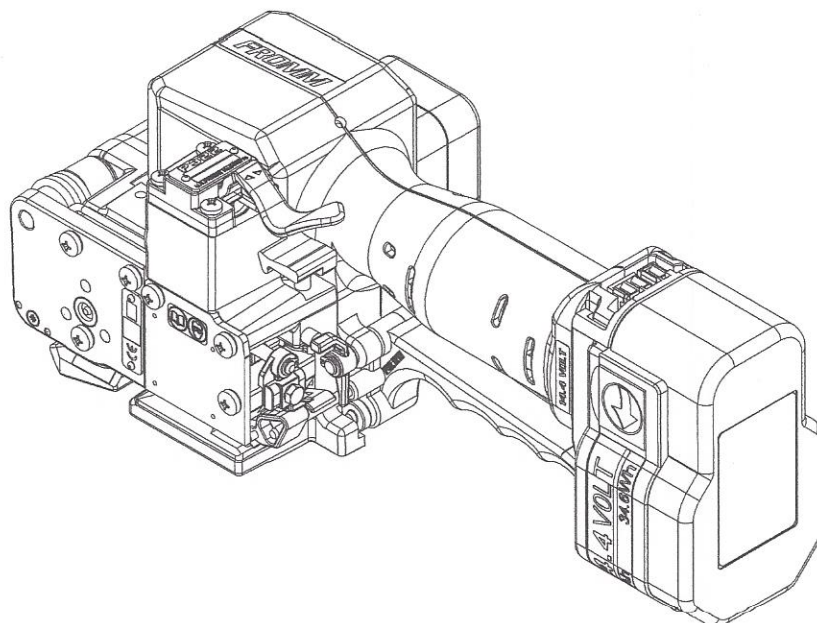


**FROMM**  
SERVICE MANUAL  
**BATTERY - POWERED  
PLASTIC STRAPPING TOOL**  
**MODEL P323.0001.01**

**Manual for authorized dealers and service points**



P323.0001.01.sen/MAS/© 11.05



**FRONM**  
SERVICE MANUAL  
**BATTERY - POWERED**  
**PLASTIC STRAPPING TOOL**  
**MODEL P933.0007.01**

Manual for authorized dealers and service points



FRONM P933.0007.01



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## 5.1 ACCESSORIES

### 5.1.1 Battery

Use only original Fromm batteries N5.4309 (NiCd) or N5.4316 (NiMH) for the P322 tool.  
In case of a damaged battery housing, it can be ordered separately under item no. N5.4318.

### 5.1.2 Battery chargers

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

#### Standard charger

Item-No.	Voltage / frequency	Admitted for country
N5.4414	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, (Z), (ZA), (ZW)
N5.4416	220 - 240V / 50 - 60Hz	BRN, BRU, CY, EAK, EAT, GB, IRL, M, MAL, OM, SGP, Y
N5.4418	220 - 240V / 50 - 60Hz	AUS, NZ
N5.4420	220V / 60Hz	ROK

#### Turbo charger

Item-No.	Voltage / frequency	Admitted for country
N5.4422	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, (Z), (ZA), (ZW)
N5.4424	120V / 60Hz	BR, C, CDN, CO, CR, DOM, EC, GCA, J, JA, KSA, LB, MEX, NIC, PA, Puerto Rico, RC, RP, USA, YV
N5.4426	110V / 50 - 60Hz	GB
N5.4428	220 - 240V / 50 - 60Hz	BRN, BRU, CY, EAK, EAT, GB, IRL, M, MAL, OM, SGP, Y
N5.4430	220 - 240V / 50 - 60Hz	AUS, NZ

### 5.1.3 Battery tester

For testing the batteries order battery tester N7.5121.

### 5.1.4 Charger for car batteries

The charger N5.4407 must be ordered for connection to a car battery with 12 or 24V.

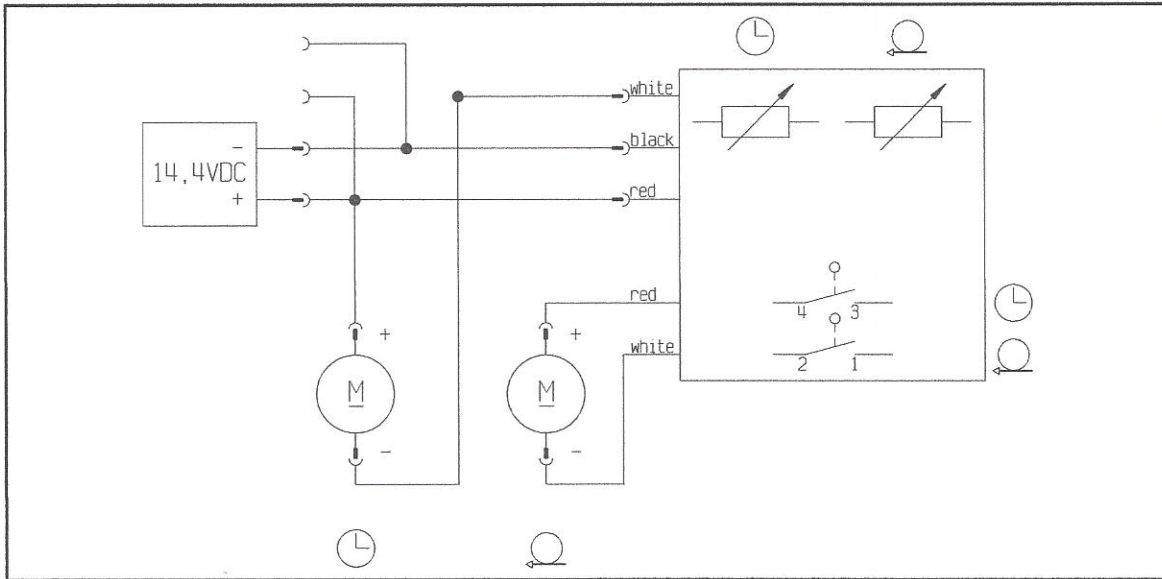
### 5.1.5 Battery light

For completely discharging of the battery the battery light N5.4313 can be used.

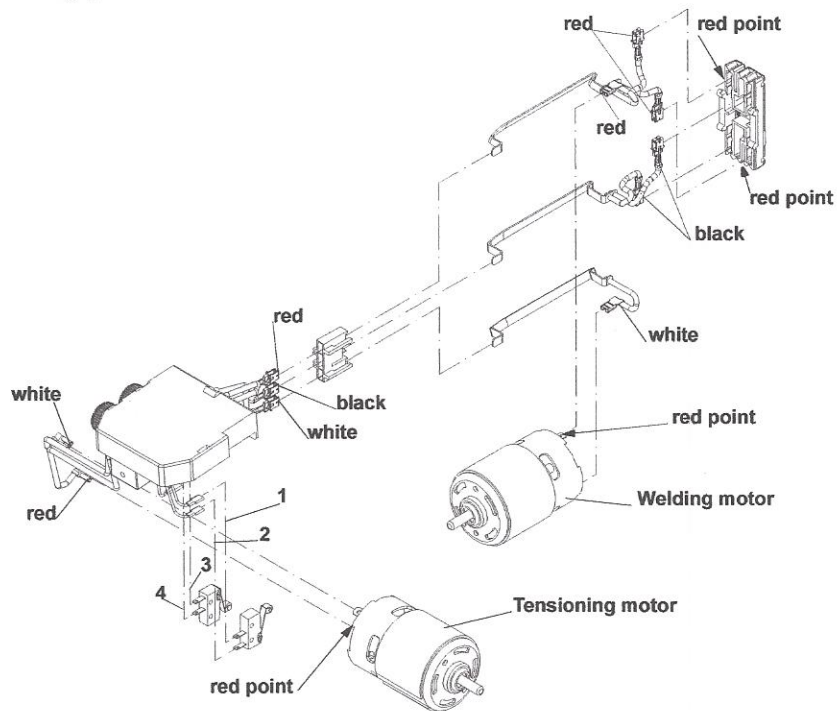


## 5.2 TECHNICAL DETAILS

### 5.2.1 Electric schematic



### 5.2.2 Connecting plan



### 5.2.3 Strap tension

The tension force values mentioned in the P323 operation manual (650-3000N) 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 the thick and the wide straps.





### 5.3 CONVERSION PARTS P323

By converting to an other tool type following parts must be changed:

	43.3101 12.7 X 0.65-1.05	43.3111 13 X 0.65-1.05	43.3121 16 X 0.65-1.05	43.3122 16 X 1.06-1.35	43.3131 19 X 0.40-0.64	43.3132 19 X 0.65-1.05	43.3133 19 X 1.06-1.35	Field (see drawings)
Pressure spring	N2.5237	N2.5237	N2.5237	N2.5282	N2.5237	N2.5237	N2.5282	C10
Guide pin	P30.1156	P30.1156	P30.1158	P35.3216	P30.1161	P30.1161	P35.3218	D10
Guide pin	P30.1156	P30.1156	P30.1164	P35.3217	P30.1167	P30.1167	P35.3219	D10
Holder	P32.1228	P32.1228	P32.1228	P35.3210	P32.1228	P32.1228	P35.3210	C3
Holder	P32.1229	P32.1229	P32.1229	P35.3209	P32.1229	P32.1229	P35.3209	B3
Strap guide	P32.1242	P32.1243	P32.1246	P35.3212	P32.1724	P32.1724	P35.3213	C4
Seesaw lever	P32.1248	P32.1248	P32.1248	P35.3220	P32.1248	P32.1248	P35.3220	C11
Seesaw lever	P32.1249	P32.1249	P32.1249	P35.3221	P32.1249	P32.1249	P35.3221	C10
Spring bolt	P32.1403	P32.1403	P32.1403	P32.1910	P32.1403	P32.1403	P32.1910	B9
Thrust piece	P32.1702	P32.1702	P32.1702	P35.3223	P32.1702	P32.1702	P35.3223	C11
Tensioning body	P32.0121	P32.0121	P32.0121	P35.0144	P32.0121	P32.0121	P35.0144	D2
Steel insert	P32.1706	P32.1706	P32.1706	P35.3127	P32.1705	P32.1706	P35.3127	D7
Welding stop gripper	P32.1707	P32.1707	P32.1707	P35.3128	P32.1707	P32.1707	P35.3128	D7
Cutter	P32.1708	P32.1708	P32.1708	P35.3214	P32.1708	P32.1708	P35.3214	C10
Gripper	P32.1719	P32.1719	P32.1719	P35.3206	P32.1716	P32.1719	P35.3206	C3
Gripper	P32.1720	P32.1720	P32.1720	P35.3207	P32.1717	P32.1720	P35.3207	C3
Gripper	P32.1721	P32.1721	P32.1721	P35.3208	P32.1718	P32.1721	P35.3208	C4
Tensioning wheel	P32.1729	P32.1729	P32.1729	P32.1729	P32.1728	P32.1729	P32.1729	B4
Guide case	P32.1735	P32.1733	P32.1709	P35.3215	P32.1709	P32.1709	P35.3215	C11
Strap stop	P32.1736	P32.1734	P32.1722	P32.1722	P32.1723	P32.1723	P32.1723	D4
Body	P32.1901	P32.1901	P32.1901	P32.1908	P32.1901	P32.1901	P32.1908	A2

The conversion from tools with the strap thickness 0.40-0.64 and 0.65-1.05 to tools with the strap thickness 1.06-1.35 is possible. However the number of required parts and labour cost are making a conversion not economic anymore.



#### Attention!

When converting tools always change the item number on the type label

Replace following parts:

Type label N43.9109

2 x hammer head bolts N2.4902

Enclose the suitable operation manual with the tool after each conversion

(see paragraph 5.8.1 Ordering manuals)



## **5.4 PERIODIC MAINTENANCE AND CONTROL**

(Carry out 12- months cycles doing one shift work. Doing more shift work respectively often.)

### **5.4.1 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:**

- Strap feed and strap tensioning
- Tensioning force adjustment (see operation manual P323)
- Cutting of the upper strap
- Welding time adjustment (see operation manual P323)
- Seal quality (see operation manual P323)
- Function of the LED - display
- Insertion of the strap

Proceed according to paragraph 5.4.2 after a fault appears.



#### **Attention!**

**Remove battery from tool before each maintenance work.**

**For exchange of wearing parts see operation Manual P323.**

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

## 2.4 PERIODIC MAINTENANCE AND CONTROL

Carry out 15 minute checks during and after work. Check more regularly if necessary.

### 2.4.1 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 those exposed to the welding arc or the welding unit, by using compressed air. Wipe the tool with a dry cloth or a clean, dry cloth for cleaning.

Carry out a test striping and check following:

- Strip, bend and strip test strip
- Positioning force adjustment (see operation manual P223)
- Control of the strip edge
- Welding time adjustment (see operation manual P223)
- Roll gently (see manual P223)
- Position of the LED - display
- Position of the strip

Return according to paragraph 2.4.2 after a full repair.

### Attention!

Remove battery from tool before each maintenance work.  
For exchange of welding parts see operation manual P223.  
Never use water or solvents for cleaning the tool's surface.





## 5.4.2 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 N5.4318.	Replace battery housing
	Contact problems caused by a damaged connecting plate P32.1118 or damaged motor housing P32.1418 and P32.1419	Replace connecting plate or motor housing
	Defective busbar P32.1111/14	Replace busbar
	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 P323)
	P32.1051 is not meshing with P32.1048, because spring N2.5822 is defective or parts are dirty	Replace spring N2.5822, clean dirty parts
	Faulty tensioning wheel or tensioning wheel is assembled reversed	Correct assembling (see operation manual P323)
	Grippers are dirty, worn or faulty assembled	Replace grippers, clean them or assemble correct, don't use any hard objects for this (see operation manual P323)
	Gearing parts from the tensioning gear are defective Loose pinion on P32.1516 Loose pinion on tensioning motor	Check tensioning gear and replace defect parts
	Defective tensioning motor	Replace tensioning motor
	Defective circuit board	Replace circuit board
	Micro switch N5.2322 for tensioning motor is defective	Replace micro switch
	Contact problem of the internal wires	Check contacts and fix them if required or change defective parts
	Defective gear bearings	Replace bearings
	Defective tensioning body	Replace tensioning body
	Needle free wheeling assembled reversed	Correct assembling

## 2.4.3 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 start	Defective wheel drive	Check for any loose parts or damage to the wheel drive assembly. If necessary, replace the wheel drive assembly.
	Defective motor	Check the motor for any signs of damage or wear. If necessary, replace the motor.
	Defective battery	Check the battery for any signs of damage or wear. If necessary, replace the battery.
	Defective control system	Check the control system for any signs of damage or wear. If necessary, replace the control system.
Tool doesn't work as well	Defective wheel drive	Check for any loose parts or damage to the wheel drive assembly. If necessary, replace the wheel drive assembly.
	Defective motor	Check the motor for any signs of damage or wear. If necessary, replace the motor.
	Defective battery	Check the battery for any signs of damage or wear. If necessary, replace the battery.
	Defective control system	Check the control system for any signs of damage or wear. If necessary, replace the control system.
	Defective wheel drive	Check for any loose parts or damage to the wheel drive assembly. If necessary, replace the wheel drive assembly.
	Defective motor	Check the motor for any signs of damage or wear. If necessary, replace the motor.
	Defective battery	Check the battery for any signs of damage or wear. If necessary, replace the battery.
	Defective control system	Check the control system for any signs of damage or wear. If necessary, replace the control system.
	Defective wheel drive	Check for any loose parts or damage to the wheel drive assembly. If necessary, replace the wheel drive assembly.
	Defective motor	Check the motor for any signs of damage or wear. If necessary, replace the motor.
	Defective battery	Check the battery for any signs of damage or wear. If necessary, replace the battery.

SYMPTOM	CAUSE	REMEDY
Tensioning wheel turns back immediately after the tensioning cycle	Shaft P32.1014 in lever P32.1051 is loose	Check parts and replace as required
	Defective needle free wheeling N3.4509	
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 P323)
	Welding stop gripper is dirty or worn	Replace or clean welding stop gripper, don't use any hard objects for this (see operation manual P323)
	Damaged housing parts	Replace housing parts
	Defective circuit board	Replace circuit board
	Defective welding motor	Replace welding motor
	Pressure spring N2.5294 defective	Replace pressure spring
	Loose pinion P32.1119 on welding motor	Replace pinion
	Gearing parts of the welding gear are defective	Check welding gear and replace defect parts
	Micro switch N5.2322 for welding motor is defective	Replace micro switch
	Defective busbar P32.1108	Replace busbar
	Contact problem of the internal wires	Check contacts and fix them if required or change defective parts
	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 P323)
	Faulty adjustment of the coupler	Check adjustment and readjust if necessary (see operation manual P323)
	Welding gripper is worn	Replace welding gripper (see operation manual P323)
	Welding time too short	Change adjustment (see operation manual P323)
	Defective pressure spring N2.5237/N2.5282	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 defect one's





### 5.4.3 Battery test

The battery should be checked while each maintenance by using the battery tester N7.5121. The use is described in the instruction manual of the battery tester.

- NiCd-Batteries 14,4V / 2,4Ah must be replaced by an capacity less than 1,7 Ah.
- NiMH-Batteries 14,4V / 2,7Ah(3,0Ah) must be replaced by an capacity less than 1,9 Ah(2,1Ah).

### 5.4.4 Checklist

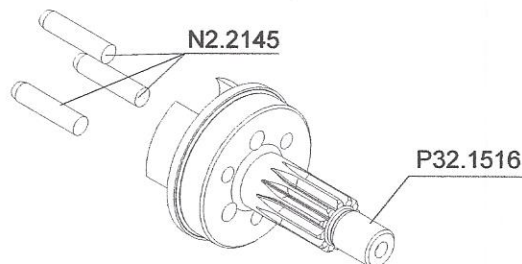
Carry out some test strappings and check following tool components.

- Insert battery in the tool and check function of the LED-display (see operation manual P323)
- Strap feed and strap tension
- Tension force adjustment (see operation manual P323)
- Cutting of the upper strap
- Welding time adjustment (see operation manual P323)
- Seal quality (see operation manual P323)
- Function of the LED-display (see operation manual P323)
- Inserting of the strap
- Correct type label

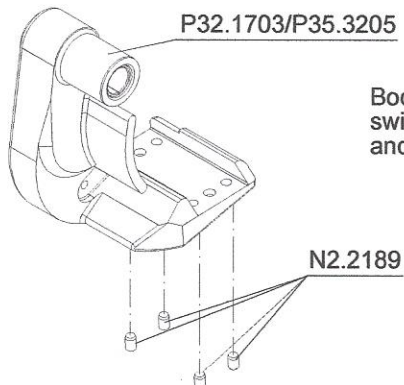
### 5.4.5 Glueing rules

Following parts have to be glued with **LOCTITE 603**:

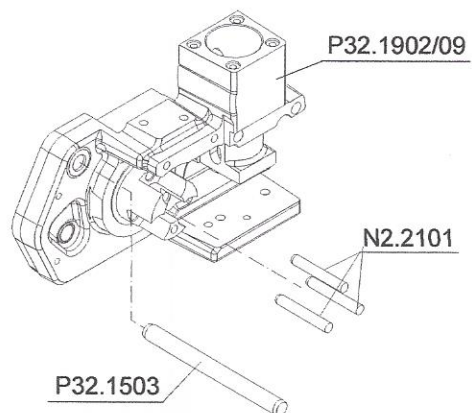
Planet shaft P32.1516  
with the parallel pins N2.2145.



Tensioning body P32.1703/P35.3205  
with the parallel pins N2.2189



Body P32.1902/09 with  
swivel shaft P32.1503  
and parallel pins N21.2101



## 8.4.3 Battery test

The battery should be checked while each instrument is in use. The battery level is displayed in the instruction manual of the battery tester. The test is described in the instruction manual of the battery tester.

- If the battery level is 4V or less, it must be replaced by an equally less than 1.5 Ah.
- If the battery level is 4V or less, it must be replaced by an equally less than 1.5 Ah.

## 8.4.4 Checklist

Carry out some test steps and check following (all components):

- Insert battery in the tool and check function of the LED display (see operation manual P.100)
- Check tool and check function
- Test tool force adjustment (see operation manual P.100)
- Cutting of the upper strap
- Welding line adjustment (see operation manual P.100)
- Set quality test operation manual P.100
- Function of the LED display (see operation manual P.100)
- Inserting of the strap
- Connect plug label

## 8.4.5 Closing notes

Following parts have to be glued with LOCTITE 609:

Please refer P.100-101  
with the parallel pins P.100

P.100

P.100

Tensioning body P.100 P.100  
with the parallel pins P.100

P.100 P.100 P.100

Body P.100 P.100 P.100  
with the parallel pins P.100

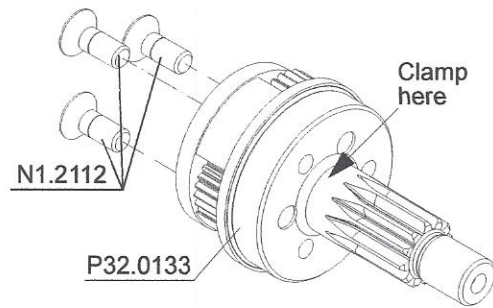
P.100

P.100

P.100

P.100

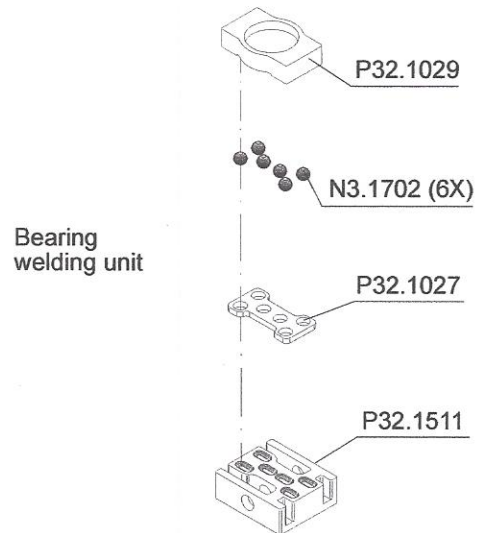
Additional the screws N1.2112 have to be glued with the idler step P32.0133 using **LOCTITE 222**.  
Don't clamp the planet shaft on the pinion while loosening or tightening the screws N1.2112.



#### 5.4.6 Lubrication rules

All gear parts have to be lubricated with **MOLYKOTE BR 2 PLUS** grease.  
Lubrication interval: While each maintenance or after 12 months at the latest.

All bearing parts of the welding unit have to be cleaned and lubricated with **Klüber Isoflex Alltime SL2** grease while each maintenance.  
Lubrication interval: While each maintenance or after 12 months at the latest.



All other parts have to be greased due to the explosion drawing.  
Lubrication interval: While each maintenance

Adjust the screws #21/21 to be flush with the  
 the step P32 6121 using LDC TITE 22A.  
 Don't clamp the panel until on the screw while loosening or  
 tightening the screws #21/21.



### 3.4.6 Lubrication rules

All gear parts have to be lubricated with MOLYKOTE GREASE PLUS Grease.  
 Lubrication interval: While each maintenance or after 12 months in the field.

P32 1031

All the other parts of the welding unit have to be the used and  
 lubricated with KILMER JACOBI ALUMINUM GREASE 212.  
 Lubrication interval: While each maintenance or after 12  
 months in the field.

P32 1032 (2x)

Welding  
 unit

P32 1033

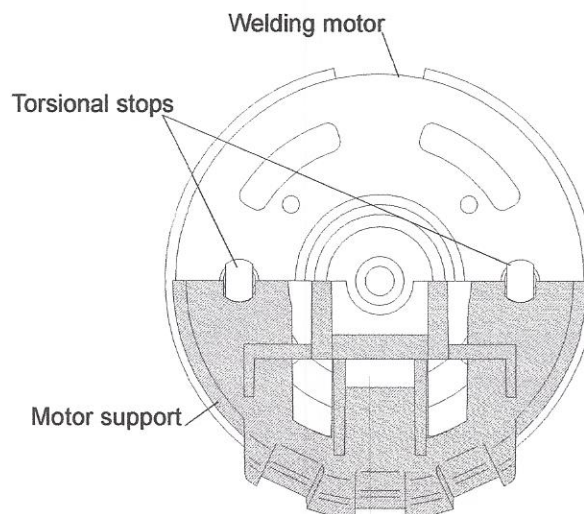
P32 1034

All other parts have to be greased due to the required greasing  
 Lubrication interval: While each maintenance.

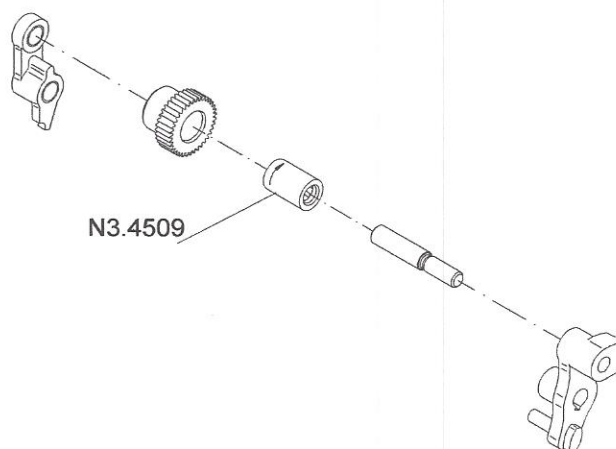


### 5.4.7 Assembly informations

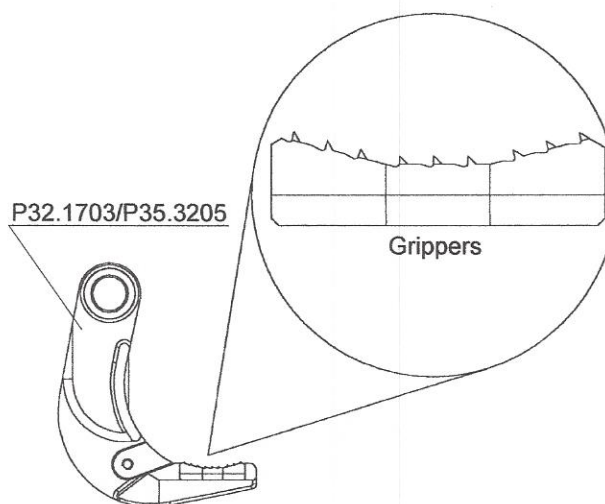
Pay attention to the correct position of the torsional stops while fitting the welding motor.  
(see illustration)



Pay attention to the assembling direction of the needle free wheeling N3.4509.  
The sense of rotation is stamped in the front of the free wheeling.

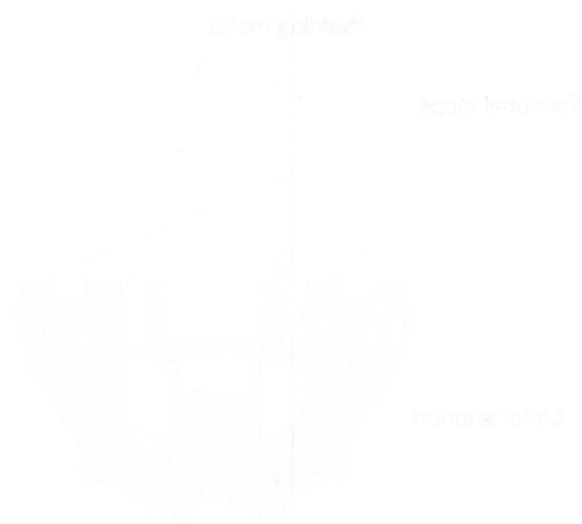


Pay attention to the direction of the teeth while assembling the grippers into the tensioning body P32.1703/P35.3205. (look at the picture)



# 3.4.7 Assembly Instructions

Pay attention to the correct position of the internal  
steps while fitting the wheeling body.  
(see illustration)



Pay attention to the wheeling direction  
of the wheeling body. The wheeling  
direction is indicated in the  
front of the wheeling



Pay attention to the correct position of the  
wheeling body. The wheeling body  
must be fitted into the  
correct position.



## 5.5 RECOMMENDED SPARE PARTS

Following spare parts are recommended for stock keeping:

Item-No.	Description	Pieces per tool
N1.1305	Screw	2
N1.1904	Flat head screw	4
N1.1909	Flat head screw	2
N1.1925	Flat head screw	1
N1.1929	Flat head screw	1
N1.1934	Flat head screw	6
N1.6503	Washer	5
N1.6504	Washer	14
N1.6505	Washer	3
N1.7207	PT-screw	4
N1.7208	PT-screw	4
N2.1118	Circlip	1
N2.1121	Circlip	5
N2.1606	Spring ring	1
N2.1801	Tensioning ring	1
N3.1702	Ball	6
N5.2322	Micro switch	2
N5.4318	Housing	1
P32.0107	Welding motor	1
P32.0131	Tensioning motor	1
P32.1418	Motor housing	1
P32.0143	Lever	1
P32.1419	Motor housing	1
P32.1118	Connecting plate	1
P32.1421	Motor cover	1
P32.1901	Body	1
P32.1904	Circuit board	1
P32.1726	End cover	1

Besides should be stocked the wearing parts of the different Types.  
Stock only parts from tools that are in sale.

## 3.3 RECOMMENDED SPARE PARTS

Following spare parts are recommended for stock holding:

Item No.	Description	Quantity per lot
MT 1308	Screw	5
MT 1804	Flat head screw	4
MT 1805	Flat head screw	5
MT 1828	Flat head screw	7
MT 1829	Flat head screw	7
MT 1834	Flat head screw	11
MT 5803	Gasket	5
MT 5804	Washer	14
MT 5805	Washer	3
MT 5207	PT screw	5
MT 5208	PT screw	4
MS 416	Circle	1
MS 421	Circle	5
MS 408	Spring ring	1
MS 1801	Interlocking ring	1
MS 1102	Ball	11
MS 1232	Locks switch	5
MS 416	Flange	1
P02 0107	Feeding motor	1
P02 0131	Feeding motor	1
P02 1418	Motor housing	1
P02 0143	Lever	1
P02 1418	Motor housing	1
P02 1118	Command plate	1
P02 1431	Motor cover	1
P02 1801	Body	1
P02 1804	Control panel	1
P02 1128	End cover	1

Reserve without an stocked the warning parts in the different types

Stock only parts from table that are in use

## 5.6 ACCESSORY TOOLS

Item number		Description
N71.3235	*a,b,c,d,e	Press in and press out arbor for N3.4509/P32.1519
N71.3236	*a,b,c	Press in and press out pressure pad for N3.4509/P32.1519
N71.3237	*a,b,c,d,e	Press in and press out arbor for N3.1159/P32.1037
N71.3238	*a,b,c,e	Press in and press out pressure pad for N3.1159/P32.1037
N71.3239	*a,b,c,d,e	Press in arbor for N3.2347/P32.1510
N71.3240	*a,b,c,d,e	Press out arbor for N3.2347/P32.1510
N71.3241	*a,b,c,d,e	Press in and press out pressure pad for N3.2347/P32.1510
N71.3243	*a,b,c,d,e	Press in arbor for N3.1134, P32.1023/P32.1022
N71.3244	*a,b,c,d,e	Press out arbor for N3.1134, P32.1023/P32.1022; N5.1129/P32.1603
N71.3245	*a,b,c,d,e	Pressure pad for N3.1134, P32.1023/P32.1022; N3.2350/P32.1726
N71.3248	*a,b,c,d,e	Press in arbor for N3.3150/P32.1703
N71.3253	*a,b,c,d	Press in and press out arbor for P32.1119, N3.1158, P32.1120/N5.1129
N71.3255	*a,b,c	Distance sleeve for N3.1158, P32.1120, P32.1119/N5.1129; P32.1603/N5.1129
N71.3256	*a,b,c	Press in and press out pressure pad for N3.1158, P32.1120, P32.1119/N5.1129
N71.3257	*a,b,c	Press out pressure pad for P32.1119/N5.1129; P32.1603/N5.1129
N71.3258	*a,b,c	Press in arbor for P32.1603/N5.1129
N71.3259	*a,b,c	Press in and press out pressure pad for P32.1603/N5.1129
N71.3260	*a,b,c	Press out arbor for N3.1158, P32.1120, P32.1119/N5.1129
N71.3261	*a,b,c	Distance sleeve for N3.1158, P32.1120, P32.1119/N5.1129
N71.3264	*b,e	Press in and press out arbor for N3.1157/P32.1516
N71.3265	*b	Press in and press out pressure pad for N3.1157/P32.1516
N71.3266	*b,e	Press in and press out arbor for N3.2350/P32.1726
N71.3267	*b,e	Press in and press out arbor N3.3172/P32.1901/09; N3.3150/P32.1703
N71.3268	*b,e	Press in and press out pressure pad for N3.3150/P32.1703

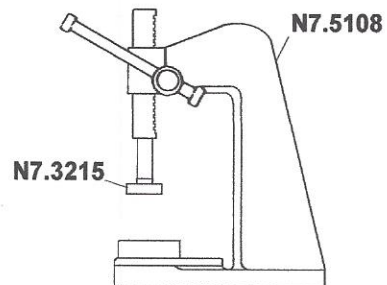
- \* a) These tools are also included in the P320 tool set.  
 b) These tools are also included in the P321 tool set.  
 c) These tools are also included in the P322 tool set.  
 d) These tools are also included in the P355 tool set.  
 e) These tools are also included in the P356 tool set.





## 5.7 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
N3.1157/ P32.1516	<p>The diagram illustrates the disassembly process. A downward arrow indicates the direction of force. The top part, labeled N71.3264, is being pushed out of a housing. Below it, a dashed line indicates the path of the middle component. The bottom part, labeled N71.3265, is being pushed out of the housing.</p>	<p>The diagram illustrates the assembly process. A downward arrow indicates the direction of force. The top part, labeled N3.1157, is being inserted into the housing. Below it, a dashed line indicates the path of the middle component. The bottom part, labeled P32.1516, is being inserted into the housing.</p>
N3.1159/ P32.1037	<p>The diagram illustrates the disassembly process. A downward arrow indicates the direction of force. The top part, labeled N71.3237, is being pushed out of a housing. Below it, a dashed line indicates the path of the middle component. The bottom part, labeled N71.3238, is being pushed out of the housing.</p>	<p>The diagram illustrates the assembly process. A downward arrow indicates the direction of force. The top part, labeled N3.1159, is being inserted into the housing. Below it, a dashed line indicates the path of the middle component. The bottom part, labeled P32.1037, is being inserted into the housing.</p>

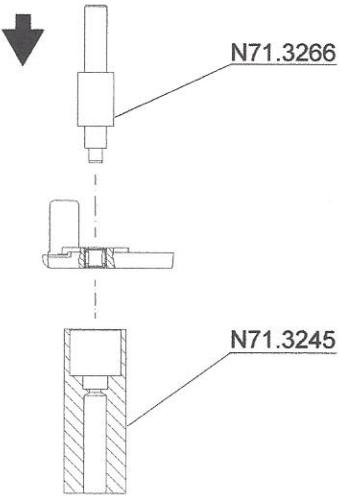
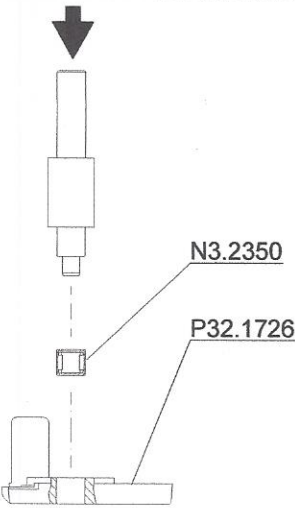
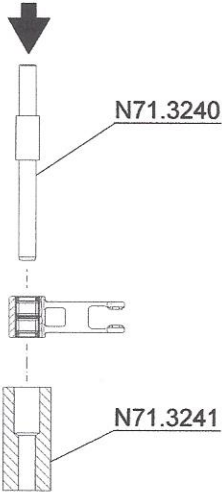
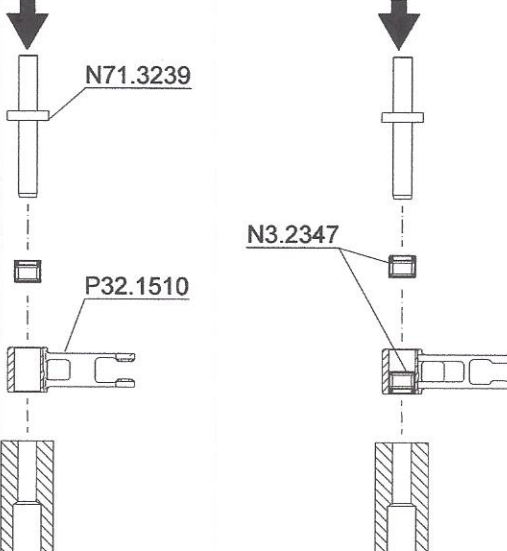
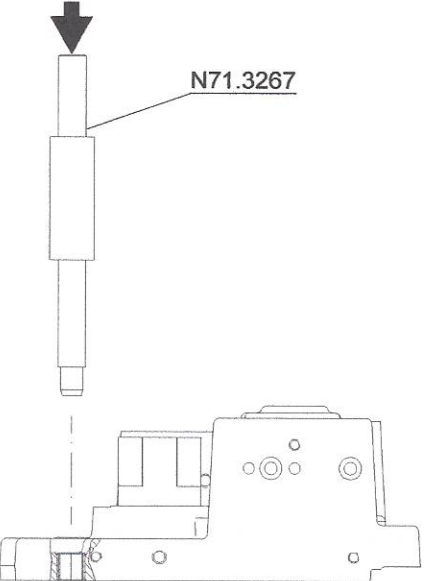
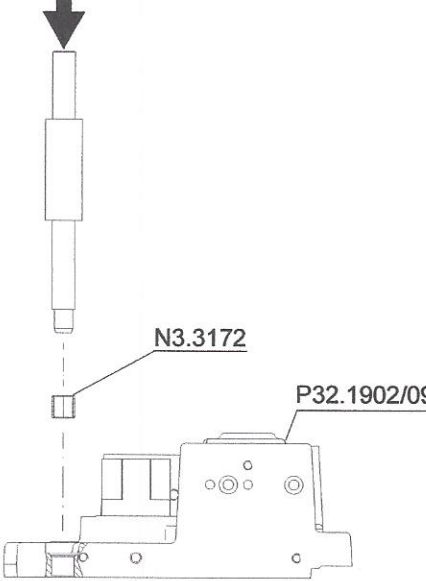
# 6.7. USE OF ACCESSORY TOOLS

A secondary tool should only be used with the subject when the NT 810B is present a part of the part to be placed in addition a release (NT 311B) is necessary.

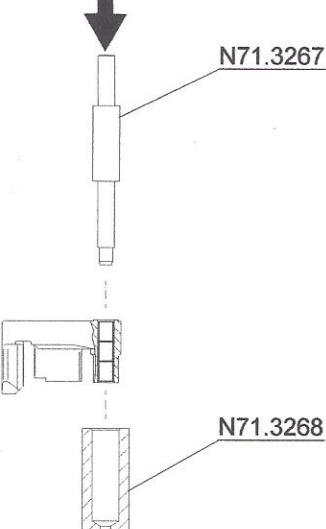
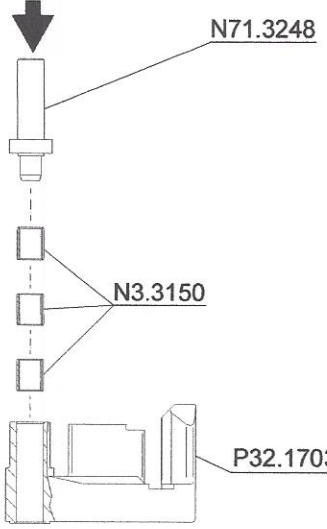
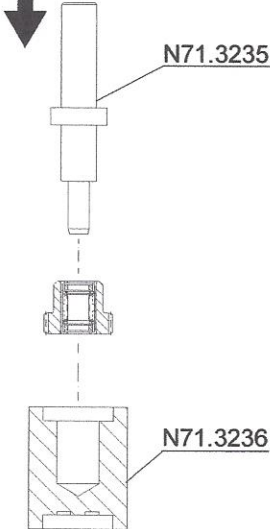
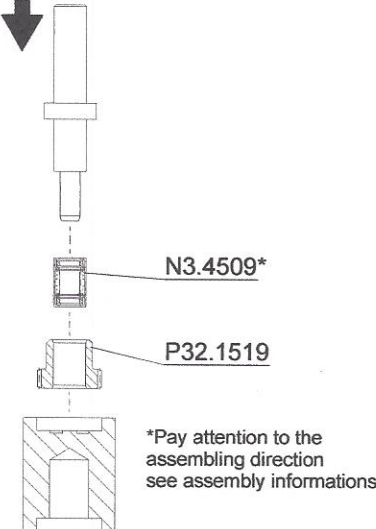
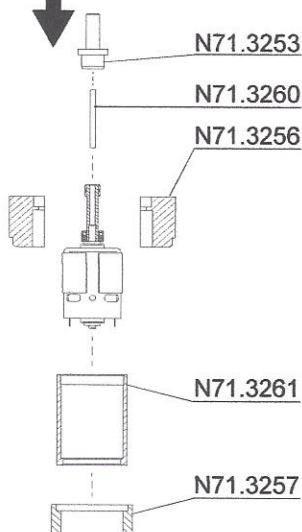
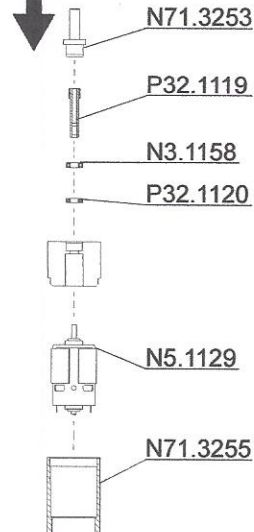


Part	Threats	Assembly
NT 110V FOS 101	NT 320A NT 320B NT 320C NT 320D NT 320E NT 320F NT 320G NT 320H NT 320I NT 320J NT 320K NT 320L NT 320M NT 320N NT 320O NT 320P NT 320Q NT 320R NT 320S NT 320T NT 320U NT 320V NT 320W NT 320X NT 320Y NT 320Z	NT 110S FOS 101
NT 110V FOS 101	NT 320A NT 320B NT 320C NT 320D NT 320E NT 320F NT 320G NT 320H NT 320I NT 320J NT 320K NT 320L NT 320M NT 320N NT 320O NT 320P NT 320Q NT 320R NT 320S NT 320T NT 320U NT 320V NT 320W NT 320X NT 320Y NT 320Z	NT 110S FOS 101

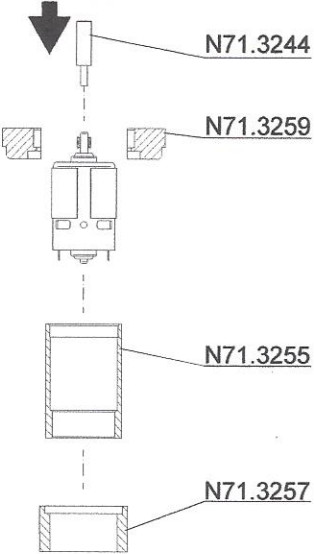
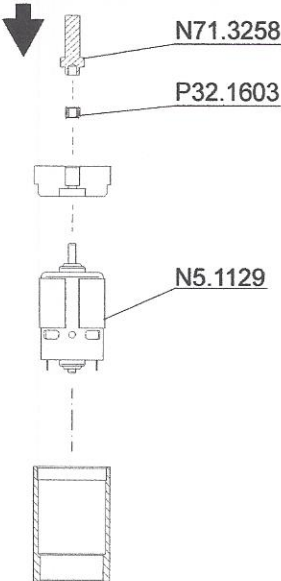
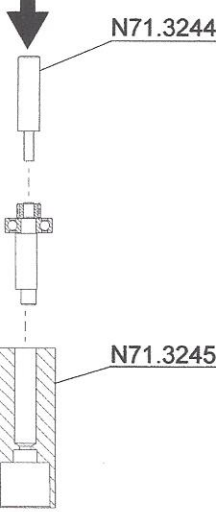
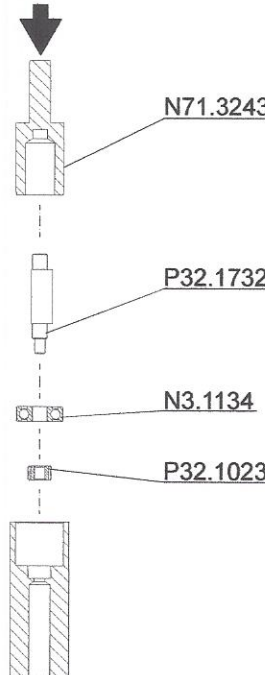


Part	Disassembly	Assembly
N3.2350/ P32.1726		
N3.2347/ P32.1510		
N3.3172/ P32.1902/ P32.1909		



Part	Disassembly	Assembly
N3.3150/ P32.1703		
N3.4509/ P32.1519		 <p>*Pay attention to the assembling direction see assembly informations</p>
N5.1129/ P32.1119/ N3.1158/ P32.1120		



Part	Disassembly	Assembly
N5.1129/ P32.1603	 <p>Diagram showing the disassembly of the N5.1129/P32.1603 assembly. The components are shown in a vertical sequence from top to bottom: a pin (N71.3244), a small rectangular block (N71.3259), a central assembly (N5.1129), a rectangular block (N71.3255), and a base block (N71.3257). A downward arrow indicates the direction of disassembly.</p>	 <p>Diagram showing the assembly of the N5.1129/P32.1603 assembly. The components are shown in a vertical sequence from top to bottom: a pin (N71.3258), a small rectangular block (P32.1603), a central assembly (N5.1129), a rectangular block (N71.3255), and a base block (N71.3257). A downward arrow indicates the direction of assembly.</p>
P32.1023/ N3.1134/ P32.1732	 <p>Diagram showing the disassembly of the P32.1023/N3.1134/P32.1732 assembly. The components are shown in a vertical sequence from top to bottom: a pin (N71.3244), a small rectangular block (N71.3245), and a base block (N71.3245). A downward arrow indicates the direction of disassembly.</p>	 <p>Diagram showing the assembly of the P32.1023/N3.1134/P32.1732 assembly. The components are shown in a vertical sequence from top to bottom: a pin (N71.3243), a small rectangular block (P32.1732), a central assembly (N3.1134), a rectangular block (P32.1023), and a base block (N71.3245). A downward arrow indicates the direction of assembly.</p>



## 5.8 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 (P32.1728/29)
- Find out the tool type in which the tensioning wheel should be assembled (e.g. 43.3101)
- Find out the item number of the needed tensioning wheel by using the type dependent spare parts lists (for type 43.3101 it is tensioning wheel P32.1729).

Order as follows if 10 tensioning wheels are needed:

**P32.1729      Tensioning wheel      10 pcs.**

### 5.8.1 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: 43.3101

Version number: 01

Language of the manual: de

The manual order for this tool must look as follows:

**43310101.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
sf	Finnish
sp	Spanish
ru	Russian
cz	Czech

### 5.8.2 Ordering address

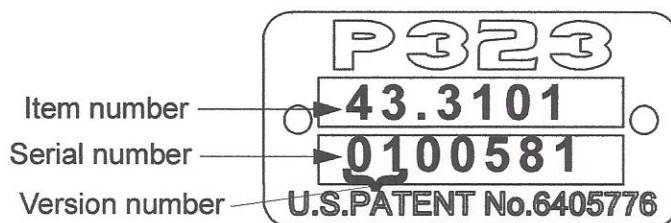
Spare parts and manuals can be ordered at:

Fromm Holding AG  
Hinterbergstrasse 26  
CH-6330 Cham  
Switzerland

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

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

#### Type label P323



## 8.5 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 turning wheel:

- Take item number of the turning wheel from drawing P-03.1730250
- Find out the tool type in which the turning wheel should be assembled (e.g. 43.3101)
- Find out the item number of the needed turning wheel by using the type dependent spare parts list for type 43.3101 (e.g. turning wheel P-03.1730)

Order as follows if no turning wheel is ordered:  
P-03.1730      Turning wheel      10 pcs

### 8.5.1 Ordering manuals

When converting tools into new tool sets read manual first and verify if tools change their data number because of the conversion (section of type) the adequate manual must be ordered as follows:

#### Ordering example:

Tool set number: 43.3101  
Version number: 01  
Language of the manual: de

The manual order for the tool must look as follows:  
43.3101.01.de  
If the manual is needed in another language replace the standard expression "de" (see table).

### 8.5.2 Ordering address

Spare parts and manuals can be ordered at:

Proton Holding AG  
Löhner-Graben 30  
CH-6520 Cham  
Switzerland  
Phone: +41(0) 41 741 21 91  
Fax: +41(0) 41 741 21 80  
e-mail: order@proton-pack.com

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

Type label P-03



Item number  
Serial number  
Version number



## 5.9 SERVICE ADDRESS

You will get further assistance and information at:

**Post address**

Fromm System GmbH  
Technical customer support  
Postfach 12 46  
D-77843 Achern  
Germany

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

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

e-mail: [de@fromm-pack.com](mailto:de@fromm-pack.com)

**Physical address:**

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

## 5.10 CHART OF TYPES

Item no.	Model	Strap width	Strap thickness
43.3101	P323/12.7/0.65-1.05	12.7 mm / 1/2"	0.65 - 1.05 mm / .026 - .041"
43.3111	P323/13/0.65-1.05	13 mm	0.65 - 1.05 mm / .026 - .041"
43.3121	P323/16/0.65-1.05	16 mm / 5/8"	0.65 - 1.05 mm / .026 - .041"
43.3122	P323/16/1.06-1.35	16 mm / 5/8"	1.06 - 1.35 mm / .042 - .053"
43.3131	P323/19/0.40-0.64	19 mm / 3/4"	0.40 - 0.64 mm / .016 - .025"
43.3132	P323/19/0.65-1.05	19 mm / 3/4"	0.65 - 1.05 mm / .026 - .041"
43.3133	P323/19/1.06-1.35	19 mm / 3/4"	1.06 - 1.35 mm / .042 - .053"

## 5.9 SERVICE ADDRESS

You will get further assistance and information at:

Postal address	Physical address
<p>Fromm System GmbH Technical customer support Postfach 15-47 D-77345 Achern Germany</p> <p>Phone: +49(0)7641 97 34-53 Fax: +49(0)7641 975 94-11 e-mail: <a href="mailto:fromm@fromm-ges.de">fromm@fromm-ges.de</a></p>	<p>Fromm System GmbH Technical customer support Hauptstraße 17 D-77345 Achern Germany</p>

## 5.10 CHART OF TYPES

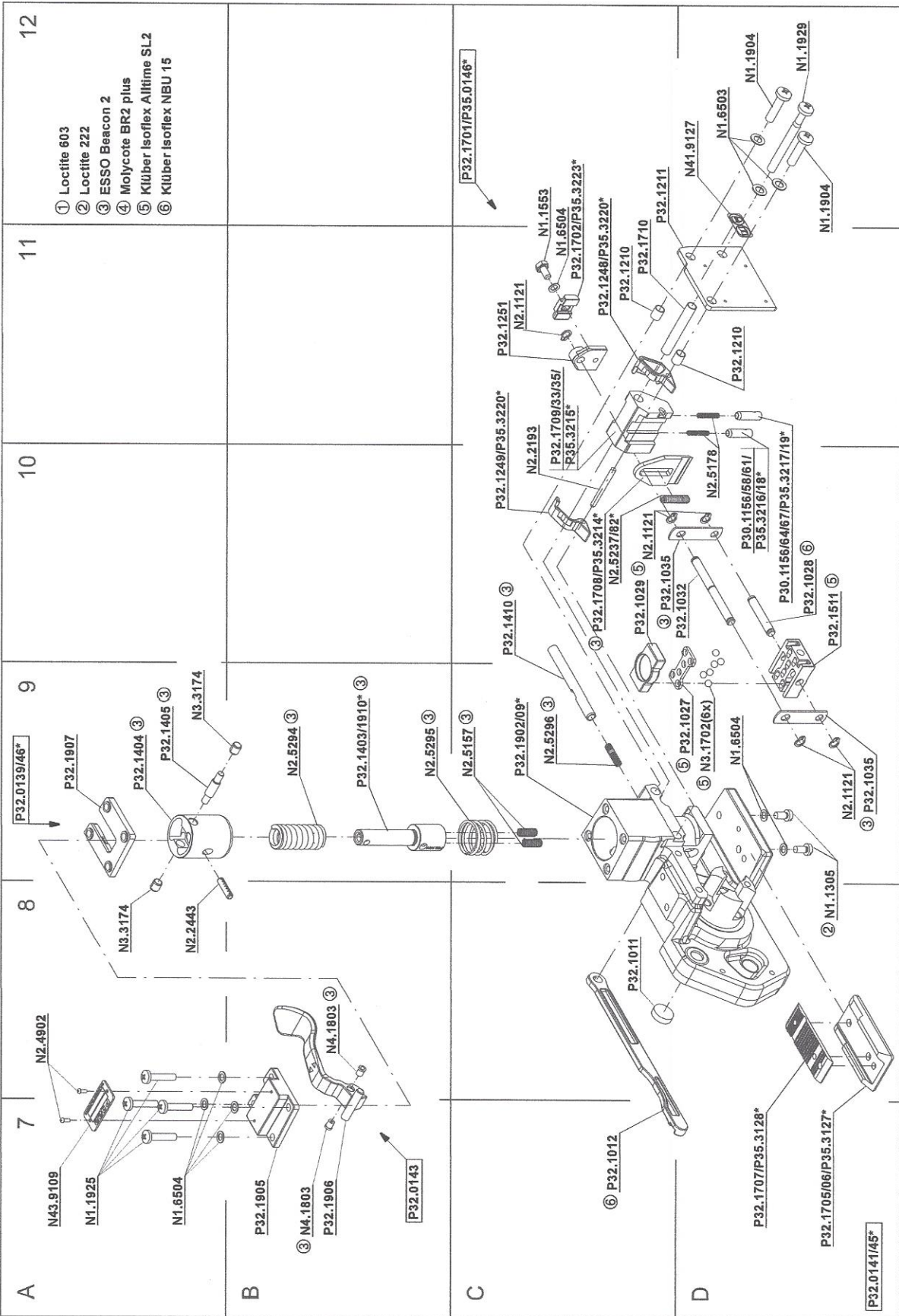
Item no.	Model	Design width	Design thickness
43 3101	P523M15 08-1-08	15 mm : 15°	0.85 - 1.05 mm : 0.58 - 0.67
43 3111	P523M15 08-1-08	15 mm	0.85 - 1.05 mm : 0.58 - 0.67
43 3121	P523M15 08-1-08	15 mm : 15°	0.85 - 1.05 mm : 0.58 - 0.67
43 3131	P523M15 08-1-08	15 mm : 15°	1.05 - 1.25 mm : 0.63 - 0.72
43 3141	P523M15 08-1-08	15 mm : 15°	0.85 - 1.05 mm : 0.58 - 0.67
43 3151	P523M15 08-1-08	15 mm : 15°	0.85 - 1.05 mm : 0.58 - 0.67
43 3161	P523M15 08-1-08	15 mm : 15°	1.05 - 1.25 mm : 0.63 - 0.72









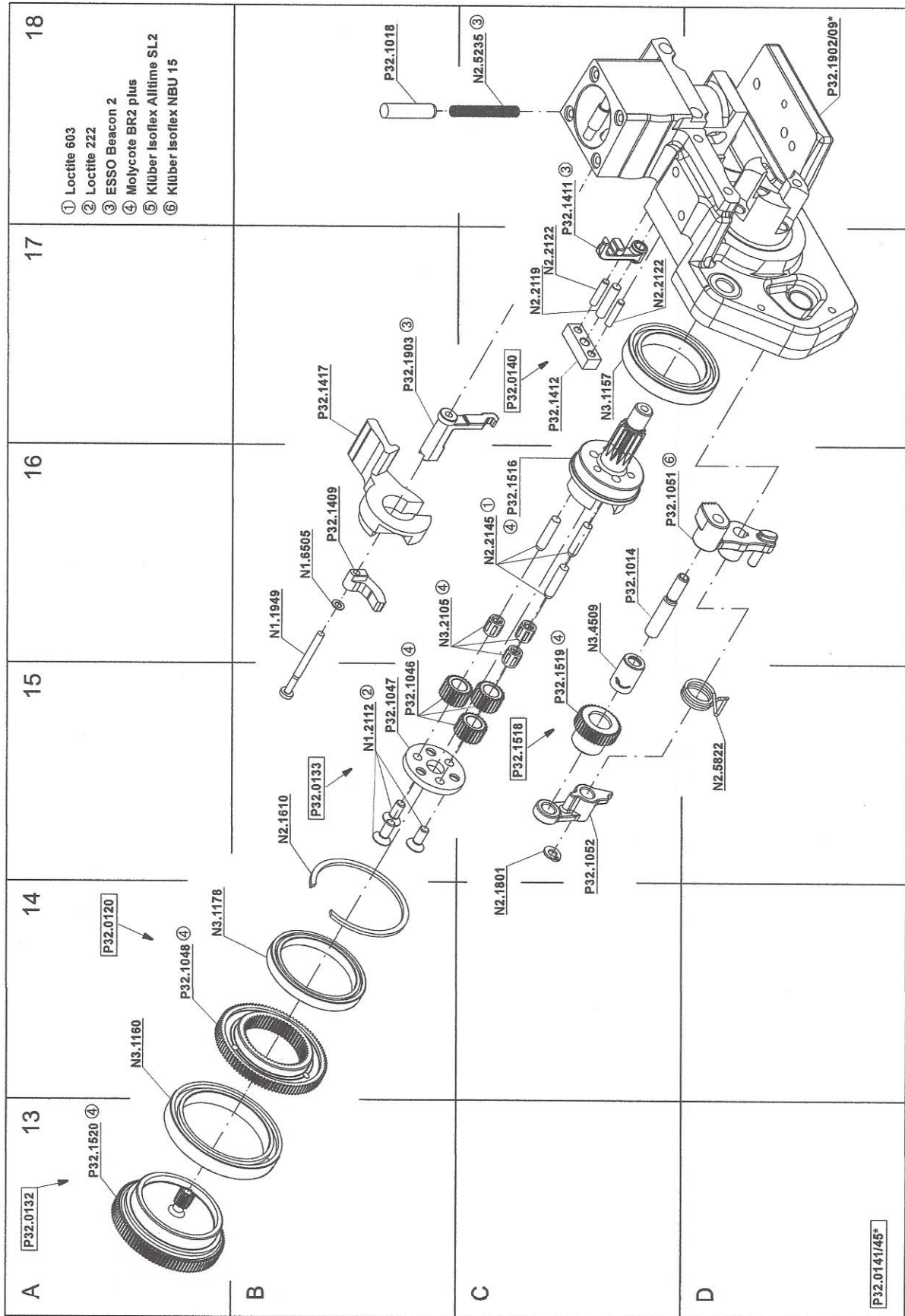


\*See 5.8 Ordering spare parts



FIG. 2-1. (Continued) Phase 2













## 7 SPARE PARTS LIST P323

### 7.1 Type independent spare parts P323.0001.01

Item-No.		in group	Pcs.	Description	Dimension	Field
N1.1305			2	SCREW	M4 X 7.8	D8
N1.1553		P32.1701	1	HEXAGON SCREW	M4 X 8	C12
N1.1904			4	SCREW	M5 X 20	C6+
N1.1909			2	FLAT HEAD SCREW	M3 X 5	D3
N1.1925			1	SCREW	M4 X 20	D6
N1.1925		P32.0141	4	SCREW	M4 X 20	A7
N1.1929			1	SCREW	M5 X 50	D12
N1.1934		P32.0141	6	FLAT HEAD SCREW	M4 X 50	A19+
N1.1949		P32.0141	1	SCREW	M3 X 40	B16
N1.2112		P32.0133	3	COUNTERSUNK SCREW	M4 X 10	B15
N1.2216			2	COUNTERSUNK SCREW	M3 X 8	D4+
N1.6331		P32.0141	4	SPACER WASHER	6 X 12 X 0.5	C22+
N1.6503			5	SAFETY WASHER	M5	C6+
N1.6504			3	SAFETY WASHER	M4	D6+
N1.6504		P32.0141	10	SAFETY WASHER	M4	A7+
N1.6504		P32.1701	1	SAFETY WASHER	M4	C11
N1.6505			2	SAFETY WASHER	M3	D3
N1.6505		P32.0141	1	SAFETY WASHER	M3	B16
N1.7206		P32.1904	2	PT-SCREW	2.2 X 10	D20+
N1.7207		P32.0141	4	PT-SCREW	3 X 40	A20+
N1.7208		P32.0141	4	PT-SCREW	3 X 14	A21
N21.2101		P32.1901	3	PARALLEL PIN	5 h6 X 40	B2+
N21.2102		P32.0129	2	PARALLEL PIN	3 m6 X 8	C4
N2.1118			1	SECURITY RING	6	C24
N2.1121			1	SECURITY RING	5	C11
N2.1121		P32.0141	4	SECURITY RING	5	D9+
N2.1606			1	SPRING RING	SW6	A21
N2.1610		P32.0141	1	SPRING RING	SB44	B15
N2.1801		P32.0141	1	TENSIONING RING	4	C14
N2.2110		P32.1901	1	PARALLEL PIN	4 m6 X 10	B2
N2.2119		P32.0140	1	PARALLEL PIN	4 m6 X 18	C17
N2.2122		P32.0140	2	PARALLEL PIN	3 h6 X 14	C17
N2.2145		P32.0133	3	PARALLEL PIN	4 h6 X 18	C16
N2.2187		P32.1901	1	PARALLEL PIN	3 m6 X 6	A3
N2.2189		P32.0121	4	PARALLEL PIN	3 m6 X 5	D3
N2.2190		P32.0141	2	PARALLEL PIN	6 h6 X 18	C22
N2.2193			1	PARALLEL PIN	3 m6 X 32	C10
N2.2443		P32.0139	1	DOWEL PIN	4 X 15	A8
N2.3342		P32.0141	1	FEATHER KEY	2 X 2 X 10	C2
N2.4902			4	HAMMER HEAD BOLT	1.85 X 4.76	C6+
N2.5157		P32.0141	2	PRESSURE SPRING	0.6 X 4.8 X 20/15.5	C9
N2.5178			2	PRESSURE SPRING	0.32 X 2.82 X 20.5/ 20.5	D10
N2.5235		P32.0141	1	PRESSURE SPRING	0.5 X 4.50 X 42.4/28.5	C18
N2.5294		P32.0139	1	PRESSURE SPRING	2.5 X 15 X 46.5/9.5	B9
N2.5295		P32.0141	1	PRESSURE SPRING	1.5 X 21 X 27/5.5	B9
N2.5296		P32.0141	1	PRESSURE SPRING	0.5 X 4 X 24/16.5	C9
N2.5822		P32.0141	1	TORSION SPRING	1.25 X 12/3.75	D15
N2.5823			1	TORSION SPRING	2.8 X 17/4	D4
N3.1134		P32.0141	1	BALL BEARING	7 X 22 X 7	D21

[] = Group

\* = Wearing parts





Item-No.		in group	Pcs.	Description	Dimension	Field
N3.1134		P32.1731	1	BALL BEARING	7 X 22 X 7	C22
N3.1157		P32.0133	1	BALL BEARING	30 X 42 X 7	C17
N3.1158		P32.0107	1	BALL BEARING	8 X 16 X 5	B23
N3.1159		P32.0141	2	BALL BEARING	6 X 19 X 6	C22
N3.1160		P32.0132	1	BALL BEARING	40 X 52 X 7	A14
N3.1172			2	BALL BEARING	30 X 42 X 7	B3+
N3.1178		P32.0120	1	BALL BEARING	35 X 44 X 5	A14
N3.1702		P32.0141	6	BALL	4 MM	D9
N3.2105		P32.0133	3	NEEDLE CAGE	K 4 X 7 X 7 TN	B16
N3.2107			3	NEEDLE CAGE	K 5 X 9 X 13 TN	B3
N3.2347		P35.0136	2	NEEDLE BUSH	10 X 14 X 12	C21
N3.2350		P32.0129	1	NEEDLE CASE	6 X 10 X 9	C5
N3.3150		P32.0121	3	SLIDE-BEARING	8 X 10 X 12	C3
N3.3172		P32.1901	1	SLIDE-BEARING	8 X 10 X 10	C1
N3.3174		P32.0139	2	SLIDE-BEARING	4 X 5.5 X 6	A8+
N3.3174		P32.1419	1	SLIDE-BEARING	4 X 5.5 X 6	C21
N3.4509		P32.1518	1	NEEDLE FREE WHEELING	6 X 10 X 15	C16
N41.9127			1	ADHESIVE LABEL	20 X 10 X 0.1	D12
N41.9160		P32.0141	2	ADHESIVE LABEL	14.4 VOLT	A21+
N43.9109			1	TYPE PLATE	<<P323>>	A7
N4.1803		P32.0143	2	THRUST PIECE		B7+
N4.9108			1	ADHESIVE LABEL	54 X 12 X 0.1	A21
N4.9159			1	LABEL	<<CE>>	C6
N5.1129		P32.0107	1	ELECTRIC MOTOR		B24
N5.1129		P32.0131	1	ELECTRIC MOTOR		A19
N5.2322		P32.1904	2	MICRO SWITCH		D20
N5.2702			1	COVER		B20
N5.2702		P32.0141	1	COVER		B20
N6.6271		P32.0107	1	O-RING	17 X 3.0	B24
N6.6271		P32.0131	1	O-RING	17 X 3.0	A20
[P32.0106]		P32.0141	1	ENERGY TRANSMISSION		A23
[P32.0107]		P32.0141	1	WELDING MOTOR		B24
[P32.0120]		P32.0141	1	WHEEL		A14
[P32.0129]			1	END COVER		B6
[P32.0131]		P32.0141	1	TENSIONING MOTOR		A19
[P32.0132]		P32.0141	1	SPUR WHEEL		A13
[P32.0133]		P32.0141	1	IDLER STEP		B15
[P32.0140]		P32.0141	1	INSERTATION PART		C17
[P32.0143]		P32.0141	1	LEVER		B7
P32.1011		P32.0141	2	FELT		C8+
P32.1012		P32.0141	1	COUPLER		C7
P32.1014		P32.0141	1	SHAFT		C16
P32.1018		P32.0141	1	CARTRIDGE		B18
P32.1023		P32.1731	1	PINION		C22
P32.1027		P32.0141	1	BALL CAGE		D9
P32.1028		P32.0141	1	BOLT		D10
P32.1029		P32.0141	1	THRUST PIECE		C10
P32.1032		P32.0141	1	DRIVING PIN		D10
P32.1035		P32.0141	2	DRIVER		D9+
P32.1037		P32.0141	2	SPUR WHEEL		C22
P32.1046		P32.0133	3	IDLER GEAR		B15
P32.1047		P32.0133	1	COVER		B15
P32.1048		P32.0120	1	WHEEL		A14
P32.1050		P32.0141	1	FRONT TOGGLE LINK		C2

[ ] = Group

\* = Wearing parts

Part No	Part Name	Quantity	Description	Unit
100-1000	WHEEL	1	WHEEL	
100-1001	WHEEL	1	WHEEL	
100-1002	WHEEL	1	WHEEL	
100-1003	WHEEL	1	WHEEL	
100-1004	WHEEL	1	WHEEL	
100-1005	WHEEL	1	WHEEL	
100-1006	WHEEL	1	WHEEL	
100-1007	WHEEL	1	WHEEL	
100-1008	WHEEL	1	WHEEL	
100-1009	WHEEL	1	WHEEL	
100-1010	WHEEL	1	WHEEL	
100-1011	WHEEL	1	WHEEL	
100-1012	WHEEL	1	WHEEL	
100-1013	WHEEL	1	WHEEL	
100-1014	WHEEL	1	WHEEL	
100-1015	WHEEL	1	WHEEL	
100-1016	WHEEL	1	WHEEL	
100-1017	WHEEL	1	WHEEL	
100-1018	WHEEL	1	WHEEL	
100-1019	WHEEL	1	WHEEL	
100-1020	WHEEL	1	WHEEL	
100-1021	WHEEL	1	WHEEL	
100-1022	WHEEL	1	WHEEL	
100-1023	WHEEL	1	WHEEL	
100-1024	WHEEL	1	WHEEL	
100-1025	WHEEL	1	WHEEL	
100-1026	WHEEL	1	WHEEL	
100-1027	WHEEL	1	WHEEL	
100-1028	WHEEL	1	WHEEL	
100-1029	WHEEL	1	WHEEL	
100-1030	WHEEL	1	WHEEL	
100-1031	WHEEL	1	WHEEL	
100-1032	WHEEL	1	WHEEL	
100-1033	WHEEL	1	WHEEL	
100-1034	WHEEL	1	WHEEL	
100-1035	WHEEL	1	WHEEL	
100-1036	WHEEL	1	WHEEL	
100-1037	WHEEL	1	WHEEL	
100-1038	WHEEL	1	WHEEL	
100-1039	WHEEL	1	WHEEL	
100-1040	WHEEL	1	WHEEL	
100-1041	WHEEL	1	WHEEL	
100-1042	WHEEL	1	WHEEL	
100-1043	WHEEL	1	WHEEL	
100-1044	WHEEL	1	WHEEL	
100-1045	WHEEL	1	WHEEL	
100-1046	WHEEL	1	WHEEL	
100-1047	WHEEL	1	WHEEL	
100-1048	WHEEL	1	WHEEL	
100-1049	WHEEL	1	WHEEL	
100-1050	WHEEL	1	WHEEL	



Item-No.		in group	Pcs.	Description	Dimension	Field
P32.1051		P32.0141	1	LEVER		C16
P32.1052		P32.0141	1	STANCHION		C15
P32.1105		P32.1904	1	RETAINER		D20
P32.1106		P32.1904	2	TURNING BUTTON		C20
P32.1107		P32.0106	1	MOTOR SUPPORT		A24
[P32.1108]		P32.0106	1	BUSBAR		B22
[P32.1111]		P32.0106	1	BUSBAR		B22
[P32.1114]		P32.0106	1	BUSBAR		A22
P32.1118		P32.0106	1	CONNECTING PLATE		A24
P32.1119		P32.0107	1	PINION		B23
P32.1120		P32.0107	1	FELT WASHER		B23
P32.1121		P32.0107	2	TORSIONAL STOP		B24
P32.1121		P32.0131	2	TORSIONAL STOP		A20
P32.1122		P32.0107	1	RUBBER BUSHING		B24
P32.1122		P32.0131	1	RUBBER BUSHING		A19
P32.1124		P32.0141	1	INSERT		B19
P32.1126		P32.0106	1	PLUG SOCKET		B22
P32.1210			2	CENTERING SLEEVE		C11+
P32.1211			1	COVER		C12
[P32.1212]			1	HANDLE LEVER		C23
P32.1216			1	PRESSURE ROLLER		C2
P32.1251		P32.1701	1	COUPLER		C11
P32.1404		P32.0139	1	SPRING SLIDE		A9
P32.1405		P32.0139	1	ROLLER		A9
P32.1409		P32.0141	1	ARM		B16
P32.1410		P32.0141	1	COUPLER		C10
P32.1411		P32.0141	1	LEVER		C18
P32.1412		P32.0140	1	INSERTION PART		C17
P32.1414			1	LEVER		C24
P32.1415			1	HANDLE SHAFT		C24
P32.1417		P32.0141	1	SWITCH ROCKER		B17
P32.1418		P32.0141	1	MOTOR HOUSING		C23
[P32.1419]		P32.0141	1	MOTOR HOUSING		A22
P32.1421		P32.0141	1	MOTOR COVER		B19
P32.1503		P32.1901	1	SWIVEL SHAFT		C2
P32.1510		P35.0136	1	ROCKER		C22
P32.1511	*	P32.0141	1	WELDING GRIPPER		D10
P32.1516		P32.0133	1	PLANET SHAFT		C16
[P32.1518]		P32.0141	1	RATCHET WHEEL		C15
P32.1519		P32.1518	1	SPUR WHEEL		C15
P32.1520		P32.0132	1	SPUR WHEEL		A13
P32.1603		P32.0131	1	PINION		A20
P32.1710			1	CENTERING SLEEVE		C11
P32.1712			3	DOWEL		B4
P32.1726		P32.0129	1	END COVER		C5
P32.1727			3	IDLER GEAR		B4
[P32.1731]		P32.0141	1	WELDING EXCENTRIC		D22
P32.1732		P32.1731	1	WELDING EXCENTRIC		C22
P32.1903		P32.0141	1	HOOK		B17
[P32.1904]		P32.0141	1	CIRCUIT BOARD	14.4V	C21
P32.1905		P32.0141	1	COVER		B7
P32.1906		P32.0143	1	LEVER		B7
P32.1907		P32.0141	1	FIXING PLATE		A9
[P35.0136]		P32.0141	1	ROCKER		D22

[] = Group

\* = Wearing parts

Item No.	Description	Unit	Quantity	Rate	Amount
100	1.0000	1	1.0000	1.0000	1.0000
101	1.0000	1	1.0000	1.0000	1.0000
102	1.0000	1	1.0000	1.0000	1.0000
103	1.0000	1	1.0000	1.0000	1.0000
104	1.0000	1	1.0000	1.0000	1.0000
105	1.0000	1	1.0000	1.0000	1.0000
106	1.0000	1	1.0000	1.0000	1.0000
107	1.0000	1	1.0000	1.0000	1.0000
108	1.0000	1	1.0000	1.0000	1.0000
109	1.0000	1	1.0000	1.0000	1.0000
110	1.0000	1	1.0000	1.0000	1.0000
111	1.0000	1	1.0000	1.0000	1.0000
112	1.0000	1	1.0000	1.0000	1.0000
113	1.0000	1	1.0000	1.0000	1.0000
114	1.0000	1	1.0000	1.0000	1.0000
115	1.0000	1	1.0000	1.0000	1.0000
116	1.0000	1	1.0000	1.0000	1.0000
117	1.0000	1	1.0000	1.0000	1.0000
118	1.0000	1	1.0000	1.0000	1.0000
119	1.0000	1	1.0000	1.0000	1.0000
120	1.0000	1	1.0000	1.0000	1.0000
121	1.0000	1	1.0000	1.0000	1.0000
122	1.0000	1	1.0000	1.0000	1.0000
123	1.0000	1	1.0000	1.0000	1.0000
124	1.0000	1	1.0000	1.0000	1.0000
125	1.0000	1	1.0000	1.0000	1.0000
126	1.0000	1	1.0000	1.0000	1.0000
127	1.0000	1	1.0000	1.0000	1.0000
128	1.0000	1	1.0000	1.0000	1.0000
129	1.0000	1	1.0000	1.0000	1.0000
130	1.0000	1	1.0000	1.0000	1.0000
131	1.0000	1	1.0000	1.0000	1.0000
132	1.0000	1	1.0000	1.0000	1.0000
133	1.0000	1	1.0000	1.0000	1.0000
134	1.0000	1	1.0000	1.0000	1.0000
135	1.0000	1	1.0000	1.0000	1.0000
136	1.0000	1	1.0000	1.0000	1.0000
137	1.0000	1	1.0000	1.0000	1.0000
138	1.0000	1	1.0000	1.0000	1.0000
139	1.0000	1	1.0000	1.0000	1.0000
140	1.0000	1	1.0000	1.0000	1.0000
141	1.0000	1	1.0000	1.0000	1.0000
142	1.0000	1	1.0000	1.0000	1.0000
143	1.0000	1	1.0000	1.0000	1.0000
144	1.0000	1	1.0000	1.0000	1.0000
145	1.0000	1	1.0000	1.0000	1.0000
146	1.0000	1	1.0000	1.0000	1.0000
147	1.0000	1	1.0000	1.0000	1.0000
148	1.0000	1	1.0000	1.0000	1.0000
149	1.0000	1	1.0000	1.0000	1.0000
150	1.0000	1	1.0000	1.0000	1.0000







## 7.2 Type dependent spare parts P323.0001.01

43.3101.01	P323/12.7/0.65-1.05		P323.0001.01		08.09.05
Item-No.	in group	Pcs.	Description	Dimension	Field
N2.5237		1	PRESSURE SPRING	0.8 X 4.8 X 25/18.5	C10
P30.1156		2	GUIDE PIN		D10
[P32.0121]		1	TENSIONING BODY		D2
[P32.0139]	P32.0141	1	SPRING PACKAGE		A9
[P32.0141]		1	BASE MODEL		C1+
P32.1228		1	HOLDER		C3
P32.1229		1	HOLDER		B3
P32.1242		1	STRAP GUIDE		C4
P32.1248		1	SEESAW LEVER		C11
P32.1249		1	SEESAW LEVER		C10
P32.1403	P32.0139	1	SPRING BOLT		B9
[P32.1701]		1	COUPLER		C12
P32.1702	P32.1701	1	THRUST PIECE		C11
P32.1703	P32.0121	1	TENSIONING BODY		C4
P32.1706		1	STEEL INSERT		D7
P32.1707	*	1	WELDING STOP GRIPPER		D7
P32.1708	*	1	CUTTER		C10
P32.1719	*	1	GRIPPER		C3
P32.1720	*	1	GRIPPER		C3
P32.1721	*	1	GRIPPER		C4
P32.1729	*	1	TENSIONING WHEEL		B4
P32.1735		1	GUIDE CASE		C11
P32.1736		1	STRAP STOP		D4
[P32.1901]	P32.0141	1	BODY		A2
P32.1902	P32.1901	1	BODY		A1+

43.3111.01	P323/13/0.65-1.05		P323.0001.01		08.09.05
Item-No.	in group	Pcs.	Description	Dimension	Field
N2.5237		1	PRESSURE SPRING	0.8 X 4.8 X 25/18.5	C10
P30.1156		2	GUIDE PIN		D10
[P32.0121]		1	TENSIONING BODY		D2
[P32.0139]	P32.0141	1	SPRING PACKAGE		A9
[P32.0141]		1	BASE MODEL		C1+
P32.1228		1	HOLDER		C3
P32.1229		1	HOLDER		B3
P32.1243		1	STRAP GUIDE		C4
P32.1248		1	SEESAW LEVER		C11
P32.1249		1	SEESAW LEVER		C10
P32.1403	P32.0139	1	SPRING BOLT		B9
[P32.1701]		1	COUPLER		C12
P32.1702	P32.1701	1	THRUST PIECE		C11
P32.1703	P32.0121	1	TENSIONING BODY		C4
P32.1706		1	STEEL INSERT		D7
P32.1707	*	1	WELDING STOP GRIPPER		D7
P32.1708	*	1	CUTTER		C10
P32.1719	*	1	GRIPPER		C3
P32.1720	*	1	GRIPPER		C3
P32.1721	*	1	GRIPPER		C4
P32.1729	*	1	TENSIONING WHEEL		B4
P32.1733		1	GUIDE CASE		C11
P32.1734		1	STRAP STOP		D4
[P32.1901]	P32.0141	1	BODY		A2
P32.1902	P32.1901	1	BODY		A1+

[ ] = Group

\* = Wearing parts





43.3121.01	P323/16/0.65-1.05		P323.0001.01		08.09.05
Item-No.	in group	Pcs.	Description	Dimension	Field
N2.5237		1	PRESSURE SPRING	0.8 X 4.8 X 25/18.5	C10
P30.1158		1	GUIDE PIN		D10
P30.1164		1	GUIDE PIN		D10
[P32.0121]		1	TENSIONING BODY		D2
[P32.0139]	P32.0141	1	SPRING PACKAGE		A9
[P32.0141]		1	BASE MODEL		C1+
P32.1228		1	HOLDER		C3
P32.1229		1	HOLDER		B3
P32.1246		1	STRAP GUIDE		C4
P32.1248		1	SEESAW LEVER		C11
P32.1249		1	SEESAW LEVER		C10
P32.1403	P32.0139	1	SPRING BOLT		B9
[P32.1701]		1	COUPLER		C12
P32.1702	P32.1701	1	THRUST PIECE		C11
P32.1703	P32.0121	1	TENSIONING BODY		C4
P32.1706		1	STEEL INSERT		D7
P32.1707	*	1	WELDING STOP GRIPPER		D7
P32.1708	*	1	CUTTER		C10
P32.1709		1	GUIDE CASE		C11
P32.1719	*	1	GRIPPER		C3
P32.1720	*	1	GRIPPER		C3
P32.1721	*	1	GRIPPER		C4
P32.1722		1	STRAP STOP		D4
P32.1729	*	1	TENSIONING WHEEL		B4
[P32.1901]	P32.0141	1	BODY		A2
P32.1902	P32.1901	1	BODY		A1+

43.3122.01	P323/16/1.06-1.35		P323.0001.01		08.09.05
Item-No.	in group	Pcs.	Description	Dimension	Field
N2.5282		1	PRESSURE SPRING	0.8 X 4.8 X 27/17.5	C10
[P32.0145]		1	BASE MODEL		C1+
[P32.0146]	P32.0145	1	SPRING PACKAGE		A9
P32.1722		1	STRAP STOP		D4
P32.1729	*	1	TENSIONING WHEEL		B4
[P32.1908]	P32.0145	1	BODY		A2
P32.1909	P32.1908	1	BODY		A1
P32.1910	P32.0146	1	SPRING BOLT		B9
[P35.0144]		1	TENSIONING BODY		D2
[P35.0146]		1	COUPLER		C12
P35.3127		1	STEEL INSERT		D7
P35.3128	*	1	WELDING STOP GRIPPER		D7
P35.3205	P35.0144	1	TENSIONING BODY		C4
P35.3206	*	1	GRIPPER		C3
P35.3207	*	1	GRIPPER		C3
P35.3208	*	1	GRIPPER		C4
P35.3209		1	HOLDER		B3
P35.3210		1	HOLDER		C4
P35.3212		1	STRAP GUIDE		C4
P35.3214	*	1	CUTTER		C10
P35.3215		1	GUIDE CASE		C11
P35.3216		1	GUIDE PIN		D10
P35.3217		1	GUIDE PIN		D10
P35.3220		1	SEESAW LEVER		C10
P35.3221		1	SEESAW LEVER		C11
P35.3223	P35.0146	1	THRUST PIECE		C11

[ ] = Group

\* = Wearing parts

Item No.	Item Description	Unit	Quantity	Unit Price	Total Price
101	101-001	101-001	101-001	101-001	101-001
102	102-001	102-001	102-001	102-001	102-001
103	103-001	103-001	103-001	103-001	103-001
104	104-001	104-001	104-001	104-001	104-001
105	105-001	105-001	105-001	105-001	105-001
106	106-001	106-001	106-001	106-001	106-001
107	107-001	107-001	107-001	107-001	107-001
108	108-001	108-001	108-001	108-001	108-001
109	109-001	109-001	109-001	109-001	109-001
110	110-001	110-001	110-001	110-001	110-001
111	111-001	111-001	111-001	111-001	111-001
112	112-001	112-001	112-001	112-001	112-001
113	113-001	113-001	113-001	113-001	113-001
114	114-001	114-001	114-001	114-001	114-001
115	115-001	115-001	115-001	115-001	115-001
116	116-001	116-001	116-001	116-001	116-001
117	117-001	117-001	117-001	117-001	117-001
118	118-001	118-001	118-001	118-001	118-001
119	119-001	119-001	119-001	119-001	119-001
120	120-001	120-001	120-001	120-001	120-001
121	121-001	121-001	121-001	121-001	121-001
122	122-001	122-001	122-001	122-001	122-001
123	123-001	123-001	123-001	123-001	123-001
124	124-001	124-001	124-001	124-001	124-001
125	125-001	125-001	125-001	125-001	125-001
126	126-001	126-001	126-001	126-001	126-001
127	127-001	127-001	127-001	127-001	127-001
128	128-001	128-001	128-001	128-001	128-001
129	129-001	129-001	129-001	129-001	129-001
130	130-001	130-001	130-001	130-001	130-001
131	131-001	131-001	131-001	131-001	131-001
132	132-001	132-001	132-001	132-001	132-001
133	133-001	133-001	133-001	133-001	133-001
134	134-001	134-001	134-001	134-001	134-001
135	135-001	135-001	135-001	135-001	135-001
136	136-001	136-001	136-001	136-001	136-001
137	137-001	137-001	137-001	137-001	137-001
138	138-001	138-001	138-001	138-001	138-001
139	139-001	139-001	139-001	139-001	139-001
140	140-001	140-001	140-001	140-001	140-001
141	141-001	141-001	141-001	141-001	141-001
142	142-001	142-001	142-001	142-001	142-001
143	143-001	143-001	143-001	143-001	143-001
144	144-001	144-001	144-001	144-001	144-001
145	145-001	145-001	145-001	145-001	145-001
146	146-001	146-001	146-001	146-001	146-001
147	147-001	147-001	147-001	147-001	147-001
148	148-001	148-001	148-001	148-001	148-001
149	149-001	149-001	149-001	149-001	149-001
150	150-001	150-001	150-001	150-001	150-001



43.3131.01	P323/19/0.40-0.64			P323.0001.01		08.09.05
Item-No.		in group	Pcs.	Description	Dimension	Field
N2.5237			1	PRESSURE SPRING	0.8 X 4.8 X 25/18.5	C10
P30.1161			1	GUIDE PIN		D10
P30.1167			1	GUIDE PIN		D10
[P32.0121]			1	TENSIONING BODY		D2
[P32.0139]		P32.0141	1	SPRING PACKAGE		A9
[P32.0141]			1	BASE MODEL		C1+
P32.1228			1	HOLDER		C3
P32.1229			1	HOLDER		B3
P32.1248			1	SEESAW LEVER		C11
P32.1249			1	SEESAW LEVER		C10
P32.1403		P32.0139	1	SPRING BOLT		B9
[P32.1701]			1	COUPLER		C12
P32.1702		P32.1701	1	THRUST PIECE		C11
P32.1703		P32.0121	1	TENSIONING BODY		C4
P32.1705			1	STEEL INSERT		D7
P32.1707	*		1	WELDING STOP GRIPPER		D7
P32.1708	*		1	CUTTER		C10
P32.1709			1	GUIDE CASE		C11
P32.1716	*		1	GRIPPER		C3
P32.1717	*		1	GRIPPER		C3
P32.1718	*		1	GRIPPER		C4
P32.1723			1	STRAP STOP		D4
P32.1724			1	STRAP GUIDE		C4
P32.1728	*		1	TENSIONING WHEEL		B4
[P32.1901]		P32.0141	1	BODY		A2
P32.1902		P32.1901	1	BODY		A1+

43.3132.01	P323/19/0.65-1.05			P323.0001.01		08.09.05
Item-No.		in group	Pcs.	Description	Dimension	Field
N2.5237			1	PRESSURE SPRING	0.8 X 4.8 X 25/18.5	C10
P30.1161			1	GUIDE PIN		D10
P30.1167			1	GUIDE PIN		D10
[P32.0121]			1	TENSIONING BODY		D2
[P32.0139]		P32.0141	1	SPRING PACKAGE		A9
[P32.0141]			1	BASE MODEL		C1+
P32.1228			1	HOLDER		C3
P32.1229			1	HOLDER		B3
P32.1248			1	SEESAW LEVER		C11
P32.1249			1	SEESAW LEVER		C10
P32.1403		P32.0139	1	SPRING BOLT		B9
[P32.1701]			1	COUPLER		C12
P32.1702		P32.1701	1	THRUST PIECE		C11
P32.1703		P32.0121	1	TENSIONING BODY		C4
P32.1706			1	STEEL INSERT		D7
P32.1707	*		1	WELDING STOP GRIPPER		D7
P32.1708	*		1	CUTTER		C10
P32.1709			1	GUIDE CASE		C11
P32.1719	*		1	GRIPPER		C3
P32.1720	*		1	GRIPPER		C3
P32.1721	*		1	GRIPPER		C4
P32.1723			1	STRAP STOP		D4
P32.1724			1	STRAP GUIDE		C4
P32.1729	*		1	TENSIONING WHEEL		B4
[P32.1901]		P32.0141	1	BODY		A2
P32.1902		P32.1901	1	BODY		A1+

[] = Group

\* = Wearing parts



43.3133.01	P323/19/1.06-1.35		P323.0001.01		08.09.05
Item-No.		in group	Pcs.	Description	Field
N2.5282			1	PRESSURE SPRING	0.8 X 4.8 X 27/17.5 C10
[P32.0145]			1	BASE MODEL	C1+
[P32.0146]		P32.0145	1	SPRING PACKAGE	A9
P32.1723			1	STRAP STOP	D4
P32.1729	*		1	TENSIONING WHEEL	B4
[P32.1908]		P32.0145	1	BODY	A2
P32.1909		P32.1908	1	BODY	A1
P32.1910		P32.0146	1	SPRING BOLT	B9
[P35.0144]			1	TENSIONING BODY	D2
[P35.0146]			1	COUPLER	C12
P35.3127			1	STEEL INSERT	D7
P35.3128	*		1	WELDING STOP GRIPPER	D7
P35.3205		P35.0144	1	TENSIONING BODY	C4
P35.3206	*		1	GRIPPER	C3
P35.3207	*		1	GRIPPER	C3
P35.3208	*		1	GRIPPER	C4
P35.3209			1	HOLDER	B3
P35.3210			1	HOLDER	C4
P35.3213			1	STRAP GUIDE	C4
P35.3214	*		1	CUTTER	C10
P35.3215			1	GUIDE CASE	C11
P35.3218			1	GUIDE PIN	D10
P35.3219			1	GUIDE PIN	D10
P35.3220			1	SEESAW LEVER	C10
P35.3221			1	SEESAW LEVER	C11
P35.3223		P35.0146	1	THRUST PIECE	C11

[ ] = Group

\* = Wearing parts

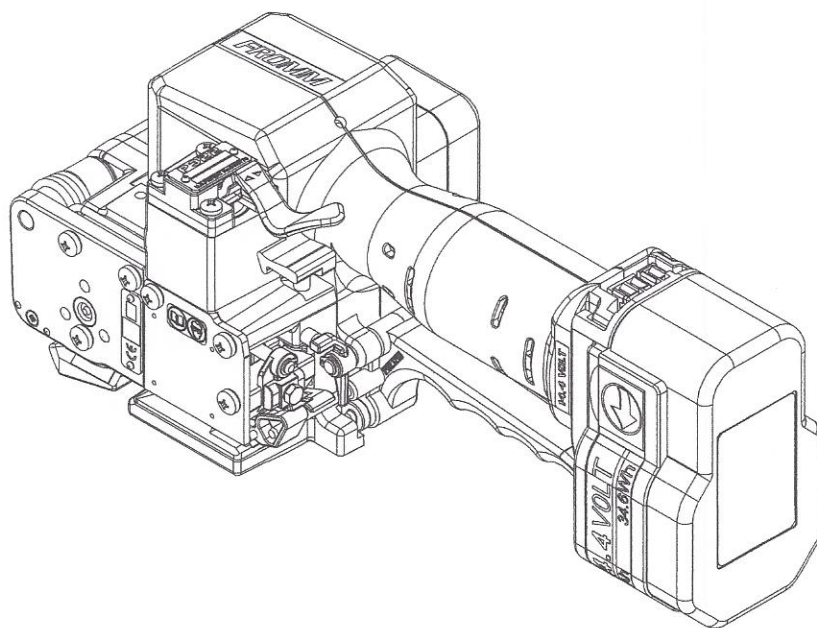
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4	4.00000000	1	1	1	4.00	4.00
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98	98.00000000	1	1	1	98.00	98.00
99	99.00000000	1	1	1	99.00	99.00
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# **FROMM**

OPERATION MANUAL

## **BATTERY - POWERED PLASTIC STRAPPING TOOL MODEL P323.0001.01**



### **CE Declaration of conformity**

We declare that the machine P323  
is in conformity with the following standard or  
standardised documents:

98/37/EEC

FROMM Holding AG  
Hinterbergstrasse 26  
CH - 6330 Cham  
12.08 2005

R. Fromm  
Director



# **FRIDM** OPERATION MANUAL **BATTERY - POWERED** **PLASTIC STRAPPING TOOL** MODEL P323-0001-01



CE Declaration of conformity  
 The device has been tested in  
 accordance with the following standards:  
 EN 12345

Technical specifications:  
 Maximum weight: 20  
 Maximum length: 1000 mm  
 Maximum width: 100 mm

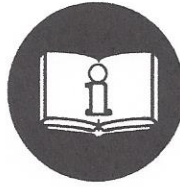
FRIDM  
 12345

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## 8.1 SAFETY INSTRUCTIONS

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



### Operation with battery

Environment protection:

- Do not dispose of used batteries in the household refuse, water or by burning them.  
FROMM distributors offer an environment friendly battery disposal service.

Danger of shortcircuit:

- Do not store batteries together with metal objects.
- Do not open batteries and store them only in dry and frost-proof rooms. The maximum ambient temperature is 50°C. Keep dry at all times.
- Never charge a damaged battery. Replace by a new one immediately.

### Eye injury hazard

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



### Operation

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

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

### Joints

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

### Dispensing strap

Only dispense strap from a dispenser specifically designed for strap.

Tuck strap end back into dispenser when not in use.

### Strap warnings

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

### Strap breakage hazard

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

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

Note as follows:

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

### Cutting tensioned strap

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

### Fall hazard

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

Pay attention to the rules and regulations for preventions of accident which are valid for the work place.

### Tool hazards

A well maintained tool is a safe tool!

Check tool regularly for broken or worn parts. Do not operate a tool with broken or worn parts.

Never modify any tool. Modification can result in severe bodily injury.





## 8.2 TECHNICAL DATA

### Description of the tool

The tool model P323 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, automatically tensioned, sealed by friction welding and separated.

### Tool size with battery

Length: 335 mm / 13.2"

Width: 165 mm / 6.5"

Height: 135 mm / 5.3"

Weight: 4.5 kg / 9.9 lbs

### Sound information

The A-weighted equivalent continuous sound level at the work place of the machine operator is typical 82 dB (A).

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

### Vibration information

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

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

### Strap material

Strap qualities: PET (Polyester) and PP (Polypropylene) plain or embossed.  
**Use only plastic straps recommended by your sales shop (name and address on the rear of the operation manual).**

Strap dimensions: 12.7 - 19.0 mm x 0.4 - 1.35 mm (see chart of types).  
**Use only plastic straps with the correct strap dimensions for your tool.**

### Strap tension

Tensioning force: Adjustable from 650 - max. 3000 N / 146.25 - max. 675 lbs.  
The maximum value depends on the strap quality.

Tensioning speed: approx. 152 - 225 mm/s / 6 - 8.9 inch/sec.

Joint strength: approx. 75% of the tensile strength of the plastic strap  
(depending on the strap quality).

### Working temperature

The ambient temperature should be between 5° and 45° C (41° and 113°F).

The best performance is achieved between 15° and 20°C (59° and 68°F).





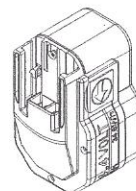
## 8.3 ACCESSORIES



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

### 8.3.1 Battery

Since the tool can be operated with NiCd or NiMH batteries, the battery is not automatically supplied with the tool. The battery has to be ordered separately under the following item numbers.



Item-No.	Battery	Voltage	Capacity
N5.4309	NiCd	14,4 VDC	2,4Ah
N5.4316	NiMH	14,4 VDC	2,7Ah

### 8.3.2 Battery - chargers

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

#### Standard charger

Item-No.	Voltage / frequency	Admitted for country
N5.4414	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, (Z), (ZA), (ZW)
N5.4416	220 - 240V / 50 - 60Hz	BRN, BRU, CY, EAK, EAT, GB, IRL, M, MAL, OM, SGP, Y
N5.4418	220 - 240V / 50 - 60Hz	AUS, NZ
N5.4420	220V / 60Hz	ROK

#### Turbo charger

Item-No.	Voltage / frequency	Admitted for country
N5.4422	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, (Z), (ZA), (ZW)
N5.4424	120V / 60Hz	BR, C, CDN, CO, CR, DOM, EC, GCA, J, JA, KSA, LB, MEX, NIC, PA, Puerto Rico, RC, RP, USA, YV
N5.4426	110V / 50 - 60Hz	GB
N5.4428	220 - 240V / 50 - 60Hz	BRN, BRU, CY, EAK, EAT, GB, IRL, M, MAL, OM, SGP, Y
N5.4430	220 - 240V / 50 - 60Hz	AUS, NZ

#### Charging times

	Standard charger	Turbo charger
NiCd-Battery 14,4 VDC, 2,4Ah	approx. 80 min.	approx. 20 min.
NiMH-Battery 14,4 VDC, 2,7Ah	approx. 85 min.	approx. 25 min.

## 6.3 ACCESSORIES

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



### 6.3.1 Battery

Since the tool can be operated with NiCd or NiMH batteries, the battery is not automatically supplied with the tool. The battery has to be ordered separately. Contact the following firm to purchase:



Item-No.	Battery	Voltage	Capacity
MS 4321	NiCd	14.4 VDC	2.5Ah
MS 4319	NiMH	14.4 VDC	2.5Ah

### 6.3.2 Battery - chargers

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

#### Standard charger

Item-No.	Voltage / Capacity	Admitted for country
MS 4414	220 - 240V / 50 - 60Hz	A: B, BR, CH, DE, DK, ES, FR, GB, GR, IE, IT, JP, KR, NL, PT, SE, SI, TR, TW, US, ZA EU: DE, DK, ES, FR, GB, GR, IE, IT, JP, KR, NL, PT, SE, SI, TR, TW, US, ZA US: MA, MC, ME, MO, NI, NL, PL, PT, SE, SI, TR, TW, US, ZA EU: RO, RU, SE, SI, TR, TW, US, ZA
MS 4415	220 - 240V / 50 - 60Hz	BR, CH, DE, DK, ES, FR, GB, GR, IE, IT, JP, KR, NL, PT, SE, SI, TR, TW, US, ZA
MS 4416	220 - 240V / 50 - 60Hz	AUS, NZ
MS 4420	220V / 50Hz	ROK

#### Turbo charger

Item-No.	Voltage / Capacity	Admitted for country
MS 4421	220 - 240V / 50 - 60Hz	A: B, BR, CH, DE, DK, ES, FR, GB, GR, IE, IT, JP, KR, NL, PT, SE, SI, TR, TW, US, ZA EU: DE, DK, ES, FR, GB, GR, IE, IT, JP, KR, NL, PT, SE, SI, TR, TW, US, ZA US: MA, MC, ME, MO, NI, NL, PL, PT, SE, SI, TR, TW, US, ZA EU: RO, RU, SE, SI, TR, TW, US, ZA
MS 4424	120V / 60Hz	US, CA, MX, JP, AU, NZ, IN, TW, ZA
MS 4425	120V / 50 - 60Hz	DE
MS 4426	220 - 240V / 50 - 60Hz	BR, CH, DE, DK, ES, FR, GB, GR, IE, IT, JP, KR, NL, PT, SE, SI, TR, TW, US, ZA
MS 4427	220 - 240V / 50 - 60Hz	AUS, NZ

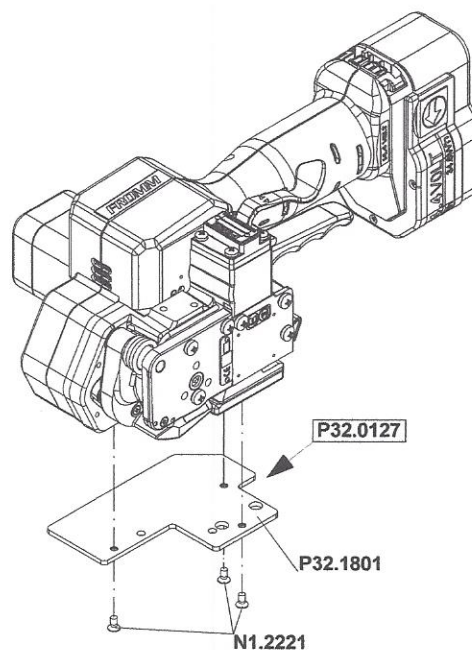
### Charging times

Item-No.	Standard charger	Turbo charger
NiCd-Battery 14.4 VDC 2.5Ah	approx. 80 min.	approx. 50 min.
NiMH-Battery 14.4 VDC 2.5Ah	approx. 80 min.	approx. 50 min.

### 8.3.3 Wearing plate

As an option, tool can be equipped with a wearing plate to protect base from excessive wear on abrasive package surfaces (like bricks, concrete blocks etc.).

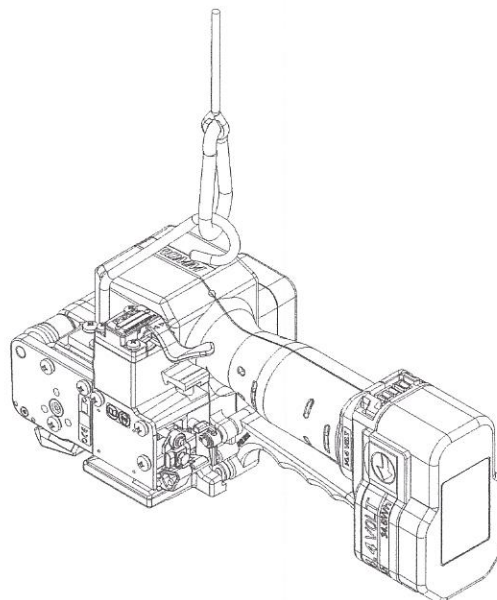
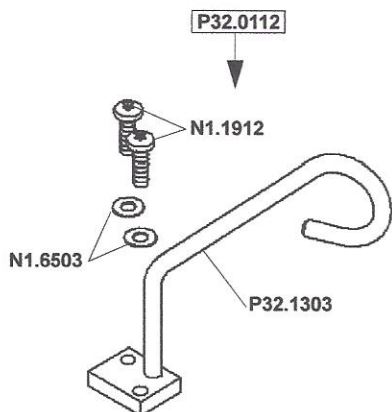
The complete wearing plate can be ordered together with the fastening screws under item number P32.0127.



### 8.3.4 Suspension

When working stationary the P323 can be suspended at a spring loaded balancer by using a suspension bracket.

For working in normal position a stiff suspension bracket with screws and washers can be ordered under item number P32.0112.



### 8.3.3 Working plate

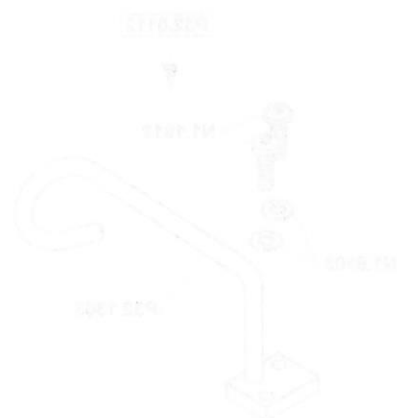
As an optional tool can be supplied with a working plate to protect parts from excessive wear on abrasive particles (the plate, concrete blocks etc). The concrete working plate can be ordered together with the testing arms under item number P23 0127.



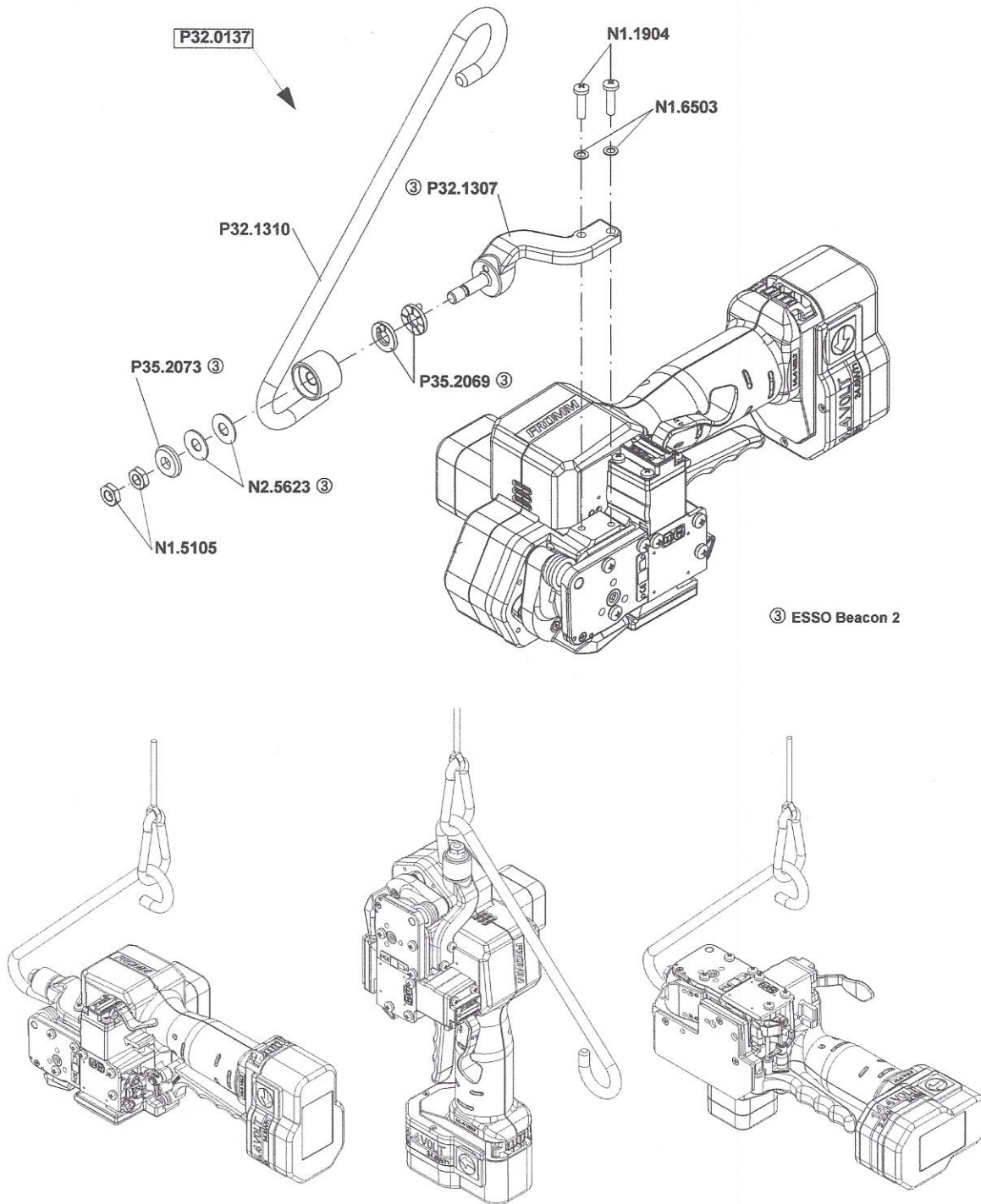
### 8.3.4 Suspension

When working externally the P23 can be suspended at a spring loaded balance by using a suspension bracket.

For working in normal position a stiff section in bracket will extend and withdraw and be fitted to order. Item number P23 0112.



For working in alternating positions a turn able suspension bracket with screws and washers can be ordered under item number P32.0137.



### 8.3.5 Turning button kit

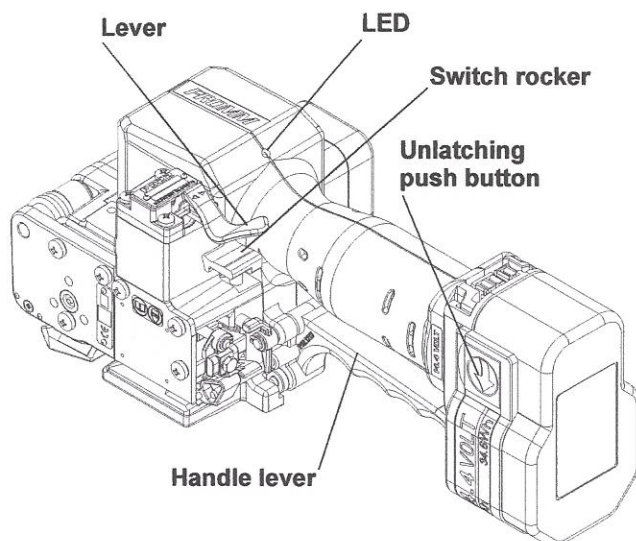
For a remaining adjustment of tension force and welding time.

After exchanging of the turning buttons the adjustment can only be changed with the allen key (2mm) that comes with the kit. The kit can be ordered under the item number P32.1129.





## 8.4 OPERATING ELEMENTS



LED - Indication	
Green	During tensioning the LED lights green.
Green	During welding the LED lights green.
Yellow	Cooling time is running, the tool must not be removed from the strap.
Green	Cooling time is finished, the tool can be removed from the strap.
Red	Charge the battery.
Red blinking	The control board is overheated, the tool has to cool down, the switches are locked.

## 8.5 OPERATION

### 8.5.1 Installation

**Do not expose the tool to rain!**

For safety reasons the battery is delivered uncharged.

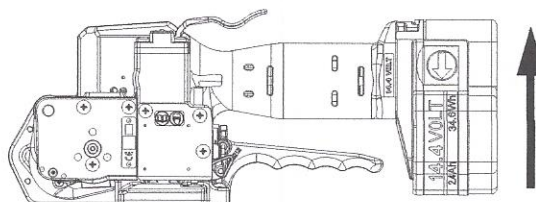
Charge the battery before working. See separate operating instruction of the battery charger.

### Inserting the battery

Insert the battery from bottom to top into the tool **both unlatching push buttons latch**.

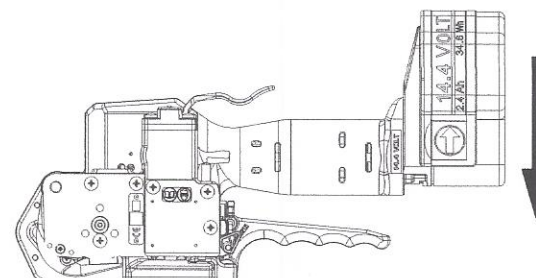
Depending on the application, the battery can also be inserted from top to bottom in order to achieve a better handling.

When inserting the battery the status of the charge is displayed shortly.



### Displaying of the status of the battery charge by LED

Green blinking	full
Green yellow blinking	3/4 full
Yellow blinking	1/2 full
Yellow - red blinking	1/4 full
Red blinking	empty



## 8.4 OPERATING ELEMENTS

LED - Information	
Green	Charging terminated, the LED lights green.
Green	Charging started, the LED lights green.
Yellow	Charging time is running, the tool must not be removed from the stand.
Green	Charging time is finished, the tool can be removed from the stand.
Red	Charge the battery.
Red Blinking	The control board is overheat, the tool has to cool down, the batteries are locked.



## 8.5 OPERATION

### 8.5.1 Installation

Do not expose the tool to rain!  
For safety reasons the battery is delivered uncharged.  
Charge the battery before working. See chapter "Operating instructions" of the battery charger.

### Inserting the battery

Insert the battery from bottom to top into the tool.  
Both unlatching ears bottom latch.  
Depending on the application, the battery can also be inserted from top to bottom in order achieve a better fitting.

When inserting the battery the status of the charge is displayed shortly.

### Displaying of the status of the battery charge by LED

Green blinking	full
Green yellow blinking	3/4 full
Yellow blinking	1/2 full
Yellow - red blinking	1/4 full
Red blinking	empty



## 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 seal efficiency is insufficient.**

**Warning! Straps with insufficient seal strength must be removed from the package!**

The battery must be recharged.

Push the unlatching push buttons at both sides of the battery.

Push the battery out of the tool in the opposite direction of insertion.

When removing the battery the LED lights shortly red.

## 8.5.2 Adjustments

### 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 right adjusting knob.

Turning clockwise increases;

turning counterclockwise decreases the tensioning force and the tensioning speed resp..

The tensioning force on the minimum setting is 650 N (146.25 lbs) and it is increased on the maximum setting to 3000 N (675 lbs).

The tensioning speed on the minimum setting is 152 mm/s (6 inch/sec), it is increased on the middle setting to 225 mm/s (8.9 inch/sec) and remains on this value till the maximum setting.

### Adjusting the welding time

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

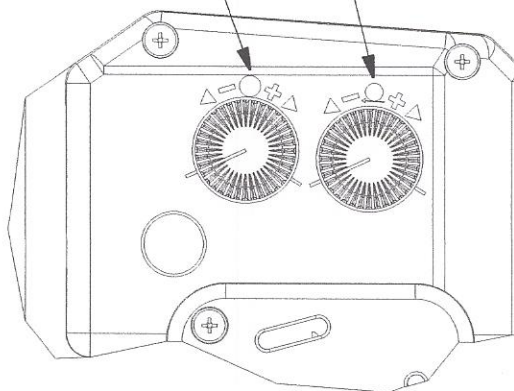
The welding time can be adjusted at the left adjusting knob.

Turning clockwise increases,

turning counterclockwise decreases the welding time.

Adjusting knob tensioning force /  
tensioning speed

Adjusting knob  
welding time

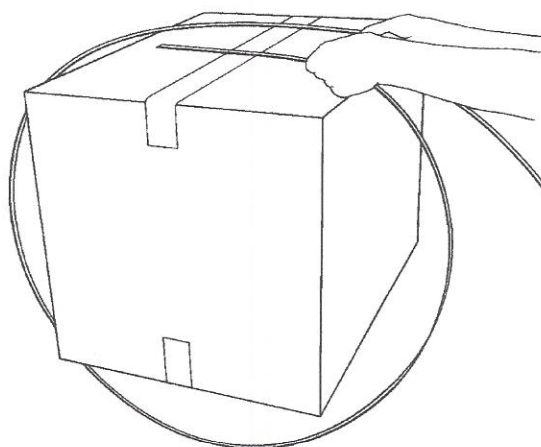


### 8.5.3 Feeding the strap around the package

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!**



## Removing the empty battery

If the two LED status lighting when a tasking or welding indicator the capacity of the battery is exhausted. All empty function of the tool are blocked.

The seal efficiency is insufficient.

Warning! Straps with insufficient seal strength must be removed from the package.



The battery must be recharged.

Push the unlatching push buttons at both sides of the battery.

Push the battery out of the tool in the opposite direction of insertion.

When removing the battery the LED light always on.

## 8.2.2 Adjustments

### Presetting of strip 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 pre-set.

With the right adjusting knob.

Turning clockwise increases.

Turning counterclockwise decreases the tensioning force.

and the tensioning speed too.

The tensioning force on the minimum setting is 500 N.

(112.5 lbs) and a maximum on the maximum setting is

3000 N (675 lbs).

The tensioning speed on the minimum setting is 100 mm/s.

If indicated, it is increased on the middle setting to 320

mm/s (12.5 inches/s) and remains on this value to the

maximum setting.

### 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 left adjusting

knob.

Turning clockwise increases.

Turning counterclockwise decreases the welding time.

### 8.2.3 Feeding the strap around the

#### package

The strap 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 correctly.



Adjusting knob tensioning force  
Adjusting knob tensioning speed



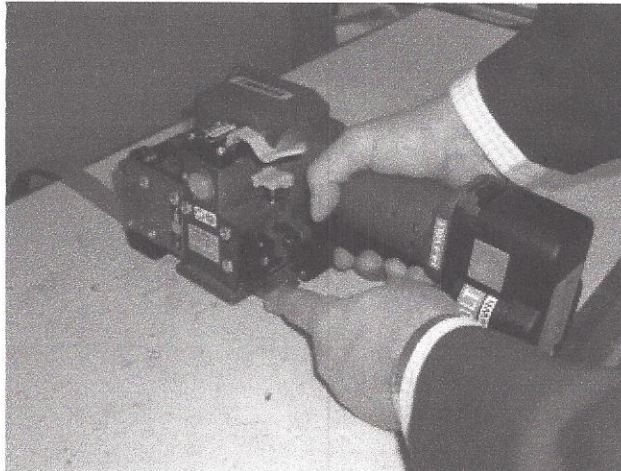


#### 8.5.4 Inserting the strap

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.

Release the handle lever.



#### 8.5.5 Tensioning the strap

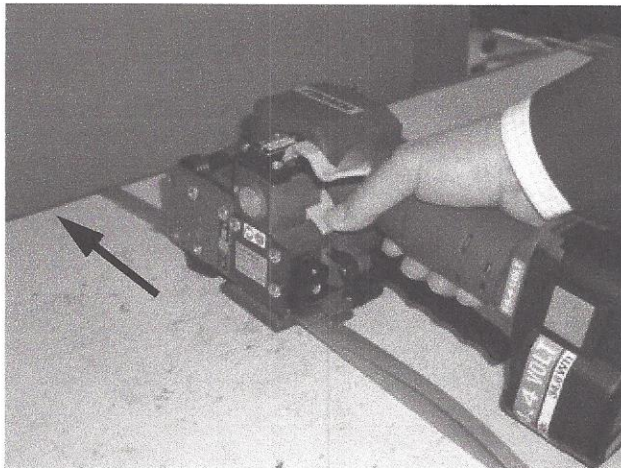
Press down the switch rocker and then release it again after the desired strap tension has been reached.

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

During tensioning the LED lights green.

**Do not press the switch rocker after reaching the preselected tensioning.**

**Danger of strap breakage.**



**The tool must carry out a balance movement while tensioning.**

**Therefore:**

- Don't hinder the tools movement in the signed direction.

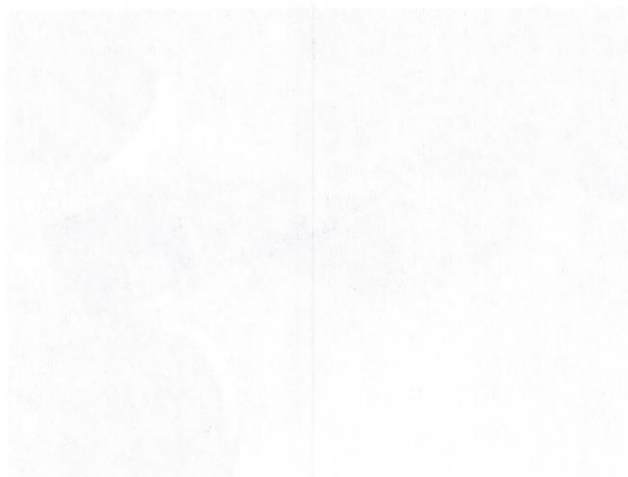
**Disregard:**

- The feed wheel slips on the strap without tensioning it.



### 8.5.4 Inserting the strap

Put up the handle with your right hand.  
Insert the two straps and signed in each other.  
Into the strap guide using your left hand.  
Release the handle lever.



### 8.5.5 Tensioning the strap

Press down the tension roller and then release it.  
Again after the desired strap tension has been reached.  
The tensioning operation can be interrupted and resumed at any time.  
During tensioning the LED light green.  
Do not press the switch to lock after reaching the prescribed tensioning.  
Larger of strap tensioning.



The tool must carry out a distance movement while tensioning.  
Warning:  
- Don't hinder the tool's movement in the signed direction.  
- The tool must carry out a distance movement while tensioning.  
- The tool must carry out a distance movement while tensioning.

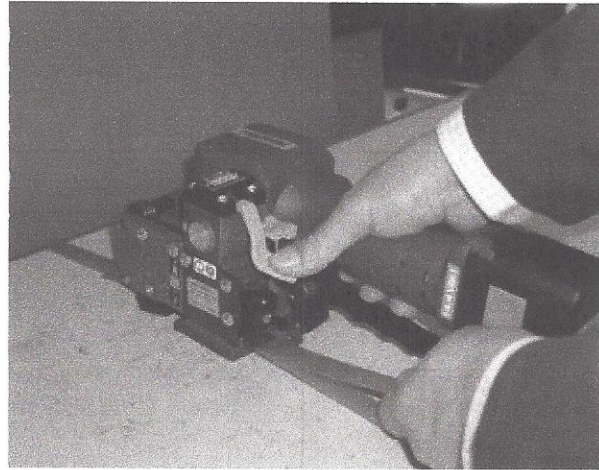
### 8.5.6 Sealing of the joint

Press sealing lever down and let it go immediately. 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 5.2.2) the cooling time begins (LED lights yellow). During that time the tool must not be removed from the strap.

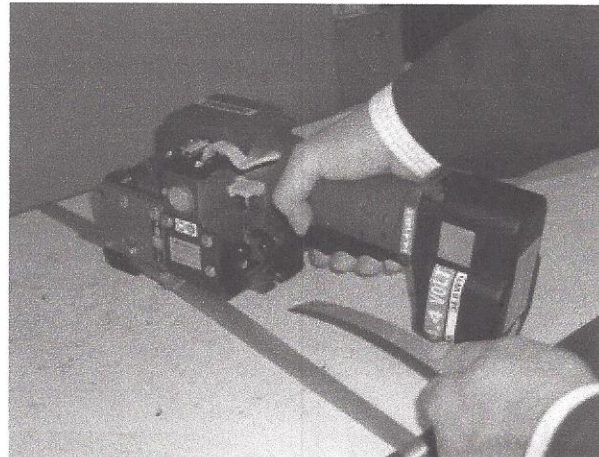
If the LED lights green again, the sealing cycle is finished.



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.

### 8.5.7 Removing the tool

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



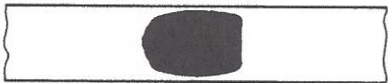
### 8.5.8 Seal - Control

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.

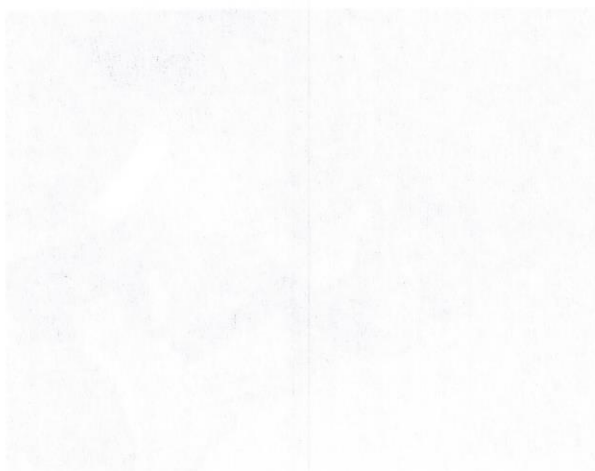
Warning! Straps with insufficient seal strength must be removed from the package! Adjust the welding time (see 8.5.2).



#### 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.

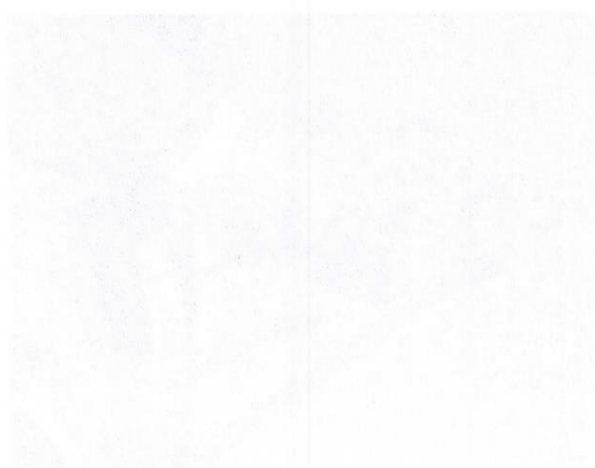
Warning! Straps with insufficient seal strength must be removed from the package! Adjust the welding time (see 8.5.2).



### 8.5.5 Sealing of the joint

Press sealing lever down and let it go immediately. The plastic strip is welded and cut off from the end of the strip. During the waiting the LED lights green. After elapsing of the adjusted waiting time (see 8.5.2) the cooling time begins (LED lights yellow). During this time the tool must not be removed from the strip. If the LED lights green again the waiting cycle is finished.

The tool must not be removed from the strip as long as the cooling time is not finished. Disregard of this regulation is causing inefficient seal efficiency, which can cause severe injuries.



### 8.5.7 Removing the tool

Push up the handle lever. Pull the tool right backwards and off the strip.

### 8.5.8 Seal - Control

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

#### Control seal

The seal must be completely welded over the whole width of the strip. The seal efficiency is sufficient. The plastic strip is not welded over the whole width of the strip. The seal efficiency is insufficient. The plastic strip with insufficient seal strength must be removed from the process. Adjust the waiting time (see 8.5.2).



#### Welding time too short

The plastic strip is not welded over the whole width of the strip. The seal efficiency is insufficient. The plastic strip with insufficient seal strength must be removed from the process. Adjust the waiting time (see 8.5.2).



#### Welding time too long

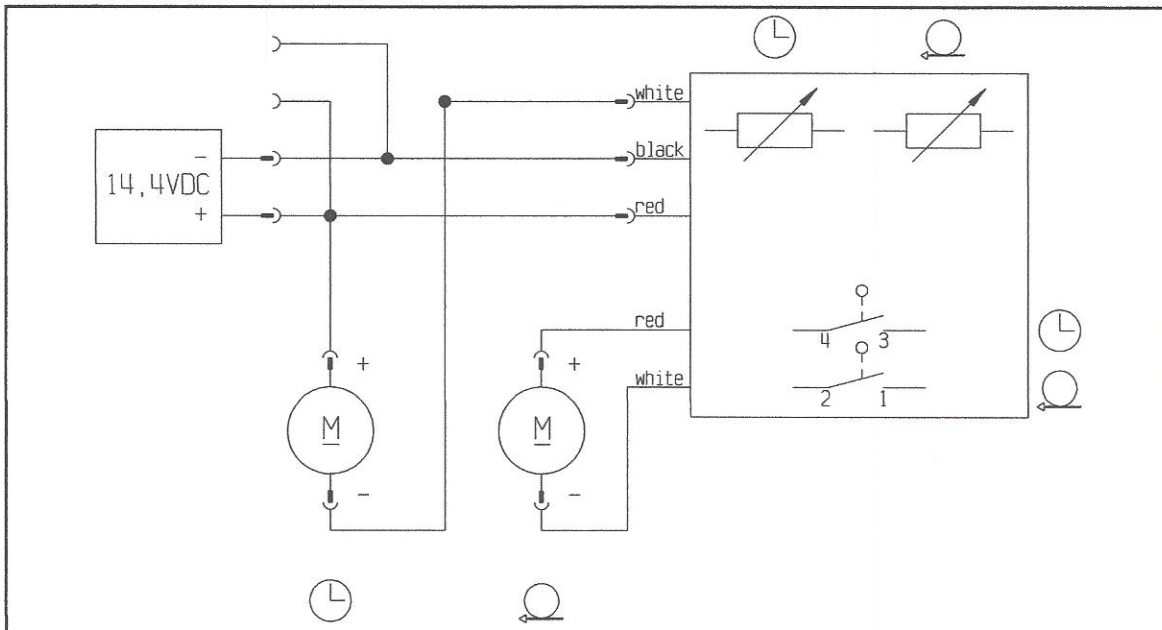
If the welding time is too long the strip is overheated. The fusion plastic overlaps on both sides of the strip. The seal efficiency is affected. The plastic strip with insufficient seal strength must be removed from the process. Adjust the waiting time (see 8.5.2).



## 8.6 CHART OF TYPES

Item No.	Model	Strap width	Strap thickness
43.3101	P323/12.7/0.65-1.05	12.7 mm / 1/2"	0.65 - 1.05 mm / .026 - .041"
43.3111	P323/13/0.65-1.05	13 mm	0.65 - 1.05 mm / .026 - .041"
43.3121	P323/16/0.65-1.05	16 mm / 5/8"	0.65 - 1.05 mm / .026 - .041"
43.3122	P323/16/1.06-1.35	16 mm / 5/8"	1.06 - 1.35 mm / .042 - .053"
43.3131	P323/19/0.40-0.64	19 mm / 3/4"	0.40 - 0.64 mm / .016 - .025"
43.3132	P323/19/0.65-1.05	19 mm / 3/4"	0.65 - 1.05 mm / .026 - .041"
43.3133	P323/19/1.06-1.35	19 mm / 3/4"	1.06 - 1.35 mm / .042 - .053"

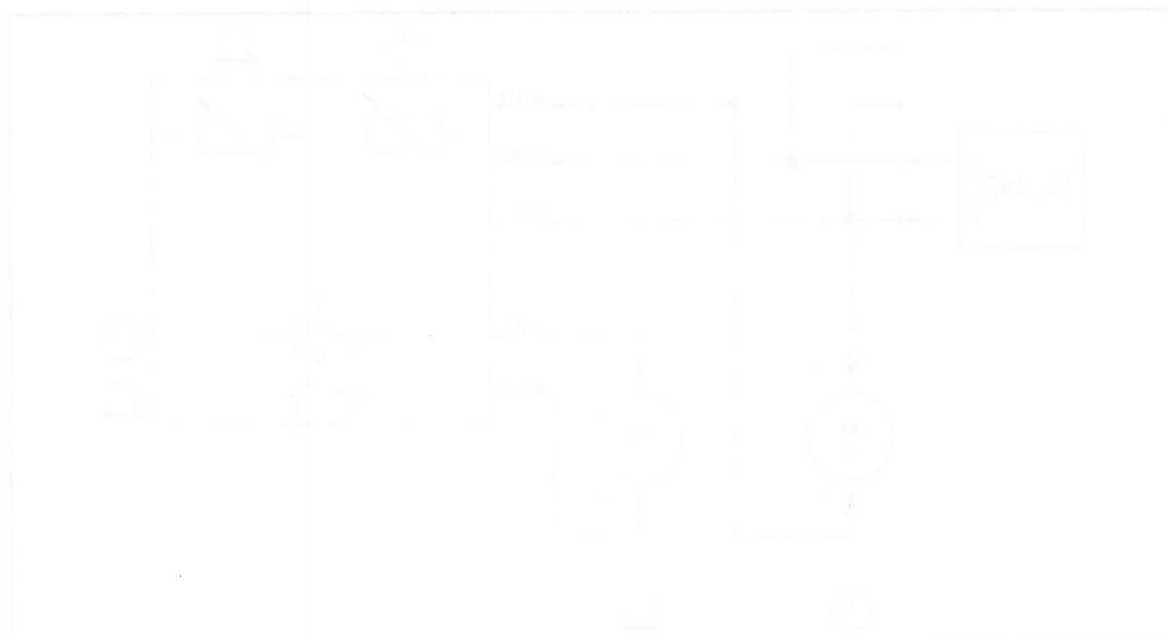
## 8.7 ELECTRIC SCHEMATIC



# 8.6 CHART OF TYPES

Item No	Model	Stroke width	Stroke thickness
43.3101	P320P2 70.55-1.05	7.5 mm 1.5	0.55 - 1.05 mm 0.45 - 0.47
43.3111	P320P2 50.55-1.05	12 mm	0.55 - 1.05 mm 0.55 - 0.47
43.3121	P320P2 65-1.05	18 mm 1.5	0.55 - 1.05 mm 0.55 - 0.47
43.3122	P320P2 65-1.35	18 mm 1.5	1.05 - 1.35 mm 0.45 - 0.52
43.3131	P320P2 45-0.94	12 mm 1.5	0.45 - 0.94 mm 0.16 - 0.35
43.3132	P320P2 55-1.05	18 mm 1.5	0.55 - 1.05 mm 0.55 - 0.47
43.3133	P320P2 65-1.35	18 mm 1.5	1.05 - 1.35 mm 0.45 - 0.52

## 8.7. ELECTRIC SCHEMATIC





## 8.8 EXCHANGE OF WEARING PARTS

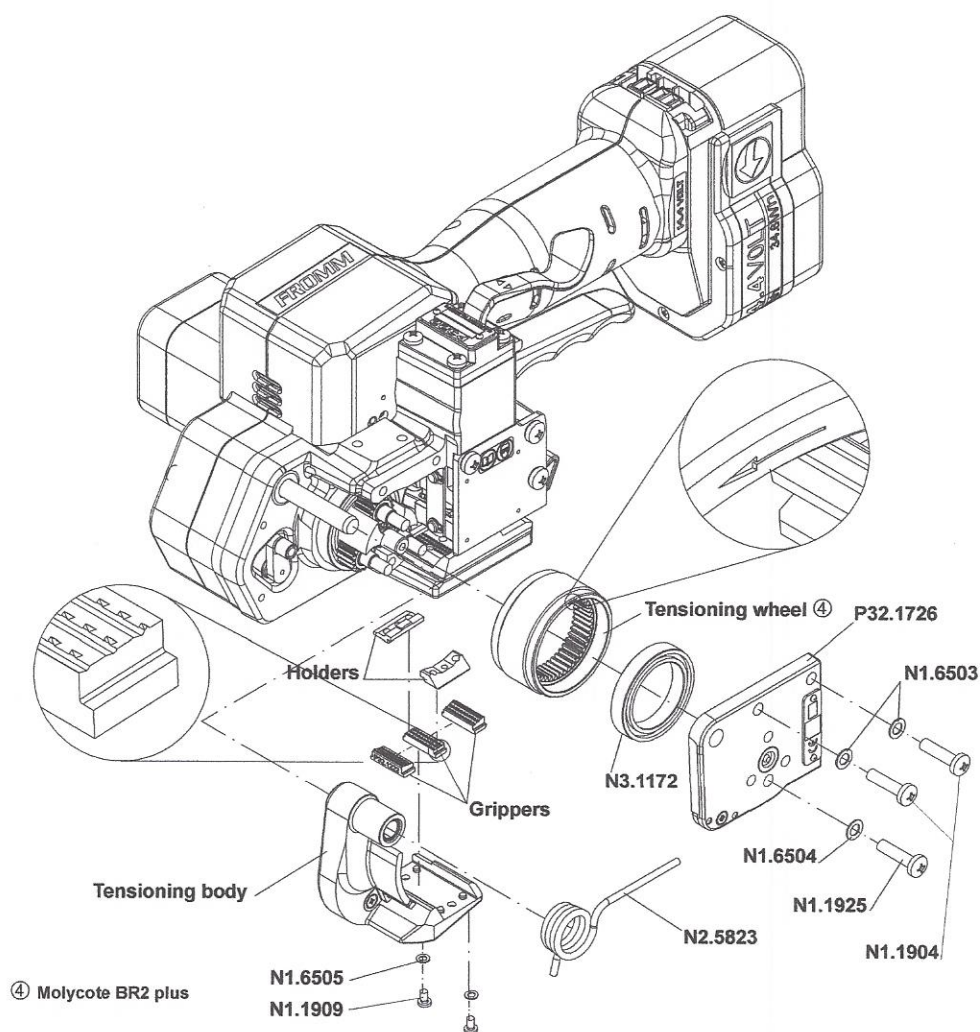


Remove always the battery from the tool before starting maintenance works.

### 8.8.1 Exchange of tensioning wheel and grippers

#### Disassembling

- Unscrew end cover P32.1726 and remove it;
- Remove the torsion spring N2.5823;
- Remove the tensioning body;
- Remove the tensioning wheel together with the bearing N3.1172 from the tool;
- Unscrew the holders and remove them from the tensioning body;
- Remove the grippers from the tensioning body.



#### Assembling

Assembling in opposite order. Observe the following:

- Lubricate the internal toothing of the tensioning wheel with Molykote BR 2 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).**



## 8.8 EXCHANGE OF WEARING PARTS



Remove always the battery from the tool before editing maintenance work.

### 8.8.1 Exchange of tensioning wheel and gripper

#### Disassembly

- Unscrew and cover P.51.1730 and remove it.
- Remove the tension spring (P.51.1731).
- Remove the tensioning body.
- Remove the tensioning wheel together with the bearing (P.51.1732) from the tool.
- Unscrew the rollers and remove them from the tensioning body.
- Remove the gripper from the tensioning body.



#### Assembly

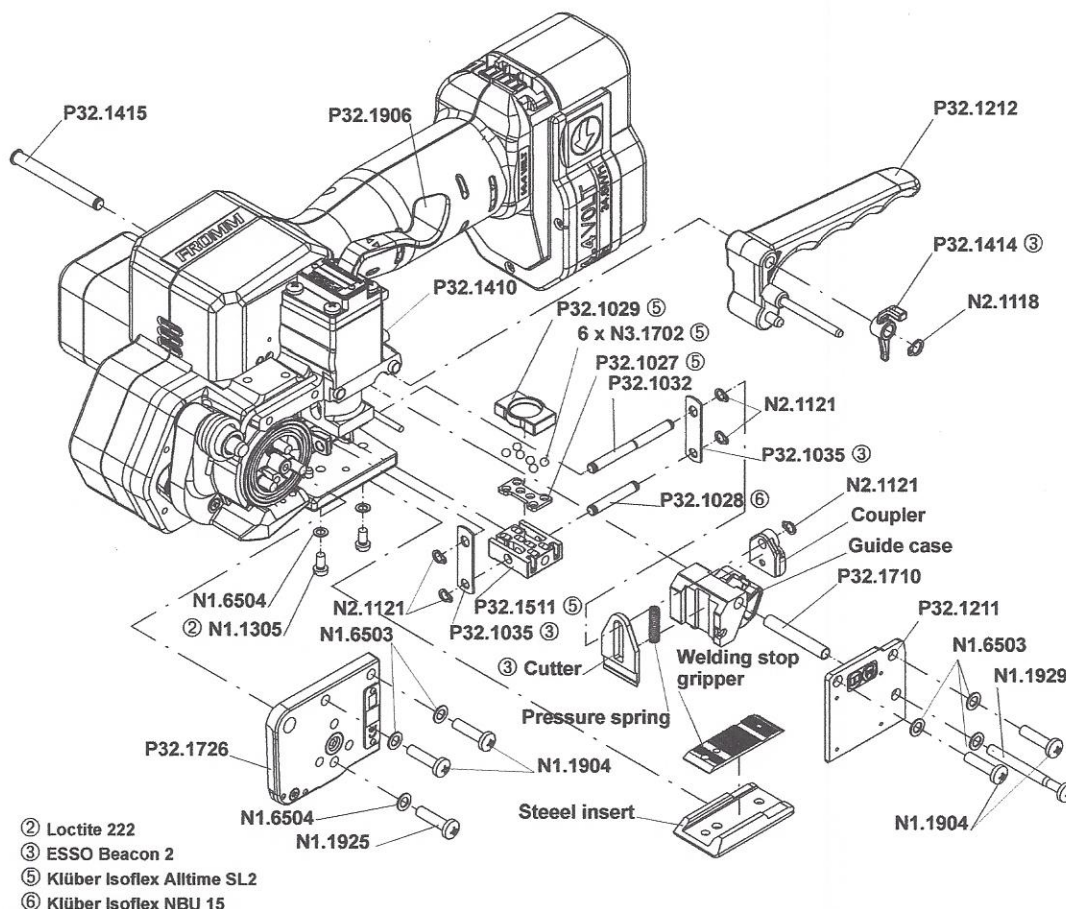
- Assemble in opposite order. Observe the following:
- Lubricate the internal rolling of the tensioning wheel with Molykote G-P 2 plus.
- Observe the position of the tensioning wheel. The direction of rotation of the tensioning wheel is marked at the front of the tensioning wheel (see drawing).
- Observe the position of the gripper (see drawing).



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

### Disassembling

- Unscrew cover P32.1211 and remove it;
- Unscrew end cover P32.1726 and remove it;
- Remove security ring N2.1118 and pull handle shaft P32.1415 out of the tool.  
This is loosening the lever P32.1414;
- Tilt down the handle lever P32.1212 and remove it from the tool;
- Don't loosen screw N1.1553 at the coupler.
- Disassemble the security ring N2.1121 from the coupler, remove the coupler;
- Pull out the centering sleeve P32.1710 from the guide case to left, disassemble the guide case;
- Pull out the pressure spring with a screw driver from the cutter;
- Remove the cutter from the driving pin P32.1032;
- Disassemble the screws N1.1305, lift slightly the welding stop gripper and the steel insert 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;
- Press down lever P32.1906;
- Disassemble the safety ring N2.1121 from the bolt P32.1028, remove the bolt from the welding gripper;
- Press in coupler P32.1410 in order to release the lever P32.1906 again;
- Pull out the steel insert with care to right under the welding gripper;
- Disassemble the security rings N2.1121 from the driving pin P32.1032, remove the driver P32.1035 from the driving pin;
- Lift the rocker P32.1510 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;
- Lower the rocker, remove the thrust piece P32.1029 from the tool.



# 8.3.5 Exchange of cutter welding stop gripper and welding gripper

## Disassembly

- Remove cover P32 1511 and remove it.
- Remove end cover P32 1528 and remove it.
- Remove security ring H2 1118 and pull handle shaft P32 1414 out of the tool.
- This is loosening the lever P32 1414.
- Lift down the handle lever P32 1515 and remove it from the tool.
- Don't remove lever H1 1553 of the gripper.
- Disassemble the security ring H2 1118 from the cover, remove the cover.
- Pull out the bearing sleeve P32 1514 from the guide case to left, disassemble the guide case.
- Pull out the pressure spring with a screw driver from the cutter.
- Remove the cutter from the driving pin P32 1511.
- Disassemble the gripper H1 1553. To slightly the welding stop gripper and the steel head and remove from the tool.
- Push the steel head without welding stop gripper under the welding gripper P32 1511 and it reaches the bearing pin H2 1118.
- Press down lever P32 1508.
- Disassemble the safety ring H2 1118 from the tool P32 1511, remove the ball from the welding gripper.
- Press in couple P32 1410 in order to release the lever P32 1508 again.
- Pull out the steel head with care to right under the welding gripper.
- Disassemble the security ring H2 1118 from the driving pin P32 1511, remove the lever P32 1508 from the driving pin.
- Lift the cover P32 1510 behind the welding gripper with a screw driver, remove the welding gripper together with the ball cage P32 1507 and the ball H2 1118 from the tool.
- Load the cover, remove the brass plate P32 1510 from the tool.



## Assembling

Assembling in opposite order. Observe the following:



**Pay attention to the fitting position of the cutter (see drawing).**  
**Safe the screws N1.1305 with Loctite 222.**

## Lubrication

- Lubricate the rocker and the bolt P32.1028 in the area of the welding jaw 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 Esso Beacon 2.

### 8.8.3 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:

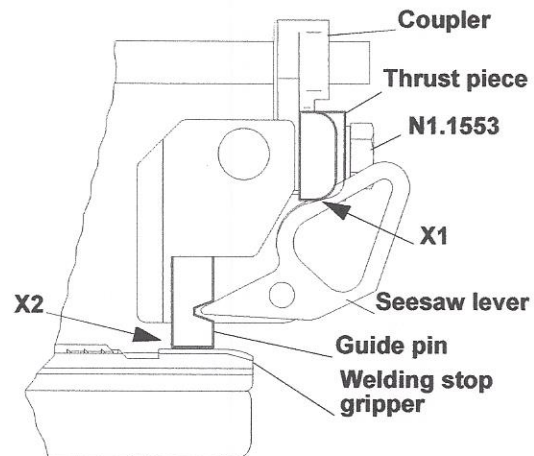
The battery is removed from the tool.

The coupler is fitted into the tool.

- Loosen screw N1.1553.
- Displace thrust piece P32.1702, so that it touches the two seesaw levers without moving them.
- Retighten screw N1.1553.

#### Control:

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



## 8.9 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.

The battery powered plastic strapping tool P323 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.

## 8.10 CLEANING

Clean strap gripping parts from strap abrasion regularly using compressed air (do not use any mechanical tool for cleaning).

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

## Assembly

Assembly is done in the following order:

1. Lubricate the roller and the pin (P22) in the area of the roller (see drawing).
2. Lubricate the roller with P22 with P22.



## Lubrication

- Lubricate the roller and the pin (P22) in the area of the roller (see drawing) with P22.
- Lubricate the roller and the pin (P22) in the area of the roller (see drawing) with P22.
- Lubricate the roller and the pin (P22) in the area of the roller (see drawing) with P22.

## 8.3.3 Adjustment of the coupler

The coupler is adjusted in the following way:

In case of loading the coupler, the coupler is adjusted in the following way:

Procedure as follows:



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

- Lubricate the roller and the pin (P22) in the area of the roller (see drawing) with P22.
- Lubricate the roller and the pin (P22) in the area of the roller (see drawing) with P22.
- Lubricate the roller and the pin (P22) in the area of the roller (see drawing) with P22.

## Control

The roller must touch the roller (see drawing).  
Both roller and pin must be on the roller (see drawing).

## 8.5 SERVICE

Service and repair work must only be carried out by authorized service centers.  
If the tool breaks down or does not work properly, it should be fully assembled to the tool.  
The battery powered electric coupling tool P22 is a high performance tool. We strongly recommend you to have it serviced by an authorized service center after 12 months or 1000 hours of use. It is used two or more times a day. The tool has to be serviced after a shorter period of time.

## 8.10 CLEANING

Clean the coupling tool from dirt and debris regularly using compressed air. Do not use any mechanical tool for cleaning.  
When cleaning the surface of the tool do not use water or aggressive chemicals.



## **8.11 WARRANTY CONDITIONS AND LIABILITY**

FROMM Holding AG warrants all its strapping tools and machine heads during a period of 24 months from the date of installation at the end-user's sight by the distributor, however, not later than 30 months from the date of shipment to the distributor of FROMM Holding AG.

The warranty includes all deficiencies clearly resulting from poor manufacturing or faulty materials. Damage claims as a result of production shutdowns and claims for damage to persons and to property resulting from warranty deficiencies cannot be asserted by the customer.

The warranty excludes:

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

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

## **8.12 APPROPRIATE USE**

The tool model P323 has been designed to strap packages with plastic strapping exclusively.

The warranty / liability excludes:

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



## 8.11 WARRANTY CONDITIONS AND LIABILITY

FRONT Holding AG warrants all its shipping tools and machine tools during a period of 24 months from the date of installation at the customer's site by the designated, however not later than 30 months from the date of shipment to the customer of FRONT Holding AG.

The warranty includes all damages resulting from manufacturing or assembly errors. It covers claims as a result of production shutdowns and claims for damage to persons and to property resulting from warranty deficiencies cannot be asserted by the customer.

The warranty excludes

wearing parts,  
damages resulting from improper handling, incorrect handling and maintaining the tool,  
damages resulting from using the tool without or with incorrect security and safety devices,  
damages or damages to the operation manual,  
altering modifications at the tool,  
deficient control or wiring work,  
deficient repair work of the tool,  
Use of consumable products not recommended by FRONT Holding AG.

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

## 8.12 APPROPRIATE USE

The tool model P223 has been designed as a tool package with plastic shipping exclusively.  
The warranty is validly excludes

- any appropriate use of the tool
- damage or damage to the operation manual
- damage to control and transport material