

DEPRAG

Operating Instructions

Pneumatic Die Grinder

20-042-1

312581 A

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, our international support offices or contact 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

1.1. General Safety



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 stand of the technology, while recognizing all necessary safety-related requirement. Nevertheless, while operating the equipment and/or machinery there is a change 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

- used for the task it was designed for
- equipment and/or machinery is in perfect 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 3 and those requirements have to be observed as well. Prerequisite for the safe contact 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 drill spindle from the compressed air, an injury is possible because of a whipping pressure-hose.

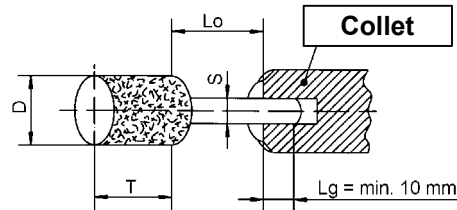
The operating-instruction booklet, especially the safety-symbols and safety-tips affixed to the equipment or included in the documentation, must be observed by all persons coming in contact with the equipment

1.2. Safety Tips for Grinders and their corresponding Grinding Inserts

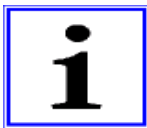


- Use only approved grinding inserts with a correct shaft diameter
- Make sure the rated speed of the insert is higher than the speed of the grinder
- It is especially important to keep in mind, that the allowable speed of the installed grinding insert is reduced, if the distance between the end of the 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.



- 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 lubricating oil only.
- In case of a power interruption, the grinder must be disconnected from the air supply.

1.3. User Obligation

The user is obligated to only let persons operate the equipment, which

- are familiar with basic work environment safety-rules and accident-prevention regulations. Also, those persons must be 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-conscious 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 prevention 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 foreign body effect or acts of god.

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 heavy 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 for hand-injuries.

Attention: remove hands from areas, which are marked with this symbol!



There is a danger, that 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 for the maintenance or repair needed materials, tools and other supplies from work-area of the equipment
- Remove leaked 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

may 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

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.

4. 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	1/4"	820454 A
0.15 – 1.5 m ³ /h	1/2"	820455 A
0.8 – 6.0 m ³ /h	3/4"	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	1/4"	822408 A
0.15 – 0.9 m ³ /h	? "	826981 A
0.5 – 1.5 m ³ /h	1/2"	822409 A
0.8 – 6.0 m ³ /h	3/4"	826982 A

in connection with a Point-of-Use Oiler (PartNo. 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

5. Operation

Prior to operation, insert the grinding tip as deep as possibly into the collet and tighten the grinding tip with the supplied wrenches. (see safety-tips for grinders and their corresponding grinding inserts)



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

Insert Grinding Insert:

Slide grinding insert with shaft (standard d 8h9; for other \varnothing see spare parts listing) into collet 312688 \varnothing 6, and tighten with wrenches (AF9 / AF10).

Connection:

Connect hose 806095 (1/4" I.D.) with coupler 804251 to plug 323214. Open shut-off valve (operating pressure 6.3 bar)

Start:

Press lever 301291, grinder operates

1.8. Special Repair Tools (Optional Equipment)

(see also our Maintenance leaflet D0090)

Pressure Pin 460417	for motor housing	311860
Chucking Jaws 460334	for motor housing	311860
Positioning Device 460475	for rotor cylinder	311856
Wrench 460413	for valve housing	312364
Wrench 460475	for spindle bearing	312495
Tachometer 807416	(measuring range 40 - 50000 rpm)	

6. Handling

The tool should only be used while observing all safety- and danger recommendations.

7. Disassembly - Assembly

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:

Disconnect grinder from air supply. Remove spindle-bearing 312145 (left hand thread).

Completely remove lever valve 340313 A (right hand thread) from motor housing 311860. Unscrew threaded bushing 312499 from motor housing 311860 (left hand thread). Slide complete motor 312658 E out of motor housing 311860. remove bearing cover 311921 / 311865. Remove the 3 vanes 312030/3 and check them in regards to wear and tear, as well as width. Minimum width should be 6 mm. Vanes that are smaller than 6mm or which are damaged, must be replaced.

Assembly:

Clean and grease all parts, replace damaged parts and reassembly in reverse order.

Test speed of grinder (17,000 rpm) after repair or maintenance!

8. 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 A (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.

1.9. Wear Parts

QUANTITY	DESCRIPTION	PART No.
3	Vane	312130/3
1	O-ring	802502
1	Collet (∅ 6)	312688

1.10. 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	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.
	Worn vanes	Exchange vanes 312030/3
	Screen Support clogged	Clean screen support 311884 or exchange with new one
	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 312030/3
Motor operates, but spindle does not rotate	Broken clutch	Replace clutch 311876
Grinder does not want to stop	Worn O-Ring	Replace o-ring 802502

If necessary, send the equipment to DEPRAG.

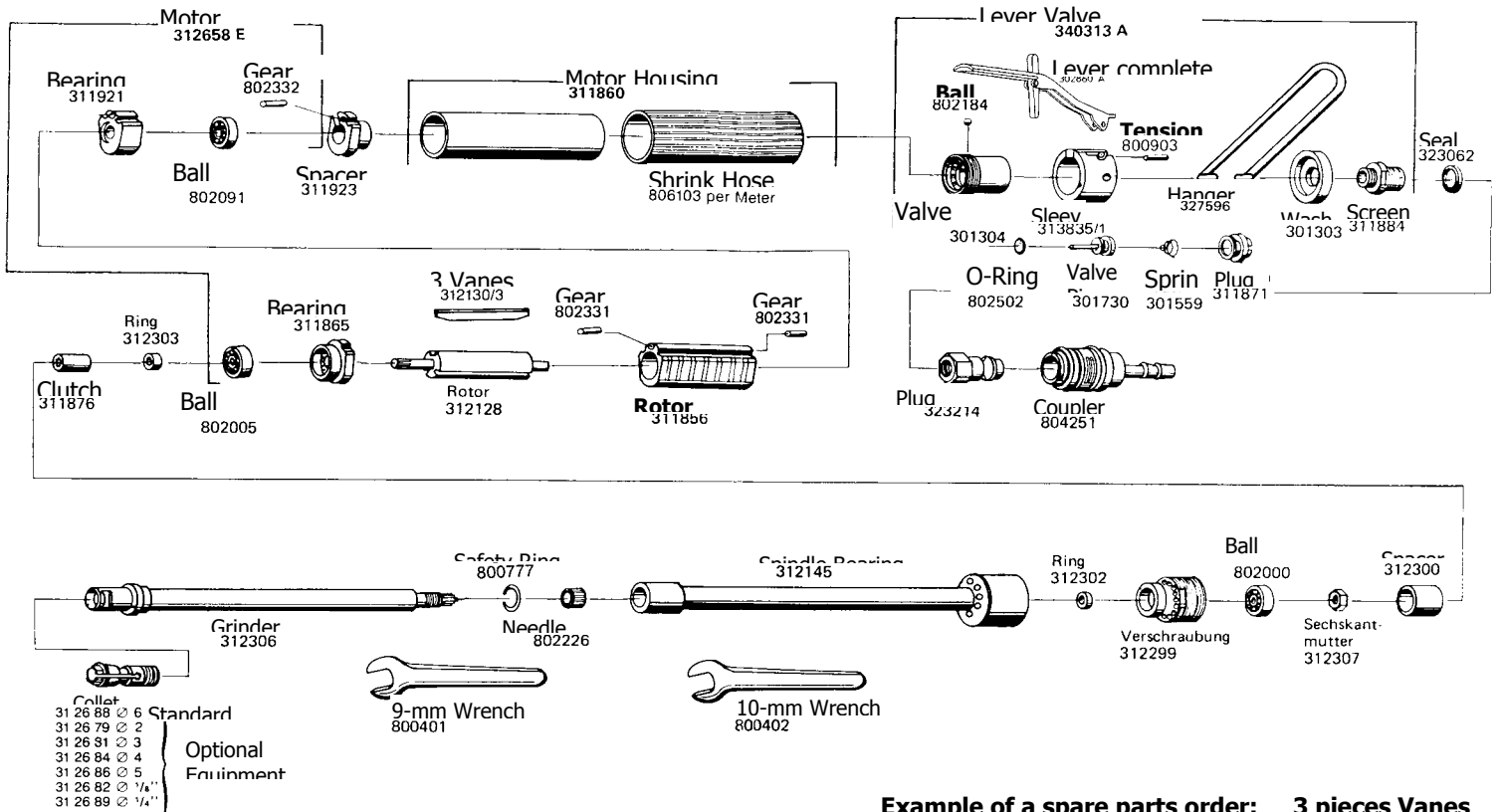
9. Delivery Capacity

Please check the delivery capacity in regards to its completeness.

QUANTITY	NAME	PART No.
1	Operating Instruction Booklet	010049 E
1	Grinder	312581 A
1	Wrench AF 9	800401
1	Wrench AF 10	800402

1.11. Spare Parts Drawing

10.



Example of a spare parts order: 3 pieces Vanes # 3121303

Other dimensions are available on special

Storage

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

11. Technical Data

Manufacturer DEPRAG SCHULZ GMBH u. CO.
Address Kurfürstenring 12 - 18 Postfach 1352
D-92224 Amberg D-92203 Amberg
Phone 09621/371-0
Fax 09621/371-120

Subsidiary DEPRAG INC.
Address 640 Hembry Street
Lewisville, TX 75057
Phone (800) 4 DEPRAG = (800) 433-7724
Fax (972) 221-8163

Technical Data:

TYPE:		20-042-1
Part No.		312581 A
Exhaust:		On spindle
Start Function:		Lever Valve
Max. Abrasive Ø	mm	(32m/s) ceramic (40m/s) epoxy resin 40
Speed (unloaded)	rpm	17,000
Air Consumption	m³/min	0.5
Power Output	KW	0.40
Machine Diameter	mm	38
Machine Length	mm	188
Weight	kg	0.9
Hose ID requirement	mm	6
Connection Thread		¼ male
Noise Level	dB(A)	82
Operating Pressure	bar	6.3
Vibration	m/s²	<2.5

12. Disposal

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



Recycle waste oil to avoid environmental damage!

13. Conformity Declaration

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

We,

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

hereby confirm, that the

Grinder

20-042-1

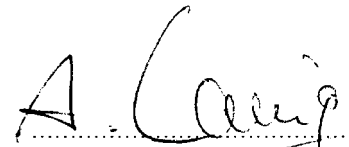
conform to the following, relevant regulation:

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

Applicable Standard:

- EN 292

Amberg,. 16.12. 2002


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

14. Service Locations and Authorized Partners

ARGENTINA**ERIN s.a.**

Av. Constituyentes 5751
RA-1431 Buenos Aires
Tel./Fax: +54 (0) 11 / 4573.1313

AUSTRALIA**De Rossi Industrial**

P.O. Box 187
168-170, Liverpool Road
Enfield – N.S.W. 2136
Tel.: +61 (0)2 / 9744.0733
Fax: +61 (0)2 / 9744.8259
Internet: <http://www.derossi.com.au>
e-mail: sales@derossi.com.au

BELGIUM**Aijkens en Zumpolle B.V.**

Postbus 2994
NL-5306 ZG
Brakel/The Netherlands
Tel.: +31 (0)4 18 / 67 18 16
Fax: +31 (0)4 18 / 67 32 17
Internet: <http://www.zumpolle.net>
e-mail: info@zumpolle.net

BRASIL**METALFEMA Ltda.**

Rua São Pedro, 786
São Leopoldo – RS –
BRAZIL
ZIP 93.010-260
Tel.: +55 (0) 51 / 592.4050
Fax: +55 (0) 51 / 590.1856
e-mail: mtfma@zaz.com.br

CHINA, SUZHOU**DEPRAG China**

Engineering & Services
No. 5, Xing Han St, Blk. A#06-16
Suzhou 215021, China
Tel.: +86 (0) 512 – 767 – 1108 - 800
Fax: +86 (0) 512 – 767 – 1109
e-mail: deprag@ruhlat.com.cn

CHINA, SHANGHAI**Testel Systems Pte Ltd****Shanghai Representative Office**

Room 1012
Tomson Commercial Building
710 Dong Fang Road
Shanghai 200122, China
Tel.: +86 (0) 21 – 5830-3077
Fax: +86 (0) 21 – 5830-3078
e-mail: testelsh@online.sh.cn

CHINA, SHENZHEN**Testel Systems Pte Ltd****Shenzhen High Teck**

Industrial Estate Nanshan
Shenzhen 518087, China
Tel.: +86 (0) 755-66-00143
e-mail: testelsh@online.sh.cn

DENMARK**DEPRAG Scandinavia AB**

Filial
Lindalsbakken 10
DK-9560 Hadsun
Tel.: +45 (0) 98572250
Fax: +45 (0) 98572253
Internet: <http://www.deprag.com>
e-mail: keld.branner@get2net.dk

GERMANY**Factory Amberg**

Kurfürstenring 12-18,
D-92224 Amberg
Postfach 1352,
D-92203 Amberg
Tel.: +49 (0) 9621 / 3 71-0
Fax: +49 (0) 9621 / 3 71-1 20
Internet: <http://www.deprag.com>
e-mail: info@deprag.de

FINLAND**Pneumacon OY**

Läkkisepäntie 4
FI-00620 Helsinki
Tel.: +358 (0) 9 / 7288.160
Fax: +358 (0) 9 / 7288.1610

FRANCE**DEPRAG France**

9, rue du Général Frère
F-67500 Haguenau
Tel.: +33 388 / 06.14.17
Fax: +33 388 / 93.01.08
e-mail: depragfrance@evc.net

GREECE**D. Panayotidis – J. Tsatsis S.A.**

6 Pireos Street – Moschaton-
Athens
Tel.: +30 (0) 1 / 4810.817-8-9
Fax: +30 (0) 1 / 482 96 73

GREAT BRITAIN**BALTEC (UK) LTD.**

Baltec House, 1 Danehill
Lower Earley
Reading RG6 4UT
Tel.: +44 (0) 1189 / 311 191
Fax: +44 (0) 1189 / 311 103

IRAN**NACCARSON AIR TOOLS Co., Ltd.**

Azadi Ave. No. 625
IR-Tehran 14 588
Tel.: +98 (0) 21 / 6006602 + 6015656
Fax: +98 (0) 21 / 6009451

IRELAND**Production Equipment Ltd.**

Riverside Commercial Estate
IRL-Galway
Tel.: +353 (0) 91 / 745 100
Fax: +353 (0) 91 / 751 299

ITALY**DREX PALLOTTI S.r.l**

Via A. Manzoni, 19
I-20090 Vimodrone/Mi
Tel.: +390 02 / 2740 0561 + 0569
Fax: +390 02 / 2740 0607

JAPAN**NIPPON GESCO Ltd.**

P.O. Box 255 Kyobashi Tokyo
Ginza Matsuyoshi Bldg.
17 – 8, 7-Chome, Ginza,
Chuo-Ku, Tokyo
Tel.: +81 (0) 3 / 3542.2400
Fax: +81 (0) 3 / 3542.2420

KOREA (South)**Hand Tools****DONG WON POWER-TECH.INC.**

108-10 Moonjung-Dong
Songpa-Ku
Seoul, Korea
Tel.: +82 (0) 2 / 409.1344
Fax: +82 (0) 2 / 409.1345

Automation**Fatec Co.Ltd.**

#903, SUNGLIM B/D 257
CHULSAN-DONG
KWANGMYUNG-CITY,
KYUNGGI-DO
Tel.: +82 (0) 2 / 688.2152
Fax: +82 (0) 2 / 688.2842

CROATIA**SM AUTOMATIKA D.O.O**

Trg i. Kukuljevica 6
HR-ZAGREB 10000
Tel./Fax: +385 (0) 1 / 389.6685

LITHUANIA**HIDROTEKA**

P.O. Box 572
LT-3028 KAUNAS
Tel.: +370 (0) 7 / 352195
Fax: +370 (0) 7 / 351952
e-mail: hidroteka@post.sonexco.com

LUXEMBOURG**Comptoir Technique et Industriel**

321, Route d'Arlon
L-8011 Strassen
Tel.: +352 / 31 31 40
Fax: +352 / 31 31 95

MALAYSIA**SEIMITSU Automation & Services Sdn.Bhd.**

14, Jalan Berlian 8,
Taman Yayasan Sungai Jarom,
42600 Jenjarom
Selangor Darul Ehsan
Tel.: +60 (0) 3 / 3191.7576 / 7577
Fax: +60 (0) 3 / 3191.7578

THE NETHERLANDS**Aijkens en Zumpolle B.V.**

Postbus 2994
NL-5306 ZG
Brakel/The Netherlands
Tel.: +31 (0) 4 18 / 67 18 16
Fax: +31 (0) 4 18 / 67 32 17
Internet: <http://www.zumpolle.net>
e-mail: info@zumpolle.net

NORWAY**TORP FASTENERS**

P.O. Box 2953 – Tøyen
N-0608 Oslo
Tel.: +47 (0) 2 / 2681.530
Fax: +47 (0) 2 / 2199.127

AUSTRIA**Amersin Olschinsky GmbH**

Carlberggasse 45
A-1230 Vienna
Tel.: +43 (0)1 / 8 69 87 66
Fax: +43 (0)1 / 8 65 16 97
Internet: <http://www.amersin.at>
e-mail: information@amersin.at

POLAND**TOOL-SERVICE**

Odolanska 50
PL-02-562 Warszawa
Tel./Fax: +48 (0) 22 / 845.4430

PORTUGAL**Anibal Pires Lda.**

A.P. 23
E.N. 1 – Mourisca do Vouga
P-3750 TROFA AGD
Tel.: +351 (0) 234 / 646.820
Fax: +351 (0) 234 / 646.815
Internet: <http://www.anibalpires.pt>
e-mail: anibalpires@mail.telepac.pt

SWEDEN**DEPRAG Scandinavia AB**

Gap Sundins Väg 3
S-633 46 Eskilstuna
Tel.: +46 (0) 16-12 61 10
Fax: +46 (0) 16-13 31 88
Internet: <http://www.deprag.se>
e-mail: info@deprag.se

SWITZERLAND**Limatec Automation AG**

Schlachthausstrasse 15
CH-2540 Grenchen
Tel.: +41 (0) 32 / 6542904
Fax: +41 (0) 32 / 6542901
Internet: <http://www.limatec.ch>
e-mail: office@limatec.ch

SINGAPORE**Testel Systems Pte Ltd**

1200 Depot Road # 04-07/09
Singapore 109675
Tel.: +65 / 271-3688
Fax: +65 / 271-8866
e-mail: testel@pacific.net.sg

SLOVANIA**MB-NAKLO D.O.O.**

Toma Zupana 16
SLO 4202 NAKLO
Tel.: +386 (0) 4 / 277 17 00
Fax: +386 (0) 4 / 277 17 17
e-mail: mb-naklo@siol.net

SPAIN**ALCOTAN SISTEMASS S.A.**

pº de la Direccion, nmro. 95,
local
E-28039 Madrid
Tel.: +349 (0) 1 / 311.17.84 + 311.18.01
Fax: +349 (0) 1 / 311.60.53

Barcelona office:

Passeig de la Mare de Déu del
Coll, 122-124
E-08023 Barcelona
Tel.: +349 (0) 3 / 2 19 77 43

TAIWAN**I HEN MACHINE Co.Ltd.**

6F-9, No. 12, Lane 609, Sec. 5
Chung-Hsin Road,
San-Chung City
241 Taipei Hsen
Tel.: +886 (0) 2 / 2999.6766
Fax: +886 (0) 2 / 2999.6236

CZECH REPUBLIC/SLOVAKIA**DEPRAG CZ a.s.**

ul. T.G. Masaryka 113
CZ -50781 Lázně Běláhrad
Tel.: +420 (0) 4 34 / 69 24 11
Fax: +420 (0) 4 34 / 69 25 12
Internet: <http://www.deprag.com>
e-mail: info@deprag.cz

TURKEY**YNA MAKINA ELEKTRONIK**

Tur. Ins. Ltd. Sti.
Hürriyet Cad. Ugurcan Is
Merkezi No. 20 Kat. 3
Daire: 12
TR-81410 Kartal-Istanbul
Tel.: +90 (0) 216 / 306.7510
Fax: +90 (0) 216 / 306.7512

HUNGARY**ADLER '91**

Export/Import Kereskedelmi
Tabaré u. 18/B
H-8800 Nagykanizsa
Tel./Fax: +36 (0) 93 / 314 633

Nóniusz**Tool Trading House Ltd.**

Köbányai út. 47/6
H-1101 Budapest
Tel.: +36 (0) 1 / 260 030 30
Fax: +36 (0) 1 / 260 060 83
Internet: <http://www.noniusz.hu>
e-mail: noniusz@noniusz.hu

USA, MEXICO, CANADA**DEPRAG INC.**

645 Hembry St. / P.O. Box 1554
Lewisville, TX 75057-4726
Phone: +1 / 972 / 221 – 8731
Fax: +1 / 972 / 221 – 8163
Toll Free: (800) 4 DEPRAG
Internet: <http://www.deprag.com>
e-mail: deprag@depragusa.com

VENEZUELA**Suministros Tecnicos SUMTEC C.A.**

Av. Francisco de Mirando, Centro Plaza
Torre C, Piso 16, Oficina C16 A-B
Urb. Los Palos Grandes
Caracas 1060
Tel.: +58 (0) 212 – 2856410
Fax.: +58 (0) 212 – 2851947

DEPRAG

DEPRAG SCHULZ GMBH u. CO.

PO Box 1352, D -92203 Amberg

Kurfürstenring 12-18, D-92224 Amberg

Phone (09621) 371 -0

Fax (09621) 371-120

Internet: <http://www.deprag.com>

e-mail: info@DEPRAG.de

DEPRAG Inc.

640 Hembry Street

Lewisville, TX 75057

(800) 433-7724 Toll Free

001-(800) 336-1756 Toll Free from Mexico

(972) 221-8163 Fax



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