

# DEPRAG

## Operating instructions

### Pneumatic screwdriver

345-3220-31  
345-0220-31

341190 A  
341190 E

# DEPRAG

## DEPRAG SCHULZ GMBH u. CO.

Postfach 1352, D-92203 Amberg  
Kurfürstenring 12-18, D-92224 Amberg  
Telefon (09621) 371-0  
Fax (09621) 371-120  
Internet: <http://www.deprag.com>  
e-mail: [info@deprag.de](mailto:info@deprag.de)

## DEPRAG INC.

P.O. Box 1554 • Lewisville, Texas 75067 – 1554  
645 Hembry Street • Lewisville, Texas 75057 – 4726  
Phone (972) 221 – 8731 • FAX (972) 221 – 8163  
TOLL FREE (800) 4 DEPRAG  
Internet: <http://www.deprag.com>  
e-mail: [deprag@depragusa.com](mailto:deprag@depragusa.com)



CERTIFIED AS PER DIN EN ISO 9001

Dec-03 Technical alterations reserved

# MINIMAT-ULTRA

Dear Customer:

Congratulations, you chose the enclosed tool from an extensive DEPRAG product line. This tool is the result of more than 60 years experience in the design and manufacturing of pneumatic tools for the industrial market. We offer a complete program of pneumatic tools, such as Drills, Tappers, Grinders, Screwdrivers, Impact Wrenches, Metal Working Tools and Hammers.

Please call us for all of your needs, from individual hand tools to the complete automated screwdriving cell. Our products offer solutions to any and all requirements, which are needed in the screwdriving sector.

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 or contact us direct at DEPRAG. We will be happy to answer any questions.

We hope you will be pleased with your new tool!

#### Table of Content

<b>Content:</b>	<b>Page:</b>
1. Operating Instruction	2
1.1 Safety Tips	2
1.2 Application	2
1.3 Range- and Exchange of Clutch Spring	3
1.4 Bit Change	4
1.5 Torque Adjustment	4
1.6 Connection, Installation and Operation	5
2. Parts Breakdown	9/10
3. Maintenance	8
3.1 General	8
3.2 Testing + Maintenance	11
3.3 Assembly + Dis-Assembly	11
3.4 Special Repair Tools	12
4. Trouble Shooting	13
5. EC-Declaration of Manufacturer	14
6. Technical Data/Specifications	15



Before starting operation of tool make sure to carefully read and follow operating instruction.

### **General Information**

All DEPRAG MINIMAT-ULTRA screwdrivers can be used with or without lubrication. (Please refer to 3.2 Testing and Maintenance) Oilfree operation could result in a loss of performance of up to 20 %. To avoid dry running we recommend, especially with a high cycle time, our injection oilers, part no. 37 80 77 A-F (1-6fold). With this oiler you will achieve an optimum lifespan combined with minimum oil consumption.

### **1. Operating Instruction**

#### **1.1 Safety Tips**

- The tool is not insulated to protect an electrical power surge.
- It is not recommended to use this tool in explosive hazardous environments.
- The driver is activated immediately when air is connected, this may possibly cause an injury. (provide valve)
- Injury is possible, if the driver reacts with an unexpected motion or is damaged.
- During any maintenance or repair work, or when changing bits, the tool must be disconnected from the air supply.
- During any maintenance or repair work, a clean working surface is recommended. Also, it is not recommended to either eat or smoke during repair or maintenance.
- Unless otherwise requested the driver is preset to max. torque with the strongest clutch spring

#### **1.2 Application**

Screwdriver Spindles are constructed for the stationary use in:

- Lever Operated Single Spindle Screwdriving Stations
- Construction Units
- Multi-Spindle Screwdriving Stations
- Robot End-Of-Arm Tooling
- X-Y-Z Screw-Assembly Stations

These Spindles assemble screws to torque and measure that torque more accurately than any subsequent testing method. They tighten and test the assembly in one operation.

### 1.3 Range- and Exchange of Clutch Spring

The torque range of the DEPRAG MINIMAT-ULTRA Screwdriver is adjustable. Please see a listing for the ranges of the color coded springs below.

#### Torque range of individual Screwdriver Spindle:

Model	345-3220-31	345-0220-31
Torque Capacity: min.:	20,0 Nm	15,0 Nm
max. soft pull-up:	80,0 Nm	35,0 Nm
max. hard pull-up:	80,0 Nm	35,0 Nm

#### Torque Range of individual clutch springs:

Part	WireÆ	Color	Torque minimum	Torque maximum
337322	4,0 mm	violett	45,0 Nm	80,0 Nm
328025	3,5 mm	blau	25,0 Nm	60,0 Nm
328026	2,5 mm	grün	15,0 Nm	28,0 Nm

All torque values are based on 90 PSI (6,3 bar) air pressure.

#### Attention:

Operate clutch only in specified range with correct clutch spring mounted!

#### Change of Clutch Spring ( see Picture 1)

1. Disconnect driver from air supply.
2. Clamp driver into a vice, utilizing flange 339147 only! Remove cylinder screw 340781. Carefully pull-off the toothring 339012 from the clutch bearing 339011.
3. Take-out clutch 374157 A.
4. Slide 11mm wrench over the hex of the clutch shaft 331562 and use a 19mm wrench to unscrew the adjusting nut 337674.
5. Pull off lock ring 337673
6. Remove clutch spring, replace with new clutch spring and re-assemble clutch in reverse order.
7. Reinsert clutch 374157 A into clutch bearing 339011.

#### Attention:

The claw of the clutch must engage in the claw of the pinion 339144/spindle 391434 . The hex AF 11 of the clutch shaft 331562 must engage in the hex of the gear support 339420/346511.

8. Carefully slide tooth ring 339012 onto clutch bearing. Thereafter, secure the toothring with cylinder screw 340781.

## 6. Technical Data/Specifications

### Technical Data:

Manufacturer: DEPRAG-SCHULZ GMBH & CO.  
 Address: Kurfürstenring 12 - 18 PO Box 1352  
 D-92224 Amberg D-92203 Amberg  
 Phone: 09621/371-0  
 Fax: 09621/371-120

Subsidiary: DEPRAG INC.  
 Address: 645 Hembry Street  
 Lewisville, TX 75057  
 Phone: (800) 4 DEPRAG = (800) 433-7724  
 Fax: (214) 221-8163

<b>Model:</b>	<b>345-3220-31</b>	<b>345-0220-31</b>
<b>Order no.</b>	<b>341190 A</b>	<b>341190 E</b>
<b>Length:</b>	338,5	
<b>Diameter:</b>	65	
<b>Drive:</b>	1/2"	
<b>Weight:</b>	4,3	
<b>Air Pressure Requirement:</b>	6,3	
<b>Hose I.D. Requirement:</b>	min. LW 10 3/8"	
<b>Torque Capacity min.: (Nm) (in.lbs)</b>	20	15
<b>soft pull-up max.: (Nm) (in.lbs)</b>	80	35
<b>hard pull-up max.: (Nm) (in.lbs)</b>	80	35
<b>Speed: (rpm)</b>	90/500	200/1400
<b>Noise Level:</b>	70	
<b>Air Consumption:</b>	0,6	

## 1.4 Change of Bits

### Attention:

Before exchange of bits driver needs to be disconnected from air supply

Bit or Socket needs to be installed to the male square drive (1/2") of the gear supports 339014.

## 1.5 Torque Adjustment (s. also Picture 1)

Use the following sequence to adjust the torque:

1. Disconnect screwdriver from air supply.
2. Clamp driver into a vice, utilizing flange 339147 only! Remove cylinder screw 340781. Carefully pull-off the toothring 339012 from the clutch bearing 339011.
3. Take-out clutch 374157 A.
4. Turn adjustment nut 327091 with the supplied wrench AF 11 and AF 22. Right-hand rotation increases the torque. Left-hand rotation decreases the torque.
5. Reinsert clutch 374157 A into clutch bearing 339011.

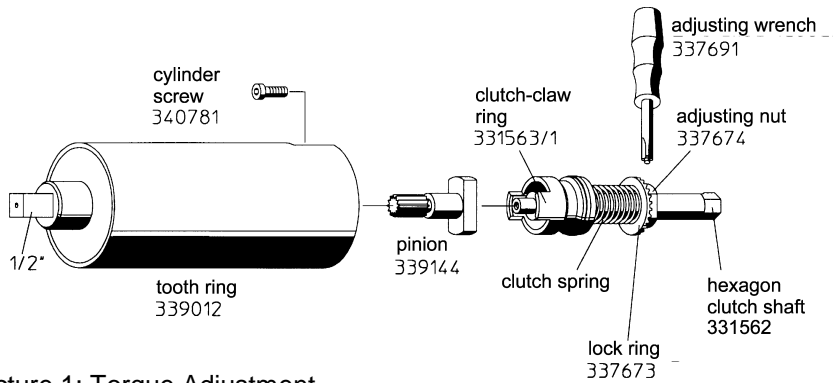
### Attention:

The hex of the clutch shaft 331562 (AF 11) must engage in the hex of the spindle 339420.

6. Carefully slide tooth ring 339012 onto clutch bearing. Thereafter, secure the toothring with cylinder screw 340781.

### Attention:

The hex of the clutch-claw rings 331563/1 must engage in the hex of the pinion 339144.



Picture 1: Torque Adjustment

### 1.6 Connection, Installation and Operation

**Attention:**

The driver starts by remove-valve. The flow-pressure cannot drop below 5 bar.

Blow out air hose before connecting it to the tool.

Connect the MINIMAT-ULTRA Screwdriver Spindle as follows:

- a) If used with lubrication, connect driver to Maintenance Unit, consisting of Filter, Regulator and Lubricator.
- b) If used without lubrication, connect driver to Maintenance Unit, consisting of Filter and Regulator.

The required I.D. of pressure hose is 10 mm. Please make sure, that the pressure hose length does not exceed 2 meters (6,6 ft.). The air pressure should be 90 PSI (6,3 bar). A pressure below 90 PSI reduces tool performance; a pressure above 90 PSI increases wear and tear on the tool.

In regards to air-quality according to ISO 8573-1, we recommend:

	Class	Residue of Oil Content mg/m <sup>3</sup>	Residue of Dust		Residue of Water	
			particle size μm	max. concentration mg/m <sup>3</sup>	pressure dewpoint °C	max. concentration g/m <sup>3</sup>
Lubricated Air	4	5	15	8	+3	6
Dry Air	3	1	5	5	-20	0,88

**Attention:**

Make sure the hoses allow unrestricted air flow. avoid bends, nicks, etc.

### 5. EC-Declaration of Manufacturer

**EC-Declaration of Manufacturer**  
in accordance with the CE-Machine-Guideline 98/37/EG, appendix II B

DEPRAG SCHULZ GMBH u. CO.  
P.O. Box 1352

92203 Amberg, Germany

declares, that the construction of

DEPRAG MINIMAT-ULTRA

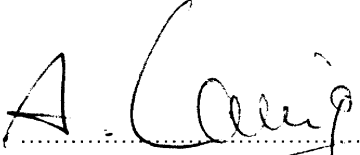
345-3220-31

345-0220-31

is appointed to the assembly with another machine and the start of operation of this other machine is prohibited until it is pored that it is in accordance with the CE-Machine-Guideline i.d. F.98/37/EG.

used standards  
- EN 292

Amberg, 22.12. 2003

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

#### 4. Trouble Shooting

Error	Reason	Solution
Screwdriver does not start	No air, Shut-Off valve is closed	Open Shut-Off valve
	Clutch is not engaged	Mount clutch correctly Refer to: Range- and exchange of clutch spring
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
	Silencer clogged	Clean silencer or exchange with new one
	Valve Pin too short	Check required length of valve pin according to picture 6. If needed, exchange valve pin.
	Hose I.D. is too small	Use required hose I.D.
	Silencer clogged	Clean Silencer or exchange with new one
Driver does not shut-off or ratchets	Vanes are worn	Exchange vanes
	Air pressure is too low for required torque value	Maintain air pressure of 90 PSI
	Valve Pin is too long	Check length of valve pin, either shorten or replace valve pin (picture 6)

The installation and connection of the Spindle requires the following steps:

1. Adjust clutch to required torque setting (see 1.3/1.5)
2. Install spindle according to picture 3. If several Spindles are being installed, refer to the screwdriver arrangement on construction sheet 342289E (if you do not have this construction sheet, please call us)
3. Make sure valve is attached to air supply, in closed position. Then connect main air hose (3/8" I.D. Hose part 806096 - specify length).
4. Connect pneumatic function control hose (3 mm I.D. Hose part 806107 specify length). This function control is under pressure of 2,5 bar during actual screw-driving. **If the function control is not needed, the port has to be closed, otherwise there is a loss of power of about 15 %.**

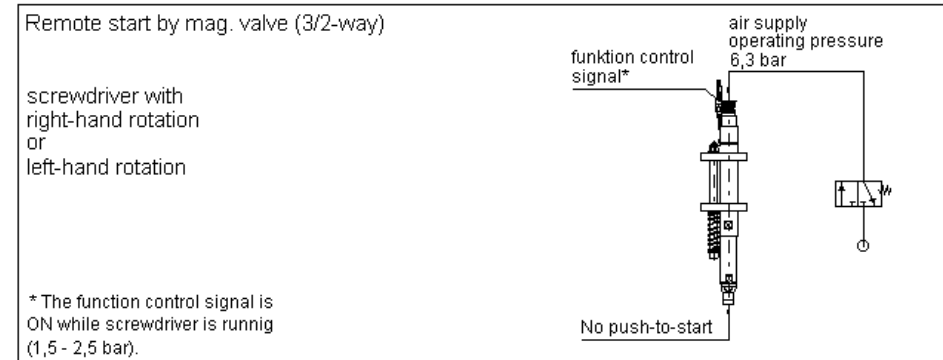
Please make sure not to exceed the driver stroke of 20 mm during screwdriving. The noise level of 71 dB(A) can be further reduced, when an exhaust connection with connected Filter/Silencer is used.

#### Connection-Possibilities of the Function Control

Use as air pressure outlet during screw-assembly:

- to control driver start and stop, as well shut-off control of clutch;
- as cycle counter of the complete process; each in connection with a PE-Switch or similar.

#### Function Description/Driver Start



Picture 2: Installation of Air Valve

The driver will start, as soon as air supply is connected. Please make sure that the air flow of the air valve is minimum 0,6 m<sup>3</sup>/min.



### 3.3 Assembly and Dis-Assembly

The Dis-Assembly of the screwdriver Spindle should be made in the following sequence:

1. Disconnect screwdriver from air supply.
2. Clamp driver into a vice, utilizing flange 339147 only! Remove cylinder screw 340781. Carefully pull-off the toothring 339012 from the clutch bearing 339011.
3. Take-out clutch 374157 A.
4. Clamp tool into a vice, using the flats of the motor housing 339010 and unscrew clutch bearing 339011.
5. Unscrew connector nipple 335383 together with connector plug 804289 using 19mm wrench and remove silencers 313209 and 301317.
6. Using a suitable arbor, carefully push motor and gearing parts out of the motor housing 339010 in direction of the clutch.

#### **Attention:**

Motor- and gearing parts may get damaged if dropped.

Assembly has to be done in reverse order.

#### **Attention:**

Never clamp driver into a vice other than using the provided flats of the motor housing. This will cause damage to the motor housing and the internal parts.

**DEPRAG is not liable for such damages and warranty will be voided!**

## 2. Spare Parts Listing

Refer to Picture 4 Page 9/10

## 3. Maintenance

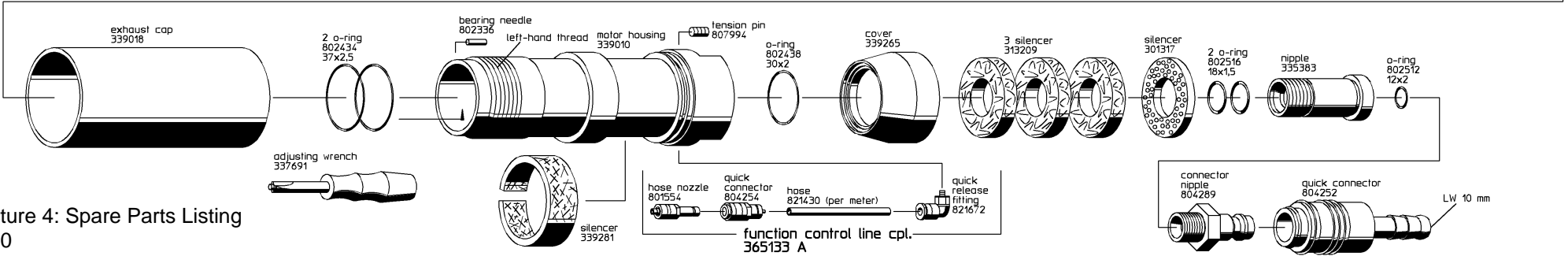
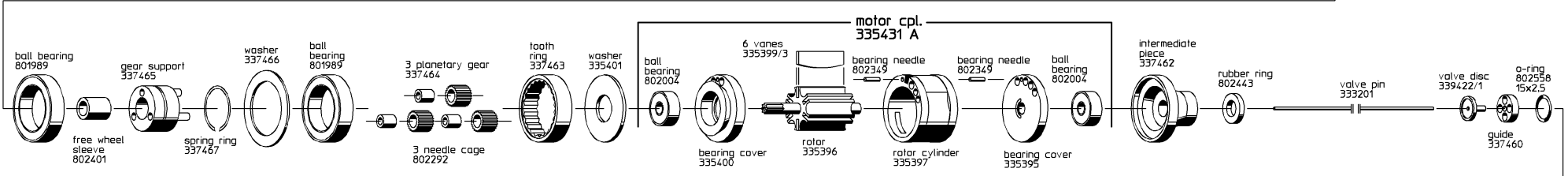
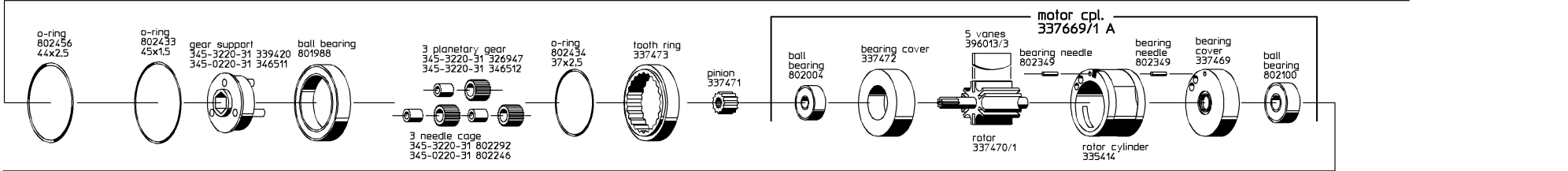
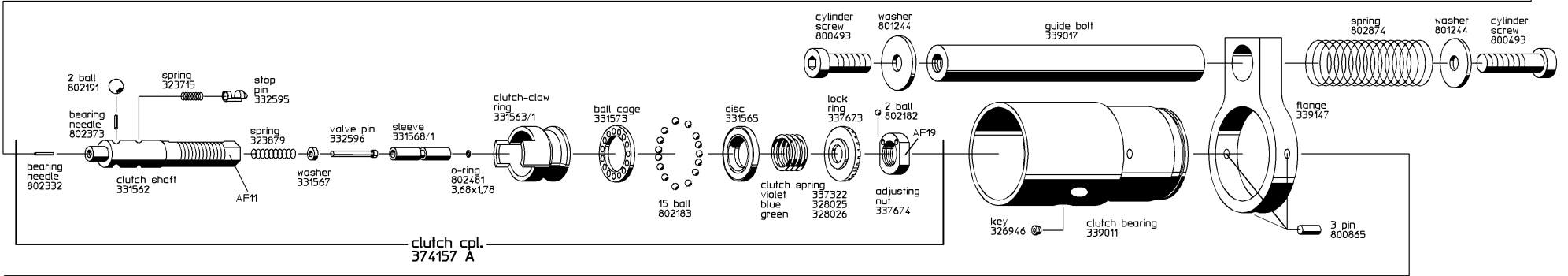
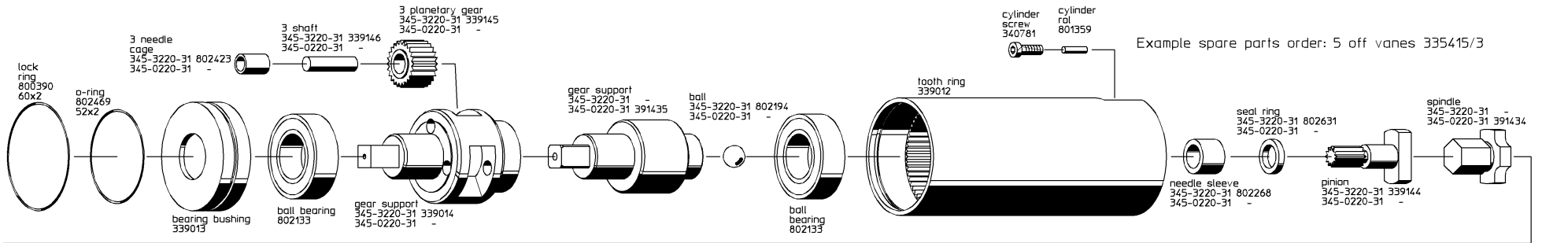
### 3.1 General

Inspection and maintenance can be done by Operator, disassembly and re-assembly of the DEPRAG MINIMAT-ULTRA Screwdriver Spindle should be done by experienced maintenance personnel. Incorrect assembly or disassembly can lead to injury of an operator and damage of the tool.

### 3.2 Testing + Maintenance

The tool requires little maintenance. If the following service rules are observed, the tool will have a long life expectancy and will remain in a safe condition.

- Check tool on a regular basis for external damage.
- Check your maintenance until on a regular basis, make sure that sufficient oil is in the lubricator (if lubrication is used) and that the adjustment is correct. We recommend for your lubricator DEPRAGOL, part 790081 E. Oiling: approx. 1 - 2 drops per 1 m<sup>3</sup> air consumption.
- If tool are being used with lubrication, we recommend to have tools tested and cleaned every 12 months (single shift).
- If tools are being used without lubrication, we recommend to have tools tested and cleaned every 6 months (single shift).
- After cleaning, the gearing parts have to be greased prior to re-assembly, preferably with Grease, part 807293.
- After assembly fill 2 – 3 drops of DEPRAGOL into the air inlet nipple.
- Exchange broken or worn bits and parts immediately, for they can cause injury to the Operator.



Picture 4: Spare Parts Listing 9/10