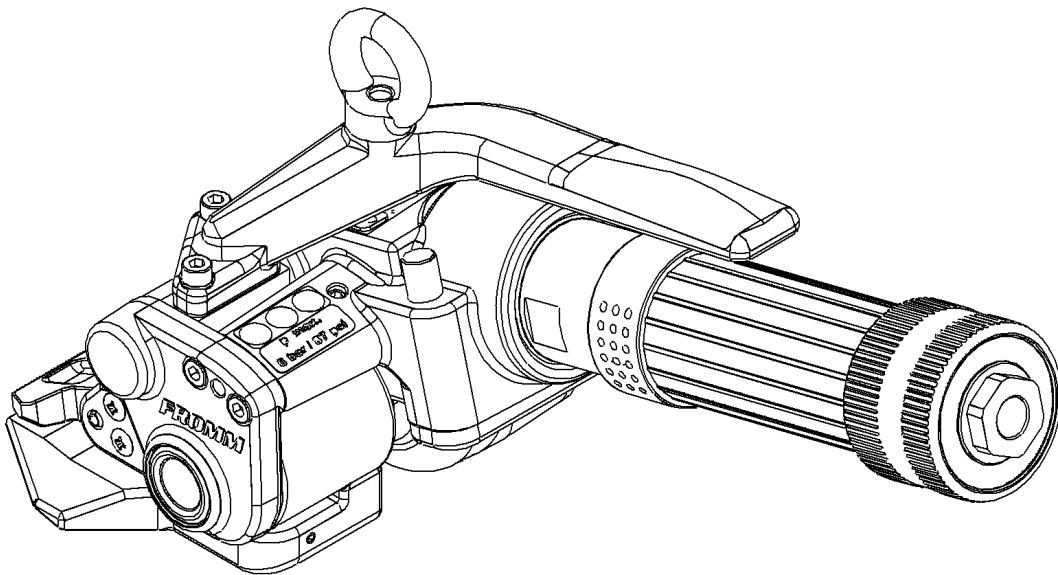


# FROMM

OPERATION MANUAL / SPARE PARTS LIST

## PNEUMATIC TENSIONER MODEL A452.0001

13.4210.01



### CE Declaration of conformity

We declare that the machine A452  
is in conformity with the following standard or  
standardised documents:  
98/37/EEC

FROMM Holding AG  
Hinterbergstrasse 26  
CH - 6330 Cham  
27.03 2001

A stylized signature of R. Fromm, consisting of a series of loops and a long horizontal stroke.

R.Fromm  
Director



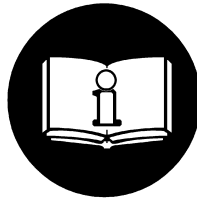
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## 1 SAFETY INSTRUCTIONS

Read these instructions carefully. Failure to follow these instructions can result in severe personal injury.



### Eye injury hazard

Failure to wear safety glasses with side shields can result in severe eye injury or blindness. Always wear safety glasses with side shields which conform to ANSI Standard Z87.1.



### Operation

Tool must not be used by persons not properly trained in their use. Before tensioning strap, read and understand the tool operating instructions. Failure to follow the operating instructions or improper load positioning could result in strap breakage.

Become familiar with your tool and keep fingers away from areas that can pinch or cut.

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**Joints**

You are fully responsible to review the joints made by your tool. Become familiar with the seal control and seal adjustment described in this operation manual. Misformed joints may not secure the load and could cause serious injury. Never handle or ship any load with improperly formed joints.

**Dispensing strap**

Only dispense strap from a dispenser specifically designed for strap.  
Tuck strap end back into dispenser when not in use.

**Protective gloves**

When handling strap, always wear protective gloves.

**Strap warnings**

Never use strap as a means of pulling or lifting loads. Failure to follow these warnings can result in severe personal injury.

**Strap breakage hazard**

Improper operation of the tool, excessive tensioning, using strap not recommended for this tool or sharp corners on the load can result in a sudden loss of strap tension or in strap breakage during tensioning, which could result in the following:

- A sudden loss of balance causing you to fall.
- Both tool and strap flying violently towards your face.

Note as follows:

- If the load corners are sharp, use edge protectors.
- Place the strap correctly around a properly positioned load.
- Positioning yourself in-line with the strap, during tensioning and sealing, can result in severe personal injury from flying strap or tool. When tensioning or sealing, position yourself to one side of the strap and keep all bystanders away.
- Use the correct strap quality, strap width, strap gauge and strap tensile strength recommended in this manual for your tool. Using strap not recommended for this tool can result in strap breakage during tensioning.

**Cutting tensioned strap**

When cutting strapping, use the proper strapping cutter and keep other personnel and yourself at a safe distance from the strap. Always stand to side of the strap, away from the direction the loosened strap end will fly. Use only cutters designed for strap and never hammers, pliers, hacksaws, axes, etc.

**Fall hazard**

Keep your working area tidy. Untidiness of your working area may cause a risk of injury. Maintaining improper footing and/or balance when operating the tool can cause you to fall. Before tensioning and especially in elevated areas, always establish good balance. Both feet should be securely placed on a flat, solid surface, especially when working in elevated areas. Do not use the tool when you are in an awkward position. Pay attention to the rules and regulations for preventions of accident which are valid for the work place.

**Tool hazards**

A well maintained tool is a safe tool!

Check tool regularly for broken or worn parts. Do not operate a tool with broken or worn parts.  
Never modify any tool. Modification can result in severe bodily injury.

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## 2 WARRANTY CONDITIONS AND LIABILITY

FROMM Holding AG warrants all its strapping tools and machine heads during a period of 90 days from the date of sale. The warranty includes all deficiencies clearly resulting from poor manufacturing or faulty materials. Damage claims as a result of production shutdowns and claims for damage to persons and to property resulting from warranty deficiencies cannot be asserted by the customer.

The warranty excludes:

- wearing parts
- deficiencies resulting from improper installing, incorrect handling and maintaining the tool
- deficiencies resulting from using the tool without or with defective security- and safety devices
- disregard of directions in the operation manual
- arbitrary modifications of the tool
- deficient control of wearing parts
- deficient repair works of the tool
- Use of consumable products not recommended by FROMM Holding AG

We reserve the right to modify the product at any time in order to improve its quality.

## 3 APPROPRIATE USE

The tool model A452 has been designed to strap packages with steel strapping exclusively.

The warranty / liability excludes:

- non appropriate use of the tool,
- disregard of directions in the operation manual,
- disregard of control- and maintenance instructions.

## 4 TECHNICAL DATA

**Item-No.:** 13.4210

### Dimensions

	<b>Tool:</b>	<b>Package:</b>
Length:	329 mm / 13"	460 mm / 18"
Width:	135 mm / 5.3"	272 mm / 10.7"
Height:	158 mm / 6.2"	180 mm / 7"
Weight:	4.35 kg / 9.6 lbs	1.1 kg / 2.4 lbs

### Performance

Max. strap tension:	8.5 KN / 1900 lbs at 6 bar / 87 psi
Tensioning speed:	150 mm/s / 5.9 inch/s

### Compressed air

Max. air pressure:	6.0 bar / 87 psi
Joining thread:	G 1/4 or G 3/8" (inside)
Min. inside diam. of air-tube:	8mm / 5/16"
Air consumption:	14.5 NI/sec. / 0.51cu. ft./sec.

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## Steel strap

Width:	19 - 32 mm / 3/4 - 1 1/4"
Thickness:	0.63 - 1.27 mm / .025 - .05"
Tensioning strength:	600 - 1100 N/mm <sup>2</sup> / 87 000 - 160 000 psi
Finish:	Waxed, smooth edges

## Sound information

The A-weighted equivalent continuous sound level at the work place of the machine operator is typical 81 dB (A).

This value was determined according to DIN 45 635 T3 (11.85).

## Vibration information

The weighted effective value of the acceleration typically amounts to less than 2,5m/s<sup>2</sup>.

This value was determined according to DIN EN 28 662 T1 (01.93).

## 5 INSTALLATION

### Compressed air connection

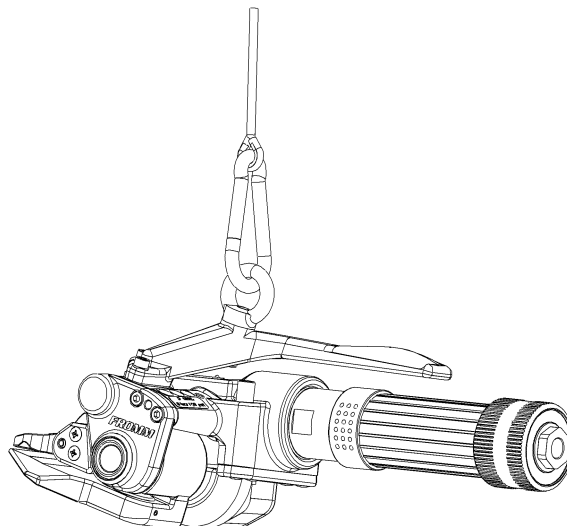
The compressed air is to be connected to the tool preferably by a quick disconnecter.

It is very important to clean the compressed air with an air unit consisting of a separator for water and dirt, a pressure regulator with a manometer and a lubricator.

The maximum length of the air tube between air unit and tool has to be 5m/15 ft.

### Suspension of tool

The tool can be suspended at the ring nut N1.5924.

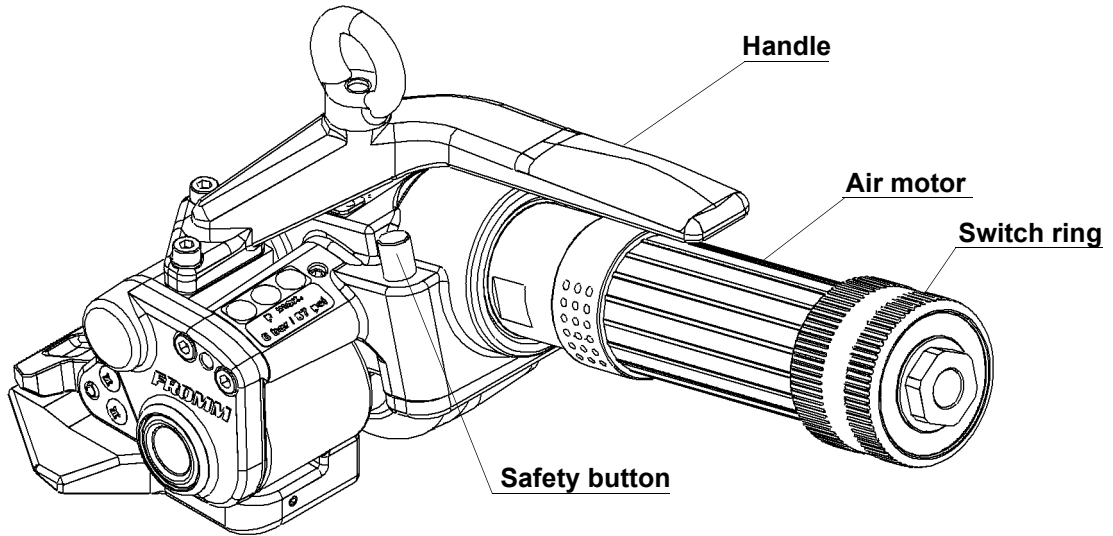


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## 6 OPERATING CONTROLS



## 7 OPERATION



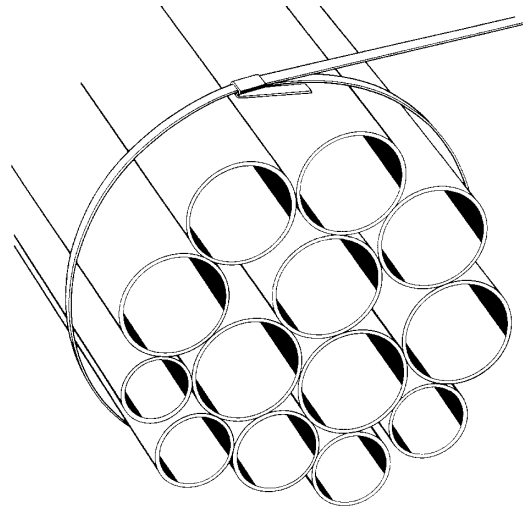
When handling strap, always wear protective gloves and safety glasses with side shields which conform to ANSI Standard Z87.1.



### Feeding the strap

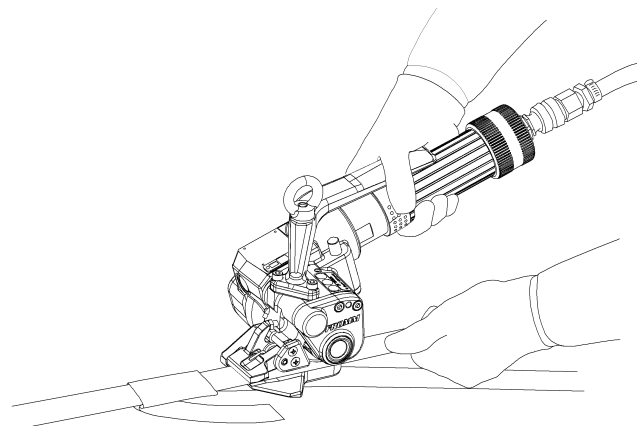
Feed the strap through the seal around the package to be strapped;  
 Push the strap through the seal again;  
 Bend it;  
 Pretension the loose strap loop manually.

**The bent strap end has to be adjacent to the object to be strapped!**



### Introducing the tool

Lift the air motor against the handle;  
 Introduce the tool from right to left and from rear to front;  
 Lower the air motor on the strap.



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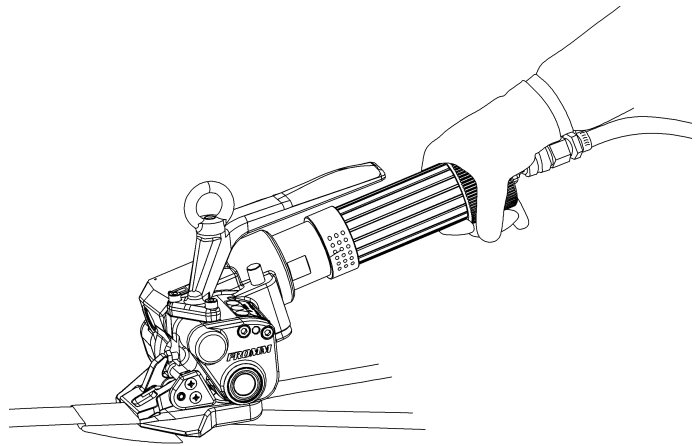
## Tensioning the strap

Turn the switch ring counter clockwise.

Tensioning is completed when the air motor stalls.  
The tension force can be adjusted by the  
connected air pressure.

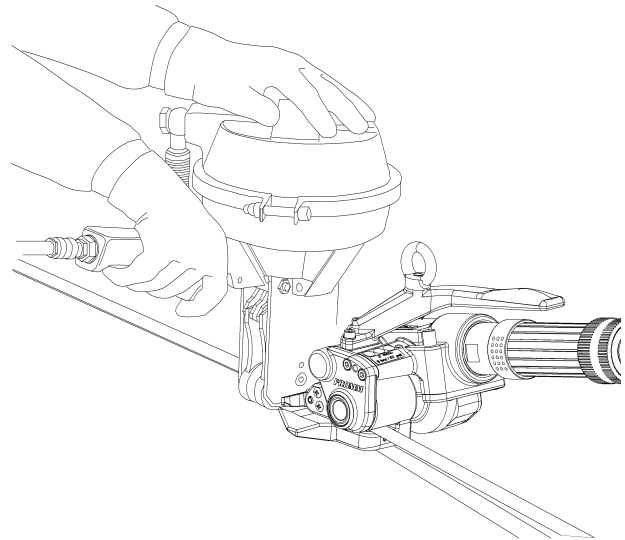
### Important! Never exceed 87 psi / 6,0 bar!

Releasing of the switch ring interrupts the  
tensioning process.  
The reached tension remains.  
The unsealed strap can be released by pressing  
the safety button.



## Sealing the strap

Seal the tensioned strap loop with a suitable sealer  
(e.g. Fromm Model A461).

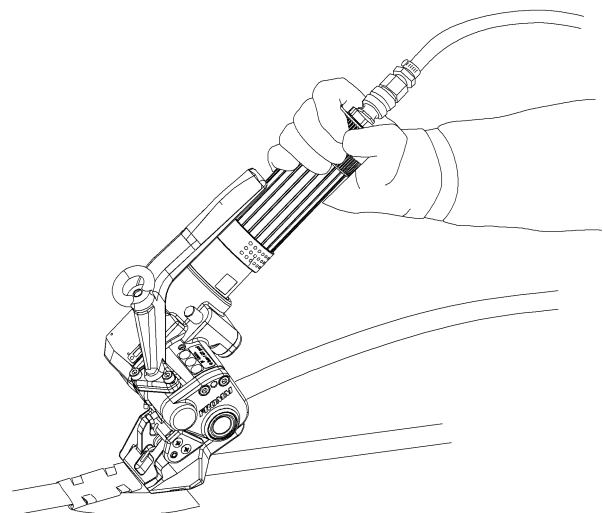


## Cutting the strap

Swing the tensioner a maximum of 90° forward  
and backward.

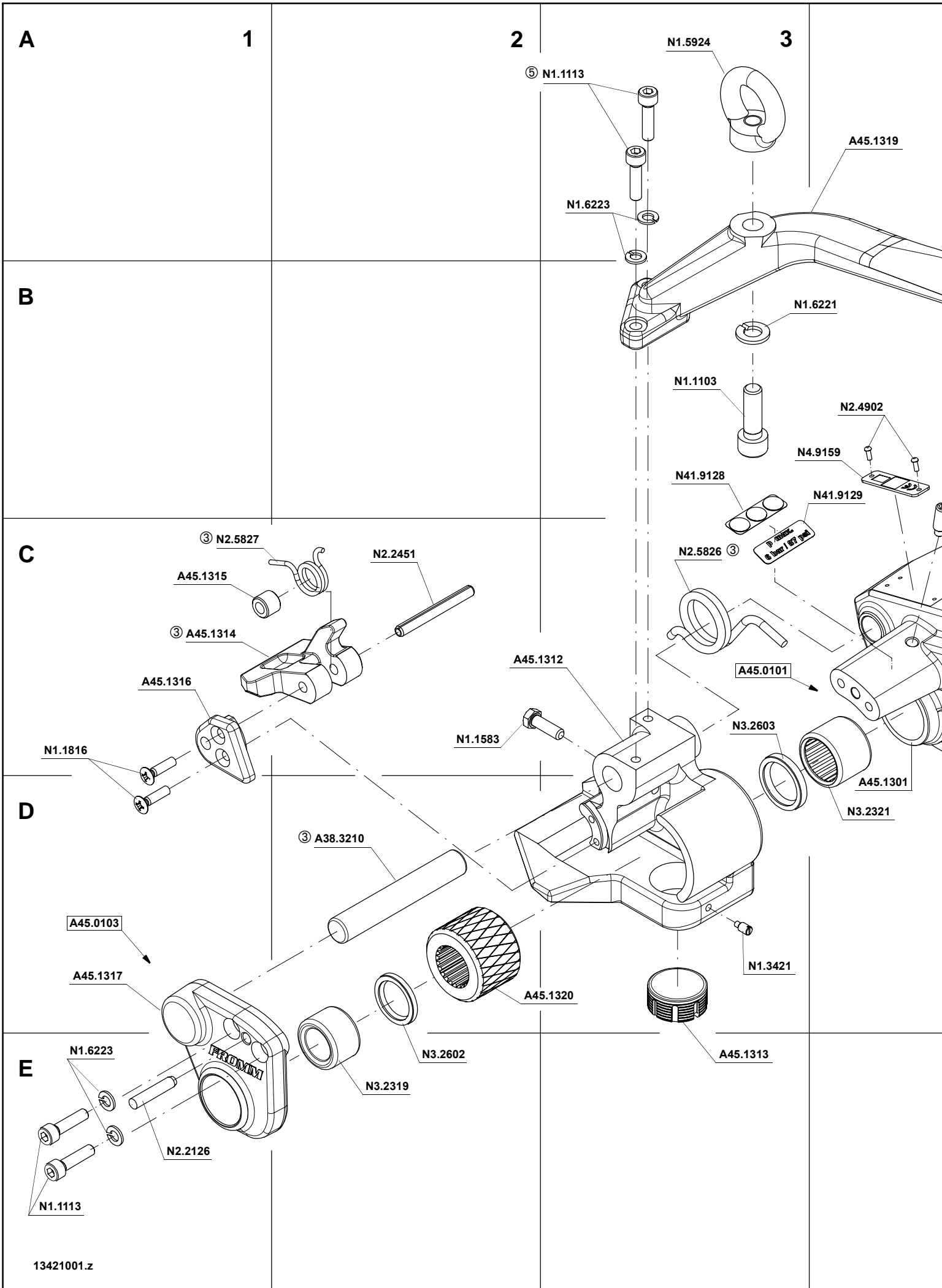
If necessary repeat the swing.

Lift the air motor,  
remove the strap from the tool.

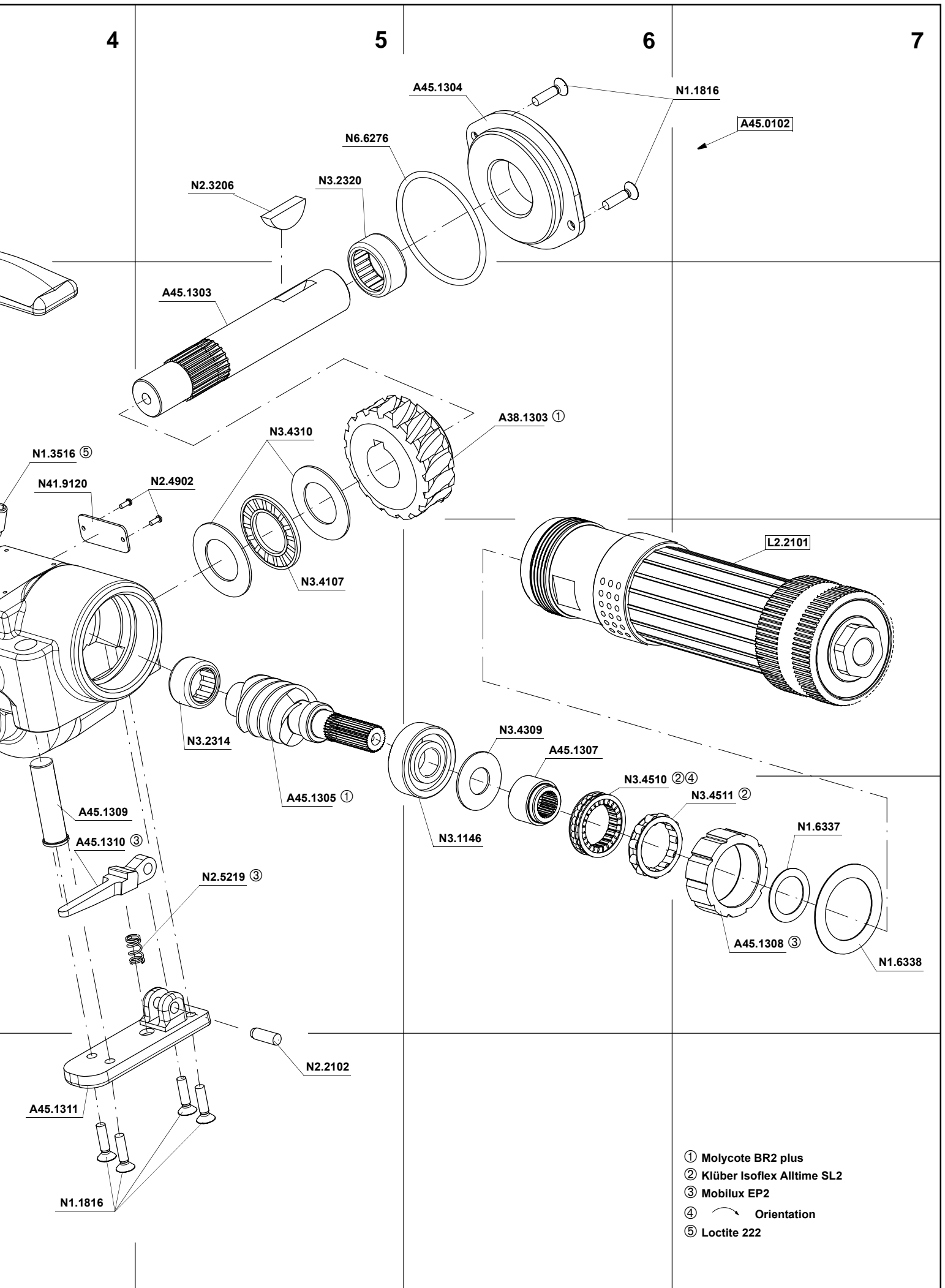


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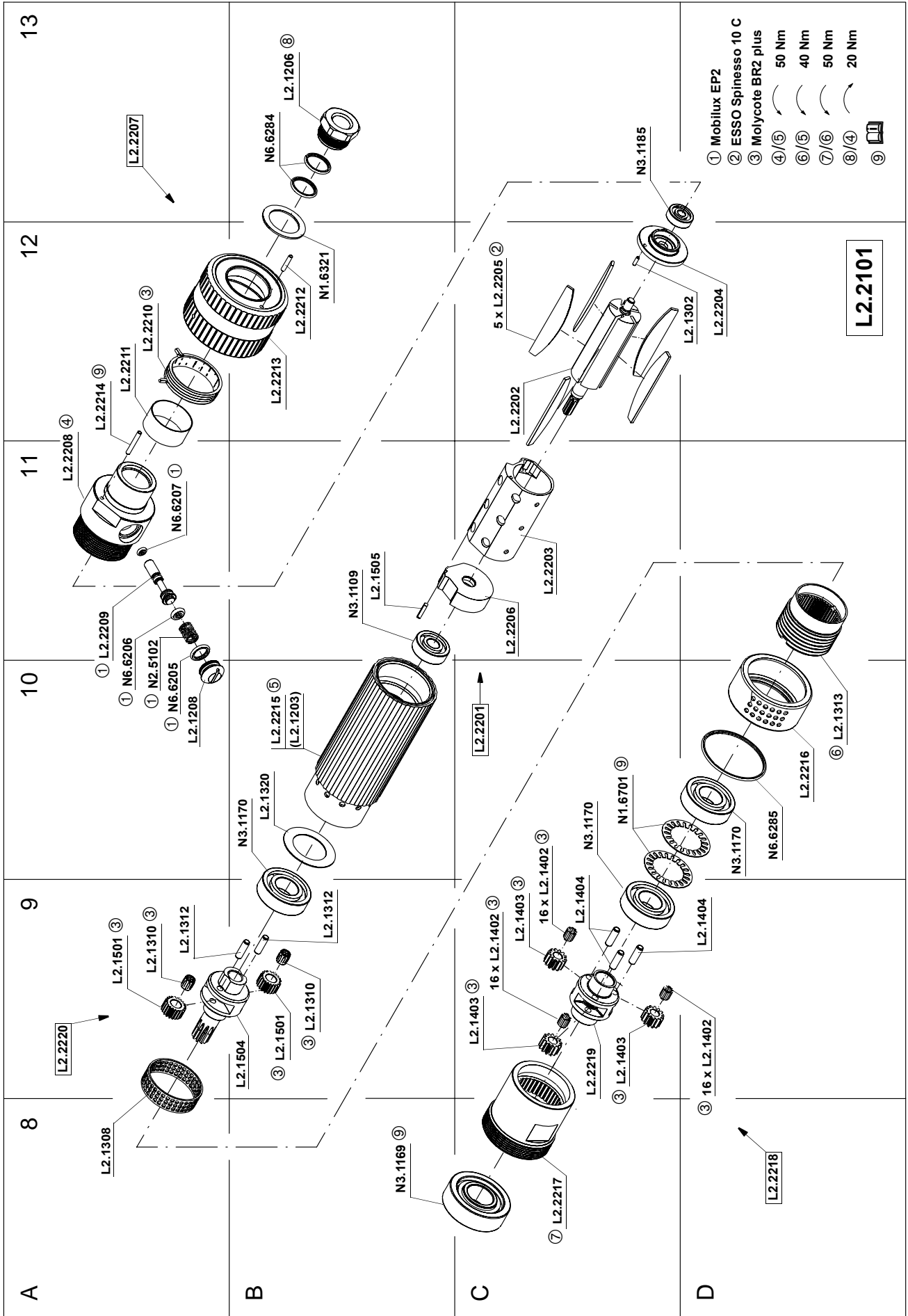
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- ① Molycote BR2 plus
- ② Klüber Isoflex Alltime SL2
- ③ Mobilux EP2
- ④ Orientation
- ⑤ Loctite 222



## 8 SPARE PARTS LIST 13.4210.01

13.4210.01	A452/19-32/0.63-1.27/8.5		A452.0001.01		20.04.00	
Item-No.		in group	Pcs.	Description	Dimension	Field
A38.1303	*		1	WORM WHEEL		B6
A38.3210			1	PIVOT PIN		D2
[A45.0101]			1	GEAR BODY		C3
[A45.0102]			1	END COVER		A7
[A45.0103]			1	END COVER		D1
[A45.1301]		A45.0101	1	GEAR BODY		D4
A45.1303			1	TENSION SHAFT		B5
A45.1304		A45.0102	1	END COVER		A6
A45.1305			1	WORM		D5
A45.1307			1	DRIVER		C6
A45.1308			1	RATCHET		D7
A45.1309			1	BUTTON		D4
A45.1310			1	PAWL		D4
A45.1311			1	COVER		E4
A45.1312	*		1	TENSIONING BODY		C2
A45.1313	*		1	SLIDE PLATE		E3
A45.1314	*		1	PAWL		C1
A45.1315			1	DOWEL		C1
A45.1316			1	COVER		C1
[A45.1317]		A45.0103	1	END COVER		D1
A45.1319			1	HANDLE		A4
A45.1320	*		1	TENSIONING WHEEL		D3
L2.1203		L2.2215	1	PLASTIC JACKET		B10
L2.1206		L2.2207	1	ADAPTOR		B13
L2.1208		L2.2207	1	SEALING SCREW		A10
L2.1302		L2.2201	1	PARALLEL PIN		D12
L2.1308		L2.2101	1	SILENCER		A8
L2.1310		L2.2220	2	NEEDLE CAGE		A9+
L2.1312		L2.2220	2	SHAFT		A9+
L2.1313		L2.2101	1	BEARING RING		D10
L2.1320		L2.2101	1	WASHER		B10
L2.1402		L2.2218	48	BEARING NEEDLE		C9+
L2.1403		L2.2218	3	GEAR WHEEL		C9
L2.1404		L2.2218	3	SHAFT		C9+
L2.1501		L2.2220	2	GEAR WHEEL		A9+
L2.1504		L2.2220	1	PLANET SHAFT		B9
L2.1505		L2.2201	1	KEY		B11
[L2.2101]			1	AIR MOTOR		C7+
[L2.2201]		L2.2101	1	MOTOR CELL		C10
L2.2202		L2.2201	1	ROTOR		C12
L2.2203		L2.2201	1	CYLINDER		C11
L2.2204		L2.2201	1	END PLATE		D12
L2.2205	*	L2.2201	5	VANE		C12
L2.2206		L2.2201	1	END PLATE		C11
[L2.2207]		L2.2101	1	VALVE HEAD		A13
L2.2208		L2.2207	1	VALVE BODY		A11
L2.2209		L2.2207	1	VALVE PISTON		A11
L2.2210		L2.2207	1	TORSION SPRING		A12
L2.2211		L2.2207	1	DOWEL		A12
L2.2212		L2.2207	1	PARALLEL PIN	2.5 X 12	B12
L2.2213		L2.2207	1	SWITCH RING		B12
L2.2214		L2.2207	1	BEARING NEEDLE	2.5 X 17.8	A12

[ ] = Group

\* = Wearing parts

13.4210.01	A452/19-32/0.63-1.27/8.5		A452.0001.01		20.04.00	
Item-No.		in group	Pcs.	Description	Dimension	Field
[L2.2215]		L2.2101	1	HOUSING		B10
L2.2216		L2.2101	1	EXHAUST RING		D10
L2.2217		L2.2101	1	BEARING RING		C8
[L2.2218]		L2.2101	1	IDLER STEP		D8
L2.2219		L2.2218	1	PLANET SHAFT		C9
[L2.2220]		L2.2101	1	IDLER STEP		A9
N1.1103			1	SCREW	M8 X 25	B3
N1.1113			4	SCREW	M5 X 20	A3+
N1.1583			1	HEXAGON SCREW	M5 X 16	C2
N1.1816			8	SCREW	M4 X 16	A7+
N1.3421			1	SOCKET SET SCREW	M4 X 8	D3
N1.3516			1	SOCKET SET SCREW	M6 X 16	B4
N1.5924			1	RING NUT	M8	A3
N1.6221			1	SPRING LOCK WASHER	M8	B4
N1.6223			4	SPRING LOCK WASHER	M5	A3+
N1.6321		L2.2207	1	SPACER WASHER	20 X 28 X 1	B12
N1.6337			1	SPACER WASHER	17 X 24 X 0.5	D7
N1.6338			1	SPACER WASHER	28 X 40 X 0.5	D7
N1.6701		L2.2101	2	CUP SPRING		C10
N2.2102			1	PARALLEL PIN	5 m6 X 16	E5
N2.2126		A45.0103	1	PARALLEL PIN	5 m6 X 26	E1
N2.2451			1	DOWEL PIN	5 X 45 MM	C2
N2.3206			1	WOODRUFF KEY	6 X 9 X 21.63	A5
N2.4902			4	HAMMER HEAD BOLT	1.85 X 4.76	B4+
N2.5102		L2.2207	1	PRESSURE SPRING	0.6 X 8 X 14/6	A10
N2.5219			1	PRESSURE SPRING	0,7X5,7X12/6	D5
N2.5826			1	TORSION SPRING	3.5/40.0	C3
N2.5827			1	TORSION SPRING	2.0/16.5	C1
N3.1109		L2.2201	1	BALL BEARING		B11
N3.1146			1	BALL BEARING		D6
N3.1169		L2.2101	1	BALL BEARING		B8
N3.1170		L2.2101	3	BALL BEARING		B10+
N3.1185		L2.2201	1	BALL BEARING		C13
N3.2314		A45.0101	1	NEEDLE CASE		C5
N3.2319		A45.0103	1	NEEDLE CASE		E2
N3.2320		A45.0102	1	NEEDLE CASE		A5
N3.2321		A45.0101	1	NEEDLE BUSH		D4
N3.2602		A45.0103	1	PACKING RING		E2
N3.2603		A45.0101	1	PACKING RING		D4
N3.4107			1	THRUST BEARING CAGE		C5
N3.4309			1	THRUST RACE		C6
N3.4310			2	THRUST RACE		B5
N3.4510			1	FREE-WHEELING		D6
N3.4511			1	ROLLER BEARING		D7
N41.9120			1	TYPE PLATE	<<A452>>	B4
N41.9128			1	ADHESIVE LABEL		B3
N41.9129			1	ADHESIVE LABEL		C4
N4.9159			1	LABEL	<<CE>>	B4
N6.6205		L2.2207	1	O-RING	9.2 X 1.78	A10
N6.6206		L2.2207	1	O-RING	4.3 X 2.4	A10
N6.6207		L2.2207	1	O-RING	3.1 X 1.6	A11
N6.6276		A45.0102	1	O-RING	48.9 X 2.62	A5
N6.6284		L2.2207	2	O-RING	14.1 X 1.6	B13
N6.6285		L2.2101	1	O-RING	39.4 X 1.6	D10

[ ] = Group

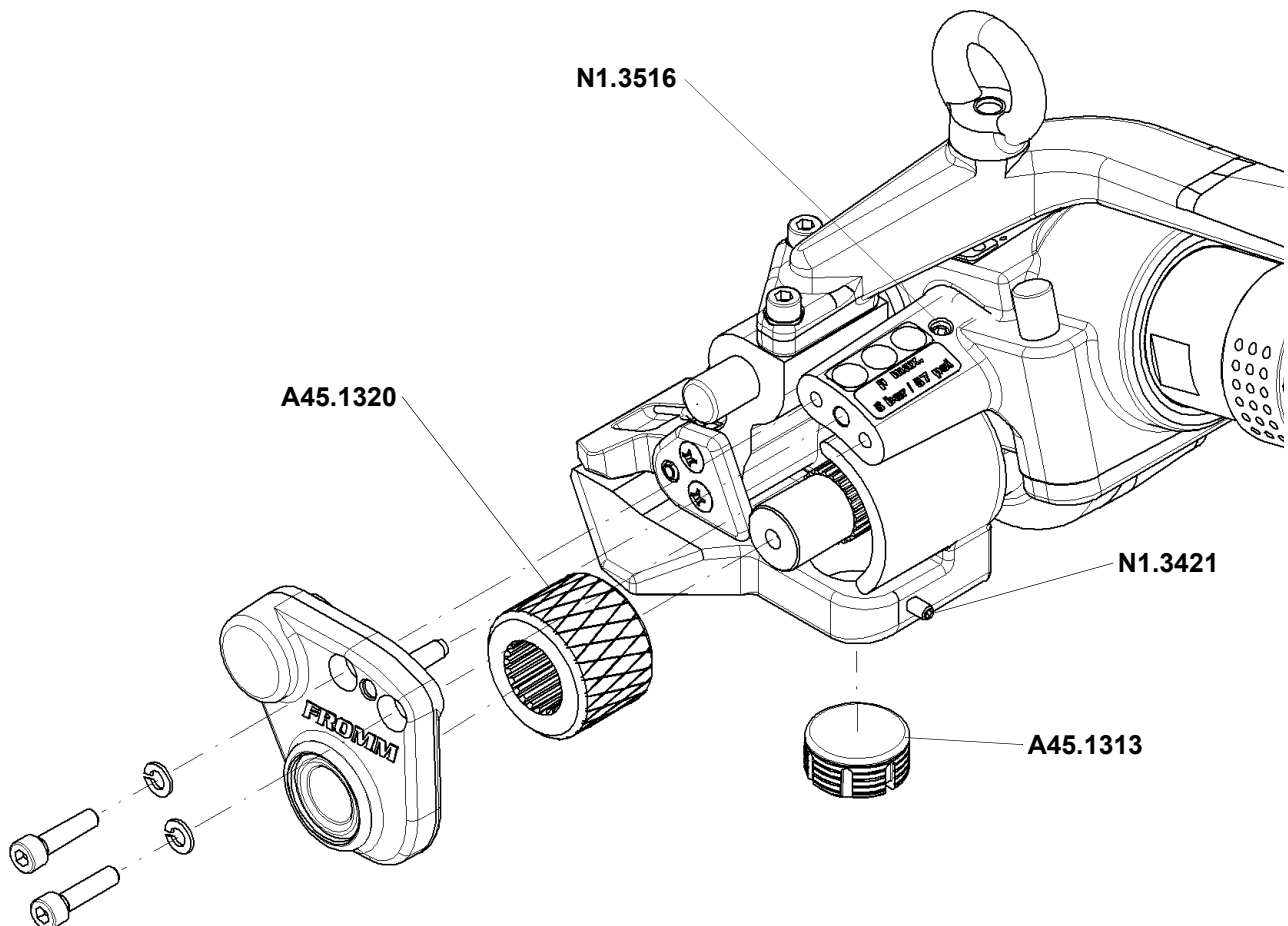
\* = Wearing parts

## 9 EXCHANGE OF WEARING PARTS

### 9.1 Exchange of tension wheel and sliding plate

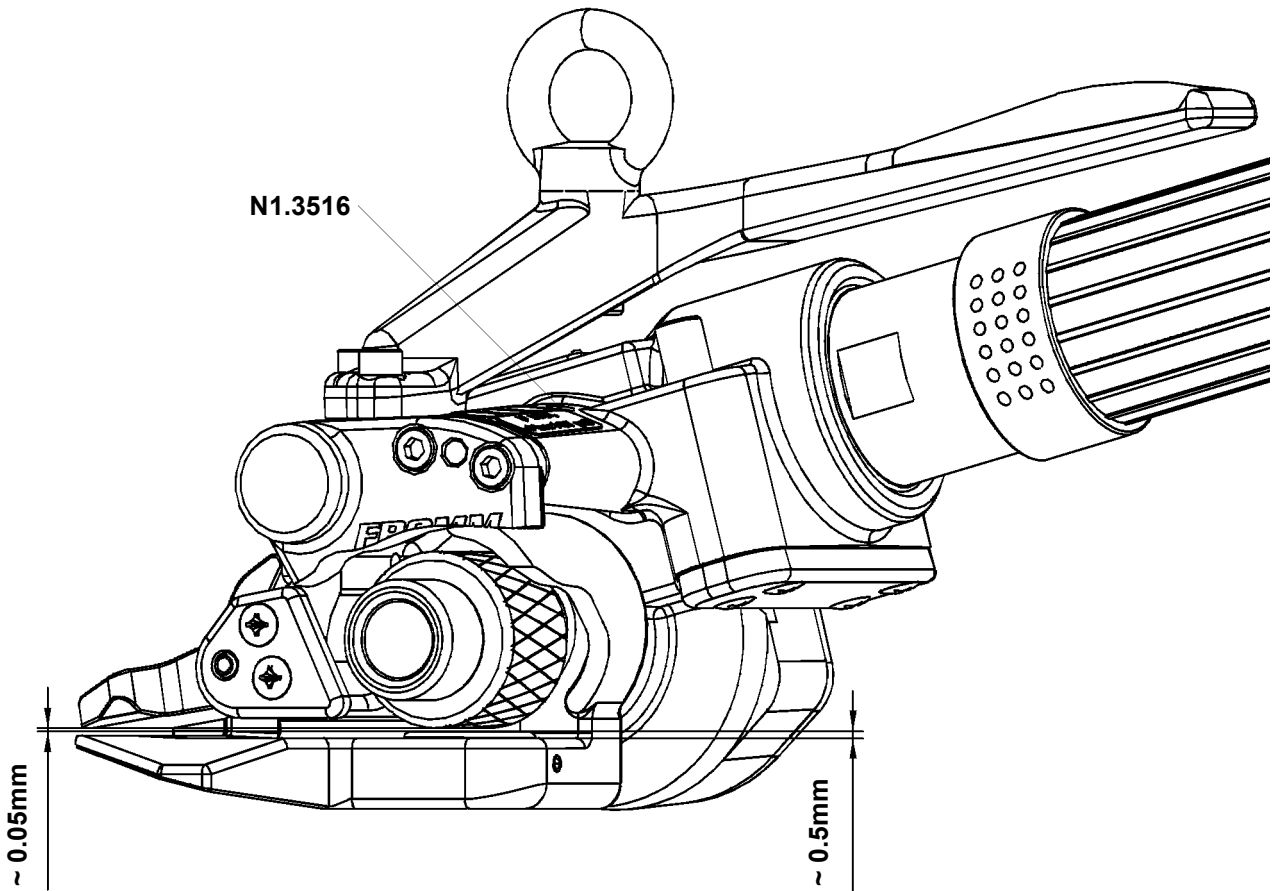
- Unscrew end cover.
- Pull off tension wheel A45.1320 from tension shaft.
- Loose lock screw N1.3421.
- Unscrew sliding plate A45.1313 to the bottom.
- Assemble in opposite order (attend to the assembling direction of the tension wheel).

**If the sliding plate or the tension wheel have been changed, they have to be adjusted after assembling!  
(see 10.1)**



## 10 ADJUSTMENTS

### 10.1 Adjustment of sliding plate/ tension wheel



Screw the sliding plate in the tensioning body from the bottom until it raises 0,5mm above the surface of the tensioning body.

Screw the lock screw N1.3421 in the nearest possible gap of the sliding plate.

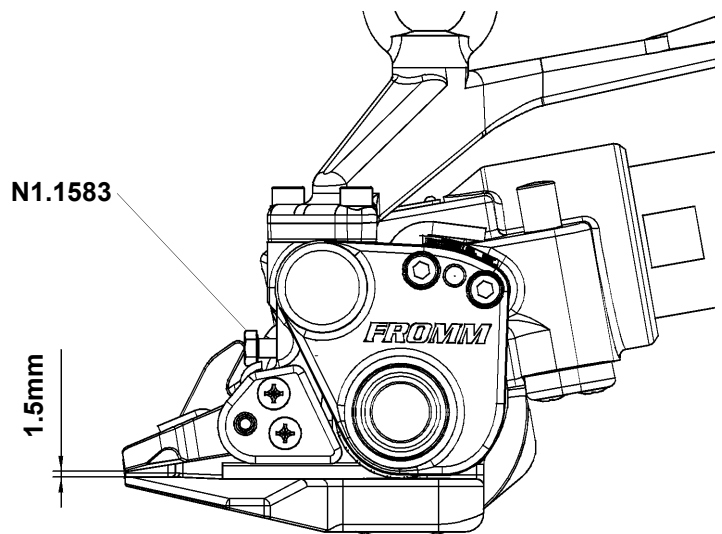
Adjust the gap between sliding plate and tension wheel to 0,05mm with the adjustment screw N1.3516.

**The rotating tension wheel must not touch the sliding plate in any case.!**

### 10.2 Adjustment of the pawl

Ex works the maximum opening of the pawl A45.1314 is adjusted to 1,5mm.

If necessary the opening angle can be reduced with the adjustment screw N1.1583.



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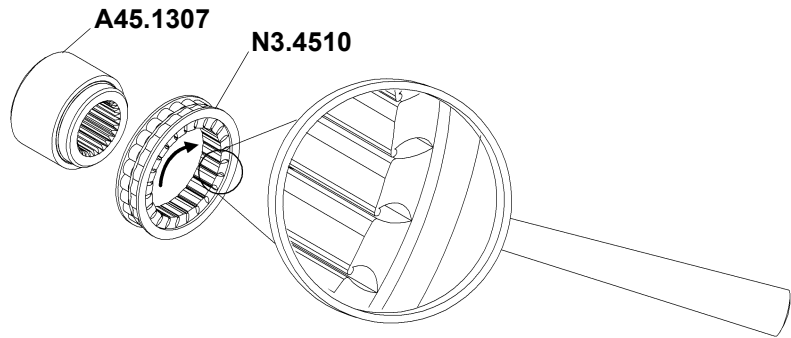
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## 11 ASSEMBLING INSTRUCTIONS

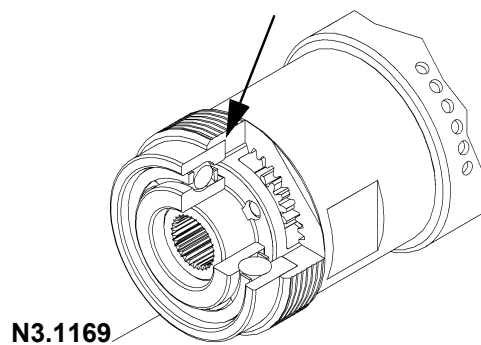
### Free-wheeling N3.4510

The driver A45.1307 has to be turned in the freewheeling in arrow direction.



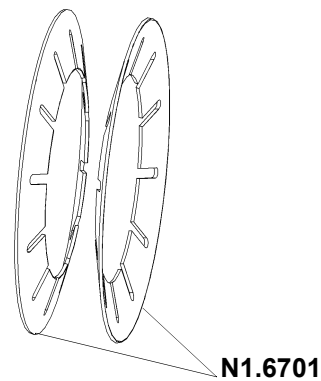
### Ball bearing N3.1169

The thicker side of the outside ring of the ball bearing must face towards the air motor.



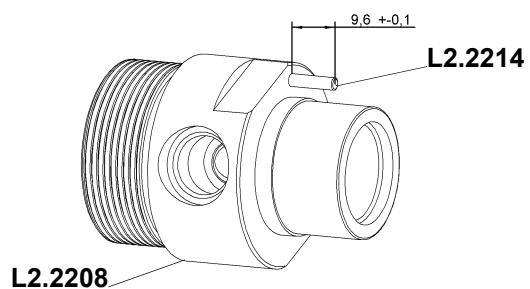
### Cup springs N1.6701

The two cup springs has to be assembled in the air motor as shown.



### Bearing needle L2.2214

When assembling the bearing needle L2.2214 in the valve body L2.2208 the mentioned pressing in dimension must be observed.



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## 12 MAINTENANCE

Depending on the working conditions and the use of the tool the following maintenance has to be made periodically:

### 12.1 Air unit

- Checking the air-pressure daily (never exceed 87psi / 6 bar)
- Checking oil-level daily
- The water separator must be emptied before it is full (unless automatic).
- The filter has to be cleaned following the instructions of the manufacturer of the air- unit.

### Oil for air unit

HL or CL ISO-VG 10

### 12.2 Cleaning

If impact of dirt and dust is considerable and if painted or zinc coated straps are used the tension wheel must be cleaned regularly. Normally it is sufficient to blow it out by the use of an air gun.

### 12.3 Lubrication

The worm gear is lubricated with MOLYKOTE BR2 PLUS. For relubrication purposes after possible repairs only this type of grease must be used.

The free wheeling N3.4510 and the roller bearing N3.4511 have to be lubricated with Klüber Isoflex Alltime SL2 when being assembled.

When being exchanged, all movable parts have to be greased with grease of type MOBILUX EP2 or with any equivalent product.

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