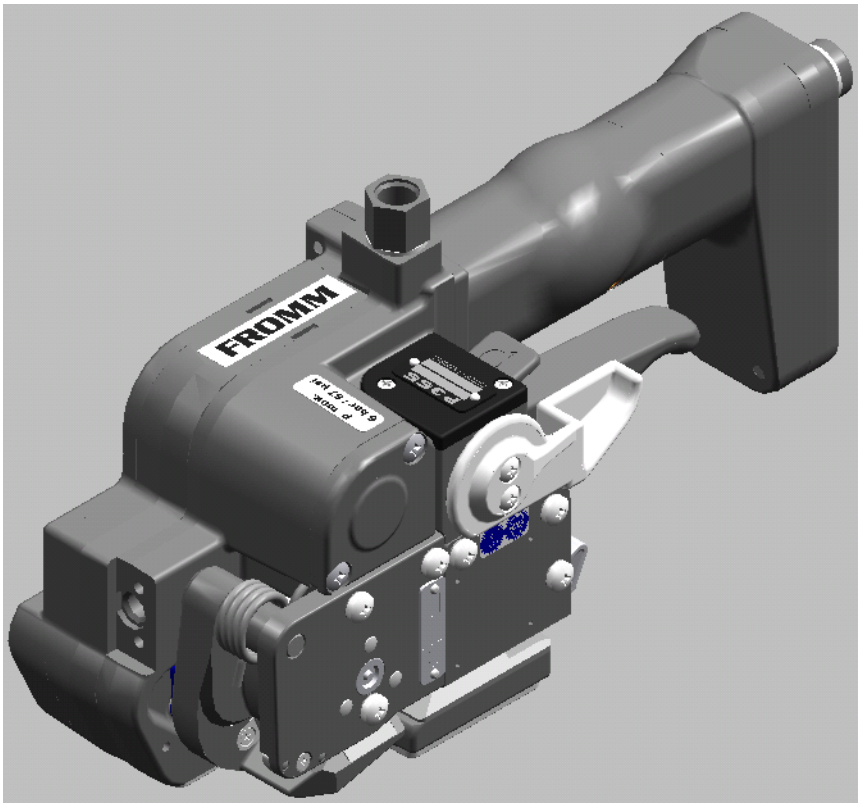
FROMM

OPERATION MANUAL / SPARE PARTS LIST

PNEUMATIC
PLASTIC STRAPPING TOOL
MODEL P355

49.0323.01



CE Declaration of conformity

We declare that the machine P355
is in conformity with the following standard or
standardised documents:
98/37/EEC

FROMM Holding AG
Hinterbergstrasse 26
CH - 6330 Cham
22.01 2002

R.Fromm
Director

CE

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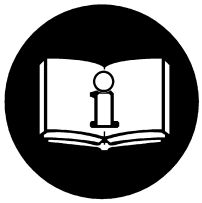
1 SAFETY INSTRUCTIONS

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



Eye injury hazard

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

Operation

Tool must not be used by persons not properly trained in their use. Before tensioning strap, read and understand the tool operating instructions. Failure to follow the operating instructions or improper load positioning could result in strap breakage.
Become familiar with your tool and keep fingers away from areas that can pinch or cut.

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.

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.

2 TECHNICAL DATA

Description of the tool

The tool model P355 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	without suspension bracket	with suspension bracket
Length:	305 mm / 12"	356 mm / 14"
Width:	104 mm / 4.1"	104 mm / 4.1"
Height:	151 mm / 6"	252 mm / 9.9"
Weight:	4.75 kg / 10.5 lbs	5.0 kg / 11 lbs

Sound information

The A-weighted equivalent continuous sound level at the work place of the machine operator is typical 79 dB (A).
This value was determined according to DIN 45 635 T3 (11.85).

Vibration information

The weighted effective value of the acceleration typically amounts to less than 2,5m/s^2.
This value was determined according to DIN EN 28 662 T1 (01.93).

Strap material

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

Strap dimensions: 10.0 - 16.0 mm / 3/8 - 5/8“ x 0.4 - 1.05 mm / .016 - .041“ (see chart of types).
Use only plastic straps with the correct strap dimensions for your tool.

Strap tension with steady air pressure of 5.5bar/80 psi.

Tensioning force*: Adjustable from 400 - max. 2100 N / 90 - max. 470 lbs.
Thirteen different steps can be preselected.

Tensioning speed*: approx. 120 - 250 mm/s / 4.7 - 10 "/sec.

Joint strength*: approx. 75% of the tensile strength of the plastic strap.

* The value depends on the strap quality.

Air pressure

Joining thread / Air tube: G 1/4 / Min. inside diameter = 9 mm

Air pressure: The maximum air pressure allowed is 6.0 bars / 87 psi.
The standard working air pressure is 5.5 bar / 80 psi.

Air unit: min. G 3/8

Air line in front of air unit : min. 1/2"

Air flow of air unit: min. 480Nl/min / 18 cu.ft/min with a maxim pressure drop of 0.5 bar / 7.25 psi.

Air consumption

Tensioning: approx. 8 Nl / 0.30 cu.ft uncompressed air per second with the air motor running.

Sealing: approx. 4 - 20 Nl / 0.15 - 0.75 cu.ft uncompressed air per cycle
approx. 8 Nl / 0.30 cu.ft uncompressed air per second.

Oil for air unit: HL / CL ISO VG 10

3 CHART OF TYPES

Item No.	Model	Strap width	Strap thickness
49.0301	P355/10/0.40-0.64	10.0 mm / 3/8"	0.4 - 0.64 mm / .016 - .025"
49.0302	P355/10/0.65-1.05	10.0 mm / 3/8"	0.65 - 1.05 mm / .026 - .041"
49.0311	P355/11.1/0.40-0.64	11.1 mm / 7/16"	0.4 - 0.64 mm / .016 - .025"
49.0312	P355/11.1/0.65-1.05	11.1 mm / 7/16"	0.65 - 1.05 mm / .026 - .041"
49.0321	P355/12/0.40-0.64	12.0 mm	0.4 - 0.64 mm / .016 - .025"
49.0322	P355/12/0.65-1.05	12.0 mm	0.65 - 1.05 mm / .026 - .041"
49.0323	P355/12.7/0.40-0.64	12.7 mm / 1/2"	0.4 - 0.64 mm / .016 - .025"
49.0324	P355/12.7/0.65-1.05	12.7 mm / 1/2"	0.65 - 1.05 mm / .026 - .041"
49.0331	P355/13/0.40-0.64	13.0 mm	0.4 - 0.64 mm / .016 - .025"
49.0332	P355/13/0.65-1.05	13.0 mm	0.65 - 1.05 mm / .026 - .041"
49.0351	P355/15/0.40-0.64	15.0 mm	0.4 - 0.64 mm / .016 - .025"
49.0352	P355/15/0.65-1.05	15.0 mm	0.65 - 1.05 mm / .026 - .041"
49.0353	P355/15.5/0.40-0.64	15.5 mm	0.4 - 0.64 mm / .016 - .025"
49.0354	P355/15.5/0.65-1.05	15.5 mm	0.65 - 1.05 mm / .026 - .041"
49.0361	P355/16/0.40-0.64	16.0 mm / 5/8"	0.4 - 0.64 mm / .016 - .025"
49.0362	P355/16/0.65-1.05	16.0 mm / 5/8"	0.65 - 1.05 mm / .026 - .041"

4 WARRANTY CONDITIONS AND LIABILITY

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

The warranty excludes:

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

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

5 APPROPRIATE USE

The tool model P355 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.

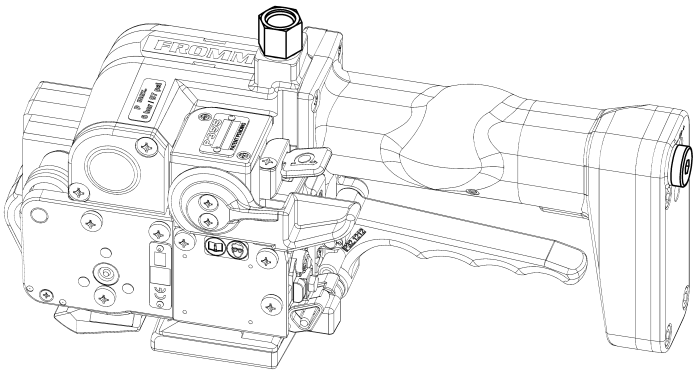
6 INSTALLATION

6.1 Compressed air connection

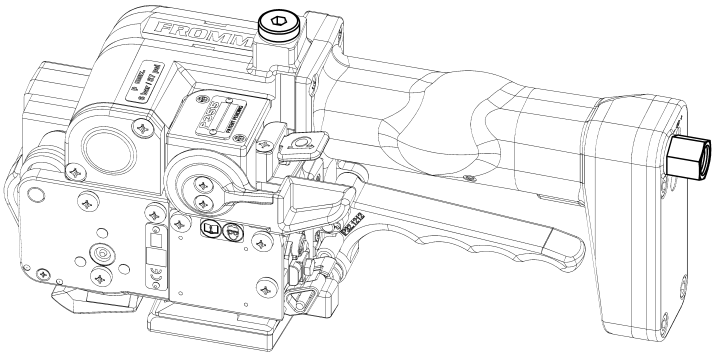
The compressed air is to be connected to the tool preferably by a quick disconnector (G1/4).
An air-unit consisting of a separator for water and dirt, a pressure regulator with a manometer and a lubricator must be installed within a range of 15 ft / 5 meters. The compressed air must be free from dirt, rust and moisture.

Possible connections at the tool

Factory produced the connection for the air supply is prepared from the top.



According to requirement the connection can also be assembled to the rear end of the tool.

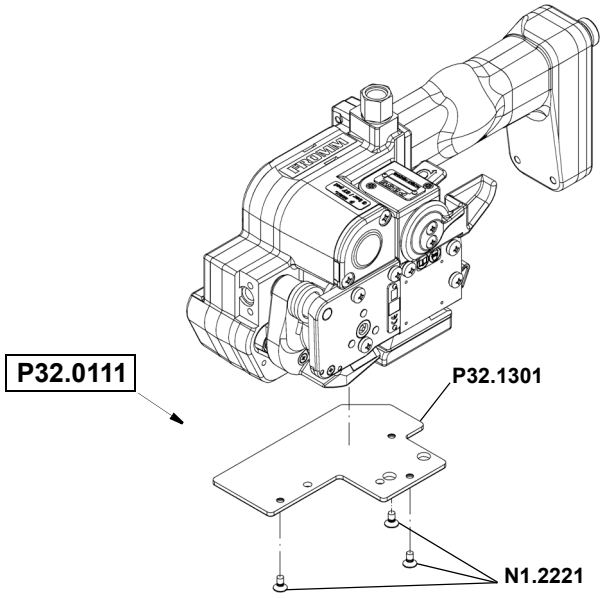


6.2 Accessories

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

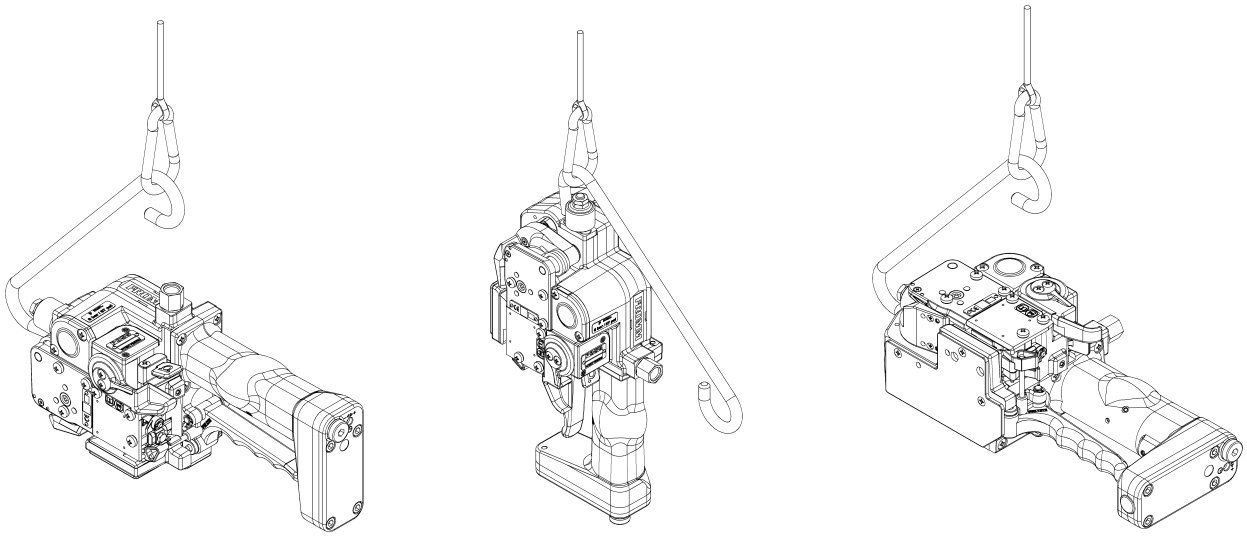
Wearing plate

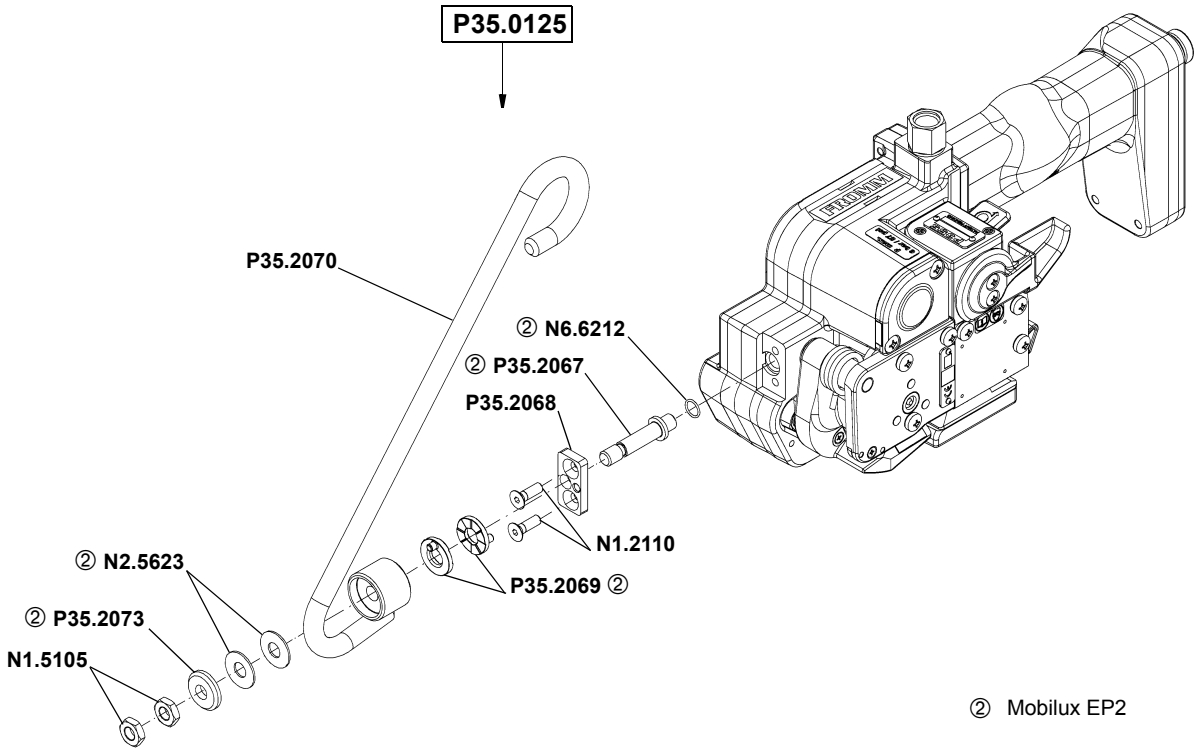
As an option, tool can be equipped with a wearing plate to protect base from excessive wear on abrasive package surfaces (like bricks, concrete blocks etc.). The complete wearing plate can be ordered together with the fastening screws under item number P32.0111.



Suspension of tool

It is possible to suspend the tool on a spring loaded balancer using the suspension bracket P35.0125 which is supplied with the tool. The suspension bracket has been designed in such a way, that the tool can be used for all three working positions.





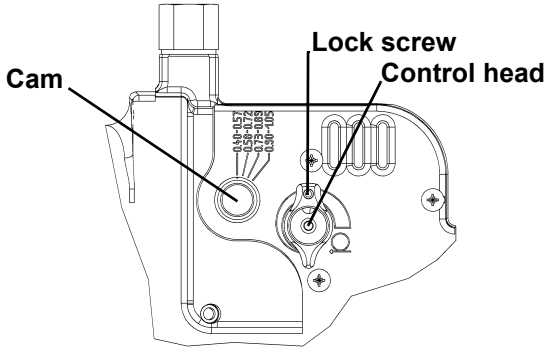
② Mobilux EP2

6.3 Adjustments

6.3.1 Preselecting of strap tension and tensioning speed

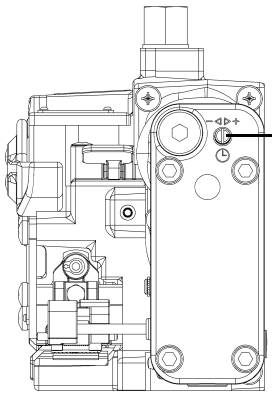
Do not adjust the tensioning force too high.
If the tensioning force is higher than the tensioning strength of the strap, the strap will tear while the tensioning.

Tensioning force and tensioning speed can be preselected at the control head.
Loose lock screw;
press the control head against the tool and turn it.
Turning clockwise increases;
turning counterclockwise decreases the tensioning force and the tensioning speed resp..
Tight lock screw.



6.3.2 Adjusting the welding time

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



6.3.3 Adjusting the welding pressure

In order to assure optimal welding, the pressure of the welding gripper to the straps to be welded must be within a certain range. Depending on the thickness of the strap, this pressure is adjusted by means of the

When adjusting the welding pressure, the lever must be latched into its start position.

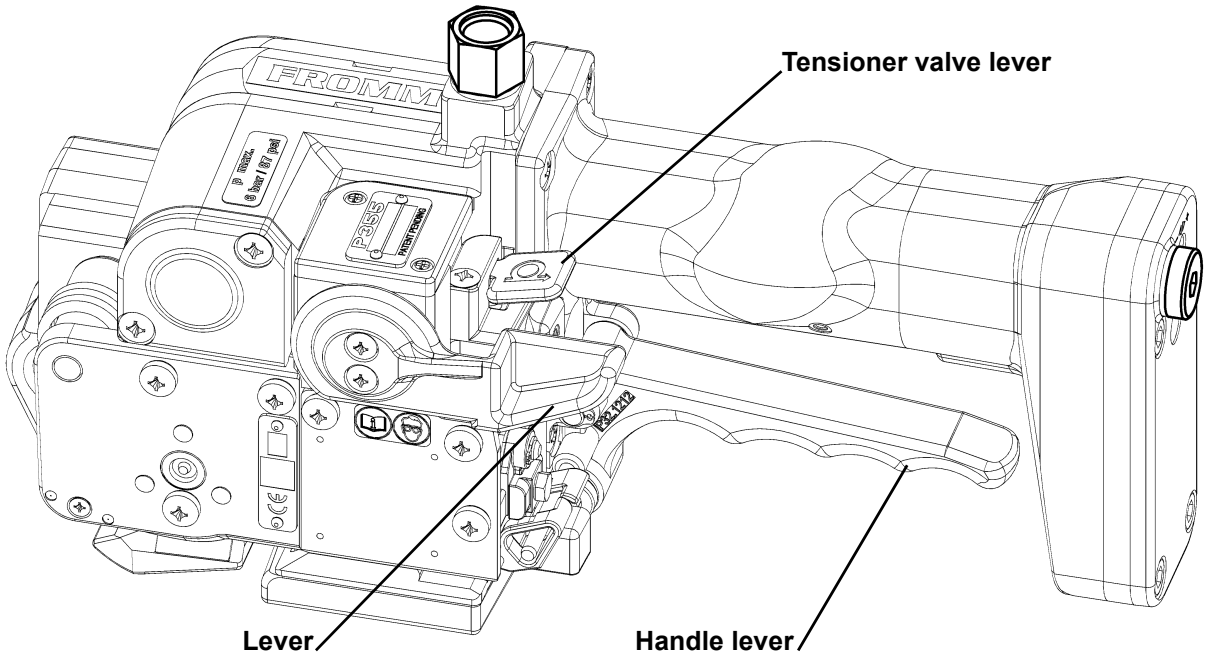
The range of thickness of the strap must be adjusted according to the strap thickness admitted for the tool (see chart of types) and the thickness of the strap to be processed.

Model	Welding pressure, Possible adjustments	
Strap thickness 0.40 - 0.64 mm (.016 - .025")	0.40 - 0.57 mm (.016 - .022") 0.58 - 0.72 mm (.023 - .028")	
Strap thickness 0.65 - 1.05 mm (.026 - .041")		0.58 - 0.72 mm (.023 - .028") 0.73 - 0.89 mm (.029 - .035") 0.90 - 1.05 mm (.035 - .041")

Adjustment:

The lever is latched and in start position!
Pull out the cam of the tool,
turn it into the desired position (observe the marking on the housing),
release the cam (the cam must latch without assistance).

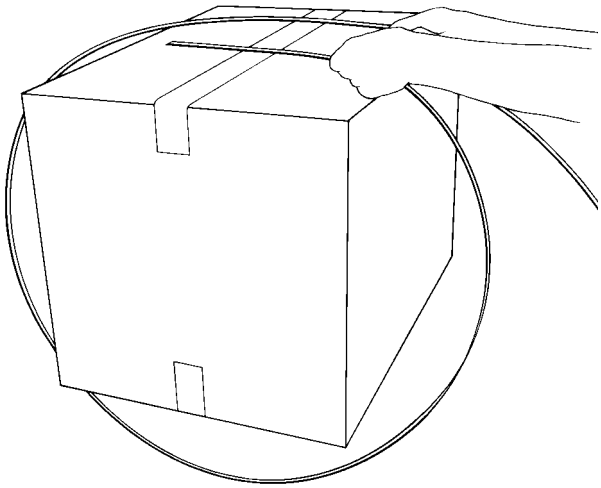
7 OPERATING ELEMENTS



8 OPERATION

8.1 Feeding the strap around the package

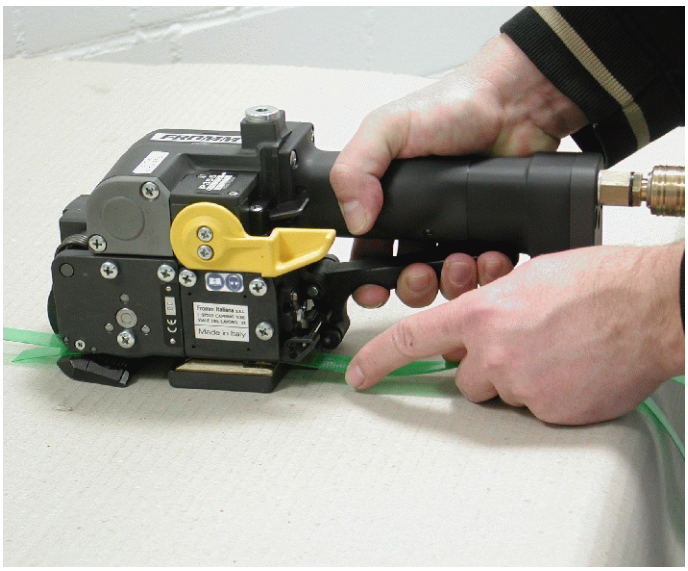
The strapping is fed around the package as illustrated.



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!

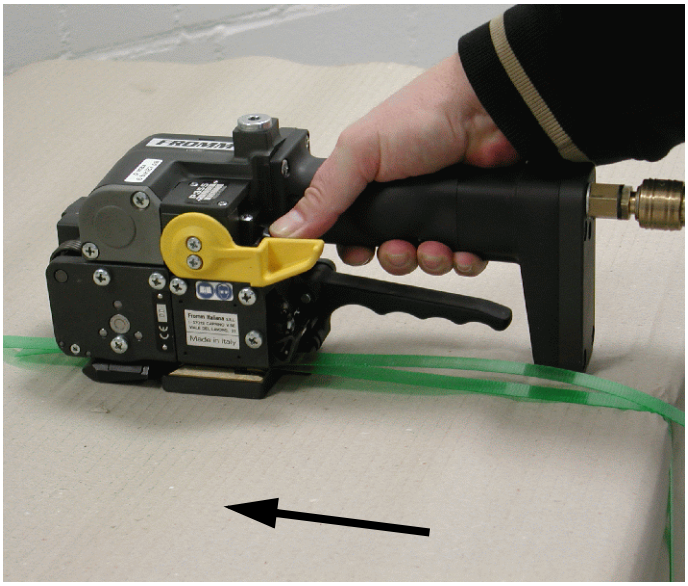
8.2 Inserting the strap

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.



8.3 Tensioning the strap

Press down the tensioner valve lever and then release it again after the desired strap tension has been reached.
The tensioning operation can be interrupted and restarted at any time.



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.

8.4 Sealing the straps

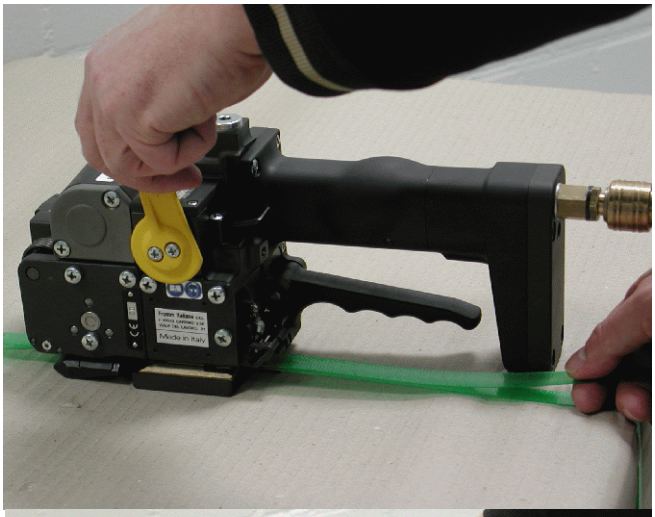
While welding the plastic strap the lever must be pressed forward against the front stop After the welding operation the lever must be pressed against the front stop for another 1-2 seconds until the seal is cooled down.
Disregarding of this regulation will cause insufficient seal efficiency, what can cause severest injuries.

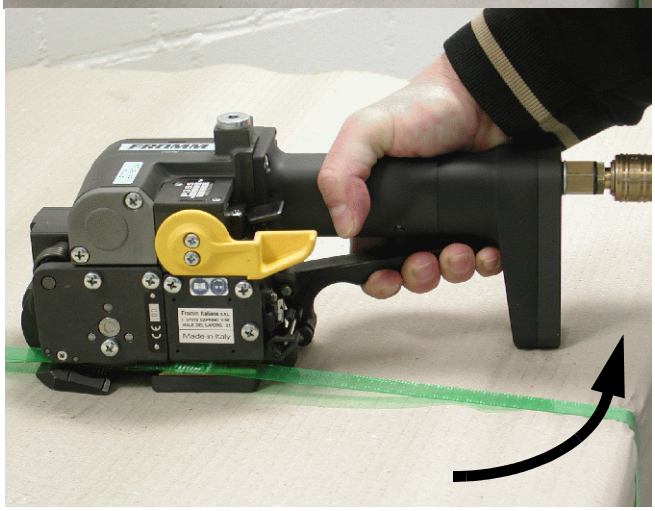
Press the lever with the left hand forward against the stop and keep it pressed.

The plastic strap is welded and cut off from the strap coil at the same time.

After the preselected welding time is elapsed, the lever must be kept pressed for 1 - 2 seconds in the welding position until the seal is cooled down.

Turn back the lever until it latches in start position.





8.5 Removing the tool

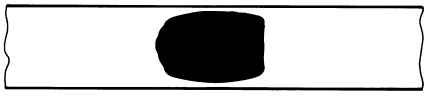
Pull up the handle lever,
pull the tool right / backwards and off the strapping.

8.6 Seal - Control

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

Correct seal

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



Welding time too short

The plastic strap is not welded over the whole width of the strap. The seal efficiency is insufficient.
Warning! Straps with insufficient seal strength must be removed from the package!
Adjust the welding time (see 6.3.2).

Welding time too long

If the welding time is too long the straps are overheated. The fused plastic overflows on both sides of the straps. The seal efficiency is affected.
Warning! Straps with insufficient seal strength must be removed from the package!
Adjust the welding time (see 6.3.2).

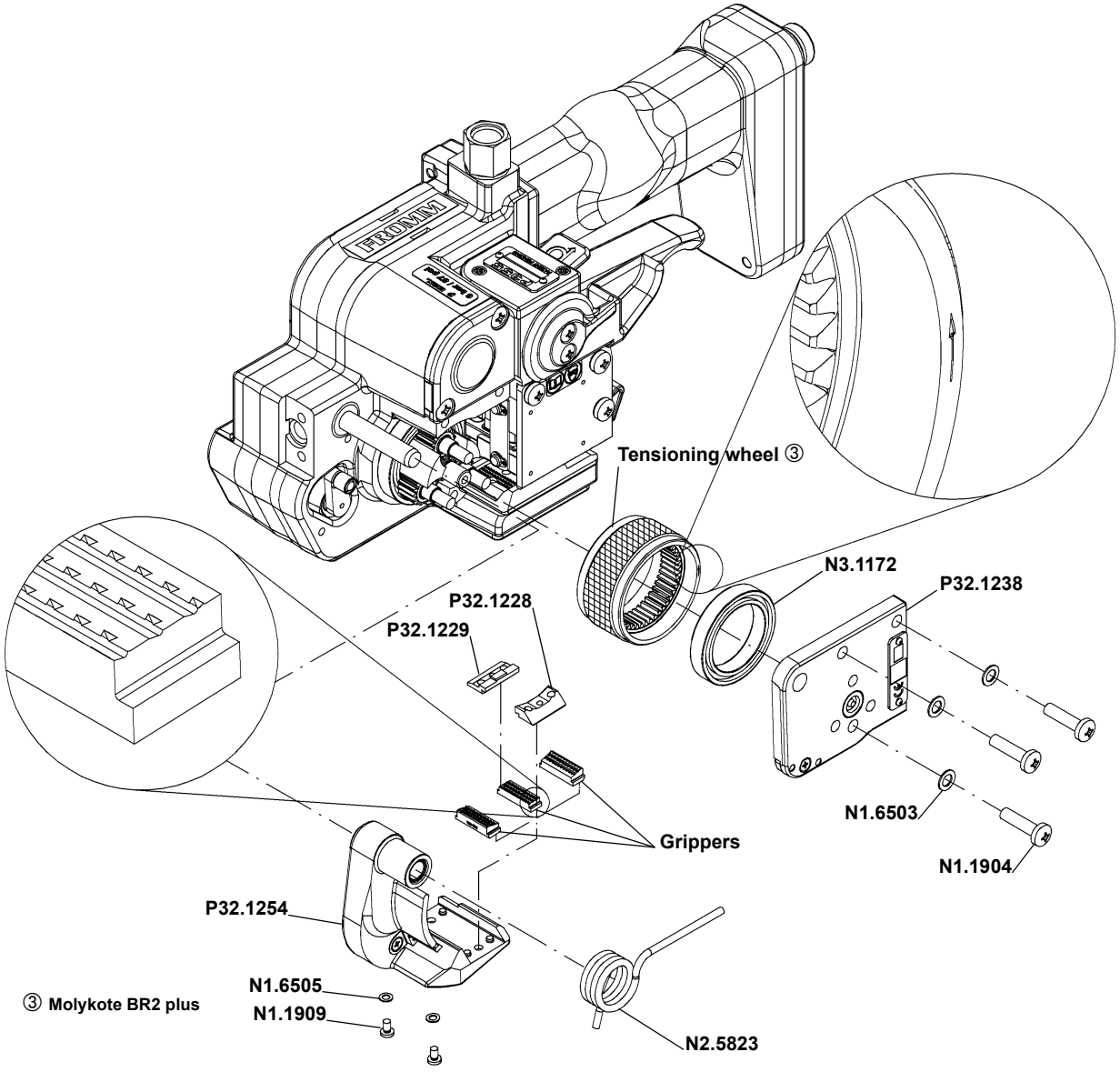
9 EXCHANGE OF WEARING PARTS

Before any maintenance work always disconnect the tool from the air supply.

9.1 Exchange of tensioning wheel and grippers

Disassembling

- Unscrew end cover P32.1238 and remove it;
- Remove the torsion spring N2.5823;
- Remove the tensioning body P32.1254;
- Remove the tensioning wheel together with the bearing N3.1172 from the tool;
- Unscrew the holders P32.1228 and P32.1229 and remove them from the tensioning body;
- Remove the grippers from the tensioning body.



Assembling

Assembling in opposite order. Observe the following:

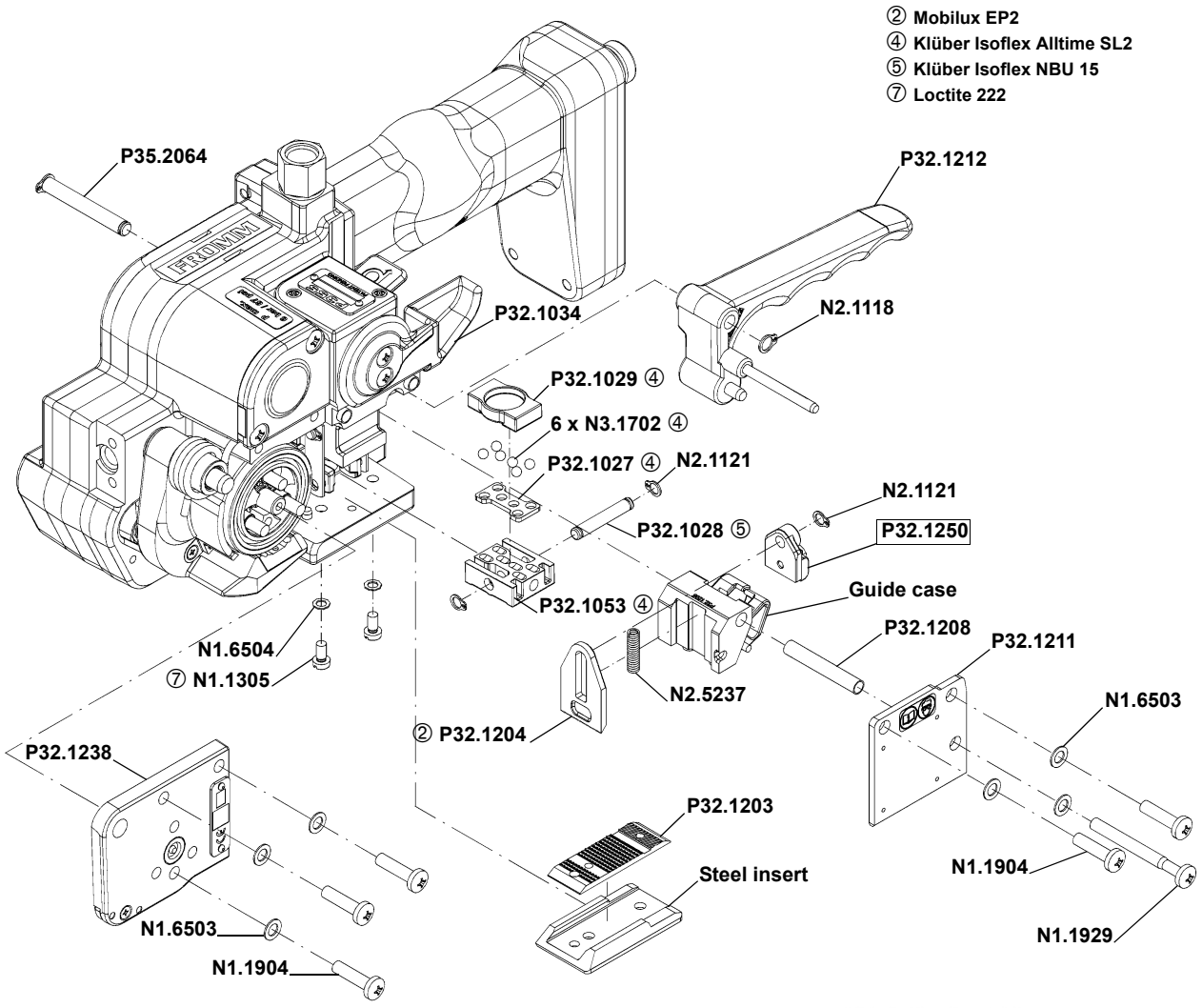
- Lubricate the internal toothing of the tensioning wheel with Molykote BR 2 plus.

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).

9.2 Exchange of cutter, welding stop gripper and welding gripper

Disassembling

- Unscrew cover P32.1211 and remove it;
- Unscrew end cover P32.1238 and remove it;
- Disassemble security ring N2.1118, pull the grip axle P35.2064 from the tool;
- Tilt down the handle lever P32.1212 and remove it from the tool;
- **Don't loosen** screw N1.1553 at the coupler P32.1250.
- Disassemble the security ring N2.1121 from the coupler P32.1250, remove the coupler;
- Pull out the centering sleeve P32.1208 from the guide case to left, disassemble the guide case;
- Pull out the pressure spring N2.5237 with a screw driver from the cutter P32.1204;
- Remove the cutter from the driving pin P32.1032;
- Disassemble the screws N1.1305, lift slightly the welding stop gripper P32.1203 and the steel insert and remove them from the tool;
- Adjust the welding pressure with the cam to the thickness of the strap 0.40 - 0.57 mm;
- Push the steel insert without welding stop gripper under the welding gripper P32.1053 until it touches the parallel pin N2.2110;
- Turn the lever P32.1034 in welding position;
- Disassemble the safety ring N2.1121 from the bolt P32.1028, remove the bolt from the welding gripper;
- Turn the lever P32.1034 in start position;
- Pull out the steel insert with care to right under the welding gripper;
- Lift the rocker P32.1024 behind the welding gripper with a screw driver, remove the welding gripper together with the ball cage P32.1027 and the balls N3.1702 from the tool;
- Lower the rocker, remove the thrust piece P32.1029 from the tool.



Assembling

Assembling in opposite order. Observe the following:

Pay attention to the proper seat of the thrust piece on the spring bolt P32.1030 when lifting the rocker.
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 Mobilux EP2.

After assembling

Adjust the welding pressure according to the thickness of the strap! (see 6.3.3)

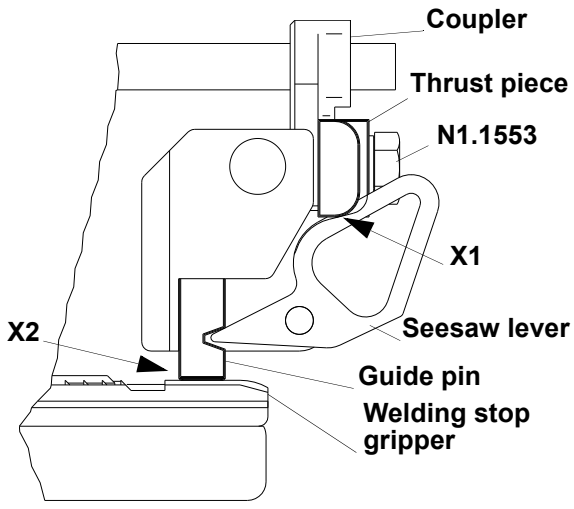
9.3 Adjustment of the coupler P32.1250

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:
Lever P32.1034 in start position.
The tool is disconnected from the air supply.
The coupler is fitted into the tool.

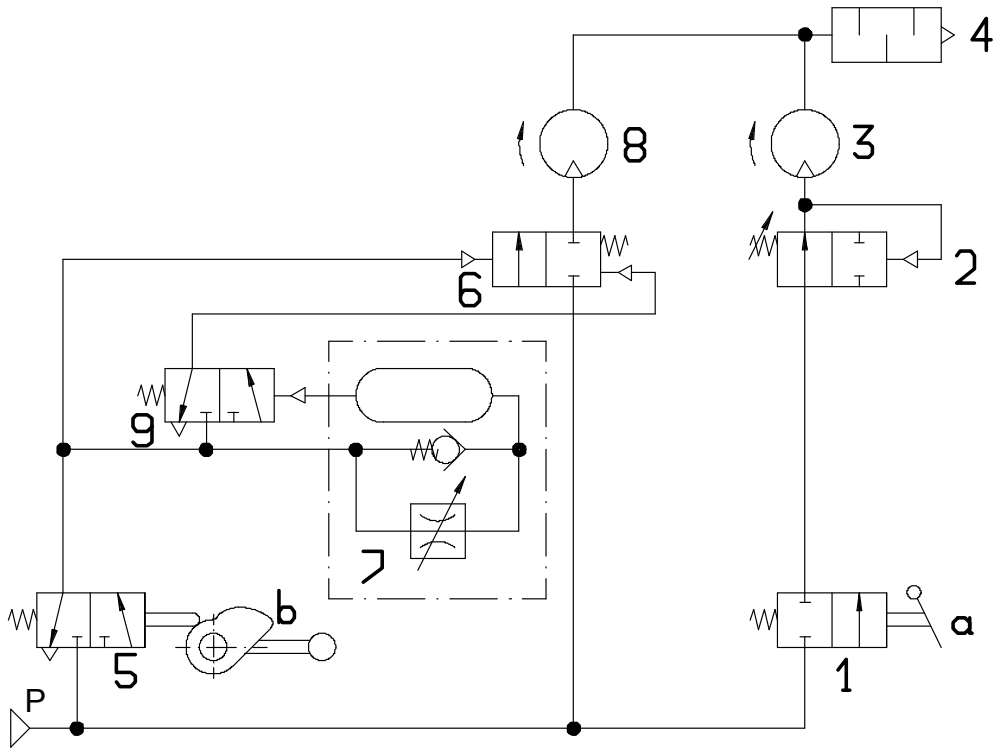
- Loosen screw N1.1553.
- Displace thrust piece P32.1252, so that it touches the two seesaw levers without moving them.
- Retighten screw N1.1553.



Control:

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

10 PNEUMATIC SCHEMATIC



1 Tensioner valve
2 Tension force control valve
3 Tensioning motor
4 Exhaust silencer
5 Welding valve
6 Welding motor valve
7 Welding time valve
8 Welding motor
9 Turn off valve

a Valve lever for tensioning
b Valve lever for welding

11 SERVICE

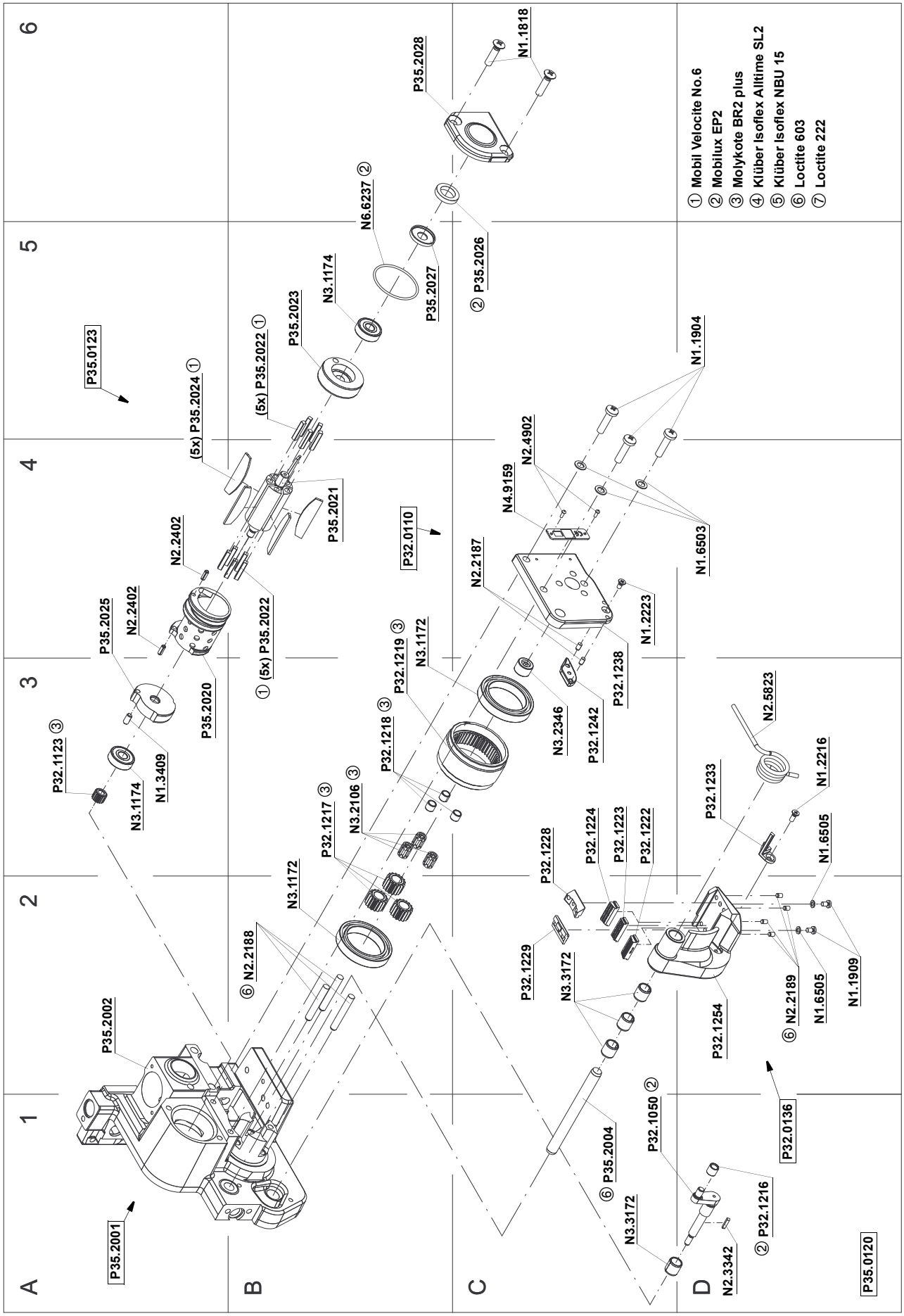
Servicing and repair work must only be carried out by authorized service centres.
If the tool breaks down or does no longer operate do not disassemble it. Send it fully assembled to the local service center (see name and address on the rear page of this manual). Use original packing.

The pneumatic plastic strapping tool P355 is a high performance tool. We strongly recommend you to have it serviced by an authorized service shop after 12 months at the latest if used one shift per day. If used two or more shifts per day the tool has to be serviced after a shorter period of time.

12 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!


① Mobil Velocite No.6
② Mobilux EP2
③ Molykote BR2 plus
④ Klüber Isoflex Alltime SL2
⑤ Klüber Isoflex NBU 15
⑥ Loctite 603
⑦ Loctite 222
P35.0123
P35.2001
P35.0120
P32.0110
P32.0136
P35.2002
P35.2004
P35.2020
P35.2021
P35.2022
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P35.2027
P35.2028
P32.1050 ②
P32.1123 ③
P32.1216 ②
P32.1217 ③
P32.1218 ③
P32.1219 ③
P32.1222
P32.1223
P32.1224
P32.1228
P32.1229
P32.1233
P32.1238
P32.1242
P32.1254
N1.1818
N1.1904
N1.2216
N1.2223
N1.3409
N1.6503
N1.6505
N1.1909
N2.2402
N2.2187
N2.4902
N2.5823
N2.2189
N2.3342
N3.1172
N3.1174
N3.2106
N3.2346
N3.3172
N4.9159
N6.6237 ②
(5x) P35.2024 ①
(5x) P35.2022 ①
① (5x) P35.2022
⑥ N2.2188
⑥ P35.2004
⑥ N2.2189
② P35.2026
A
B
C
D
1
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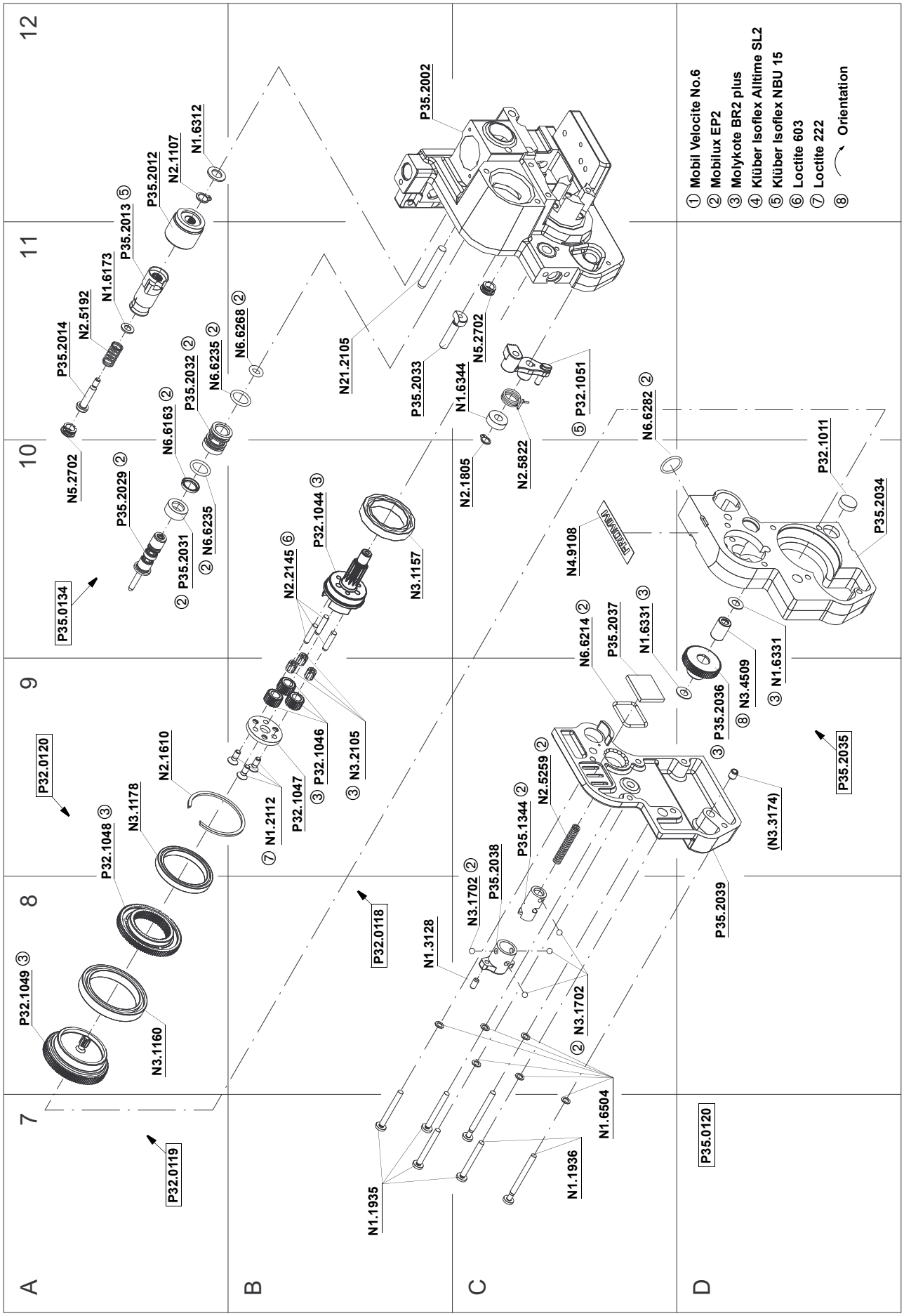
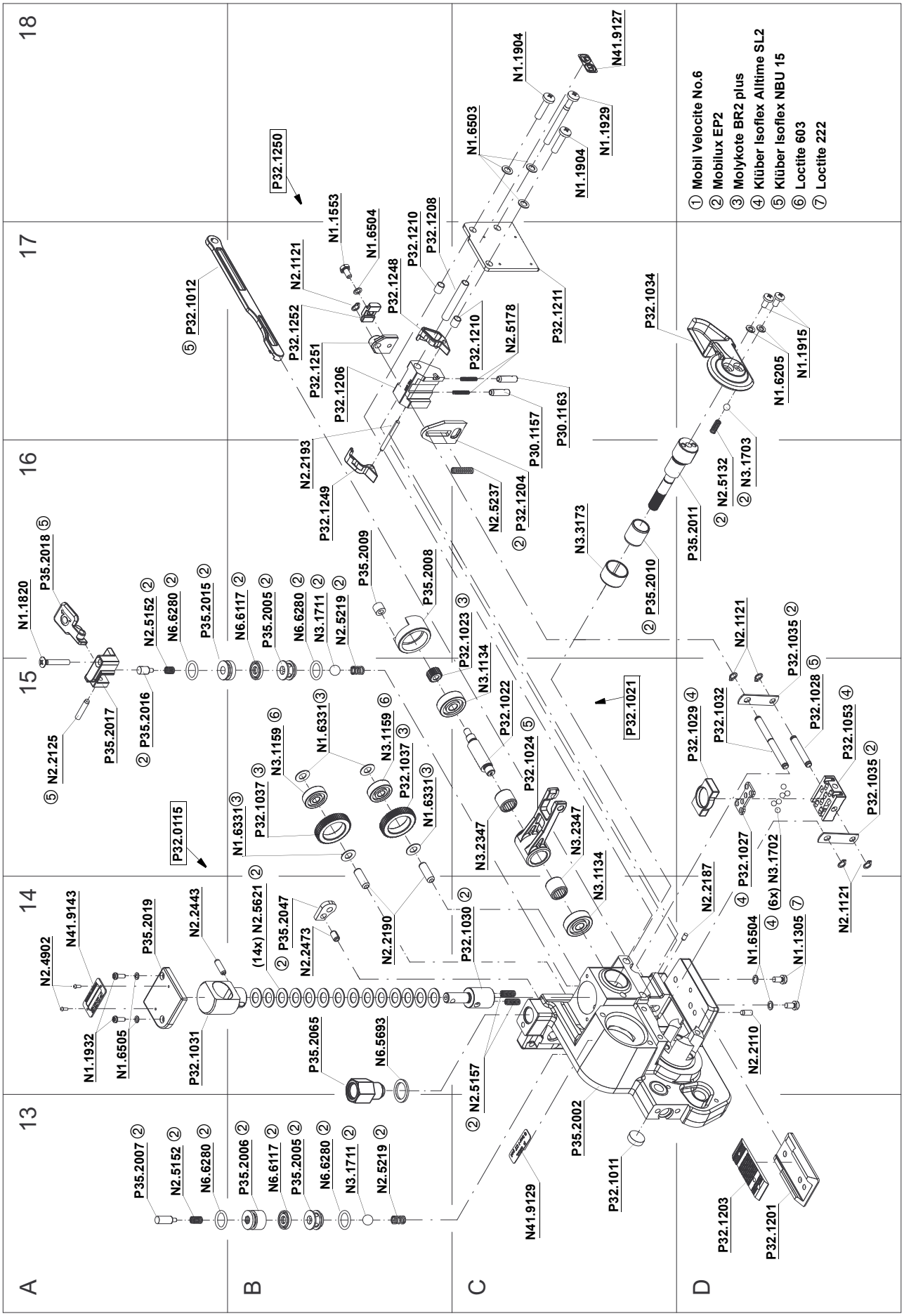
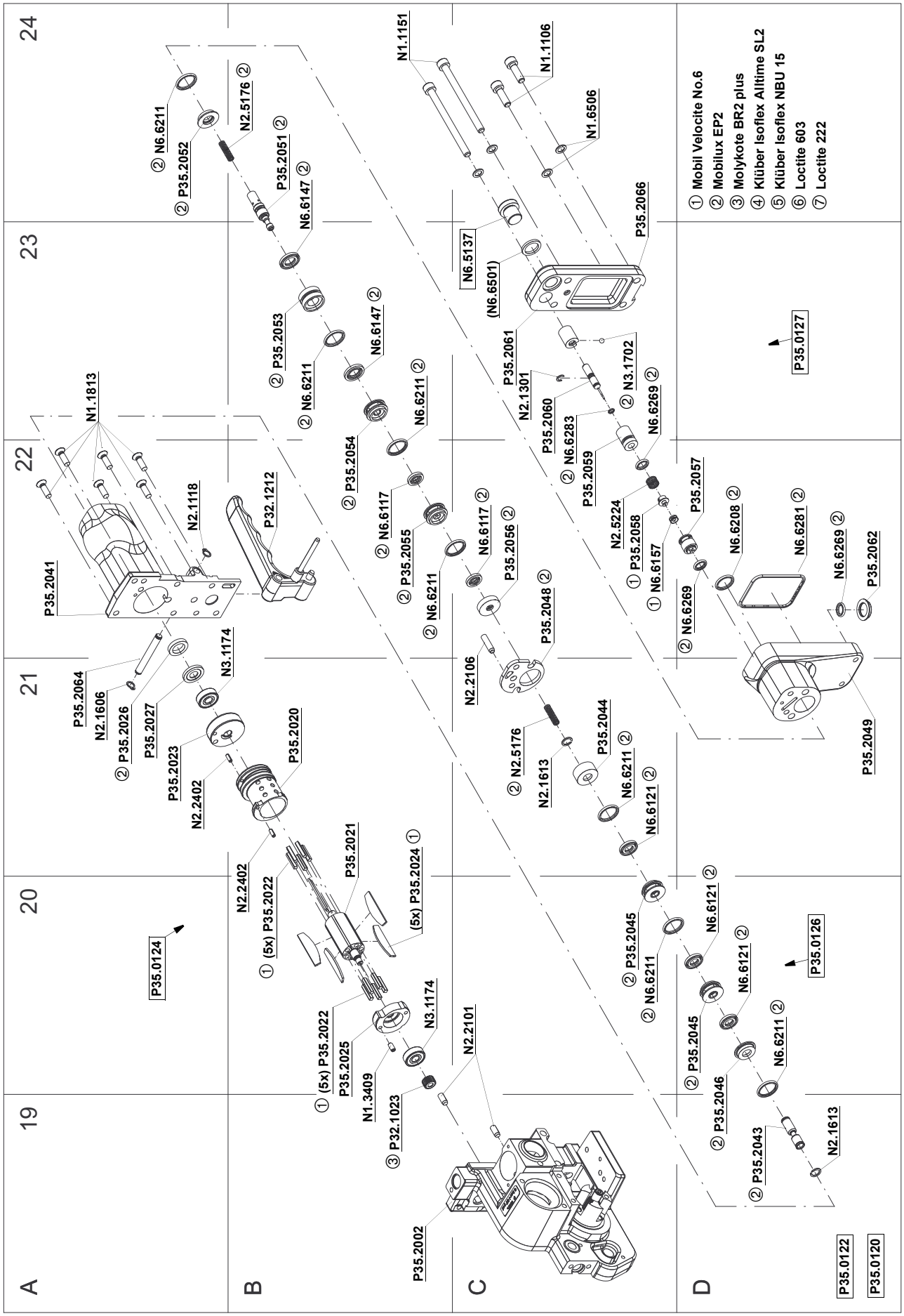
4
5
6







13 SPARE PARTS LIST 49.0323.01

49.0323.01	P355/12.7/0.40-0.64		P355.0001.01		01.07.04
Item-No.	in group	Pcs.	Description	Dimension	Field
N1.1106	P35.0127	2	SCREW	M6 X 20	C24
N1.1151	P35.0122	2	SCREW	M6 X 80	B24
N1.1305		2	SCREW	M4 X 7.8	D14
N1.1553	P32.1250	1	HEXAGON SCREW	M4 X 8	B17
N1.1813	P35.0120	6	SCREW	M5 X 16	A23
N1.1818	P35.0120	2	SCREW	M5 X 20	C6
N1.1820	P35.0120	1	SCREW	M4 X 25	A16
N1.1904		5	SCREW	M5 X 20	D5+
N1.1909		2	FLAT HEAD SCREW	M3 X 5	D2
N1.1915	P35.0120	2	SCREW	M4 X 8	D17
N1.1929		1	SCREW	M5 X 50	C18
N1.1932	P35.0120	2	FLAT HEAD SCREW	M3 X 8	A14
N1.1935	P35.0120	4	FLAT HEAD SCREW	M4 X 35	B7
N1.1936	P35.0120	2	FLAT HEAD SCREW	M4 X 45	C7
N1.2110	P35.0125	2	COUNTERSUNK SCREW	M5 X 16	--
N1.2112	P32.0118	3	COUNTERSUNK SCREW	M4 X 10	B9
N1.2216		1	COUNTERSUNK SCREW	M3 X 8	D3
N1.2223		1	COUNTERSUNK SCREW	M3 X 6	C4
N1.3128	P35.0120	1	SOCKET SET SCREW	M4 X 8	B8
N1.3409	P35.0123	1	SOCKET SET SCREW	M4 X 8	A3
N1.3409	P35.0124	1	SOCKET SET SCREW	M4 X 8	B19
N1.5105	P35.0125	2	HEXAGON NUT	M8	--
N1.6173	P35.0120	1	WASHER	5.3 X 9 X 1	A11
N1.6205	P35.0120	2	SPRING LOCK WASHER	M4	D17
N1.6312	P35.0120	1	SUPPORTING DISK	8 X 14 X 1.2	A12
N1.6331	P35.0120	6	SPACER WASHER	6 X 12 X 0.5	D9+
N1.6344	P35.0120	1	SPACER PIECE	6.3 X 15 X 5	C11
N1.6503		6	SAFETY WASHER	M5	D4+
N1.6504		2	SAFETY WASHER	M4	D14
N1.6504	P32.1250	1	SAFETY WASHER	M4	B17
N1.6504	P35.0120	6	SAFETY WASHER	M4	C7
N1.6505		2	SAFETY WASHER	M3	D2+
N1.6505	P35.0120	2	SAFETY WASHER	M3	A14
N1.6506	P35.0122	2	SAFETY WASHER	M6	C24
N1.6506	P35.0127	2	SAFETY WASHER	M6	C24
N21.2105	P35.0120	1	PARALLEL PIN	6 m6 X 40	B11
N2.1107	P35.0120	1	SECURITY RING	8	A12
N2.1118		1	SECURITY RING	6	A21+
N2.1121		1	SECURITY RING	5	B17
N2.1121	P35.0120	4	SECURITY RING	5	D14+
N2.1301	P35.0127	1	CIRCLIP	6	C23
N2.1606		1	SPRING RING	SW6	A21
N2.1610	P35.0120	1	SPRING RING	SB44	A9
N2.1613	P35.0126	2	SPRING RING		D19+
N2.1805	P35.0120	1	TENSIONING RING	6	C10
N2.2101	P35.0122	2	PARALLEL PIN	5 m6 X 12	C20
N2.2106	P35.0122	1	PARALLEL PIN	5 m6 X 20	C21
N2.2110	P35.2001	1	PARALLEL PIN	4 m6 X 10	D14
N2.2125	P35.0120	1	PARALLEL PIN	4 m6 X 20	A15
N2.2145	P32.0118	3	PARALLEL PIN	4 h6 X 18	B10
N2.2187	P32.0110	2	PARALLEL PIN	3 m6 X 6	C4
N2.2187	P35.2001	1	PARALLEL PIN	3 m6 X 6	D14

[ ] = Group * = Wearing parts

49.0323.01	P355/12.7/0.40-0.64		P355.0001.01		01.07.04
Item-No.	in group	Pcs.	Description	Dimension	Field
N2.2188	P35.2001	3	PARALLEL PIN	5 h6 X 34	B2
N2.2189	P32.0136	4	PARALLEL PIN	3 m6 X 5	D2
N2.2190	P35.0120	2	PARALLEL PIN	6 h6 X 18	B14
N2.2193		1	PARALLEL PIN	3 m6 X 32	B16
N2.2402	P35.0123	2	DOWEL PIN	3 X 8	A4
N2.2402	P35.0124	2	DOWEL PIN	3 X 8	B20+
N2.2443	P32.0115	1	DOWEL PIN	4 X 15	A14
N2.2473	P35.2001	1	DOWEL PIN	5 X 8	B14
N2.3342	P35.0120	1	FEATHER KEY	2 X 2 X 10	D1
N2.4902		4	HAMMER HEAD BOLT	1.85 X 4.76	C4+
N2.5132	P35.0120	1	PRESSURE SPRING	0.5 X 4 X 16/9.5	D16
N2.5152	P35.0120	2	PRESSURE SPRING	0.5 X 4.9 X 15/9.5	A13+
N2.5157	P35.0120	2	PRESSURE SPRING	0.6 X 4.8 X 20/15.5	C14
N2.5176	P35.0122	1	PRESSURE SPRING	0.6 X 5.5 X 31/17.5	C21
N2.5176	P35.0127	1	PRESSURE SPRING	0.6 X 5.5 X 31/17.5	B24
N2.5178		2	PRESSURE SPRING	0.32 X 2.82 X 20.5/20.5	C17
N2.5192	P35.0120	1	PRESSURE SPRING	0.7 X 8 X 28/8.5	A11
N2.5219	P35.0120	2	PRESSURE SPRING	0.7 X 5.7 X 12/6	B13+
N2.5224	P35.0127	1	PRESSURE SPRING	0.5 X 9 X 17/6.5	C22
N2.5237		1	PRESSURE SPRING	0.8 X 4.8 X 25/18.5	C16
N2.5259	P35.0120	1	PRESSURE SPRING	0.9 X 5.9 X 36.5/21.5	C9
N2.5621	P32.0115	14	CUP SPRING	15 X 8.2 X 0.7	B14
N2.5623	P35.0125	2	CUP SPRING	20 X 8.2 X 1/1.55	--
N2.5822	P35.0120	1	TORSION SPRING	1.25 X 12/3.75	C10
N2.5823		1	TORSION SPRING	2.8 X 17/4	D3
N3.1134	P32.1021	1	BALL BEARING	7 X 22 X 7	C15
N3.1134	P35.0120	1	BALL BEARING	7 X 22 X 7	C14
N3.1157	P32.0118	1	BALL BEARING	30 X 42 X 7	B10
N3.1159	P35.0120	2	BALL BEARING	6 X 19 X 6	B15
N3.1160	P32.0119	1	BALL BEARING	40 X 52 X 7	A8
N3.1172		2	BALL BEARING	30 X 42 X 7	B2+
N3.1174	P35.0123	2	BALL BEARING	7 X 19 X 6	A3+
N3.1174	P35.0124	2	BALL BEARING	7 X 19 X 6	B20+
N3.1178	P32.0120	1	BALL BEARING	35 X 44 X 5	A9
N3.1702	P35.0120	10	BALL	4 MM	C8+
N3.1702	P35.0127	1	BALL	4 MM	C23
N3.1703	P35.0120	1	BALL	5 MM	D16
N3.1711	P35.0120	2	BALL	8 MM	B13+
N3.2105	P32.0118	3	NEEDLE CAGE	K 4 X 7 X 7 TN	B9
N3.2106		3	NEEDLE CAGE	K 5 X 8 X 10 TN	B3
N3.2346	P32.0110	1	NEEDLE CASE	8 X 12 X 8	C3
N3.2347	P35.0120	2	NEEDLE BUSH	10 X 14 X 12	C15
N3.3172	P32.0136	3	SLIDE-BEARING	8 X 10 X 10	C2
N3.3172	P35.2001	1	SLIDE-BEARING	8 X 10 X 10	C1
N3.3173	P35.2001	1	SLIDE-BEARING	17 X 19 X 12	C16
N3.3174	P35.2039	1	SLIDE-BEARING	4 X 5.5 X 6	D9
N3.4509	P35.2035	1	NEEDLE FREE WHEELING	6 X 10 X 15	D9
N41.9127		1	ADHESIVE LABEL	20 X 10 X 0.1	C18
N41.9129		1	ADHESIVE LABEL	p max. 6 bar/87 psi	C13
N41.9143		1	TYPE PLATE	>>P355<<	A14
N4.9108		1	ADHESIVE LABEL	54 X 12 X 0.1	C10
N4.9159		1	LABEL	<<CE>>	C4
N5.2702	P35.0120	2	COVER		A10+
[N6.5137]	P35.0127	1	SEALING SCREW		C23

[ ] = Group

* = Wearing parts

49.0323.01	P355/12.7/0.40-0.64			P355.0001.01		01.07.04
Item-No.		in group	Pcs.	Description	Dimension	Field
N6.5693		P35.0120	1	PACKING RING		B14
N6.6117		P35.0120	2	SEAL	6 X 13 X 2.3	B13+
N6.6117		P35.0127	2	SEAL	6 X 13 X 2.3	B22+
N6.6121		P35.0126	3	SEAL	8 X 15 X 2.3	D20+
N6.6147		P35.0127	2	SEAL	10 X 17 X 2.3	B23+
N6.6157		P35.0127	1	PACKING RING	4 MM	C22
N6.6163		P35.0134	1	SEAL	10 X 13.6 X 2.3	A11
N6.6208		P35.0127	1	O-RING	14 X 2	D22
N6.6211		P35.0126	3	O-RING	16 X 2	C20+
N6.6211		P35.0127	4	O-RING	16 X 2	B22+
N6.6212		P35.0125	1	O-RING	8 X 1	--
N6.6214		P35.0120	1	O-RING	23 X 2	C10
N6.6235		P35.0134	2	O-RING	12 X 2	A11
N6.6237		P35.0120	1	O-RING	33 X 1.5	B6
N6.6268		P35.0134	1	O-RING	6 X 2.5	B11
N6.6269		P35.0127	3	O-RING	8.5 X 2.0	D22+
N6.6280		P35.0120	4	O-RING	11 X 2	A13+
N6.6281		P35.0127	1	O-RING	54 X 2	D22
N6.6282		P35.0120	1	O-RING	14 X 1.5	C11
N6.6283		P35.0127	1	O-RING	4 X 1	C23
N6.6501		N6.5137	1	FLAT SEAL	18 X 13 X 2	C23
P30.1157			1	GUIDE PIN		C17
P30.1163			1	GUIDE PIN		C17
[P32.0110]			1	END COVER		B4
[P32.0115]		P35.0120	1	SPRING PACKAGE		A15
[P32.0118]		P35.0120	1	IDLER STEP		B8
[P32.0119]		P35.0120	1	SPUR WHEEL		A7
[P32.0120]		P35.0120	1	WHEEL		A9
[P32.0136]			1	TENSIONING BODY		D1
P32.1011		P35.0120	2	FELT		D10+
P32.1012		P35.0120	1	COUPLER		A17
[P32.1021]		P35.0120	1	WELDING EXCENTRIC		C15
P32.1022		P32.1021	1	WELDING EXCENTRIC		C15
P32.1023		P32.1021	1	PINION		C16
P32.1023		P35.0124	1	PINION		B19
P32.1024		P35.0120	1	ROCKER		C15
P32.1027		P35.0120	1	BALL CAGE		D15
P32.1028		P35.0120	1	BOLT		D15
P32.1029		P35.0120	1	THRUST PIECE		D15
P32.1030		P32.0115	1	SPRING BOLT		C14
P32.1031		P32.0115	1	SPRING SLIDE		A14
P32.1032		P35.0120	1	DRIVING PIN		D15
P32.1034		P35.0120	1	LEVER		C17
P32.1035		P35.0120	2	DRIVER		D15+
P32.1037		P35.0120	2	SPUR WHEEL		B15
P32.1044		P32.0118	1	PLANET SHAFT		B10
P32.1046		P32.0118	3	IDLER GEAR		B9
P32.1047		P32.0118	1	COVER		B9
P32.1048		P32.0120	1	WHEEL		A9
P32.1049		P32.0119	1	SPUR WHEEL		A8
P32.1050		P35.0120	1	FRONT TOGGLE LINK		C1
P32.1051		P35.0120	1	LEVER		C11
P32.1053	*	P35.0120	1	WELDING GRIPPER		D15
P32.1123		P35.0123	1	PINION		A3

[ ] = Group

* = Wearing parts

49.0323.01	P355/12.7/0.40-0.64			P355.0001.01		01.07.04
Item-No.		in group	Pcs.	Description	Dimension	Field
P32.1201			1	STEEL INSERT		D13
P32.1203	*		1	WELDING STOP GRIPPER		D13
P32.1204	*		1	CUTTER		C16
P32.1206			1	GUIDE CASE		B17
P32.1208			1	CENTERING SLEEVE		B17
P32.1210			2	CENTERING SLEEVE		B17+
P32.1211			1	COVER		C17
[P32.1212]			1	HANDLE LEVER		B22
P32.1216			1	PRESSURE ROLLER		D1
P32.1217			3	IDLER GEAR		B3
P32.1218			3	DOWEL		B3
P32.1219	*		1	TENSIONING WHEEL		B3
P32.1222	*		1	GRIPPER		C3
P32.1223	*		1	GRIPPER		C3
P32.1224	*		1	GRIPPER		C3
P32.1228			1	HOLDER		C3
P32.1229			1	HOLDER		C2
P32.1233			1	STRAP STOP		D3
P32.1238		P32.0110	1	END COVER		C3
P32.1242			1	STRAP GUIDE		C3
P32.1248			1	SEESAW LEVER		B17
P32.1249			1	SEESAW LEVER		B16
[P32.1250]			1	COUPLER		B18
P32.1251		P32.1250	1	COUPLER		B17
P32.1252		P32.1250	1	THRUST PIECE		B17
P32.1254		P32.0136	1	TENSIONING BODY		D2
[P35.0120]			1	BASE MODEL		D19
[P35.0122]		P35.0120	1	HANDLE HOUSING		D19
[P35.0123]		P35.0120	1	MOTOR CELL		A5
[P35.0124]		P35.0122	1	MOTOR CELL		A20
[P35.0125]			1	SUSPENSION		--
[P35.0126]		P35.0122	1	VALVE		D20
[P35.0127]		P35.0122	1	VALVE HEAD		D23
[P35.0134]		P35.0120	1	VALVE		A10
P35.1344		P35.0120	1	SLIDE GATE		C9
[P35.2001]		P35.0120	1	BODY		A1
[P35.2002]		P35.2001	1	BODY		A2
P35.2004		P35.2001	1	SWIVEL SHAFT		C1
P35.2005		P35.0120	2	EXHAUST RING		B13+
P35.2006		P35.0120	1	GUIDE		B13
P35.2007		P35.0120	1	TOUCH BOLT		A13
P35.2008		P35.0120	1	BEARING SUPPORT		B16
P35.2009		P35.0120	1	TORSIONAL STOP		B16
P35.2010		P35.0120	1	INNER RACEWAY		C16
P35.2011		P35.0120	1	ECCENTRIC SHAFT		D16
[P35.2012]		P35.0120	1	RATCHET WHEEL		A12
P35.2013		P35.0120	1	CAM		A11
P35.2014		P35.0120	1	COLLAR SCREW		A11
P35.2015		P35.0120	1	GUIDE		A16
P35.2016		P35.0120	1	TOUCH BOLT		A15
P35.2017		P35.0120	1	LEVER BODY		A15
P35.2018		P35.0120	1	TENSIONER VALVE LEVER		A16
P35.2019		P35.0120	1	COVER		A14
P35.2020		P35.0123	1	JACKET		A3

[ ] = Group

* = Wearing parts

49.0323.01	P355/12.7/0.40-0.64			P355.0001.01		01.07.04
Item-No.		in group	Pcs.	Description	Dimension	Field
P35.2020		P35.0124	1	JACKET		B21
P35.2021		P35.0123	1	ROTOR		B4
P35.2021		P35.0124	1	ROTOR		B21
P35.2022		P35.0123	10	FELT		B4+
P35.2022		P35.0124	10	FELT		B20
P35.2023		P35.0123	1	END PLATE		B5
P35.2023		P35.0124	1	END PLATE		A21
P35.2024	*	P35.0123	5	VANE		A5
P35.2024	*	P35.0124	5	VANE		B20
P35.2025		P35.0123	1	END PLATE		A4
P35.2025		P35.0124	1	END PLATE		B20
P35.2026		P35.0120	1	SPRING		C5
P35.2026		P35.0122	1	SPRING		A21
P35.2027		P35.0120	1	THRUST PIECE		B5
P35.2027		P35.0122	1	THRUST PIECE		A21
P35.2028		P35.0120	1	MOTOR COVER		B6
[P35.2029]		P35.0134	1	CONTROL ROD		A10
P35.2031		P35.0134	1	END RING		A10
P35.2032		P35.0134	1	VALVE SHELL		A11
P35.2033		P35.0120	1	SHAFT		B11
P35.2034		P35.0120	1	GEAR BODY		D10
[P35.2035]		P35.0120	1	RATCHET WHEEL		D9
P35.2036		P35.2035	1	SPUR WHEEL		D9
P35.2037		P35.0120	1	EXHAUST SILENCER		C10
P35.2038		P35.0120	1	CONTROL HEAD		C9
[P35.2039]		P35.0120	1	GEARING COVER		D8
[P35.2041]		P35.0122	1	HANDLE HOUSING		A22
P35.2043		P35.0126	1	COUPLER		D19
P35.2044		P35.0126	1	SUSTAINING RING		C21
P35.2045		P35.0126	2	SUSTAINING RING		C20+
P35.2046		P35.0126	1	END RING		D19
P35.2047		P35.0120	1	SEAL PLATE		B14
P35.2048		P35.0122	1	SEAL PLATE		C22
[P35.2049]		P35.0127	1	ADAPTOR		D21
P35.2051		P35.0127	1	COUPLER		B24
P35.2052		P35.0127	1	END RING		A24
P35.2053		P35.0127	1	INTERMEDIATE RING		B23
P35.2054		P35.0127	1	SUSTAINING RING		B23
P35.2055		P35.0127	1	SUSTAINING RING		B22
P35.2056		P35.0127	1	END RING		C22
P35.2057		P35.0127	1	THROTTLE SEAT		D22
P35.2058		P35.0127	1	THROTTLE BODY		C22
P35.2059		P35.0127	1	GUIDE		C22
P35.2060		P35.0127	1	THROTTLE SCREW		C23
P35.2061		P35.0127	1	THROTTLE HOLDER		C23
P35.2062		P35.0127	1	DISK		D22
P35.2064			1	HANDLE SHAFT		A21
P35.2065		P35.0120	1	AIR CONNECTION		B14
[P35.2066]		P35.0127	1	COVER		C24
P35.2067		P35.0125	1	BOLT		--
P35.2068		P35.0125	1	FLANGE		--
P35.2069		P35.0125	2	RATCHET DISK		--
[P35.2070]		P35.0125	1	SUSPENSION BRACKET		--
P35.2073		P35.0125	1	DISK		--

[ ] = Group

* = Wearing parts