed, idling (rpm)	47000
Air consumption, under load (m³/min/cfm)	0,23 / 8
Power (kW/HP)	0,15 / 0,20
Body-\varnothing, D (mm/in.)	30 / $1\frac{3}{16}$
Body-Length, L (mm/in.)	147 / $5\frac{25}{32}$
Air Connect / Exhaust-Hose-Length	2/0,75m / 6,6/2,5 ft.
Weight, without hoses (kg/lbs)	0,26 / 0,6
Noise Level (dB(A))	73
Air Hose I.D. (mm/in.)	6 / $\frac{1}{4}$
Vibration m/s²	<2,5
Connector	Hose Nozzle
Air pressure (bar/PSI)	6,3 / 90

12 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!

13 Conformity Declaration

EC-Conformity Declaration according to the EC-Machine-Guidelines 98/37/EC, Amendment IIA

We,

DEPRAG SCHULZ GMBH & CO.
PO Box 1352
D-92203 Amberg

hereby confirm, that the design of the
grinder

211-43HA


conforms to the following, relevant regulation:

- EC-Machine-Guidelines, Version 98/37/EC, Amendment No. 1 and No. 2.2.

Applicable Standard:

- EN 292

Amberg, 26.07. 2004


Dipl. Ing. (FH) A. Lanig
Mr. Design Dept.

14 Service Locations and Authorized Partners

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