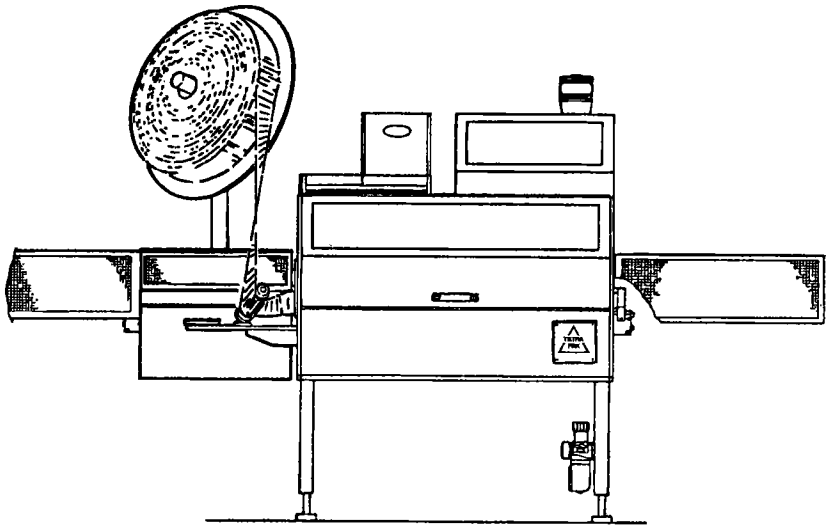


MS
Maintenance System

Tetra Straw Applicator 36
678544-030V
Issue 3/9209

Introduction 000

Drive frame 100

Hot melt unit 200

Electrical equipment 300

Pneumatic system 400

Fault finding 500

600

700

800

900

Tetra Pak
Distribution
Lund Sweden

MS 87697-01

MS 205–11

Main group

Machine function

Action code

1 Checking/lubrication

2 Removal

3 Overhaul/Cleaning

4 Fitting

5 Setting

6 Adjustment during operation

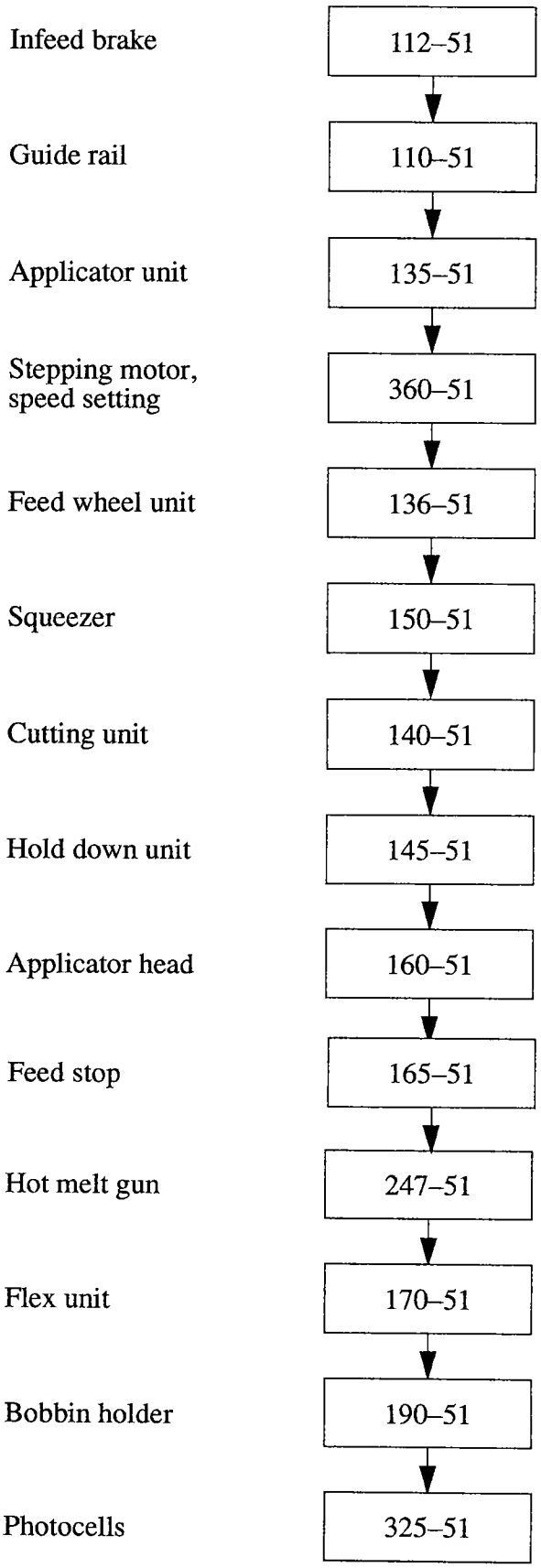
7 Miscellaneous

Consecutive No

WARNING!
Prior to any work done to the machine, it must be depressurized, and electric power switched off (main power switch in position 0).

Whenever welding work is done in the machine, the central unit must be removed, see page MS 335-31.

Synchronization diagram



Description	Issue	Page
External conveyor brake	1/9107	105-11
External conveyor brake, hose – Replacement	1/9107	105-21
External conveyor brake – Setting	1/9107	105-51
Guide rail – Setting	3/9205	110-51
Infeed brake – Removal/Fitting	2/9205	112-21
Infeed brake – Overhaul	2/9205	112-31
Infeed brake – Setting	2/9205	112-51
Applicator unit– Removal/Fitting	1/9107	135-21
Applicator unit – Overhaul	1/9107	135-31
Applicator unit – Setting	1/9107	135-51
Feed wheel unit – Setting	2/9205	136-51:1-3
Cutting unit – Checking	1/9107	140-11
Cutting unit – Replacement	1/9107	140-21
Cutting unit – Overhaul	1/9107	140-31
Cutting unit – Setting	2/9205	140-51
Applicator unit, hold-down unit – Setting	2/9205	145-51
Applicator unit, squeezer – Overhaul	2/9205	150-31
Applicator unit, squeezer – Setting	2/9205	150-51
Applicator head – Setting	2/9110	160-51
Feed stop - setting	1/9205	165-51
Flex unit – Removal	2/9205	170-21
Flex unit – Overhaul	1/9107	170-31

Flex unit – Setting	2/9205	170-51:1-4
Bobbin-holder – Setting	2/9110	190-51

The straw applicator with TPMC is prepared for the use of an external conveyor brake.

The brake is controlled by the TPMC system.

For wiring, see the electrical diagrams.

Replacement

Footnote
The conveyor brake is not included in all installations.

Check the hose (2). If required, replace as follows:

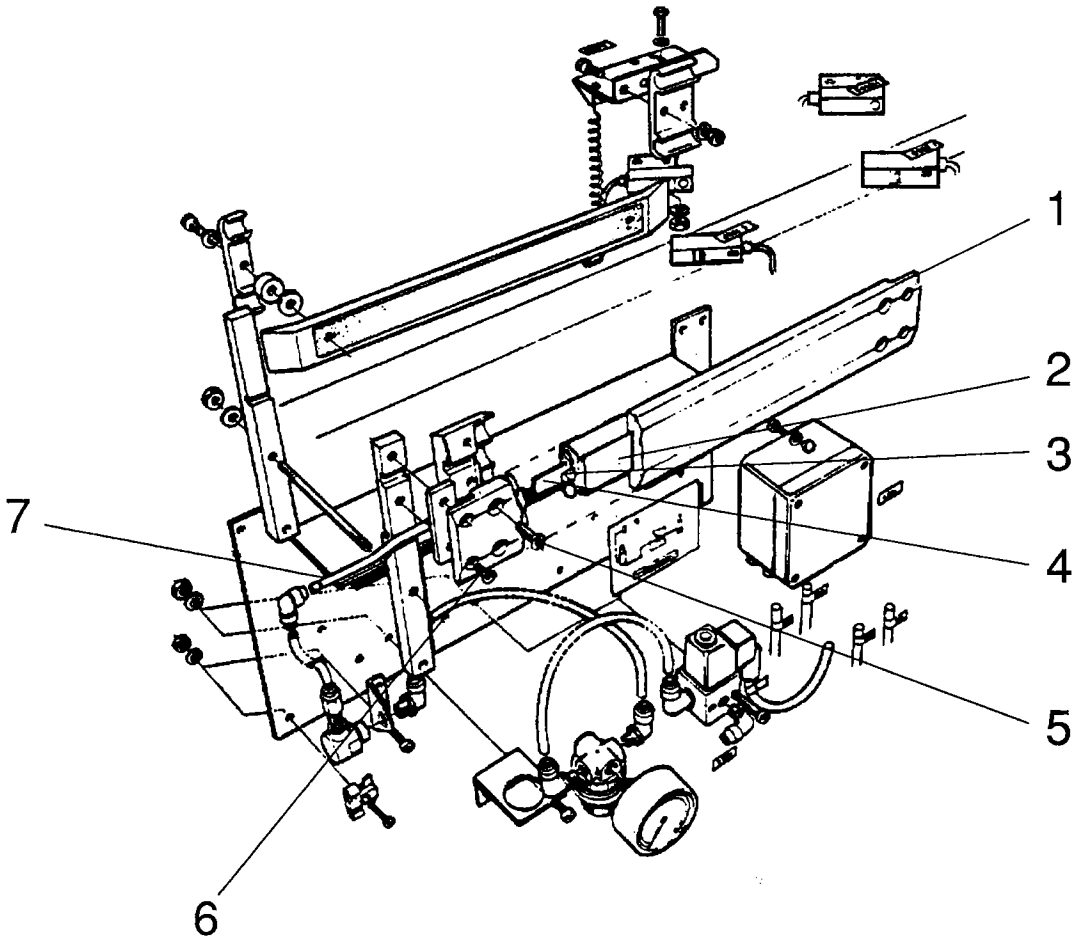
a) Undo the air connections.

b) Undo the screws (6) and remove the entire brake plate (1).

c) Undo the screws (5) and pull the hose (2) out of the brake plate (1). Remove the plug (3), pipe (7), and rails (4).

d) Replace the hose (2).

Reassemble in reverse order.



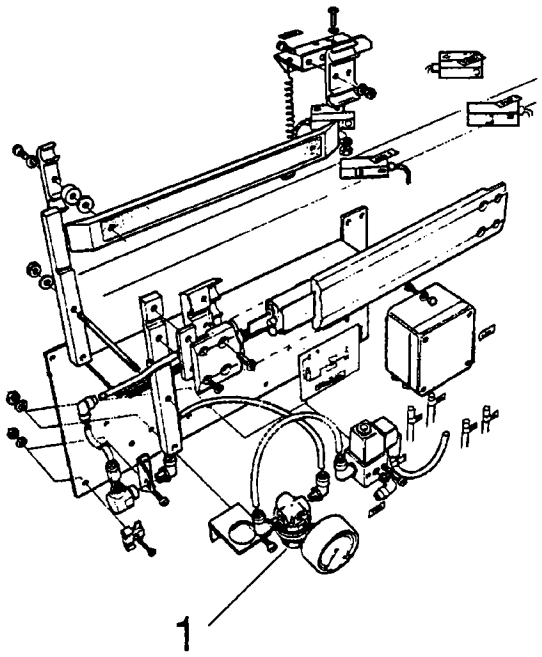
1 Brake plate
2 Hose
3 Plug
4 Rail
5 Screw
6 Screw
7 Pipe

Setting

Footnote
The conveyor brake is not included in all installations.

Distance D = maximum length of queue. Position photocell MB902 (5) so that the distance D not is so long that the infeed brake (2) of the machine cannot hold back the pressure of the queue. The packages will else be deformed by the pressure.

The external conveyor brake (3) should be located so that a queue never exerts pressure through a bend. Photocell MB901 (4), for the purpose of splitting the queue, is to be located at distance A=35 mm from the external brake.



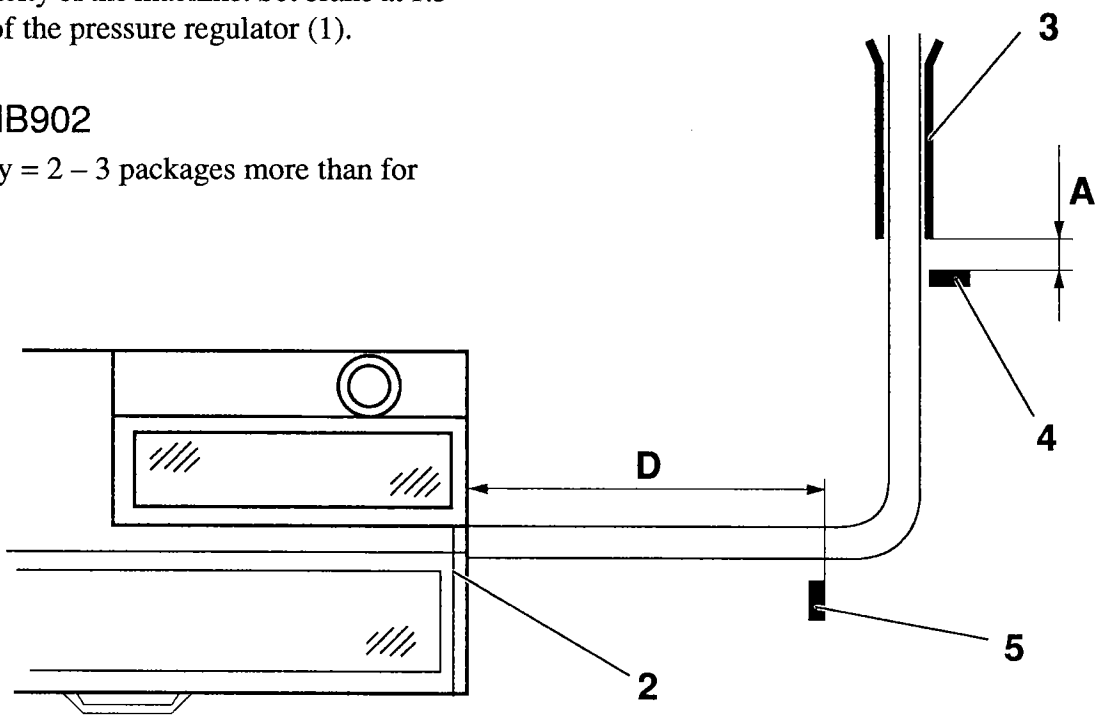
Photocell MB901

Actuation delay = appr 6 – 8 Tetra Brik 250 ml packages.

D actuation delay = gap between groups of packages. Packages + "gap" should correspond to the maximum capacity of the machine. Set brake at 1.5 bar by means of the pressure regulator (1).

Photocell MB902

Actuation delay = 2 – 3 packages more than for MB901.



1 Pressure regulator
2 Infeed brake
3 External conveyor brake
4 Photocell MB901, queue splitting
5 Photocell MB902, maximum queue length

Setting

Check the following measurements between the guide rails:

D = B – 2 mm

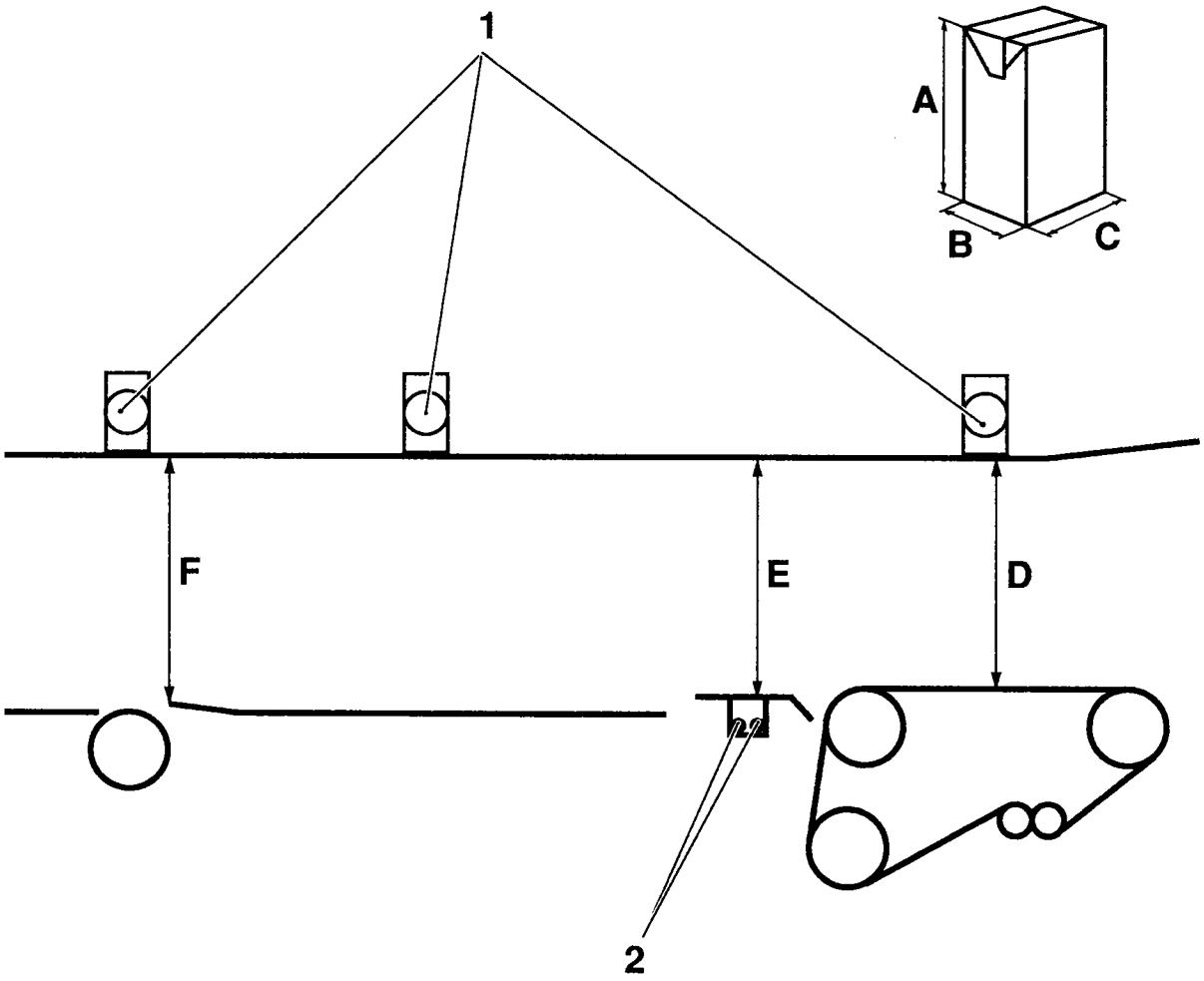
E = B + 2 mm

F = B + 2 mm

a) If required, adjust D and F with screws (1).

b) Adjust E to B + 2 mmwith screws (2).

(Cont'd overleaf)



(Cont'd from previous page)

There are two positions that the guide rail (4) can be placed in.

For volumes 180, 189, 200, 236, 250 and 284 cc the guide rail should be placed in the upper position.

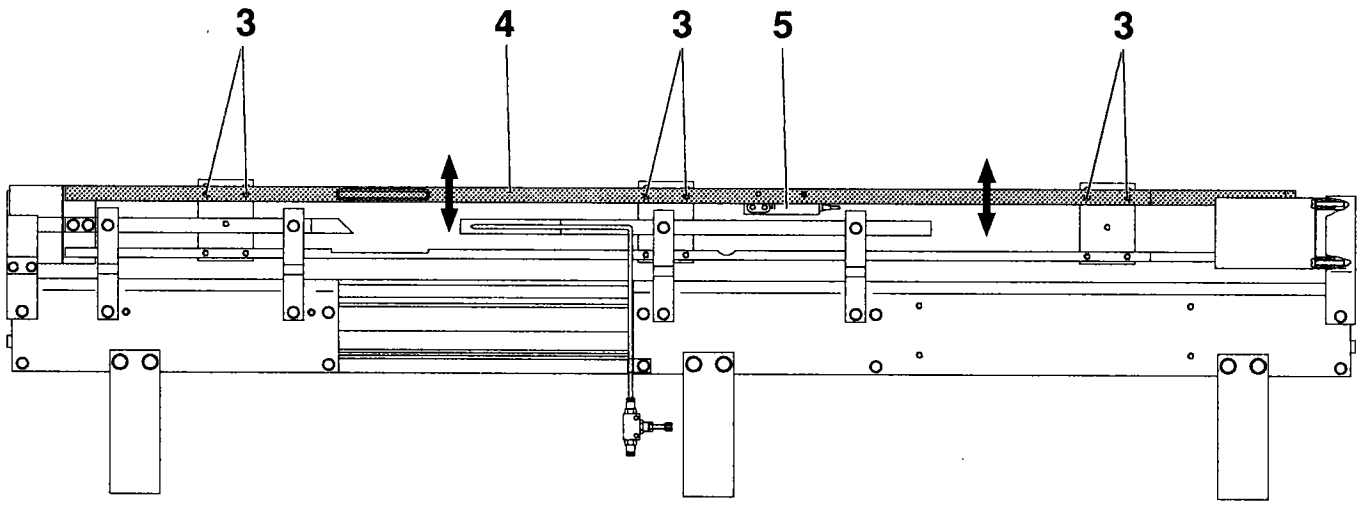
For all other volumes the guide rail should be placed in the lower position.

To adjust, undo the screws (3) and shift the rail.

The photocell MB004 (5) should be mounted in the lower position for volumes 125, 180, 189, 200, 200 slim, 236, 250 and 284 cc.

For all other volumes it should be mounted in the upper position.

3 Screw
4 Guide rail
5 Photocell MB004



Removal/fitting

a) Loosen screws (2) and remove the cover.

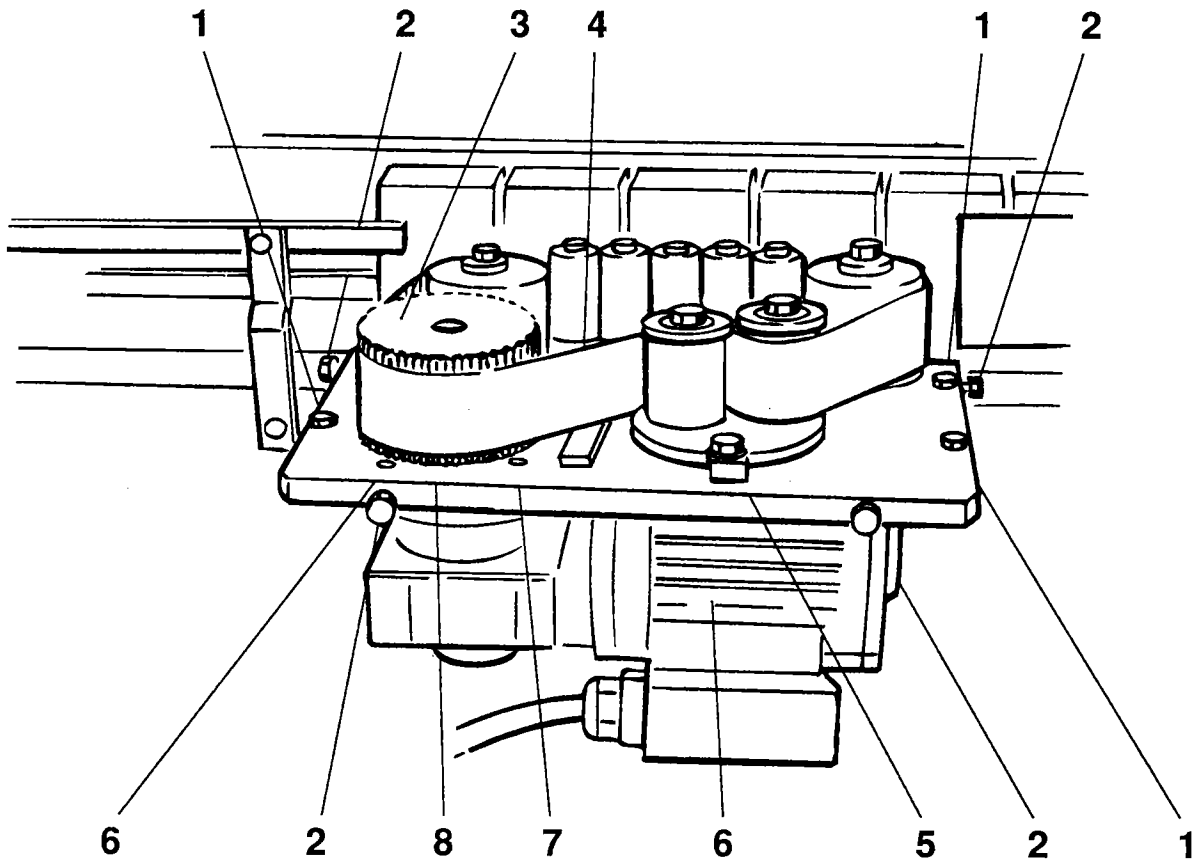
b) Loosen the screw (5), slacken and remove the timing belt (4).

c) Loosen the stop screw (8) and remove the toothed pulley (3).

d) Undo screws (7) and remove the motor MM 001 (6).

e) Undo the four screws (1) and lift out the infeed brake unit.

Reassemble in reverse order.



1 Screw
2 Screw
3 Toothed pulley
4 Timing belt
5 Screw
6 Motor MM001
7 Screw
8 Stop screw

Overhaul

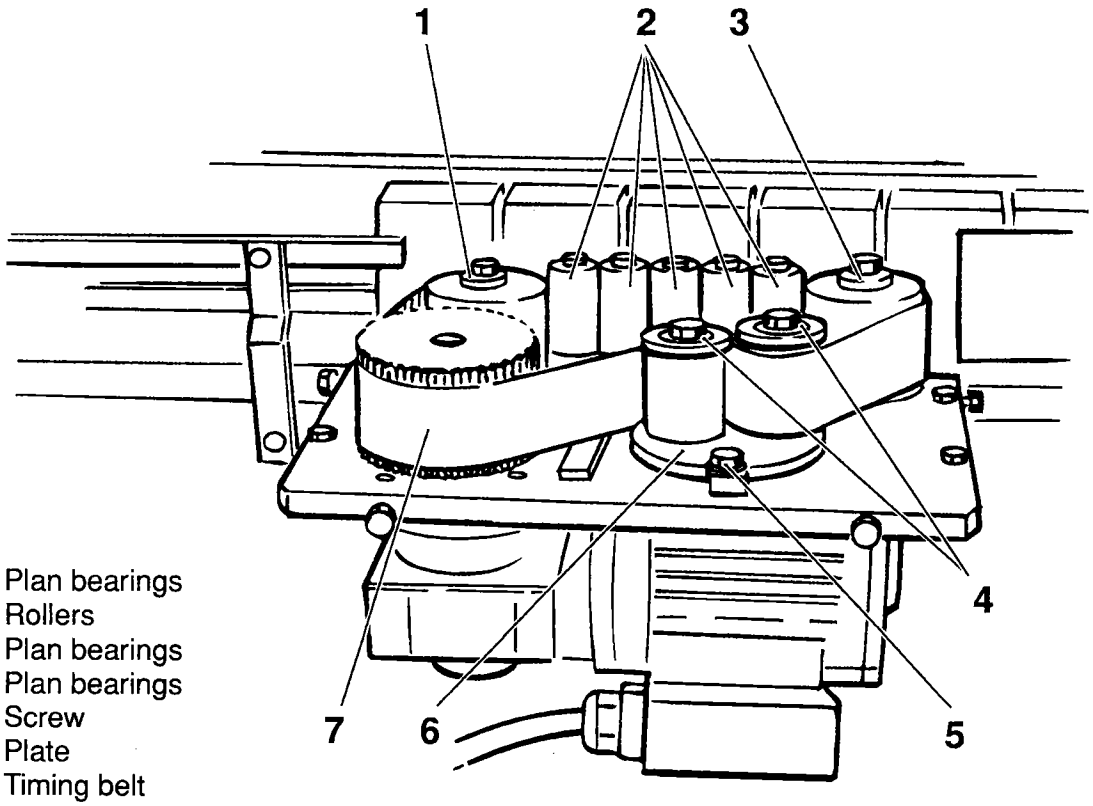
a) Loosen the screw (5), slacken and remove the timing belt (7).

b) Check and if required, replace the timing belt.

c) Check and if required, replace the plan bearings (1), (3) and (4).

d) Check and if required, replace the rollers (2).

e) Retighten the timing belt (7) by turning the plate (6) clockwise. Retighten the screw (5).



1 Plan bearings
2 Rollers
3 Plan bearings
4 Plan bearings
5 Screw
6 Plate
7 Timing belt

Setting.

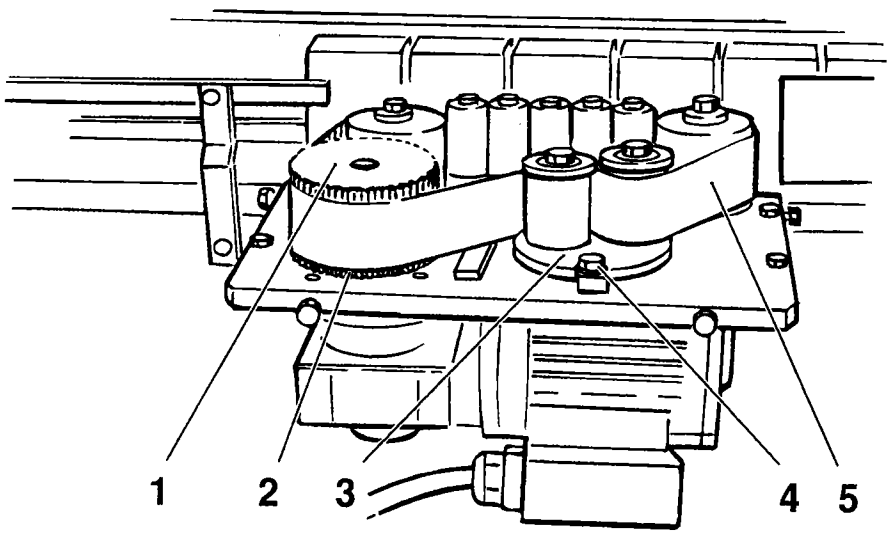
a) Loosen the the screw (4), slacken and remove the timing belt (5).

b) Loosen the stop screw (2) and undo the toothed pulley (1).

c) Change toothed pulley (1) acc to table below:

Packet type	Frequenzy	Type of pulley
125 and 200 slim	50 Hz	975 629
180-375 ml	50 Hz	975 630
355 and 500 slim	50 Hz	975 631
125 and 200 slim	60 Hz	975 632
180-375 ml	60 Hz	975 633
355 and 500 slim	60 Hz	975 630

d) Retighten the timing belt (5) by turning the plate (3) clockwise. Retighten the screw (4).



1 Toothed pulley
2 Stop screw
3 Plate
4 Screw
5 Timing belt

Dismantling

a) Turn out the squeezers (17).

b) Loosen the feed wheel unit (2) by screwing the hand wheel (1) clockwise.

c) Remove the feed wheel unit (2).

d) Loosen screws (4) and remove the cover (6).

e) Loosen the screws (7) and remove the motor (5).

f) Loosen screws (11) and remove the inductive switches (12).

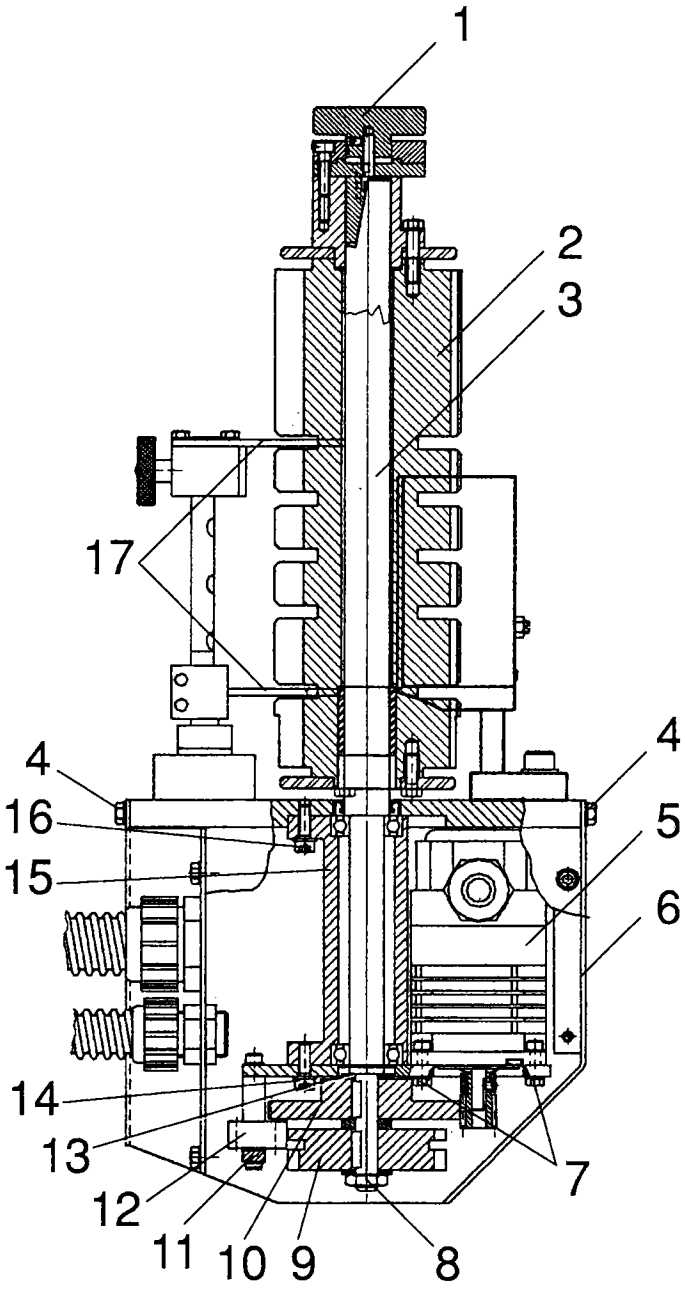
g) Loosen the screws (16) and pull out the shaft (3) together with the index wheel (9) and the gear wheel (10).

h) Loosen the nut (8) and pull out the index wheel (9) and the gear wheel (10).

i) Loosen the circlip (13) and the screws (14).

j) Pull out the shaft (3) from the bracket (15).

Reassemble in reverse order.



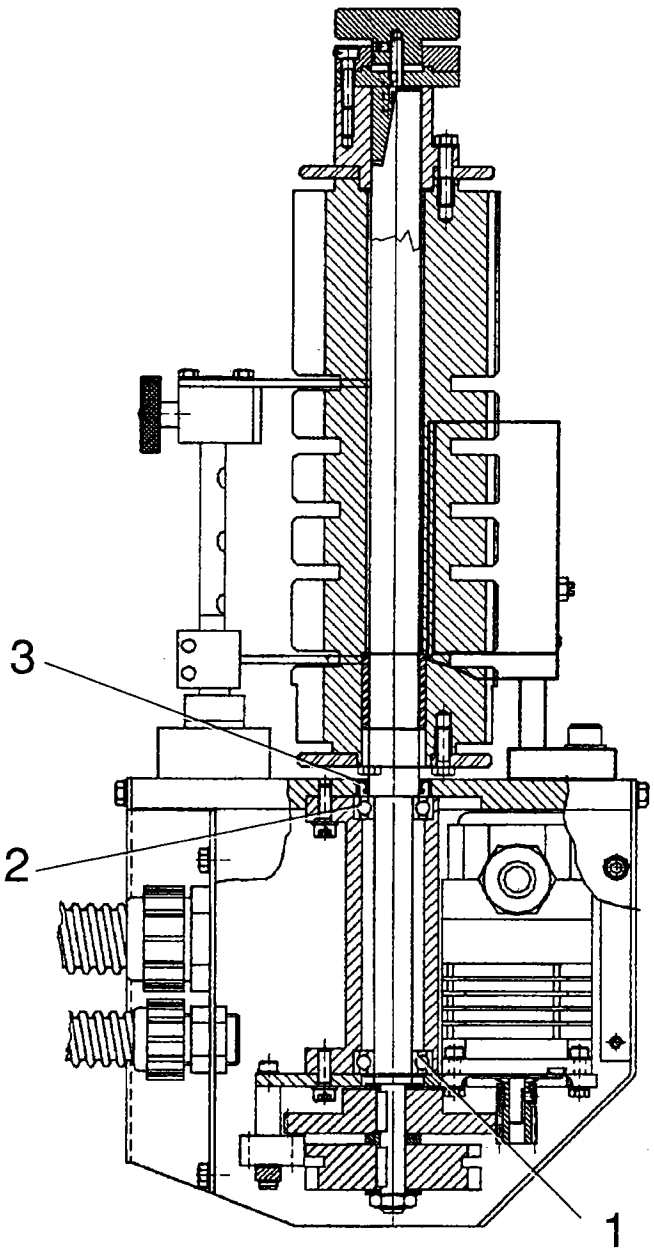
1 Hand wheel
2 Feed wheel unit
3 Shaft
4 Screw
5 Motor
6 Cover
7 Screw
8 Nut
9 Index wheel
10 Gear wheel
11 Screw
12 Indictive switches MB008 and MB009
13 Circlip
14 Screw
15 Bracket
16 Screw
17 Squeezer

Overhaul

a) Replace the ball bearings (1) and (2).

b) Check and if required, replace the sealing (3).

Reassemble in reverse order according to page 135-21.



1 Ball bearing
2 Ball bearing
3 Sealing

Setting

Footnote
Make the setting with both a U- and a S4/5-feed wheel unit if the machine will be running with more than one feed wheel unit. If required, change feed wheel unit.

a) Turn off the air supply.

b) Step up the machine to step 1.

c) Check the clearance between the two gear wheels (4) and (5). If required, alter the position of the step motor (2) by loosening the screws (3).

d) Inductive switches MB008 and MB009 (7) are to be located as close as possible (appr 0.1 mm) to the index wheel (6), without fouling their rotation.

e) Set the feed wheel unit speed, see page 360–51.

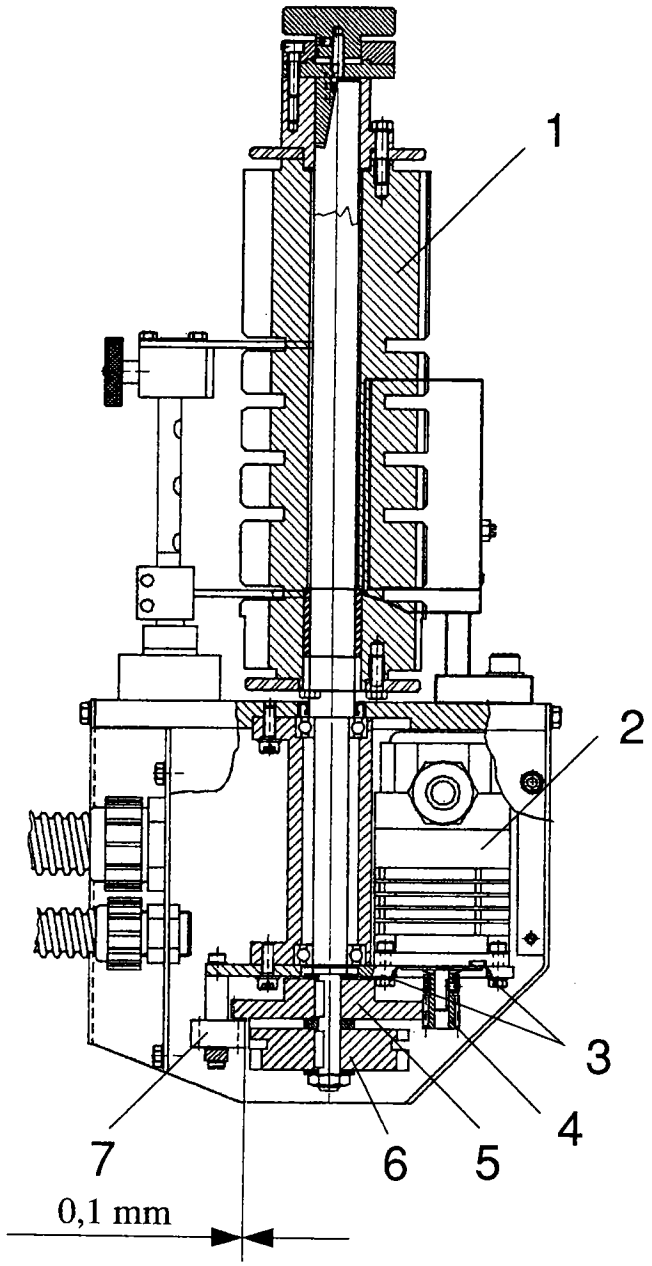
f) Set the feed wheel unit, see page 136-51.

g) Set the squeezer, see page 150-51.

h) Set the cutting unit, see page 140-51.

i) Set the hold down unit, see page 145-51.

j) Change feed wheel unit (1) and repeat item f with this wheel.



1 Feed wheel unit
2 Step motor
3 Screw
4 Gear wheel
5 Gear wheel
6 Index wheel
7 Inductive switches MB008 and MB009

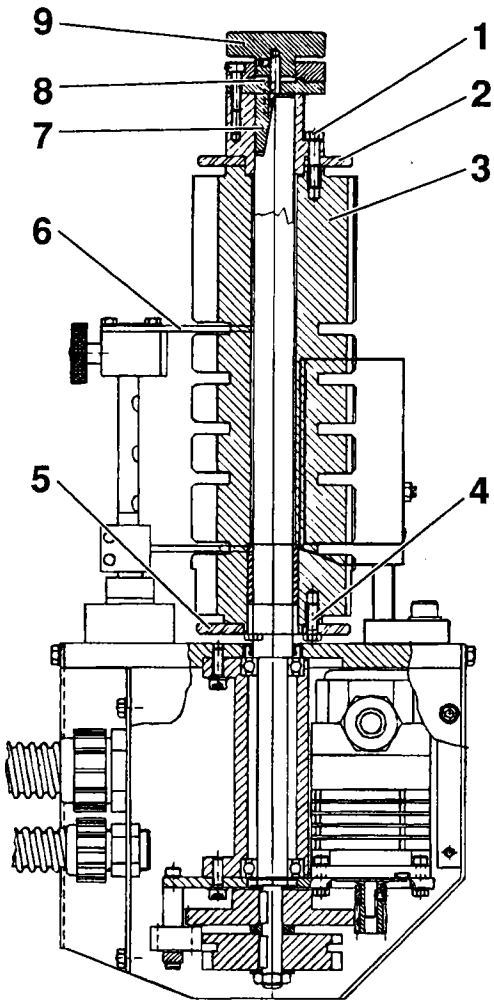
Setting

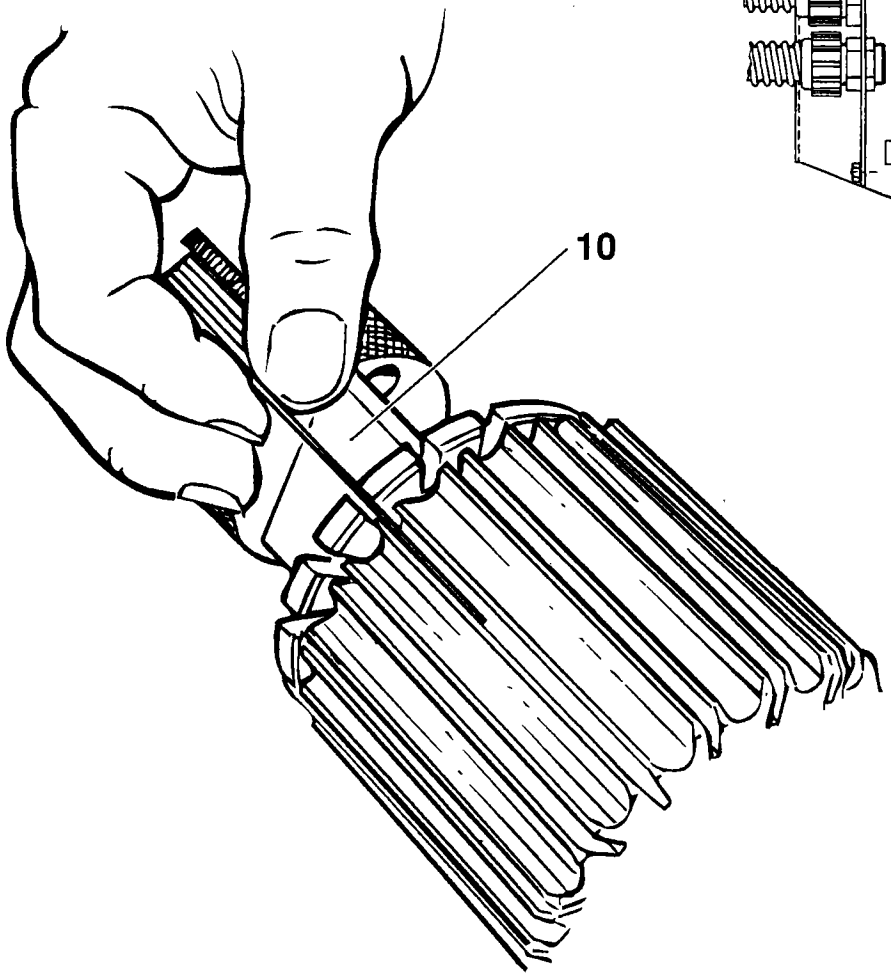
a) Loosen the screws (1).

b) Place a feeler gauge with a thickness of 1.25 mm between the track in the index plate (2) and the track in the feed wheel unit (3), see measuring point (10). Turn the index plate (2) clockwise.

c) Make this measurement to minimum three places. Retighten the screws (1)

(Cont'd overleaf)





1 Screw
2 Index plate
3 Feed wheel unit
4 Screw
5 Index plate
6 Squeezer
7 Key
8 Screw
9 Hand wheel
10 Measuring point

(Cont'd from previous page)

d) Loosen screws (4)

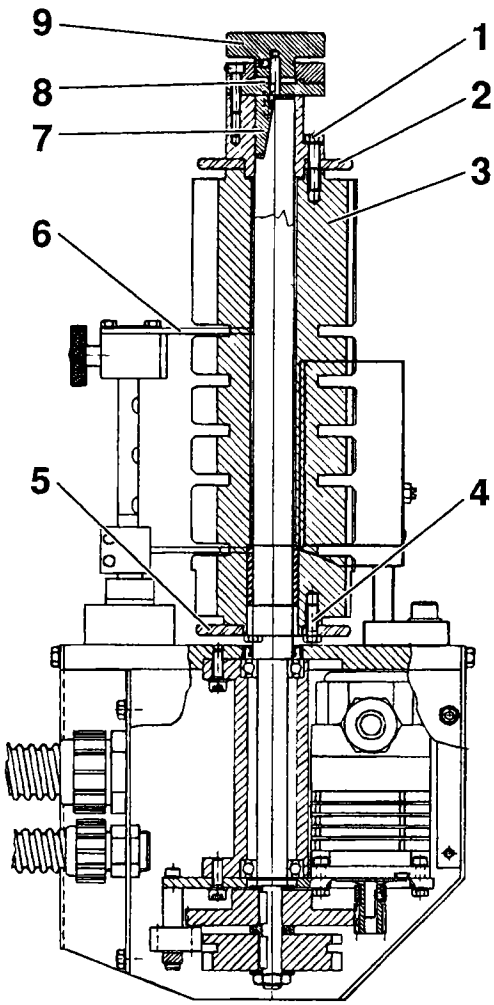
e) Place a feeler gauge with a thickness of 1.25 mm between the track in the index plate (5) and the track in the feed wheel unit (3), see measuring point (11). Turn the index plate (5) **counter clockwise.**

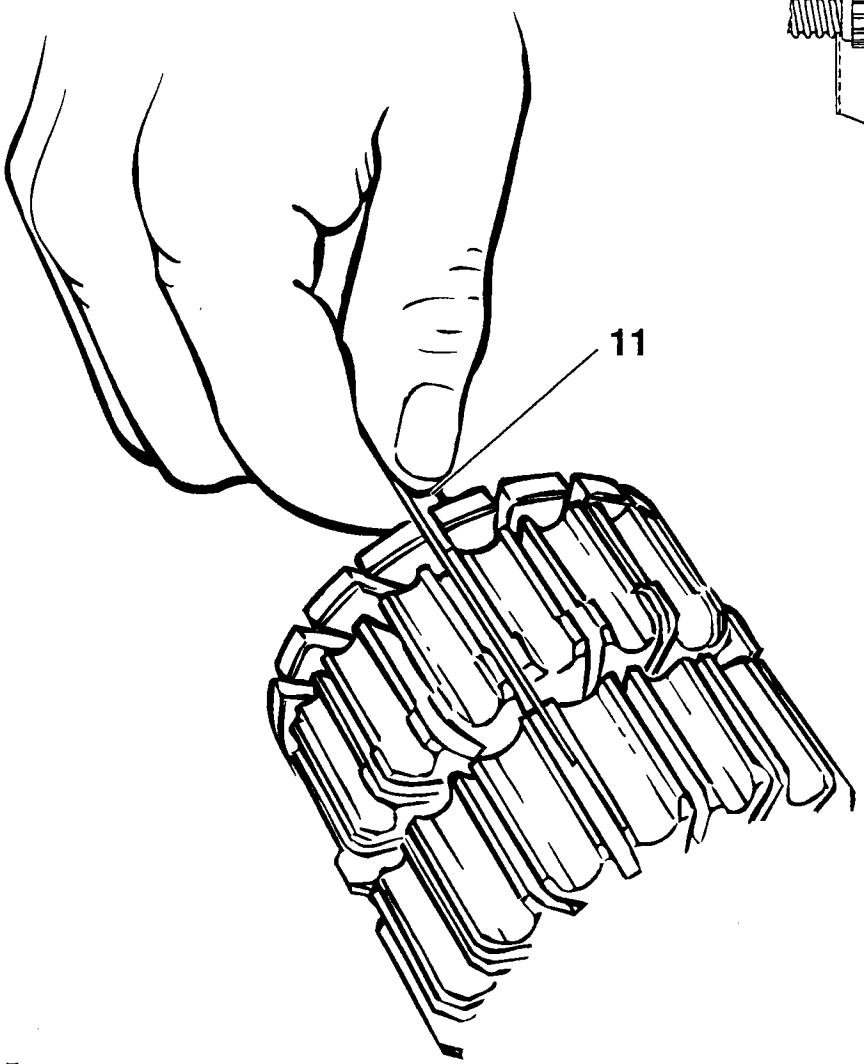
f) Make this measurement to minimum three places. Retighten the screws (4).

g) Place the feed unit on the applicator unit.

h) Check that the upper squeezer (6) is centered into the squeezer track in the feed wheel unit (3). If required, remove the hand wheel (9), loosen screws (8) and adjust the height of the feed wheel unit (3) by moving the key (7) sideways.

(Cont'd overleaf)





1 Screw
2 Index plate
3 Feed wheel unit
4 Screw
5 Index plate
6 Squeezer
7 Key
8 Screw
9 Hand wheel
11 Measuring point

(Cont'd from previous page)

Footnote
Make the first adjustement with a U- or a S4/5-feed wheel unit if the machine will be running with more than one feed wheel unit.

i) Loosen the feed wheel unit (13) by tighten down the hand wheel (12).

j) Loosen and remove the hand wheel (12).

k) Loosen the screws (14).

l) Step up the machine to step 1.

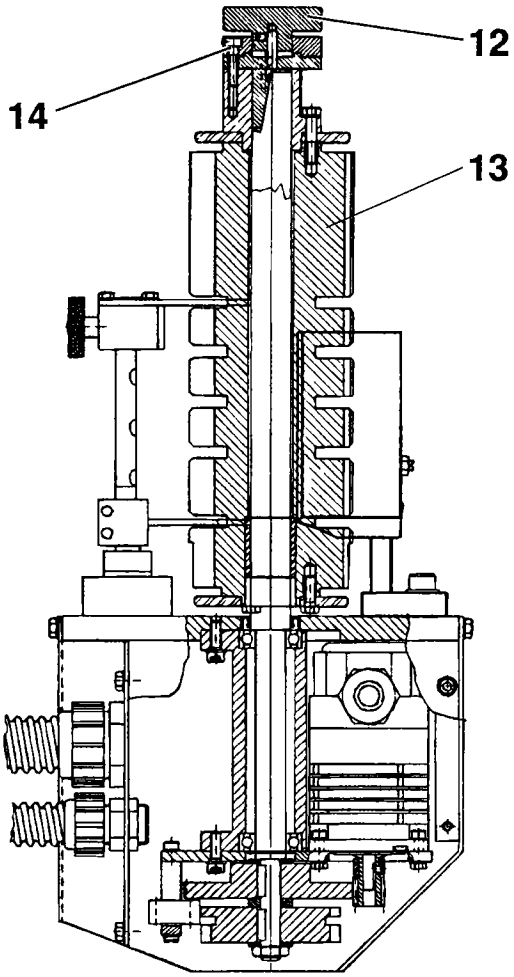
m) Push MANUAL FEED.

Footnote
Set the first feed wheel unit according to item n-o. The remaining according to item p.

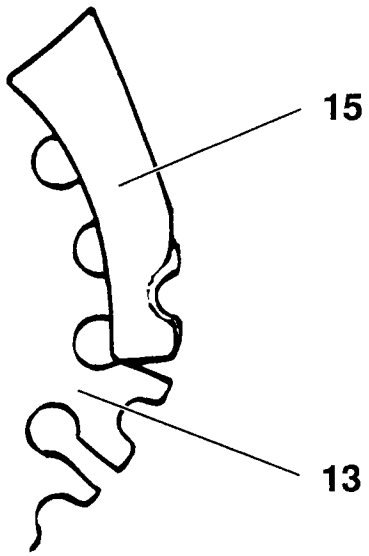
n) Set the feed wheel unit (13) so that the groove in the squeezers (15) and the groove in the feed wheel unit (13) coincide.

o) Retighten the screws (14).

p) If the machine is adjusted for one feed wheel unit, set the remaining feed wheel unit so that the knife is centered into the groove in the feed wheel unit instead of adjusting according to the squeezers.



12 Hand wheel
13 Feed wheel unit
14 Screw
15 Squeezer

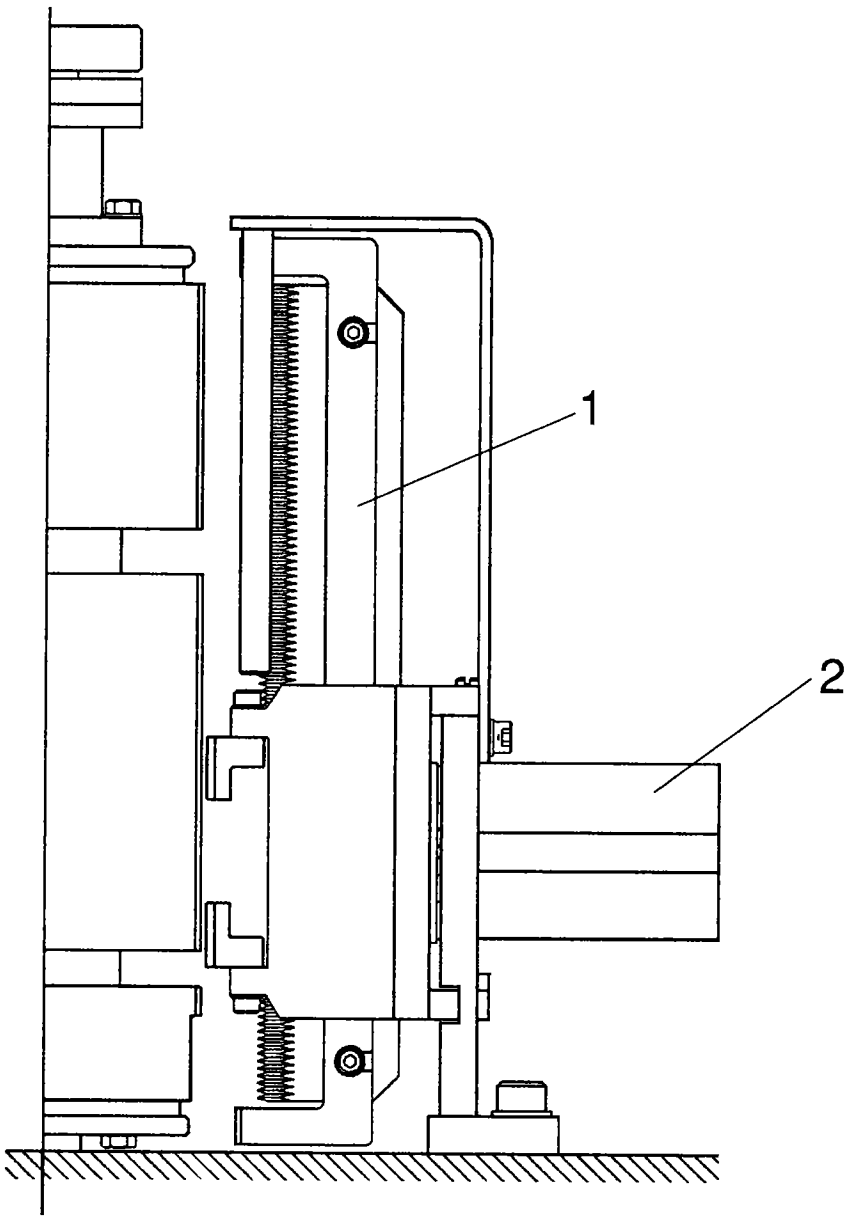


Checking

a) Check that both plus and minus movement of cylinder C04 (2) are rapid.

b) Check that:

– the cutting unit (1) functions satisfactorily,
– the air connections of the cylinder are tight.



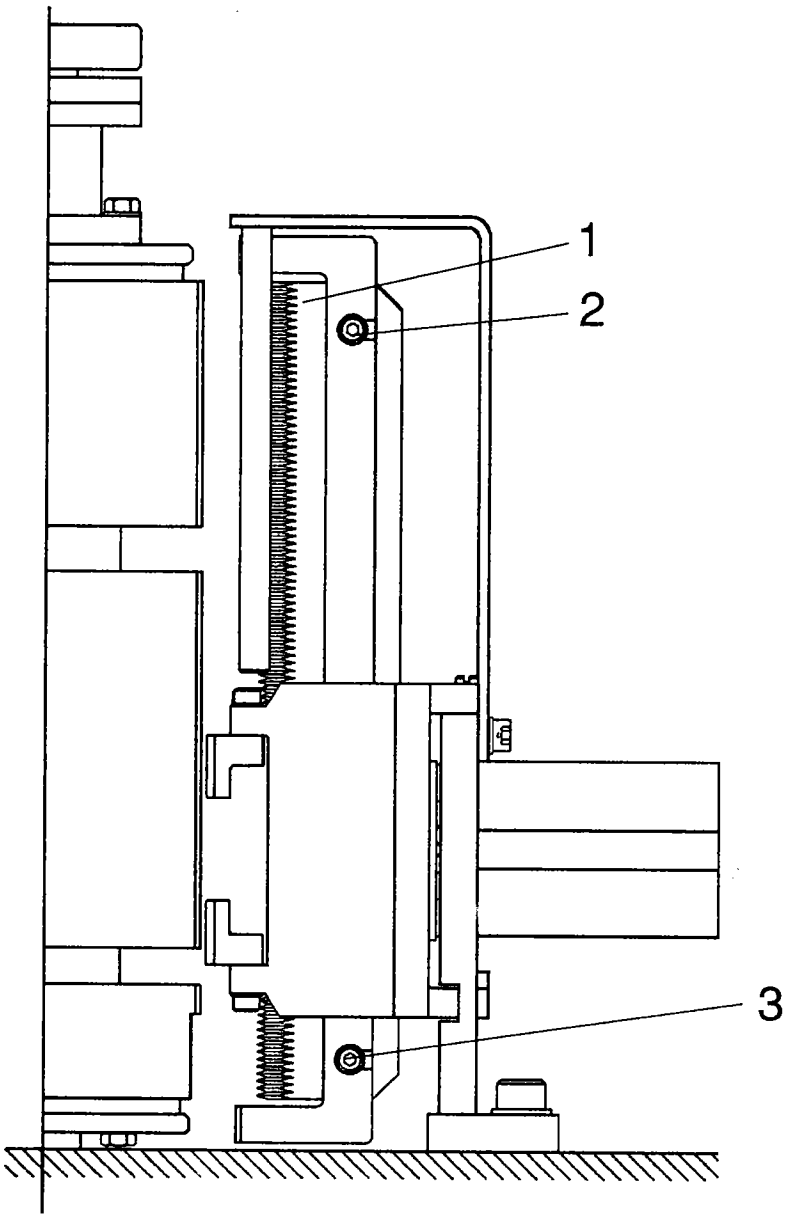
1 Cutting unit
2 Cylinder C04

Replacement

a) Turn off the air supply.

b) Undo the screws (2) and (3) and remove the knife (1).

Fit a new knife in reverse order.



1 Knife
2 Screw
3 Screw

Overhaul

a) Turn off the air supply.

b) Disconnect the air connections (2) of the cylinder (3).

c) Loosen screws (5) and place the unit on a table.

d) Undo the screws (1) and (6) and move the knife holder (8) with the plastic cantilever (4) forward.

e) Undo the screws (10) and remove the knife holder (8) and the plastic cantilever (4).

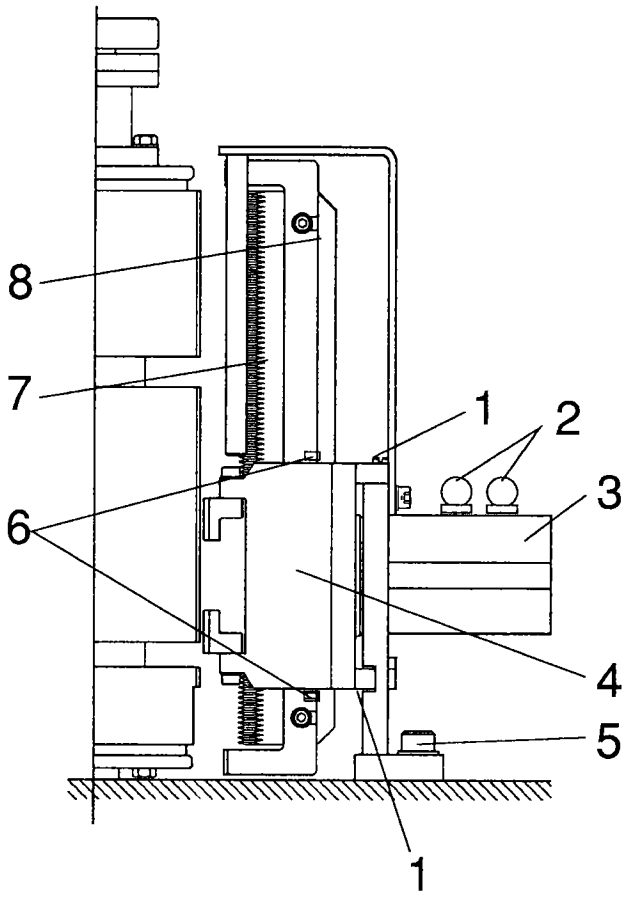
f) Check the knife (7). Loosen the screws (11) and replace the knife if required.

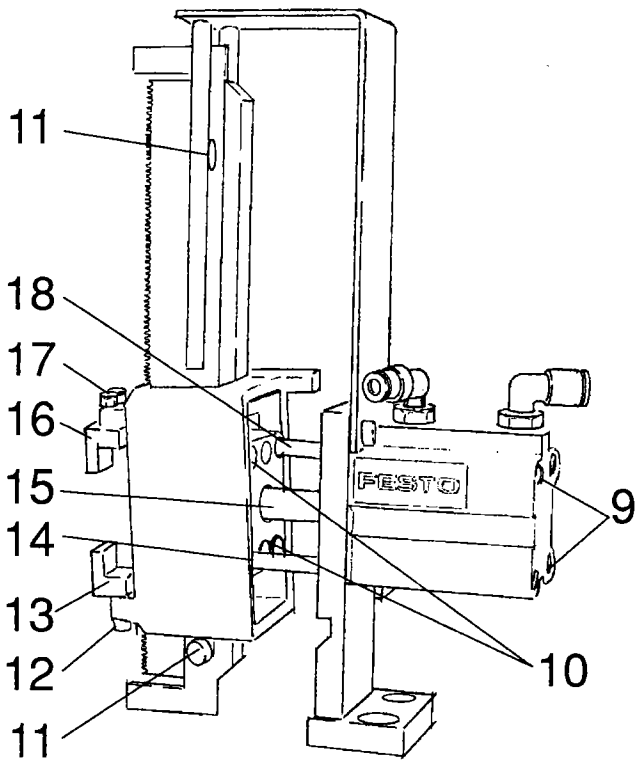
g) Check the play between the holes in the plastic cantilever (4) and the screws (1) and (6). Replace if required.

h) Check the guides (13) and (16). Loosen the screws (12) and (17) and replace if required.

i) Check the cylinder (3). Loosen the screws to the piston rod (15). Replace the cylinder if required by loosen the screws (9).

Reassemble in reverse order.





1 Screw
2 Air connection
3 Cylinder
4 Plastic cantilever
5 Screw
6 Screw
7 Knife
8 Knife holder
9 Screw
10 Screw
11 Screw
12 Screw
13 Guide
14 Guide
15 Piston rod
16 Guide
17 Screw
18 Guide

Setting

a) Check that the knife (5) and the guideplate (3) is fully home in the holder (6). If required, loosen the screws (4) and adjust. Retighten the screws.

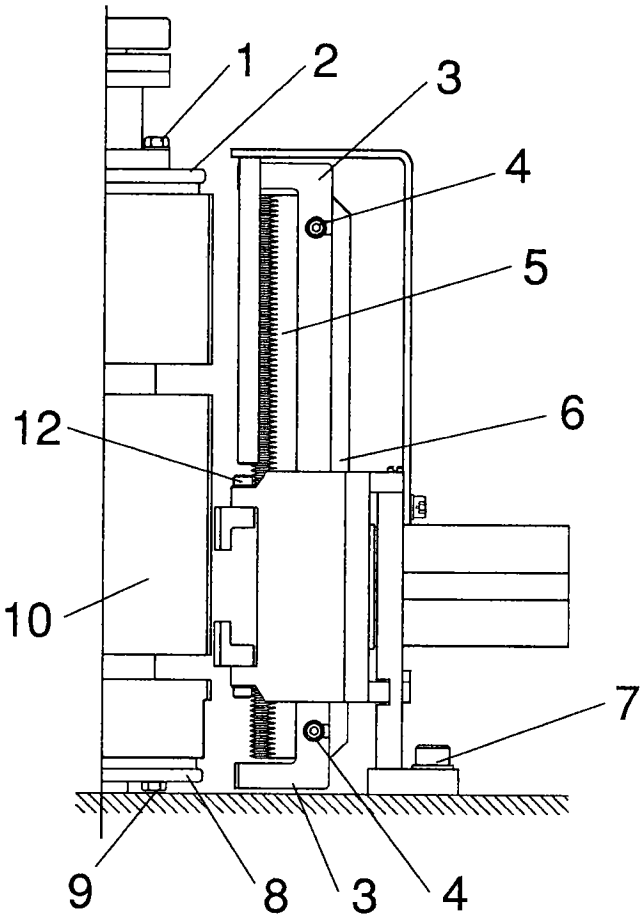
b) Move the knife (5) by hand into the track in the feed wheel unit (10). Check that the knife is centered in the track, if required adjust with the screws (7).

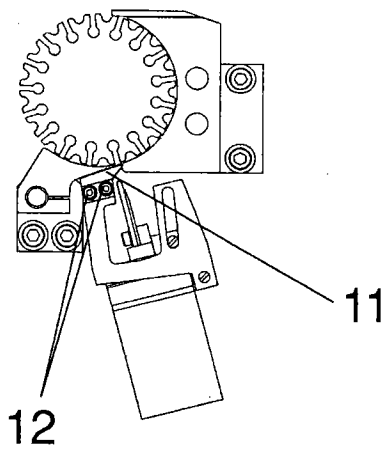
c) Check that the guideplate (3) is centered in the guidering (2) and (8). If not, check that the guideplate (3) is not bent.

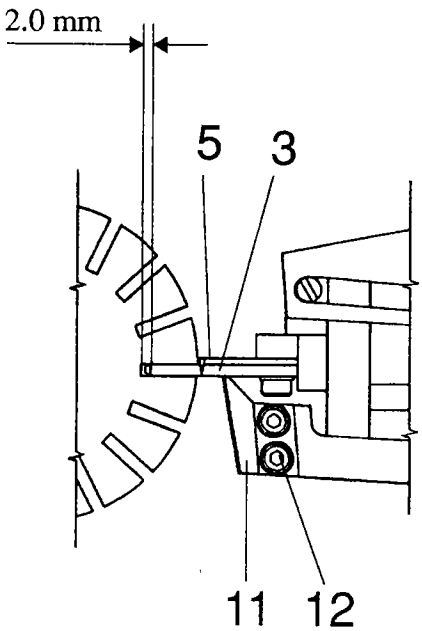
d) Check that there is a distance of 2 mm between the bottom of the track in the guidering (2) and the guideplate (3). If required, adjust the unit by loosen screw (7).

e) Check that the guide (11) is set acc to page MS 145-51:2, item f. If required, undo the screws (12) and adjust. Check when the knife (5) is in forward position that there is a space between the knife (5) and the guide (11).

For speedsetting of the feed wheel see MS page 360-51.







1 Screw
2 Guidering
3 Guideplate
4 Screw
5 Knife
6 Holder
7 Screw
8 Guidering
9 Screw
10 Feed wheel unit
11 Guide
12 Screw

Setting

a) Place the arms (2) in lowest position (position 1).

b) Loosen the stop screws (4) and adjust the guide rail (3) in height so that the arms (2) lower edge is in line with the guide rail (3).

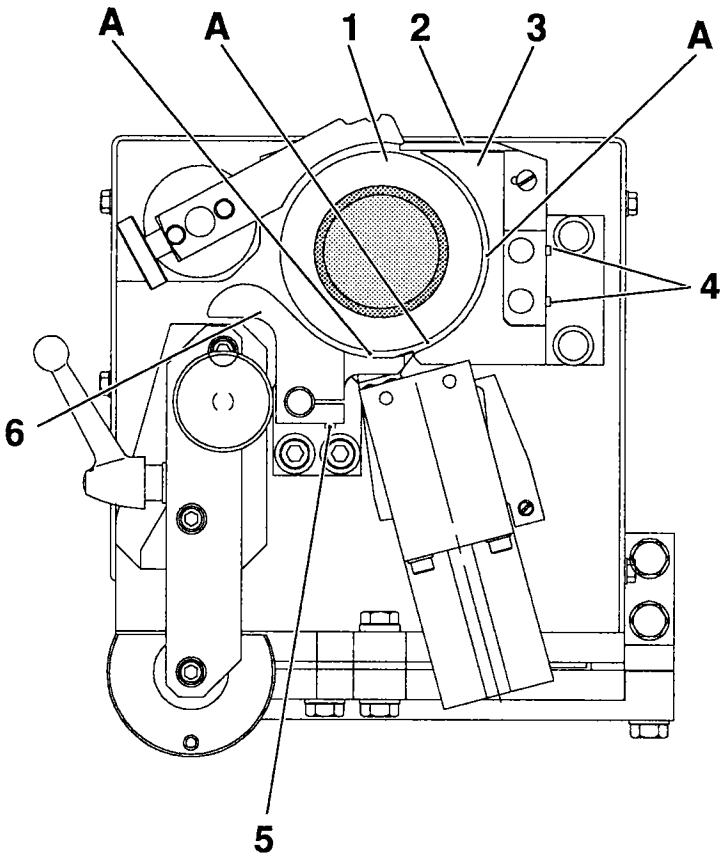
c) Loosen the screw (5) and adjust the flap (6) in height so that the guides (7) are centred to the groove in the flap (6).

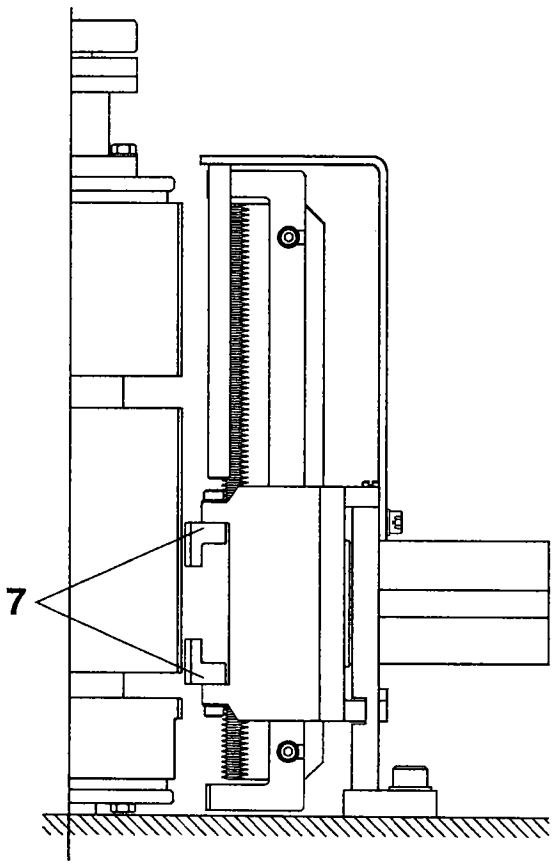
d) Check that there is a clearence of 1 mm (A) between the flap (6) and the feed wheel unit (1) and between the guide rail (3) and the feed wheel unit (1).

e) The arms (2) could be placed in four positions depending to the lenght of straws, see table below:

Position	Straw (length in mm)
1	≤ 90
2	80-120
3	105-140
4	≥ 130

(Cont'd overleaf)

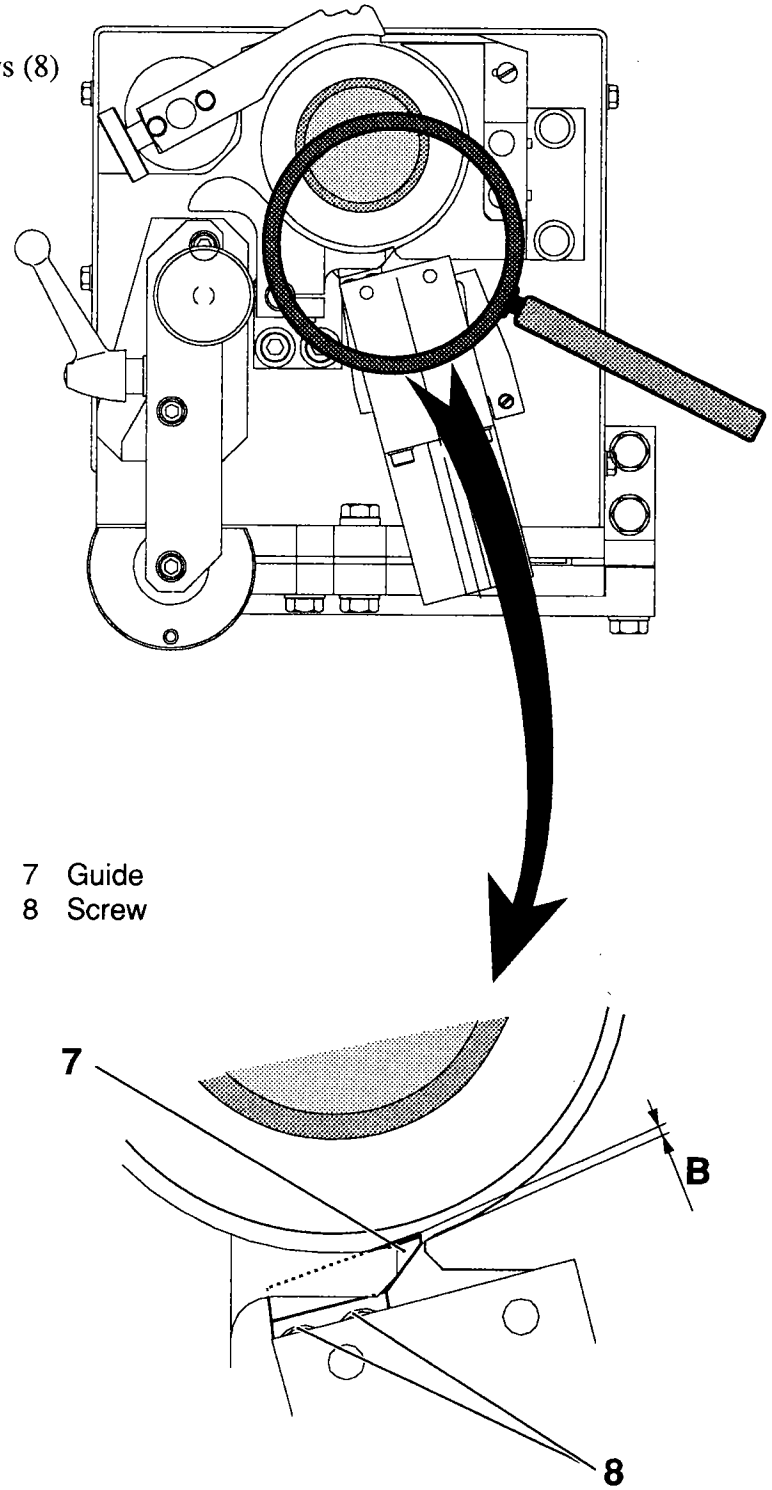




1 Feed wheel unit
2 Arm
3 Guide rail
4 Stop screw
5 Stop screw
6 Flap
7 Guide

(Cont'd)

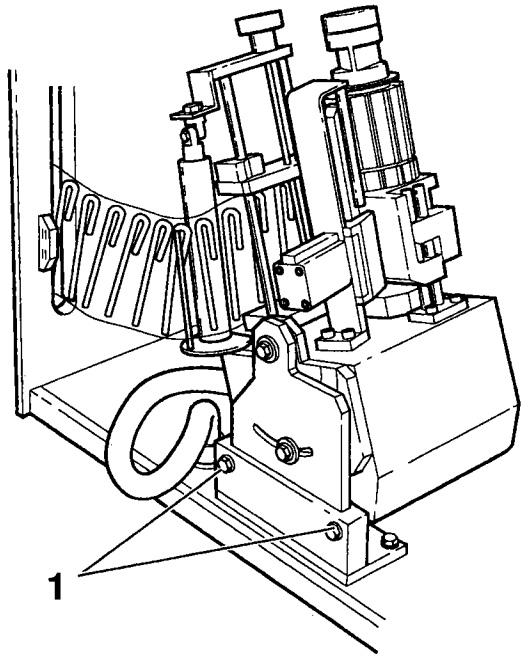
f) Set the guides (7) so that measurement B=0.5-1 mm. To adjust loosen the screws (8) and shift the guides (7).



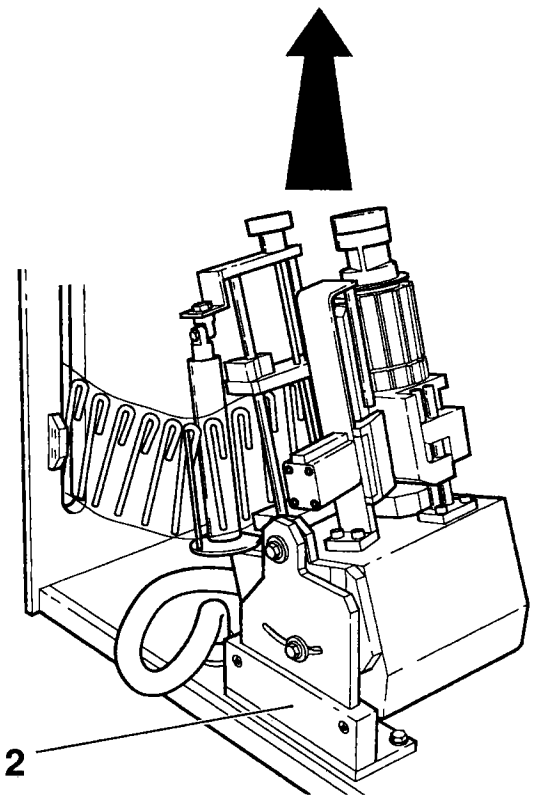
7 Guide
8 Screw

Overhaul

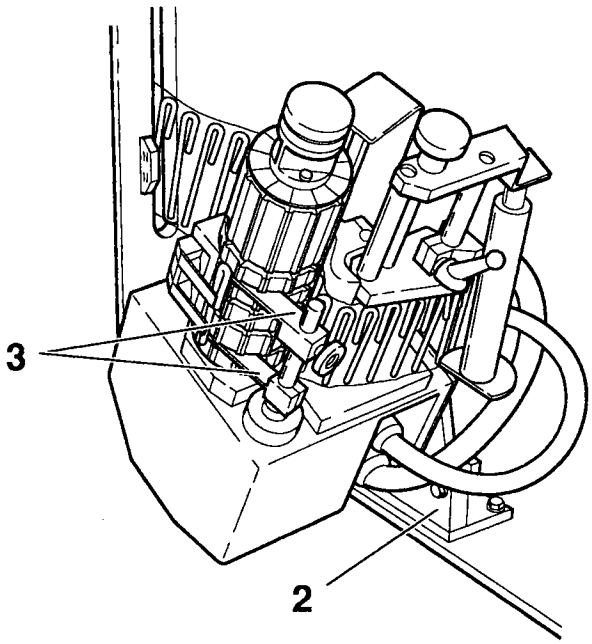
To make it easier to perform the overhauling of the squeezers, the entire applicator unit should be turned around:



a) Undo the screws (1).



b) Lift the applicator unit from its bracket (2).



c) Turn the applicator unit around and refit it to its bracket (2).

d) Overhaul the squeezers (3) acc to next page.

1 Screw
2 Bracket
3 Squeezer

(Cont'd overleaf)

(Cont'd)

e) Disconnect the air connections (8) of the cylinder (11).

f) Remove the circlip (10) and tap out the axle pin (9).

g) Remove the circlip (12) and tap out the axle pin (13). If required replace the cylinder (11).

h) Loosen the screw (15) and remove the pivot arm (14).

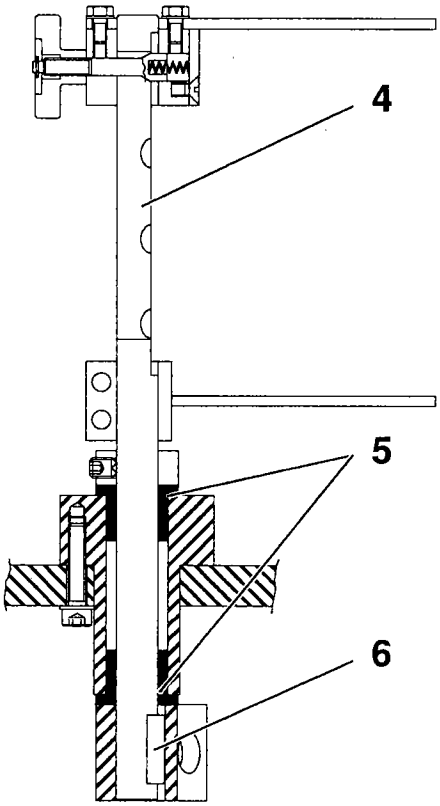
i) Remove the parallel key (6) and remove the shaft (4).

j) Check the bushings (5) and replace if required.

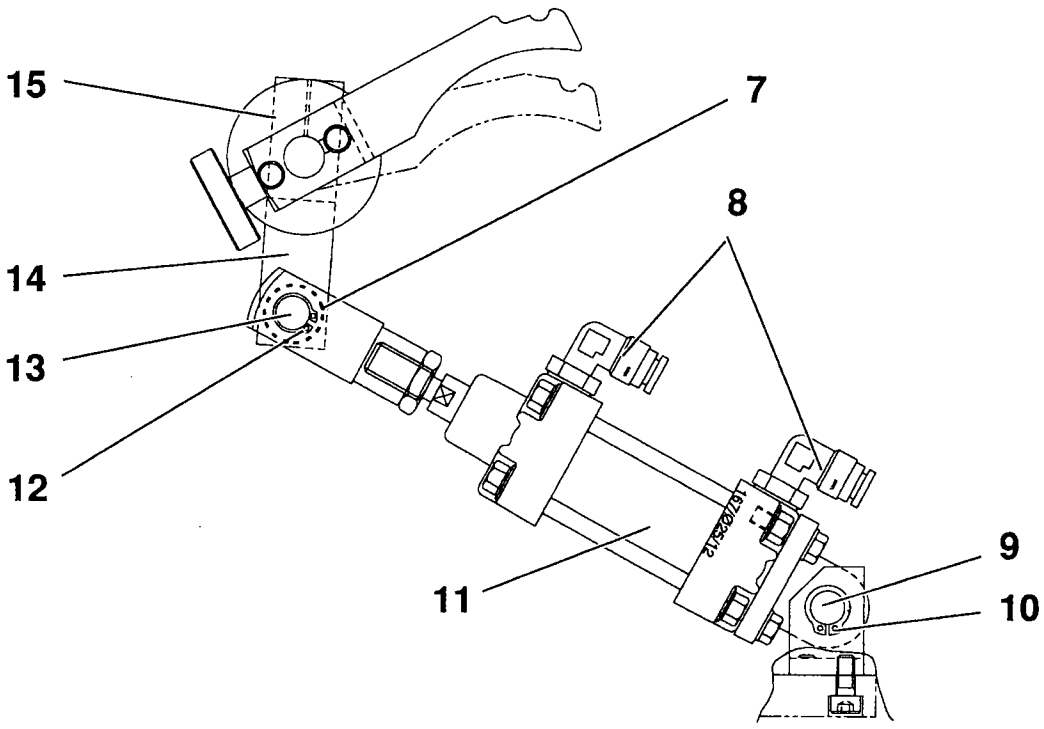
k) Check the bushing (7) and replace if required.

Reassemble in reverse order.

Refit the applicator unit to its production position.



4 Shaft
5 Bushing
6 Parallel key
7 Bushing
8 Air connections
9 Axle pin
10 Circlip
11 Cylinder
12 Circlip
13 Axle pin
14 Pivot arm
15 Screw



Setting

Setting must be carried out with drinking straws in the feed wheel unit.

a) Make sure that the machine is in programme step 1 or 2.

b) Move a package forward into application position.

c) Loosen the screws (3) and (4).

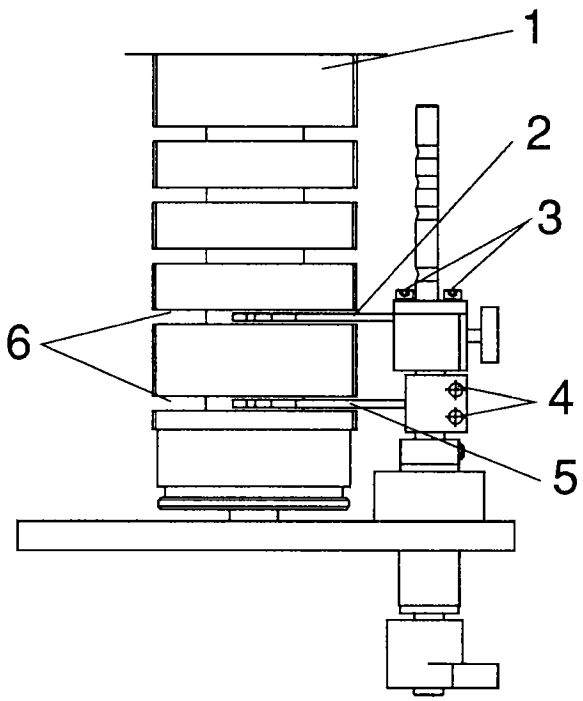
d) Actuate valve Y03 so that cylinder C03 moves to its minus position (squeezer forward).

e) Move the squeezers (2) and (5) forward by hand, as hard as possible without causing the squeezers to make marks on the drinking straw or package.

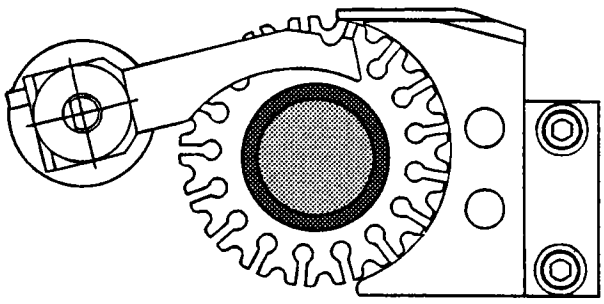
f) Tighten the screws (3) and (4) and check that the lower squeezer (5) is centred in the squeezer track (6) at the feed wheel unit (1).

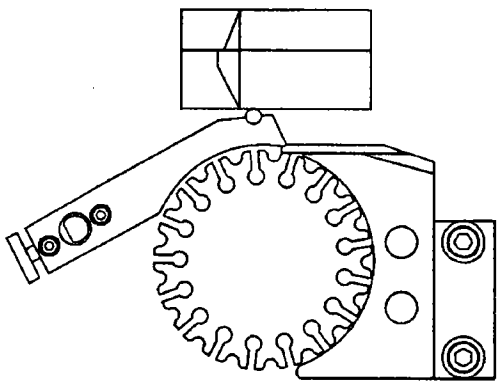
g) Actuate valve Y03 so that the squeezers (5) moves back to rear position. Check that the squeezers are positioned well back so that they does not foul the straws, but not so far back that they touch the feed wheel.

h) Check that both plus and minus movements of cylinder C03 are rapid.



1 Feeding wheel unit
2 Squeezer
3 Screw
4 Screw
5 Squeezers
6 Squeezer track





Setting

a) Draw a line on the diagonal of a package and put the package in front of the applicator head.

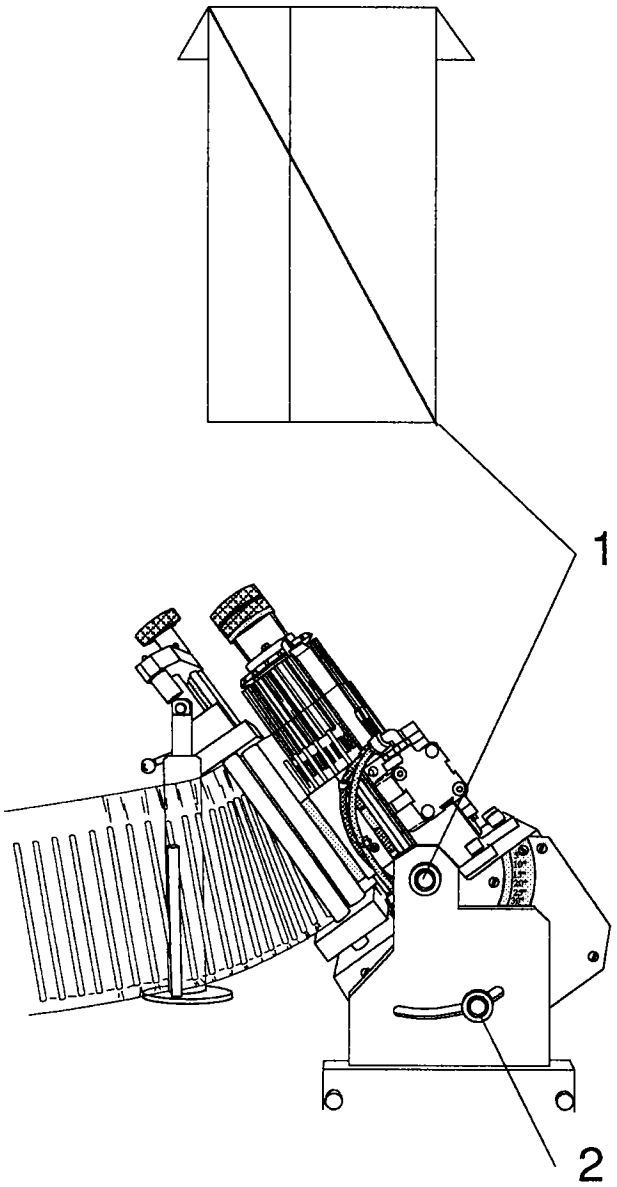
b) Loosen screw (2) and set the angle of the applicator head according to the table below. Tighten the screw.

c) Turn off the air supply and force the squeezer arms forward.

d) Adjust the infeed stop so that the package stops in correct position according to the squeezer arms

Brik

Volume (ml)	Angle (°) ±1°	
	S-T-F-straw	U-straw
125	26.5	24.5
200slim	20	18
180	40	38
200	36	34
236	32	30
250	28.5	26.5
284	28	26
300	30	28
375	25	23
355	36	34
500slim	27	25



1 Pivot point
2 Screw

Setting

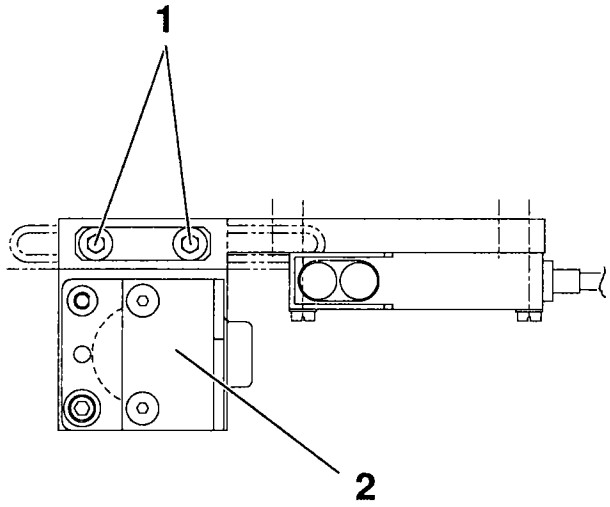
Adjust the feed stop (2) so that the packages stops in correct position according to the squeezers (see page 150-51).

The straw should be placed on the diagonal of the package.

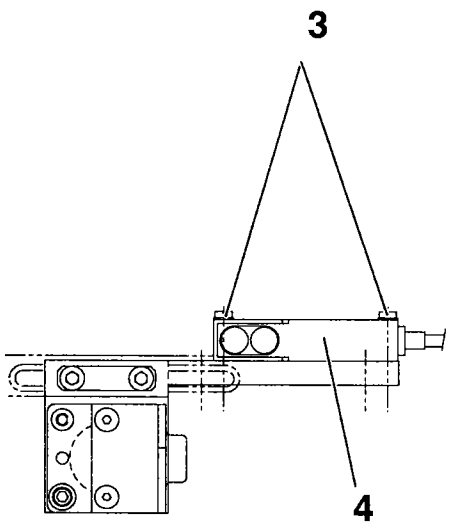
Loosen the screws (1) and move the feed stop (2) to its correct position.

The photocell MB 005 (4) should be positioned according to the table below. Loosen the screws (3) and move the photocell MB 005 (4).

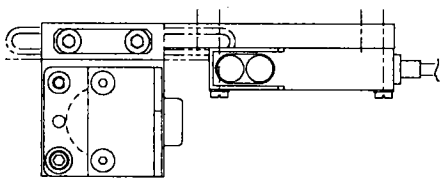
	Volume
Position 1	350 cc, 500 cc slim.
Position 2	180 cc, 189 cc, 200 cc, 236 cc 250 cc, 284 cc, 300 cc, 375 cc.
Position 3	125 cc, 200 cc slim



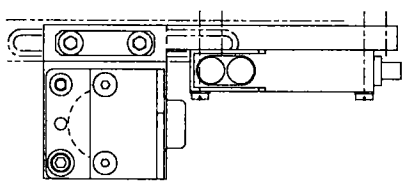
1 Screw
2 Feed stop
3 Screw
4 Photocell MB 005



Position 1



Position 2



Position 3

Removal

a) Lift up the cover (1).

b) Loosen the screws holding the cover (7).

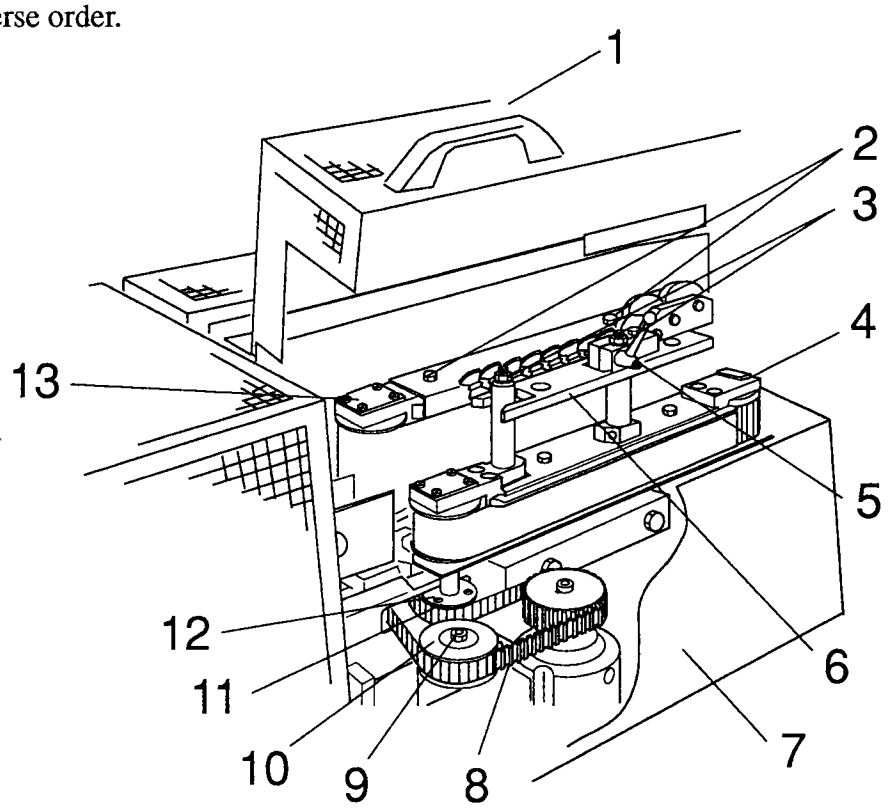
c) Loosen the nut (9), slacken and remove the timing belt (8) by undo the belt tensioner (10).

d) Loosen the screw (11) and undo the wheel (12).

e) Loosen handle (5) and lift the forming rollers unit (6) straight up.

f) Loosen the nuts (2) and (3) and lift the belt units (4) and (13) straight up.

Reassemble in reverse order.



1 Cover
2 Nut
3 Nut
4 Belt unit
5 Handle
6 Forming rollers unit
7 Cover
8 Timing belt
9 Nut
10 Belt tensioner
11 Screw
12 Wheel
13 Belt unit

Overhaul

a) Check that the forming rollers (1) not are cracked and that they are free from hot melt. Replace the rollers if required.

b) Loosen screws (11). Check and if required, replace the ball bearings (13) and the o-rings (12). Retighten the screws (11).

c) Check the driving belts (4) and (10). Replace if required.

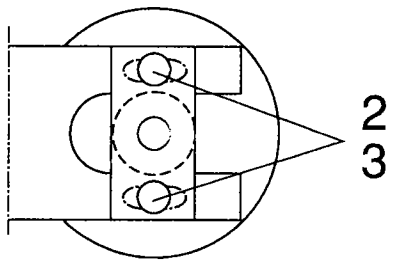
d) Retighten the driving belts by loosen screws (2) and (3). Retighten the screws (2) and (3).

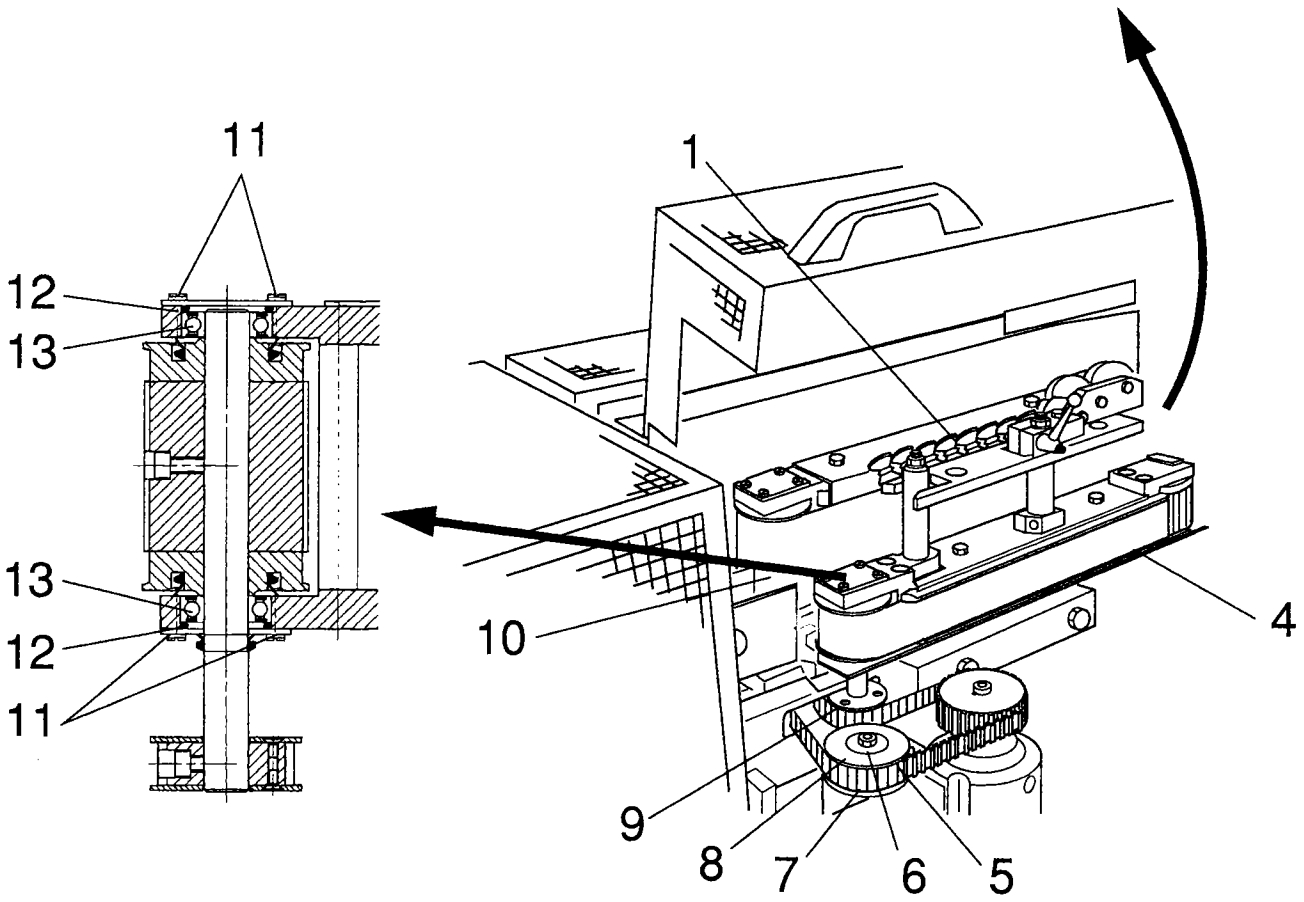
e) Check and if required, replace the bushing (8). Replace the belt tensioner (5) and retighten the nut (6).

f) Check that the belt tensioner (5) is in line with the timing belt (7) and the timing belt flanges (9).

g) Check and if required, replace the timing belt (7).

1 Forming rollers
2 Screw
3 Screw
4 Driving belt
5 Belt tensioner
6 Nut
7 Timing belt
8 Bushing
9 Timing belt disk
10 Driving belt
11 Screw
12 O-ring
13 Ball bearing





Setting

Distance setting

a) Check that the measure face (8) is parallel to the conveyor. If required, loosen screws (6) and adjust. Retighten the screws (6).

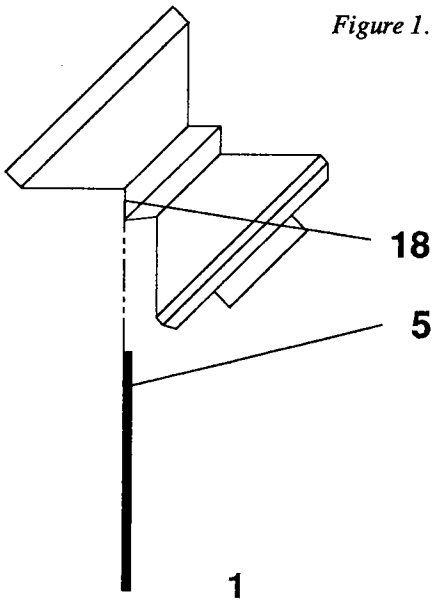
b) Loosen nuts (2) and set the two measure faces (7) and (8) vertically in line to each other. Use a ruler. Retighten the nuts.

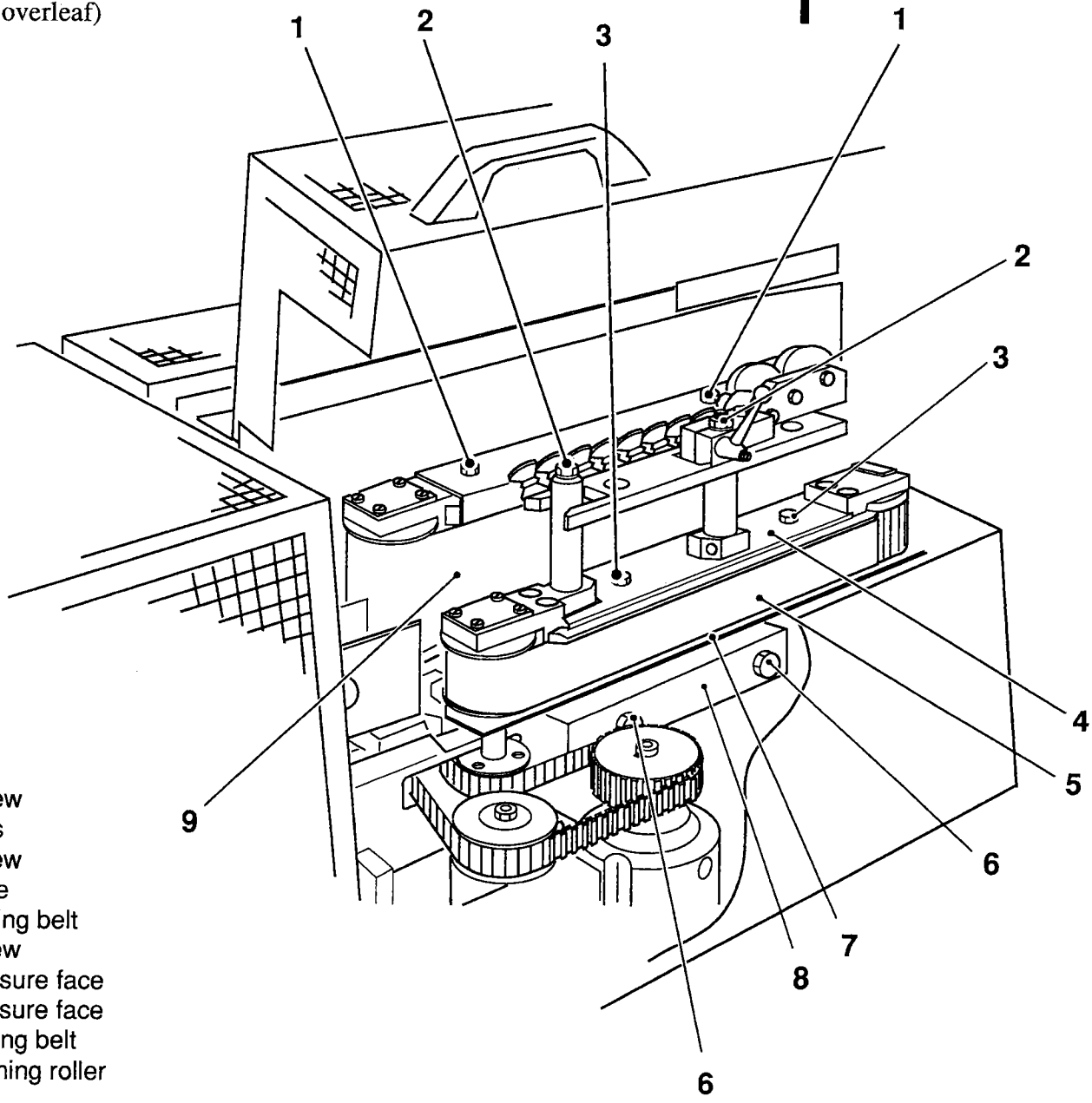
c) Loosen screws (3) and move the plate (4) so that the small edge of the forming rollers (18) are in line with the driving belt (5), see figure 1.

d) Retighten the screws.

(Cont'd overleaf)

Figure 1.

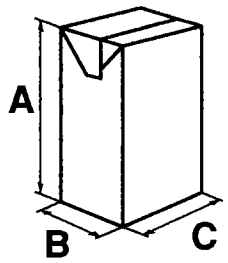




1 Screw
2 Nuts
3 Screw
4 Plate
5 Driving belt
6 Screw
7 Measure face
8 Measure face
9 Driving belt
16 Forming roller

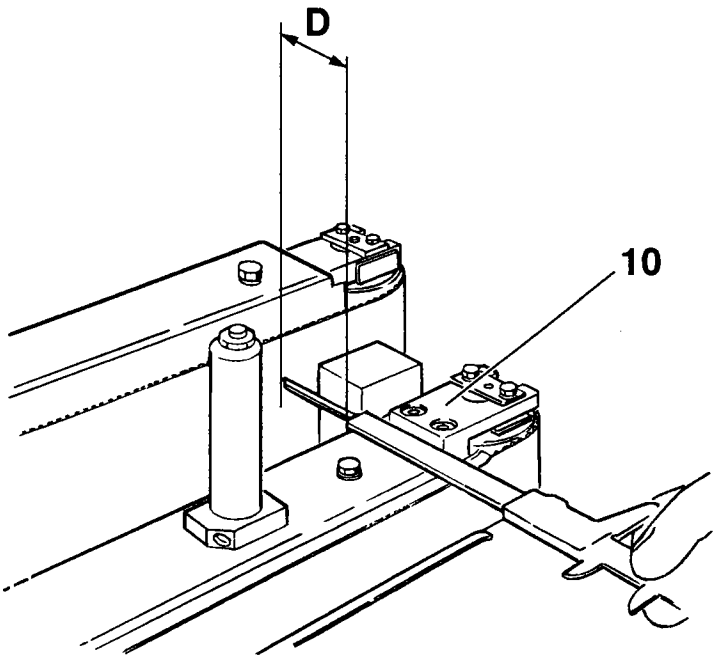
(Cont'd)

e) Loosen screws (1) and adjust the distance between the two driving belts (5) and (9) according to the following table and figures:
D = B + 2,5 mm
E = B + 0,5 mm
Measure with the sliding caliper placed against the edge of the brackets (10) and (11) respectively.

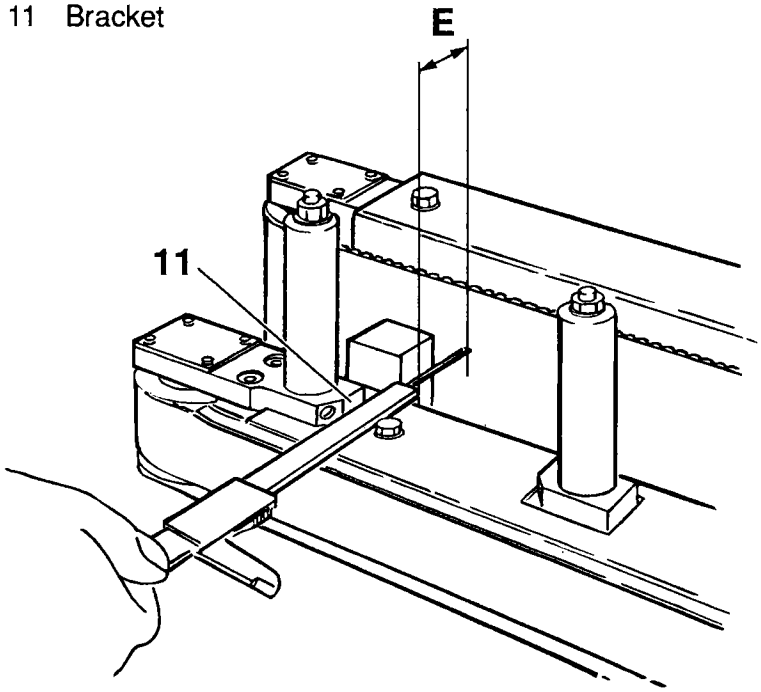


f) Retighten the screws.

(Cont'd overleaf)



10 Bracket
11 Bracket



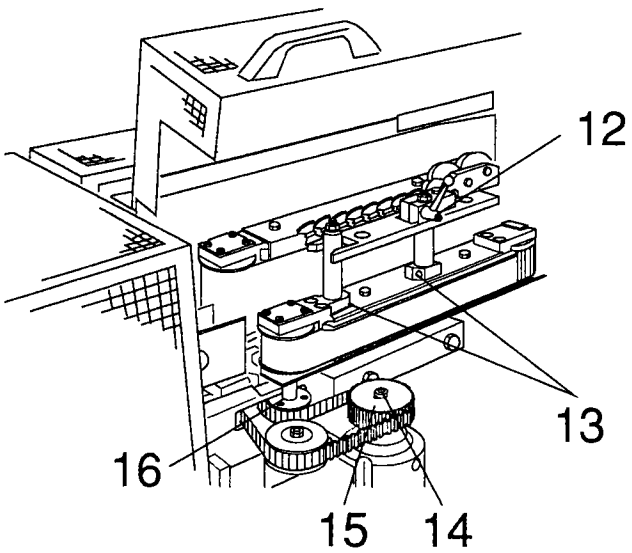
(Cont'd)

Driving wheel setting

g) Loosen the stop screws (14) and change driving wheel (15) according to the following table:

Packet type	Speed m/s	Frequency	Type of wheel
125cc, 200 slim	15,5	50 Hz	975 584
		60 Hz	975 585
Others	21,25	50 Hz	975 572
		60 Hz	975 583

(Cont'd overleaf)



12 Handle
13 Stop screw
14 Stop screw
15 Driving wheel
16 Driving belt disc

(Cont'd)

Height setting

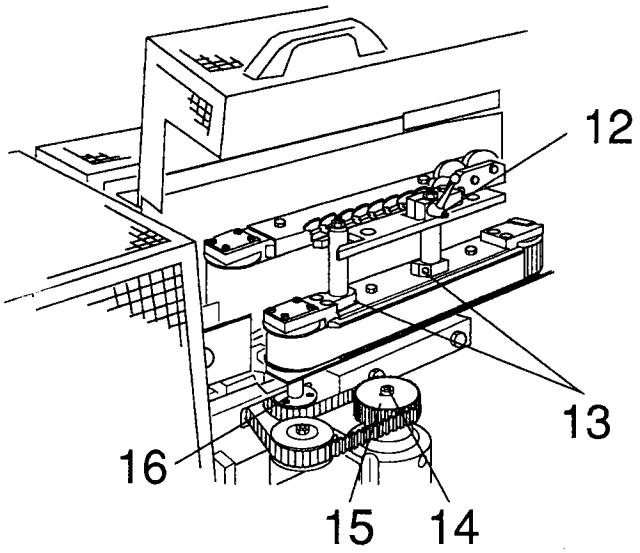
h) Loosen the handle (12), the stop screws (13) and the driving wheel (15).

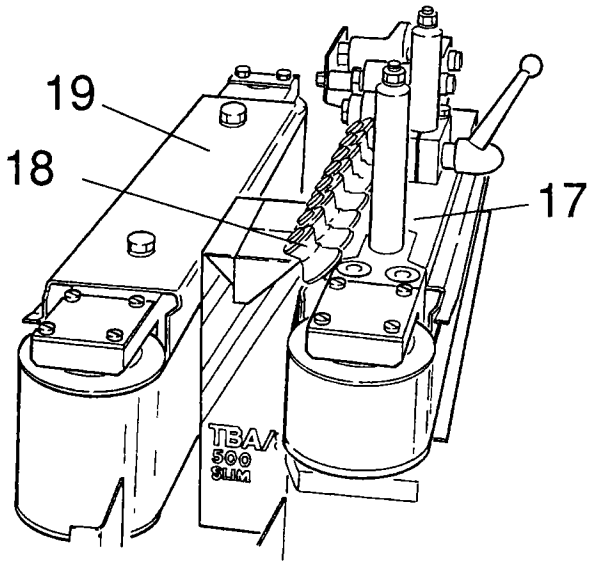
i) Adjust the height of the driving belt unit (17) so that the forming rollers (18) just touch the package (20).

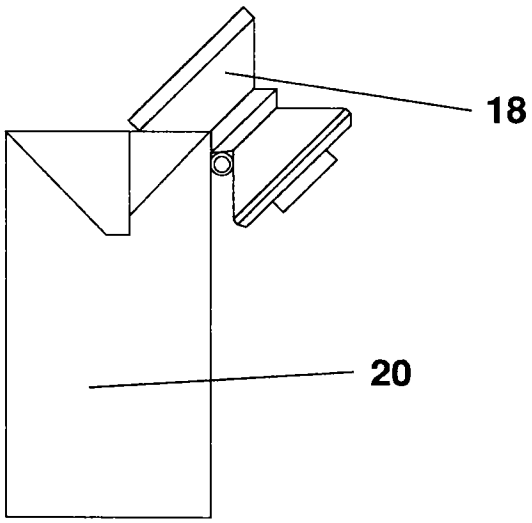
j) Lift up the forming rollers (18) and retighten the stop screws (13). Move down the forming rollers (18) and retighten the handle (12).

Final check

k) Check that all adjusted units; driving wheel (15), driving belt units (17) and (19) and driving belt disks (16) are parallel to the conveyor.







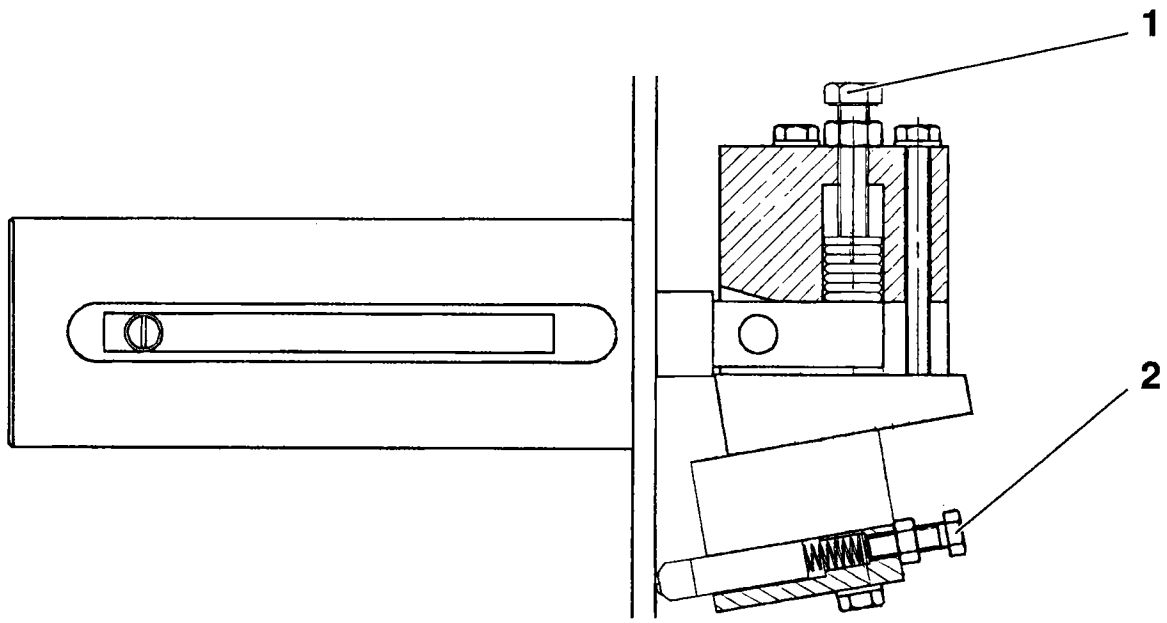
16 Driving belt disk
17 Driving belt unit
18 Forming roller
19 Driving belt unit
20 Package

Setting

Adjust on screw (1) so that the weight of approximately half a reel just presses the bobbin down.

Adjust the brake power on screw (2) so that a full reel cannot be rolled out.

1 Screw
2 Screw



Description	Issue	Page
Safety regulations	1/9107	205–71
Hot melt unit – Emptying of hot melt tank	2/9205	210–11
Hot melt unit – Replacement	1/9107	210–21
Hot melt unit – Cleaning of hot melt tank	1/9107	210–31
Hot melt unit – Setting	3/9205	210-51:1-2
Hot melt unit, filter – Replacement	1/9107	220–31
Hot melt pump – Removal/Fitting	1/9107	230–21
Hot melt pump – Overhaul	1/9107	230–31:1-6
Hot melt gun – Replacement	2/9205	240–21
Hot melt gun, o-rings – Replacement	2/9205	240-31:1-2
Hot melt gun – Replacement	2/9205	245–21
Hot melt gun – Cleaning of nozzles/Bleeding the system	2/9205	247–31
Hot melt gun – Setting	2/9205	247–51
Hot melt gun, heater – Replacement	1/9107	248–21
Hot melt gun, thermostat – Replacement	1/9107	249–21

Except the safety regulations given in this section the safety regulations prescribed in the NORDSON documentation always apply during work with the hot melt unit. If that documentation is not at hand, it can be obtained from Tetra Pak Distribution AB, dept. Technical Documentation.

WARNING!
During work with a heated unit always use protective glasses, protective gloves and other protective clothing to avoid injuries caused by splashing hot melt adhesive.

WARNING!
Before releasing or removing any component from the hot melt unit, always:

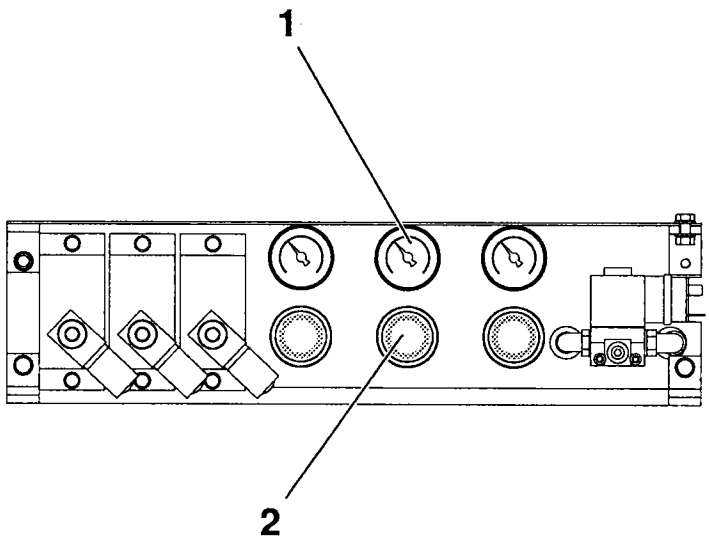
- Turn off all pneumatic and electrical connections.
- Release any remaining pressure by triggering the hot melt guns.

Emptying of hot melt tank

WARNING!
Wear safety glasses, protective gloves, and other protective clothing to avoid injuries caused by splashing hot melt material.

a) Switch on the hot melt applicator and wait until the adhesive has reached this application temperature.

b) Zero the air pressure by means of the pressure regulator (2). Activate the hot melt guns to relieve any remaining pressure.



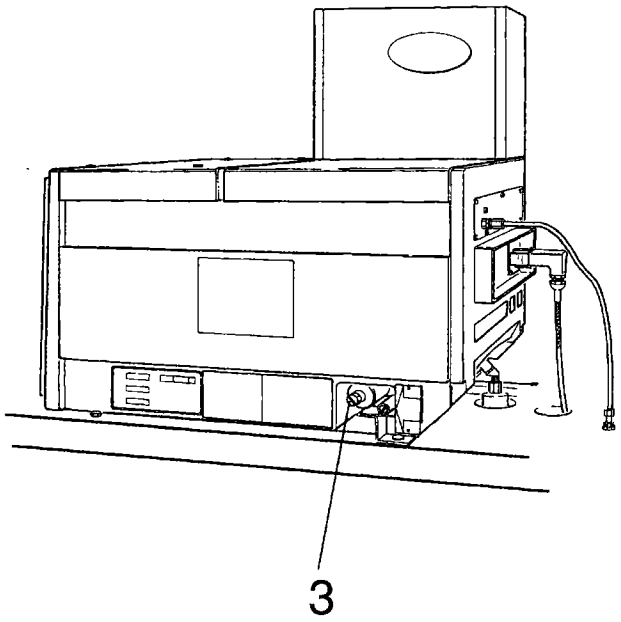
WARNING!
Failure to relieve any remaining air or liquid (adhesive) pressure may cause serious injuries through burning when the filter is detached.

c) Unscrew the filter (3) with its adapter.

d) Gently increase the air pressure to the hot melt pump until the pump begins to stroke slowly and adhesive flows out of the filter opening. Catch the adhesive in a suitable container.

e) When less adhesive comes out, the pump will stroke more rapidly, provided the air pressure is kept constant. When the first signs of rapid pump speed appear, reduce the air pressure instantly to protect the pump from damage.

f) When the tank is empty, refit the filter with its adapter.



1 Pressure gauge
2 Pressure regulator
3 Filter with adapter

Replacement

a) Empty the hot melt tank acc to page 210-11.

b) Switch off the main switch of the machine.

c) Undo the mounting screws (2) and remove the cover (1).

d) Under the cover (1), the cables for operating and control power is located. Disconnect the cables (8) and (9) from the connection board (7). Disconnect the cables (10), (11) and (12) from terminal block TB1 (13). Pull the cables out of the applicator.

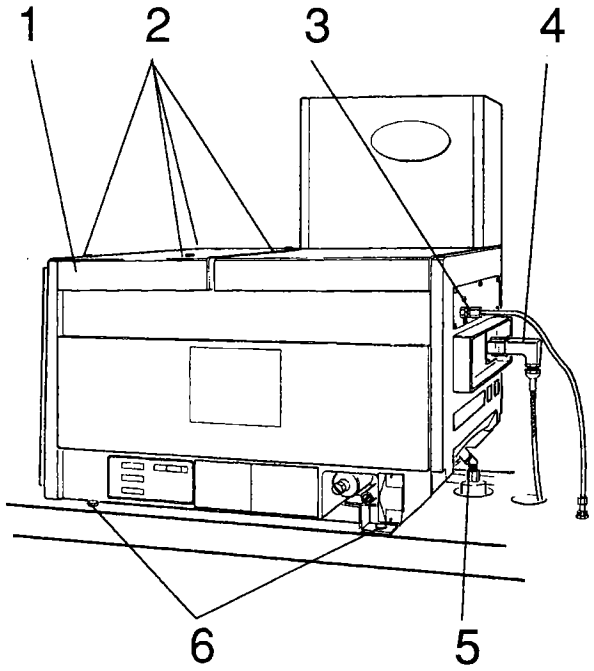
e) Detach the quick-coupling (4) of the hot melt hose and unscrew the nipple (5). Remove the hose from the applicator.

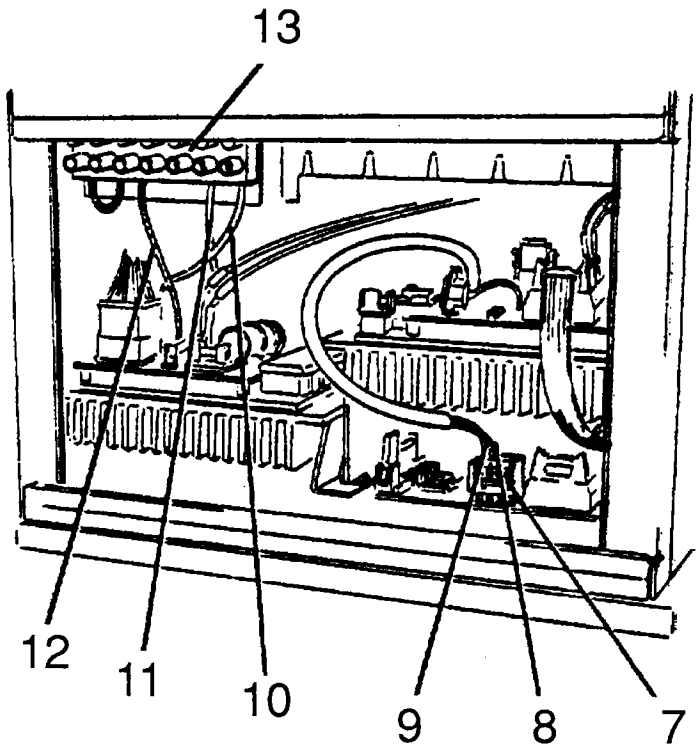
f) Undo the air connection (3) of the unit and remove the air hose.

g) Undo the four screws (6) holding the unit on the frame.

h) Pull out the unit.

i) Replace the unit. Fit in reverse order.





1 Cover
2 Mounting screw
3 Air connection
4 Quick-coupling
5 Nipple
6 Screw
7 Connection board
8 Cable
9 Cable
10 Cable
11 Cable
12 Cable
13 Terminal block TB1

Cleaning of hot melt tank

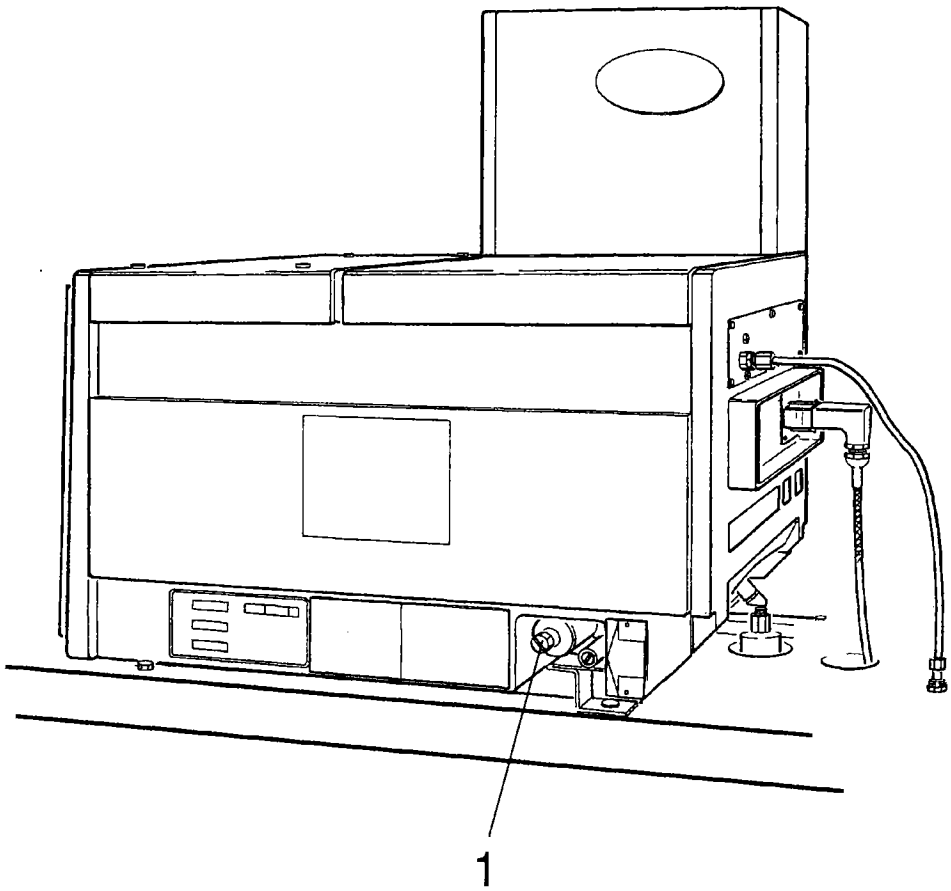
WARNING!

Wear safety glasses, protective gloves, and other protective clothing to avoid injuries caused by splashing hot melt material.

a) Empty the tank acc to page 210-11.

b) Fill the tank to two thirds with solvent, Nordson Solvent R. Heat the solvent to the application temperature of the adhesive (150° –170°).
Leave the solvent in the tank for appr 2 hours at application temperature.

c) Brush the inside of the tank with a stiff bristle brush to remove any deposits of charred adhesive. Never use a metal brush or scraper. Remove the filter (1) with its adapter, drain the solvent, and wipe the tank clean thoroughly.



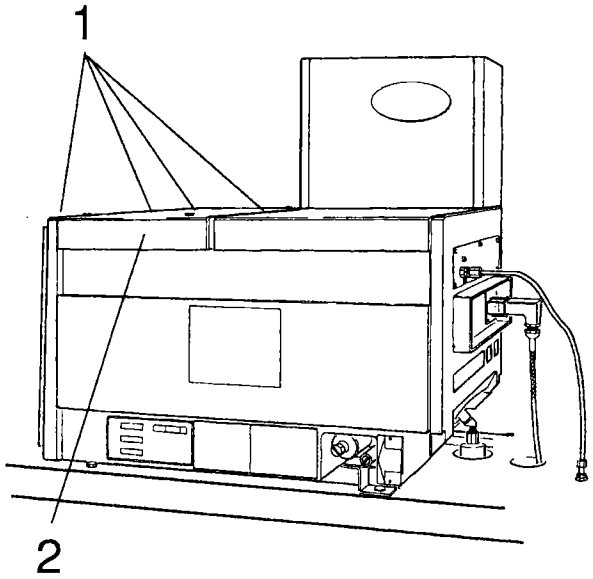
1 Filter with adapter

Setting

a) Loosen the screws (1) and lift off the cover (2).

b) When hose and tank has the same temperature, the LED (4) is lit. When hose and hot melt gun has the same temperature, the LED (5) is lit.

The tank and hose temperature should have the same setting. Check that the LED (4) is lit. If the LED (5) is lit, change the setting by altering position 5 on the switch SW1 (7).



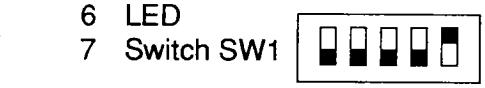
Recommended types of adhesive:

- **Jowatherm** Hotmelt 25140
  TP No. 90153-26 (15 kg).
- **HB Fuller** LUNATACK P220K
- **National** Instant-Pak 244

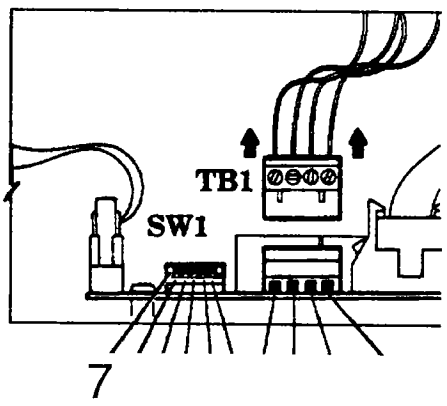
c) Set the gun temperature and the hot melt container temperature acc to the table below:

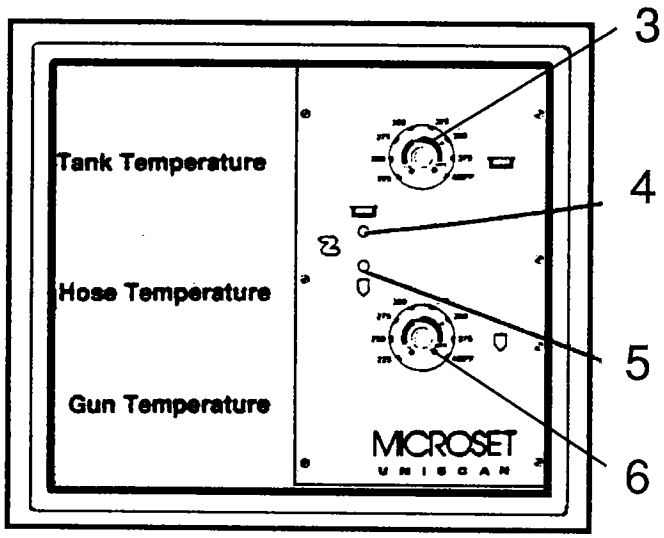
	Hot melt container and hose	Hot melt guns
Jowatherm	150 °C	160 °C
HB Fuller	150 °C	175 °C
National	150 °C	170 °C

1 Screw
2 Cover
3 Temperature gauge, tank
4 Temperature gauge, hot melt guns
5 LED
6 LED
7 Switch SW1



(Cont'd overleaf)





(Cont'd)

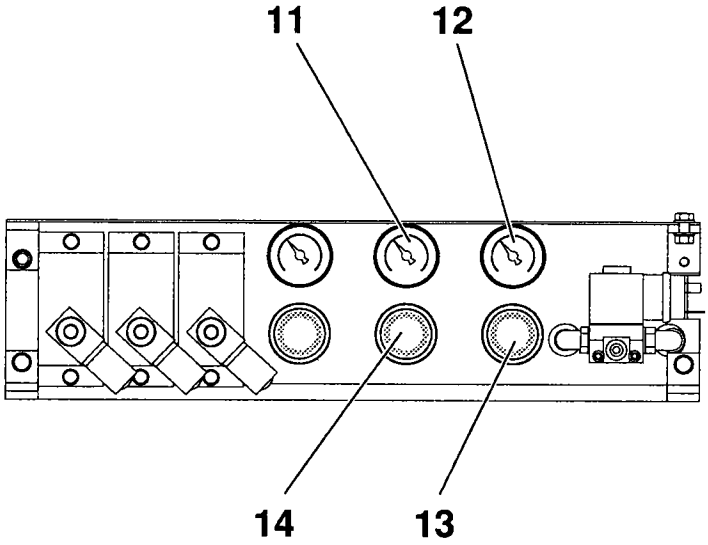
d) Attach the cover. Check that there is adhesive in the tank and switch on the hot melt unit.

e) Set the air pressure to the hot melt guns with the pressure regulator (13) to read 0.4 MPa (4 bar) on the gauge (12).

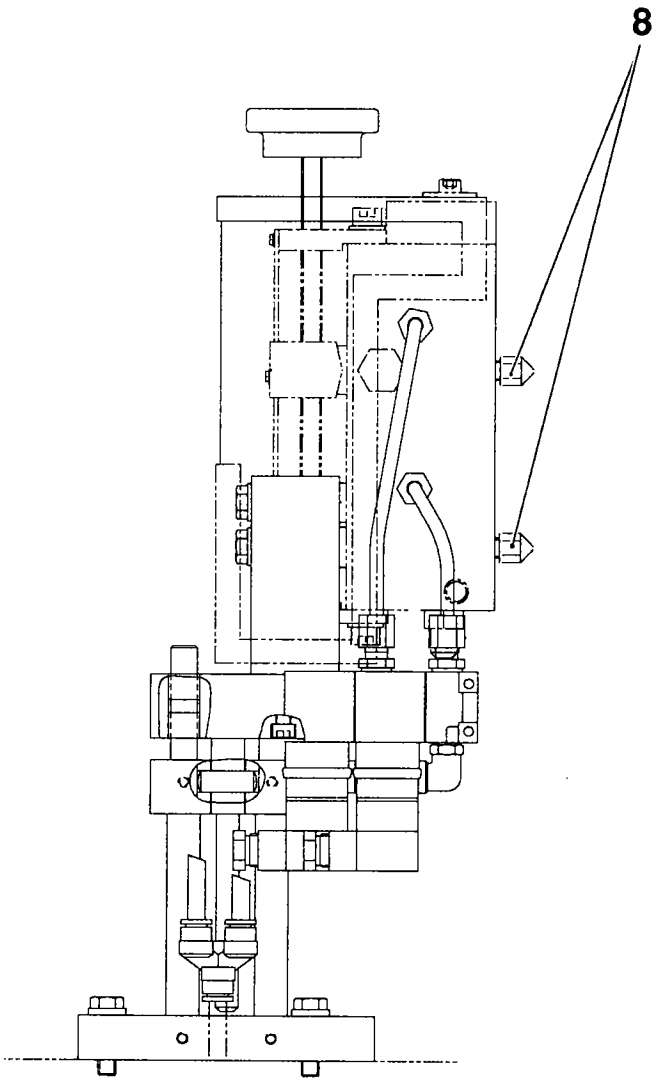
f) Unscrew the nozzles (8) from the hot melt guns.

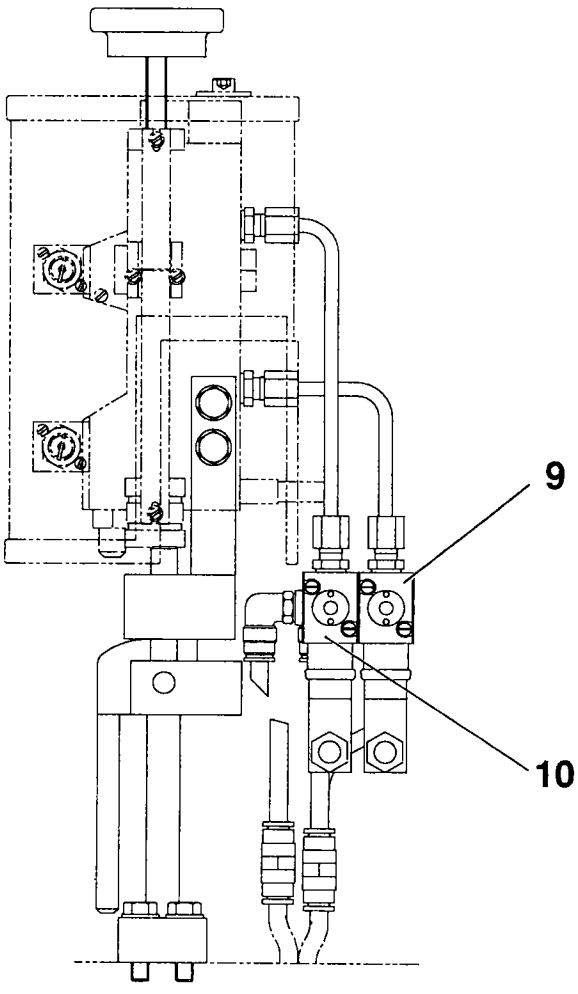
g) Test the guns by pushing the manual buttons on valve Y14 (10) and Y15 (9). Keep pushing until the adhesive is clean and without air.

Refit the nozzles (8) and reset the air pressure of the hot melt pump, indicated on the pressure gauge (111), to 0.4-0.5 MPa (4-5 bar) by means of the pressure regulator (14).



8 Nozzle
9 Valve Y15
10 Valve Y14
11 Pressure gauge, hot melt pump
12 Pressure gauge, hot melt guns
13 Pressure regulator, hot melt guns
14 Pressure regulator, hot melt pump





Replacement

The filter cannot be removed unless the unit is hot.

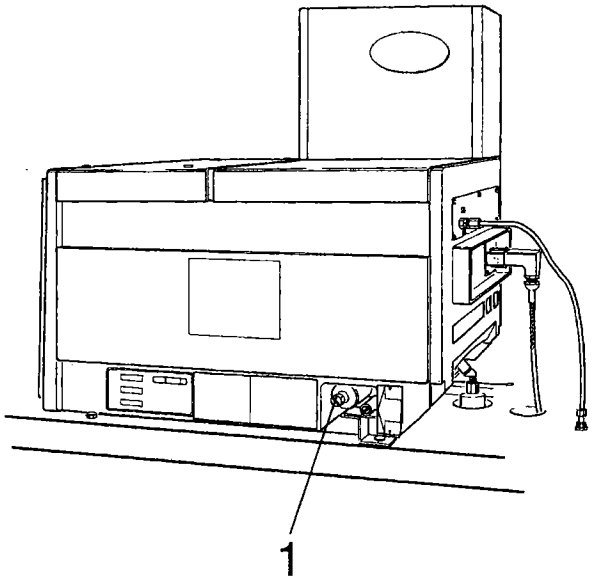
a) Turn of the air to the pump

WARNING!
Failure to relieve any remaining air or liquid (adhesive) pressure may cause serious injuries through burning when the filter is detached.

b) Hold the filter adapter (1) and unscrew the filter.

c) Wipe the inside of the adapter with a lint-free cloth.

d) Fit the exchange filter. Screw it in fingertight only. When the filter has become hot, it should be tightened a bit more.
DO NOT OVER-TIGHTEN!



Cleaning

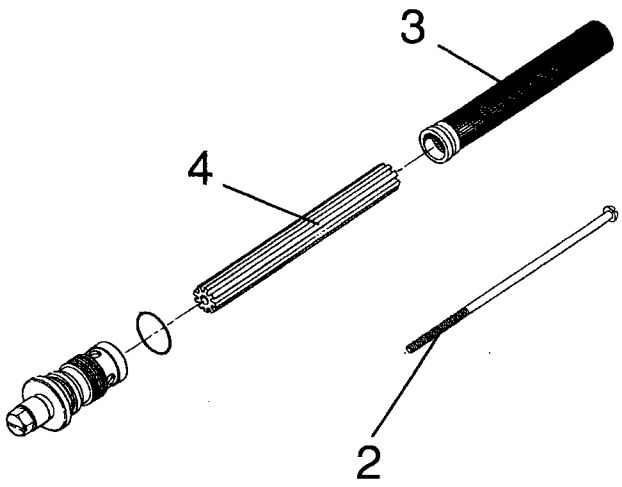
a) Immerse the filter in Nordson Solvent R and heat it to appr 170°C.

b) Undo the screw (2) from the filter holder (4) and remove the filter screen (3).

c) Blow the filter screen clean from the inside. Make sure that the longitudinal joint is intact. If required, replace the screen.

d) Reassemble the filter.

e) Store the clean filter in a container with Nordson Solvent R until the next filter change.



1 Filter adapter
2 Screw
3 Filter screen
4 Filter holder

Removal/Fitting

Before dismantling, the unit must be heated to working temperature.

WARNING!
Never remove any part or component until air and electric power have been disconnected and the pressure of the hot melt in the system has been relieved (zeroed) by triggering a gun.

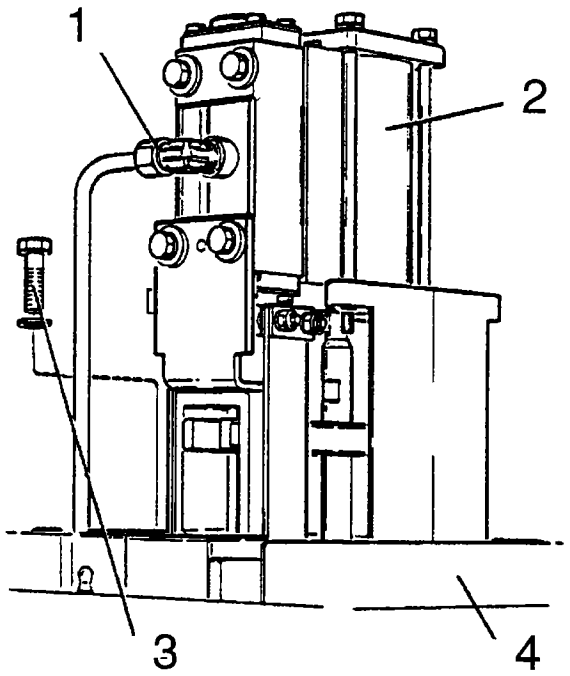
Wear safety glasses, protective gloves, and other protective clothing to avoid injuries from splashing hot adhesive.

a) Disconnect the air line (1).

b) Undo the three screws (3).

c) Remove the pump (2) from the hot melt unit (4).

Refit the pump in reversed order.



1 Air line
2 Pump
3 Screw
4 Hot melt unit

Overhaul

(Figure overleaf)

a) Undo the screws (1). Remove the lock washers (2) and the 4-way valve (3). Replace the valve gaskets (4).

b) Undo the screws (7).
Remove:
– the lock washers (8)
– the cylinder head (6)
– the cylinder head sealing ring (5)
– the cylinder shell (9)
– the sealing ring (20) (in the pump frame (13).
Check and, if required, replace the sealing rings.

c) Hold the piston rod (14), unscrew the lock nut and remove the lock washer (22). Remove the piston discs (11) and (21). Check the piston gasket (12), replace as required.

d) Undo the grub screw (18) of the valve actuator ring (17).

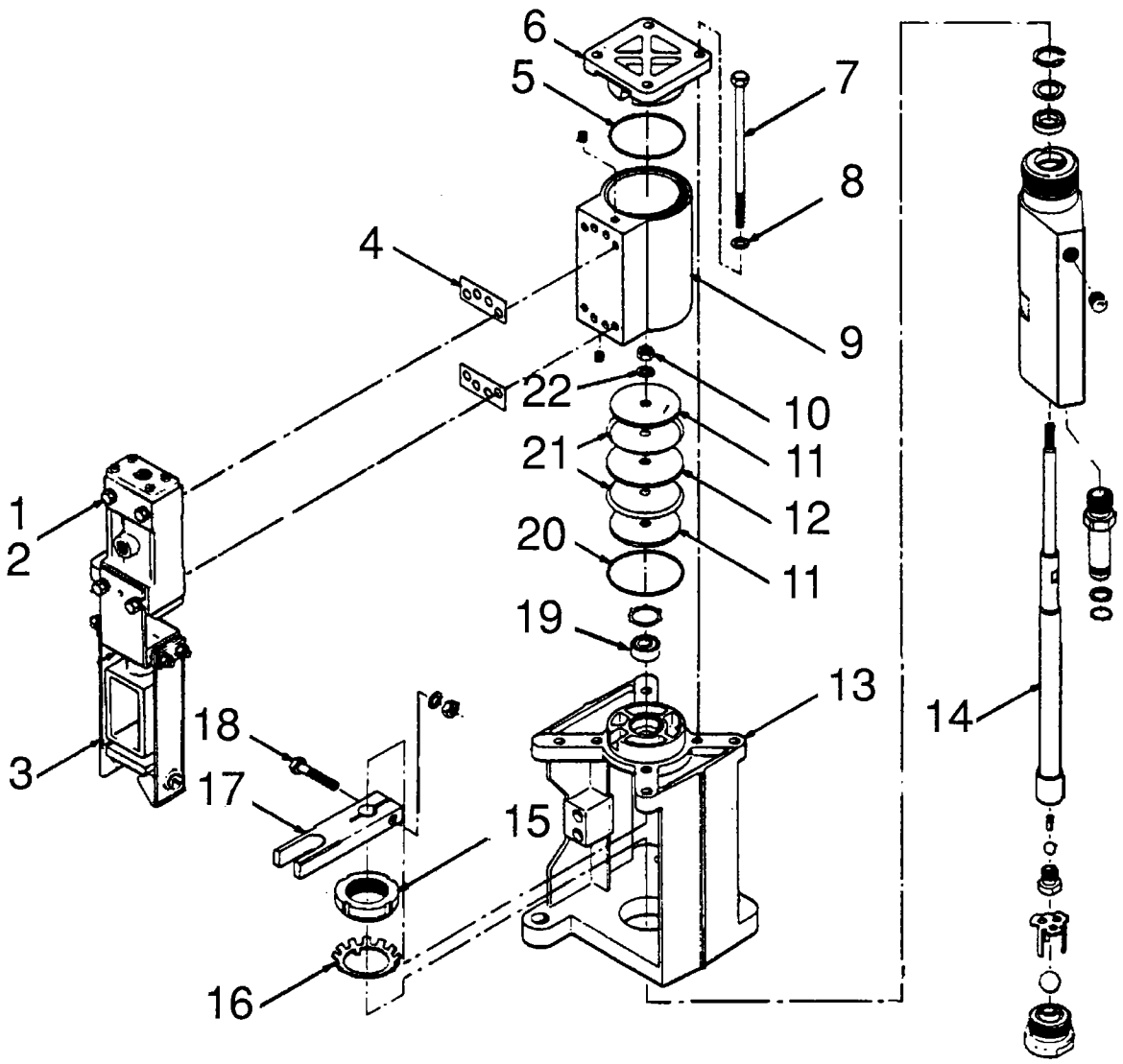
e) Free the lock washer (16) and unscrew the lock nut (15).

f) Remove:
– the pump from the pump frame (13)
– the valve actuator ring (17)
– the lock washer (16)
– the lock nut (15).

g) Check the sealing ring (19). Replace as required.

(Cont'd overleaf)

(Cont'd)



1 Screw
2 Lock washer
3 4–way valve
4 Valve gasket
5 Sealing ring
6 Cylinder head
7 Screw
8 Lock washer
9 Cylinder shell
10 Lock nut
11 Piston disc
12 Piston gasket
13 Pump frame
14 Piston rod
15 Lock nut
16 Lock washer
17 Valve actuator ring
18 Grub screw
19 Sealing ring
20 Sealing ring
21 Piston disc
22 Lock washer

(Cont'd overleaf)

(Cont'd)

h) Remove the locking ring (23). Move the pump piston rod (14) up and down by hand so that the disc (24) and gasket (25) are loosened. If required, apply heat from a hot air gun. Check the gasket and replace as required.

i) Remove the cross-over pipe (27). Check the O-ring (28) and replace as required.

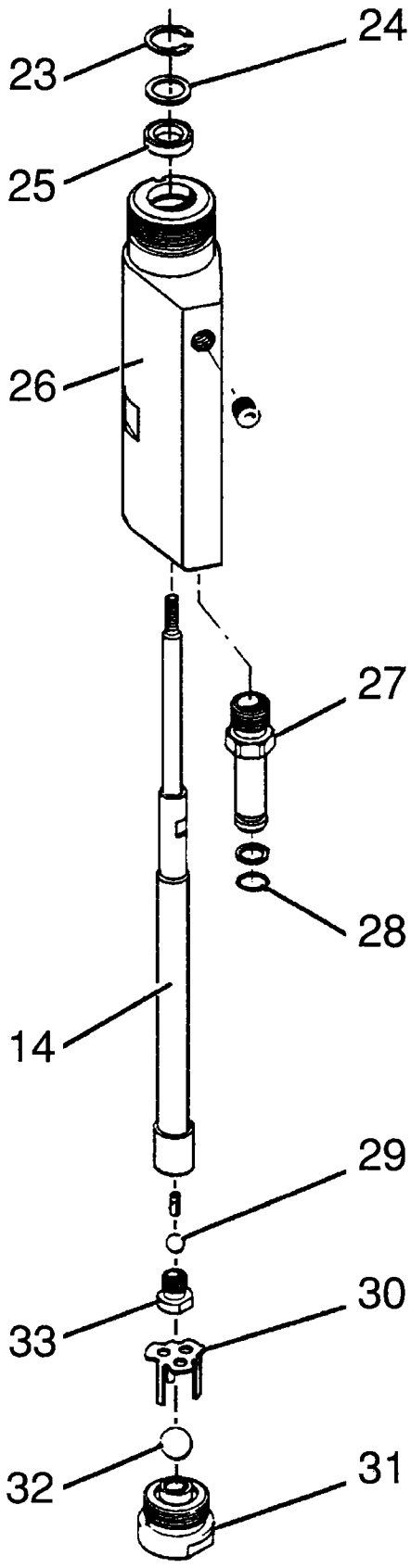
j) Unscrew the ball seat (31) from the pump piston rod. Remove the ball (32) and housing (30) from the lower end of the piston rod. Check the ball seat and ball and replace as required.

k) Pull the pump piston rod out of the housing (26). Check the rod and housing and replace as required.

l) Unscrew the ball seat (33) from the pump piston rod. Remove the ball (29). Check the ball seat and ball and replace as required.

m) Wash any components that have been in contact with hot melt material with Nordson Solvent R.

(Cont'd overleaf)



14 Pump piston rod
23 Locking ring
24 Disc
25 Gasket
26 Housing
27 Cross-over pipe
28 O-ring
29 Ball
30 Housing
31 Ball seat
32 Ball
33 Ball seat

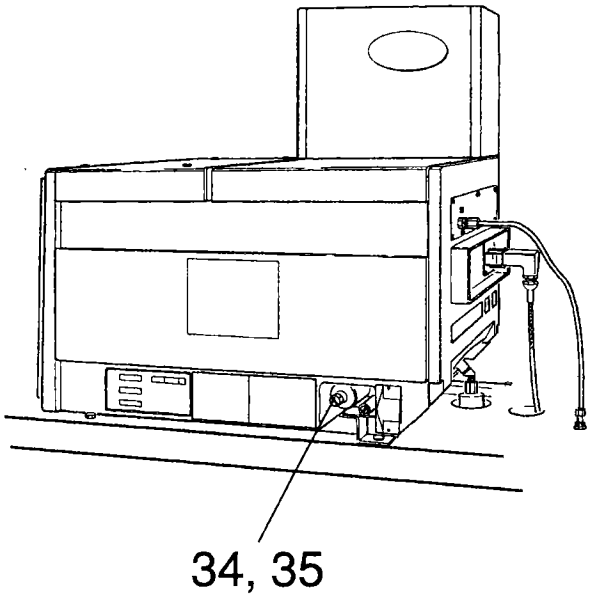
(Cont'd)

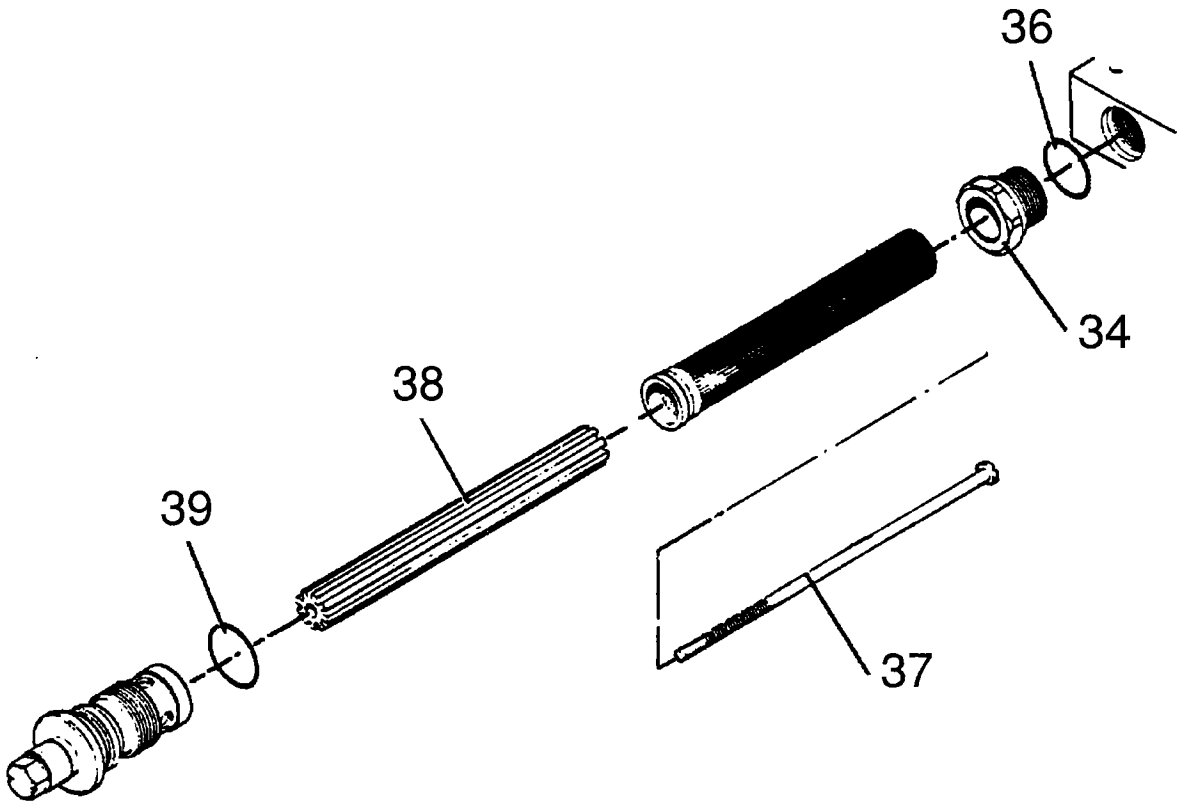
n) Hold the filter adapter (34) firmly and unscrew the filter (35).

o) Unscrew the filter adapter. Check the O-ring (36), replace as required.

p) Undo the screw (37) from the filter holder (38). Dismantle the filter assembly and replace the O-ring (39).

q) Refit the adapter. Reassemble the filter and fit it in the adapter.





34 Filter adapter
35 Filter
36 O-ring
37 Screw
38 Filter holder
39 O-ring

(Cont'd)

(Figure overleaf)

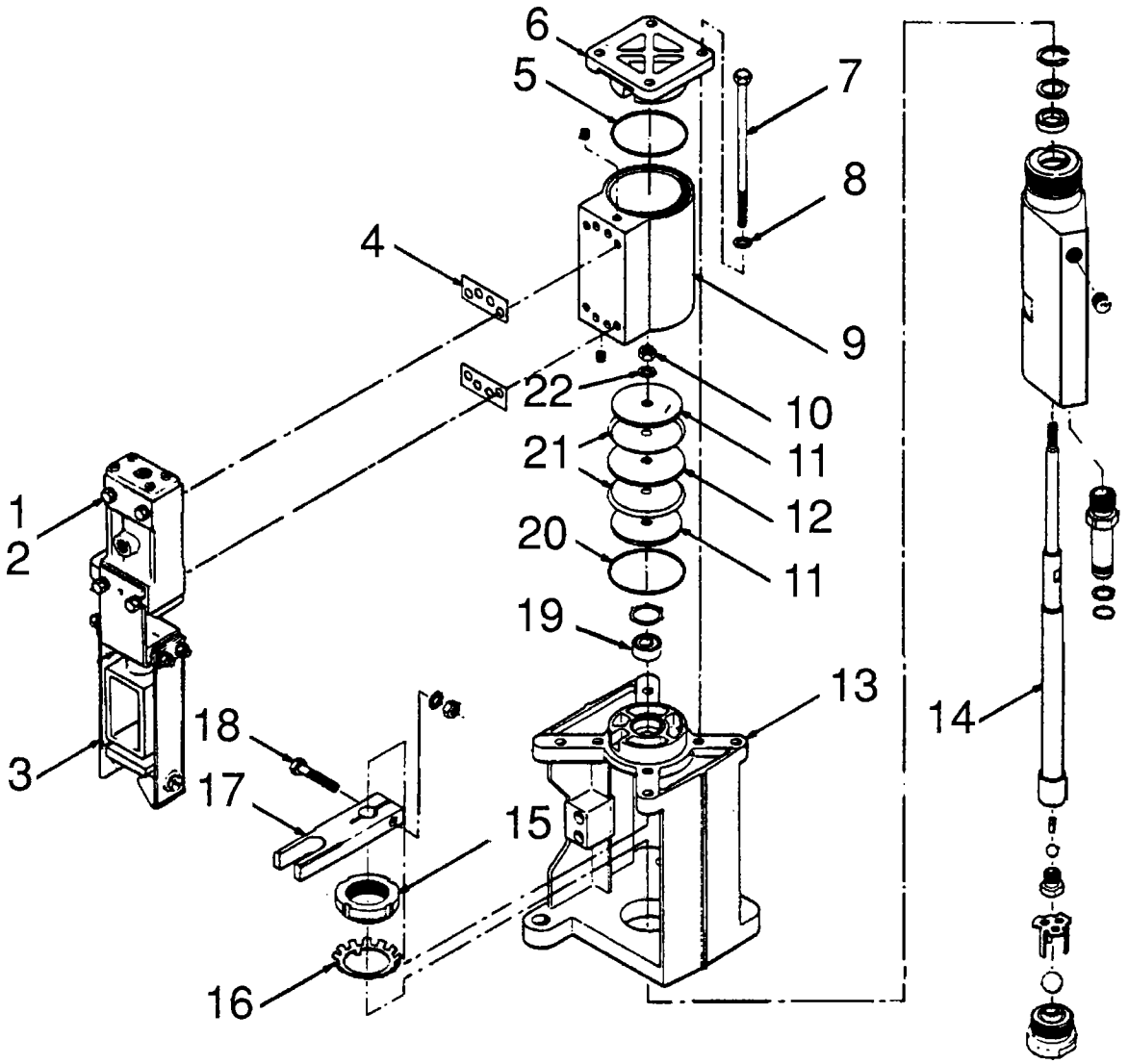
Reassemble in reverse order; keep the following in mind:

- put the ball (32) in the seat (31); attach the housing (30) to the seat; now it should be possible to turn the seat upside down with the ball and cage dropping off; if required, bend the legs at the housing,
- apply Loctite Red to the threads of the seat,
- tighten the following components; torques as listed:

  – ball seat (33) 5.64 – 6.78 Nm
  – cross-over pipe (27) 15.82 – 18.08 Nm
  – nut (15) 11.30 – 13.56
  – screw (7) 5.09 – 6.22 Nm
  – screw (1) 11.30 – 13.56 Nm
  – screw (18) 11.30 – 13.56 Nm
- lubricate the pump gasket and seal rings with Parker lubricant,
- the flat surface of the cylinder housing (9) is to be parallel with the holes in the pump frame (13),
- make sure the grove in the cylinder end section (6) faces the 4-way valve.

(Cont'd overleaf)

(Cont'd)



1 Screw
6 Cylinder end section
7 Screw
9 Cylinder housing
13 Pump frame
15 Nut
18 Screw
27 Cross-over pipe
30 Housing
31 Ball seat
32 Ball
33 Ball seat

Replacement

WARNING!

Never remove any part or component until air and electric power have been disconnected and the pressure of the hot melt in the system has been relieved (zeroed) by triggering a gun.

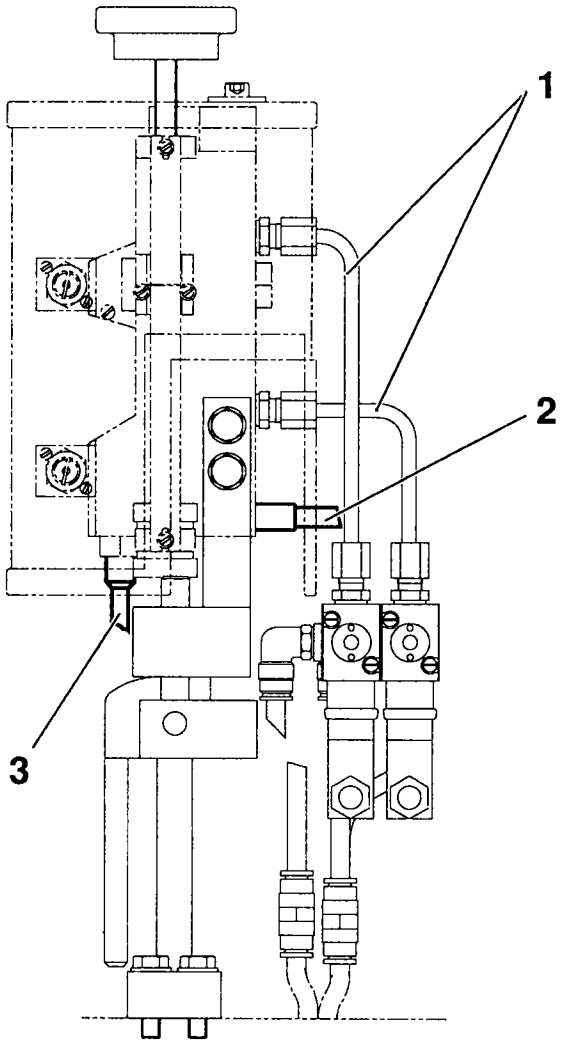
Wear safety glasses, protective gloves and other protective clothing to avoid injuries from splashing hot adhesive.

a) Disconnect the air line (1) and the cable (2).

b) Disconnect the hot melt hose (3) from the hot melt gun.

c) Lift the module straight up and replace it.

Fit in reverse order.



1 Air line
2 Cable
3 Hot melt hose

Replacement

WARNING!

Never remove any part or component until air and electric power have been disconnected and the pressure of the hot melt in the system has been relieved (zeroed) by triggering a gun.

Never perform this operation on a cold gun.

Wear safety glasses, protective gloves and other protective clothing to avoid injuries from splashing hot adhesive.

Remove the nuts (1).

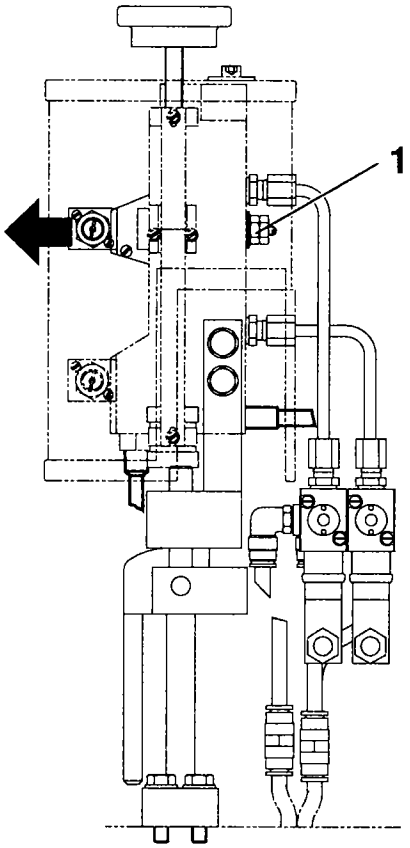
Pull the gun unit straight out.

Replace the O-rings (2), (3) and (4).
Apply O-ring grease with new O-rings.

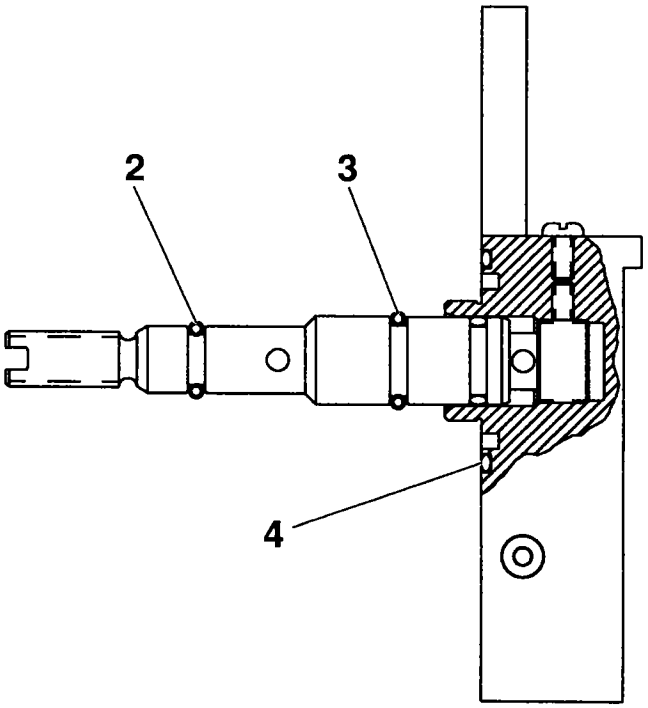
Refit the gun unit. Tighten the screw (1) using a dynamometric wrench. Tighten with a torque of 0.9-1.1 Nm.

Make sure the washers are placed correctly.

(Cont'd overleaf)



1 Screw
2 O-ring
3 O-ring
4 O-ring



(Cont'd)

Hot melt guns

a) Remove the two socket-head screws (1) from the module (2).

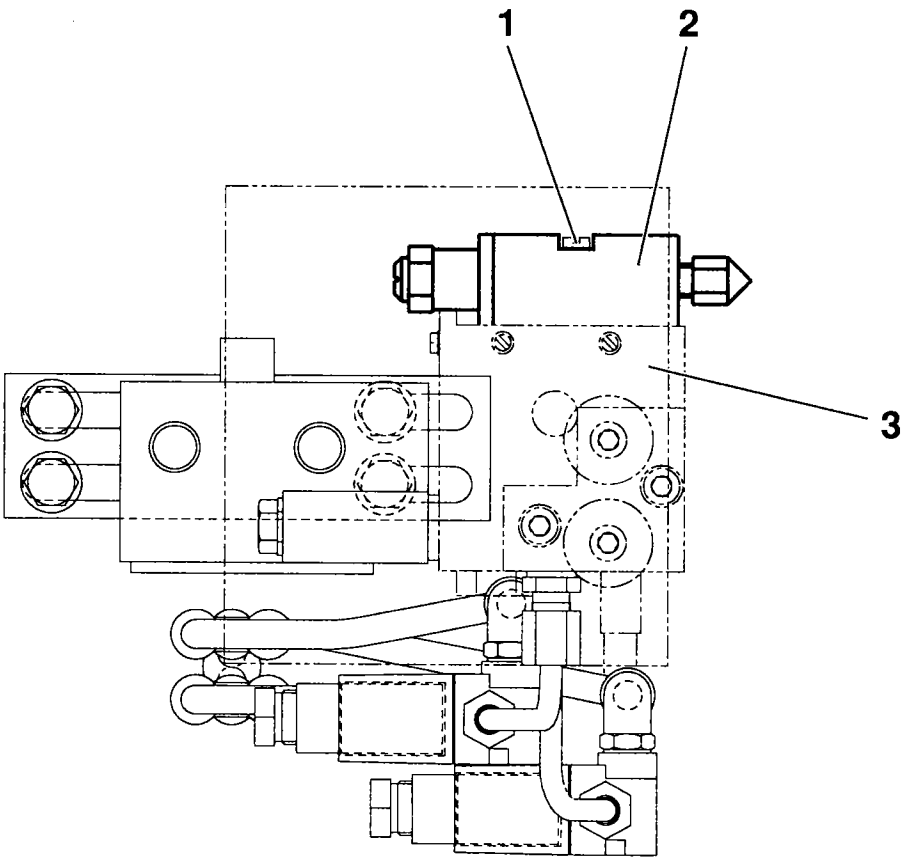
b) Remove module (2) from gun service block (3).

c) Remove two O-rings from back of module (2) and discard.

d) Position two new O-rings coated with lubricant into grooves in back of module body.

e) Position module (2) on gun service block (3).

f) Secure module to gun service block (3) with two socket-head screws (2) coated with teflon paste.



1 Socket-head screw
2 Module
3 Gun service block

Replacement

WARNING!

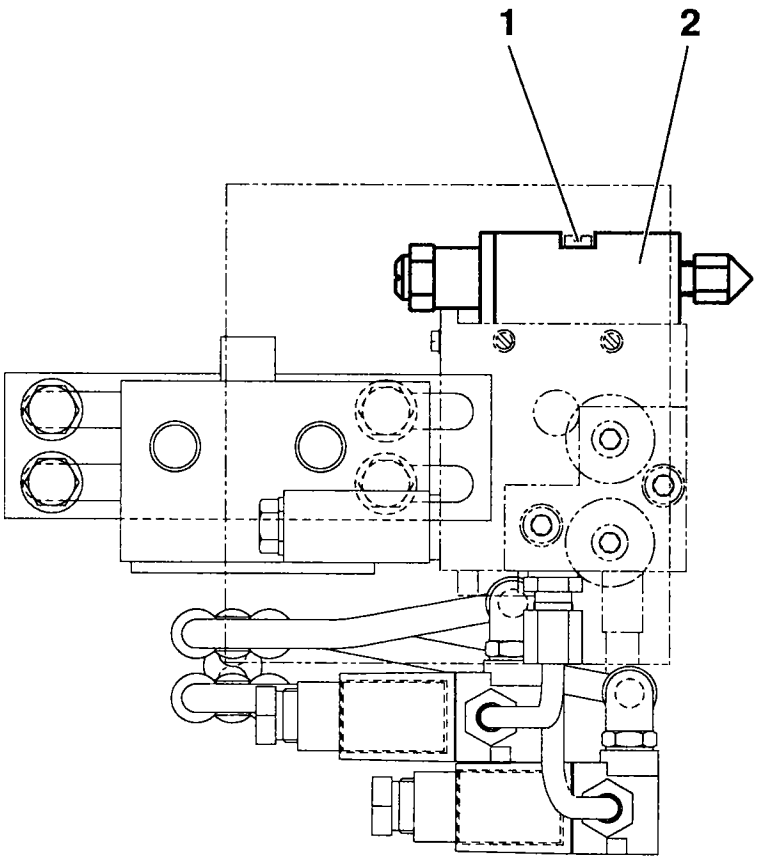
Never remove any part or component until air and electric power have been disconnected and the pressure of the hot melt in the system has been relieved (zeroed) by triggering a gun.

Wear safety glasses, protective gloves and other protective clothing to avoid injuries from splashing hot adhesive.

a) Undo the screws (1).

b) Replace the hot melt guns (2).

Reassemble in reverse order.



1 Screw
2 Hot melt gun

Cleaning of nozzles

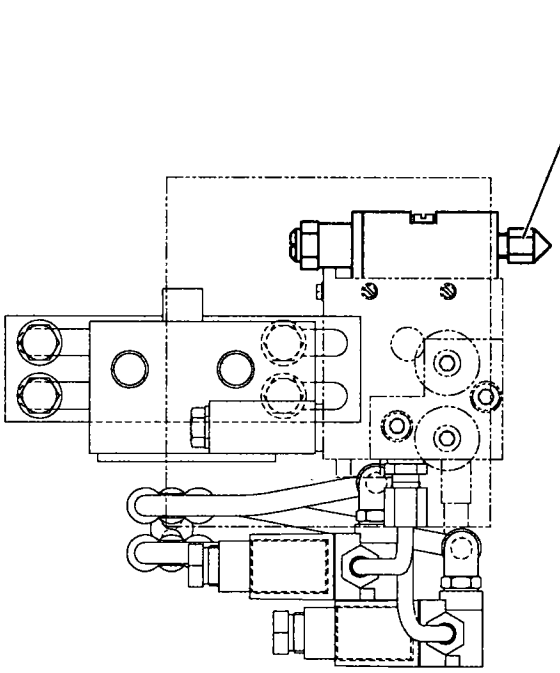
WARNING!
Wear safety glasses, protective gloves and other protective clothing.

The gun must be heated to working temperature.

a) Unscrew the nozzles (1).

b) Immerse the nozzles in a container with Nordson Solvent R and heat to working temperature of the adhesive (appr 170°C).

c) Blow the nozzles with compressed air, blowing backwards through them. If required, use a cleaning probe, TP No 90439-58.



Bleeding the system

The nozzles are to be removed.

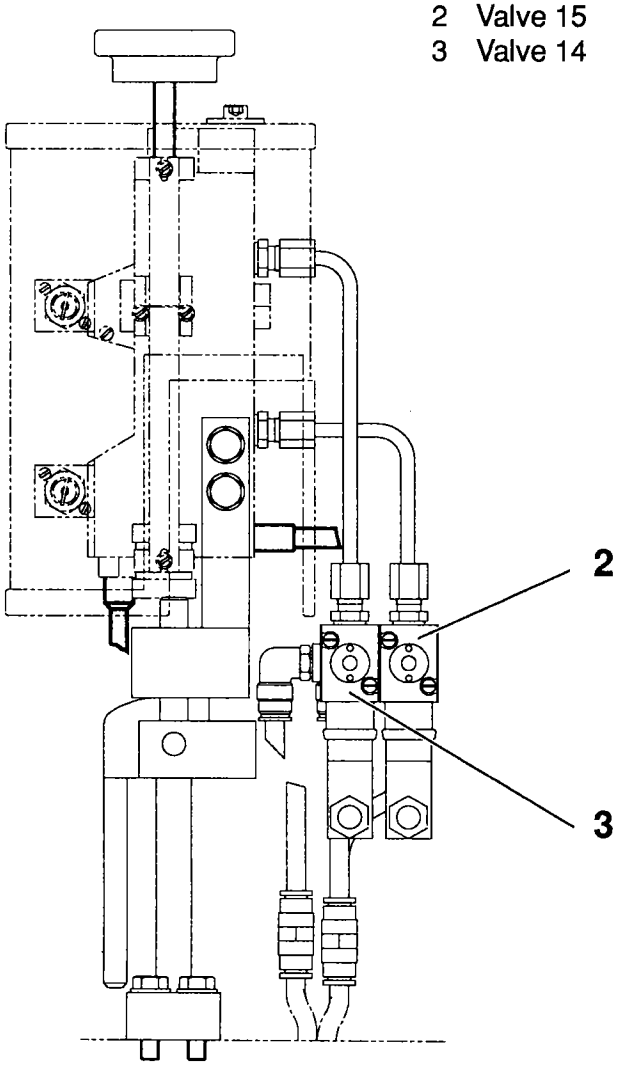
a) Reduce the air pressure with the regulator of the hot melt pump to 0.1 MPa.

b) Pump hot melt adhesive through the guns until pure hot melt without air bubbles is extruded, by repeatedly pushing the manual triggers of valves Y14 (2) and Y15 (3).

   Reset the air pressure of the pump to 0.4–0.5 MPa.

c) Refit the nozzles.

1 Nozzle
2 Valve 15
3 Valve 14



Setting

a) Loosen the screws (2) and place the hot melt guns (4) and (5) as close to the packages as possible to avoid strings of hot melt.

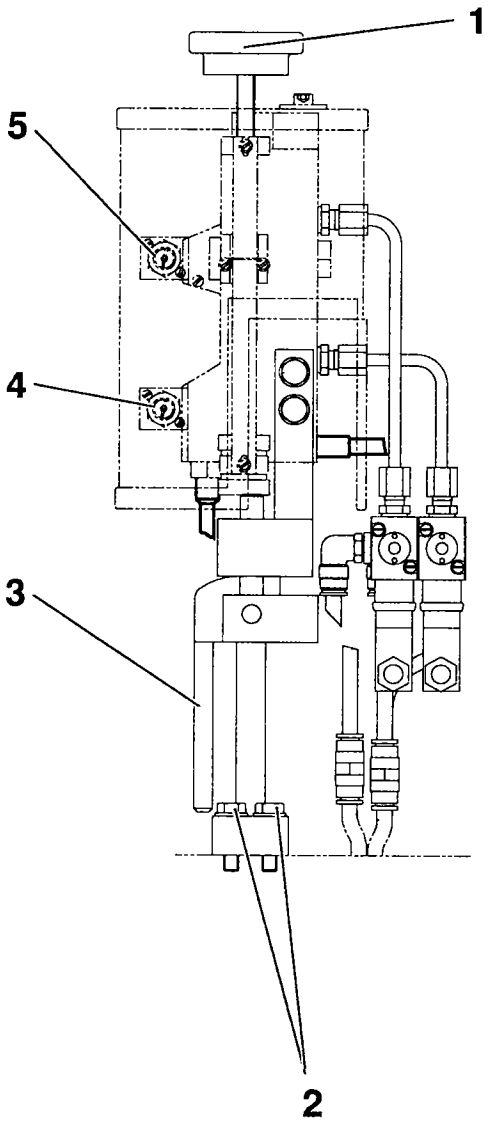
b) Operate the machine and check that the hot melt dots (7) are deposited as illustrated. If required, adjust as follows:

c) The lower beds can be placed in two positions, 10 or 20 mm from bottom. Adjust the height with the handle (3) so that the lower dot is placed as figure (7).

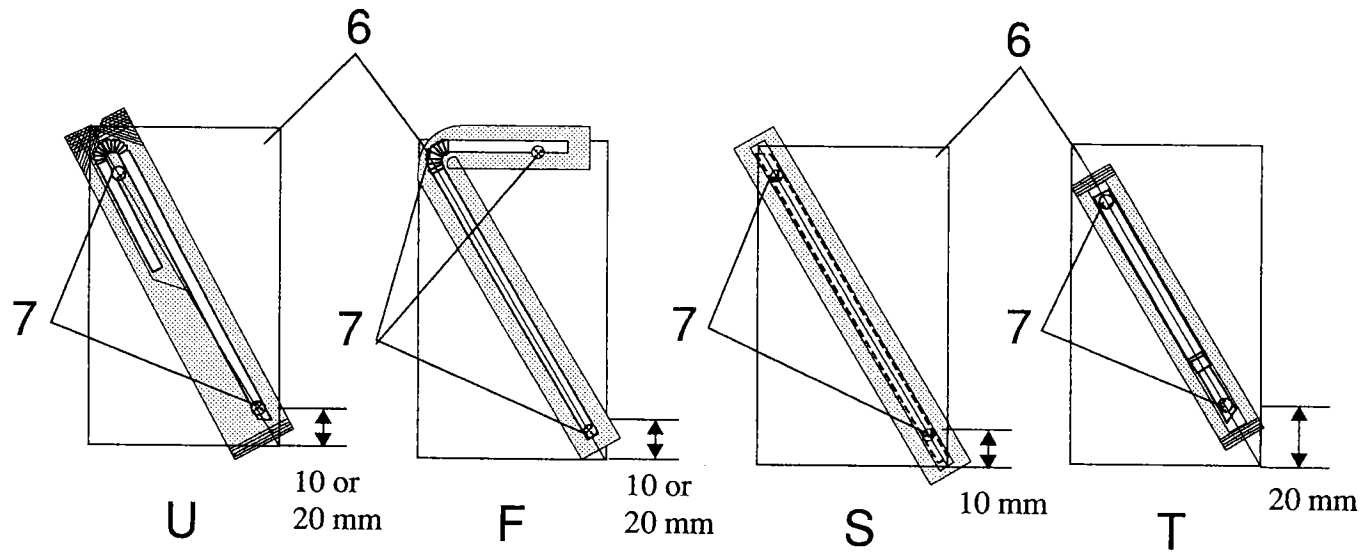
WARNING!
Never do this adjustment on a cold gun.

d) Adjust the upper dot from the hot melt gun (5) with hand wheel (1) or a wrench until the hot melt dot is placed as figure (7).

e) If there is air in the hot melt, take the necessary steps acc to page 210-51, items e – h.



1 Hand wheel
2 Screw
3 Handle
4 Hot melt gun (lower)
5 Hot melt gun (upper)
6 Package
7 Hot melt dot



Replacement

a) Switch the main switch of the packaging machine to pos OFF.

b) Remove shield from front of the hot melt gun.

c) Remove the screws that secure the cover (1) to the service body module.

d) Remove porcelain wire nuts (3) from heater leads.

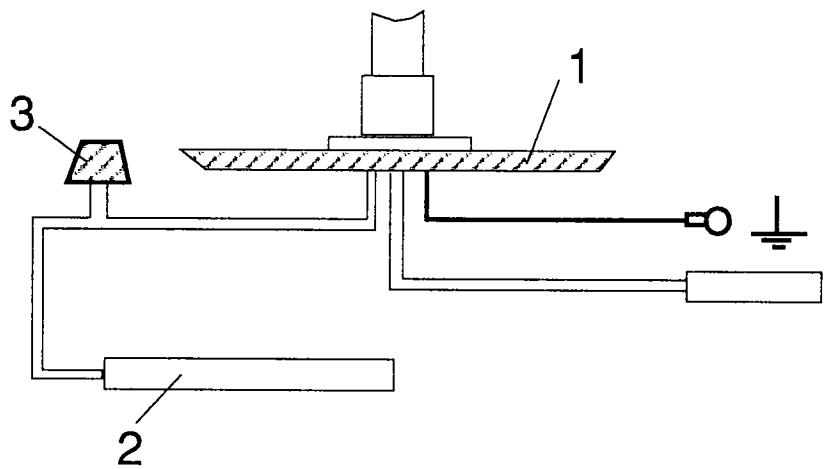
e) Remove the heater (2).

Footnote
If heater does not slide easily out of the bore, remove the screw at the opposite end of the guide rod from electrical enclosure. Insert a rod into the screw hole and gently tap on the end of the rod with a hammer. Replace the screw after heater is removed.

f) Install a new heater (2) and attach leads with porcelain wire nuts (3).

g) Replace in reverse order.

h) Switch the main switch ON.



1 Cover
2 Heater
3 Porcelain wire nut

Replacement

Use the RTD (Resistant Temperature Detector) replacement kit to replace a defective RTD.

a) Switch the main switch of the packaging machine to pos OFF.

b) Remove shield from bottom of the hot melt gun.

c) Remove the screws that secure the cover (1) to the service body module.

d) Remove the cylindrical RTD (2) from its mounting hole in the service body module.

e) Cut the two RTD leads appr 15 mm from the defective RTD and discard the RTD.

f) Strip about 5 mm of insulation from the cut wires.

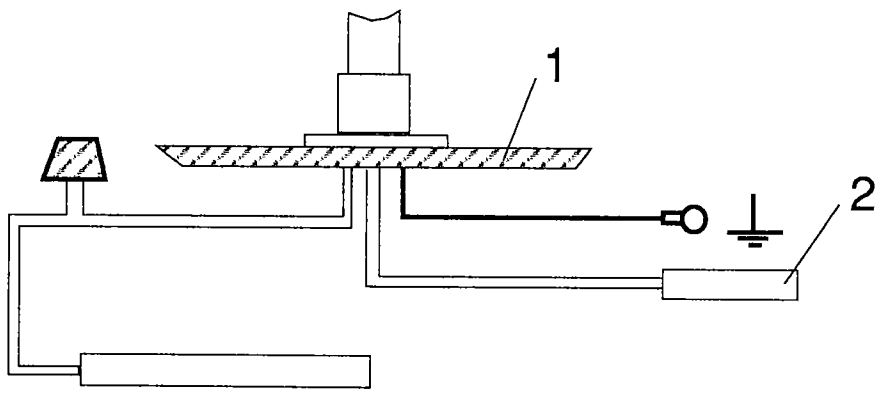
g) Using parts supplied in the RTD replacement kit, twist the leads of the new RTD together with the cut wires and secure them with the two wire nuts.

Footnote
It does not matter which lead is connected to which wire, because the RTD is not polarity sensitive.

h) Slide the RTD (2) into its mounting hole in the service body.

i) Replace in reverse order.

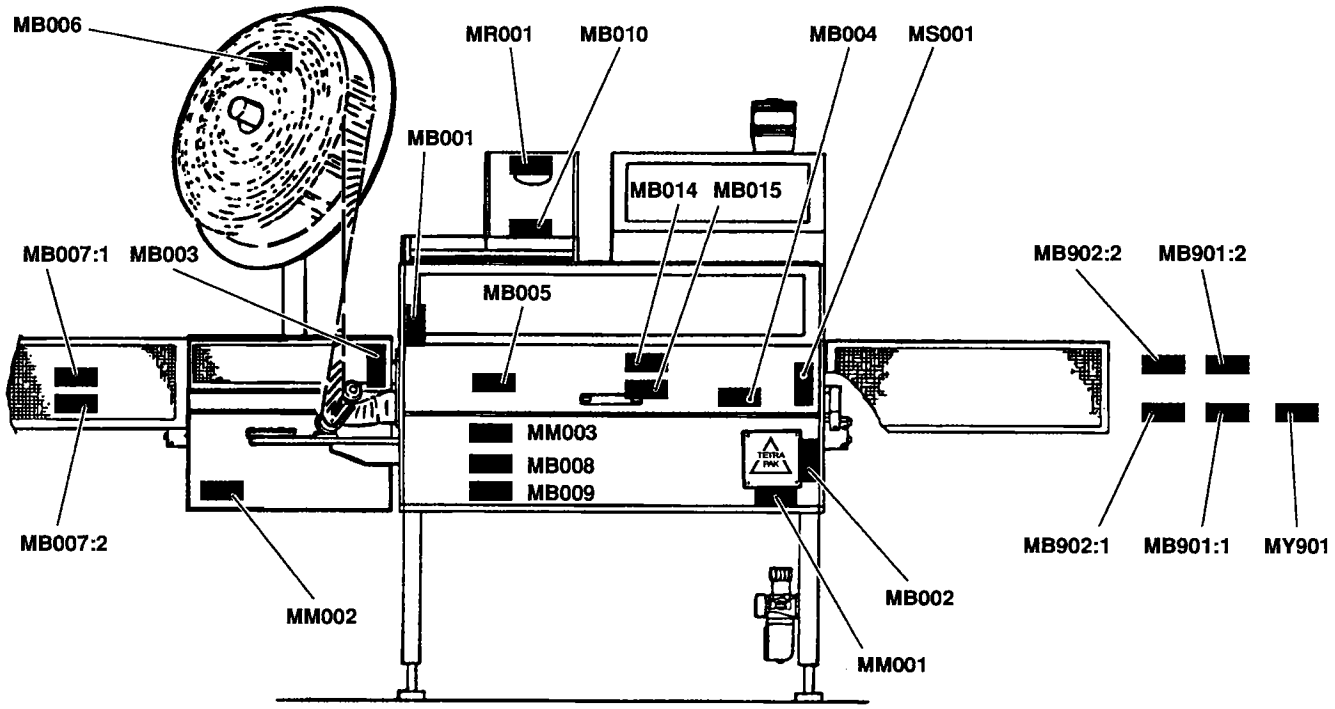
j) Switch the main switch ON.



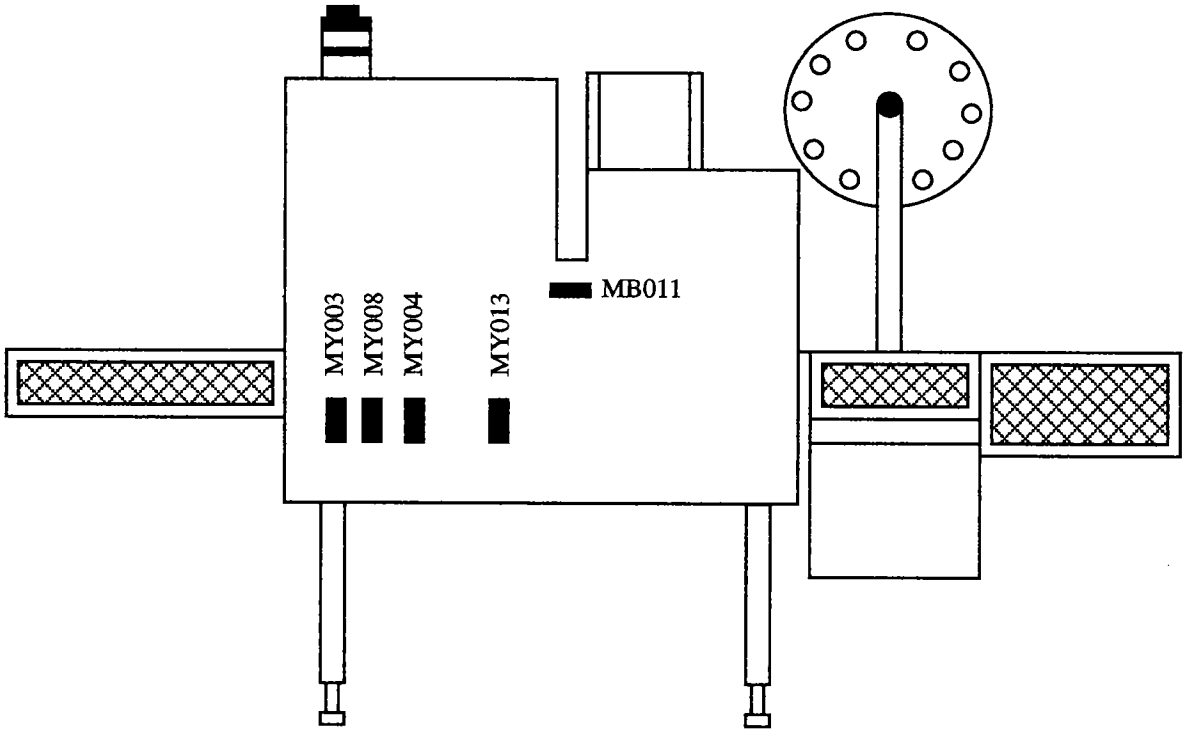
1 Cover
2 RTD

Description	Issue	Page
Electrical equipment, overview	1/9205	320-71:1-2
Photocells – Setting	3/9205	325-51:1-2
Power supply-32 – Replacement – Resetting when overload	1/9107	330-31
Central unit CU-16 – Checking/Fault-finding	1/9107	335-11
Central unit CU-16 – Replacement – Replacement of battery	1/9107	335-31
Input/output modules I/O – Replacement – Resetting	1/9107	340-31
Stepping motor – Setting	1/9107	360-51
Motor protection – Setting	2/9205	370-51

Electrical equipment, overview



MB001	Safety switch, protective cover
MB002	Safety switch, protective cover
MB003	Safety switch, protective cover, flex
MB004	Hot melt gun
MB005	Applicator unit
MB006	Magazine straws
MB007:1	Queue after machine, transmitter
MB007:2	Queue after machine, receiver
MB008	Stop position feeding wheel (S-, T- and F-type straws)
MB009	Stop position feeding wheel (U-type straws)
MB010	Temperature guard, hot melt
MB901:1	Outer carton brake sensor 1, transmitter
MB901:2	Outer carton brake sensor 1, receiver
MB902:1	Outer carton brake sensor 2, transmitter
MB902:2	Outer carton brake sensor 2, receiver
MM001	Motor, feed brake
MM002	Drive motor, flex unit
MM003	Step motor
MR001	Hot melt unit
MS001	Emergency stop
MY014	Hotmelt gun, upper
MY015	Hotmelt gun, lower
MY901	Outer carton brake



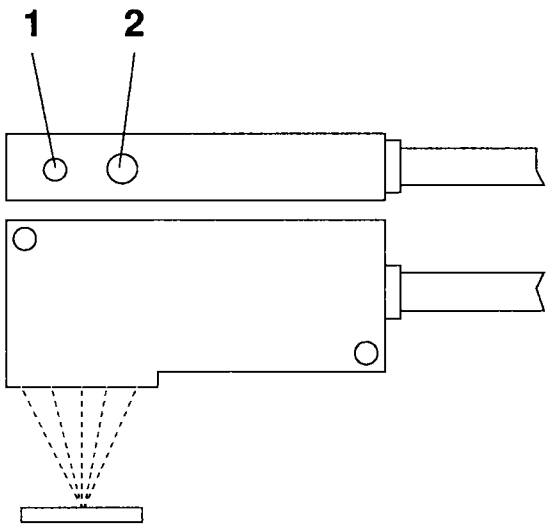
MB011	Safety switch, protective cover
MY003	Squeezer
MY004	Cutting unit
MY008	Package stop
MY013	Air pusher, blow

Setting

Reflection type

Place an object such as a card at a distance of appr 4-5 cm in front of the beam path. Turn the sensitivity screw (1) clockwice until the red LED (2) lights up.

Remove the object and check that the LED go off. If not, turn the sensitivity screw anti clockwice and make a new adjustment.



1 Sensitivity screw
2 Light-emitting diode (LED), red

Transmitting/receiving type

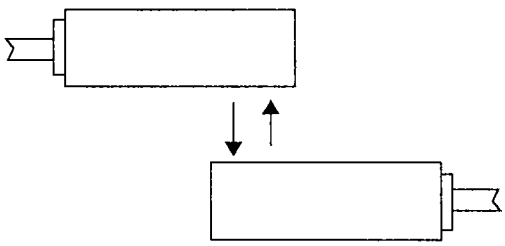
Place one transmitter and one receiver besides, see figure.

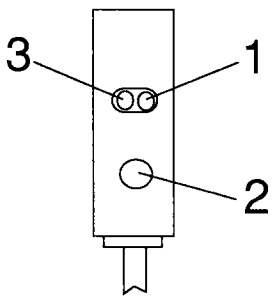
Turn the sensitivity screw (2) to minimum and then back to where the red LED (1) lights up.

If this happens before point "D" on the sensitivity screw, the photocell is correctly aimed.

Turn the sensitivity screw to maximum.

When no object is being indicated, both LEDs (1) and (3) should light up; if not, the setting is uncertain.



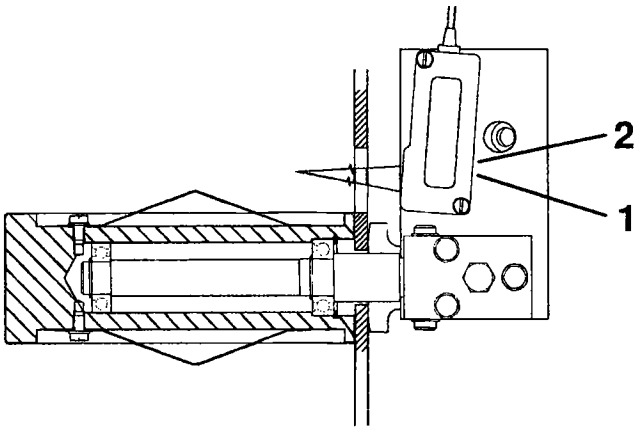


1 Light-emitting diode (LED), red
2 Sensitivity screw
3 Light-emitting diode (LED), green

Setting

Magazine straws, photocell MB006

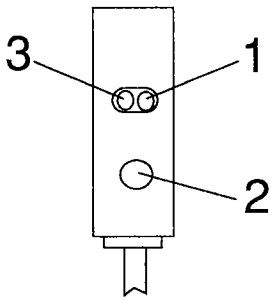
Make sure the red LED (2) goes out when there are appr 100 straws left on the reel. If required, adjust with the sensitivity screw (1).

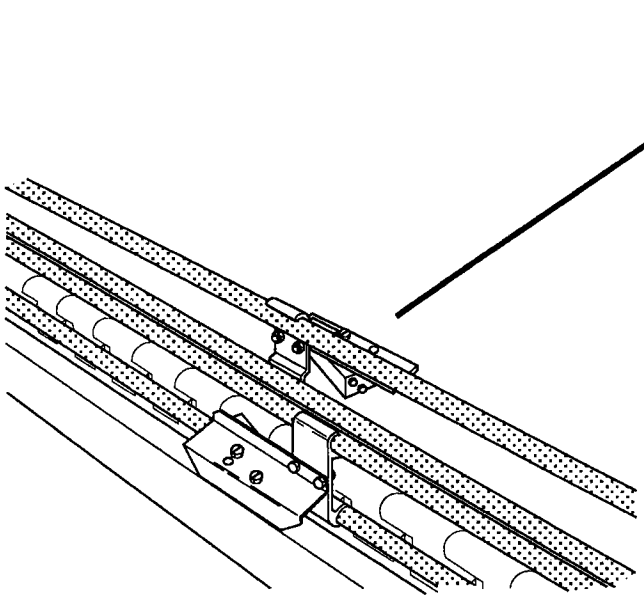


1 Sensitivity screw
2 Light-emitting diode (LED), red

Queue monitor, discharge, MB007

Make sure the red LED (1) lights up when a package passes in front of the monitor. Adjust by means of the sensitivity screw (2).



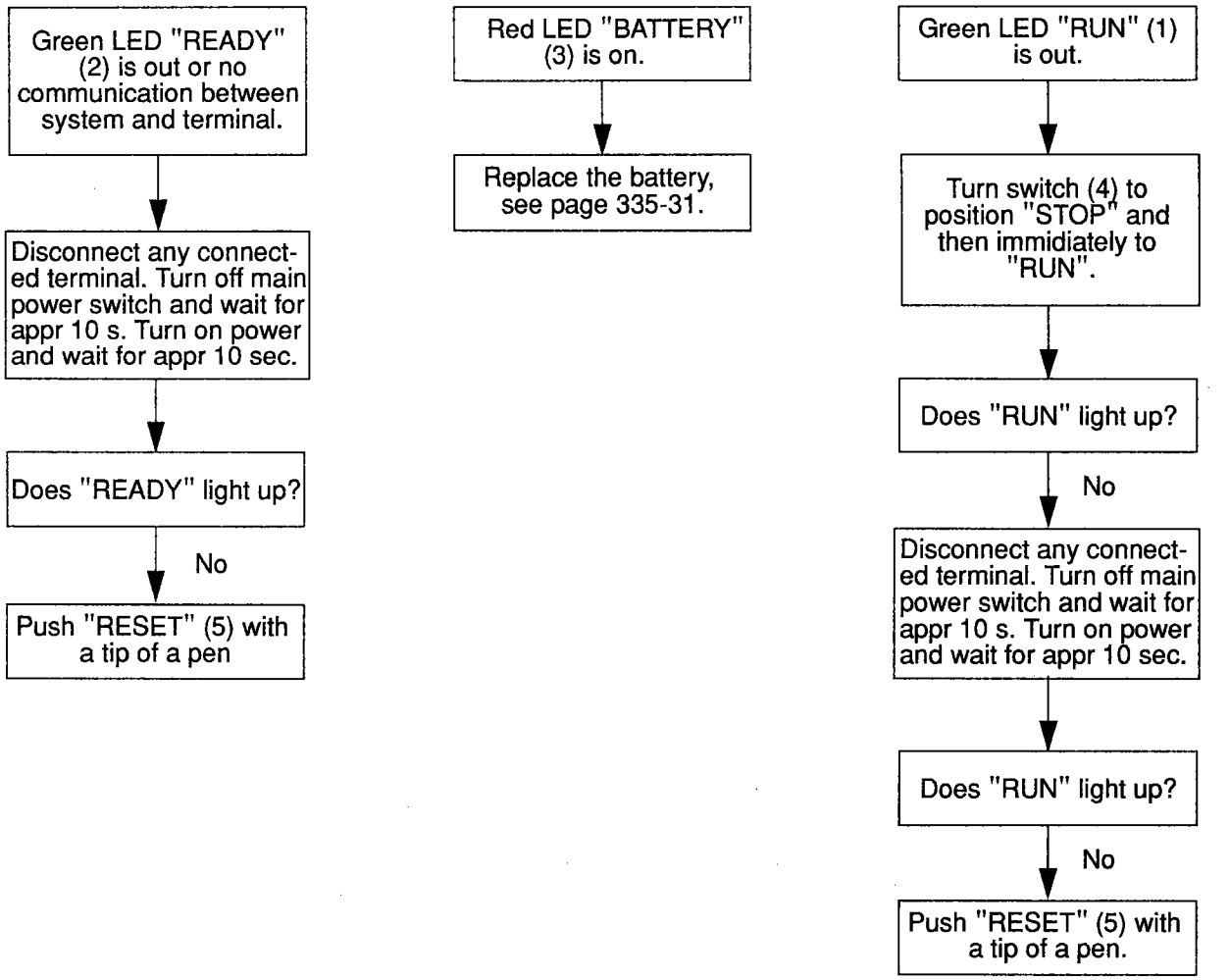


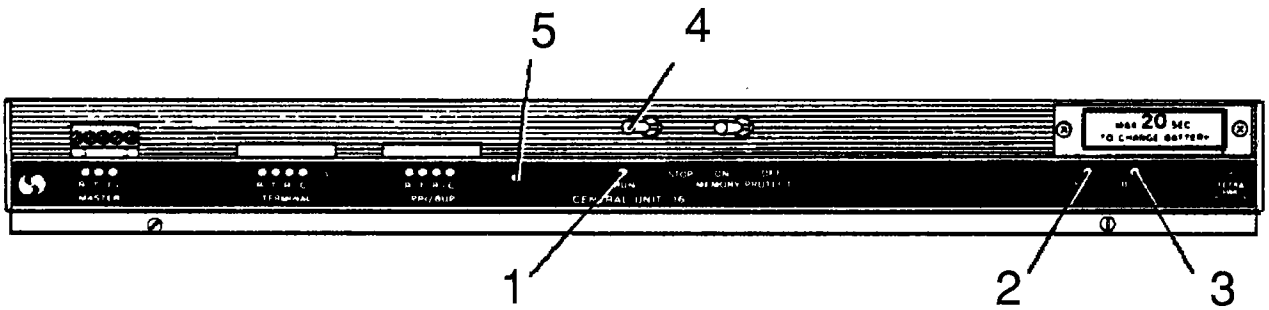
1 Light-emitting diode (LED), red
2 Sensitivity screw
3 Light-emitting diode (LED), green

Checking/Fault-finding

Check that:

- the green LED, "RUN", (1) is on,
- green LED, "READY", (2) is on,
- red LED, " BATTERY" (3) is out.





Setting

The speed of the feed wheel unit may be adjusted by means of the screw (1) in the electrical cabinet.

The speed of the feed wheel is to be 23-25 rpm.

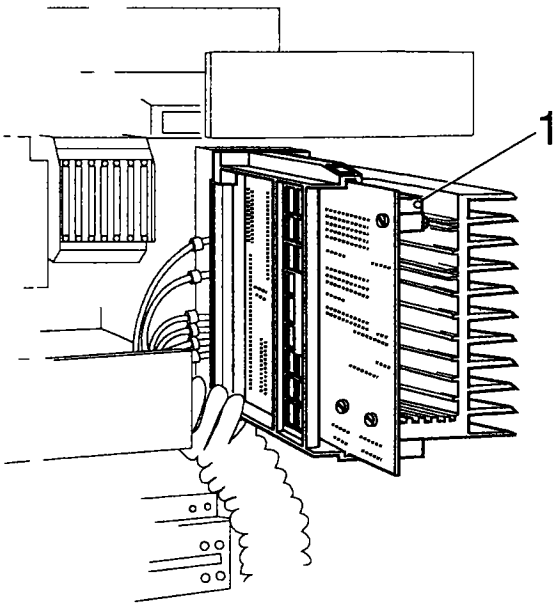
Measure the speed as follows:

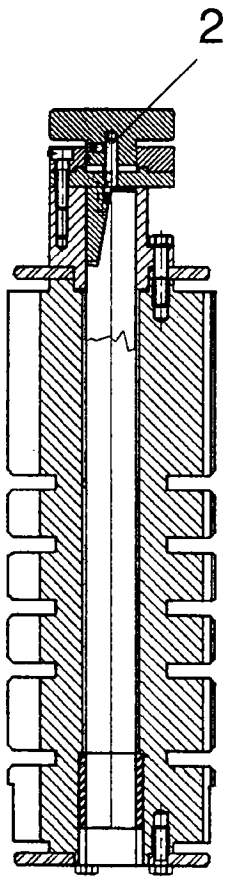
a) Make sure that STRAWS is ON. The machine is to be in step 1 or 2.

b) Turn off the air supply and remove the straws from the feed wheel.

c) Bridge terminals 13 and 14 on opto switch V002 (see electrical diagram).

d) Measure with a low-speed tachometer the speed of the shaft at the measuring point (2).





1 Screw
2 Measuring point

Setting

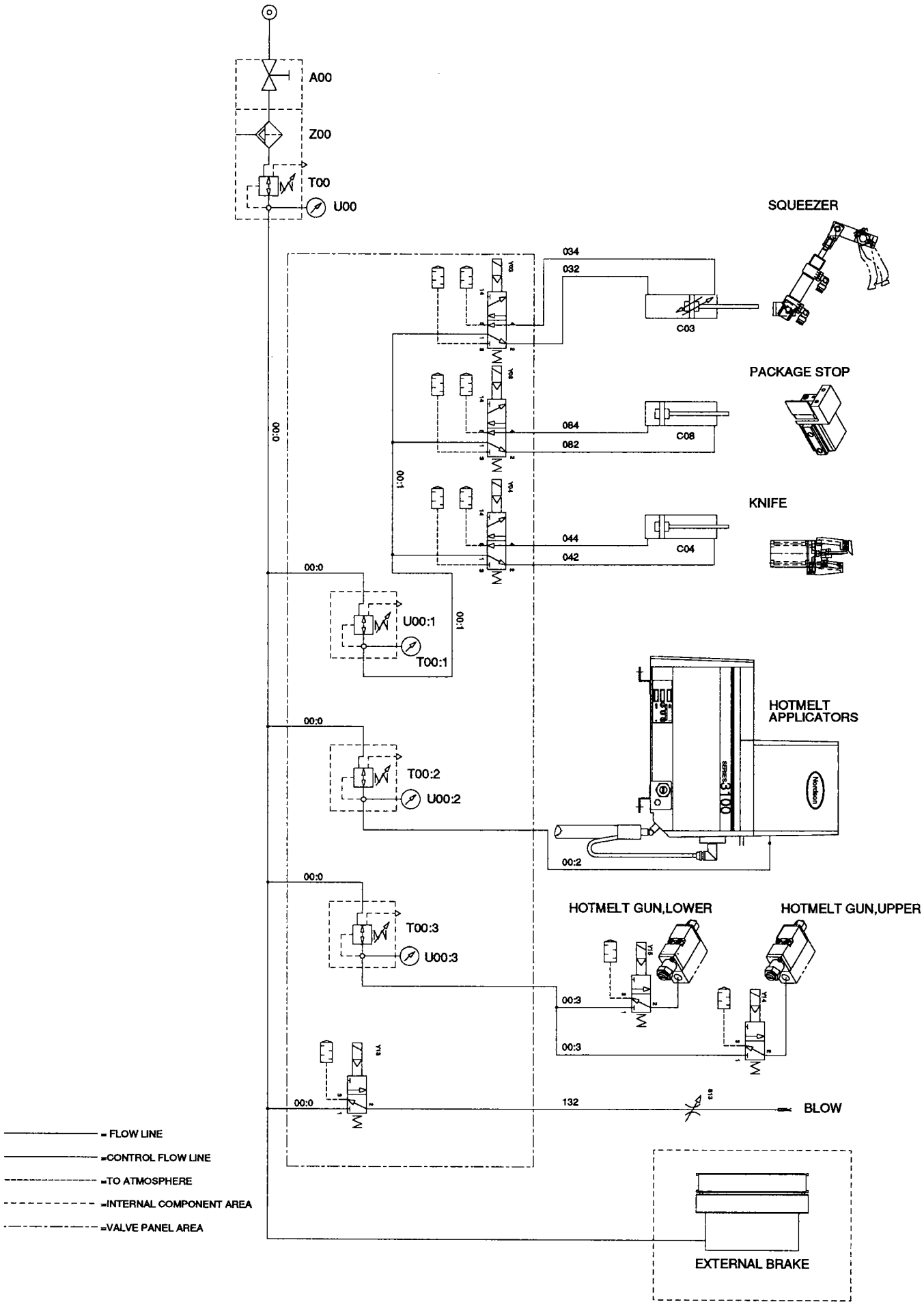
Set the motor protections according to the table.

Q1	Q2	Q3	Q10
0.31	0.54	To be set acc to the rated current of the conveyor motor.	1.0 (380 V)
0.52	0.9		1.0 (220 V)

Q1 Feed brake
Q2 Drive motor, flex unit
Q3 Feed chain (extra equipment)
Q10 Contol transformer

Description	Issue	Page
Pneumatic diagram	2/9205	410-71
Valves – Checking	2/9205	420-11
Valves – Overhaul kits	1/9107	420-31

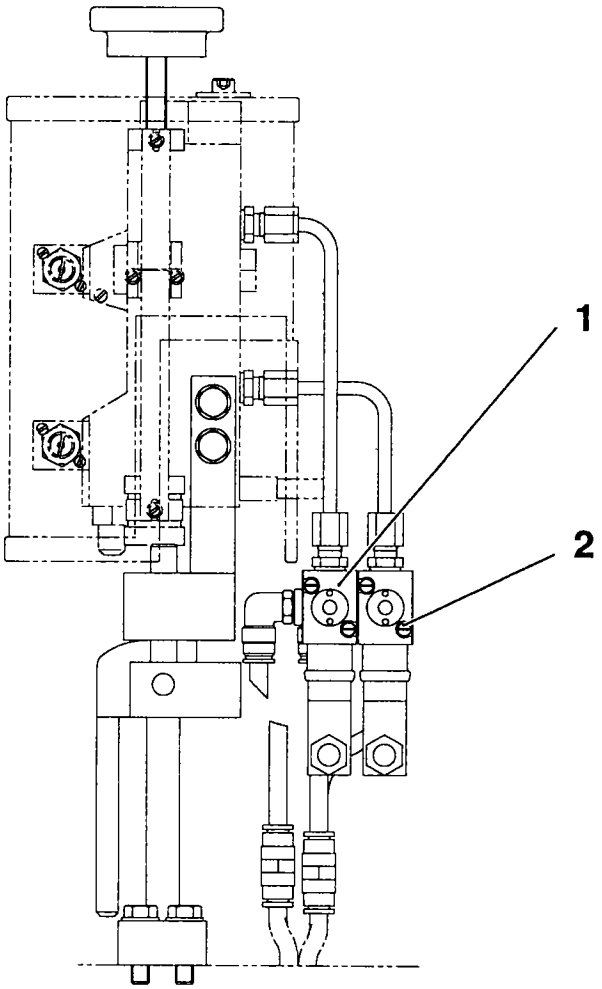
Pneumatic diagram



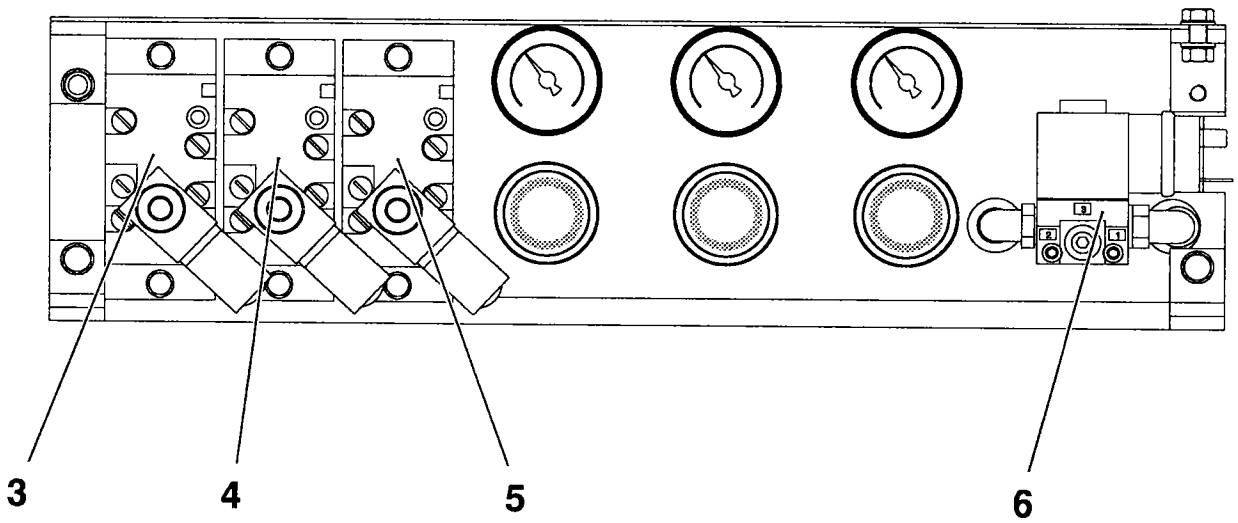
Checking

Check that all hoses and connections are tight.

Replace as required.



1 Hot melt gun Y014, upper
2 Hot melt gun Y015, lower
3 Squeezer, Y003
4 Package stop, Y008
5 Cutting unit, Y004
6 Air blow, Y013



Overhaul kits

Valve

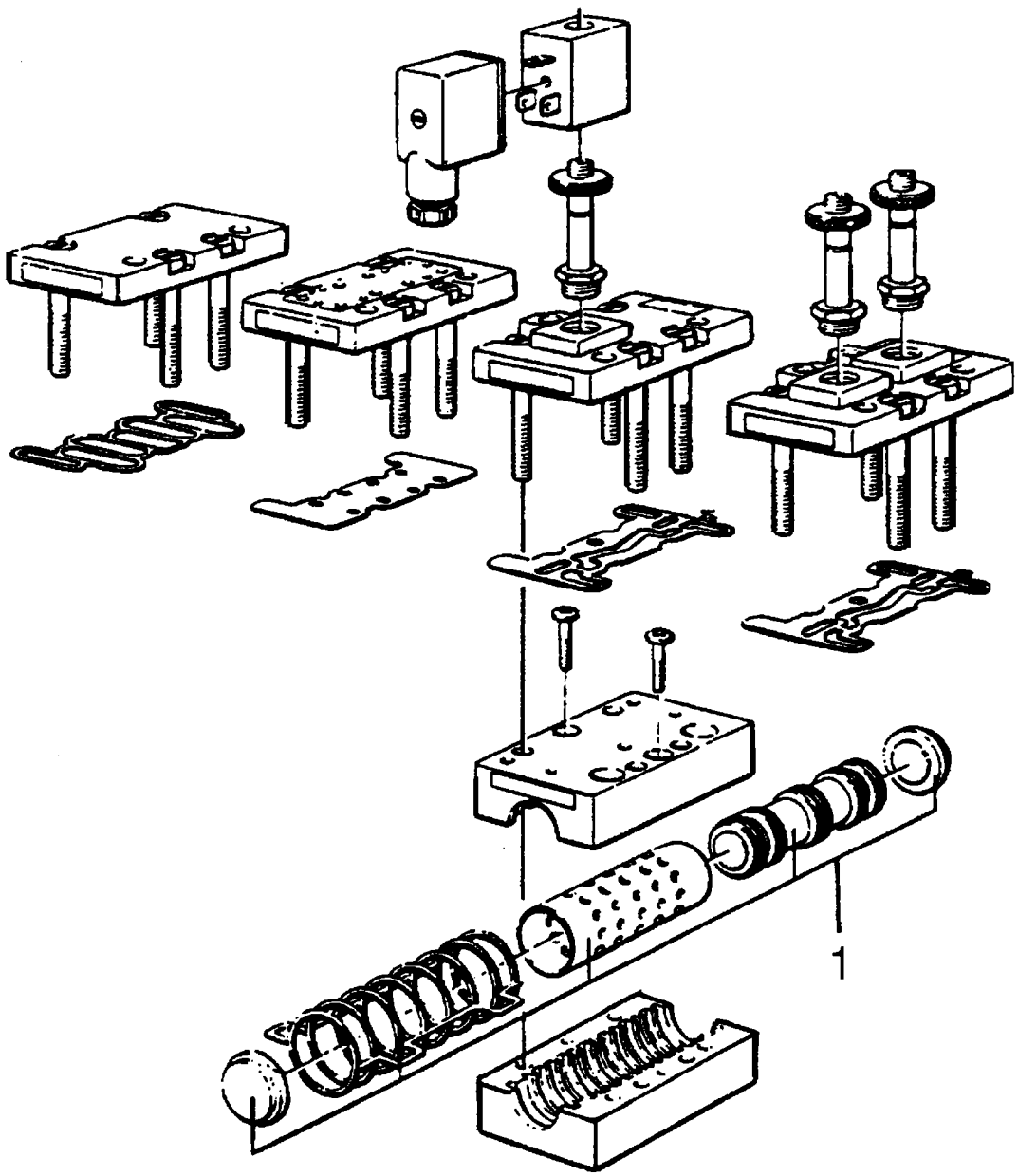
Mecman 581/111

Tetra Pak No 90042-108

Wear-and-tear parts kit (1)

Mecman Order No 04904 295 06

Tetra Pak No 90042-451



Description	Issue	Page
Fault finding	1/9207	510-71:1-2

The straws are not cut apart:

a) Check that the correct straw type is selected.

b) Check the function of the cutting unit.

c) Inspect the knife. It should not be worn or damaged.

d) Check that the feed wheel is fastened on the shaft.

e) Make sure the feed wheel stops at the correct position.

The packages are not conveyed properly:

Clean the path and the guides from any hot melt waste and other things that might prevent the packages from being conveyed properly.

The straws doesn't stick to the packages:

a) Check that hot melt is applied to the packages. If not check that the hot melt unit is turned on; check that there is hot melt in the tank; check the temperature setting on tank and gun acc to page 210-51:1; check the function of the hot melt guns.

b) Check that the lamp on the hot melt unit is alight. If not, check that:
- the fuse is intact, if not replace it.
- hot melt guns have the correct working pressure about 0.4-0.45 MPa (4-4.5 bar).

c) Check that the squeezers reach the packages.

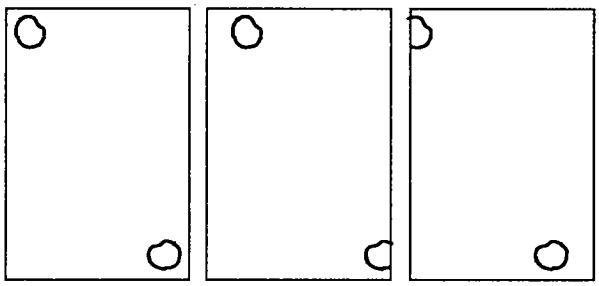
d) Check that there isn't any hot melt on the squeezers.

e) Check the setting of the feed stop acc to page 165-51.

f) Check that the straws are cut apart.

g) Make sure the path and the guides are free from any hot melt waste.

The position of the hot melt dots is varying on the packages:



a) Check that the speed of the conveyor chain doesn't vary.

b) Check that the guide rail at the feed brake is correctly set acc to page 110-51.

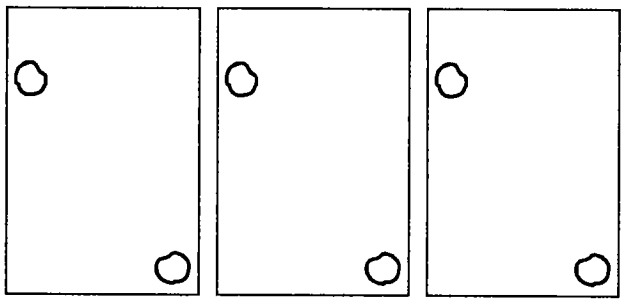
c) Check that the pressure of the hot melt valves is correct acc to page 210-51:1.

d) Clean the path and the guides from any hot melt waste and other things that might prevent the packages from being conveyed properly.

(Cont'd overleaf)

(Cont'd)

5. The hot melt dots are placed incorrectly:



a) Check the height setting of the hot melt guns acc to page 247-51.

b) Check that the correct type of straw is selected.

c) Check that the correct package volume is selected acc to OS, section G, item 2.

d) Check the speed of the conveyor chain acc to the table below:

Volume	Speed
125 cc, 200 slim	15.5 m/min
All other volumes	21.25 m/min

e) Check for dirt in the nozzles of the hot melt guns. If required clean the nozzles acc to page 247-31.

f) Check the temperature setting of the hot melt tank and the hot melt guns acc to page 210-51:1.

g) Check that the pressure of the hot melt valves is correct acc to page 210-51:2.