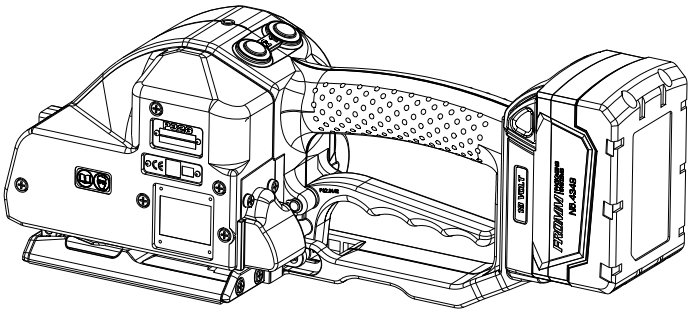
FROMM

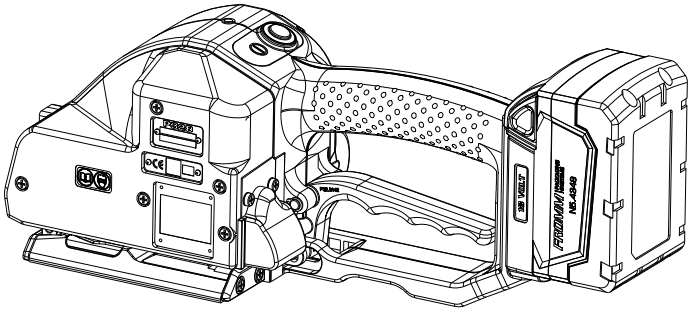
SERVICE MANUAL

BATTERY - POWERED PLASTIC STRAPPING TOOL MODEL

P328 M/HA / P328 A/A

Manual for authorized dealers and service points





P328.sen.fm/MAS/© 07.15

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1.1 ACCESSORIES

1.1.1 Battery

Use only original Fromm batteries N5.4349 (Li-Ion).

1.1.2 Battery chargers

The battery charger must be ordered separately according to the table mentioned below.

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, MC, 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.

1.1.3 Battery tester

Information to the Battery tester you will get by FROMM System GmbH.
(see 1.10 SERVICE ADDRESS)

1.1.4 Memory reader for circuit board

To read the memory information of the tools circuit board the reader N7.5154 can be ordered.
With this the following data could be read:

- software version
- date of software
- strapping cycles
- calibration current

1.1.5 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.
(see 1.4.7 Assembly information)

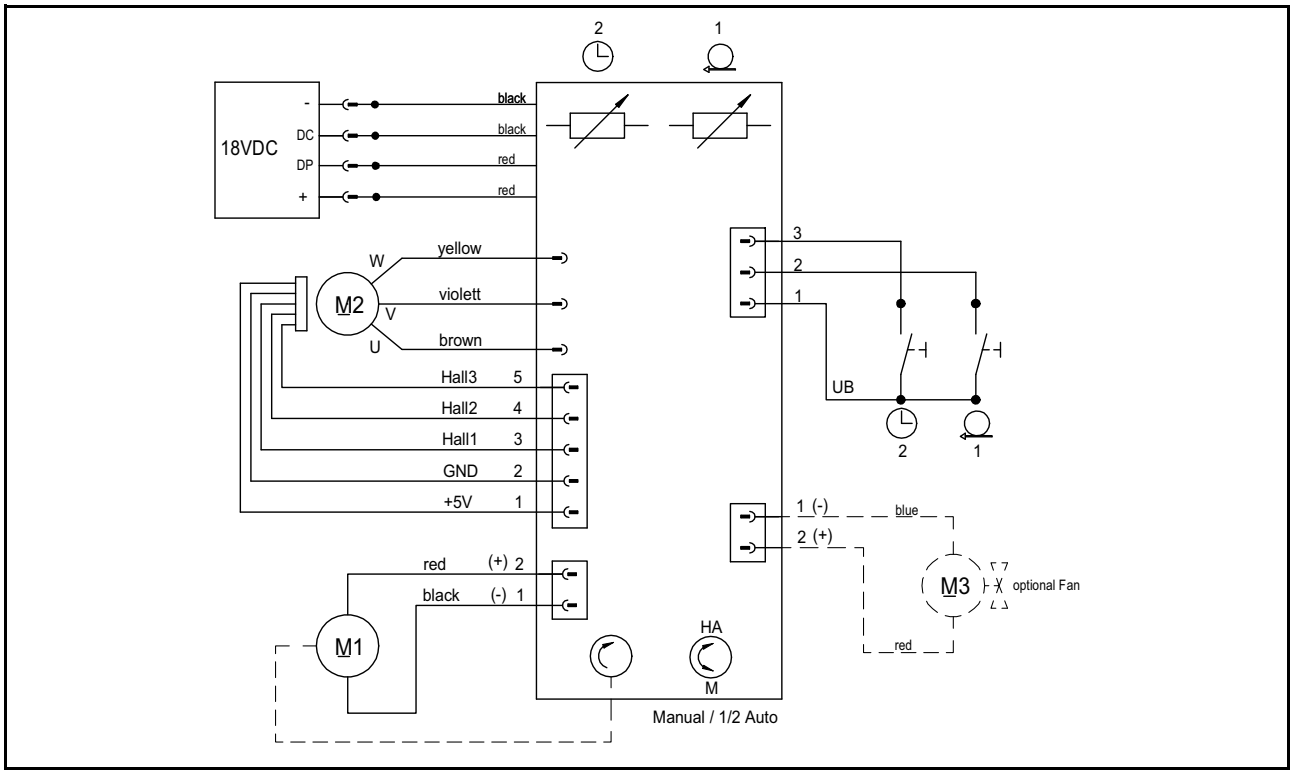
1.2 TECHNICAL DETAILS

1.2.1 Strap tension

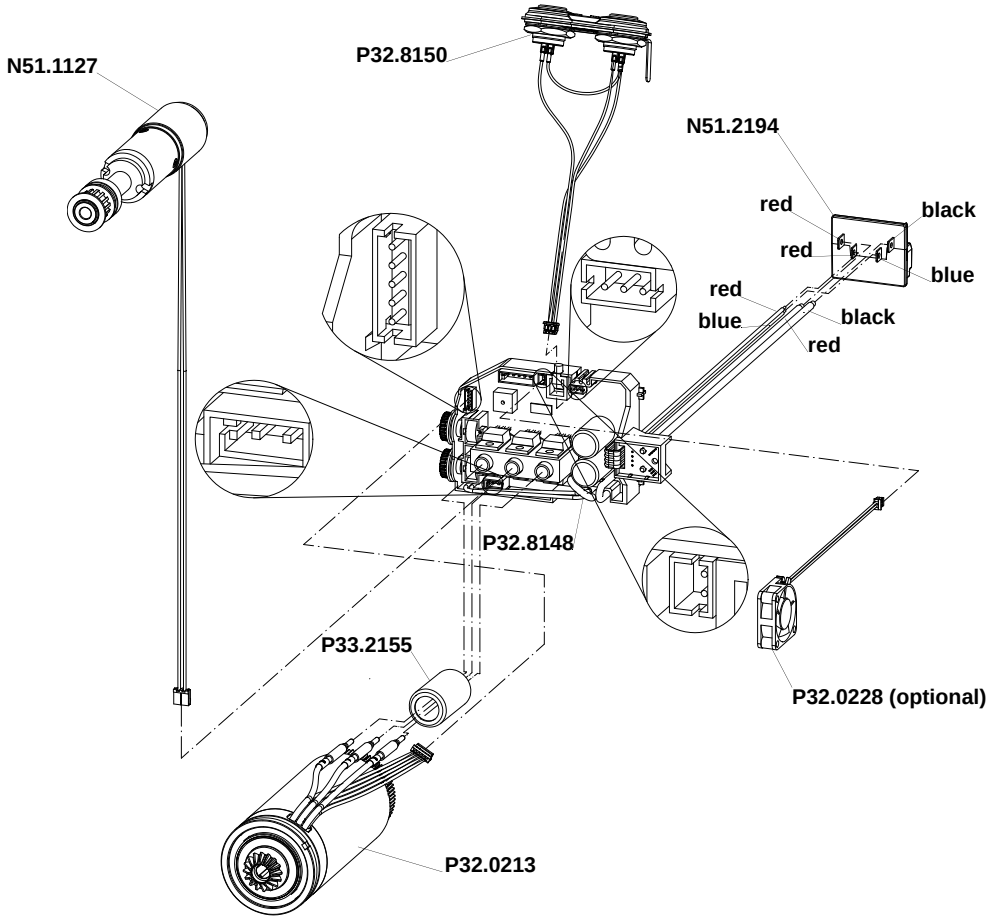
The tension force values mentioned in the operation manual (250-2600N) are not achievable with each strap. They depend on following factors:

- Hardness of the package,
  the maximum tension force values are achievable with hard packages.
- Elongation and creep properties of the plastic strap,
  the maximum tension force values are achievable by using plastic straps with a low elongation.
- Surface quality of the plastic strap,
  the maximum tension force values are achievable with waxed and embossed straps.
- Strap width, strap thickness,
  the maximum tension force values are achievable with thick and wide straps.

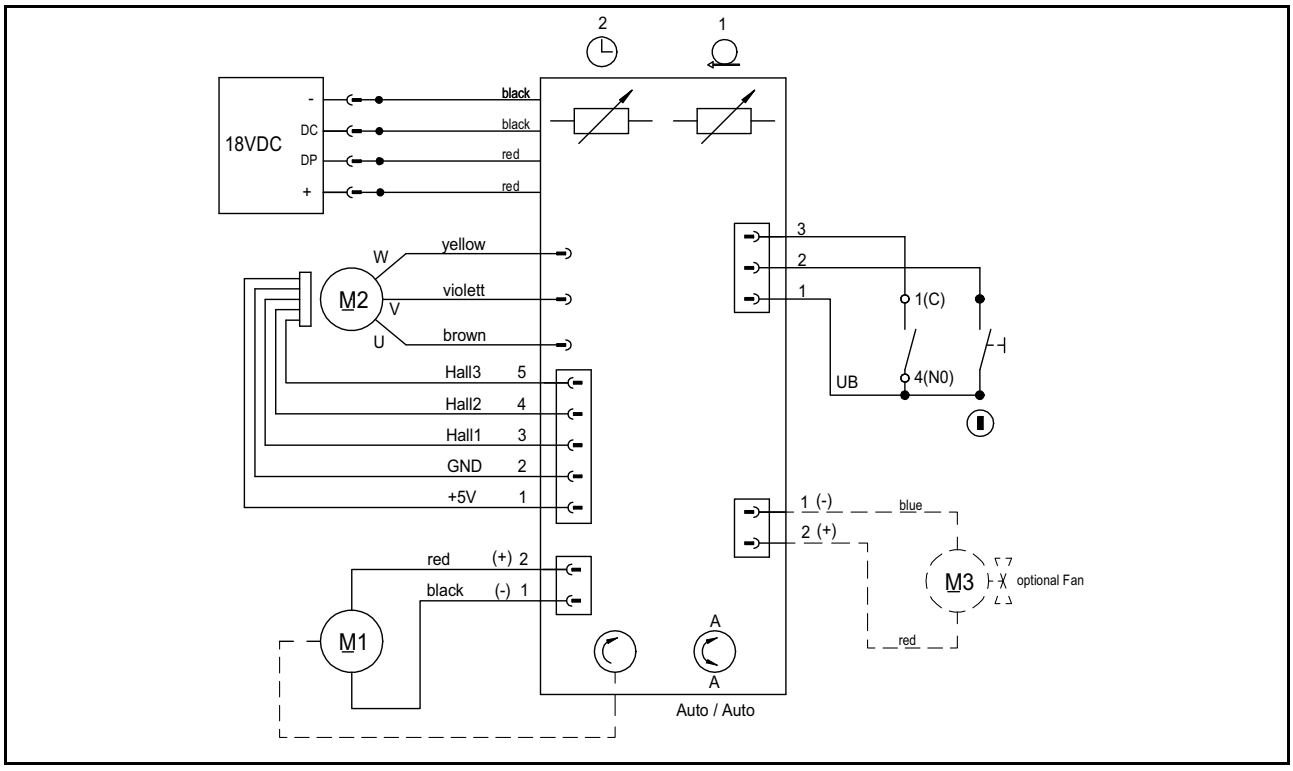
1.2.2 Electric schematic Semi Automatic ELS.1082



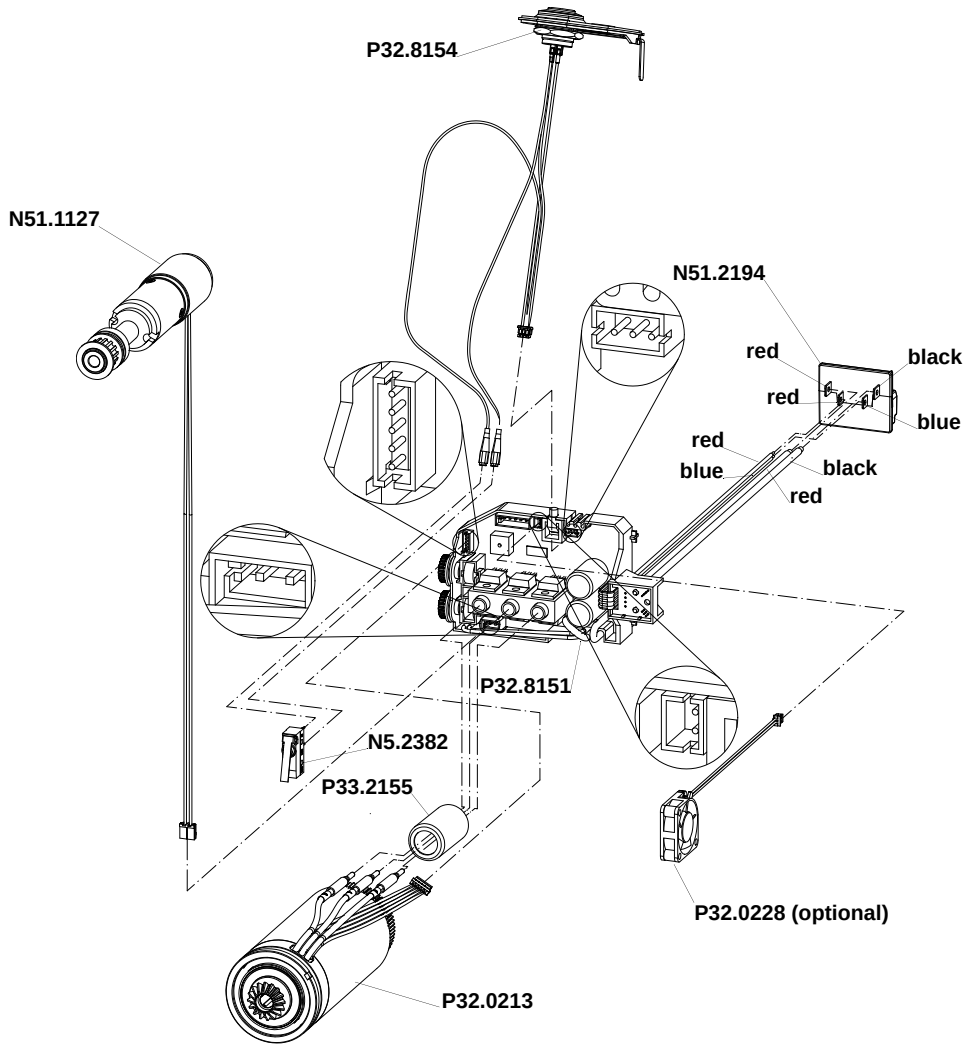
1.2.3 Connecting plan Semi Automatic



1.2.4 Electric schematic Automatic ELS.1083



1.2.5 Connecting plan Automatic



Semi automatic	43.2401	43.2402	43.2411	43.2412	43.2421	43.2422	43.2423	43.2424	43.2431	43.2432	43.2451	43.2452	43.2453	43.2454	43.2461	43.2462
Automatic	**43.2601**	**43.2602**	**43.2611**	**43.2612**	**43.2621**	**43.2622**	**43.2623**	**43.2624**	**43.2631**	**43.2632**	**43.2651**	**43.2652**	**43.2653**	**43.2654**	**43.2661**	**43.2662**
	10 x 0.4-0.64	**10 x 0.65-1.05**	**11.1 x 0.4-0.64**	**11.1 x 0.65-1.05**	**12 x 0.4-0.64**	**12 x 0.65-1.05**	**12.7 x 0.4-0.64**	**12.7 x 0.65-1.05**	**13 x 0.4-0.64**	**13 x 0.65-1.05**	**15 x 0.4-0.64**	**15 x 0.65-1.05**	**15.5 x 0.4-0.64**	**15.5 x 0.65-1.05**	**16 x 0.4-0.64**	**16 x 0.65-1.05**
Guide pin	P35.3226	P35.3226	P35.3216	P35.3216	P32.8182	P32.8182	P32.8183	P32.8183	P32.8185	P32.8185	P35.3226	P35.3226	P32.8186	P32.8186	P35.3216	P35.3216
Guide pin	P32.8189	P32.8189	P35.3217	P35.3217	P32.8181	P32.8181	P32.8191	P32.8191	P32.8193	P32.8193	P32.8189	P32.8189	P32.8194	P32.8194	P35.3217	P35.3217
Guide case	P32.8179	P32.8179	P32.8179	P32.8179	P32.8179	P32.8179	P32.8179	P32.8179	P32.8179	P32.8179	P35.3215	P35.3215	P35.3215	P35.3215	P35.3215	P35.3215
Strap stop	P32.8160	P32.8160	P32.8161	P32.8161	P32.8162	P32.8162	P32.8163	P32.8163	P32.8164	P32.8164	P32.8165	P32.8165	P32.8166	P32.8166	P32.8167	P32.8167
Strap guide	P32.8170	P32.8170	P32.8171	P32.8171	P32.8172	P32.8172	P32.8173	P32.8173	P32.8174	P32.8174	P32.8175	P32.8175	P32.8176	P32.8176	P32.8177	P32.8177
Tensioning wheel	P35.3202	P35.3203	P35.3202	P35.3203	P35.3202	P35.3203	P35.3202	P35.3203	P35.3202	P35.3203	P35.3202	P35.3203	P35.3202	P35.3203	P35.3202	P35.3203
Gripper	P32.8112	P32.8109	P32.8112	P32.8109	P32.8112	P32.8109	P32.8112	P32.8109	P32.8112	P32.8109	P32.8112	P32.8109	P32.8112	P32.8109	P32.8112	P32.8109
Gripper	P32.8113	P32.8110	P32.8113	P32.8110	P32.8113	P32.8110	P32.8113	P32.8110	P32.8113	P32.8110	P32.8113	P32.8110	P32.8113	P32.8110	P32.8113	P32.8110
Gripper	P32.8114	P32.8111	P32.8114	P32.8111	P32.8114	P32.8111	P32.8114	P32.8111	P32.8114	P32.8111	P32.8114	P32.8111	P32.8114	P32.8111	P32.8114	P32.8111
Cutter	P32.8197	P35.3214	P32.8197	P35.3214	P32.8197	P35.3214	P32.8197	P35.3214	P32.8197	P35.3214	P35.3214	P35.3214	P35.3214	P35.3214	P35.3214	P35.3214
Insertation part	P32.8198	--	P32.8198	--	P32.8198	--	P32.8198	--	P32.8198	--	P32.8198	--	P32.8198	--	P32.8198	--

Conversion parts from Semi automatic to Automatic

	Semi automatic	Automatic
Circuit board	P32.8148	P32.8151
Touch contact-switch	P32.8150	P32.8154
Pusher	--	P32.8133
Adhesive label	N44.9160	N44.9170

Attention!
When converting tools always change the item number on the type label.

Replace following parts:
Type label N44.9122
2 x hammer head bolts N2.4902

Enclose the suitable operation manual with the tool after each conversion (see paragraph 1.9.1 Ordering manuals).

1.4 PERIODIC MAINTENANCE AND CONTROL

(Carry out 12- months cycles doing one shift work. Doing more shift work respectively more often.)
To avoid damages on the motor shaft the two needle free wheelings N3.4509 and N3.4520 have to be replaced after 80 000 strapping cycles.

1.4.1 Procedure

Before using check tool for following possible faults:

- Visual test of the tool for loose, lost or damaged parts
- Clean all dirty parts of the tool, especially strap abrasion in the tensioning or the welding unit by using compressed air. (Never use any hard tools like a wire brush or a screw driver for cleaning)

Carry out a test strapping and check following:

- Insertion of the strap
- Strap feed and strap tensioning
- Tensioning force adjustment (see operation manual P328)
- Cutting of the upper strap
- Welding time adjustment (see operation manual P328)
- Seal quality (see operation manual P328)
- Function of the LED - display

Proceed according to paragraph 1.4.2 after a fault appears.
For exchange of wearing parts see operation manual P328.

Attention!

Remove battery from tool before each maintenance work.

Never use water or solvents for cleaning the tool's surface.

1.4.2 Troubleshooting

Ensure before each tool repair that the battery is charged and the tool's specific strap is used

SYMPTOM	CAUSE	REMEDY
Tool doesn't work at all	Battery is empty or defective	Charge or replace battery
	Contact problems caused by a broken battery housing	Replace battery
	Contact problems caused by a damaged insertation part N51.2194 or damaged motor housings P32.8103 and P32.8105/96	Replace insertation part or motor housing
	Contact problem of the internal wires	Check contacts and fix them if required or change defective parts
	Defective circuit board	Replace circuit board
Tool doesn't tension	Tensioning wheel is dirty or worn	Clean tensioning wheel or replace it, don't use any hard objects for this (see operation manual P328)
	P32.8128 is not meshing with P32.8130 because spring N2.5296 is defective or parts are dirty	Replace spring N2.5296, clean dirty parts
	Faulty tensioning wheel or tensioning wheel is assembled reversed	Correct assembling (see operation manual P328)
	Grippers are dirty, worn or wrongly assembled	Replace grippers, clean them or assemble correct, don't use any hard objects for this (see operation manual P328)
	Gearing parts from the tensioning gear are defective	Check tensioning gear and replace defective parts
	Defective circuit board	Replace circuit board
	Defective gear bearings	Replace bearings
	Needle free wheeling N3.4509 in gear wheel P32.8139 or N3.4520 in conical gear wheel P32.8138 assembled reversed or defective	Assemble the needle free wheeling correct or replace it
Tensioning wheel turns back immediately after the tensioning cycle	Defective needle free wheeling N3.4509 in P32.8134	Check parts and replace if necessary

SYMPTOM	CAUSE	REMEDY
Tool doesn't weld	Welding gripper P32.1511 is dirty or worn	Replace or clean welding gripper, don't use any hard objects for this (see operation manual P328)
	Welding stop gripper P32.8107 is dirty or worn	Replace or clean welding stop gripper, don't use any hard objects for this (see operation manual P328)
	Damaged housing parts	Replace housing parts
	Defective circuit board	Replace circuit board
	Pressure spring N21.5138 defective	Replace pressure spring
	Needle free wheeling N3.4509 in P32.8139 defective or assembled reversed	Assemble the needle free wheeling correct or replace it
	Gearing parts of the welding gear are defective	Check welding gear and replace defective parts
	Gear motor N51.1127 defective	Replace Gear motor
	Toothed belt N4.3236 or Toothed belt pulley P32.8122 is worn	Replace Toothed belt or Toothed belt pulley
	Defective gear bearing	Replace bearing
Tool badly cuts the strap or doesn't cut at all	Cutter is worn or damaged	Replace cutter (see operation manual P328)
	Wrong adjustment of the coupler P35.0146	Check adjustment and readjust if necessary (see operation manual P328)
	Welding gripper P32.1511 is worn	Replace welding gripper (see operation manual P328)
	Welding time too short	Change adjustment (see operation manual P328)
	Defective pressure spring N2.5237	Replace pressure spring
Tool switches off after a few strappings (Displaying empty battery)	Battery defective or empty	Check the battery and change defective batteries
Gear noise	Tensioning or welding gear is worn	Check component parts and replace defective ones

1.4.3 Battery test

The battery should be checked while each maintenance with a battery tester.
Information to the Battery tester you will get by FROMM System GmbH.
(see 1.10 SERVICE ADDRESS)

- Li-Ion-Batteries 18V / (4,0Ah) must be replaced at a capacity less than approx. 60% (2,4 Ah)

1.4.4 Checklist

Carry out some test strappings and check following tool components.

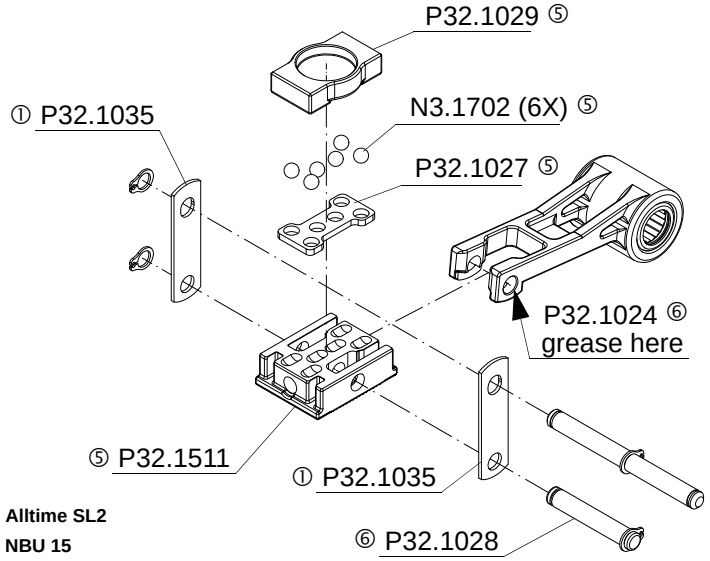
- Inserting of the strap
- Insert battery in the tool and check function of the LED-display (see operation manual P328)
- Strap feed and strap tension
- Tension force adjustment (see operation manual P328)
- Cutting of the upper strap
- Welding time adjustment (see operation manual P328)
- Seal quality (see operation manual P328)
- Function of the LED-display (see operation manual P328)
- Correct type label

1.4.5 Lubrication rules

All gear parts have to be lubricated with **MOLYKOTE BR2 PLUS** grease.
All other parts have to be lubricated according to the explosion drawing.
Lubrication interval: While each maintenance or after 12 months at the latest.

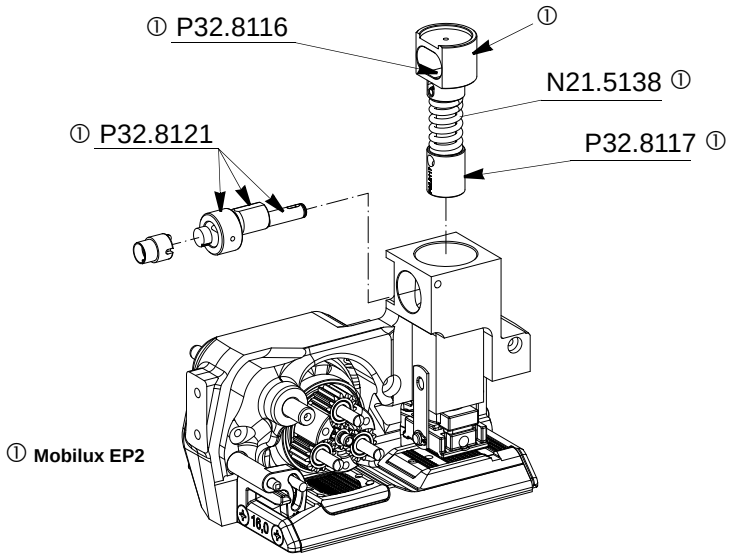
Particular note:

All bearing parts of the welding unit have to be cleaned and lubricated as follows:



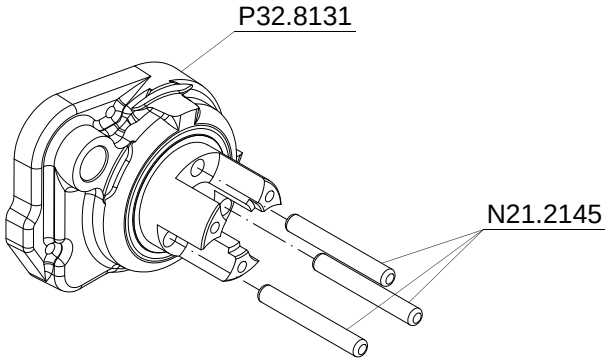
① Mobilux EP2
⑤ Klüber Isoflex Alltime SL2
⑥ Klüber Isoflex NBU 15

Eccentric shaft P32.8121, Spring slide P32.8116, Spring bolt P32.8117 and the Pressure spring N21.5138 have to be greased as follows:

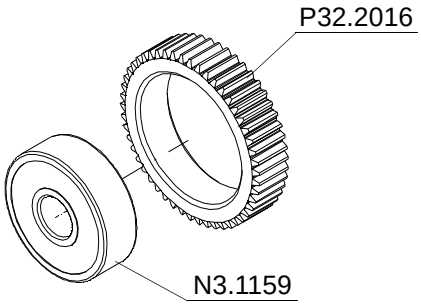


Lubrication interval: While each maintenance or after 12 months at the latest.

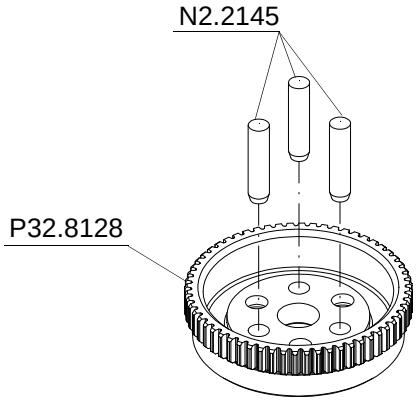
1.4.6 Glueing rules



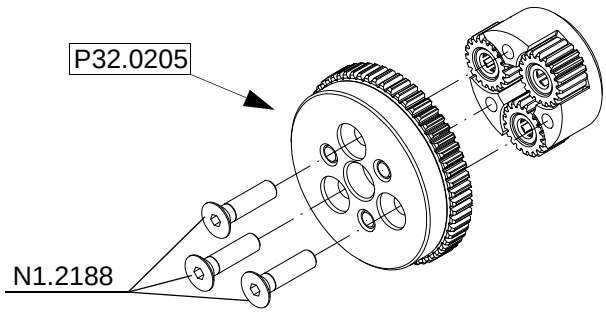
The parallel pins N21.2145 have to be glued into the gear body P32.8131 using **LOCTITE 603**.



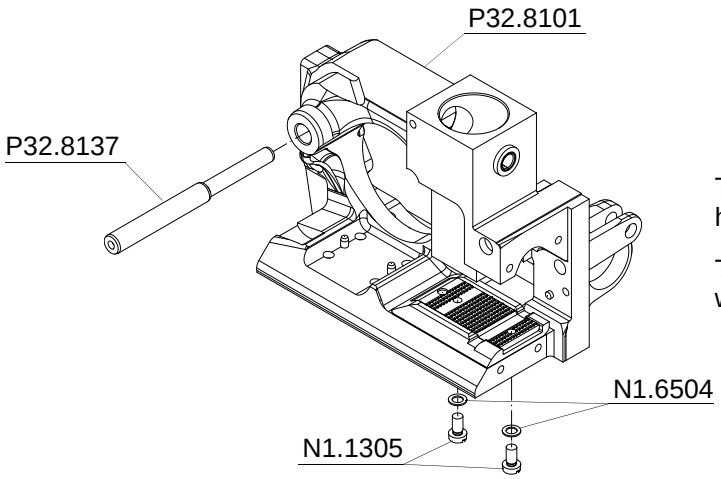
The Bearing N3.1159 has to be glued into the gear wheel P32.2016 with **LOCTITE 603.**



Gear wheel P32.8128 and parallel pins N2.2145 have to be glued with **LOCTITE 603**



The screws N1.2188 have to be glued additionally in the wheel P32.0205 using **LOCTITE 222.**
Don‘t damage the teeth when loosening or tightening the screws.

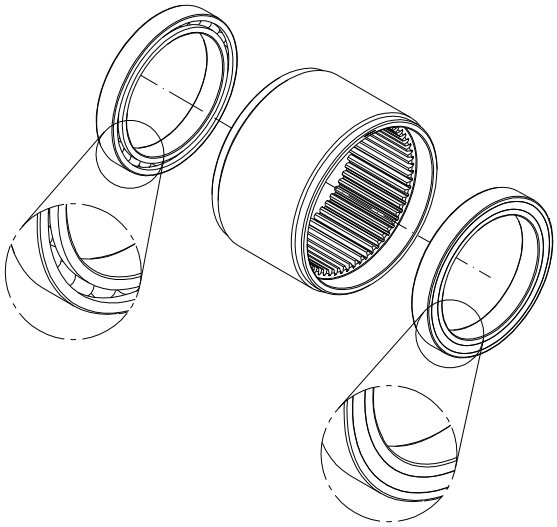


The bolt P32.8137 has to be glued into the housing P32.8101 using **Loctite 603**.

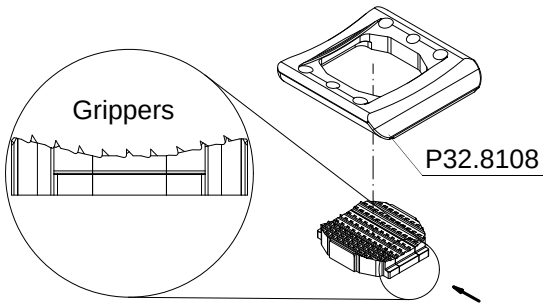
The screws N1.1305 have to be glued with **Loctite 222**.

1.4.7 Assembly information

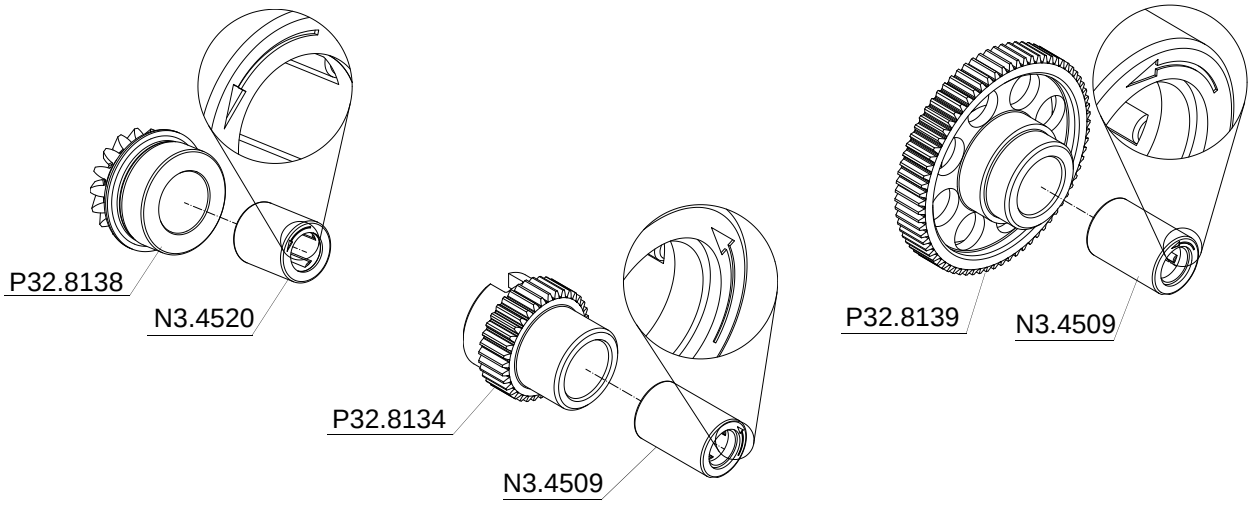
One sided sealed bearings N3.1172 in the tensioning wheel.
The sealed side has to face to the outside. (see drawing)



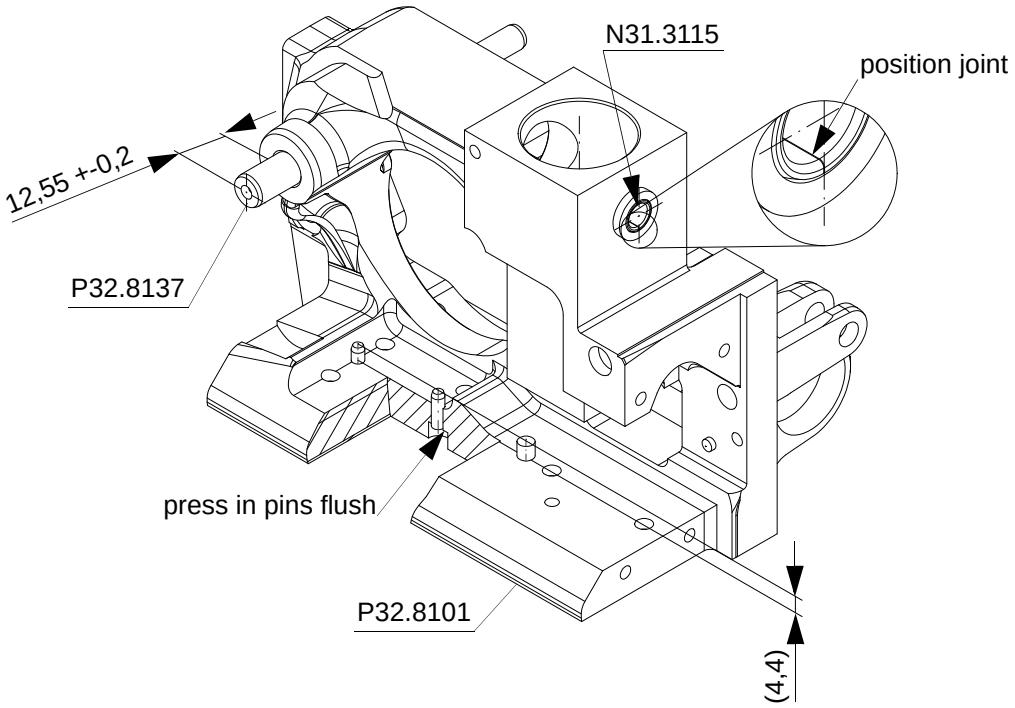
When installing the grippers into the holder P32.8108 pay attention to the direction of the teeth (see drawing).



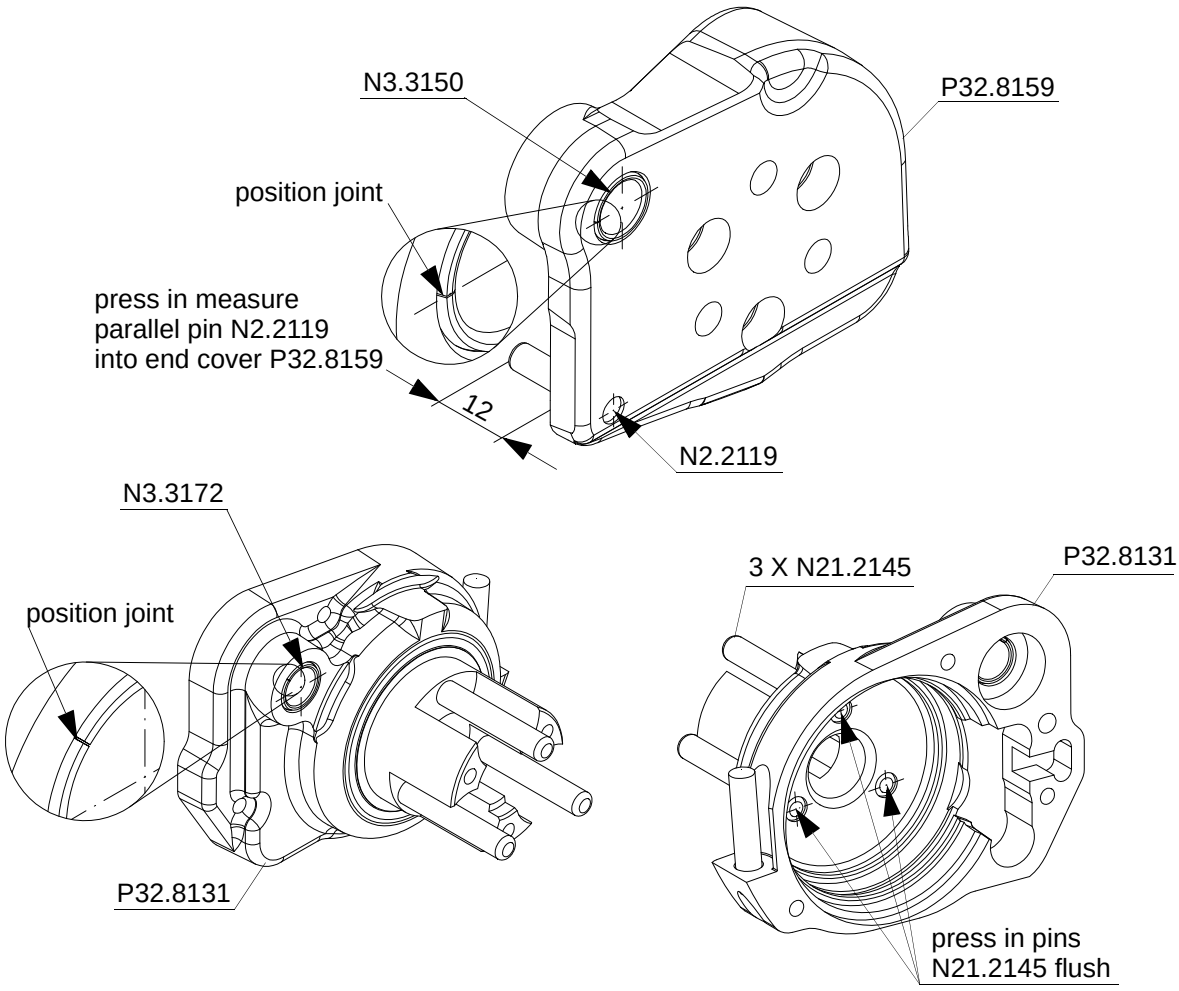
Pay attention to the mounting position of the needle free wheelings N3.4509 and N3.4520.
The rolling direction is stamped in at the front side of the free wheelings.



Pay attention to the position of the joint from the slide bearing N31.3115 (see drawing).

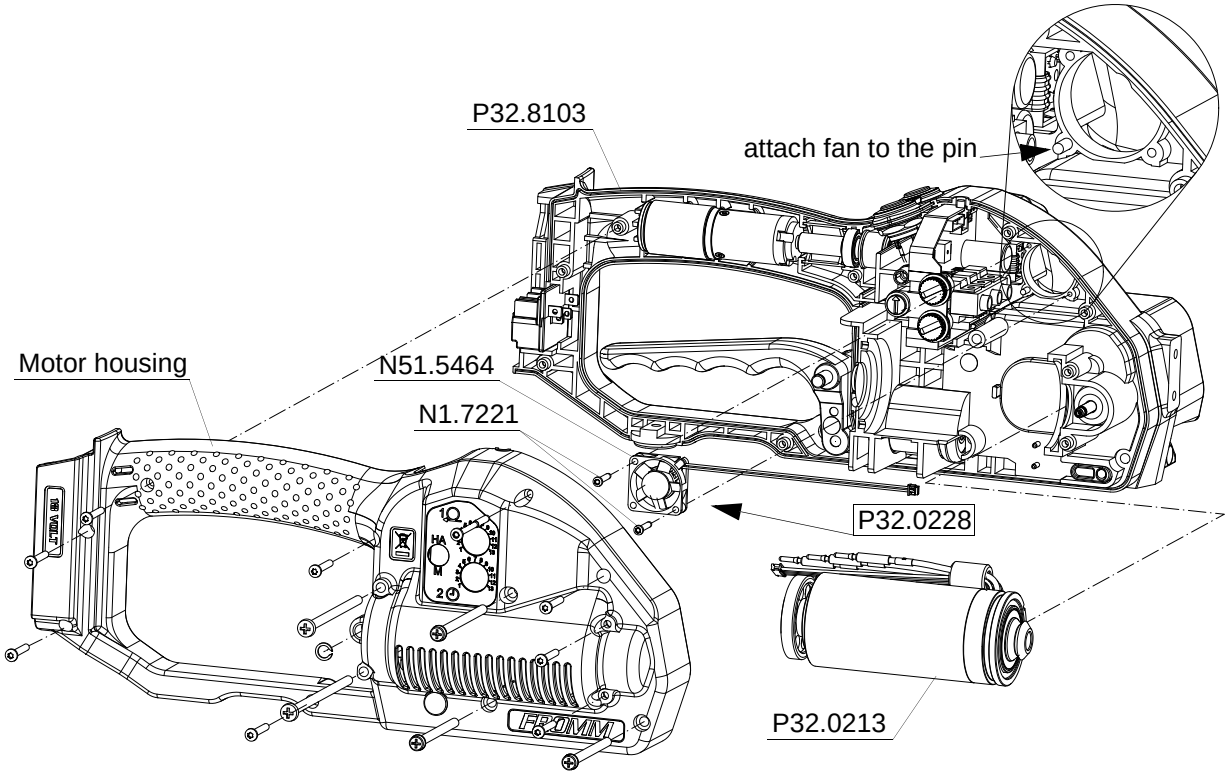


Pay attention to the position of the joint from the slide bearings N3.3172 and N3.3150. (see drawing)

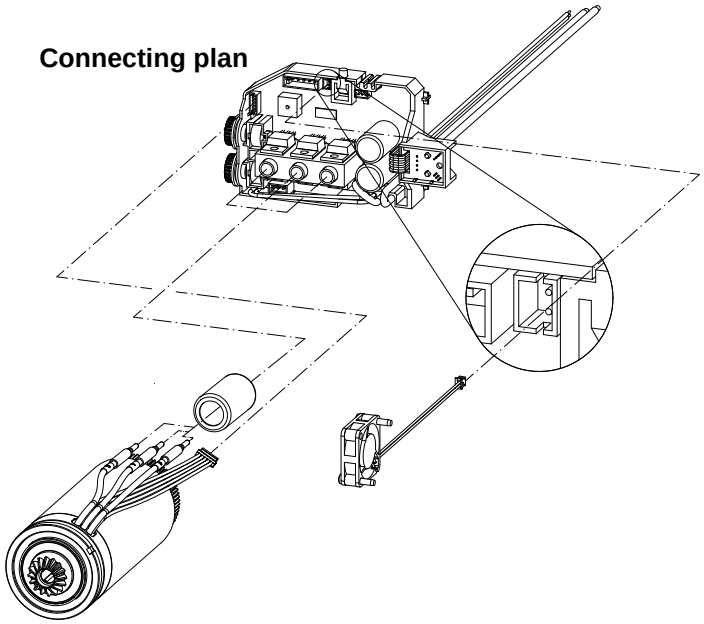


Mounting of the optional fan P32.0228:

- Unscrew the motor housing and remove it.
- Disconnect the plugs of the motor P32.0213 from the circuit board. Remove the motor.
- Insert the fan N51.5464 at the prepared place. The cable shows up to the right.
- Attach the corresponding hole of the fan to the protruding pin of the motor housing P32.8103.
- Attach the fan with the supplied screws N1.7221.
- Plug in the connector on the shown place of the circuit board.
- Put in the motor and connect it. Take care that the colours of the connecting cables are conform to the connector sockets. The gear wheels of the motor have to touch their counterparts correctly.
- Before closing the motor housing take care that no cables can be jammed or damaged.
- Assemble the motor housing.



Connecting plan



1.5 RECOMMENDED SPARE PARTS

Following spare parts are recommended for stock keeping:

Item-No.	Description	Pieces per tool
N1.1196	Screw	3
N1.1305	Screw	6
N1.1928	Screw	1
N1.1934	Flat head screw	3
N1.1943	Screw	2
N1.1973	Screw	1
N1.6504	Safety washer	24
N1.7211	PT-screw	8
N2.1118	Security ring	2
N2.1121	Security ring	5
N2.1606	Spring ring	1
N3.1702	Ball	6
N3.4509	Free wheeling	2
N3.4520	Free wheeling	1
N51.1127*	Gear motor	1
N51.2194	Insertation part	1
P32.0200	Body	1
P32.0213*	Electric motor	1
P32.0215/16	Circuit board	1
P32.8103	Motor housing	1
P32.8105/96	Motor housing	1
P32.8150/54	Touch contact-switch	1
P32.1511*	Welding gripper	1
P32.1024	Rocker	1
P32.1028	Bolt	1
P32.1035	Driver	2
P32.8107*	Welding stop gripper	1
P32.8108	Holder	1
P32.8109/12*	Gripper	1
P32.8110/13*	Gripper	1
P32.8111/14*	Gripper	1
P32.8159	End cover	1
P32.8197/ P35.3214*	Cutter	1
P35.3202/03*	Tensioning wheel	1

* = wearing parts
Stock only parts from tools that are in sale.

Item-No.	Description	Strapping cycles			Comment
		80 000	160 000	240 000	
P32.8197 / P35.3214	Cutter	new	new	new	
P35.3202 / P35.3203	Tensioning wheel			checkup	
P32.8109, P32.8110, P32.8111/ P32.8112, P32.8113, P32.8114	Gripper			checkup	
P32.8107	Welding stop gripper			checkup	
P32.1511	Welding gripper		new		
P32.1028	Bolt	new	new	new	
N3.4509 / N3.4520	Needle free wheeling (at Motor P32.0213)	new	new	new	defective needle free wheelings will damage the motor shaft
P32.0213	Motor			checkup	
N51.1127	Gear motor			checkup	
P32.0144	Rocker		new		including bearings
P32.8101 (P32.0200)	Body		checkup		
P32.0228	Fan (Optional)				check during each maintenance
N2.1121	Security ring				replace at each disassembling

new = replace after max. xxx Strapping cycles

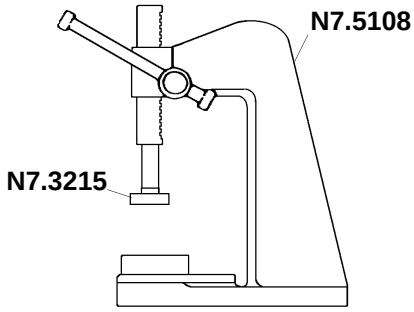
1.7 ACCESSORY TOOLS

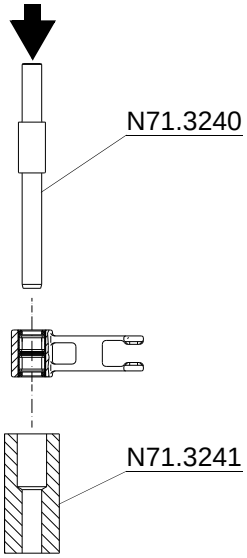
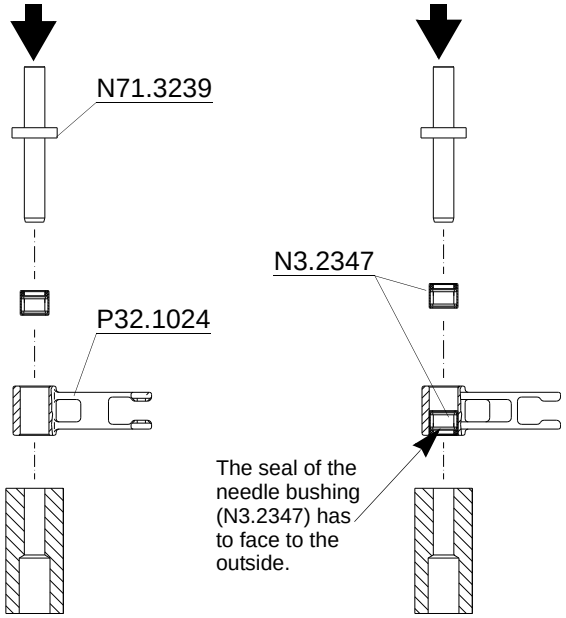
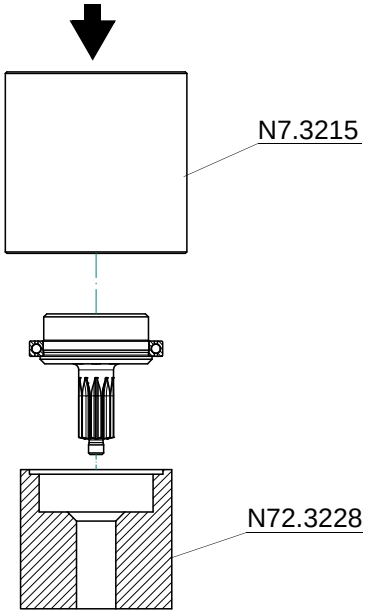
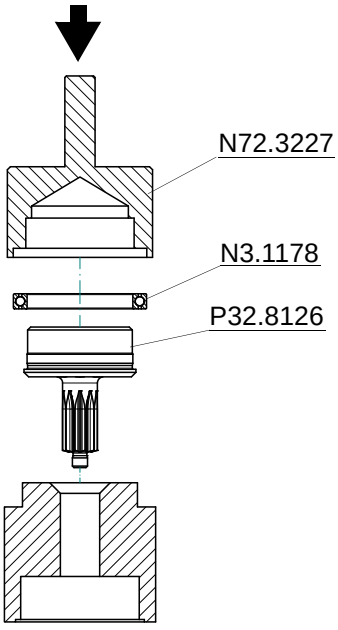
Item number	Field	Description	Application
N71.3239	F1	Press in arbor	N3.2347/P32.1024
N71.3240	F1	Press out arbor	N3.2347/P32.1024
N71.3241	F1, F3	Pressure pad	N3.2347/P32.1024; N3.4509/P32.8134
N72.3227	F2	Arbor	N3.1178/P32.8126
N72.3228	F2	Pressure pad	N3.1178/P32.8126
N72.3229	F3	Pressure pad	N3.4509/P32.8134
N72.3230	F3	Arbor	N3.4509/P32.8134
N71.3248	F4	Press in arbor	N3.3150/P32.8159
N71.3250	F4, F7	Press out arbor	N3.3150/P32.8159; N3.3172/P32.8131
N71.3237	F5, F13	Arbor	N3.1159/P32.2016; N31.3115/P32.8101
N71.3283	F5	Pressure pad	N3.1159/P32.2016
--	F6	Commercial arbor	N2.2126/P32.8131
N72.3225	F6	Pressure pad	N2.2126/P32.8131
N7.3244	F7	Arbor	N3.3172/P32.8131
N71.3235	F8, F10	Arbor	N3.4520/P32.8138; N3.4509/P32.8139
N72.3222	F8, F12, F13	Arbor	N3.4520/P32.8138; P32.8137/P32.8101; N31.3115/P32.8101
N72.3223	F8	Arbor	N3.4520/P32.8138
N72.3214	F9, F11	Arbor	N31.1151/P32.8138; N31.1163/P32.8139
N72.3224	F9	Pressure pad	N31.1151/P32.8138
N72.3220	F10	Pressure pad	N3.4509/P32.8139
N71.3286	F11	Arbor	N31.1163/P32.8139
N72.3231	F11	Pressure pad	N31.1163/P32.8139
N72.3232	F12	Thrust piece	P32.8137/P32.8101
N72.3233	F13	Pressure pad	N31.3115/P32.8101
N71.3243	F14	Press in arbor	N3.1134, P32.8115/P32.1022
N71.3244	F14	Press out arbor	N3.1134, P32.8115/P32.1022
N72.3234	F14	Pressure pad	N3.1134, P32.8115/P32.1022
N72.3235	F15	Thrust piece	N2.2145/P32.8128

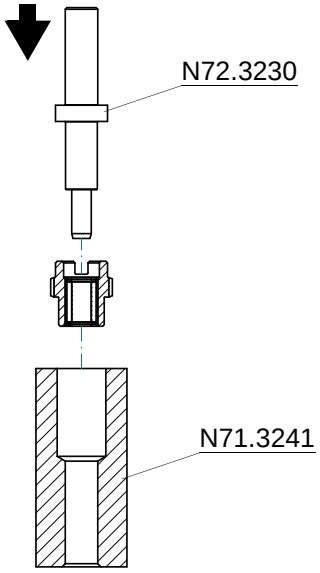
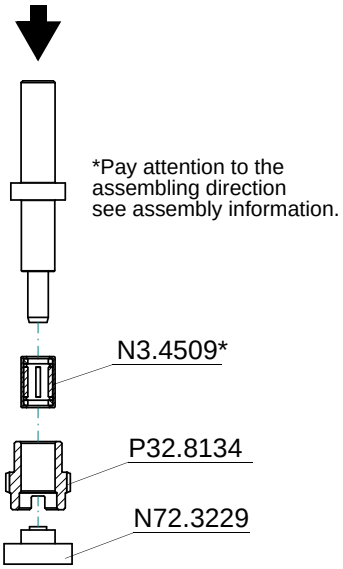
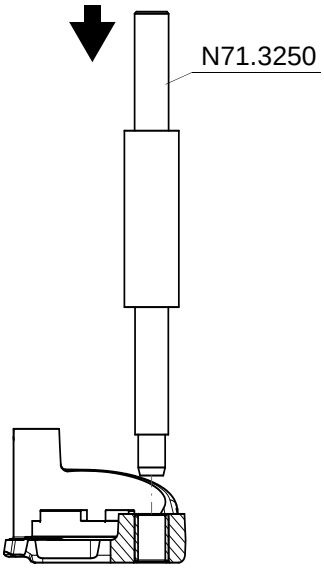
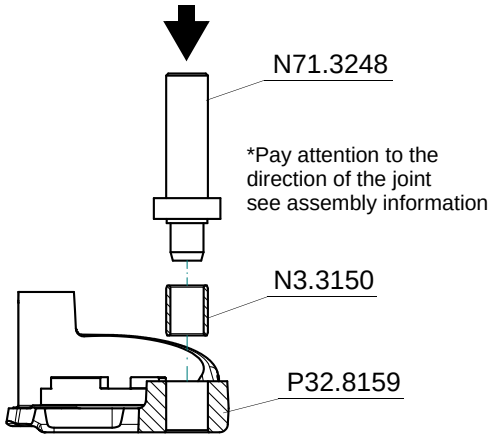
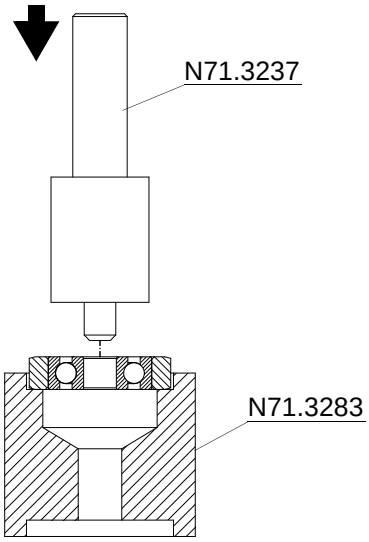
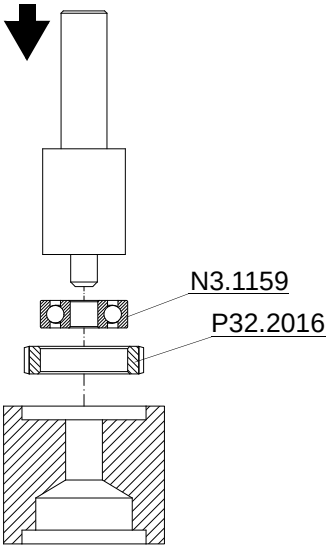
Partly some of these tools are already used for other models.

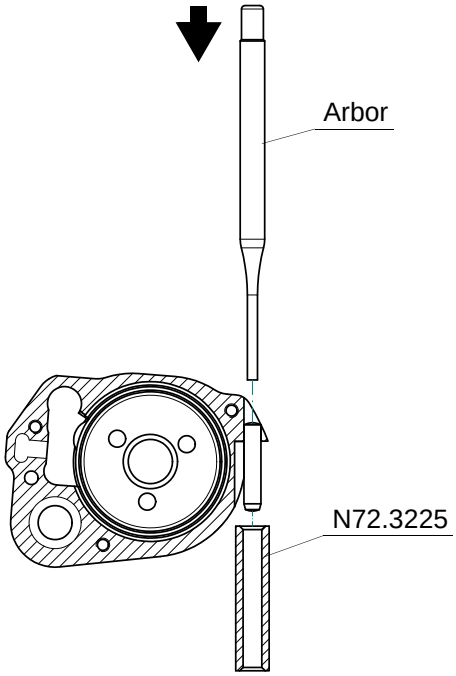
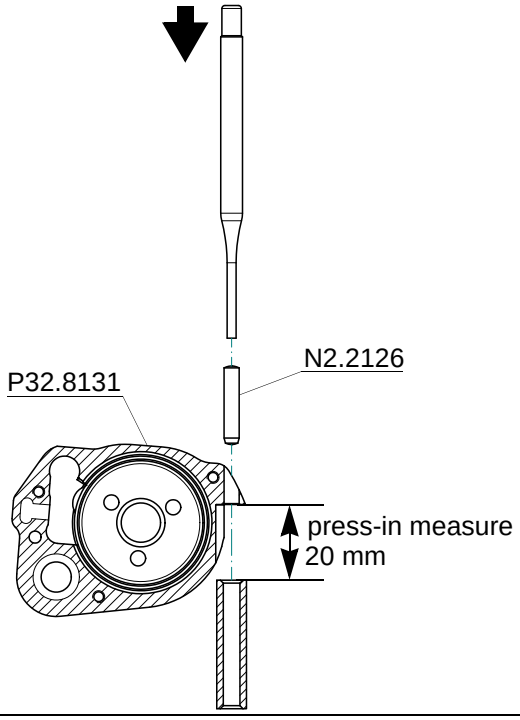
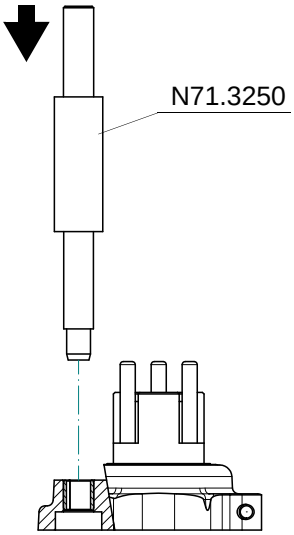
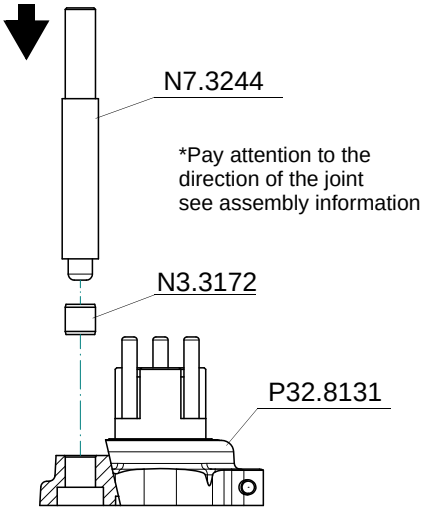
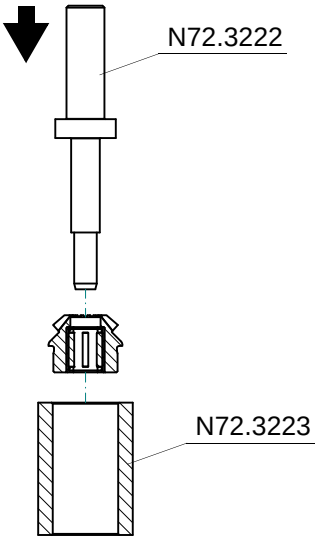
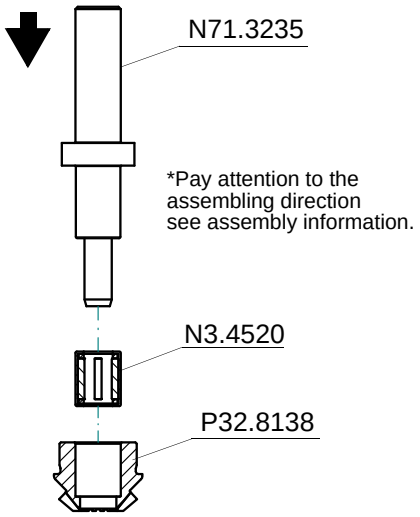
1.8 USE OF ACCESSORY TOOLS

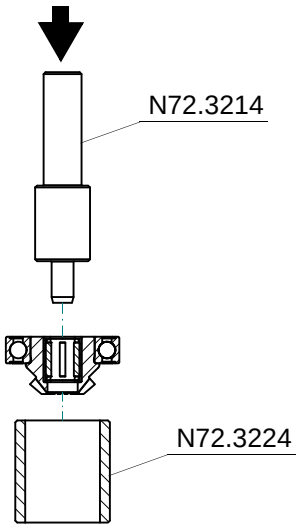
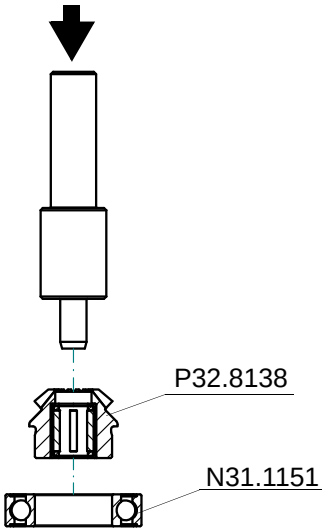
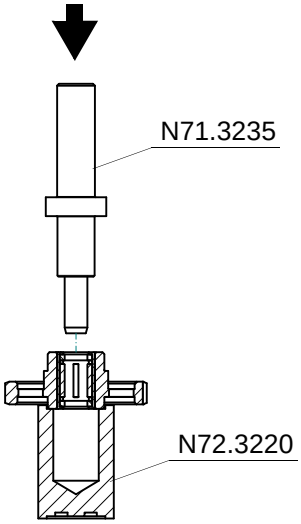
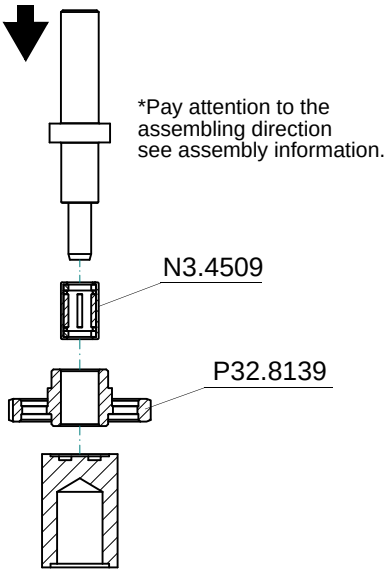
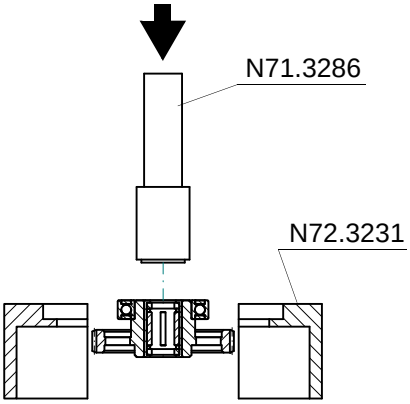
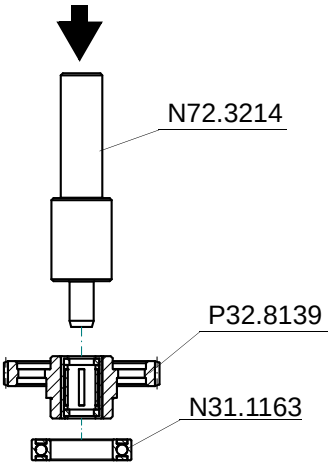
Accessory tools should only be used with the suitable arbor press N7.5108 to prevent a jam of the parts have to be pressed in. Additional a retainer (N7.3215) is necessary.

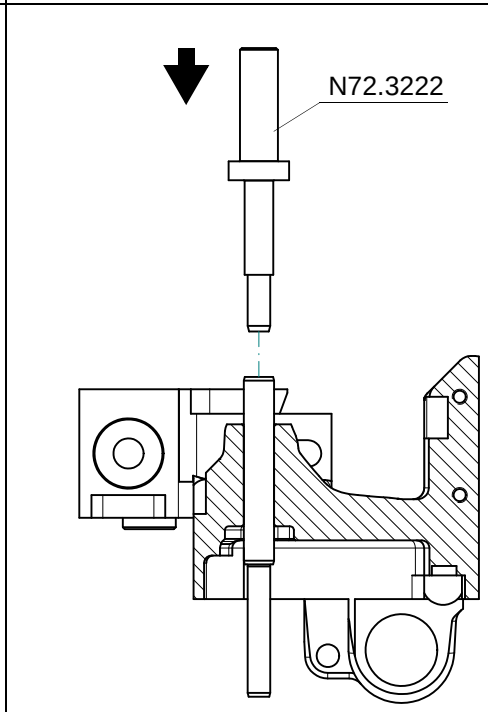
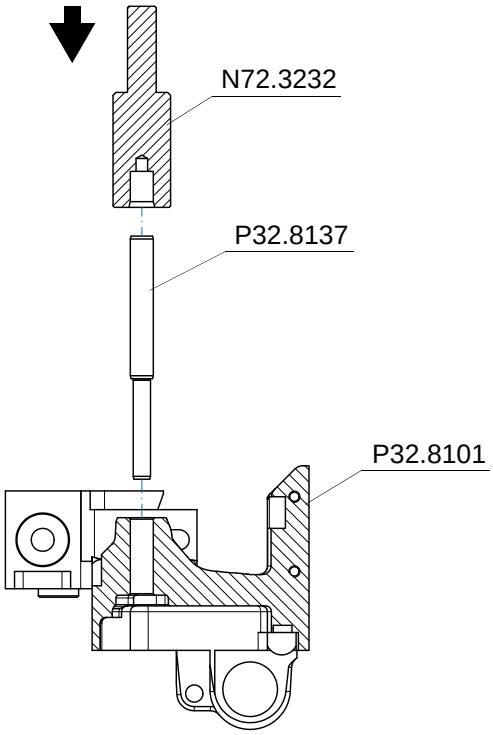
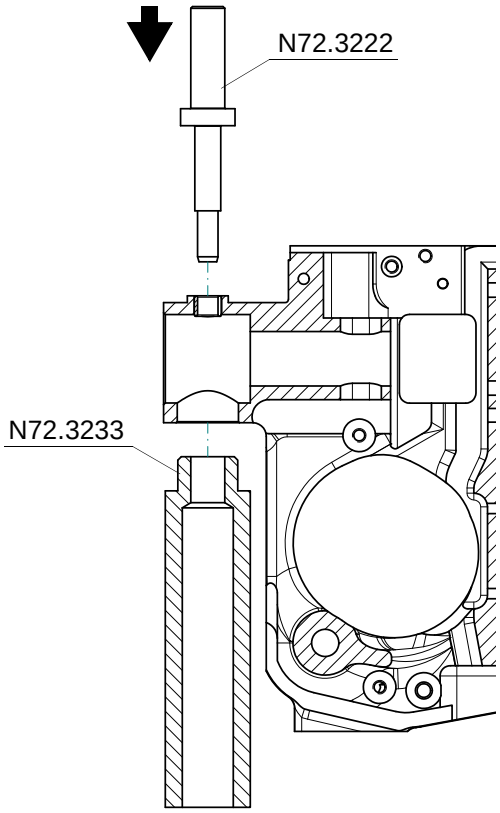
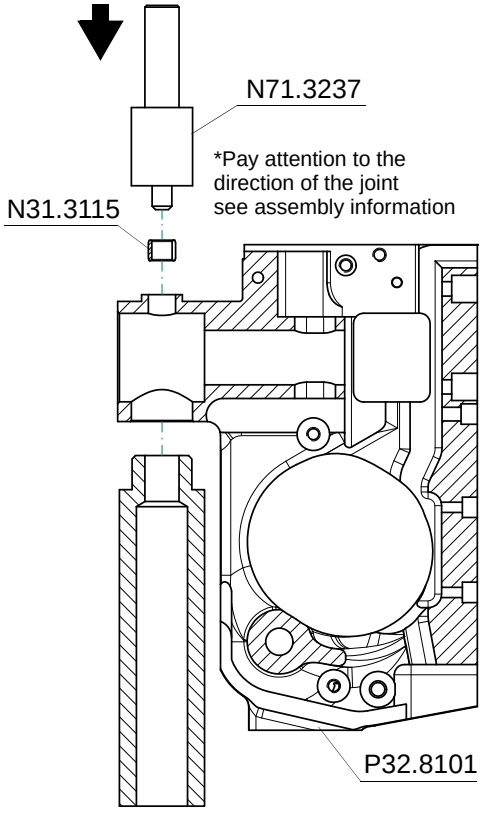


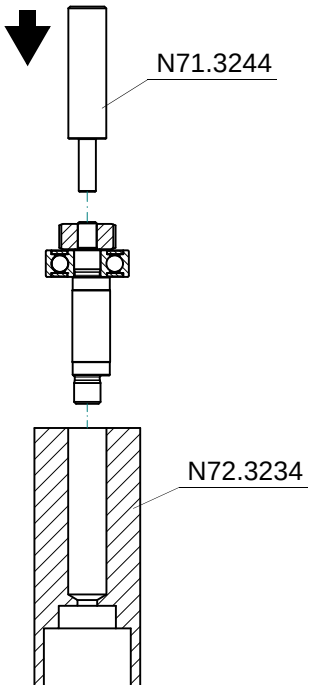
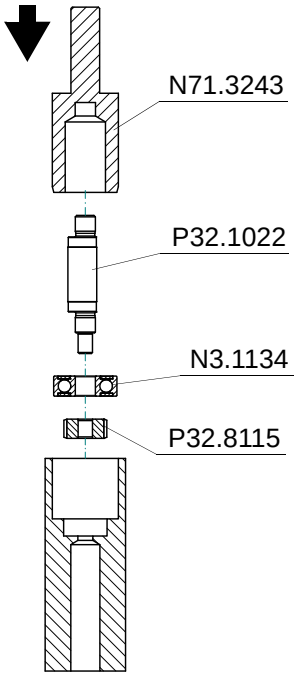
Part	Disassembly	Assembly
N3.2347/ P32.1024 **F1**		
P32.8126/ N3.1178 **F2**		

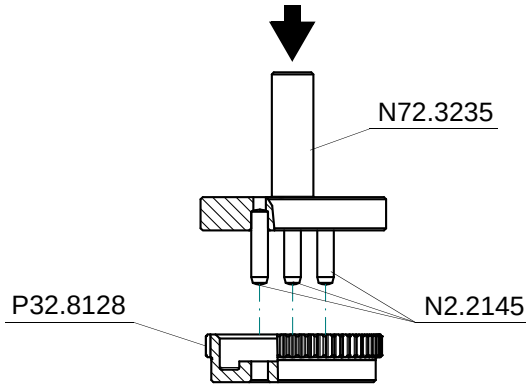
Part	Disassembly	Assembly
P32.8134/ N3.4509 **F3**		
P32.8159/ N3.3150 **F4**		
P32.2016/ N3.1159 **F5**		

Part	Disassembly	Assembly
P32.8131/ N2.2126 **F6**		
P32.8131/ N3.3172 **F7**		
P32.8138/ N3.4520 **F8**		

Part	Disassembly	Assembly
P32.8138/ N31.1151 **F9**		
P32.8139/ N3.4509 **F10**		
P32.8139/ N31.1163 **F11**		

Part	Disassembly	Assembly
P32.8101/ P32.8137 **F12**		
P32.8101/ N31.3115 **F13**		

Part	Disassembly	Assembly
P32.1022/ N3.1134/ P32.8115 **F14**		

Part	Assembly
P32.8128/ N2.2145 **F15**	

1.9 ORDERING SPARE PARTS

On principle spare part numbers should be taken from the drawings or spare parts lists. Check if the version number of the tool and the spare parts list are the same.
Type dependent spare parts should be ordered as follows:

Ordering example

Ordering a tensioning wheel:

- Take item numbers of the tensioning wheel from drawing (P35.3202/03)
- Find out the tool type in which the tensioning wheel should be assembled (e.g. 43.2462)
- Find out the item number of the needed tensioning wheel by using the type dependent spare parts lists (for type 43.2462 it is tensioning wheel P35.3203).

Order as follows if 10 tensioning wheels are needed:
P35.3203 Tensioning wheel 10 pcs.

1.9.1 Ordering manuals

When converting tools make sure that the used manual has still validity.
If tools change their item number because of the conversion (see chart of types) the adequate manual must be ordered as follows.

Ordering example:

Tool item number: 43.2462
Version number: 01
Language of the manual: de

The manual order for this tool must look as follows:
43246201.de
If the manual is needed in another language replace the shorthand expression "de" (see table).

de	**German**
en	**English**
fr	**French**
it	**Italian**
nl	**Dutch**
po	**Portuguese**
se	**Swedish**
fin	**Finnish**
sp	**Spanish**
ru	**Russian**
cz	**Czech**
hu	**Hungarian**
pl	**Polish**
sk	**Slovakian**
tr	**Turkish**

1.9.2 Ordering address

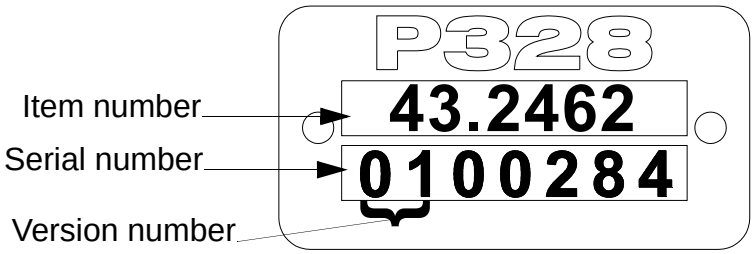
Spare parts and manuals can be ordered at:

Fromm Holding AG
Hinterbergstrasse 26
CH-6330 Cham
Switzerland

Phone: +41(0) 41 741 57 41
Fax: +41(0) 41 741 57 60
e-mail: orders@fromm-pack.com

1.9.3 Finding out of the tool type (item number), the serial number and the version number:

Type label P328



1.10 SERVICE ADDRESS

You will get further assistance and information at:

Fromm System GmbH
Technical customer support
Neulandstr. 10
D-77855 Achern
Germany

Phone:+49(0)7841 / 62 94-22
Fax: +49(0)7841 / 62 94-11

e-mail: de@fromm-pack.com

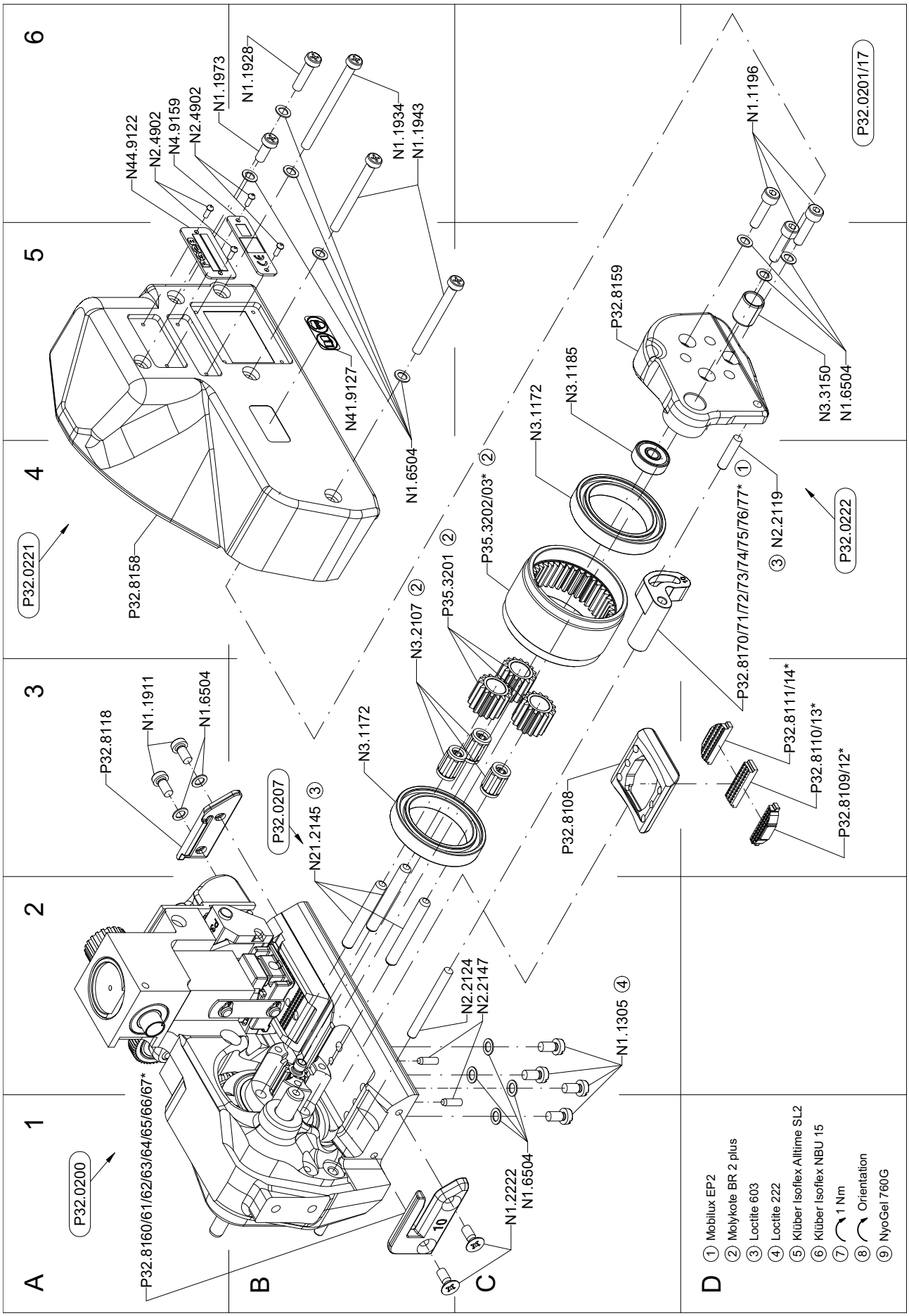
1.11 CHART OF TYPES

1.11.1 Chart of types P328 M / HA

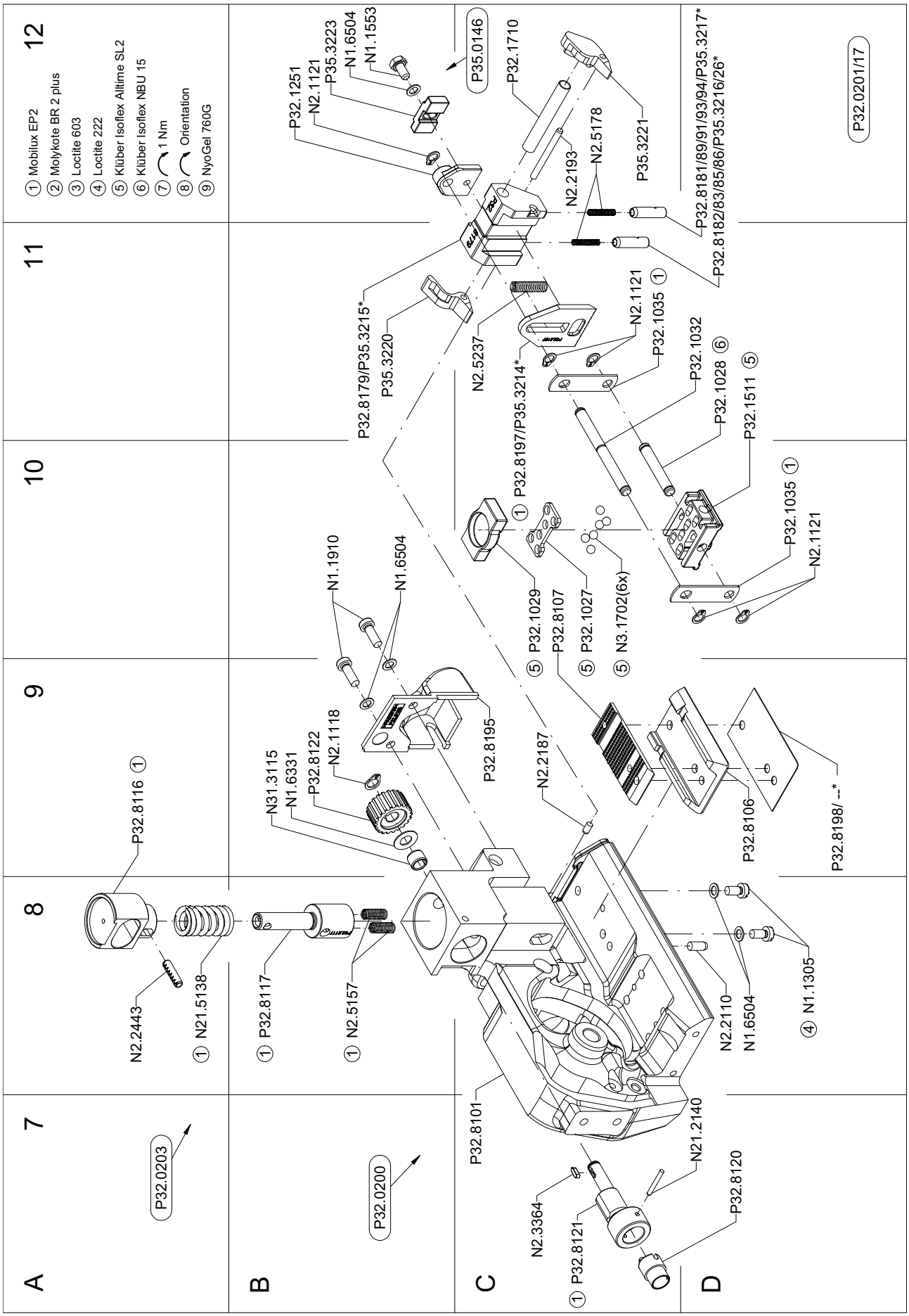
Item no.	Model	Strap width	Strap thickness
43.2401	P328/10/0.40-0.64	10 mm / 3/8"	0.40-0.64 mm / .016 - .025"
43.2402	P328/10/0.65-1.05	10 mm / 3/8"	0.65-1.05 mm / .026 - .041"
43.2411	P328/11.1/0.40-0.64	11.1 mm / 7/16"	0.40-0.64 mm / .016 - .025"
43.2412	P328/11.1/0.65-1.05	11.1 mm / 7/16"	0.65-1.05 mm / .026 - .041"
43.2421	P328/12/0.40-0.64	12 mm	0.40-0.64 mm / .016 - .025"
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"
43.2431	P328/13/0.40-0.64	13 mm	0.40-0.64 mm / .016 - .025"
43.2432	P328/13/0.65-1.05	13 mm	0.65-1.05 mm / .026 - .041"
43.2451	P328/15/0.40-0.64	15 mm	0.40-0.64 mm / .016 - .025"
43.2452	P328/15/0.65-1.05	15 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"

1.11.2Chart of types P328 A / A

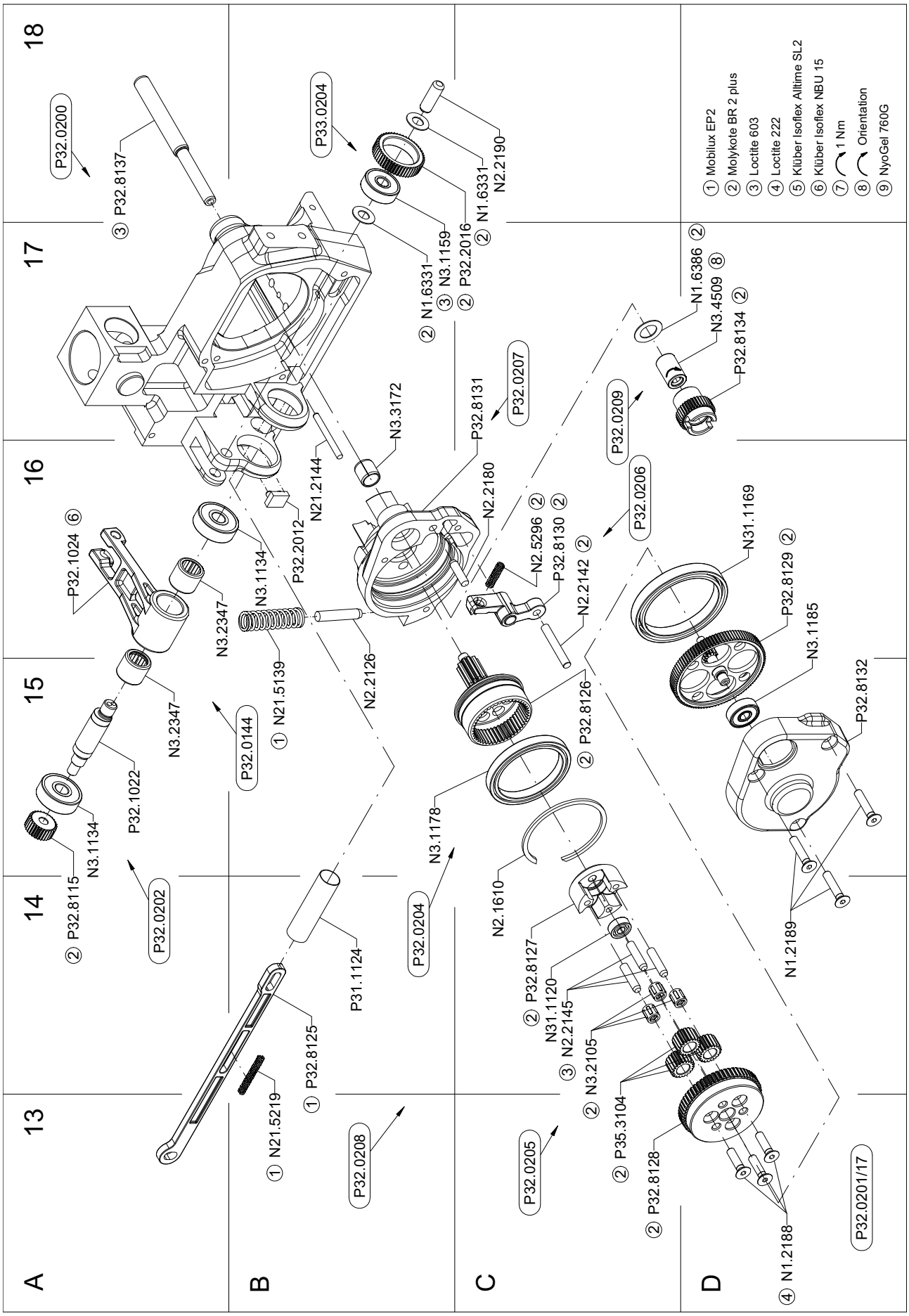
Item no.	Model	Strap width	Strap thickness
43.2601	P328/10/0.40-0.64/A	10 mm / 3/8"	0.40-0.64 mm / .016 - .025"
43.2602	P328/10/0.65-1.05/A	10 mm / 3/8"	0.65-1.05 mm / .026 - .041"
43.2611	P328/11.1/0.40-0.64/A	11.1 mm / 7/16"	0.40-0.64 mm / .016 - .025"
43.2612	P328/11.1/0.65-1.05/A	11.1 mm / 7/16"	0.65-1.05 mm / .026 - .041"
43.2621	P328/12/0.40-0.64/A	12 mm	0.40-0.64 mm / .016 - .025"
43.2622	P328/12/0.65-1.05/A	12 mm	0.65-1.05 mm / .026 - .041"
43.2623	P328/12.7/0.40-0.64/A	12.7 mm / 1/2"	0.40-0.64 mm / .016 - .025"
43.2624	P328/12.7/0.65-1.05/A	12.7 mm / 1/2"	0.65-1.05 mm / .026 - .041"
43.2631	P328/13/0.40-0.64/A	13 mm	0.40-0.64 mm / .016 - .025"
43.2632	P328/13/0.65-1.05/A	13 mm	0.65-1.05 mm / .026 - .041"
43.2651	P328/15/0.40-0.64/A	15 mm	0.40-0.64 mm / .016 - .025"
43.2652	P328/15/0.65-1.05/A	15 mm	0.65-1.05 mm / .026 - .041"
43.2653	P328/15.5/0.40-0.64/A	15.5 mm	0.40-0.64 mm / .016 - .025"
43.2654	P328/15.5/0.65-1.05/A	15.5 mm	0.65-1.05 mm / .026 - .041"
43.2661	P328/16/0.40-0.64/A	16 mm / 5/8"	0.40-0.64 mm / .016 - .025"
43.2662	P328/16/0.65-1.05/A	16 mm / 5/8"	0.65-1.05 mm / .026 - .041"



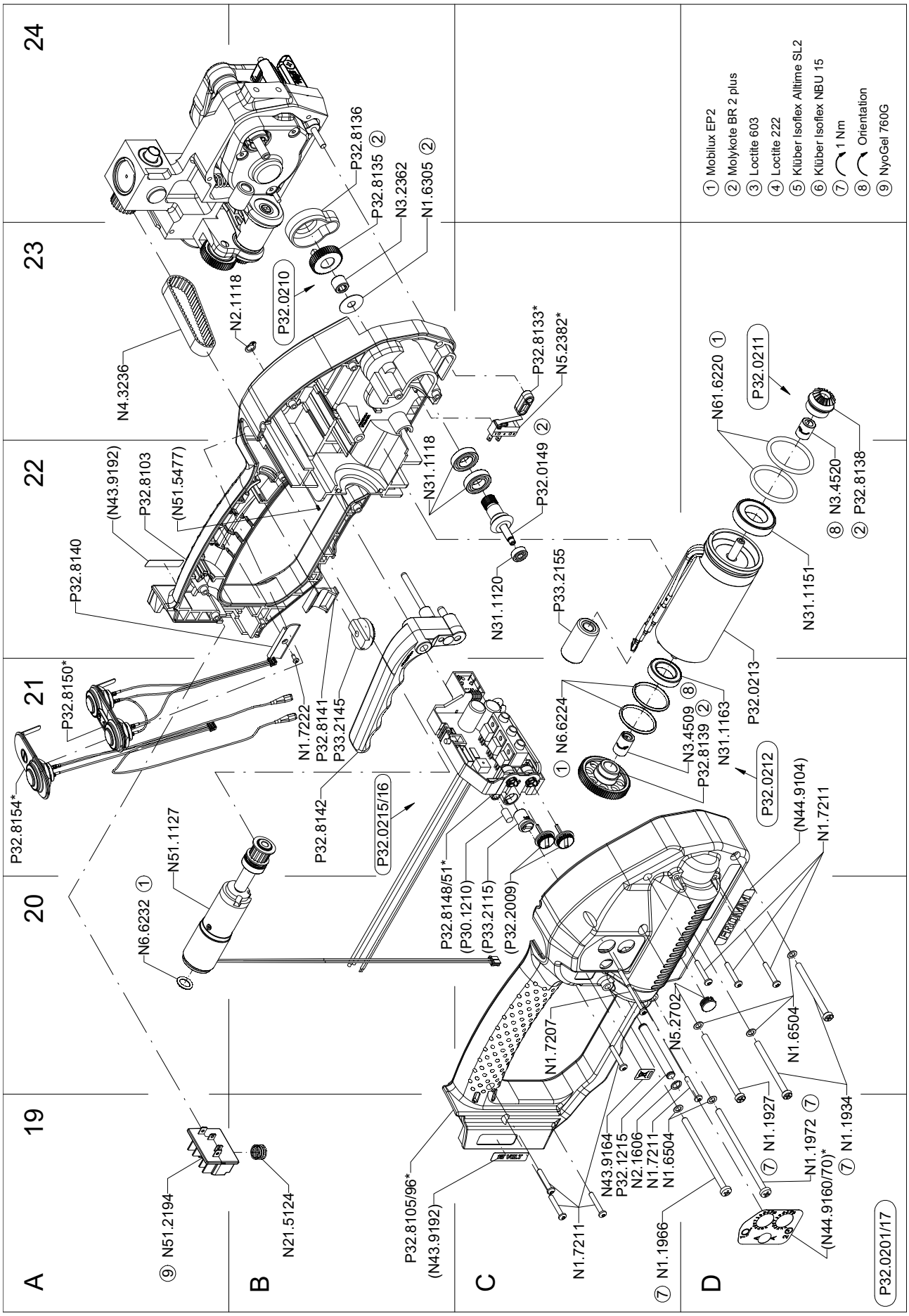
***see Ordering spare parts**



***see Ordering spare parts**



***see Ordering spare parts**



***see Ordering spare parts**

3 SPARE PARTS LIST P328

3.1 Type independent spare parts P328.0001.01 / P328.0002.01

Item-No.		in group	Pcs.	Description	Dimension	Field
N1.1196			3	SCREW	M4 X 16	D6
N1.1305			6	SCREW	M4 X 7.8	C2+
N1.1553		P35.0146	1	HEXAGON SCREW	M4 X 8	B12
N1.1910			2	FLAT HEAD SCREW	M4 X 12	B10
N1.1911			2	FLAT HEAD SCREW	M4 X 8	A3
N1.1927		P32.0201/17	1	FLAT HEAD SCREW	M4 X 60	D19
N1.1928			1	FLAT HEAD SCREW	M4 X 16	B6
N1.1934			1	FLAT HEAD SCREW	M4 X 50	B6
N1.1934		P32.0201/17	2	FLAT HEAD SCREW	M4 X 50	D19
N1.1943			2	FLAT HEAD SCREW	M4 X 40	B6
N1.1966		P32.0201/17	1	SCREW	M4 X 70	C19
N1.1972		P32.0201/17	1	SCREW	M4 X 80	D19
N1.1973			1	FLAT HEAD SCREW	M4 X 10	A6
N1.2188		P32.0205	3	COUNTERSUNK SCREW	M4 X 16	D13
N1.2189		P32.0208	3	COUNTERSUNK SCREW	M4 X 20	D14
N1.2222			2	COUNTERSUNK SCREW	M4 X 10	C1
N1.6305		P32.0201/17	1	SPACER WASHER	6 X 18 X 0.5	B24
N1.6331		P32.0201/17	3	SPACER WASHER	6 X 12 X 0.5	B9+
N1.6386		P32.0201/17	1	SPACER WASHER	9 X 15 X 0.50	D17
N1.6504			18	SAFETY WASHER	M4	C1+
N1.6504		P32.0201/17	5	SAFETY WASHER	M4	C19+
N1.6504		P35.0146	1	SAFETY WASHER	M4	B12
N1.7207		P32.0201/17	1	PT-SCREW	3 X 40	C20
N1.7211		P32.0201/17	8	PT-SCREW	3 X 20	C19+
N1.7222		P32.0201/17	1	PT-SCREW	2.2 X 5	B21
N2.1118		P32.0201/17	2	SECURITY RING	6	B9+
N2.1121			1	SECURITY RING	5	B12
N2.1121		P32.0201/17	4	SECURITY RING	5	D10+
N2.1606		P32.0201/17	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		P32.0201/17	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		P32.0201/17	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		P32.0201/17	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		P32.0201/17	1	PARALLEL PIN	2 m6 X 16	D7

[ ] = Group * = Wearing parts

Item-No.		in group	Pcs.	Description	Dimension	Field
N21.2144		P32.0201/17	1	PARALLEL PIN	3 h6 X 30	B16
N21.2145		P32.0207	3	PARALLEL PIN	5 h6 X 37.3	B3
N21.5124		P32.0201/17	1	PRESSURE SPRING	0.9 X 10 X 15/5.5	B19
N21.5138		P32.0203	1	PRESSURE SPRING	2.5 X 14.2 X 33.5/7.5	A8
N21.5139		P32.0201/17	1	PRESSURE SPRING	1.25 X 9.8 X 45/14.5	B15
N21.5219		P32.0201/17	1	PRESSURE SPRING	0.43 X 3.6 X 32.9/27.5	B13
N3.1134		P32.0201/17	1	BALL BEARING	7 X 22 X7	B16
N3.1134		P32.0202	1	BALL BEARING	7 X 22 X7	A15
N3.1159		P33.0204	1	BALL BEARING	6 X 19 X 6	B17
N3.1172			2	BALL BEARING	30 X 42 X 7	B3+
N3.1178		P32.0204	1	BALL BEARING	35 X 44 X 5	B15
N3.1185			1	BALL BEARING	5 X 16 X 5	C5
N3.1185		P32.0208	1	BALL BEARING	5 X 16 X 5	D16
N3.1702		P32.0201/17	6	BALL	4 MM	C10
N3.2105		P32.0205	3	NEEDLE CAGE	K 4 X 7 X 7 TN	C14
N3.2107			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		P32.0201/17	2	BALL BEARING	10 X 19 X 5	B22
N31.1120		P32.0201/17	1	BALL BEARING	4 X 11 X 4	C22
N31.1120		P32.0205	1	BALL BEARING	4 X 11 X 4	C14
N31.1151		P32.0201/17	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		P32.0201/17	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		P32.8105/96	1	ADHESIVE LABEL	WEEE	C19
N43.9192		P32.8103	1	ADHESIVE LABEL	18 Volt	A22
N43.9192		P32.8105/96	1	ADHESIVE LABEL	18 Volt	B19
N44.9104		P32.8105/96	1	ADHESIVE LABEL	<<FROMM>>	D21
N44.9122			1	TYPE PLATE	<<P328>>	A6
N5.2702			1	COVER		C20
N51.1127		P32.0201/17	1	GEAR MOTOR		A21
N51.2194		P32.0215/16	1	INSERTATION PART		A19
N51.5477		P32.8103	1	SPRING PIN		A22
N6.6224		P32.0201/17	2	O-RING	24 X 2	C21
N6.6232		P32.0201/17	1	O-RING	8 X 2	A20
N61.6220		P32.0201/17	2	O-RING	29.5 X 3	D23
P30.1210		P32.8148/51	1	HOLDING-DOWN CLAMP		C20
P31.1124		P32.0200	1	TUBE		B14
[P32.0144]		P32.0201/17	1	ROCKER		B15
P32.0149		P32.0201/17	1	PINION		C22
[P32.0200]		P32.0201/17	1	BODY		A1+
[P32.0202]		P32.0201/17	1	WELDING EXCENTRIC		A14
[P32.0203]		P32.0201/17	1	SPRING BOLT		A7
[P32.0204]		P32.0208	1	GEAR WHEEL		B14
[P32.0205]		P32.0208	1	IDLER STEP		C13

[ ] = Group * = Wearing parts

Item-No.		in group	Pcs.	Description	Dimension	Field
[P32.0206]		P32.0208	1	LEVER		C16
[P32.0207]		P32.0208	1	GEAR BODY		B3+
[P32.0208]		P32.0201/17	1	GEAR		B13
[P32.0209]		P32.0201/17	1	GEAR WHEEL		C17
[P32.0210]		P32.0201/17	1	GEAR WHEEL		B23
[P32.0211]		P32.0201/17	1	CONICAL GEAR WHEEL		D23
[P32.0212]		P32.0201/17	1	GEAR WHEEL		D21
P32.0213	*	P32.0201/17	1	MOTOR		D21
[P32.0221]			1	COVER		A4
[P32.0222]			1	END COVER		D4
P32.1022		P32.0202	1	WELDING EXCENTRIC		A15
P32.1024		P32.0144	1	ROCKER		A16
P32.1027		P32.0201/17	1	BALL CAGE		C10
P32.1028		P32.0201/17	1	BOLT		D11
P32.1029		P32.0201/17	1	THRUST PIECE		C10
P32.1032		P32.0201/17	1	DRIVING PIN		D11
P32.1035		P32.0201/17	2	DRIVER		D10+
P32.1215		P32.0201/17	1	HANDLE SHAFT		C19
P32.1251		P35.0146	1	PUSHER		B12
P32.1511	*	P32.0201/17	1	WELDING GRIPPER		D11
P32.1710			1	CENTERING SLEEVE		C12
P32.2009		P32.8148/51	2	TURNING BUTTON		C20
P32.2012		P32.0201/17	1	GUIDE		B16
P32.2016		P33.0204	1	GEAR WHEEL		C17
P32.8101		P32.0200	1	BODY		C7
[P32.8103]		P32.0201/17	1	MOTOR HOUSING		A22
P32.8106			1	STEEL INSERT		D9
P32.8107	*		1	WELDING STOP GRIPPER		C10
P32.8108			1	HOLDER		C3
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		P32.0201/17	1	MAGNET		D7
P32.8121		P32.0201/17	1	ECCENTRIC SHAFT		C7
P32.8122		P32.0201/17	1	TOOTHED BELT PULLEY		B9
P32.8125		P32.0201/17	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
P32.8135		P32.0210	1	GEAR WHEEL		B24
P32.8136		P32.0201/17	1	HOUSING		B24
P32.8137		P32.0200	1	SWIVEL SHAFT		A18
P32.8138		P32.0211	1	CONICAL GEAR WHEEL		D22
P32.8139		P32.0212	1	GEAR WHEEL		D21
P32.8140		P32.0201/17	1	RETAINER		A22
P32.8141		P32.0201/17	1	COVERING		B21
P32.8142		P32.0201/17	1	HANDLE LEVER		B21
P32.8158		P32.0221	1	COVER		A4

[ ] = Group * = Wearing parts

Item-No.		in group	Pcs.	Description	Dimension	Field
P32.8159		P32.0222	1	END COVER		C5
P32.8195			1	COVER		C9
[P33.0204]		P32.0201/17	1	GEAR WHEEL		B18
P33.2115		P32.8148/51	1	TURNING BUTTON		C20
P33.2145		P32.0201/17	1	DISK		B21
P33.2155		P32.0201/17	1	DOWEL		C22
[P35.0146]			1	PUSHER		C12
P35.3104		P32.0205	3	IDLER GEAR		C13
P35.3201			3	IDLER GEAR		B4
P35.3220			1	SEESAW LEVER		B11
P35.3221			1	SEESAW LEVER		C12
P35.3223		P35.0146	1	THRUST PIECE		B12

[ ] = Group * = Wearing parts

3.2 Type dependent spare parts P328.0001.01 / P328.0002.01

Type 43.2401.01

43.2401.01	P328/10/0.40-0.64			P328.0001.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8160			1	STRAP STOP		A1
P32.8170			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8189			1	GUIDE PIN		D12
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3226			1	GUIDE PIN		D12

Type 43.2402.01

43.2402.01	P328/10/0.65-1.05			P328.0001.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8160			1	STRAP STOP		A1
P32.8170			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8189			1	GUIDE PIN		D12
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3226			1	GUIDE PIN		D12

[ ] = Group * = Wearing parts

Type 43.2411.01

43.2411.01	P328/11.1/0.40-0.64			P328.0001.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8161			1	STRAP STOP		A1
P32.8171			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12

Type 43.2412.01

43.2412.01	P328/11.1/0.65-1.05			P328.0001.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8161			1	STRAP STOP		A1
P32.8171			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12
P35.3214	*		1	CUTTER		C11

[ ] = Group * = Wearing parts

Type 43.2421.01

43.2421.01	P328/12/0.40-0.64			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8162			1	STRAP STOP		A1
P32.8172			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8181			1	GUIDE PIN		D12
P32.8182			1	GUIDE PIN		D12
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4

Type 43.2422.01

43.2422.01	P328/12/0.65-1.05			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8162			1	STRAP STOP		A1
P32.8172			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8181			1	GUIDE PIN		D12
P32.8182			1	GUIDE PIN		D12
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11

[ ] = Group * = Wearing parts

Type 43.2423.01

43.2423.01	P328/12.7/0.40-0.64			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8163			1	STRAP STOP		A1
P32.8173			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8183			1	GUIDE PIN		D12
P32.8191			1	GUIDE PIN		D12
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4

Type 43.2424.01

43.2424.01	P328/12.7/0.65-1.05			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8163			1	STRAP STOP		A1
P32.8173			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8183			1	GUIDE PIN		D12
P32.8191			1	GUIDE PIN		D12
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11

[ ] = Group * = Wearing parts

Type 43.2431.01

43.2431.01	P328/13/0.40-0.64			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8164			1	STRAP STOP		A1
P32.8174			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8185			1	GUIDE PIN		D12
P32.8193			1	GUIDE PIN		D12
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4

Type 43.2432.01

43.2432.01	P328/13/0.65-1.05			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8164			1	STRAP STOP		A1
P32.8174			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8185			1	GUIDE PIN		D12
P32.8193			1	GUIDE PIN		D12
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11

[ ] = Group * = Wearing parts

Type 43.2451.01

43.2451.01	P328/15/0.40-0.64			P328.0001.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8165			1	STRAP STOP		A1
P32.8175			1	STRAP GUIDE		D4
P32.8189			1	GUIDE PIN		D12
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3226			1	GUIDE PIN		D12

Type 43.2452.01

43.2452.01	P328/15/0.65-1.05			P328.0001.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8165			1	STRAP STOP		A1
P32.8175			1	STRAP GUIDE		D4
P32.8189			1	GUIDE PIN		D12
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3226			1	GUIDE PIN		D12

[ ] = Group * = Wearing parts

Type 43.2453.01

43.2453.01	P328/15.5/0.40-0.64			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8166			1	STRAP STOP		A1
P32.8176			1	STRAP GUIDE		D4
P32.8186			1	GUIDE PIN		D12
P32.8194			1	GUIDE PIN		D12
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11

Type 43.2454.01

43.2454.01	P328/15.5/0.65-1.05			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8166			1	STRAP STOP		A1
P32.8176			1	STRAP GUIDE		D4
P32.8186			1	GUIDE PIN		D12
P32.8194			1	GUIDE PIN		D12
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11

[ ] = Group * = Wearing parts

Type 43.2461.01

43.2461.01	P328/16/0.40-0.64			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8167			1	STRAP STOP		A1
P32.8177			1	STRAP GUIDE		D4
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12

Type 43.2462.01

43.2462.01	P328/16/0.65-1.05			P328.0001.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9160		P32.8105	1	ADHESIVE LABEL		D19
[P32.0201]			1	BASE MODEL		D6+
[P32.0215]		P32.0201	1	CIRCUIT BOARD		B21
[P32.8105]		P32.0201	1	MOTOR HOUSING		B19
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
[P32.8148]		P32.0215	1	CIRCUIT BOARD		B20
P32.8150		P32.0201	1	TOUCH CONTACT-SWITCH		A21
P32.8167			1	STRAP STOP		A1
P32.8177			1	STRAP GUIDE		D4
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12

[ ] = Group * = Wearing parts

Type 43.2601.01

43.2601.01	P328/10/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8160			1	STRAP STOP		A1
P32.8170			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8189			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3226			1	GUIDE PIN		D12

Type 43.2602.01

43.2602.01	P328/10/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8160			1	STRAP STOP		A1
P32.8170			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8189			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3226			1	GUIDE PIN		D12

[ ] = Group * = Wearing parts

Type 43.2611.01

43.2611.01	P328/11.1/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8161			1	STRAP STOP		A1
P32.8171			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12

Type 43.2612.01

43.2612.01	P328/11.1/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8161			1	STRAP STOP		A1
P32.8171			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12

[ ] = Group * = Wearing parts

Type 43.2621.01

43.2621.01	P328/12/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8162			1	STRAP STOP		A1
P32.8172			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8181			1	GUIDE PIN		D12
P32.8182			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4

Type 43.2622.01

43.2622.01	P328/12/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8162			1	STRAP STOP		A1
P32.8172			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8181			1	GUIDE PIN		D12
P32.8182			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11

[ ] = Group * = Wearing parts

Type 43.2623.01

43.2623.01	P328/12.7/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8163			1	STRAP STOP		A1
P32.8173			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8183			1	GUIDE PIN		D12
P32.8191			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4

Type 43.2624.01

43.2624.01	P328/12.7/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8163			1	STRAP STOP		A1
P32.8173			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8183			1	GUIDE PIN		D12
P32.8191			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11

[ ] = Group * = Wearing parts

Type 43.2631.01

43.2631.01	P328/13/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8164			1	STRAP STOP		A1
P32.8174			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8185			1	GUIDE PIN		D12
P32.8193			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8197			1	CUTTER		C11
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4

Type 43.2632.01

43.2632.01	P328/13/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8164			1	STRAP STOP		A1
P32.8174			1	STRAP GUIDE		D4
P32.8179			1	GUIDE CASE		B11
P32.8185			1	GUIDE PIN		D12
P32.8193			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11

[ ] = Group * = Wearing parts

Type 43.2651.01

43.2651.01	P328/15/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8165			1	STRAP STOP		A1
P32.8175			1	STRAP GUIDE		D4
P32.8189			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3226			1	GUIDE PIN		D12

Type 43.2652.01

43.2652.01	P328/15/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8165			1	STRAP STOP		A1
P32.8175			1	STRAP GUIDE		D4
P32.8189			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3226			1	GUIDE PIN		D12

[ ] = Group * = Wearing parts

Type 43.2653.01

43.2653.01	P328/15.5/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8166			1	STRAP STOP		A1
P32.8176			1	STRAP GUIDE		D4
P32.8186			1	GUIDE PIN		D12
P32.8194			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11

Type 43.2654.01

43.2654.01	P328/15.5/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		**in group**	**Pcs.**	**Description**	**Dimension**	**Field**
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8166			1	STRAP STOP		A1
P32.8176			1	STRAP GUIDE		D4
P32.8186			1	GUIDE PIN		D12
P32.8194			1	GUIDE PIN		D12
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11

[ ] = Group * = Wearing parts

Type 43.2661.01

43.2661.01	P328/16/0.40-0.64/A			P328.0002.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8112	*		1	GRIPPER		D3
P32.8113	*		1	GRIPPER		D3
P32.8114	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8167			1	STRAP STOP		A1
P32.8177			1	STRAP GUIDE		D4
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P32.8198			1	INSERTATION PART		D9
P35.3202	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12

Type 43.2662.01

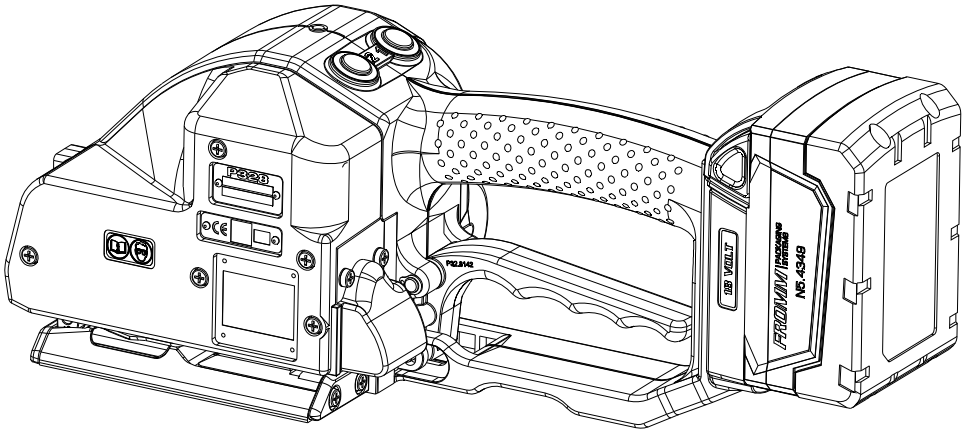
43.2662.01	P328/16/0.65-1.05/A			P328.0002.01		13.05.14
Item-No.		in group	Pcs.	Description	Dimension	Field
N44.9170		P32.8196	1	ADHESIVE LABEL		D19
[P32.0216]		P32.0217	1	CIRCUIT BOARD		B21
[P32.0217]			1	BASE MODEL		D6+
P32.8109	*		1	GRIPPER		D3
P32.8110	*		1	GRIPPER		D3
P32.8111	*		1	GRIPPER		D3
P32.8133		P32.0217	1	PUSHER		C23
[P32.8151]		P32.0216	1	CIRCUIT BOARD		B20
[P32.8154]		P32.0217	1	TOUCH CONTACT-SWITCH		A21
P32.8167			1	STRAP STOP		A1
P32.8177			1	STRAP GUIDE		D4
[P32.8196]		P32.0217	1	MOTOR HOUSING		B19
P35.3203	*		1	TENSIONING WHEEL		C4
P35.3214	*		1	CUTTER		C11
P35.3215			1	GUIDE CASE		B11
P35.3216			1	GUIDE PIN		D12
P35.3217			1	GUIDE PIN		D12

[ ] = Group * = Wearing parts

FROMM

OPERATION MANUAL

BATTERY - POWERED PLASTIC STRAPPING TOOL MODEL P328 M/HA



P328.0001.01.en/MAS/© 08.15
Original instructions

INDEX PAGE

1 GENERAL POWER TOOL SAFETY WARNINGS

WARNING! Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.
The term “power tool” in the warnings refers to your mainsoperated (corded) power tool or battery-operated (cordless) power tool.

1.1 Work area safety

a) **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.

b) **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.

c) **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

1.2 Electrical safety

a) **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce the risk of electric shock.

b) **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.

c) **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.

d) **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.

e) **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.

f) **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

1.3 Personal safety

a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.

b) **Use personal protective equipment. Always wear eye protection.** Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.

c) **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.

d) **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.

e) **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.

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:	4.2 kg / 9.3 lbs

Noise information

The A-weighted equivalent continuous sound level at the work place of the machine operator is typical 79 dB (A).
This value was determined according to EN ISO 11204.
Deviation K: 3 dB

Vibration information

The weighted effective value of the acceleration typically amounts to less than 2.5 m/s^2.
This value was determined according to DIN EN 60745-1 (12.2003).
Deviation K: 0.5 m/s^2

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:	10.0 - 16.0 mm / 3/8 - 5/8" x 0.40 - 1.05 mm / .016 - .041" (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

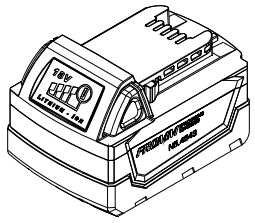
The ambient temperature should be between -10° and 45° C (14° and 113°F).
The best performance is achieved between 15° and 20°C (59° and 68°F).

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, MC, 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 Power supply

With the optional power supply the strapping tool can be run directly at the mains.
The power supply must be ordered according to below table..

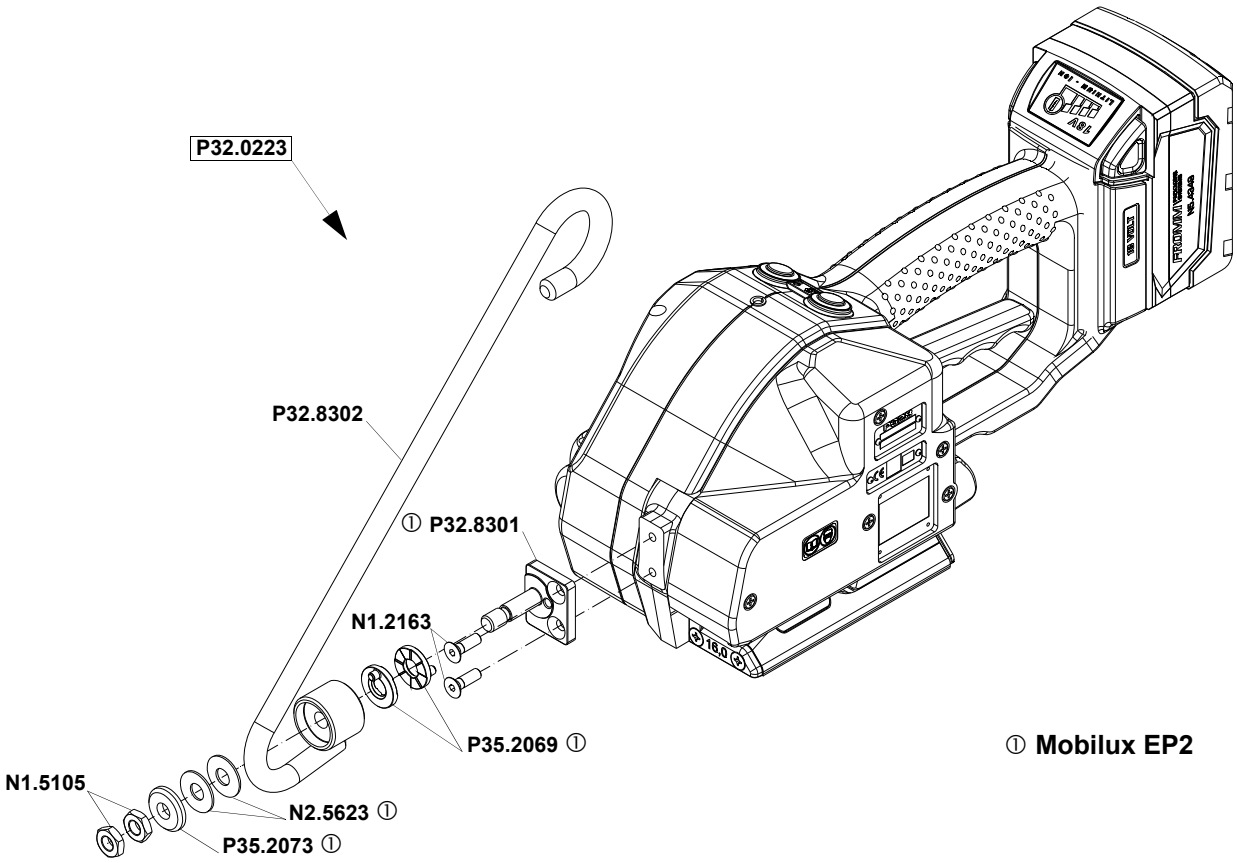
Item-No.	Voltage / frequency	Admitted for country
N5.1471	220 - 240V / 50 - 60Hz	See 4.2 Battery - chargers
N5.1472	120V / 50 - 60Hz	
N5.1473	220 - 240V / 50 - 60Hz	

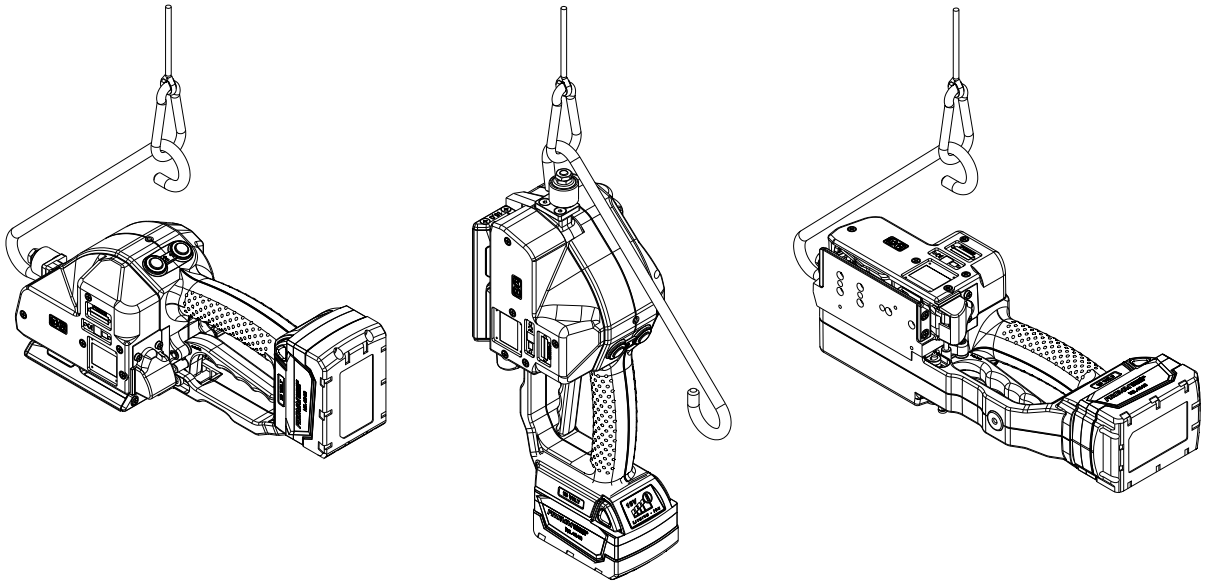
4.4 Fan

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

4.5 Suspension

When working stationary the P328 can be suspended at a spring loaded balancer by using a suspension bracket. 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.



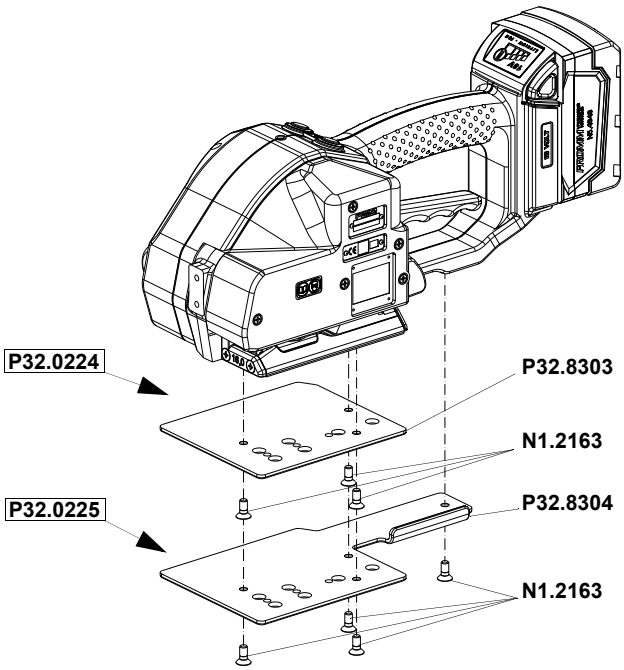


4.6 Turning button kit

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.

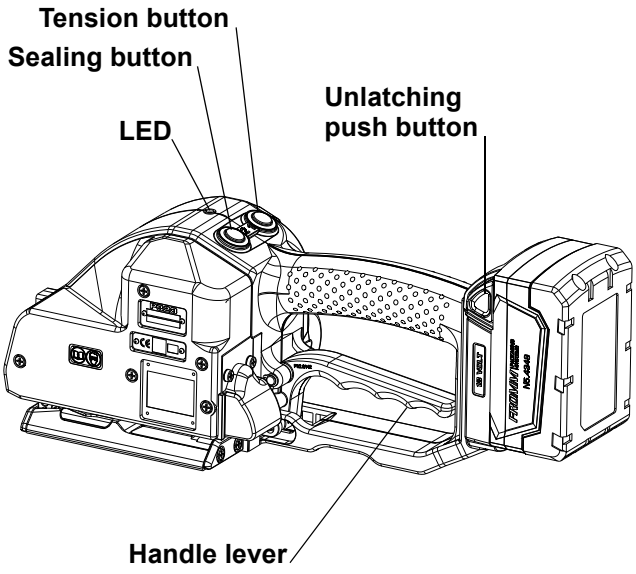
4.7 Wearing plate

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

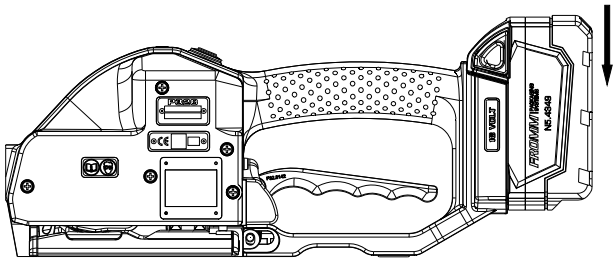
6.1 Installation

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

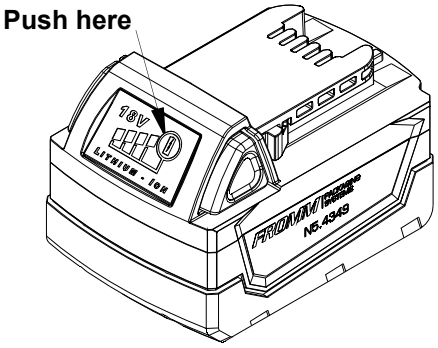
If the red LED starts lighting while a tensioning or welding procedure, the capacity of the battery is exhausted. All electric functions of the tool are blocked.

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.



6.2 Adjustments

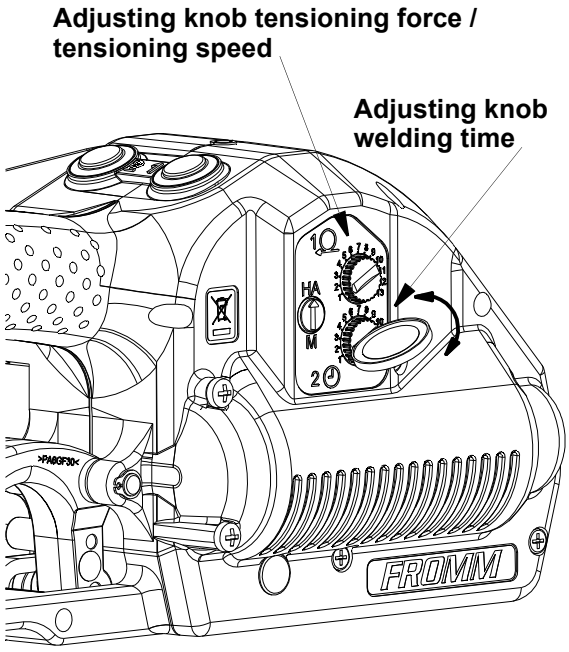
6.2.1 Preselecting of strap tension and tensioning speed

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 increasing linear up to 124 mm/s (4.9 inch/sec) on the maximum setting.



The adjustment knobs can be easily turned with a coin.

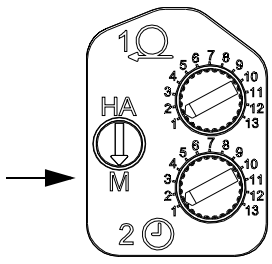
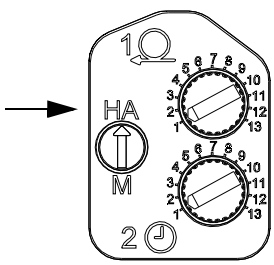
6.2.2 Adjusting the welding time

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

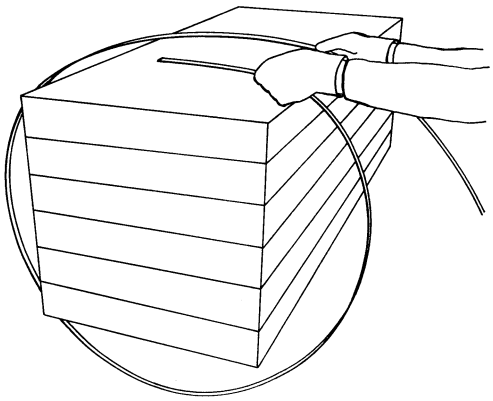
There are 2 operation modes possible.
1. Manual
In this operation mode is the tensioning as well as the welding of the strap started by the operator.
2. Semi-Automatic
In this operation mode the welding of the strap is automatically started as soon as the preselected tension has been reached.

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

Operation mode Manual	Operation mode Semi-Automatic
	
Turn adjustment screw with a screw driver in the desired position. Confirm the choice of the operation mode by pressing the tension button shortly.	

6.3 Feeding the strap around the package

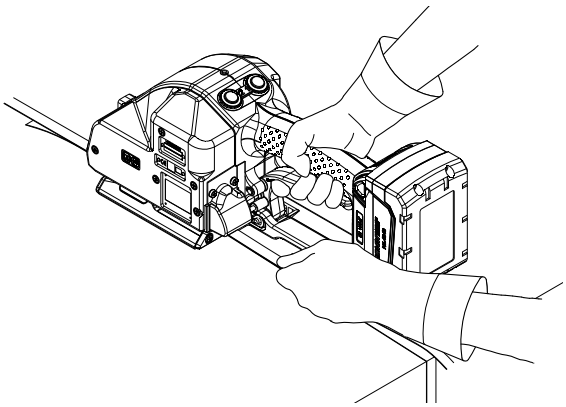
- The strapping is fed around the package as illustrated.



Warning! 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

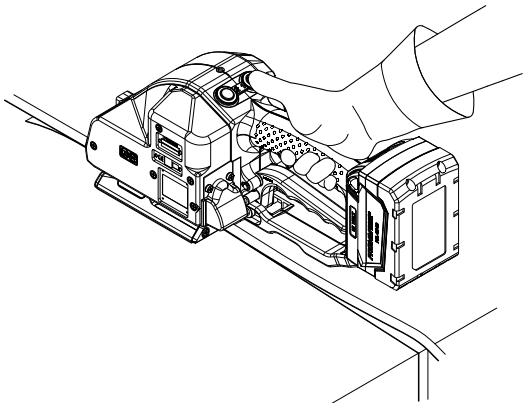
- Pull up the handle lever firmly with your right hand.
- Insert the two straps well aligned on each other into the strap guide using your left hand.
  The lower strap end must slightly protrude the end of the base plate.
- Release the handle lever.



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.



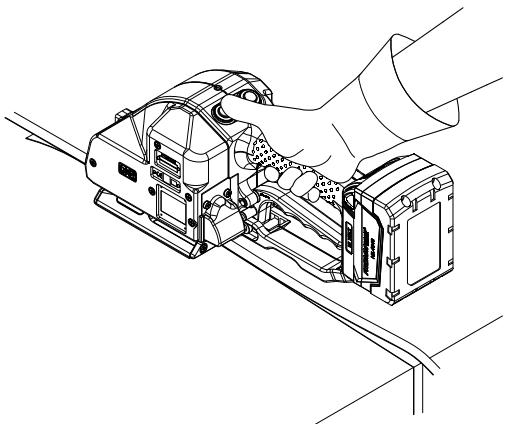
The tensioning operation can be interrupted and restarted at any time.

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

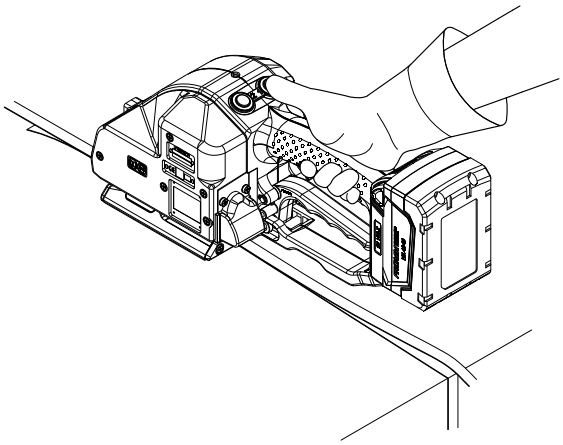
- Press and release immediately the sealing button.



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.

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).

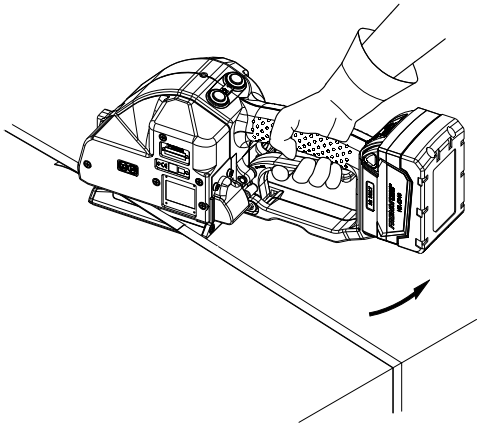
- Release the tension button after the sealing process has been started.

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.



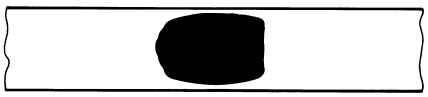
- Pull up the handle lever,
- pull the tool right and off the strapping.

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).

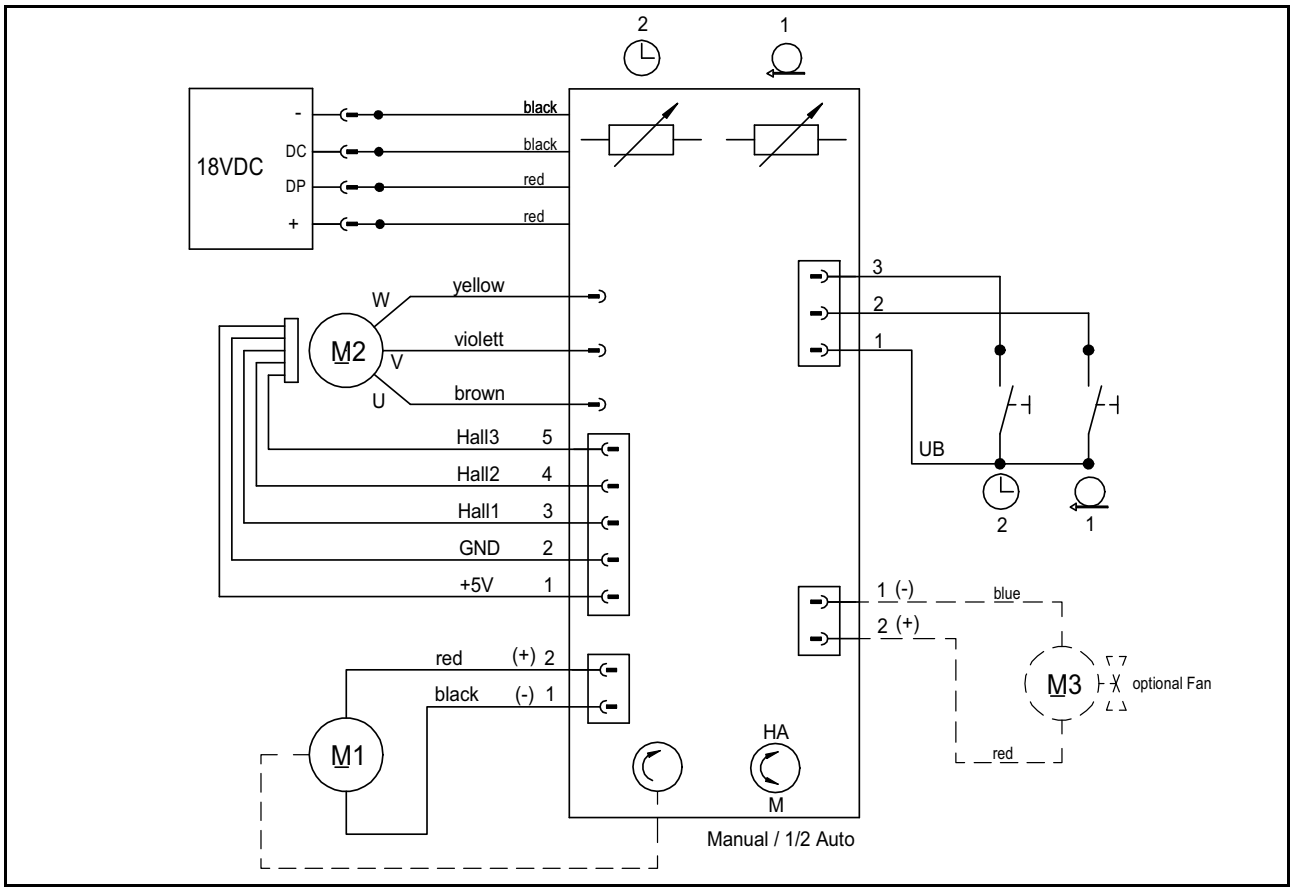
Welding time too long

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
43.2401	P328/10/0.40-0.64	10 mm / 3/8"	0.40-0.64 mm / .016 - .025"
43.2402	P328/10/0.65-1.05	10 mm / 3/8"	0.65-1.05 mm / .026 - .041"
43.2411	P328/11.1/0.40-0.64	11.1 mm / 7/16"	0.40-0.64 mm / .016 - .025"
43.2412	P328/11.1/0.65-1.05	11.1 mm / 7/16"	0.65-1.05 mm / .026 - .041"
43.2421	P328/12/0.40-0.64	12 mm	0.40-0.64 mm / .016 - .025"
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"
43.2431	P328/13/0.40-0.64	13 mm	0.40-0.64 mm / .016 - .025"
43.2432	P328/13/0.65-1.05	13 mm	0.65-1.05 mm / .026 - .041"
43.2451	P328/15/0.40-0.64	15 mm	0.40-0.64 mm / .016 - .025"
43.2452	P328/15/0.65-1.05	15 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



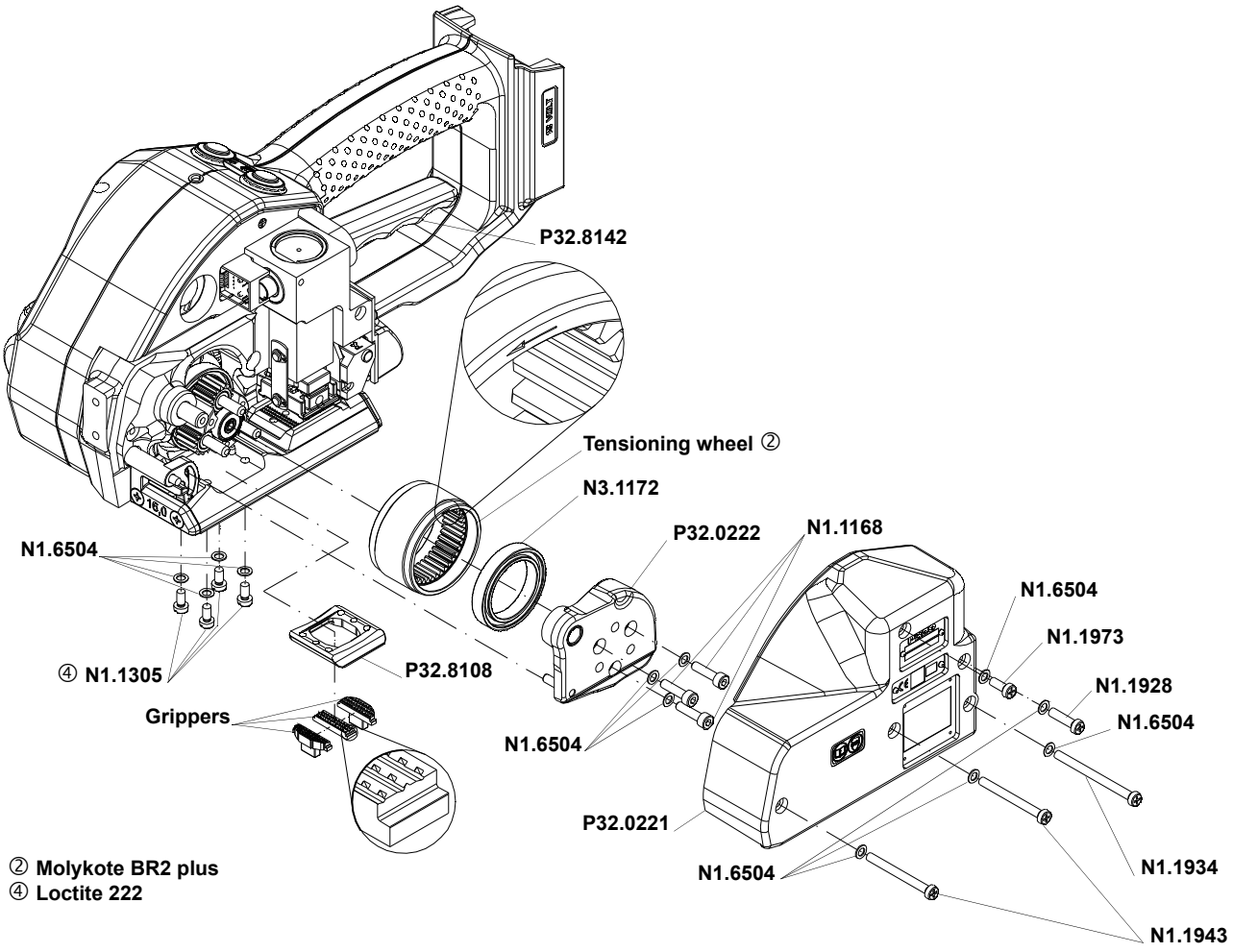
9 EXCHANGE OF WEARING PARTS

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

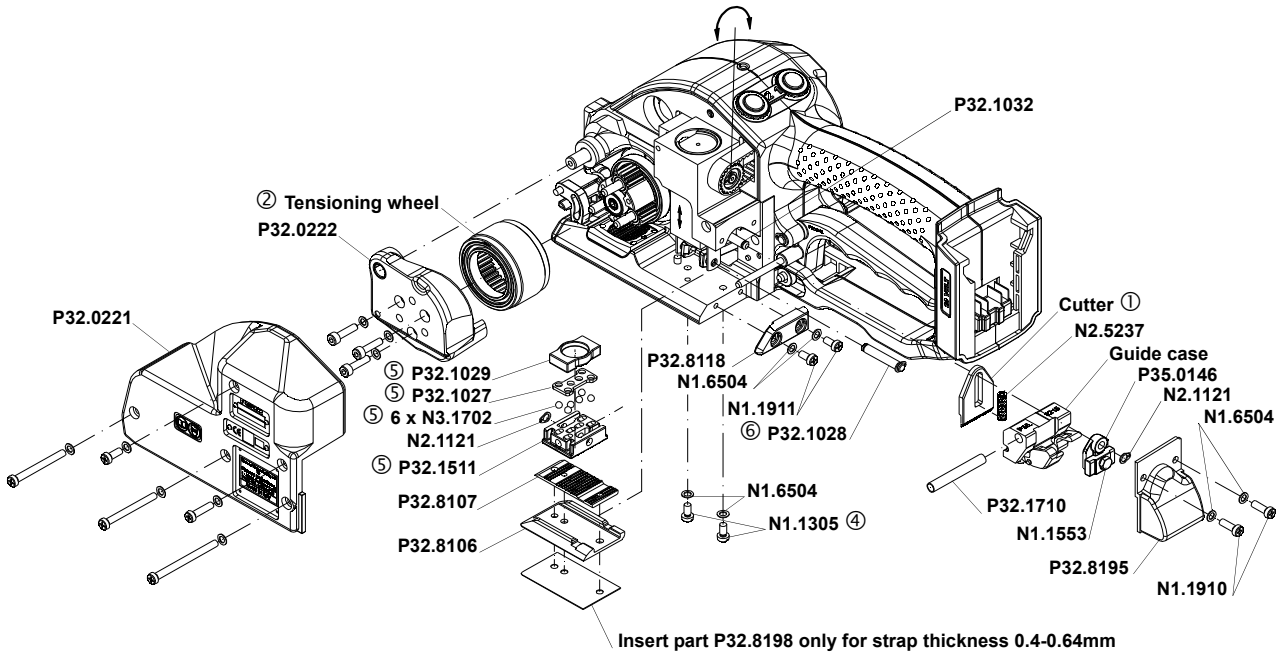
- Lubricate the internal toothing of the tensioning wheel with Molykote BR2 plus.
- Observe the position of the tensioning wheel. The direction of rotation of the tensioning wheel is marked at the front of the tensioning wheel (see drawing).
- Observe the position of the grippers (see drawing).
- Safe 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 P35.0146.
- 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**
⑥ **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).
- Safe 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

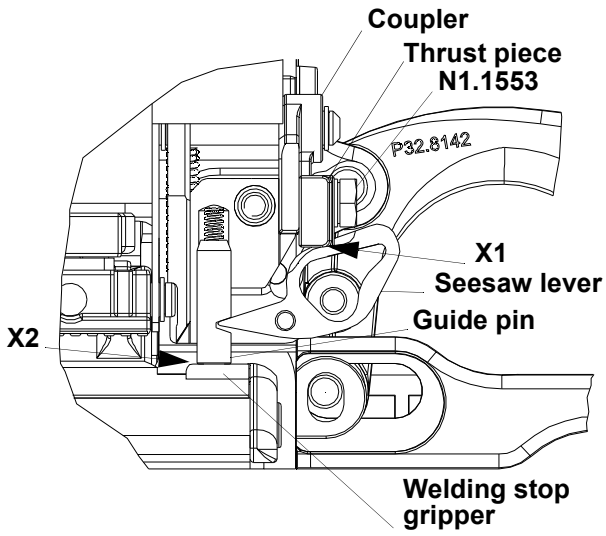
The coupler is adjusted in our works.
In case of replacing the seesaw lever, the coupler or the lever body, the coupler has to be readjusted.

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:

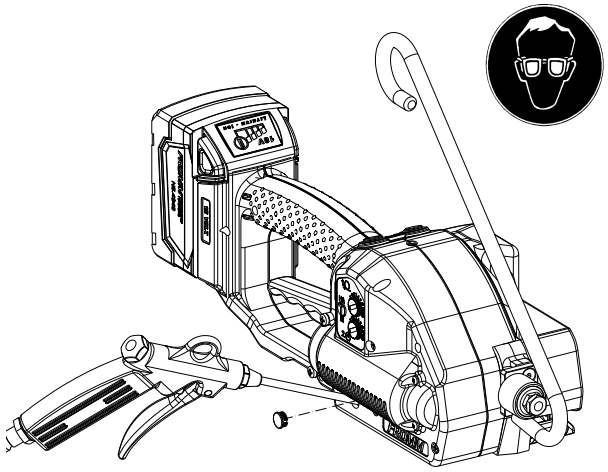
The thrust piece must touch the seesaw levers (X1).
Both guide pins must sit on the welding stop gripper (X2).



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

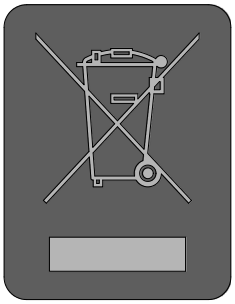
Servicing and repair work must only be carried out by authorized service centres.
If the tool breaks down or does no longer operate do not disassemble it. Send it fully assembled to the local service centre (see name and address on the rear page of this manual). Use original packing.
In order to prevent 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 2002/96/EC, 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 APPROPRIATE USE

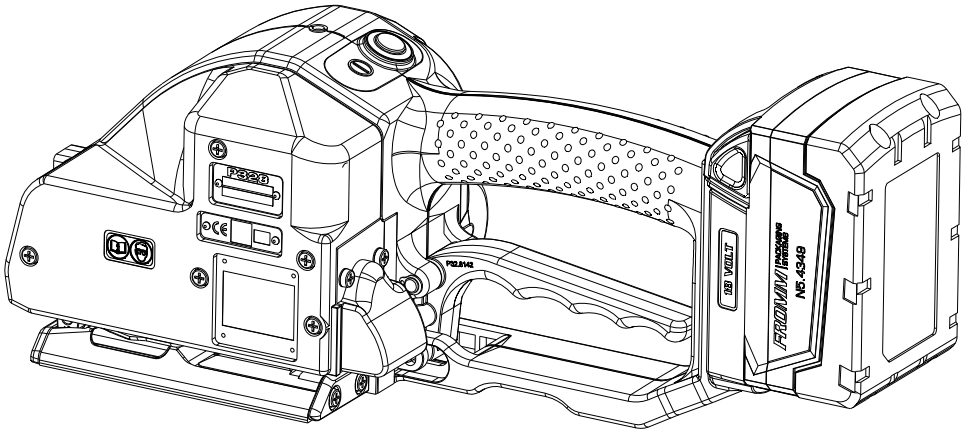
The tool model P328 has been designed to strap packages with plastic strapping exclusively.
For the use in hazardous areas the tool is not suitable.
The warranty / liability excludes:

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

FROMM

OPERATION MANUAL

BATTERY - POWERED PLASTIC STRAPPING TOOL MODEL P328 A/A



P328.0002.01.en/MAS/© 08.15
Original instructions

INDEX PAGE

1 GENERAL POWER TOOL SAFETY WARNINGS

WARNING! Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.
The term “power tool” in the warnings refers to your mainsoperated (corded) power tool or battery-operated (cordless) power tool.

1.1 Work area safety

a) **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.

b) **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.

c) **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

1.2 Electrical safety

a) **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce the risk of electric shock.

b) **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.

c) **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.

d) **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.

e) **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.

f) **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

1.3 Personal safety

a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.

b) **Use personal protective equipment. Always wear eye protection.** Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.

c) **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.

d) **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.

e) **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.

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:	4.2 kg / 9.3 lbs

Noise information

The A-weighted equivalent continuous sound level at the work place of the machine operator is typical 79 dB (A).
This value was determined according to EN ISO 11204.
Deviation K: 3 dB

Vibration information

The weighted effective value of the acceleration typically amounts to less than 2.5 m/s^2.
This value was determined according to DIN EN 60745-1 (12.2003).
Deviation K: 0.5 m/s^2

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:	10.0 - 16.0 mm / 3/8 - 5/8" x 0.40 - 1.05 mm / .016 - .041" (see chart of types). **Use only plastic straps with the correct strap dimensions for your tool.**

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

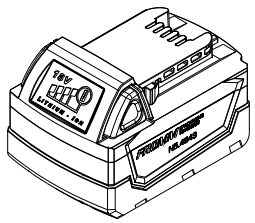
The ambient temperature should be between -10° and 45° C (14° and 113°F).
The best performance is achieved between 15° and 20°C (59° and 68°F).

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, MC, 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 Power supply

With the optional power supply the strapping tool can be run directly at the mains.
The power supply must be ordered according to below table..

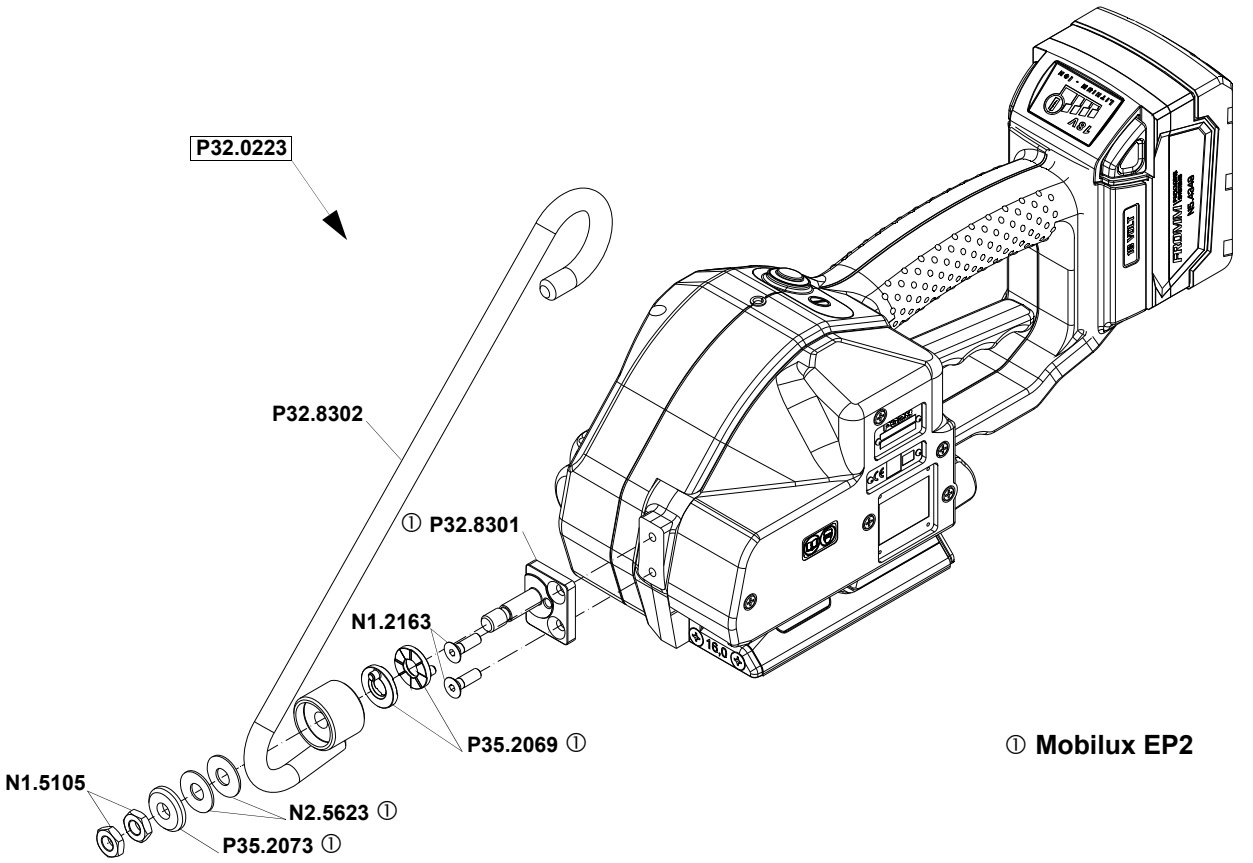
Item-No.	Voltage / frequency	Admitted for country
N5.1471	220 - 240V / 50 - 60Hz	See 4.2 Battery - chargers
N5.1472	120V / 50 - 60Hz	
N5.1473	220 - 240V / 50 - 60Hz	

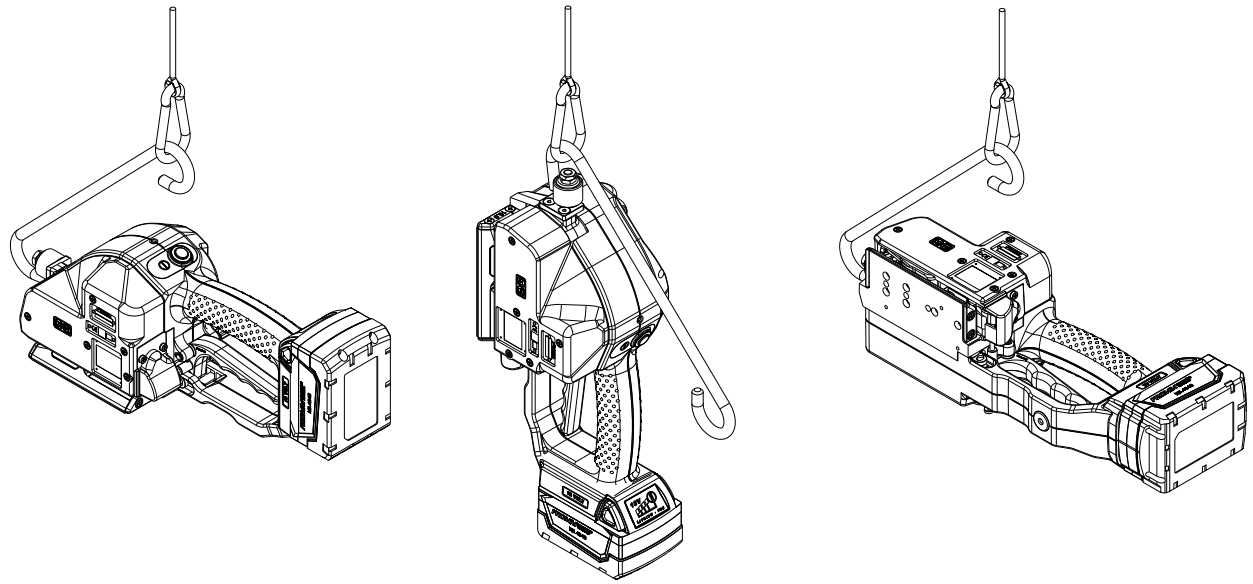
4.4 Fan

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

4.5 Suspension

When working stationary the P328 can be suspended at a spring loaded balancer by using a suspension bracket. 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.



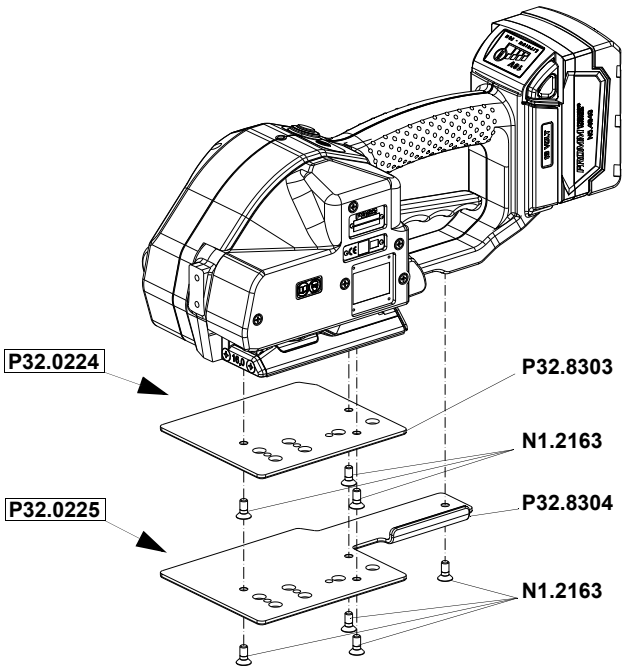


4.6 Turning button kit

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.

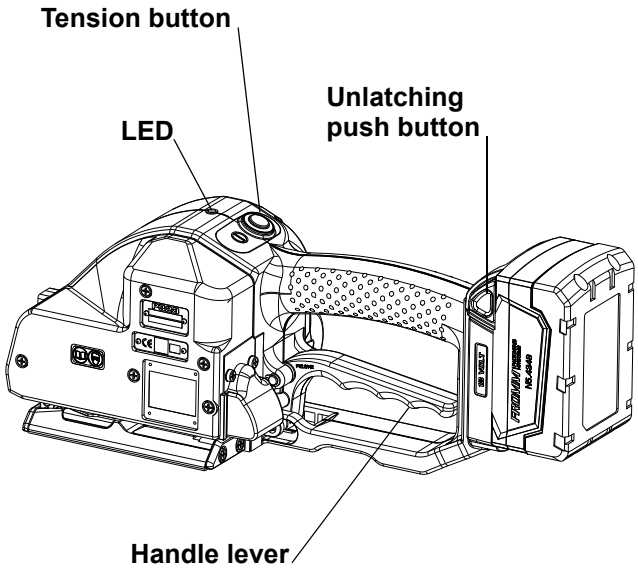
4.7 Wearing plate

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.
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

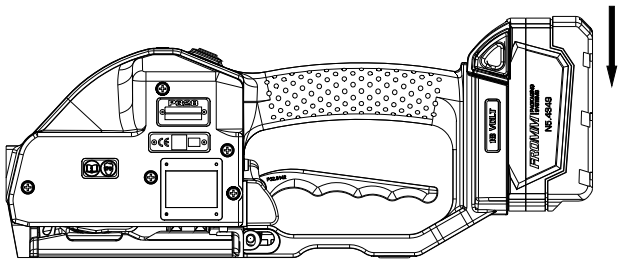
6.1 Installation

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

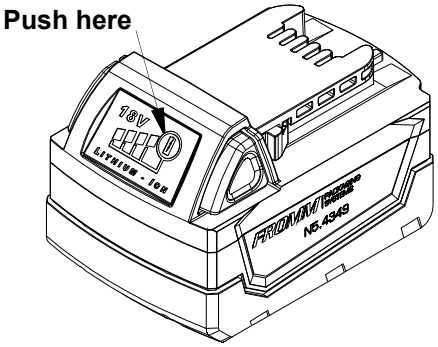
If the red LED starts lighting while a tensioning or welding procedure, the capacity of the battery is exhausted. All electric functions of the tool are blocked.

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.



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.

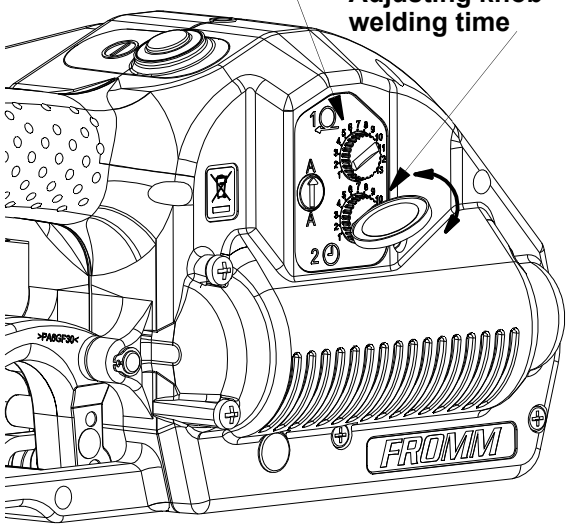
Tensioning force and tensioning speed can be preselected with the upper adjusting knob.
Turning clockwise increases;
turning counter clockwise decreases the tensioning force and the tensioning speed resp..

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 increasing linear up to 124 mm/s (4.9 inch/sec) on the maximum setting.

Adjusting knob tensioning force / tensioning speed

Adjusting knob welding time

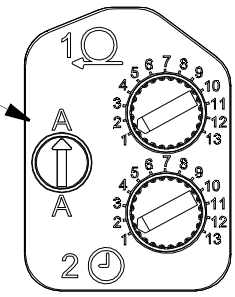


The adjustment knobs can be easily turned with a coin.

6.2.2 Adjusting the welding time

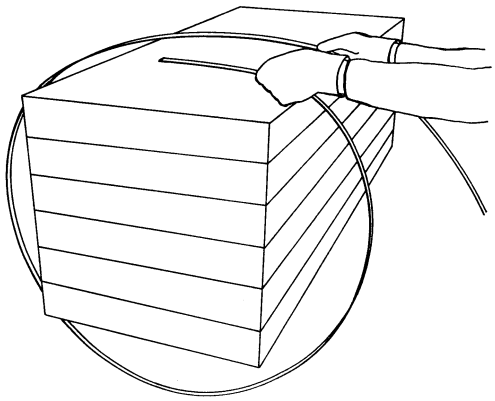
Depending on the size and quality of the strap, different welding times are required.
The welding time can be adjusted at the lower adjusting knob.
Turning clockwise increases,
turning counter clockwise decreases the welding time.

The adjustment screw for operating mode is without function at P328 A/A



6.3 Feeding the strap around the package

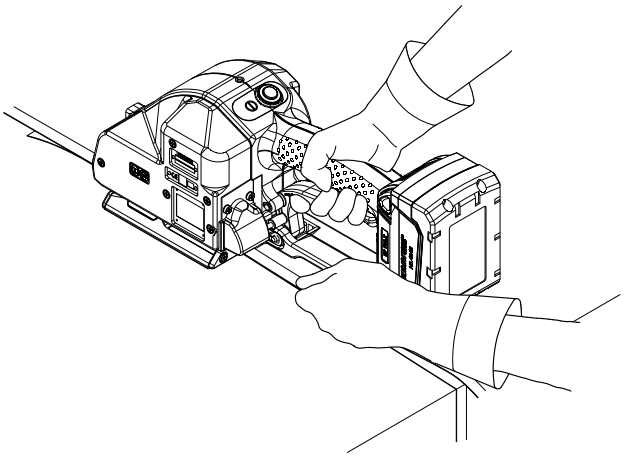
- The strapping is fed around the package as illustrated.



Warning! 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 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.

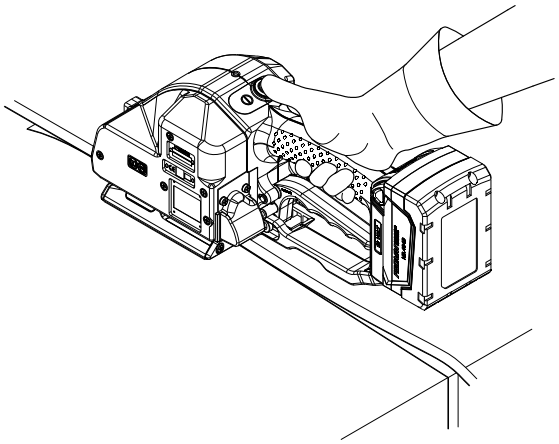
6.5 Tensioning and sealing the strap

- Press tension button shortly.

During tensioning the LED lights green.

Tensioning can be interrupted by pressing the tension button again or by pulling up the handle lever.

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).



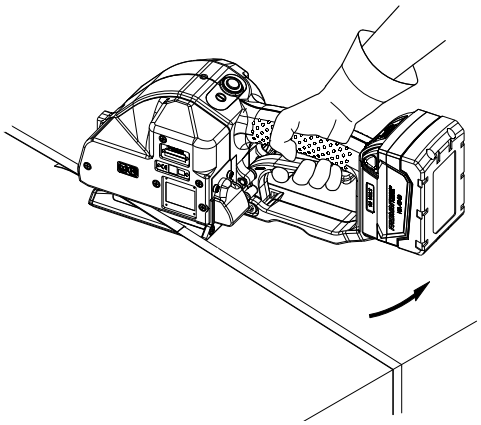
The plastic strap is welded and cut off from the rest of the strap.
After elapsing of the adjusted welding time (see 6.2.2) the cooling time begins (LED lights yellow).

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.

6.6 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.

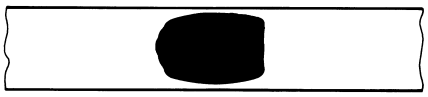


6.7 Seal - Control

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).

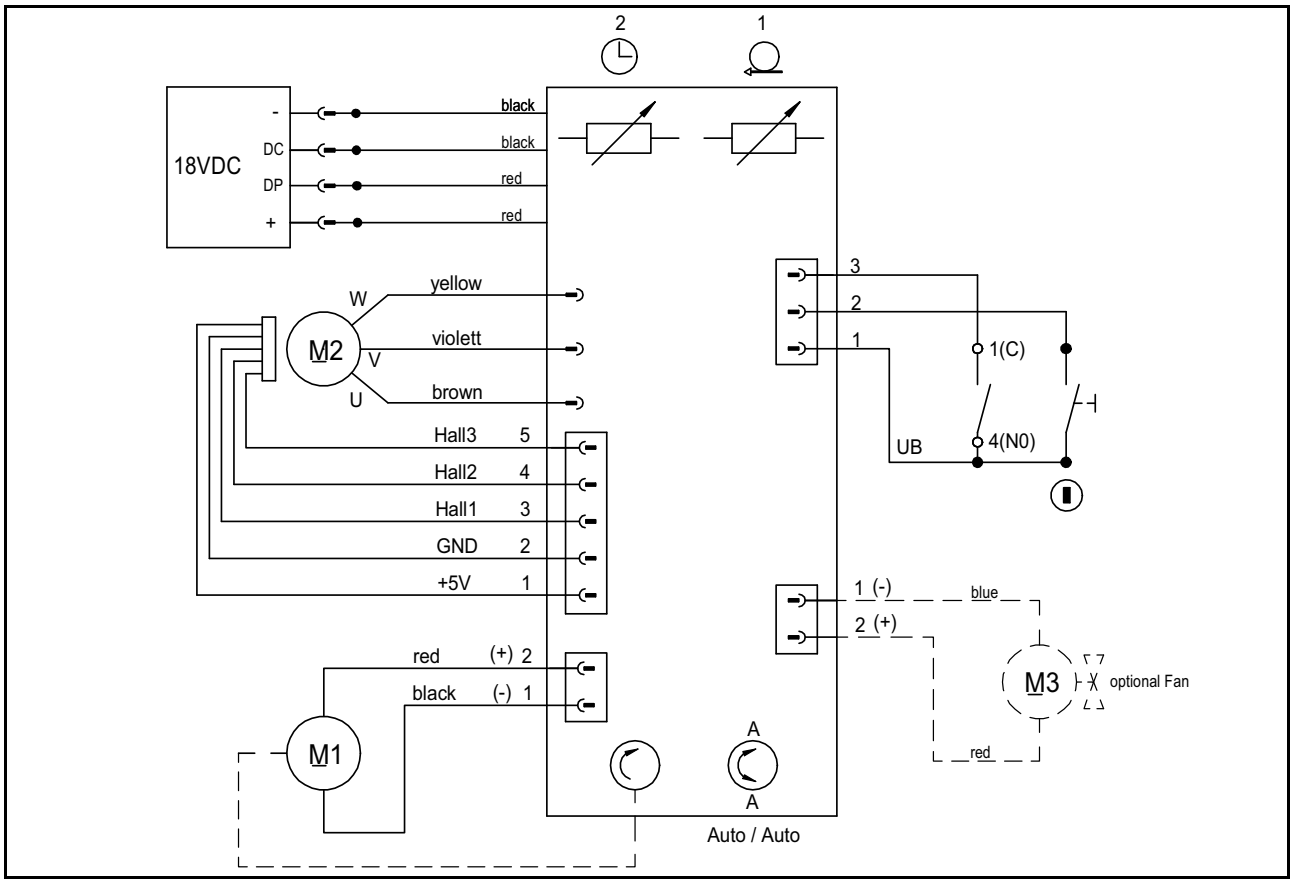
Welding time too long

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 A/A

Item No.	Model	Strap width	Strap thickness
43.2601	P328/10/0.40-0.64/A	10 mm / 3/8"	0.40-0.64 mm / .016 - .025"
43.2602	P328/10/0.65-1.05/A	10 mm / 3/8"	0.65-1.05 mm / .026 - .041"
43.2611	P328/11.1/0.40-0.64/A	11.1 mm / 7/16"	0.40-0.64 mm / .016 - .025"
43.2612	P328/11.1/0.65-1.05/A	11.1 mm / 7/16"	0.65-1.05 mm / .026 - .041"
43.2621	P328/12/0.40-0.64/A	12 mm	0.40-0.64 mm / .016 - .025"
43.2622	P328/12/0.65-1.05/A	12 mm	0.65-1.05 mm / .026 - .041"
43.2623	P328/12.7/0.40-0.64/A	12.7 mm / 1/2"	0.40-0.64 mm / .016 - .025"
43.2624	P328/12.7/0.65-1.05/A	12.7 mm / 1/2"	0.65-1.05 mm / .026 - .041"
43.2631	P328/13/0.40-0.64/A	13 mm	0.40-0.64 mm / .016 - .025"
43.2632	P328/13/0.65-1.05/A	13 mm	0.65-1.05 mm / .026 - .041"
43.2651	P328/15/0.40-0.64/A	15 mm	0.40-0.64 mm / .016 - .025"
43.2652	P328/15/0.65-1.05/A	15 mm	0.65-1.05 mm / .026 - .041"
43.2653	P328/15.5/0.40-0.64/A	15.5 mm	0.40-0.64 mm / .016 - .025"
43.2654	P328/15.5/0.65-1.05/A	15.5 mm	0.65-1.05 mm / .026 - .041"
43.2661	P328/16/0.40-0.64/A	16 mm / 5/8"	0.40-0.64 mm / .016 - .025"
43.2662	P328/16/0.65-1.05/A	16 mm / 5/8"	0.65-1.05 mm / .026 - .041"

8 ELECTRIC SCHEMATIC ELS.1083



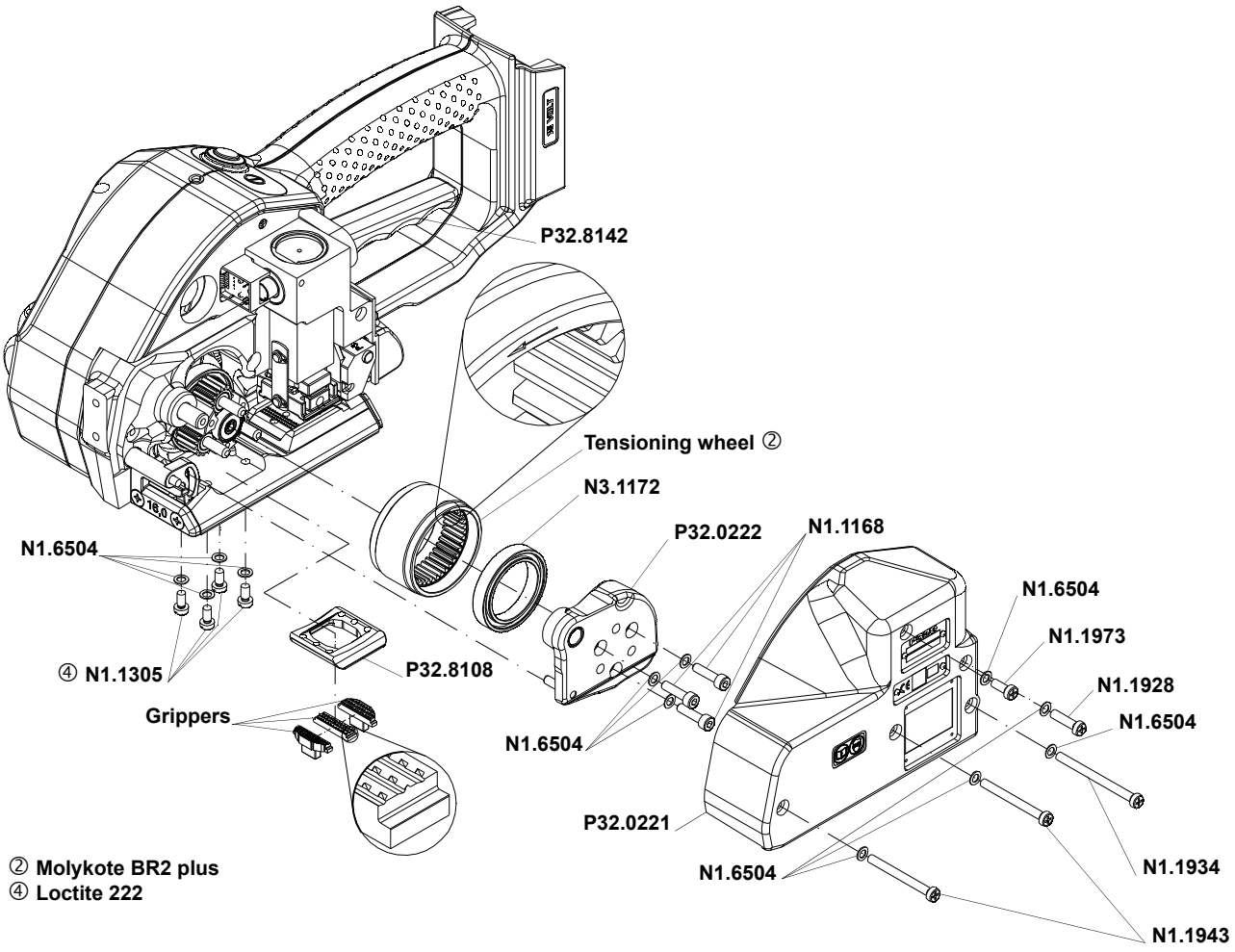
9 EXCHANGE OF WEARING PARTS

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

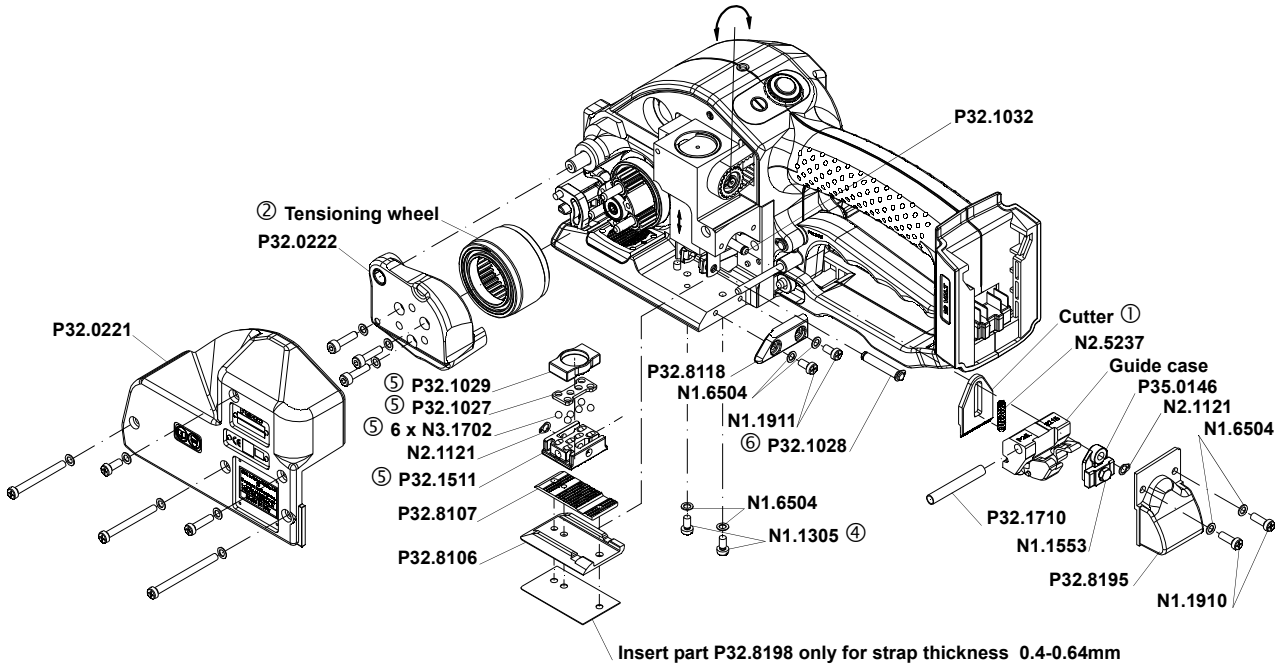
- Lubricate the internal toothing of the tensioning wheel with Molykote BR2 plus.
- Observe the position of the tensioning wheel. The direction of rotation of the tensioning wheel is marked at the front of the tensioning wheel (see drawing).
- Observe the position of the grippers (see drawing).
- Safe 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 P35.0146.
- 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**
⑥ **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).
- Safe 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

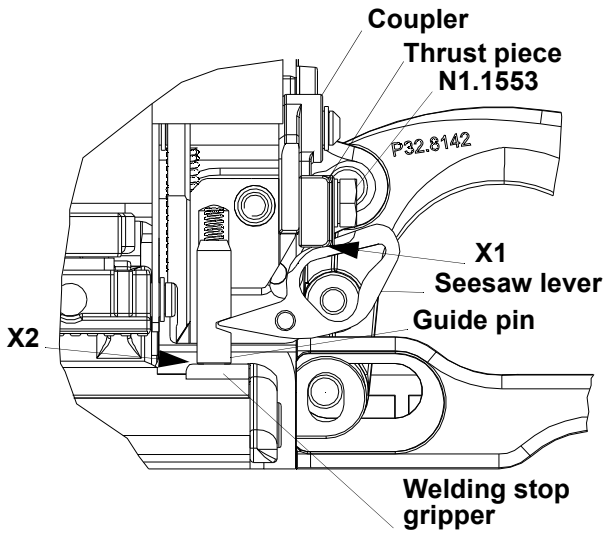
The coupler is adjusted in our works.
In case of replacing the seesaw lever, the coupler or the lever body, the coupler has to be readjusted.

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:

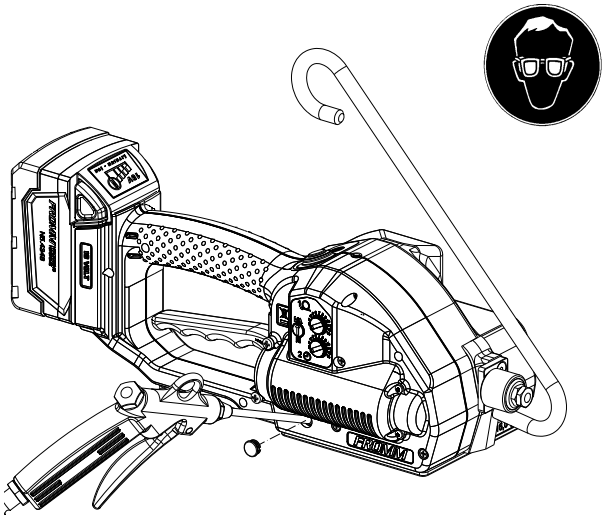
The thrust piece must touch the seesaw levers (X1).
Both guide pins must sit on the welding stop gripper (X2).



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

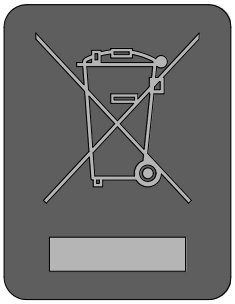
Servicing and repair work must only be carried out by authorized service centres.
If the tool breaks down or does no longer operate do not disassemble it. Send it fully assembled to the local service centre (see name and address on the rear page of this manual). Use original packing.
In order to prevent 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 2002/96/EC, 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 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.