

**FROMM**

OPERATION MANUAL / SPARE PARTS LIST

**BATTERY - POWERED  
PLASTIC STRAPPING TOOL  
MODEL P328 M/HA**

43.2462.01

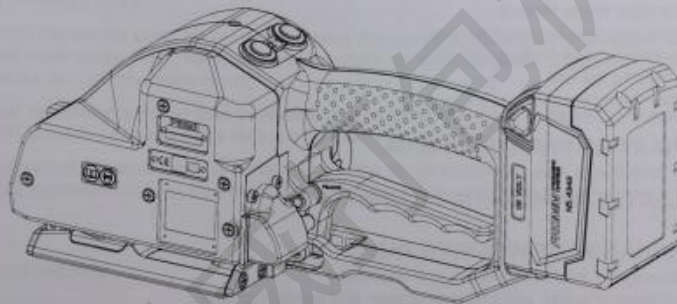
**FROMM** | STRAPPING  
SOLUTIONS

**FROMM**

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**BATTERY - POWERED  
PLASTIC STRAPPING TOOL  
MODEL P328 M/HA**

43.2462.01



**CE Declaration of conformity**

We declare that the machine P328 is in conformity with the following standard or standardised documents:

2006/42/EC  
2014/30/EU  
2011/65/EU

Technical file at:

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**CE**

## FROMM

- f) Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.
- g) If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

### 1.4 Power tool use and care

- a) Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- b) Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c) Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d) Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- e) Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- f) Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g) Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

### 1.5 Battery tool use and care

- a) Recharge only with the charger specified by the manufacturer. A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- b) Use power tools only with specifically designated battery packs. Use of any other battery packs may create a risk of injury and fire.
- c) When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
- d) Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.

### 1.6 Service

- a) Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

## 2 SAFETY RULES FOR STRAPPING TOOLS

### 2.1 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.

### 2.2 Dispensing strap

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

### 2.3 Strap warnings

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

### 2.4 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.

### 2.5 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.

### 2.6 Environment protection

Do not dispose of used batteries in the household refuse, water or by burning them.

For disposal of the batteries the local laws and prescriptions must be observed.

### 3 TECHNICAL DATA

#### Description of the tool

The tool model P328 has been designed to strap packages with plastic strapping. The plastic strapping is fed around the package manually or in combination with a strap feeder. The straps are inserted in the tool, tensioned, sealed by friction welding and separated from the strap coil.

#### Tool size with battery

Length:	351 mm / 13.8"
Width:	134 mm / 5.3"
Height:	143 mm / 5.6"

#### Weight

with battery:	4.3 kg / 9.6 lbs
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#### Noise information

The A-weighted emission sound pressure level at the work place of the machine operator is typical 78 dB(A).

This value was determined according to EN ISO 11204.

Uncertainty K: 2.5 dB

#### Vibration information

The vibration total value typically amounts to less than 2.5 m/s<sup>2</sup>.

This value was determined according to DIN EN 62841-1.

Uncertainty K: 1.5 m/s<sup>2</sup>

#### Strap material

Strap qualities: PET (Polyester) and PP (Polypropylene) plain or embossed.

The plastic strap must be according to DIN EN 13394.

**Use only plastic straps recommended by your sales shop (name and address on the rear of the operation manual).**

Strap dimensions: 12.0 - 16.0 mm x 0.40 - 1.05 mm (see chart of types).

**Use only plastic straps with the correct strap dimensions for your tool.**

#### Operation mode

Manual or Semi-Automatic mode

#### Strap tension

Tensioning force\*: Adjustable from 250 - max. 2600 N / 56 - max. 585 lbs.

Tensioning speed\*: approx. 67 - 124 mm/s / 2.6 - 4.9 inch/sec.

#### Seal

Type of seal: Friction weld sealing

Strength of seal\*: approx. 75% of the tensile strength of the plastic strap.

\* The value depends on the strap quality.

#### Working temperature

The ambient temperature should be between -10° and 45° C (14° and 113°F).  
The best performance is achieved between 15° and 20°C (59° and 68°F).

## 4 ACCESSORIES



Use only parts and accessories mentioned in the operating instruction.  
Using other parts or accessories can cause injuries to you and other persons.

### 4.1 Battery

The battery is not automatically supplied with the tool. The battery has to be ordered separately under the following item number.



Item-No.	Battery	Voltage	Capacity
N5.4349	Li-Ion	18 VDC	4,0 Ah

### 4.2 Battery - chargers

The charger must be ordered separately according to below shown table.

Item-No.	Voltage / frequency	Admitted for country
N5.4443	220 - 240V / 50 - 60Hz	A, B, BG, BIH, BOL, BR, BY, CH, CL, CZ, D, DK, DZ, E, EAS, EST, ET, F, FIN, GE, GR, H, HK, HR, I, IL, IND, IR, IRQ, IS, JOR, KSA, KWT, L, LAR, LT, LV, MA, MG, MK, MOC, N, NL, P, PK, PE, PL, PRC, PY, RA, RCH, RI, RL, RO, ROK, ROU, RP, RUS, S, SK, SLO, SYR, THA, TN, TR, UA, UAE, YU, YV, (BRN), (BRU), (CY), (EAK), (EAT), (GB), (IRL), (M), (MAL), (OM), (SGP), (Y), (Z), (ZA), (ZW)
N5.4447	120V / 50 - 60Hz	BR, C, CDN, CO, CR, DOM, EC, GCA, J, JA, KSA, LB, MEX, NIC, PA, Puerto Rico, RC, RP, USA, YV
N5.4445	220 - 240V / 50 - 60Hz	AUS, NZ

(..) = an adaptor N52.2102 is required.

### Charging time

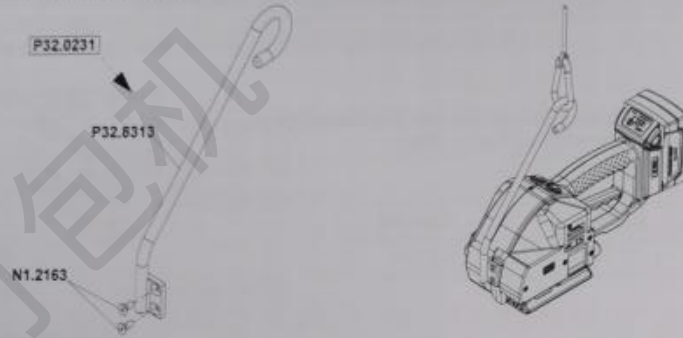
Item-No.	Battery	Charging time
N5.4349	Li-Ion	approx. 80 min.

### 4.3 Fan

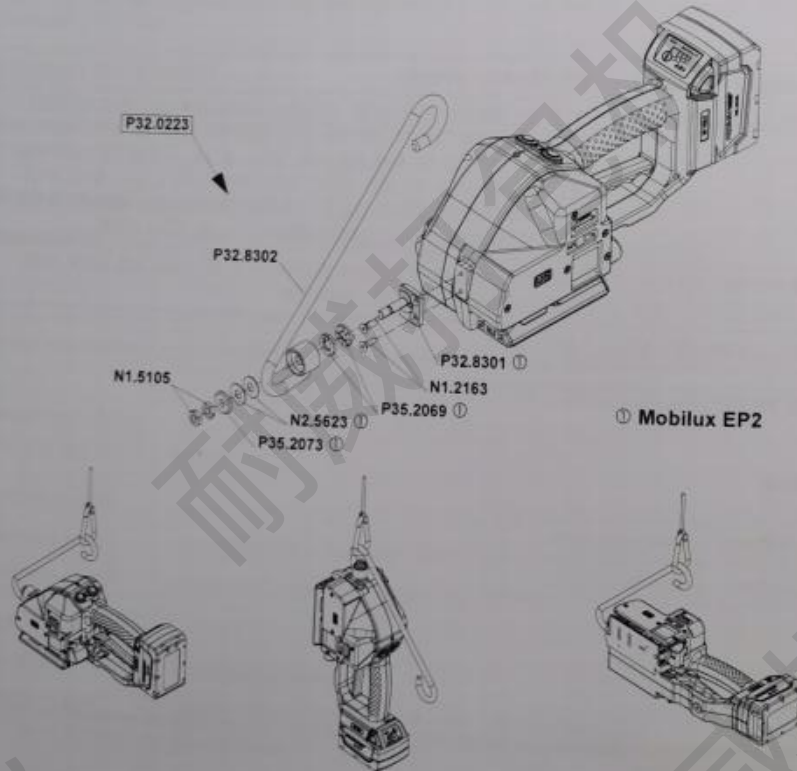
In order to avoid overheating of the motor we recommend at environmental temperatures above 40°C / 104°F using the optional fan P32.0228.

#### 4.4 Suspension

When working stationary the P328 can be suspended at a spring loaded balancer by using a suspension bracket. For working in normal position a stiff suspension bracket with screws and washers can be ordered under item number P32.0231.



With the swivel mounted suspension bracket the package can be strapped in various working positions. The complete suspension bracket can be ordered under item number P32.0223.



#### 4.5 Turning button kit

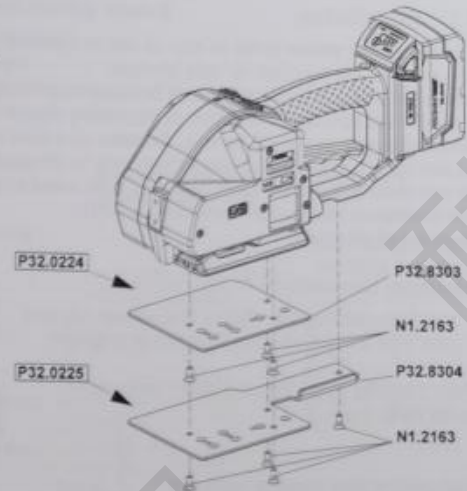
For a remaining adjustment of tension force and welding time. After exchanging of the turning buttons the adjustment can only be changed with the allen key (2mm) that comes with the kit. The kit can be ordered under the item number P32.2061.

#### 4.6 Wearing plate

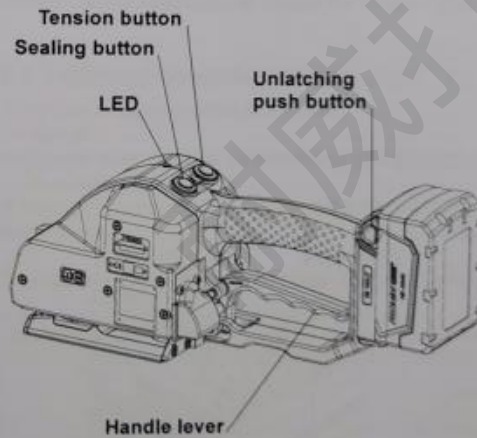
As an option, the tool can be equipped with a wearing plate to protect the base from excessive wear on abrasive package surfaces.

The complete wearing plate can be ordered together with the fastening screws under item number P32.0224.

If the complete bottom side of the tool has to be protected, the plate P32.0225 must be used.



### 5 OPERATING ELEMENTS



LED - Indication at the tool	
Green	During tensioning the LED lights green.
Blue	Welding is initiated. (only in semi-automatic mode)
Green	During welding the LED lights green.
Yellow	Cooling time is running, the tool must not be removed from the strap.
Blue blinking	Motor overheated, Motor cool down time running. If during this time a switch is operated, an acoustic signal happens.
Green + Acoustic signal	Cooling time is finished, the tool can be removed from the strap.
Red	Charge the battery.
Red blinking	Malfunction: e.g. lowering motor blocked. Remove battery. Clear malfunction. Insert battery.
Without indication	Power saving mode



## 6 OPERATION

### 6.1 Installation

**Do not expose power tools to rain or wet conditions!**

The batteries are supplied partially charged.

Before the first use, the battery must be completely charged.

See separate operating instruction of the battery charger.

**Never charge a damaged battery. Replace by a new one immediately.**

**Do not open batteries and store them only in dry and frost-proof rooms.**

**Do not store the battery pack together with metal objects (short circuit risk).**

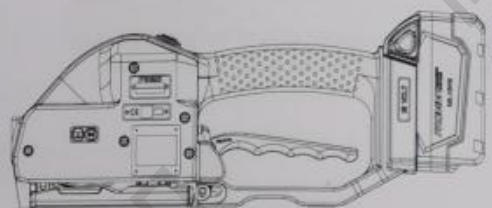
The maximum ambient temperature is 50°C.

Keep dry at all times.

#### Inserting the battery

- Insert the battery from top to bottom into the tool until both unlatching push buttons are engaged.

When inserting the battery the LED - indication shortly lights green.



#### Removing the empty battery

If the red LED starts lighting while a tensioning or welding procedure, the capacity of the battery is exhausted. All electric functions of the tool are blocked.

The battery must be recharged.

- Push the unlatching push buttons at both sides of the battery.
- Pull the battery out of the tool.

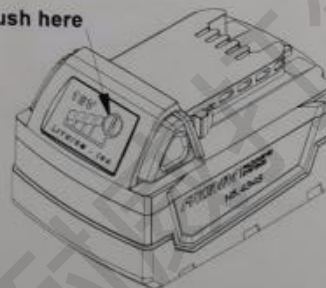
#### Displaying of the status of the battery charge

By pressing a button the status of the battery can be shown in four steps.

If four lamps are lighting the battery is full.

If only one lamp is lighting shortly the battery has to be charged.

Push here



## 6.2 Adjustments

### 6.2.1 Preselecting of strap tension and tensioning speed



**Do not adjust the tensioning force too high.**

If the tensioning force is higher than the tensioning strength of the strap, the strap will tear while the tensioning.

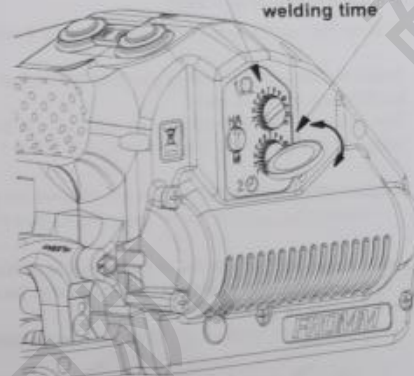
Tensioning force and tensioning speed can be preselected with the upper adjusting knob. Turning clockwise increases; turning counter clockwise decreases the tensioning force and the tensioning speed resp..

The tensioning force on the minimum setting is 250 N (56 lbs) and it is increased on the maximum setting to 2600 N (585 lbs).

The tensioning speed on the minimum setting is 67 mm/s (2.6 inch/sec), it is increased on the step 4 setting to 124 mm/s (4.9 inch/sec) and remains on this value till the maximum setting.

Adjusting knob tensioning force / tensioning speed

Adjusting knob welding time



The adjustment knobs can be easily turned with a coin.

### 6.2.2 Adjusting the welding time

Depending on the size and quality of the strap, different welding times are required.

The welding time can be adjusted at the lower adjusting knob.

Turning clockwise increases, turning counter clockwise decreases the welding time.

### 6.2.3 Choose operation mode

There are 2 operation modes possible.

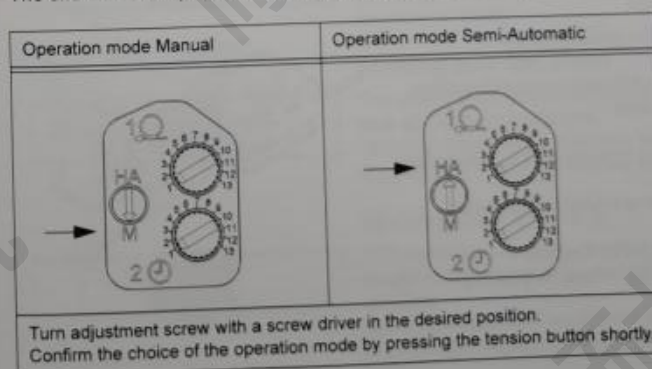
#### 1. Manual

In this operation mode is the tensioning as well as the welding of the strap started by the operator.

#### 2. Semi-Automatic

In this operation mode the welding of the strap is automatically started as soon as the preselected tension has been reached.

The choice of the operation mode can be made with the adjustment screw for operation mode.



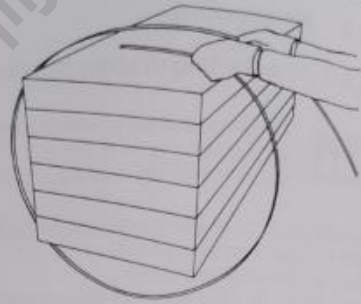
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### 6.3 Feeding the strap around the package

- The strapping is fed around the package as illustrated.

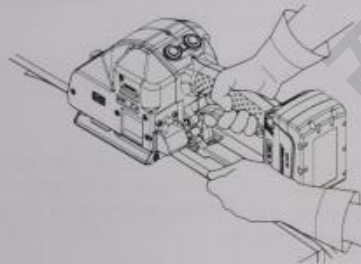


The plastic strap which will be welded must be free from oil, grease and other dirt. Dirty plastic straps can't be welded correct!



### 6.4 Inserting the strap

- Pull up the handle lever firmly with your right hand.
- Insert the two straps well aligned on each other into the strap guide using your left hand. The lower strap end must slightly protrude the end of the base plate.
- Release the handle lever.



After welding of the strapping it is neither permitted to tension again nor to weld again. After welding and cooling the tool has to be removed from the strapping before a new strapping cycle is started.

Disregard of this instruction can cause severe malfunction and damage to the tool.

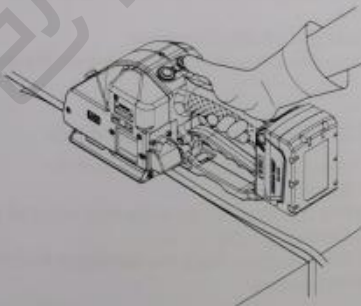
### 6.5 Tensioning the strap, Operation mode Manual

- Press down the tension button and then release it again after the desired strap tension has been reached.

The tensioning operation can be interrupted and restarted at any time.

During tensioning the LED lights green.

⇒ After automatic cut off of the tensioning force it can be tensioned again not before 8 seconds.



### 6.6 Sealing the straps, Operation mode Manual

- Press and release immediately the sealing button.

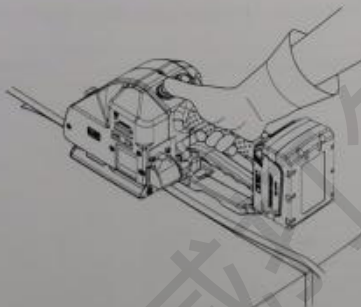
The plastic strap is welded and cut off from the rest of the strap. During the welding the LED lights green.

After elapsing of the adjusted welding time (see 6.2.2) the cooling time begins (LED lights yellow).

During that time the tool must not be removed from the strap.

#### ⇒ Information only for Operation mode Manual

It is possible to weld without tensioning before, by pushing "sealing button" twice within 0.5 sec..



## 6.7 Tensioning and sealing the strap Operation mode Semi-Automatic

- Push tension button until the adjusted tension force is reached.

During tensioning the LED lights green.

The tensioning operation can be interrupted and restarted at any time.

After reaching the adjusted strap tension the sealing cycle is initiated automatically (LED lights blue).  
Welding gripper is lowered,  
the welding starts (LED lights green).

- Release the tension button after the sealing process has been started.

The plastic strap is welded and cut off from the rest of the strap.

After elapsing of the adjusted welding time (see 6.2.2) the cooling time begins (LED lights yellow).

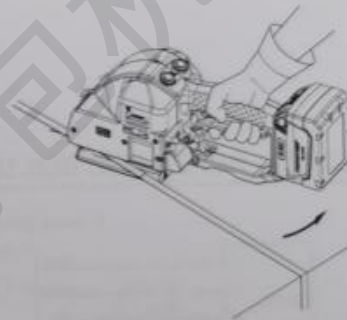
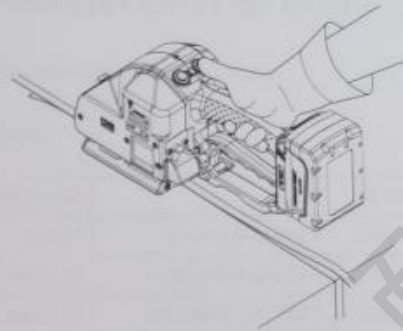


**The tool must not be removed from the strap as long as the cooling time is not finished.**  
Disregard of this regulation is causing insufficient seal efficiencies, which can cause severe injuries.

## 6.8 Removing the tool

After the cooling time is elapsed an acoustic signal happens and the LED lights green again.  
The sealing process is finished.

- Pull up the handle lever,
- pull the tool right and off the strapping.



## 6.9 Seal - Control

A regular control of the seal is necessary. The seal can be examined visually.  
Make a seal, peel it apart and examine it as follows:



### Correct seal

The seal must be completely welded over the whole width of the strap on a length of ca. 19 mm. Minor quantities of fused plastic may overflow on sides.



### Welding time too short

The plastic strap is not welded over the whole width of the strap. The seal efficiency is insufficient.  
Warning! Straps with insufficient seal strength must be removed from the package! Adjust the welding time (see 6.2.2).



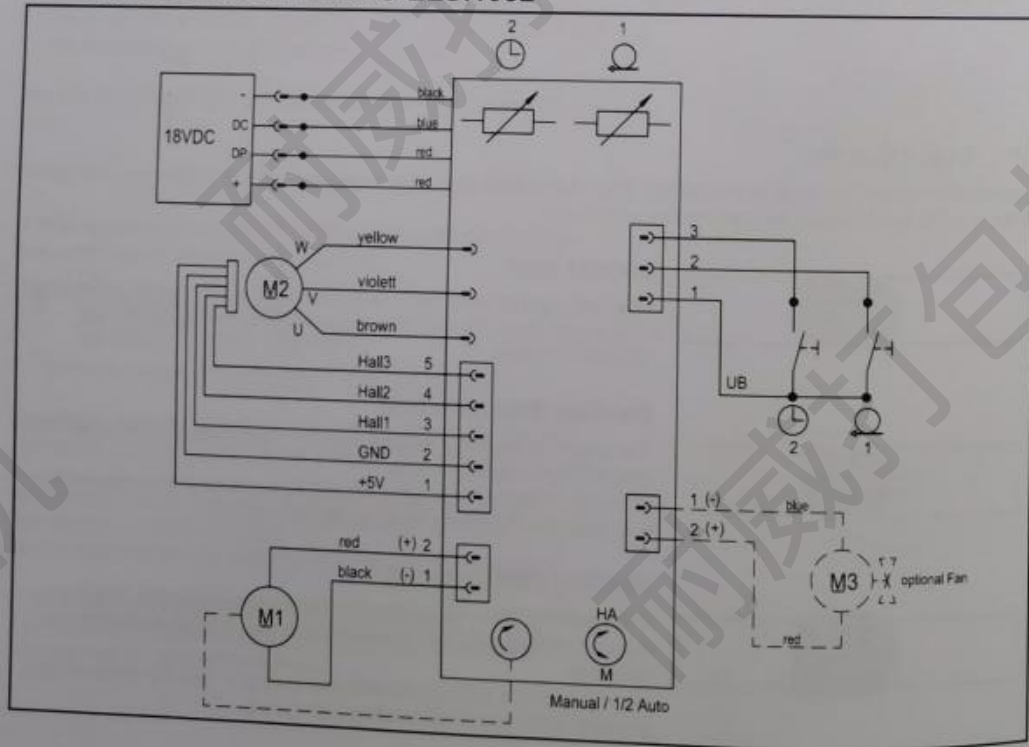
### Welding time too long

If the welding time is too long the straps are overheated. The fused plastic overflows on both sides of the straps. The seal efficiency is affected.  
Warning! Straps with insufficient seal strength must be removed from the package! Adjust the welding time (see 6.2.2).

7 CHART OF TYPES P328 M/HA

Item No.	Model	Strap width	Strap thickness
43.2422	P328/12/0.65-1.05	12 mm	0.65-1.05 mm / .026 - .041"
43.2423	P328/12.7/0.40-0.64	12.7 mm / 1/2"	0.40-0.64 mm / .016 - .025"
43.2424	P328/12.7/0.65-1.05	12.7 mm / 1/2"	0.65-1.05 mm / .026 - .041"
43.2432	P328/13/0.65-1.05	13 mm	0.65-1.05 mm / .026 - .041"
43.2453	P328/15.5/0.40-0.64	15.5 mm	0.40-0.64 mm / .016 - .025"
43.2454	P328/15.5/0.65-1.05	15.5 mm	0.65-1.05 mm / .026 - .041"
43.2461	P328/16/0.40-0.64	16 mm / 5/8"	0.40-0.64 mm / .016 - .025"
43.2462	P328/16/0.65-1.05	16 mm / 5/8"	0.65-1.05 mm / .026 - .041"

8 ELECTRIC SCHEMATIC ELS.1082



## 9 EXCHANGE OF WEARING PARTS

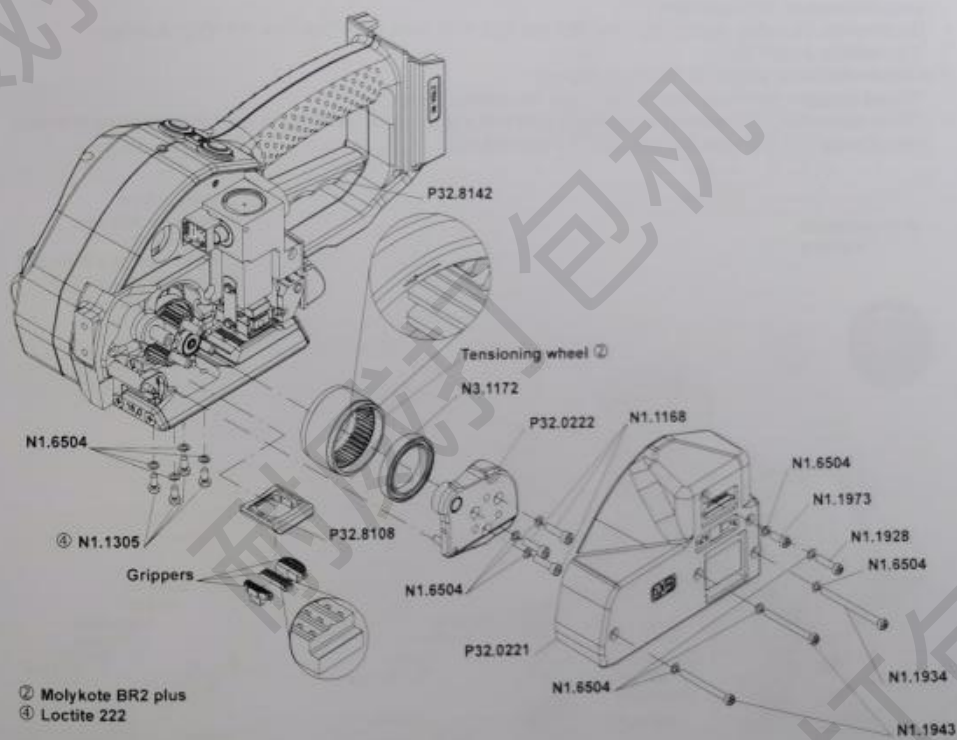


Remove always the battery from the tool before starting maintenance works.

### 9.1 Exchange of tensioning wheel and grippers

#### Disassembling

- Unscrew cover P32.0221 and remove it;
- Unscrew end cover P32.0222 and remove it;
- Raise tension wheel by lifting the handle lever P32.8142;
- Remove the tensioning wheel together with the bearing N3.1172 from the tool;
- Unscrew the holder P32.8108 and remove it from the body;
- Remove the grippers from the body.



Assembling in opposite order.

#### Assembly advise

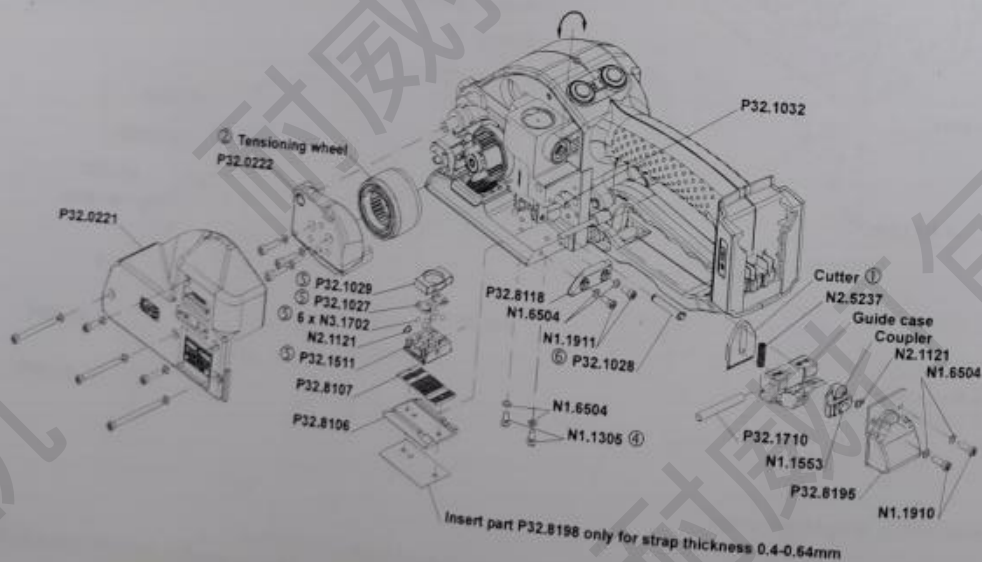
- Lubricate the internal tothing of the tensioning wheel with Molykote BR2 plus.
- Observe the position of the tensioning wheel. The direction of rotation of the tensioning wheel is marked at the front of the tensioning wheel (see drawing).
- Observe the position of the grippers (see drawing).
- Safe the screws N1.1305 with Loctite 222.

## 9.2 Exchange of cutter, welding stop gripper and welding gripper

### Disassembling

- Unscrew cover P32.0221 and remove it;
- Unscrew end cover P32.0222 and remove it;
- Raise tensioning wheel by lifting the handle lever P32.8142;
- Pull off tensioning wheel together with bearing N3.1172 from the body.
- Remove cover P32.8195;
- Don't loosen screw N1.1553 at the coupler.
- Disassemble the security ring N2.1121 from the coupler, remove the coupler;
- Pull out the centering sleeve P32.1710 from the guide case, disassemble the guide case;
- Pull out the pressure spring N2.5237 with a screw driver from the cutter;
- Remove the cutter from the driving pin P32.1032;
- Disassemble strap guide plate P32.8118;
- Disassemble the screws N1.1305, lift slightly the welding stop gripper P32.8107 and the steel insert P32.8106 and remove them from the tool;
- Push the steel insert without welding stop gripper under the welding gripper P32.1511 until it touches the parallel pin N2.2110;
- Turn welding gripper down, in case the welding gripper does not sit on the steel insert, put a piece of plastic strap underneath the steel insert;
- Disassemble the safety ring N2.1121 from the bolt P32.1028, remove the bolt from the welding gripper;
- Turn welding gripper up;
- Remove the thrust piece P32.1029 from the tool;
- Pull out the steel insert with care to right under the welding gripper;
- Lift the rocker P32.1024 behind the welding gripper with a screw driver, remove the welding gripper together with the ball cage P32.1027 and the balls N3.1702 from the tool.

- ① Mobilux EP2
- ② Molykote BR2 plus
- ④ Loctite 222
- ⑤ Klüber Isoflex Alltime SL2
- ⑤ Klüber Isoflex NBU 15



Assembling in opposite order.

**Assembly advise**

- During assembling move the strap guide plate P32.8118 downwards against the holding gripper.
- Pay attention to the fitting position of the cutter (see drawing).
- Tighten the screws N1.1305 with Loctite 222.
- Lubricate the rocker and the bolt P32.1028 in the area of the welding gripper with Klüber Isoflex NBU 15.
- Lubricate the balls, ball cage and the running surface of the balls on the welding gripper with Klüber Isoflex Alltime SL2.
- Lubricate the cutter and the driver with Mobilux EP2.

**9.3 Adjustment of the coupler**

The coupler is adjusted in our works.

In case of replacing the seesaw lever, the coupler or the lever body, the coupler has to be readjusted.

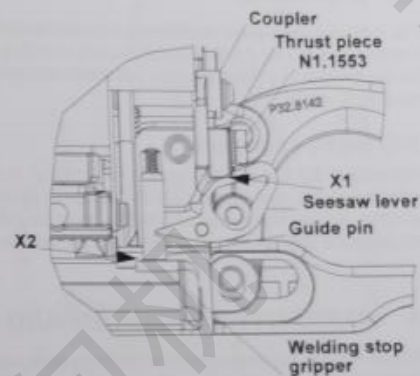
Procedure as follows:

The battery is removed from the tool.  
The coupler is fitted into the tool.

- Loosen screw N1.1553.
- Displace thrust piece, so that it touches the two seesaw levers without moving them.
- Re-tighten screw N1.1553.

**Control:**

The thrust piece must touch the seesaw levers (X1).  
Both guide pins must sit on the welding stop gripper (X2).

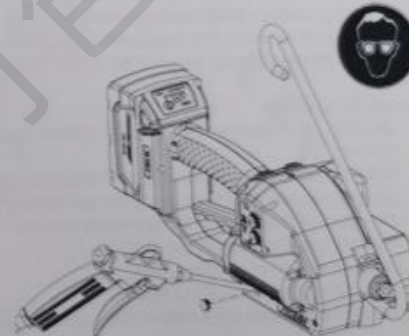
**10 CLEANING**

Clean strap gripping parts from strap abrasion regularly using compressed air.

Thus also the cover can be removed and with a suitable air gun air been blown on the welding elements.

Do not use any mechanical tool for cleaning.

When cleaning the surface of the tool do not use water or aggressive solvents!

**11 SERVICE**

Servicing and repair work must only be carried out by authorized service centres.

If the tool breaks down or does no longer operate do not disassemble it. Send it fully assembled to the local service centre (see name and address on the rear page of this manual). Use original packing.

**In order to prevent damages to the motor shaft the two needle free wheeling N3.4509/N3.4520 have to be replaced after maximum 80 000 strapping cycles.**

The battery powered plastic strapping tool P328 is a high performance tool. We strongly recommend you to have it serviced by an authorized service shop after 12 months at the latest if used one shift per day. If used two or more shifts per day the tool has to be serviced after a shorter period of time.



## 12 TRANSPORT

Lithium-ion batteries are subject to the Dangerous Goods Legislation requirements. The user can transport the batteries by road without further requirements.

When being transported by third parties (e.g.: air transport or forwarding agency), special requirements on packaging and labelling must be observed.

For preparation of the item being shipped, consulting an expert for hazardous material is required.

Dispatch batteries only when the housing is undamaged.

Tape or mask off open contacts and pack up the battery in such a manner that it cannot move around in the packaging.

Please also observe possibly more detailed national regulations.

## 13 DISPOSAL

The machine, rechargeable batteries, accessories and packaging should be sorted for environmental-friendly recycling.

Do not dispose of power tools and batteries/rechargeable batteries into household waste!

### Only for EC countries:

According to the European Guideline 2012/19/EU, power tools that are no longer usable, and according to the European Guideline 2006/66/EC, defective or used battery packs/batteries, must be collected separately and disposed of in an environmentally correct manner.



## 14 WARRANTY CONDITIONS AND LIABILITY

FROMM Holding AG warrants all its strapping tools and machine heads during a period of 24 months from the date of installation at the end-user's sight by the distributor, however, not later than 30 months from the date of shipment to the distributor of FROMM Holding AG. 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 (tensioning wheels, cutters, punches, dies, notching knives, grippers, batteries and motors),
- 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.

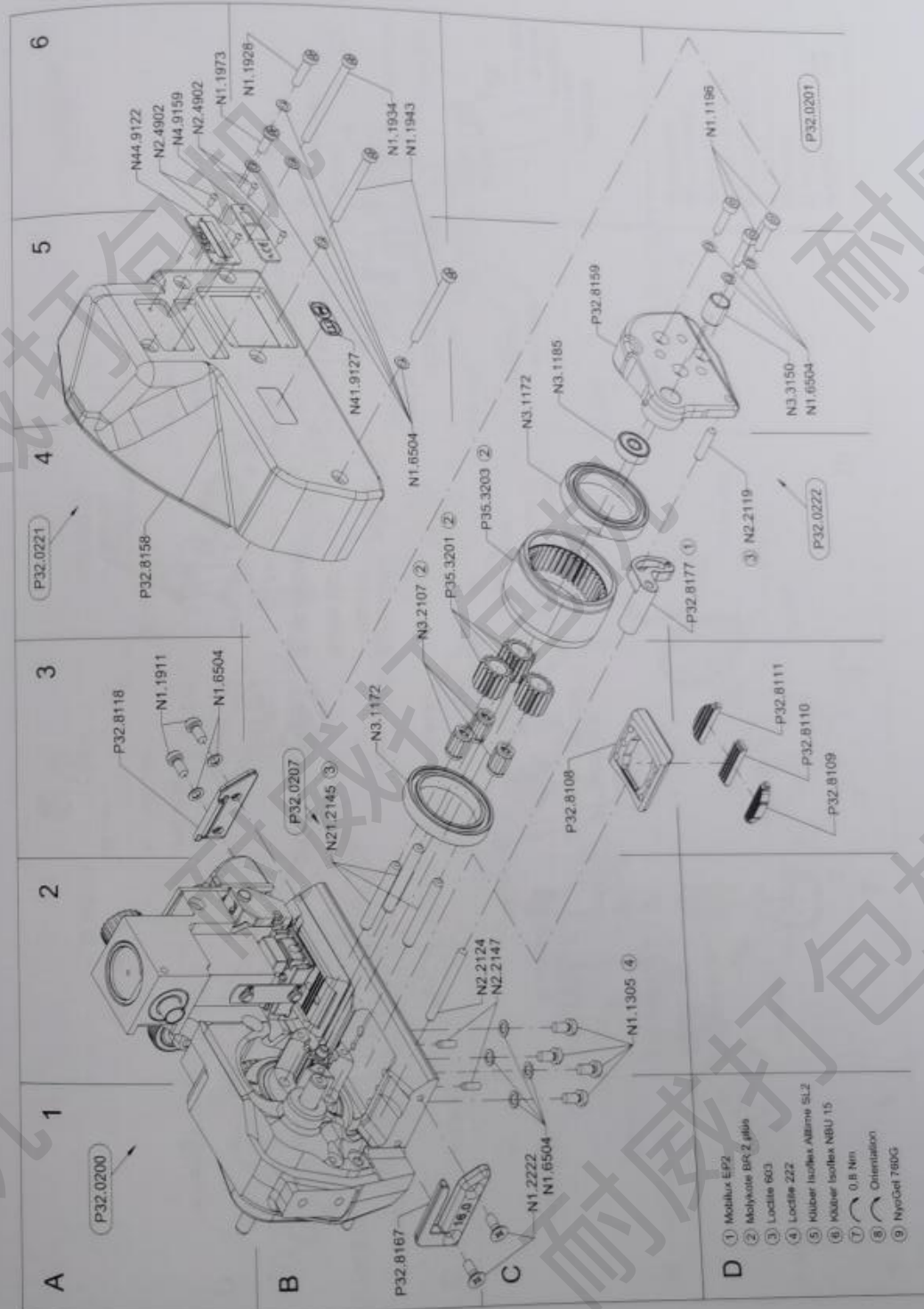
We reserve the right to modify the product at any time in order to improve its quality.

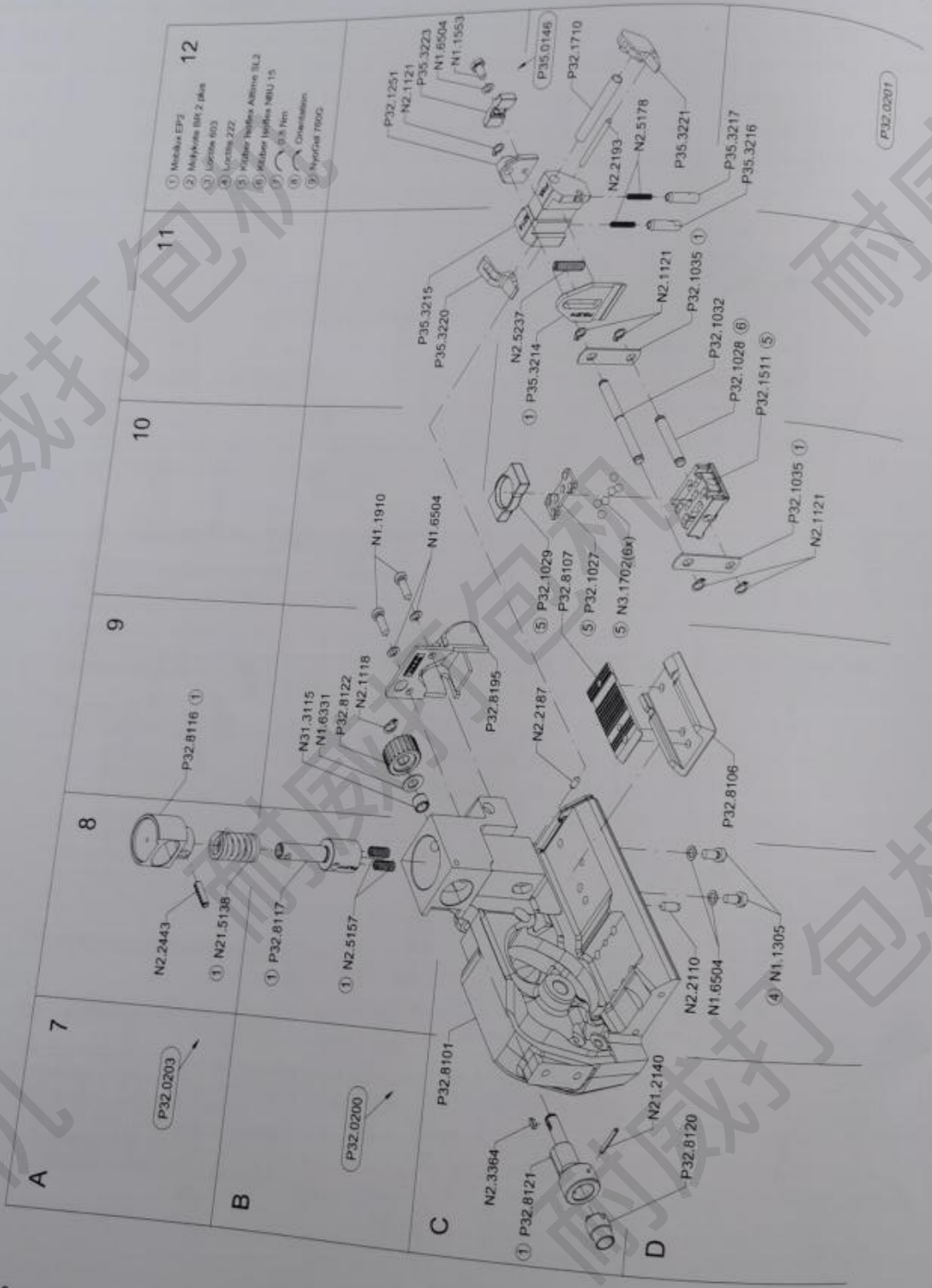
## 15 APPROPRIATE USE

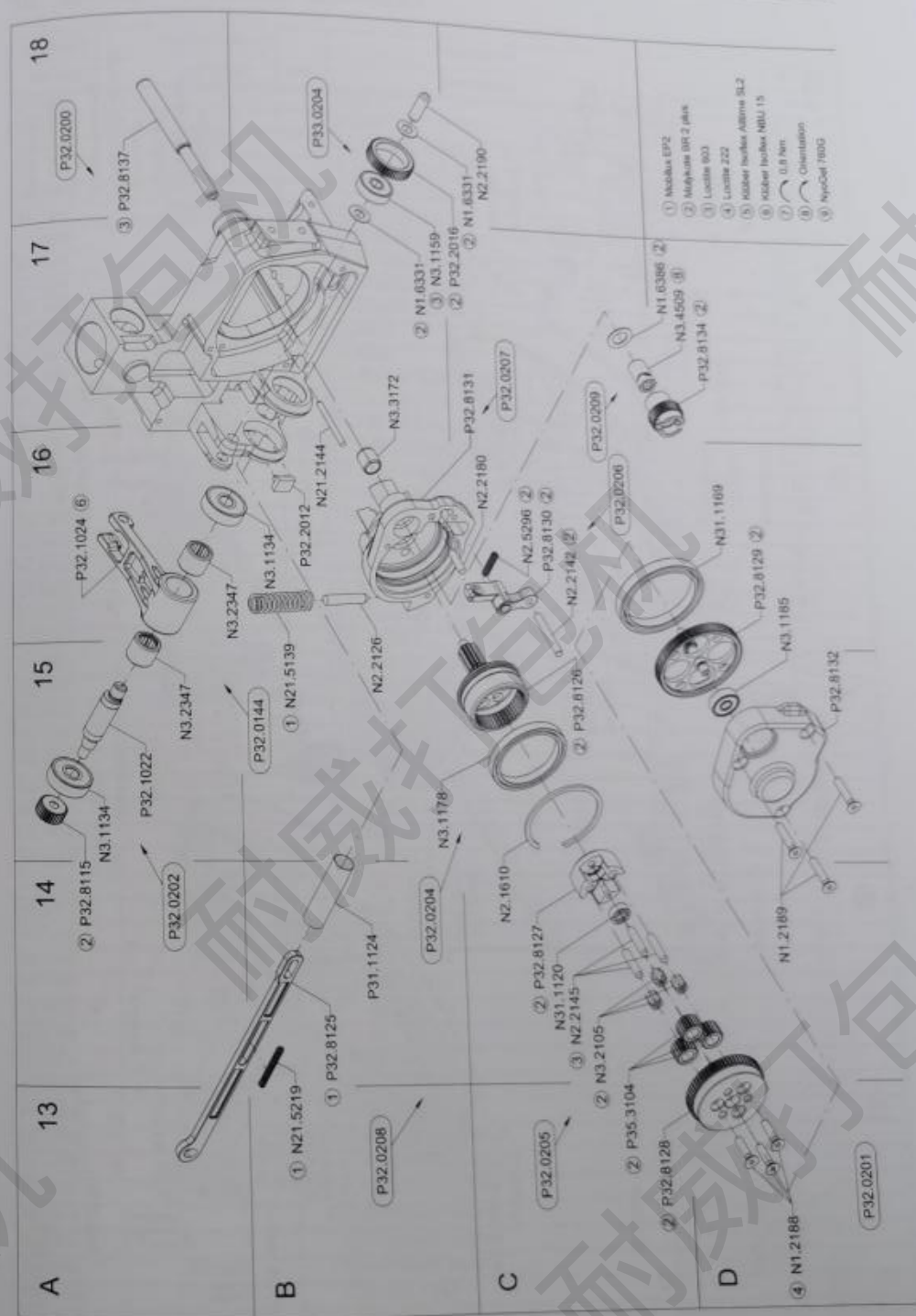
The tool model P328 has been designed to strap packages with plastic strapping exclusively. For the use in hazardous areas the tool is not suitable.

The warranty / liability excludes:

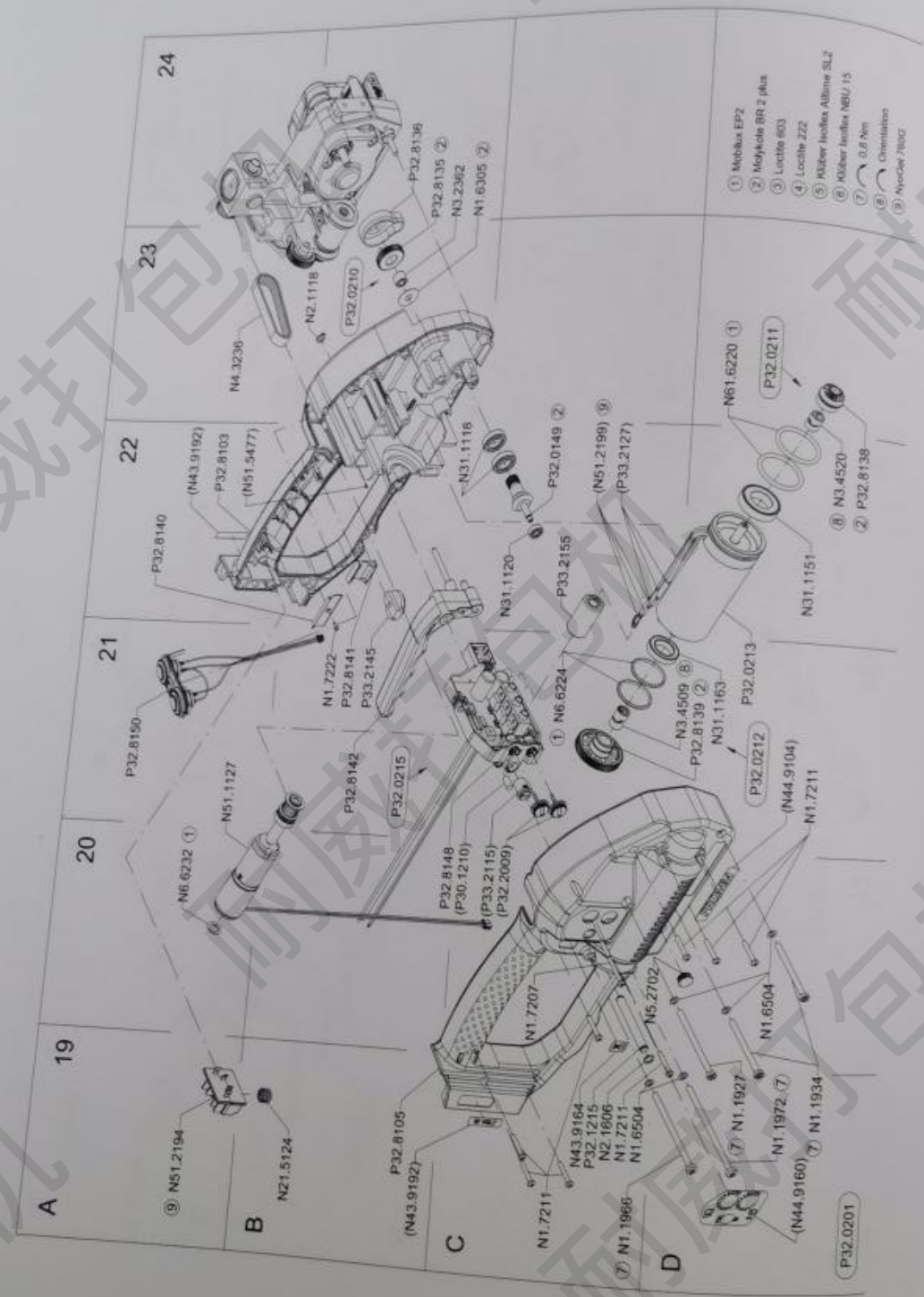
- non appropriate use of the tool,
- disregard of directions in the operation manual,
- disregard of control- and maintenance instructions.







- ① Nodular EP2
- ② Molykote DR-2 paste
- ③ Loctite 603
- ④ Loctite 222
- ⑤ Rubber bushes Abrima SL2
- ⑥ Kicker bushes NBU 15
- ⑦ 0.9 Nit
- ⑧ Orientation
- ⑨ NeoCoil 7000



- ① Mobilux EP2
- ② Mobilux BR 2 plus
- ③ Loctite 603
- ④ Loctite 222
- ⑤ Hülsenbohrer Allwin SL2
- ⑥ Hülsenbohrer NEU 15
- ⑦ 0,8 Nm
- ⑧ Chromitox
- ⑨ Aycow 700C

16 SPARE PARTS LIST 43.2462.01

FROMM

43.2462.01		P328/16/0.65-1.05		P328.0001.01		18.02.16	
Item-No.		in group	Pcs.	Description	Dimension	Field	
N1.1195			3	SCREW			
N1.1305			6	SCREW	M4 X 16	D6	
N1.1553		P35.0146	1	HEXAGON SCREW	M4 X 7.8	C2+	
N1.1910			2	FLAT HEAD SCREW	M4 X 8	B12	
N1.1911			2	FLAT HEAD SCREW	M4 X 12	B10	
N1.1927		P32.0201	1	FLAT HEAD SCREW	M4 X 8	A3	
N1.1928			1	FLAT HEAD SCREW	M4 X 60	D19	
N1.1934			1	FLAT HEAD SCREW	M4 X 16	B6	
N1.1934		P32.0201	2	FLAT HEAD SCREW	M4 X 50	B6	
N1.1943			2	FLAT HEAD SCREW	M4 X 50	D19	
N1.1966		P32.0201	1	SCREW	M4 X 40	B6	
N1.1972		P32.0201	1	SCREW	M4 X 70	C19	
N1.1973			1	FLAT HEAD SCREW	M4 X 78	D19	
N1.2188		P32.0205	3	COUNTERSUNK SCREW	M4 X 10	A6	
N1.2189		P32.0208	3	COUNTERSUNK SCREW	M4 X 16	D13	
N1.2222			2	COUNTERSUNK SCREW	M4 X 20	D14	
N1.6305		P32.0201	1	SPACER WASHER	M4 X 10	C1	
N1.6331		P32.0201	3	SPACER WASHER	6 X 18 X 0.5	B24	
N1.6386		P32.0201	1	SPACER WASHER	6 X 12 X 0.5	B9+	
N1.6504			18	SAFETY WASHER	9 X 15 X 0.50	D17	
N1.6504		P32.0201	5	SAFETY WASHER	M4	C1+	
N1.6504		P35.0146	1	SAFETY WASHER	M4	C19+	
N1.7207		P32.0201	1	PT-SCREW	M4	B12	
N1.7211		P32.0201	1	PT-SCREW	3 X 40	C20	
N1.7211		P32.0201	8	PT-SCREW	3 X 20	C19+	
N1.7222		P32.0201	1	PT-SCREW	2.2 X 5	B21	
N2.1118		P32.0201	2	SECURITY RING	6	B9+	
N2.1121			1	SECURITY RING	5	B12	
N2.1121		P32.0201	4	SECURITY RING	5	D10+	
N2.1606		P32.0201	1	SPRING RING	SW6	C19	
N2.1610		P32.0208	1	SPRING RING	SB44	C14	
N2.2110		P32.0200	1	PARALLEL PIN	4 m6 X 10	D8	
N2.2119		P32.0222	1	PARALLEL PIN	4 m6 X 18	D4	
N2.2124			1	PARALLEL PIN	4 m6 X 40	C2	
N2.2126		P32.0207	1	PARALLEL PIN	5 m6 X 26	B15	
N2.2142		P32.0206	1	PARALLEL PIN	4 m6 X 28	C16	
N2.2145		P32.0205	3	PARALLEL PIN	4 h6 X 18	C14	
N2.2147		P32.0200	2	PARALLEL PIN	3 m6 X 10	C2	
N2.2180		P32.0208	1	PARALLEL PIN	4 m6 X 16	C16	
N2.2187		P32.0200	1	PARALLEL PIN	3 m6 X 6	C9	
N2.2190		P32.0201	1	PARALLEL PIN	6 h6 X 18	C18	
N2.2193			1	PARALLEL PIN	3 m6 X 32	C12	
N2.2443		P32.0203	1	DOWEL PIN	4 X 15	A8	
N2.3364		P32.0201	1	FEATHER KEY	2 X 2 X 6	C7	
N2.4902			2	HAMMER HEAD BOLT	1.85 X 4.76	A6	
N2.4902		P32.0221	2	HAMMER HEAD BOLT	1.85 X 4.76	A6	
N2.5157		P32.0201	2	PRESSURE SPRING	0.6 X 4.8 X 20/15.5	B8	
N2.5178			2	PRESSURE SPRING	0.32X2.82X20.5/20.5	C12	
N2.5237			1	PRESSURE SPRING	0.8 X 4.8 X 25/18.5	C11	
N2.5296		P32.0208	1	PRESSURE SPRING	0.5 X 4 X 24/16.5	C16	
N21.2140		P32.0201	1	DOWEL PIN	2 X 16	D7	
N21.2144		P32.0201	1	PARALLEL PIN	3 h6 X 30	B16	

[ ] = Group

\* = Wearing parts

FROMM

43.2462.01		P328/16/0.65-1.05		P328.0001.01		Dimension	18.02.16
Item-No.	in group	Pcs.	Description			Field	
		3	PARALLEL PIN		5 h6 X 37,3	B3	
N21.2145	P32.0207	1	PRESSURE SPRING		0.9 X 10 X 15/5.5	B19	
N21.5124	P32.0201	1	PRESSURE SPRING		2.5 X 14.2 X 33.5/7.5	A8	
N21.5138	P32.0203	1	PRESSURE SPRING		1.25 X 9.8 X 45/14.5	B15	
N21.5139	P32.0201	1	PRESSURE SPRING		0.43 X 3.6 X 32.9/27.5	B13	
N21.5219	P32.0201	1	PRESSURE SPRING		7 X 22 X 7	B16	
N3.1134	P32.0201	1	BALL BEARING		7 X 22 X 7	A15	
N3.1134	P32.0202	1	BALL BEARING		6 X 19 X 6	B17	
N3.1159	P33.0204	1	BALL BEARING		30 X 42 X 7	B3+	
N3.1172		2	BALL BEARING		35 X 44 X 5	B15	
N3.1178	P32.0204	1	BALL BEARING		5 X 16 X 5	C5	
N3.1185		1	BALL BEARING		5 X 16 X 5	D16	
N3.1185	P32.0206	1	BALL BEARING		4 MM	C10	
N3.1702	P32.0201	6	BALL				
N3.2105	P32.0205	3	NEEDLE CAGE		K 4 X 7 X 7 TN	C14	
N3.2907		3	NEEDLE CAGE		K 5 X 9 X 13 TN	B4	
N3.2347	P32.0144	2	NEEDLE BUSH		10 X 14 X 12	A15+	
N3.2362	P32.0210	1	NEEDLE BUSH		6 X 10 X 8	B24	
N3.3150	P32.0222	1	SLIDE-BEARING		8 X 10 X 12	D5	
N3.3172	P32.0207	1	SLIDE-BEARING		8 X 10 X 10	B17	
N3.4509	* P32.0209	1	NEEDLE FREE WHEELING		6 X 10 X 15	D17	
N3.4509	* P32.0212	1	NEEDLE FREE WHEELING		6 X 10 X 15	D21	
N3.4520	* P32.0211	1	FREE-WHEELING		6 X 10 X 12	D22	
N31.1118	P32.0201	2	BALL BEARING		10 X 19 X 5	B22	
N31.1120	P32.0201	1	BALL BEARING		4 X 11 X 4	C22	
N31.1120	P32.0205	1	BALL BEARING		4 X 11 X 4	C14	
N31.1151	P32.0201	1	BALL BEARING		17 X 30 X 7	D22	
N31.1163	P32.0212	1	BALL BEARING		15 X 24 X 5	D21	
N31.1169	P32.0205	1	BALL BEARING		40 X 50 X 6	D16	
N31.3115	P32.0200	1	SLIDE-BEARING		6 X 8 X 6	B9	
N4.3236	P32.0201	1	TOOTHED BELT		9 MM	A23	
N4.9159	P32.0221	1	LABEL		<<CE>>	A6	
N41.9127	P32.0221	1	ADHESIVE LABEL		20 X 10 X 0,1	B5	
N43.9164	P32.8105	1	ADHESIVE LABEL		WEEE	C19	
N43.9192	P32.8103	1	ADHESIVE LABEL		18 Volt	A22	
N43.9192	P32.8105	1	ADHESIVE LABEL		18 Volt	B19	
N44.9104	P32.8105	1	ADHESIVE LABEL		<<FROMM>>	D21	
N44.9122		1	TYPE PLATE		<<P32B>>	A6	
N44.9160	P32.8105	1	ADHESIVE LABEL			D19	
N5.2702		1	COVER			C20	
N51.1127	P32.0201	1	GEAR MOTOR			A21	
N51.2194	P32.0215	1	INSERT PART			A19	
N51.2199	N51.1111	3	CONTACT PLUG			C22	
N51.5477	P32.8103	1	SPRING PIN			A22	
N6.6224	P32.0201	2	O-RING		24 X 2	C21	
N6.6232	P32.0201	1	O-RING		8 X 2	A20	
N61.6220	P32.0201	2	O-RING		29.5 X 3	D23	
P30.1210	P32.8148	1	HOLDING-DOWN CLAMP			C20	
P31.1124	P32.0200	1	TUBE			B14	
[P32.0144]	P32.0201	1	ROCKER			B15	
P32.0149	P32.0201	1	PINION			C22	
[P32.0200]	P32.0201	1	BODY			A1+	
[P32.0201]		1	BASE MODEL			D6+	
[P32.0202]	P32.0201	1	WELDING EXCENTRIC			A14	

[ ] = Group

\* = Wearing parts

FROMM

43.2462.01 Item-No.	P328/16/0.65-1.05		P328.0001.01		18.02.16	
	in group	Pcs.	Description	Dimension	Field	
[P32.0203]	P32.0201	1	SPRING BOLT			
[P32.0204]	P32.0208	1	GEAR WHEEL			A7
[P32.0205]	P32.0208	1	IDLER STEP			B14
[P32.0206]	P32.0208	1	LEVER			C13
[P32.0207]	P32.0208	1	GEAR BODY			C16
[P32.0208]	P32.0201	1	GEAR			B3+
[P32.0209]	P32.0201	1	GEAR WHEEL			B13
[P32.0210]	P32.0201	1	GEAR WHEEL			C17
[P32.0211]	P32.0201	1	CONICAL GEAR WHEEL			B23
[P32.0212]	P32.0201	1	GEAR WHEEL			D23
P32.0213	P32.0201	1	MOTOR			D21
[P32.0215]	P32.0201	1	CIRCUIT BOARD			D21
[P32.0221]		1	COVER			B21
[P32.0222]		1	END COVER			A4
P32.1022	P32.0202	1	WELDING EXCENTRIC			D4
P32.1024	P32.0144	1	ROCKER			A15
P32.1027	P32.0201	1	BALL CAGE			A16
P32.1028	P32.0201	1	BOLT			C10
P32.1029	P32.0201	1	THRUST PIECE			D11
P32.1032	P32.0201	1	DRIVING PIN			C10
P32.1035	P32.0201	2	DRIVER			D11
P32.1215	P32.0201	1	HANDLE SHAFT			D10+
P32.1251	P35.0146	1	PUSHER			C19
P32.1511	P32.0201	1	WELDING GRIPPER			B12
P32.1710		1	CENTERING SLEEVE			D11
P32.2009	P32.8148	2	TURNING BUTTON			C12
P32.2012	P32.0201	1	GUIDE			C20
P32.2016	P33.0204	1	GEAR WHEEL			B18
P32.8101	P32.0200	1	BODY			C17
[P32.8103]	P32.0201	1	MOTOR HOUSING			C7
[P32.8105]	P32.0201	1	MOTOR HOUSING			A22
P32.8106		1	STEEL INSERT			B19
P32.8107		1	WELDING STOP GRIPPER			D9
P32.8108		1	HOLDER			C10
P32.8109		1	GRIPPER			C3
P32.8110		1	GRIPPER			D3
P32.8111		1	GRIPPER			D3
P32.8115	P32.0202	1	PINION			A14
P32.8116	P32.0203	1	SPRING SLIDE			A9
P32.8117	P32.0203	1	SPRING BOLT			B8
P32.8118		1	STRAP GUIDE PLATE			A3
P32.8120	P32.0201	1	MAGNET			D7
P32.8121	P32.0201	1	ECCENTRIC SHAFT			C7
P32.8122	P32.0201	1	TOOTHED BELT PULLEY			B9
P32.8125	P32.0201	1	PUSHER			B14
P32.8126	P32.0204	1	GEAR WHEEL			C15
P32.8127	P32.0205	1	PLANET SHAFT			C14
P32.8128	P32.0205	1	GEAR WHEEL			C13
P32.8129	P32.0208	1	GEAR WHEEL			D16
P32.8130	P32.0206	1	LEVER			C16
P32.8131	P32.0207	1	GEAR BODY			C17
P32.8132	P32.0208	1	GEARING COVER			D15
P32.8134	P32.0209	1	GEAR WHEEL			D17

[] = Group

\* = Wearing parts

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