Flowwrapper	: Pack-6
Machine number	:
Year of manufacture	:
Customer	:

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2034 INTRODUCTION

FOREWORD

This manual consists of a number of sections. Each section describes the operation of the relevant part of the machine. A section comprises a text followed by the accompanying figure numbers. The text refers to these numbers. For technical reasons, actual operation may deviate from the description given.

The directions in this manual assume production by a right-handed machine; in other words, if one faces the instrument panel of the machine, the production flow is from left to right.

For a good understanding of the machine it is highly recommended that the entire manual will be read through before starting production. Reading the manual in advance will prevent unnecessary searching in the relevant sections.

1 GENERAL

The function of the machine is the packaging of products in what is known as a "flowpack".

The Pack-6 packaging machine consists of the following components:

- Drive
- Infeed table
- Folding box
- Foil tower
- Sealing table
- Crimper unit
- Discharge conveyor

2 PRINCIPLE

See Figure 2034.1
The products are carried equally spaced from one another by the infeed chain on the infeed table (1 in Fig. 2034.1).

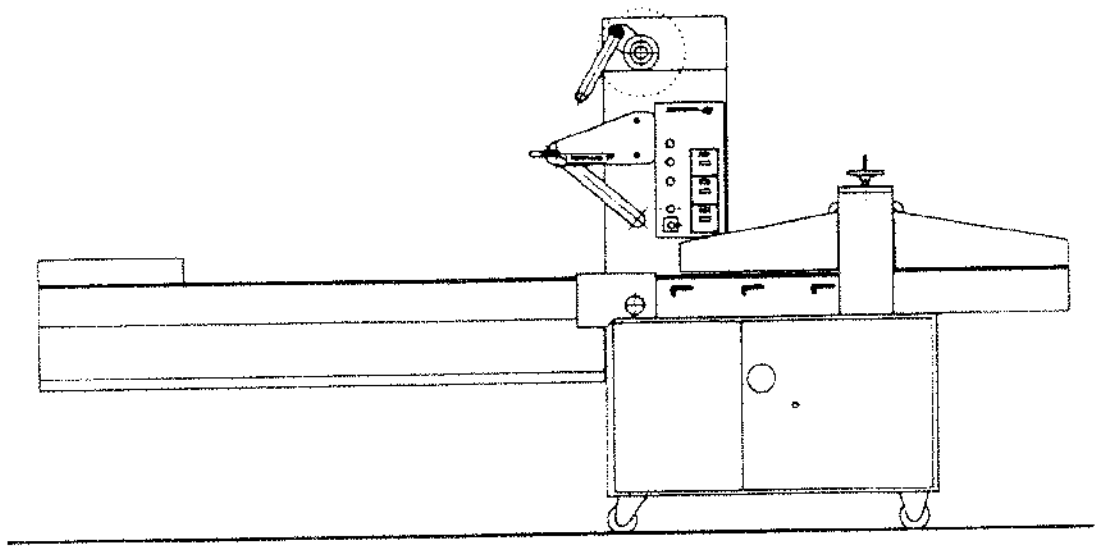
A reel of packaging material (= foil) is attached to the foil tower (3 in Fig. 2034.1). The foil is folded into a tube by the folding box (2 in Fig. 2034.1). The product is then slid into the tube in the folding box. The sealing table (4 in Fig. 2034.1) transports the foil and seals the foil tube longitudinal (finseal).

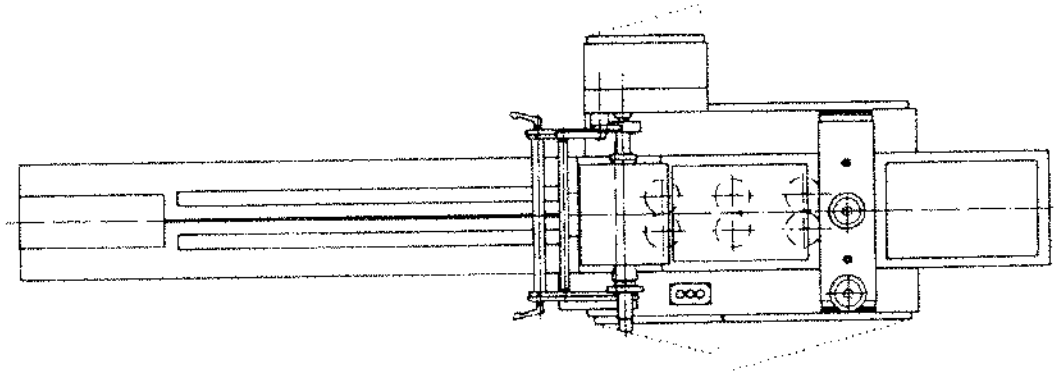
The product is now enclosed in a sealed tube of foil. By the crimper unit (5 in Fig. 2034.1) the ends are sealed and cut through.

The packaged products leave the packaging machine by the discharge conveyor (6 in Fig. 2034.1).

Key to Figure 2034.1:

1 Infeed table
2 Folding box
3 Foil tower
4 Sealing table
5 Crimper unit
6 Discharge conveyor





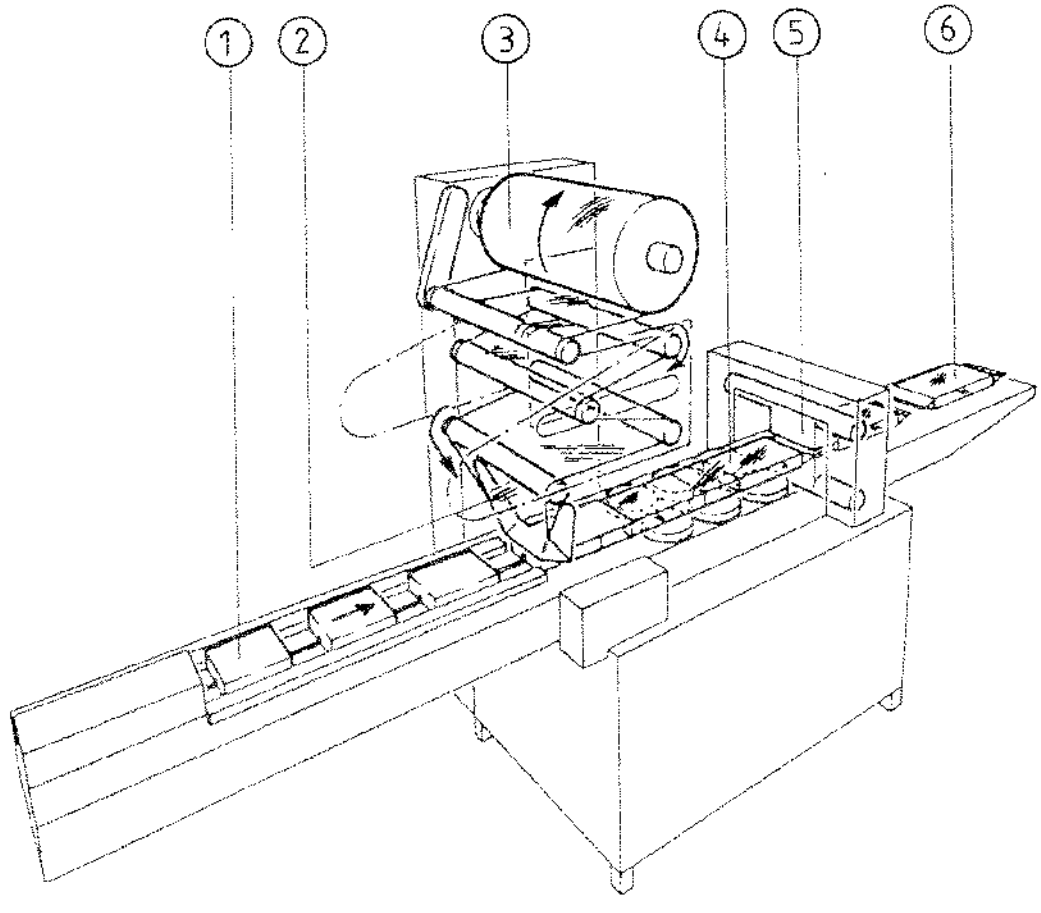


FIG 2034.1

2060 INSTALLATION

See figure 2060.1
When the Pack-6 wrapping machine is delivered, carry out the following procedure:

- Remove the packaging from the Pack-6.
- Assemble the infeed table to the sealing table frame plates (3 and 4 in figure 2060.1) and the Pack-6 frame, using the bolts supplied.
- Fit the drivechain round the change-over chainwheel (5 in fig 2060.1).
- Check the oil level in the reduction gearbox.
- Check the main voltage (see identity plate on the machine and the wiring diagram).
- Connect the cable for the emergency stop push button (in junction box under the input table).
- Connect the mains supply cable (by an authorized electrician).
- When starting the machine please pay attention to the direction of rotation, because of breaking of the pushers.
- Set up the Pack-6 for the product to be packed using the setting list.

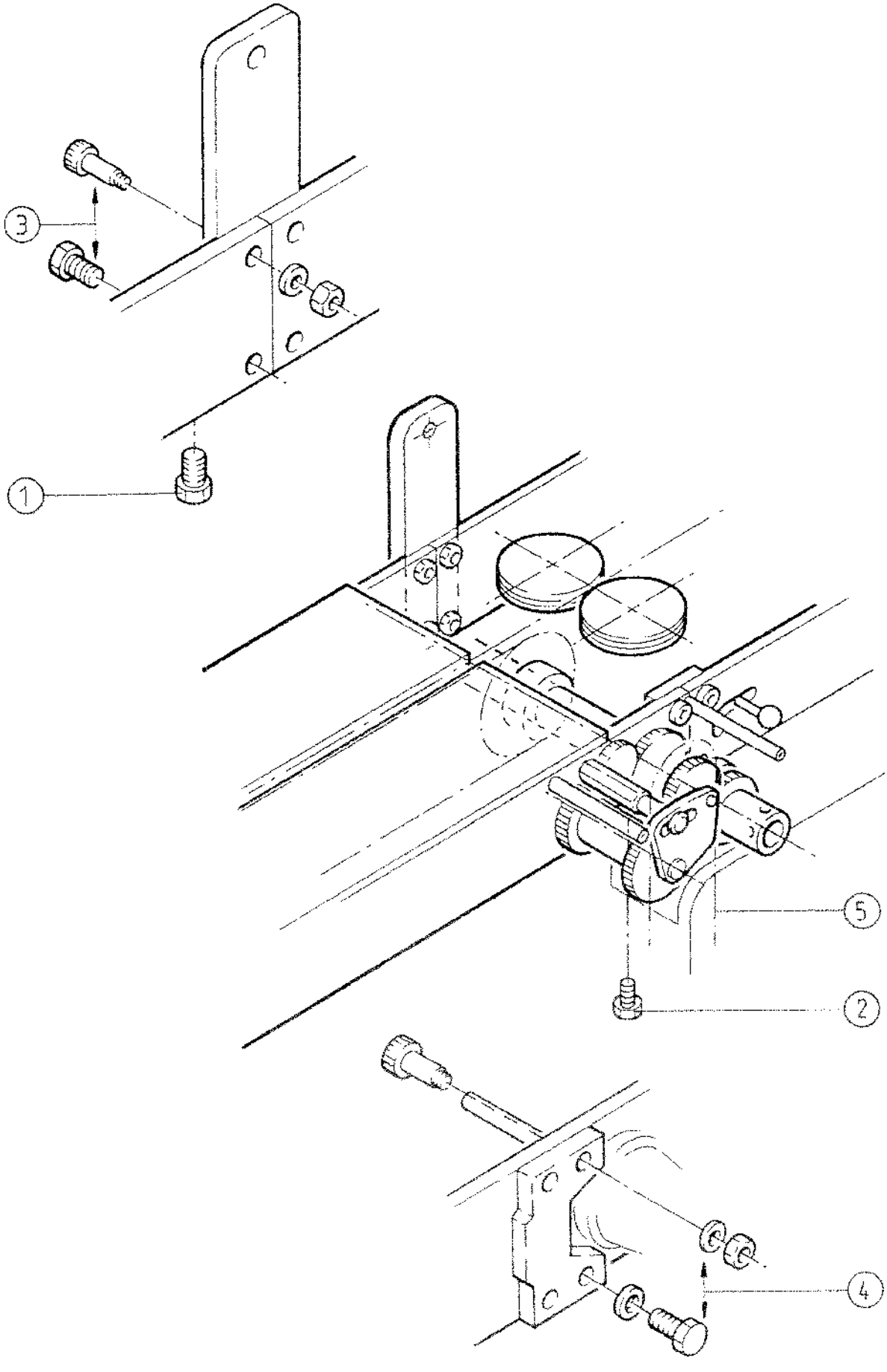


FIG 2060.1

2090 TECHNICAL SPECIFICATION

1 GENERAL

The specifications here refer to a Pack-6 as stated in this manual.
There may, however, be detail differences.

2 MACHINE CAPACITY

The mechanical capacity is the capacity at which the machine can run without foil or product.
The mechanical capacity of the Pack-6 depends on the number of crimpers and the pulley disc fitted.

Drive pulley size	Number of crimpers	capacity
250	1	25 - 60
140	1	44 - 106
250	2	50 - 120
140	2	88 - 212

The wrapping capacity depends on the foil speed, the quality of the foil and the characteristics and size of the product.

3 FOIL

See fig 2090.1
The Pack-6 can be used with elastic or non-elastic foil.
Maximum foil width : 500 mm
Maximum reel diameter (D max) : 320 mm
Foil reel inner core (d) : 70 - 76 mm

The foil transport (the rollers) which is adjustable, has to be such, that per phase of the machine a distance will be transported which is equal to the cut-off length.

> Definition: a PHASE is the cycle of the packaging machine in which one single pack is produced.

The cut-off length is determined by the distance between centres of the cutter spindles, the number of cutters per spindle, the cutter width and the package height.

The dimensions given below are for a product height of 0 mm and a cutter width of 25 mm.

Single crimper:

centre distance crimper shaft	cut-off length minimum	maximum
105	80	380
135	85	488
159	90	574

Double crimpers:

centre distance crimper shaft	cut-off length minimum	maximum
105	45	175
135	48	230

Triple crimpers:

centre distance crimper shaft	cut-off length minimum	maximum
105	35	110

Cut-off Length.

Cut-off length = product length (L) + 1.25 x product height (H) + 2 x cross seal size (R).

Foil width.

Foil width = 2 x product height (H) + 2 x product width (w) + 2 x length seal size (P + 5 mm).

NOTE: The given values can deviate in practice, because in theory measurements are taken from a rectangular products.
The calculated values are only for a test reel.

4 POWER CONSUMPTION

Main motor	750 Watt.
Sealing table	700 Watt per pair of heated rollers.
Cutter group	1200 Watt per pair of crimpers.
Pre-heating (optional)	500 Watt.

Power voltage: See wiring diagram.
Control voltage: See wiring diagram.

5 SIZE AND WEIGHT

The sizes and weight of the machine in the execution as described in this manual.

Lenght : 3510 mm
Width : 995 mm
Height : 1755 mm
Weight : 800 kg

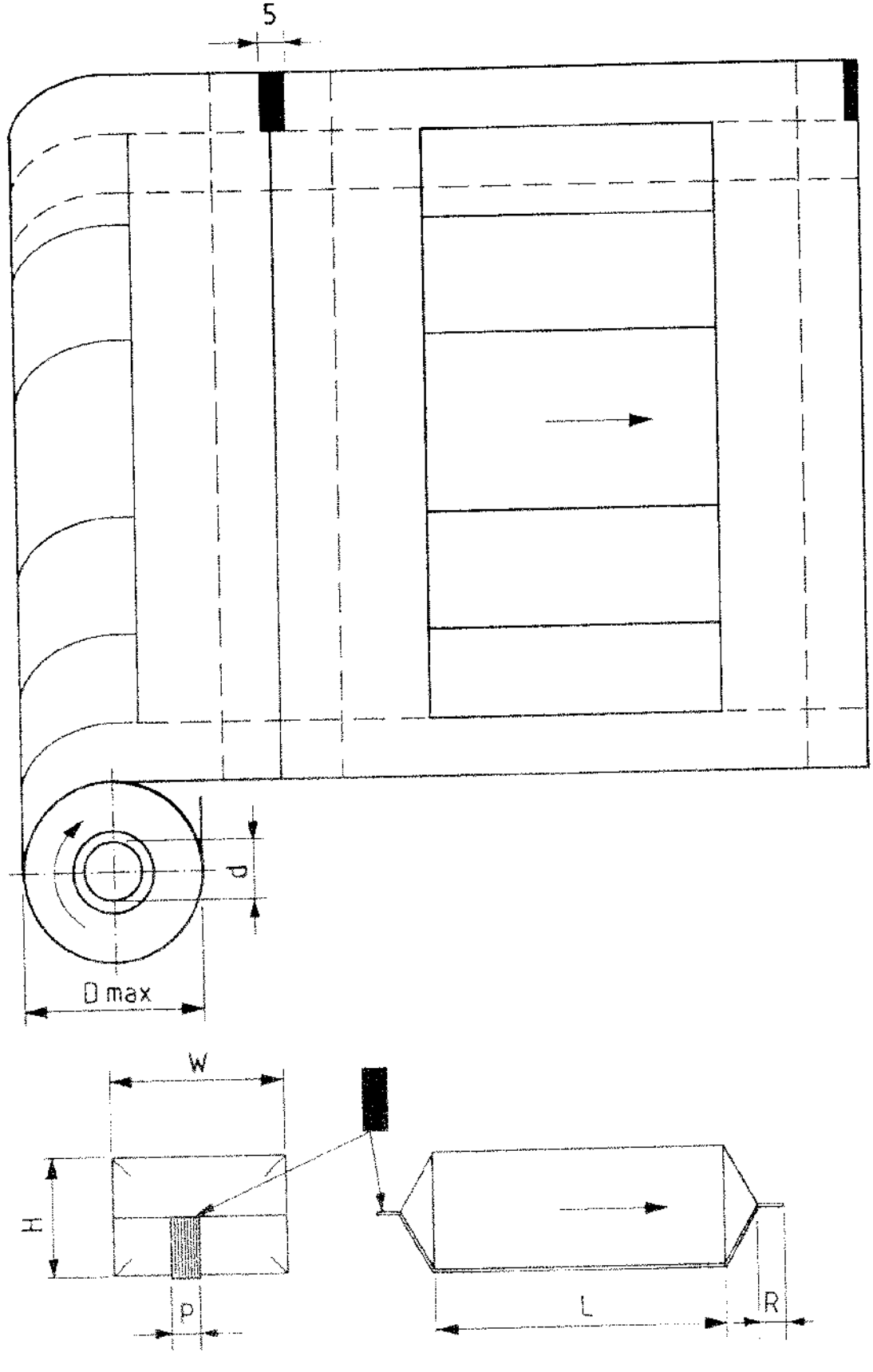


FIG 2090.1

2124 DRIVE SYSTEM

1 GENERAL

The electrical motor drives the main shaft of the packaging machine via a reducer and the overload clutch.

The main shaft drives the following parts of the packaging machine:

- Infeed table and discharge conveyor
- Sealing table
- Crimper unit

Key to figure 2124.1:

1 Main motor
2 Reduction gearbox
3 Overload clutch
4 Main shaft
5 Belt variator
6 Seal table drive
7 Photocell clutch
8 Gear box
9 Infeed chain drive
10 Infeed chain
11 Crimper unit drive
12 Discharge conveyor drive

2 MECHANICAL SPEED

The speed can be set using the hand wheel (1 in fig 2124.3):
- Anti-clockwise : higher wrapping speed.
- Clockwise : lower wrapping speed.

The mechanical speed range can be changed by replacing V-pulley (1 in fig 2124.2) with V-pulley (2 in fig 2124.2). See chapter "Technical specification".

For the packaging speed: see the setting list.
Note: Do not run at a too low speed, because of quick wear and tear of the V-belt.

3 MACHINE ZERO POSITION

All values in the setting list concerning to the moving parts, are stated with reference to a specific position of the Pack-6, namely the zero position. This zero position can be found on the disc (1 in fig 2124.4) in the door on the front of the Pack-6.
If the zero point on the disc stands level with the indicator (2 in fig 2124.4) behind the window in the door, the machine is in the zero position.
When the machine is set to the zero position the proximity switches S41 (1 in fig 2124.5) and S42 (2 in fig 2124.5) located on the command shaft, are situated above the recess of the cams (3 and 4 in fig 2124.5).

So, when you want to change the pack format, first inch the Pack-6 to the zero position, and set up the machine in accordance with the Pack-6 settings list.

4 OVERLOAD CLUTCH

An overload clutch is fitted in the drive system (3 in fig 2124.1).
When the drive system is overloaded the clutch releases and activate a switch which stops the machine.
The inch button on the control panel is used to reset the overload clutch in the drive system.

5 INFEED CHAIN AND DISCHARGE CONVEYOR DRIVE

The infeed chain is driven via the change gear by a chain from the main shaft.
The infeed chain is tensioned at the start of the infeed table with the return sprocket.
The discharge conveyor is driven from the main shaft with the same chain that drives the infeed chain.

6 SEALING TABLE DRIVE

The sealing table is driven via a belt variator. This belt variator drives the hollow shaft via the shaft and gear wheels. A conical gear wheel is fitted on this hollow shaft. This gear drives the sealing table via the universal joint.

The machine is executed with a spot correction. The sealing table is driven via gear wheels and an electromagnetic clutch. See the chapter "Spot correction" for the operation of this.

The speed of the sealing and pulling rollers determines the cut-off length of the wrapping material. This speed can be set by turning the clock knob to change the drive ratio of the belt variator.

Anti-clockwise: Longer cut-off length

Clockwise : Shorter cut-off length

7 CRIMPER UNIT DRIVE

The crimper unit is driven by chain. The speed of the crimper unit cannot be set independently of the other components of the Pack-6.

8 MAINTENANCE

Change the oil in the reduction gear box after the first month. Check the oil level every year and top up if necessary.

Recommended lubricants:

- Shell, Omala 150
- Esso, Spartan EP 150
- Mobil, Mobilgear 630

Curve rollers, threaded rods, chains and gear wheels must be checked every two months for sufficient lubrication. Remove old grease and regrease lightly.

Recommended lubricants:

- Shell, Carnea B3
- Esso, Penoled EP 2
- Mobil, Visolite extra heavy

Most of the bearings are greased for life and do not have to be lubricated.
It is recommended that these bearings are replaced every two years.

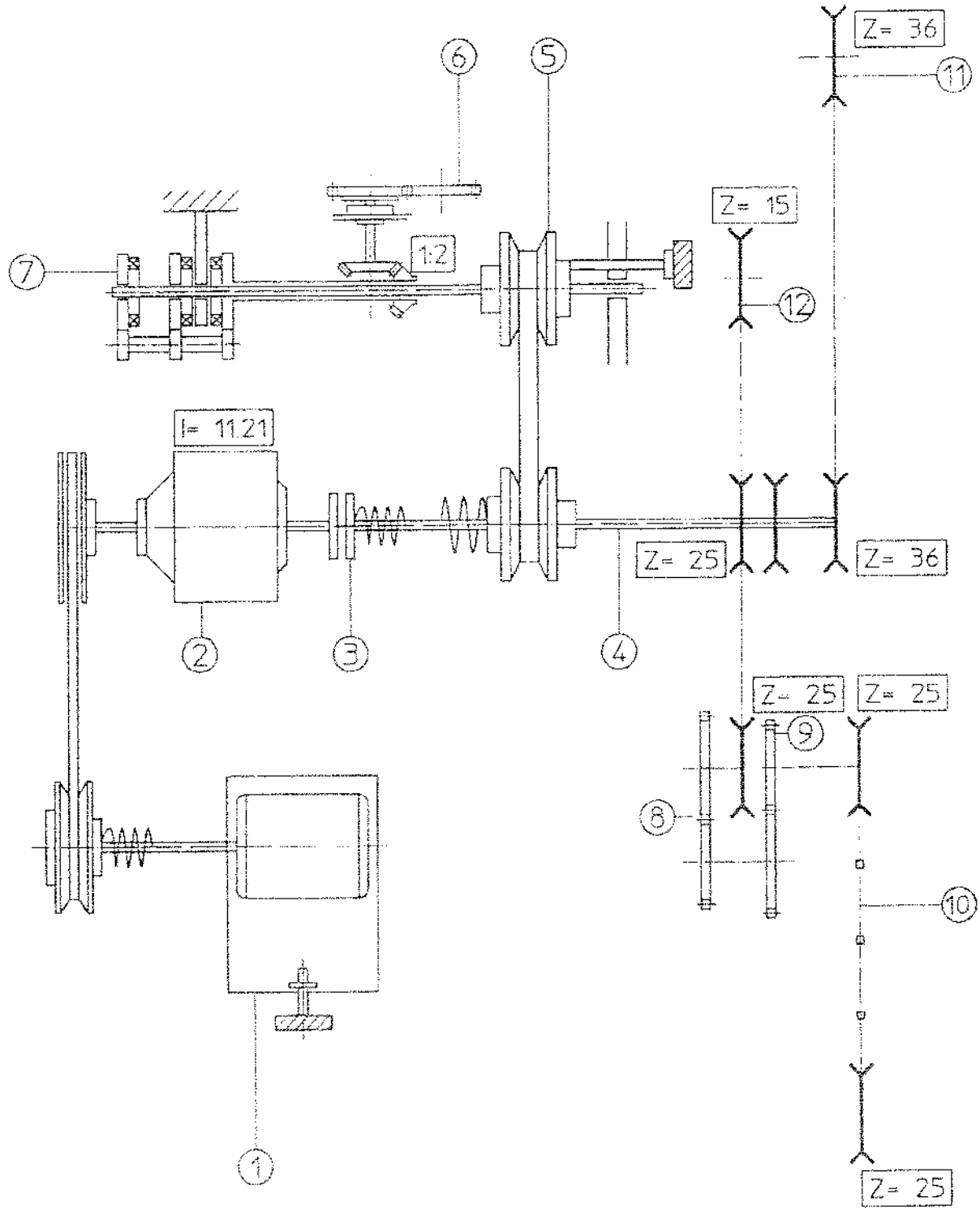


FIG 2124.1

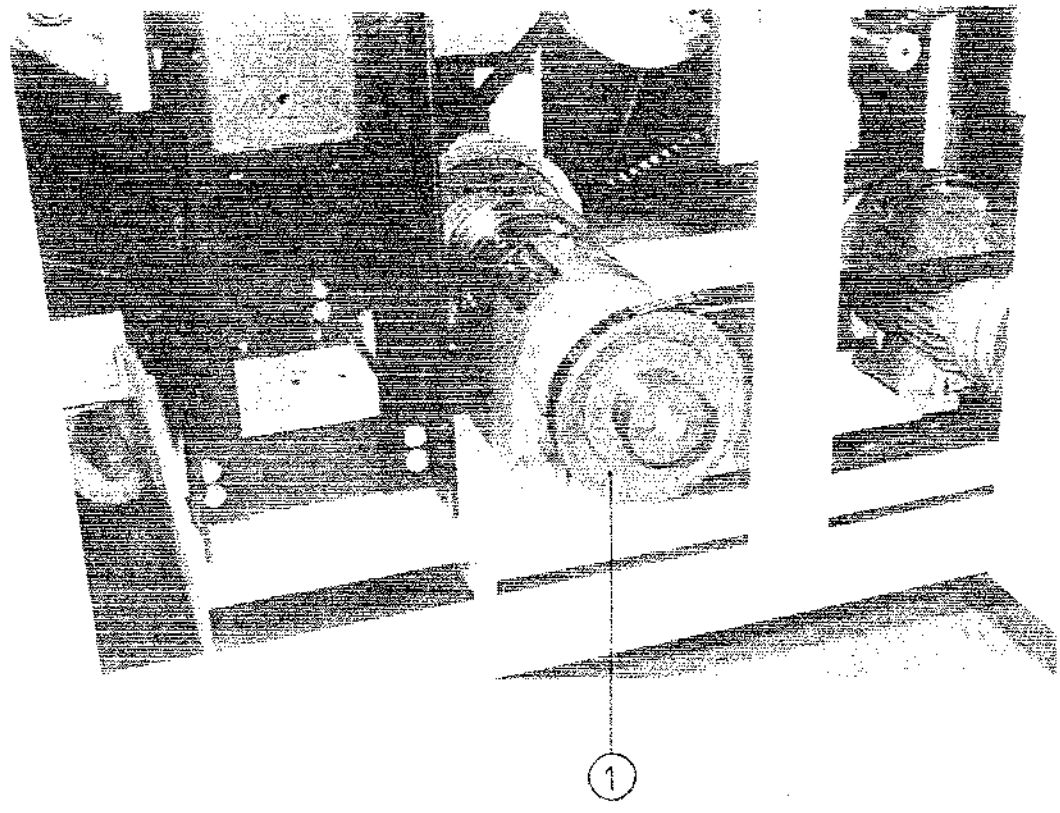


FIG 2124.2

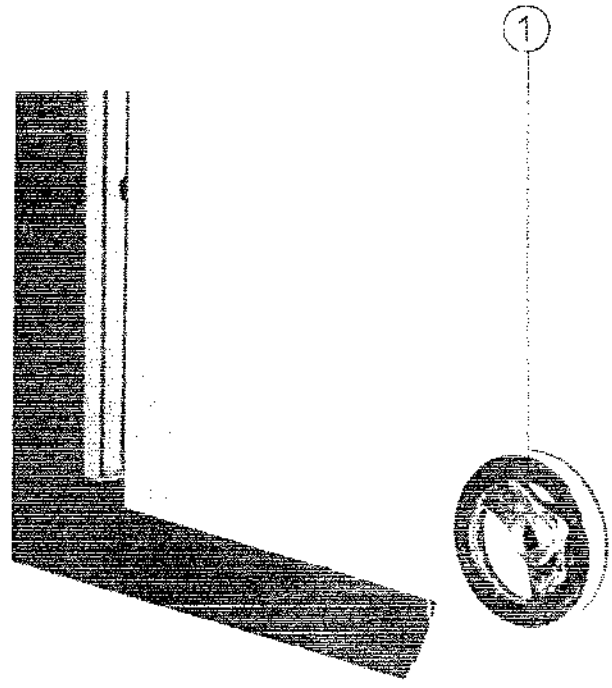


FIG 2124.3

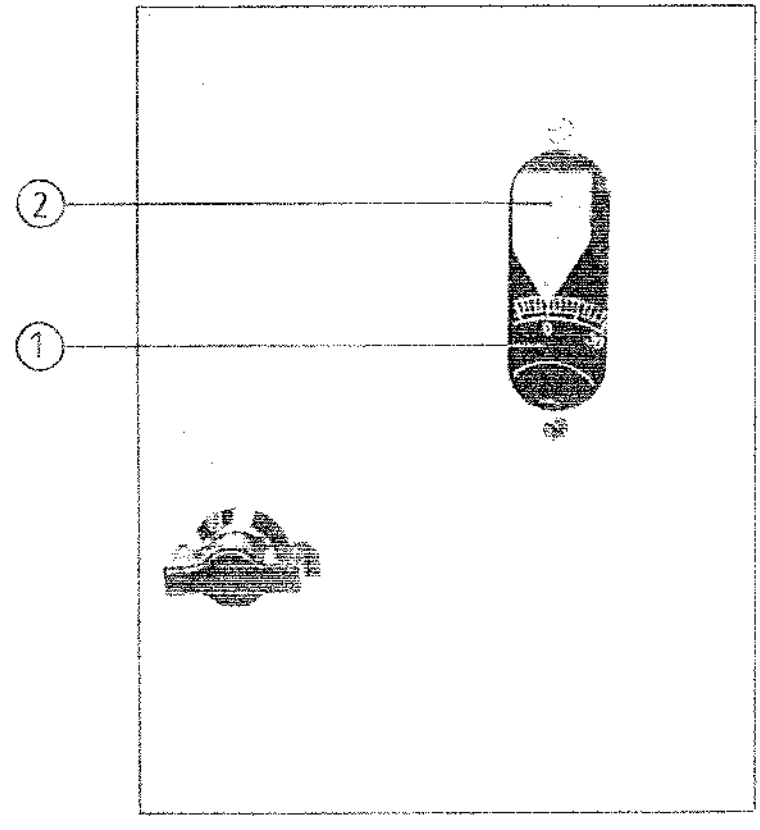


FIG 2124.4

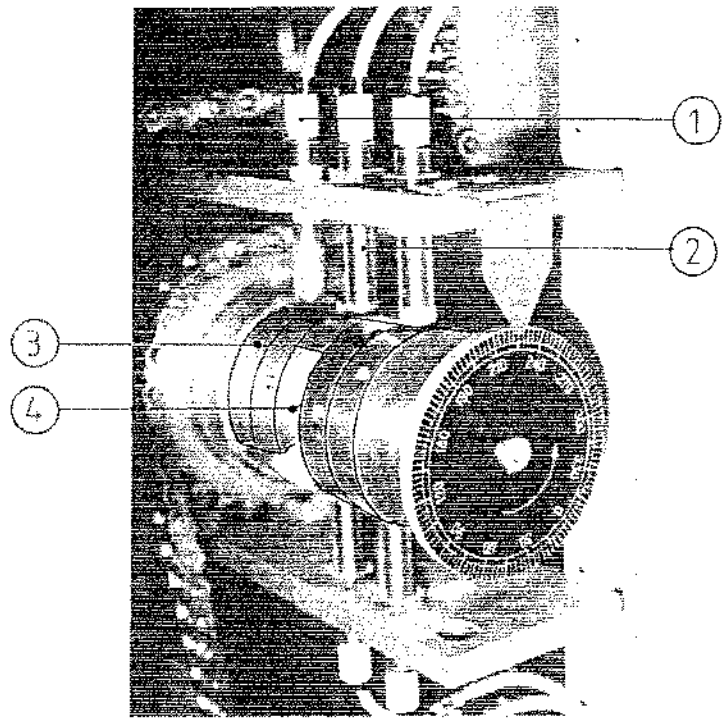


FIG 2124.5

2150 INFEED TABLE

1 SIDE GUIDES

The side guides (1 and 2 in fig 2150.1) can be adjusted widthwise.

The distance between the side guides (B in fig 2150.1) at the folding box may not be more then the width of the folding box. Set the distance between the guides (A in fig 2150.1) wider at the start of the infeed table to make product infeed easier.

2 CHAIN CONSTRUCTION

The infeed chain is constructed of:

- ½" hollow type chain
- carriers
- pushers

The distance between 2 carriers is called the "pitch". The pitch is expressed as N x ½". see fig 2150.2.
The carrier (1 in fig 2150.2) is fitted to the chain by a pin (2 in fig 2150.2).
The pusher (3 in fig 2150.2) is fitted in the carrier with a pointed grub screw (4 in fig 2150.2). The pointed grub screw must not be fitted too tightly in the plastic carrier.
With a chain with different pitches or a pitch with different pushers, the pointed grub screw is replaced by a spring loaded grub screw, so that the pushers can be changed without using tools. The pusher can be executed with a pusher plate (5 in fig 2150.2).

When the infeed chain is fitted out of the centre of the infeed table, eccentric carriers (6 in fig 2150.2) will be fitted.

3 TENSIONING THE INFEED CHAIN

The infeed chain is tensioned by moving back the wheel at the beginning of the infeed table (See fig 2150.3).

4 CONNECTING - DISCONNECTING

The infeed chain can be connected and disconnected by means of a clamp nut (1 in fig 2150.4).
To do this, carry out the following procedure:
- Insert a pin into a hole (2 in fig 2150.4) in the clamp nut.
- Insert an 10 mm allen key in the back of the spindle (1 in fig 2150.5).

Now the slip clutch (3 in fig 2150.5) can be released and locked. Do not turn the allen key.

When the infeed chain is disconnected it can only be moved forwards using the allen key.
Be aware that the safety clutch is not be activated.

5 ADJUSTING THE CHAIN

The infeed chain is driven via a chain and change-gear set; see fig 2150.4.

The crimper unit must seal and cut the foil exactly between the products.
In order to do this, the product must be pushed into the folding box at the right moment. This process can be adjusted using the handwheel (4 in fig 2150.4).
This can move the chain with pushers about 2 cm.

Turning clockwise:	Pushers move forward, so that the product is pushed into the folding box earlier.
Turning anticlockwise:	Pushers move backwards, so that the product is pushed into the folding box later. Only operate with a running machine.

6 CLUTCH - CHANGE-GEAR SET

When the infeed chain is subjected to too much resistance, the mechanical overload clutch releases (1 in fig 2150.6). The machine does not stop automatically, but must be stopped using the stop button.

Once the fault has been cleared, the machine must be inched by hand until the clutch re-engages. The clutch always grips at the same place. Thus the infeed chain always runs synchronously with the machine.

A pressure unit (2 in figure 2150.6) is fitted to the outside of the clutch housing Cupped spring washers are locked in the pressure unit - these spring washers press on the overload clutch pawl.
Turning this pressure unit increases the clutch pressure, and the clutch will release at a higher resistance.

7 PITCH - CHANGE-GEAR SET (carrier distance).

In one phase of the machine the displacement of the infeed chain must be the same as one carrier distance (the pitch).

> Definition: A PHASE is the cycle of the wrapping machine in which one wrap is produced.

When a change is made to a longer or shorter pitch, then the ratio of the drive must be changed by fitting other gearwheels in the change-gear set, see the examples in fig 2150.7.
The tables indicate the gearwheel combinations required for the required carrier distance.
See figure 2150.6 for the position of Z1, Z2, Z3 and Z4.

2150 CHANGE-GEAR SET - PACK-6.

GEARWHEEL COMBINATION -1- (5 to 20 X ½")

PITCH	Z1	Z2	Z3	Z4	PITCH	Z1	Z2	Z3	Z4
5 x ½"	40	80	24	60	13 x ½"	52	40	24	60
6 x ½"	48	80	24	60	14 x ½"	56	40	24	60
7 x ½"	56	80	24	60	15 x ½"	60	40	24	60
8 x ½"	64	80	24	60	16 x ½"	64	40	24	60
9 x ½"	72	80	24	60	17 x ½"	68	40	24	60
10 x ½"	80	80	24	60	18 x ½"	72	40	24	60
	40	40	24	60	19 x ½"	76	40	24	60
11 x ½"	44	40	24	60	20 x ½"	80	40	24	60
12 x ½"	48	40	24	60					

GEARWHEEL COMBINATION -2- (10 to 40 x ½")

PITCH	Z1	Z2	Z3	Z4	PITCH	Z1	Z2	Z3	Z4
10 x ½"	40	80	48	60	26 x ½"	52	40	48	60
11 x ½"	44	80	48	60	27 x ½"	54	40	48	60
12 x ½"	48	80	48	60	28 x ½"	56	40	48	60
13 x ½"	52	80	48	60	29 x ½"	58	40	48	60
14 x ½"	56	80	48	60	30 x ½"	60	40	48	60
15 x ½"	60	80	48	60	31 x ½"	62	40	48	60
16 x ½"	64	80	48	60	32 x ½"	64	40	48	60
17 x ½"	68	80	48	60	33 x ½"	66	40	48	60
18 x ½"	72	80	48	60	34 x ½"	68	40	48	60
19 x ½"	76	80	48	60	35 x ½"	70	40	48	60
20 x ½"	80	80	48	60	36 x ½"	72	40	48	60
21 x ½"	42	40	48	60	37 x ½"	74	40	48	60
22 x ½"	44	40	48	60	38 x ½"	76	40	48	60
23 x ½"	46	40	48	60	39 x ½"	78	40	48	60
24 x ½"	48	40	48	60	40 x ½"	80	40	48	60
25 x ½"	50	40	48	60					

GEARWHEEL COMBINATION -3- (20 to 78 x ½")

PITCH	Z1	Z2	Z3	Z4	PITCH	Z1	Z2	Z3	Z4
20 x ½"	40	80	48	30	42 x ½"	42	40	48	30
21 x ½"	42	80	48	30	44 x ½"	44	40	48	30
22 x ½"	44	80	48	30	46 x ½"	46	40	48	30
23 x ½"	46	80	48	30	48 x ½"	48	40	48	30
24 x ½"	48	80	48	30	50 x ½"	50	40	48	30
25 x ½"	50	80	48	30	52 x ½"	52	40	48	30
26 x ½"	52	80	48	30	54 x ½"	54	40	48	30
27 x ½"	54	80	48	30	56 x ½"	56	40	48	30
28 x ½"	56	80	48	30	58 x ½"	58	40	48	30
29 x ½"	58	80	48	30	60 x ½"	60	40	48	30
30 x ½"	60	80	48	30	62 x ½"	62	40	48	30
31 x ½"	62	80	48	30	64 x ½"	64	40	48	30
32 x ½"	64	80	48	30	66 x ½"	66	40	48	30
33 x ½"	66	80	48	30	68 x ½"	68	40	48	30
34 x ½"	68	80	48	30	70 x ½"	70	40	48	30
35 x ½"	70	80	48	30	72 x ½"	72	40	48	30
36 x ½"	72	80	48	30	74 x ½"	74	40	48	30
37 x ½"	74	80	48	30	76 x ½"	76	40	48	30
38 x ½"	76	80	48	30	78 x ½"	78	40	48	30
39 x ½"	78	80	48	30					
40 x ½"	80	80	48	30					

8 MAINTENANCE

The chain and chain guides must be cleaned and lightly greased every week.

Recommended lubricants:
- Shell, Carnea B 3.
- Esso, Penoled EP 2.
- Mobil, Visolite extra heavy.

Every month, clean the gearwheels in the change-over set, remove the old grease and check for play between the teeth.

Recommended lubricants:
- Shell, Carnea B 3.
- Esso, Penoled EP 2.
- Mobil, Visolite extra heavy.

The needle bearings in this drive must be lubricated using the grease nipple (3 in fig 2150.6) every month.

Recommended lubricants:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Mobil temp 1.

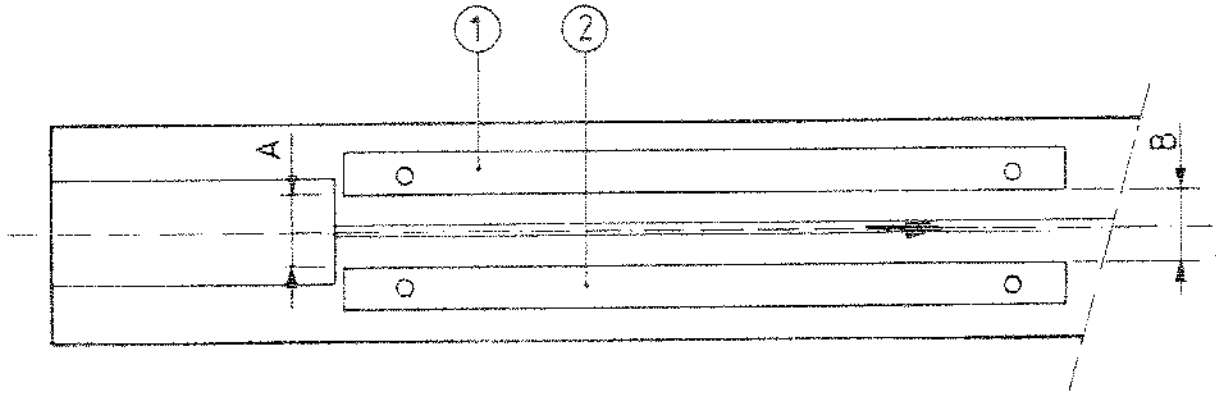


FIG. 2150.1

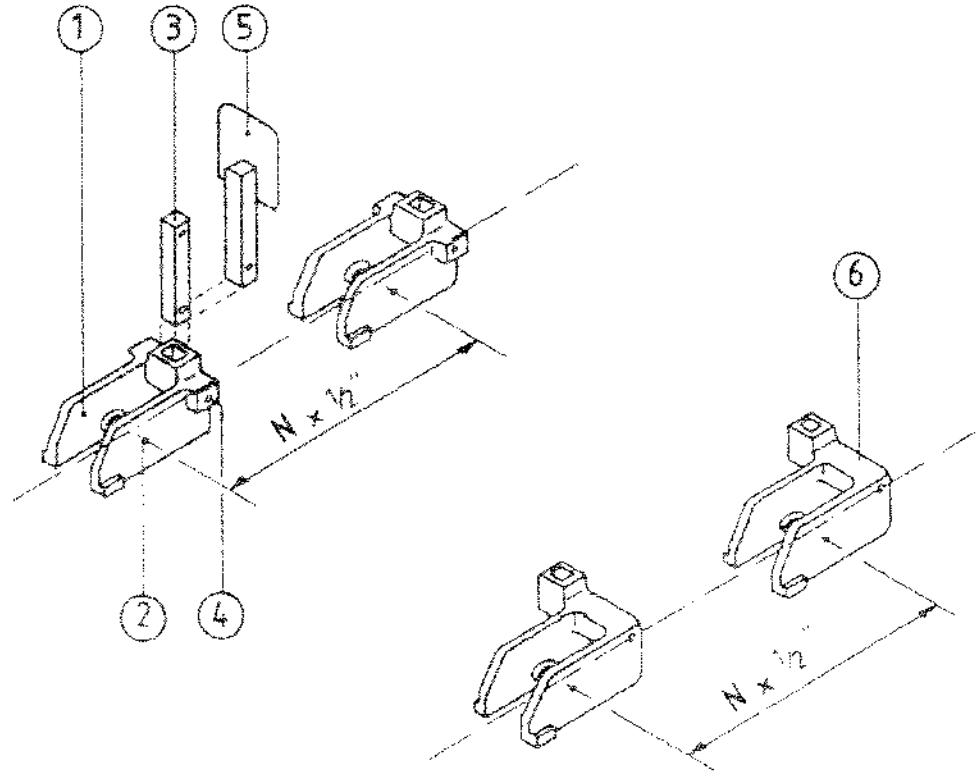


FIG 2150.2

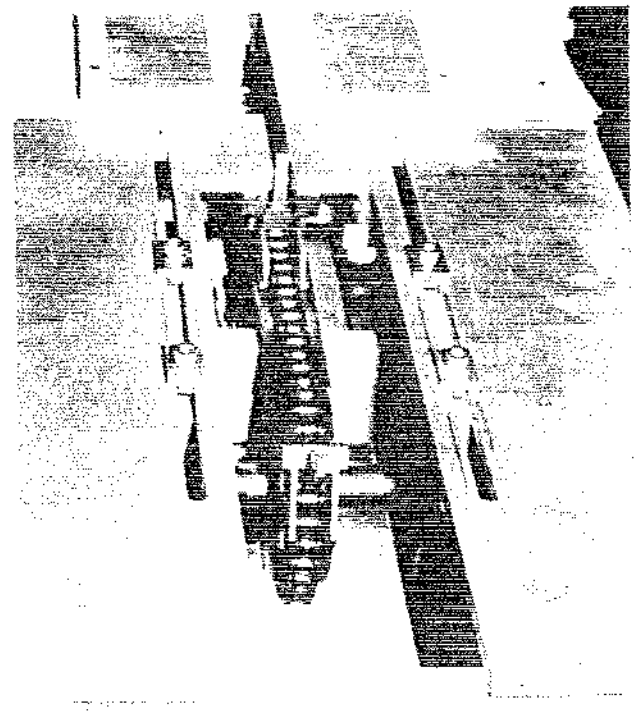


FIG 2150.3

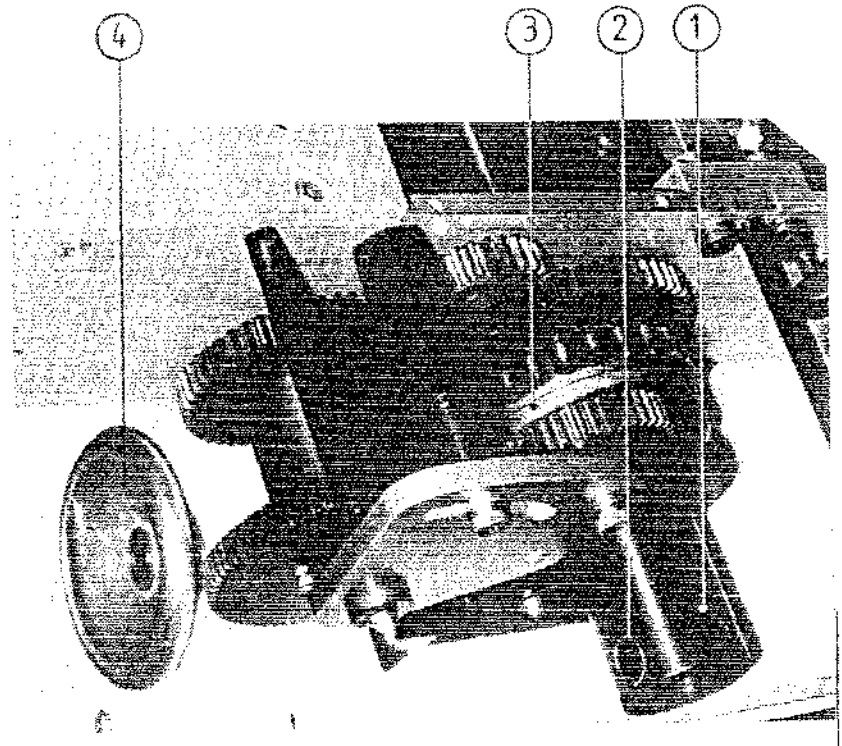


FIG 2150.4

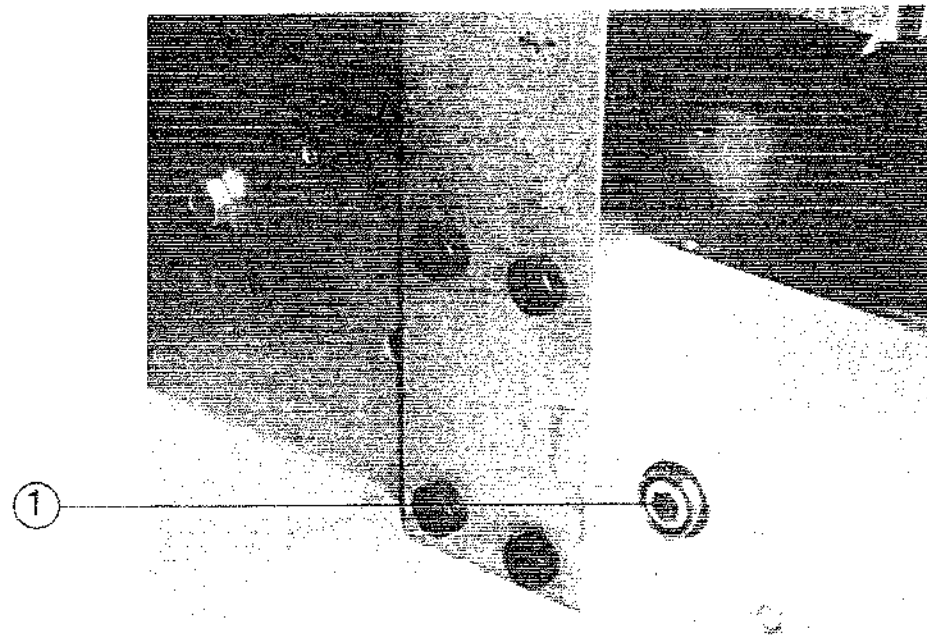


FIG 2150.5

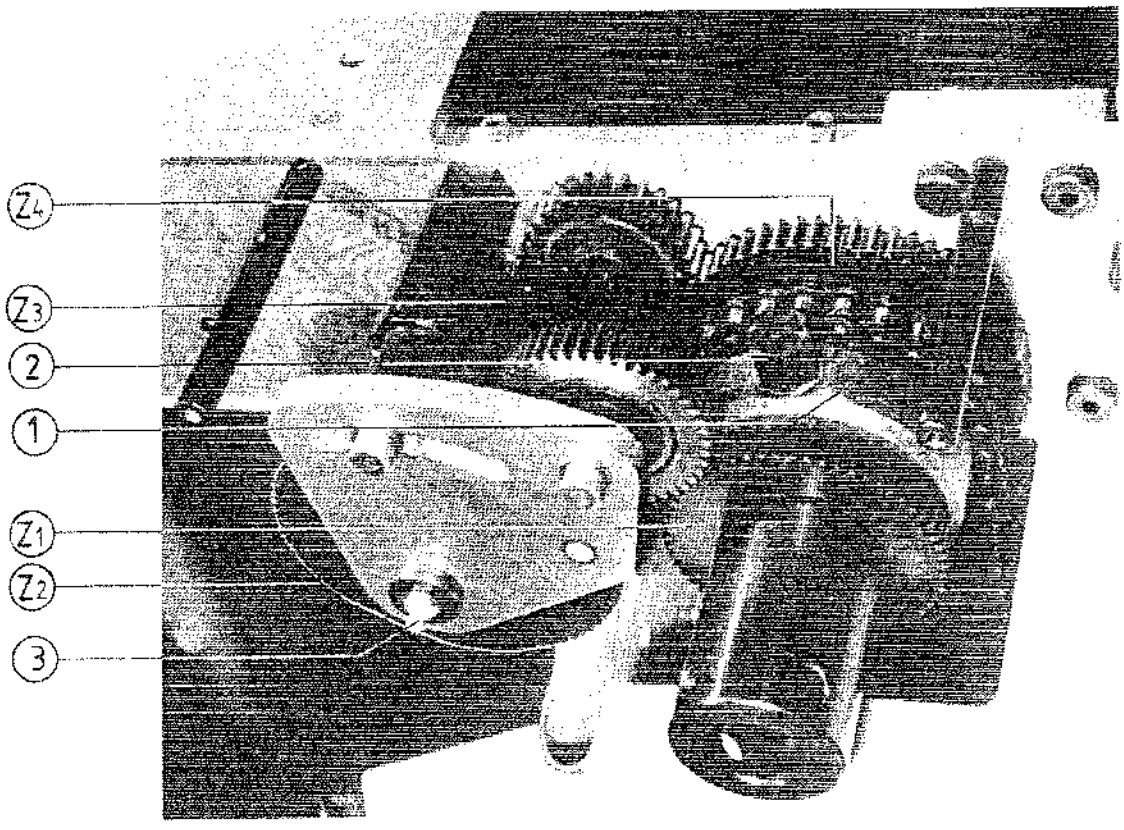


FIG 2150.6

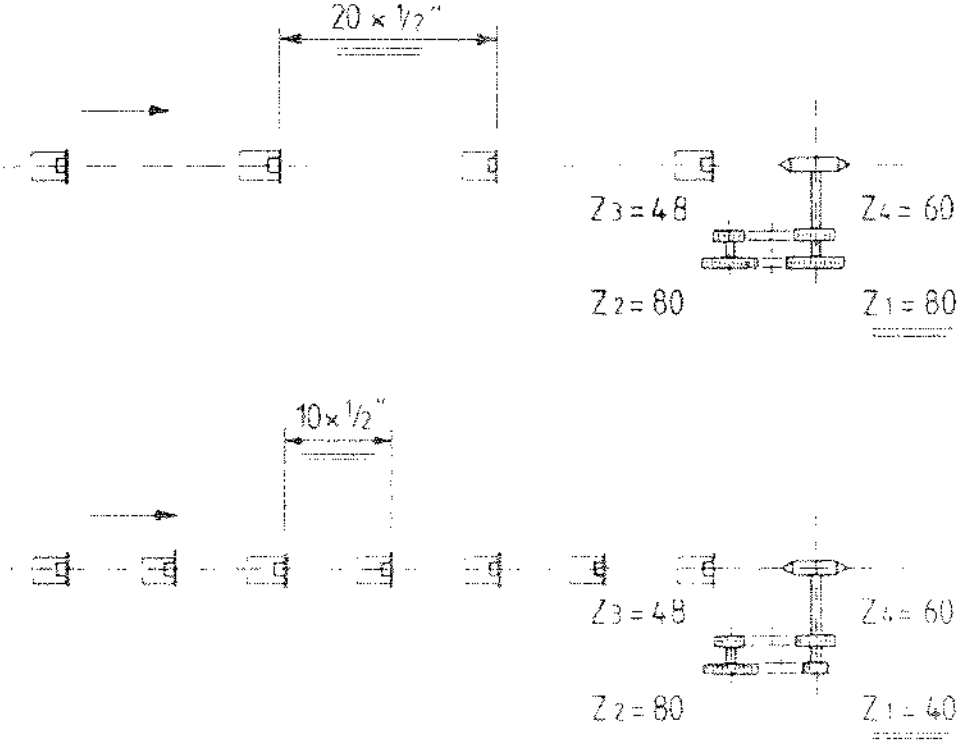
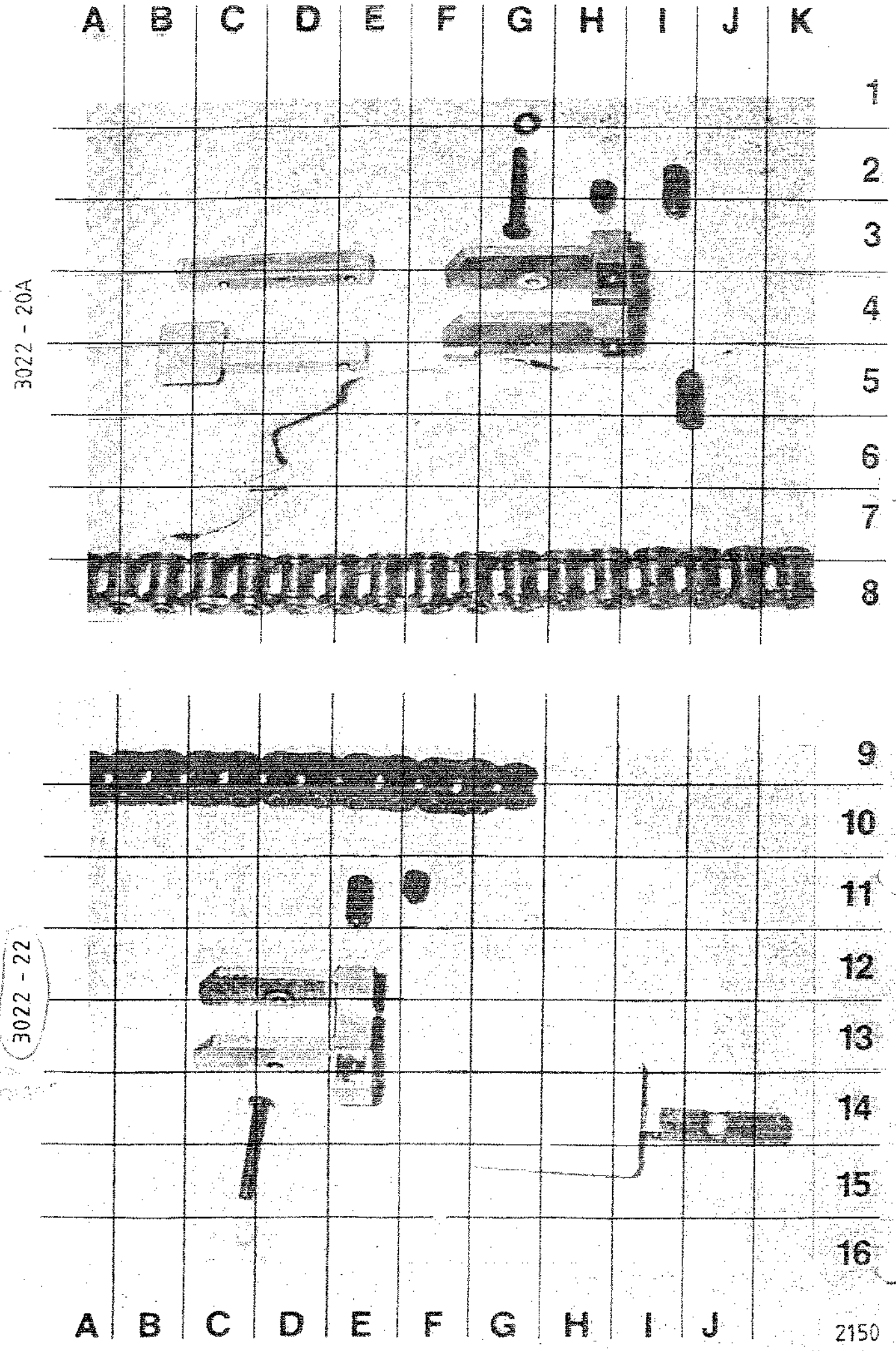
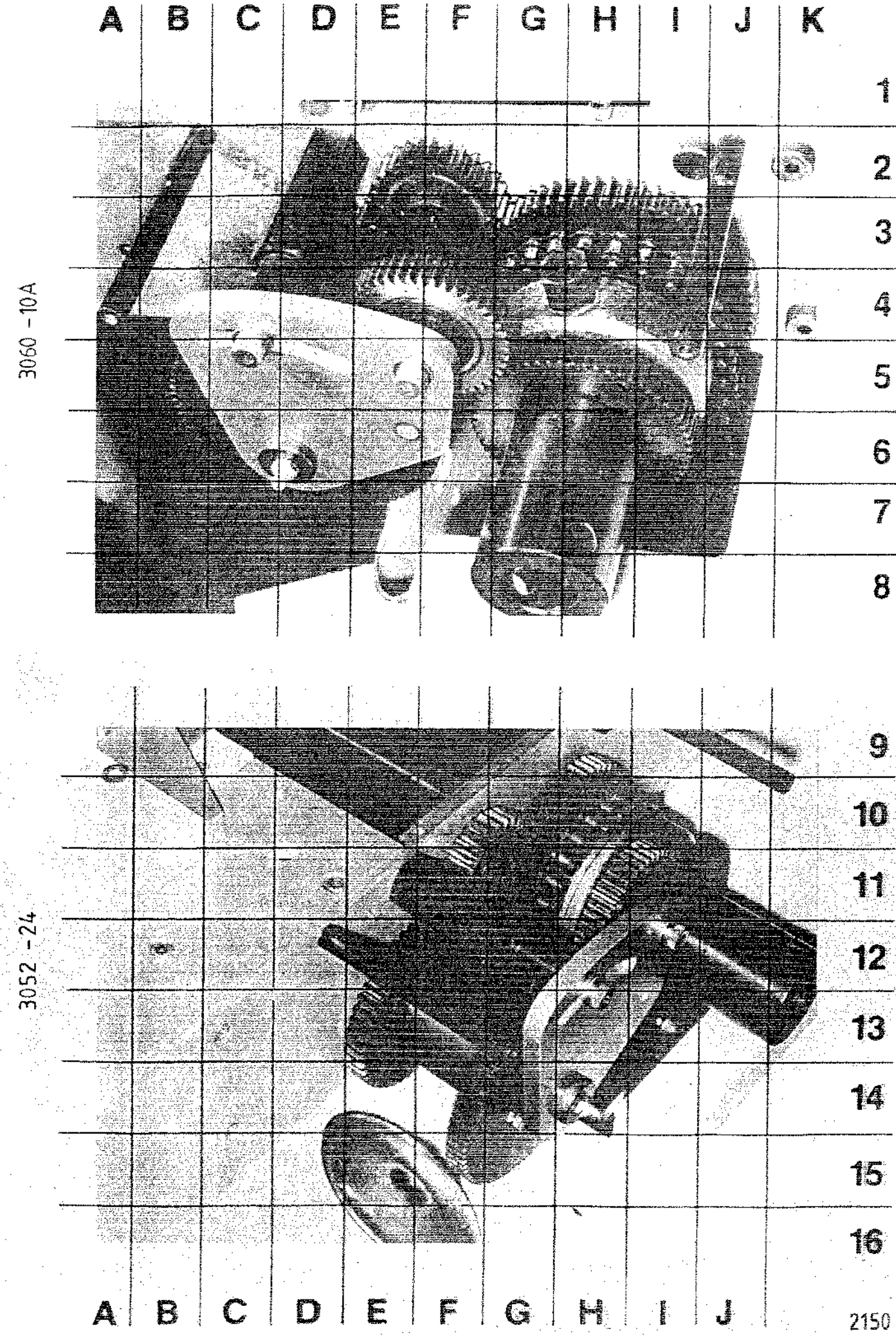


FIG 2150 7


A B C D E F G H I J K
1 2 3 4 5 6 7 8
3022 - 20A
9 10 11 12 13 14 15 16
3022 - 22
A B C D E F G H I J
2150


A B C D E F G H I J K
1 2 3 4 5 6 7 8
3060 -10A
9 10 11 12 13 14 15 16
3052 -24
A B C D E F G H I J
2150

A
B
C
D
E
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3103 - 20

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3063 - 23

A B C D E F G H I J K
1 2 3 4 5 6 7 8
3071 -11

9 10 11 12 13 14 15 16
A B C D E F G H I J
3071 - 9

2180 FOIL TOWER

1 GENERAL

The foil tower serves to introduce the foil into the folding box at the correct angle and tension.

2 FITTING THE FOIL

The reel of foil is fixed in position between the fixed cone and the detachable cone. The reel of foil should be fixed exactly in the centre of the machine. There is an indication strip (1 in Fig. 2180.1) for this purpose. The back of the fixed cone should be flush with the mark on the indication strip which corresponds to the width of the foil.

Fitting the foil reel:

- Using the indication strip, set the back of the fixed cone (2 in fig 2180.3) at the correct foil width.
- Remove the detachable cone (3 in fig 2180.3) by pushing the handle in the highest position to the left (= OPEN).
- Slide the foil reel onto the foil reel holder (taking care that it will unwind correctly).
- Lock the foil reel in place by pushing the handle in the highest position to the right (= CLOSE).

The reel of foil should be set firmly in the reel holder so that as the reel unwinds there is no slippage between the cones and the foil reel. After the reel has been installed, feed the foil through the foil tower according to the foil run diagram.

Figure 2180.1: Foil run for not register printed foil

Figure 2180.2: Foil run for register printed foil

When register printed foil is used it should be fed in via a tension roller ((1 in Fig. 2180.2). The horizontal direction of this roller is adjustable. In this way the printing can be correctly positioned in relation to the photocell. Also see "Photocell Control of Register Printed Foil" section.

3 FINE ADJUSTMENT

When, during operation, the foil edges on the underside of the pack are not equal, the foil reel can be adjusted widthways using the fine adjustment knob (4 in fig 2180.3). Note that this is a limited adjustment.

4 BALANCE ARM

In order to ensure constant tension of the foil as it unrolls, a braking system is fitted. This consists of a balance arm (5 in fig 2180.3) which is hinged on an eccentric spindle.
As the balance arm moves upward, the brake (6 in fig 2180.3) turns on the eccentric section of the spindle and slows the foilreel holder, and thus also the foil. When the balance arm moves down, the foil is braked less.

The force required to move the balance arm is adjustable. To do this, the torsion spring in the balance arm housing is tensioned or untensioned.
If the foil reel is being braked too much or too little, then carry out the following procedure:

- Hold the handwheel tight with one hand (1 in fig 2180.4). This will prevent the spring releasing suddenly.
- Loosen the adjuster bolt (2 in fig 2180.4).
- Use the handwheel to tighten or loosen the spring.
- Tighten up the adjuster bolt.
- Release the handwheel.

In case the foilreel is not slowed down sufficiently, the break pressure on the hub of the foilreel holder has to be increased.
The brake pressure can be increased by carrying out the following procedure:

- Slightly loosen the spring loaded grubscrew (2 in fig 2180.5)
- Tighten up the set screw (1 in fig 2180.5) using a pin.
- Tighten the spring loaded grubscrew a little (2 in fig 2180.5) to keep the space between brake block and spindle.

In case the foilreel is slowed down too fast, the break pressure on the hub of the foilreel holder has to be decreased.
The brake pressure can be decreased by carrying out the following procedure:

- Slightly loosen the spring loaded grubscrew (2 in fig 2180.5)
- Loosen the set screw (1 in fig 2180.5) using a pin.
- Tighten the spring loaded grubscrew (2 in fig 2180.5) to keep the space between brake block and spindle.

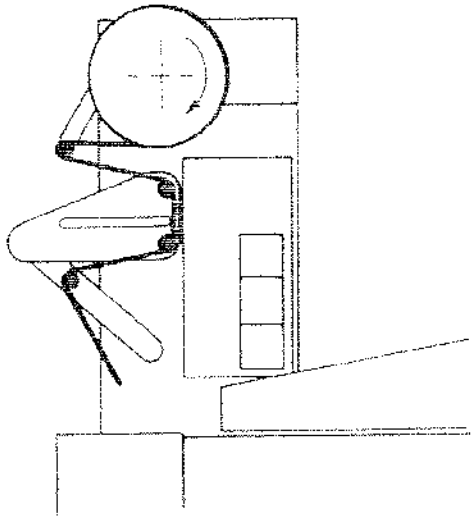


FIG. 2180.1

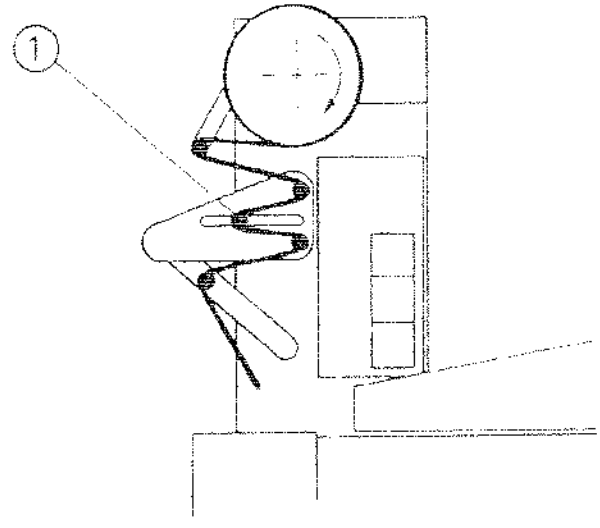


FIG. 2180.2

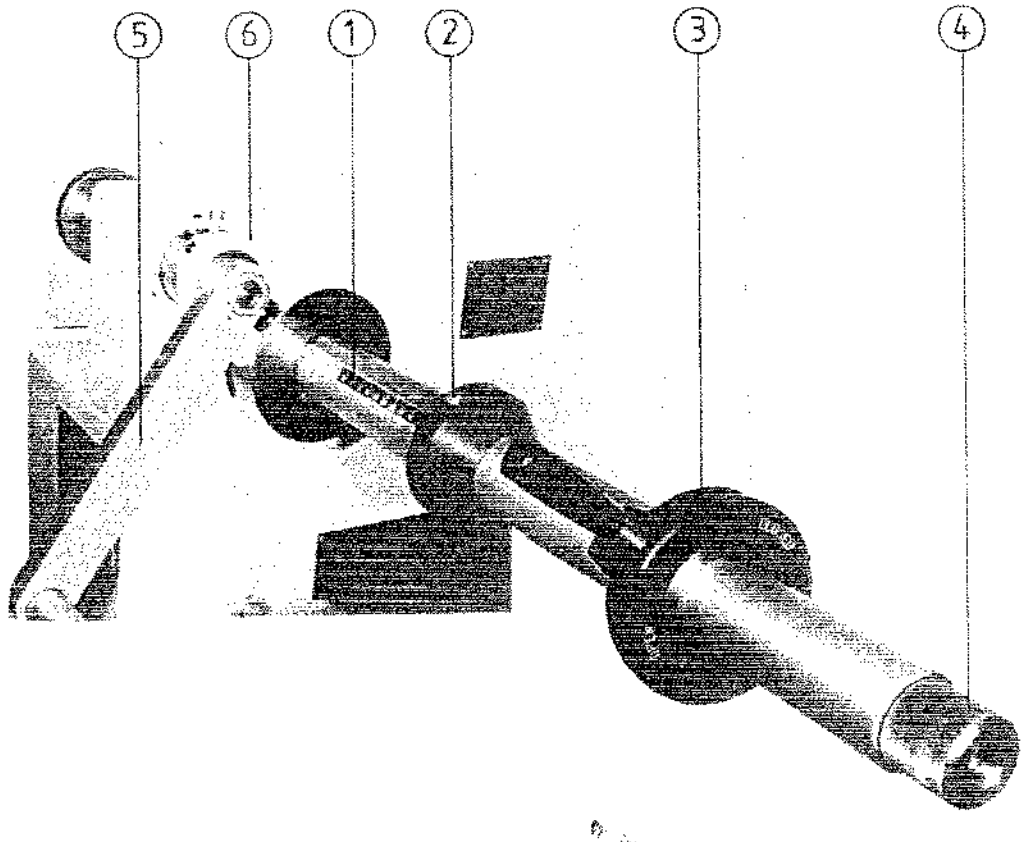


FIG 2180.3

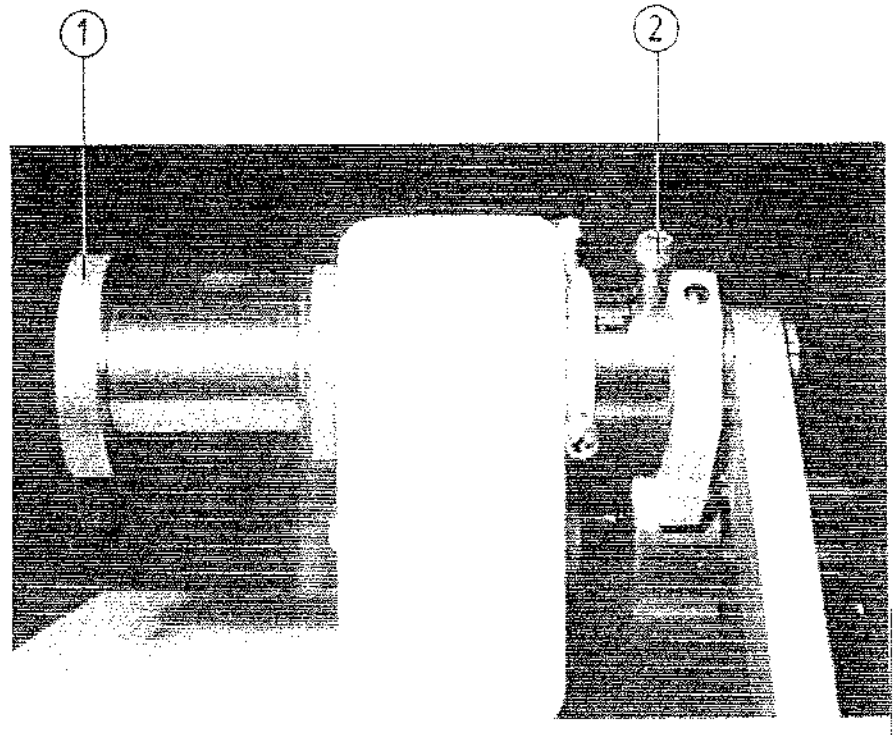


FIG 2180.4

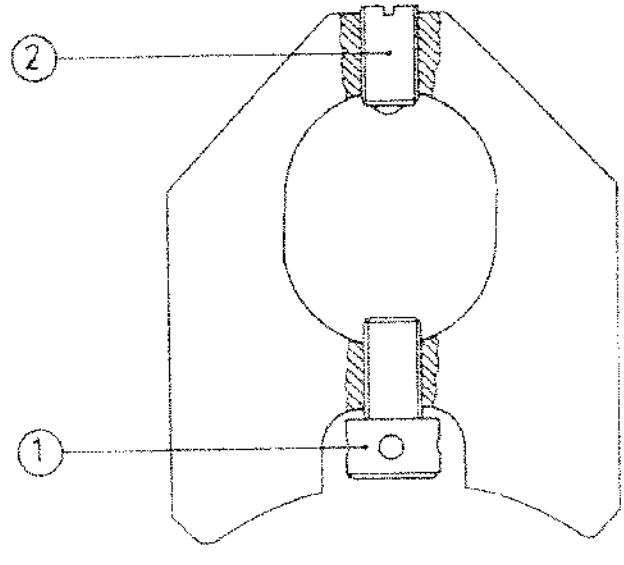
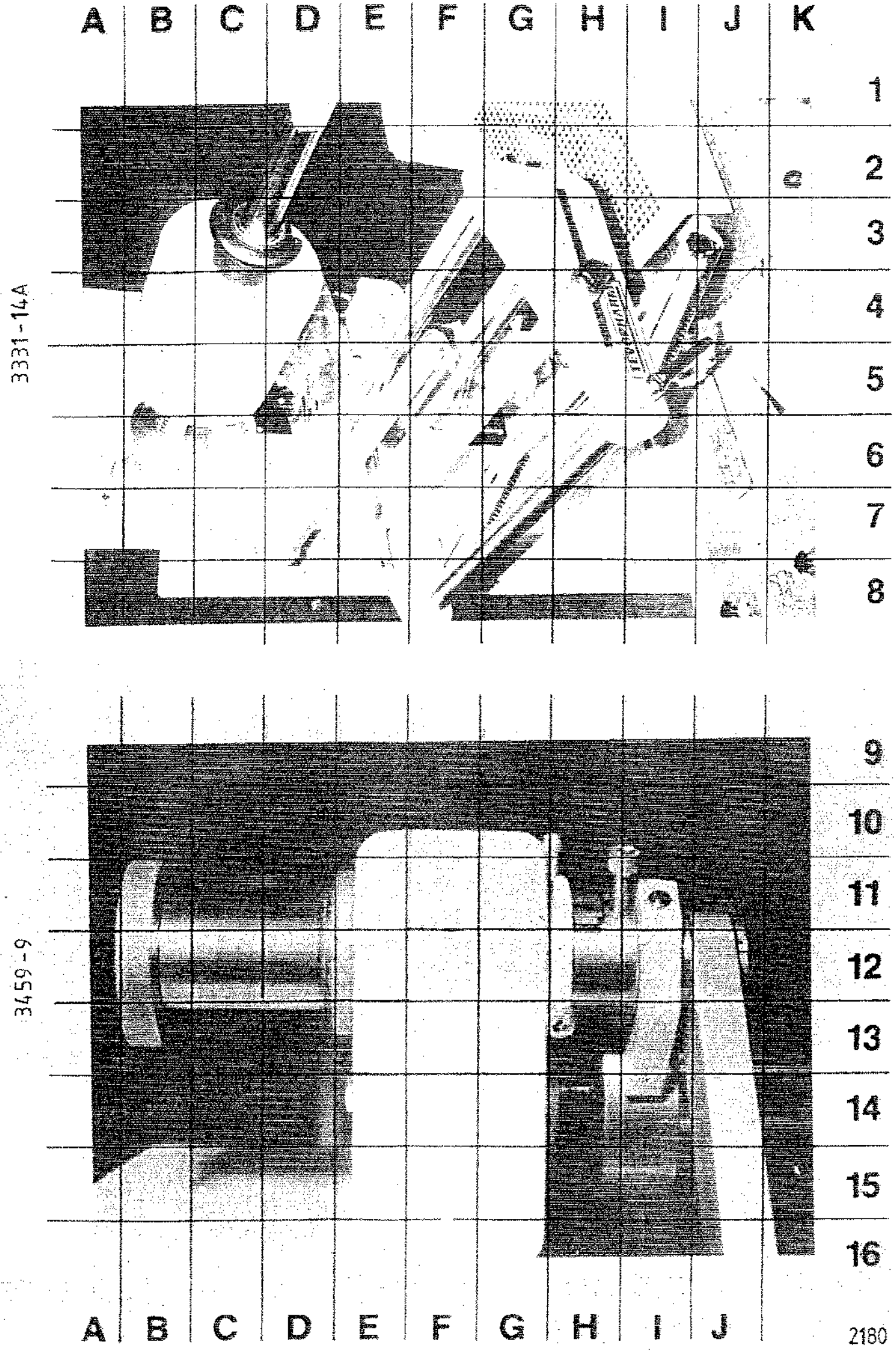


FIG. 2180.5


A B C D E F G H I J K
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3331-14A
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16
3459-9
A B C D E F G H I J
2180

2240 FOLDINGBOX

1 GENERAL

The foil is wrapped around the product (or products) in the foldingbox (1 in fig 2240.1).
Each foldingbox is suitable for one product size.

There are two support points (1 in fig 2240.2) and two side guide points (2 in fig 2240.2) for each foldingbox.
Which foldingbox, support points and side guide points are required for a specific product can be found in the setting list. It is possible that for different product sizes the same support points and side guide points apply.

2 POSITION - FOLDINGBOX

The foldingbox must be positioned centerlined with the centerline of the sealing table. The bottom of the foldingbox must be at the same level as the top of the cover plates of the sealing table (fig 2240.1).

The first pair of rollers on the sealing table must not touch the plates of the foldingbox either in closed or open position. The space between the first pair of rollers and the plating must be between 0.5 and 1.5 mm.

3 THREADING THE FOIL

To thread the foil through the foldingbox, carry out the following procedure:

- Set the three sets of rollers in open position.
- Set the crimper unit crimpers in the open position.
- Thread the foil through the foldingbox and pull it further until the crimper unit.
- Check that the foil is between the rollers.
- Close the pulling and sealing rollers.
- Start the wrapping machine.

4 ELASTIC FOIL (figure 2240.3)

The tension of the foil on the reel (1 in fig 2240.3) must be equal across the whole width. The angle of entry must be between 0 and 10 degrees. The vertical distance H (fig 2240.3) from the roll to the top of the foldingbox is approximately equal to the width of the foil. If the angle of entry is greater than 10 degrees then only the outer edges of the foil will be tensioned, while the middle will be slack. The foil will then be more tightly pulled around the product and the wear on wings of the foldingbox will increase considerably. If the angle of entry is less than 0 degrees, then the foldingbox will undergo extreme wear and the foil will track badly.

With small foldingboxs or particular types of foil, the above values may differ. See setting list.

5 NON-ELASTIC FOIL (figure 2240.4)

The tension of the foil on the reel (1 in fig 2240.4) must be equal across the whole width.
The angle of entry should be about 60 degrees.
The distance (A in fig 2240.4) is equal to about 3 times the distance (B in fig 2240.4).

If the height (H in fig 2240.4) is excessive, then only the centre of the foil will be tensioned, while the edges will be slack.
If the height (H in fig 2240.4) is too low, then only the outer edge of the foil will be tensioned, while the centre will be slack.

The ratio 1 : 3 = (B : A) is correct in most cases. With limp material the ratio can be smaller, and with stiffer material the ratio can be larger.

With small foldingboxs or particular types of foil, the above values may differ. See settings list.

6 TIGHTNESS OF THE PACKAGE

The foil can be folded either more tightly or less tightly around the product. This can be controlled by increasing or decreasing the pressure between the first rollers using the adjuster knob on the front of the sealing table. Carry out this adjustment when the machine is running. See chapter "Sealing Table".
Note: In case of too much pressure the foil will be pressed out of the rollers.

7 INNER GUIDES

Corner guides (1 in fig 2240.5) can be fitted when using either non-elastic or elastic foil (inner guides). These serve to keep the foil tube open.
The inner guides carry through the foldingbox to the point where the pusher retracts in a backwards direction.
The inner guides can be adjusted in height.
To do this, carry out the following procedure:
- Undo the locknut.
- Adjust the bolt (2 in fig 2240.5) until the inner guides are in the correct position.
- Tighten the locknut.

Note: Do not adjust the inner guides too high.

The height of the inner guides depends on the product. See the settinglist.

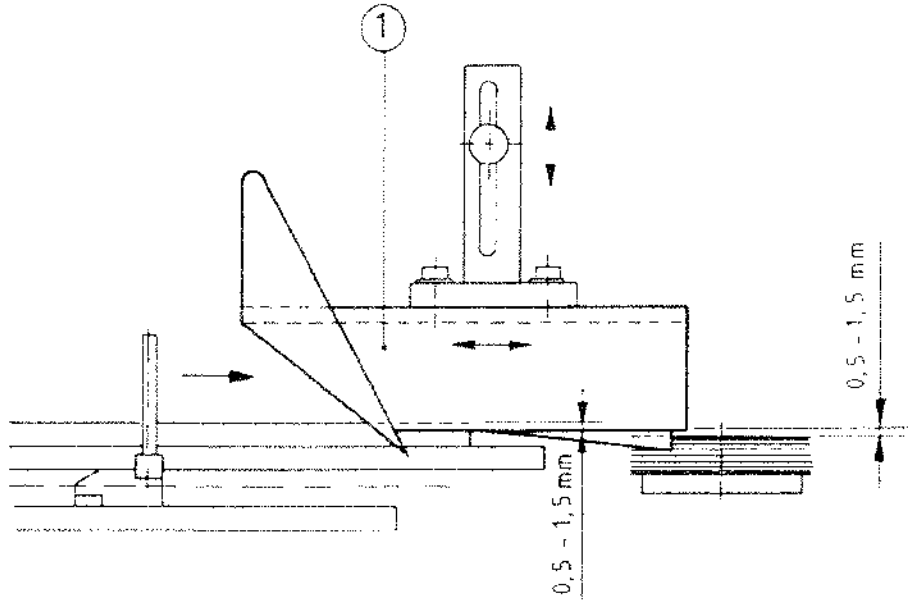


FIG 2240.1

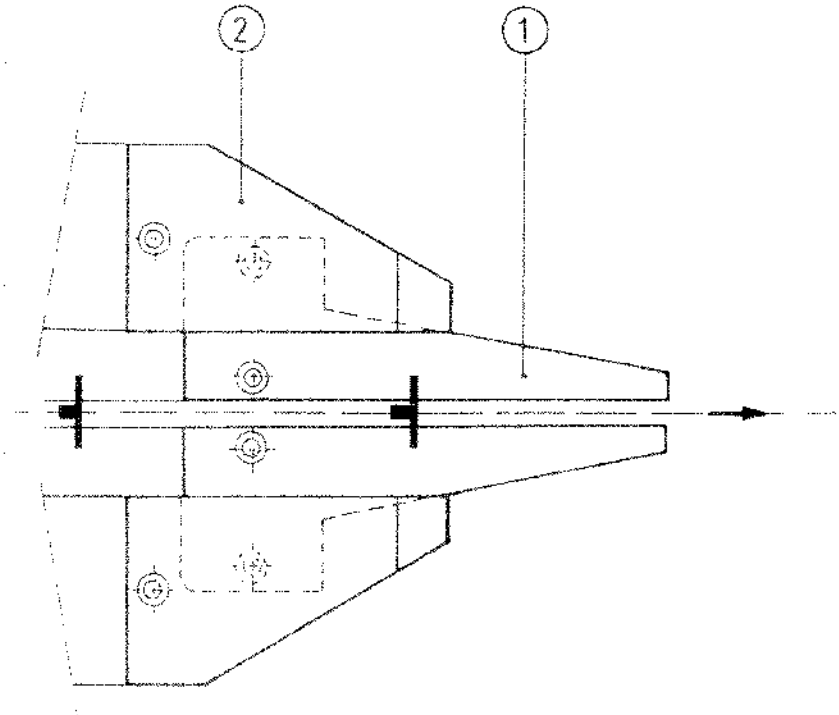


FIG 2240.2

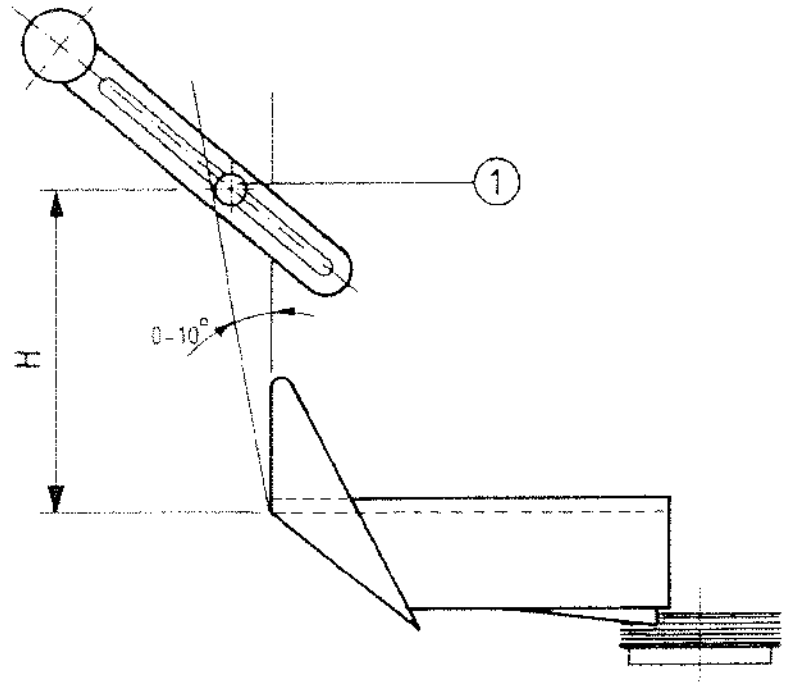


FIG 2240.3

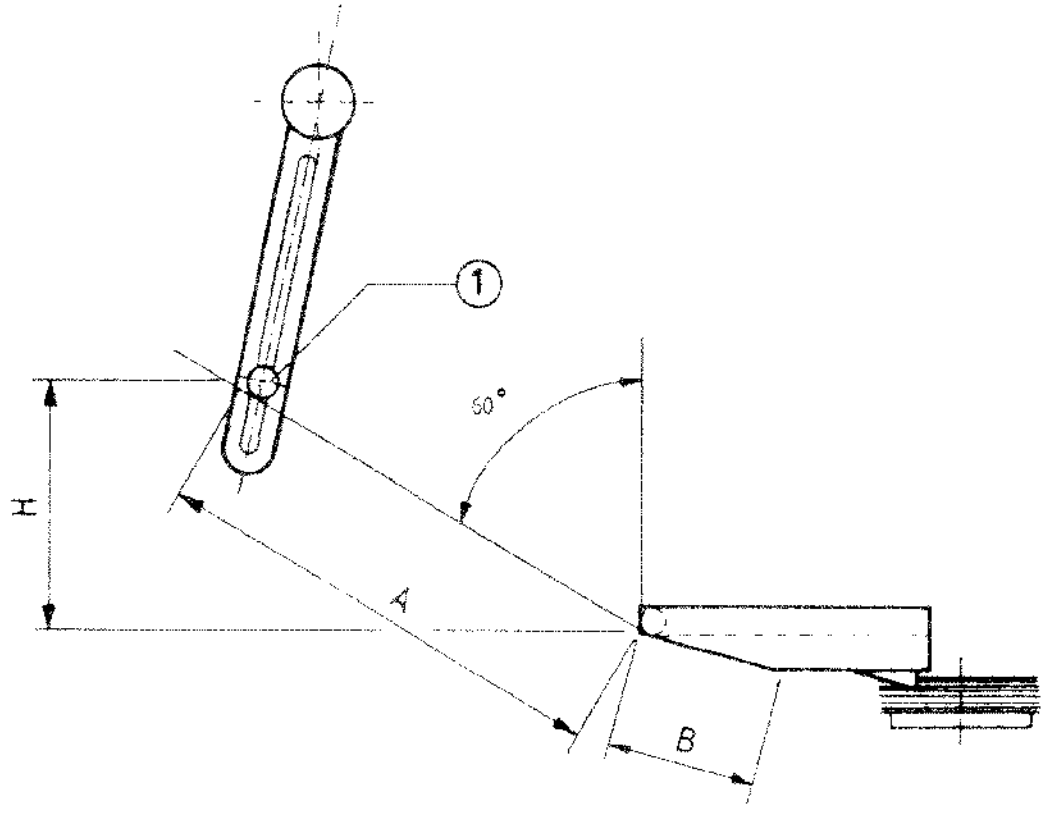


FIG 2240.4

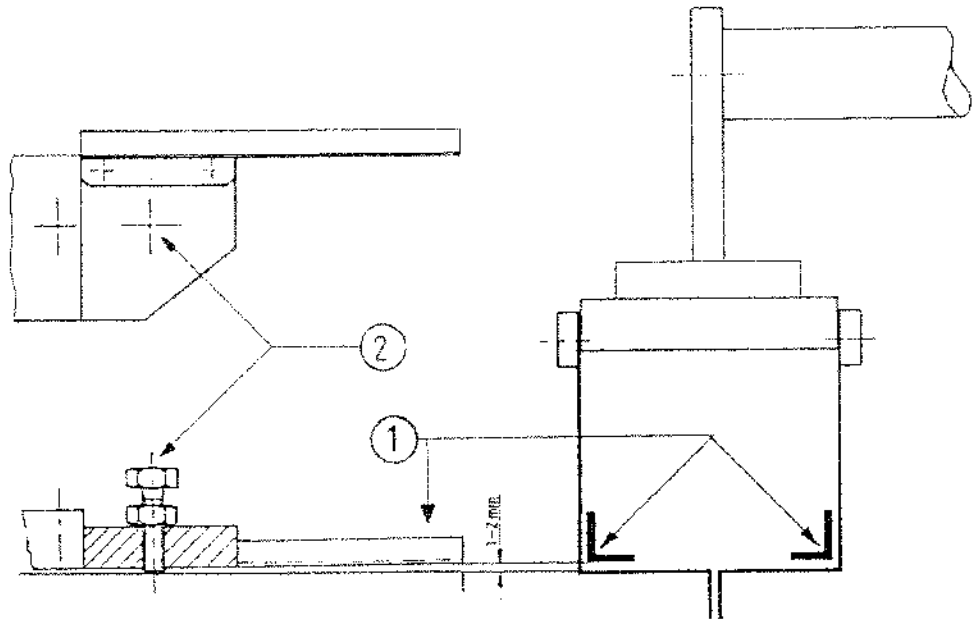


FIG 2240.5

2270 SEALING TABLE

1 GENERAL

The sealing table consists of:
- sealing rollers (rollers with heating elements)
- pulling rollers (rollers for transporting the foil)

2 OPENING THE ROLLERS

Use the handles (1 in fig 2270.1) to open the rollers.

3 SEALING TEMPERATURE

The temperature for each pair of rollers can be set using the thermostats on the electro-panel. The temperature settings are stated in the setting list.

4 OPTIONS

PRE-HEATING
Two heating blocks (1 in fig 2270.2) are fitted between the first and second pair of rollers to provide extra heat. The temperature is controlled by a thermostat on the electro-panel.
The temperature settings are stated on the settings list.

AUTOMATIC ROLLER OPENING
Here the sealing rollers are fitted with a pneumatic opening apparatus (2 in fig 2270.2). The sealing rollers open after a preset time as the packaging machine is stopped. When the machine is started the rollers close and after a preset time the machine starts. The sealing rollers are opened in this way to prevent the foil melting.
When the pre-heating blocks are fitted, these are also opened and closed pneumatically.

5 SEALING AND PULLING ROLLER PRESSURE

The sealing and pulling rollers must be accurately adjusted.

The pulling rollers are correctly adjusted when a single layer of foil cannot be pulled through the closed rollers. This, however, may differ per type of foil. The correct setting can be found by testing.
The pulling rollers are the closest to the crimper unit.

The sealing rollers are correctly adjusted when a single layer of foil can just be pulled between the rollers and two layers of foil not.
The sealing rollers must always be adjusted at working temperature.

The pressure of the first pair of rollers can be adjusted using the adjusting knob (2 in fig 22701), whereby the product is packed more tightly or more loosely.

Threaded rods (3 in fig 2270.1) are fitted on the second and third pairs of rollers for adjusting the pressure.

6 FOIL SPEED

The rollers are driven via a belt variator. The foil speed is determined by the drive ratio of the belt variator. This variator is adjusted by the dial knob (1 in fig 2270.3) on the operating side of the machine.

Turn clock wise : lower foil speed.

Turn anti clock wise : higher foil speed.

The rollers must have such a speed that in one phase the foil is transported over a distance equal to the required cut-off length.

> Definition: A PHASE is the cycle of the wrapping machine in which one wrap is produced.

The clock knob setting is stated in the setting list.

WARNING: The foil speed can only be adjusted when the machine is running in order to prevent damage to the belt.

7 COVER PLATES

Cover plates are fitted above the sealing and pulling rollers, these are held in place with magnets.
The distance between the cover plates and the rollers must be about 1 mm.

8 CHANGING THE SEALING ROLLERS

The sealing and pulling rollers on the sealing table must always be changed per pair.
One roller of each pair is always marked with a turned slot on the underside.
This groove is on the side on the heated rollers.
The sealing and pulling rollers are fitted to the spindles with 2 allen screws.
To change the rollers, carry out the following procedure:

- Switch off the machine's main supply.
- Remove the sealing table cover plate.
- Open the sealing and pulling rollers.
- Remove the allen bolts (1 in fig 2270.4) from the rollers
- With the heated rollers, first remove the wiring. See Paragraph 10 "replacing the heating elements".
- Remove the roller straight up from the shaft.
- Check that the marked rollers are fitted on the same side of the sealing table.
- Carefully clean the shaft and the underside of the roller and lubricate lightly with clean grease.
- Fit the roller in reverse order to the above.

9 CHECK

When new sealing or pulling rollers have been fitted, the toothed section on the rollers must mesh together properly. See figure 2270.5. To check the mesh use a small mirror to look inbetween the opening of the two rollers.

If the toothed sections do not mesh properly, then carry out the following procedure:

- Unlock the adjuster bolt (3 in fig 2270.6). See locking ring.
- Check whether the height of the three rollers is in line with a straight edge, and adjust if necessary using the set adjuster bolt.
- The height (H in fig 2270.4) between the top of the roller and the milled groove of the frame plate must be between 73 mm.
- Adjust the height of the other rollers using the adjusting bolt (3 in fig 2270.6).
- The gear teeth must mesh precisely. See figure 2270.5.
- When all rollers have been correctly adjusted, lock the adjusting bolt with the lock ring.

The adjustment can be checked by making a print using carbon or carbon paper.
The print must be even over the whole width of the toothed section.

10 REPLACING THE HEATING ELEMENTS.

- Switch off the main machine's supply.
- Remove the sealing table covering plates.
- Remove the allen bolts (1 in fig 2270.4) in the sealing roller and take the cover off.
- Remove the wiring from the heating element.
- Remove the temperature sensor from the recess in the roller if applicable.
- Remove the two fastening screws from the heating element.
- Remove the old element, clean the inside of the sealing roller and fit the new element in the same way. Check that the screws are properly recessed.
- Reassemble in reverse order to above.

NOTE:
- The heating element wire ends must not protrude above the nut; this could cause a short circuit.
- the cover must be replaced with the cut-out located over the wiring.

When the wiring and temperature sensor have to be replaced as well, then carry out the following procedure:

- Loosen the wiring from the slip ring (1 and 2 in fig 2270.6) and remove the cable tags.
- Tie a length of string to the ends of the wire in order to pull the new wiring through the hollow spindle.
- Remove the old wiring and pull the new wiring into place using the string.
- Fit cable tags to the right length of the heating element wires and reconnect.
- Connect the new temperature sensor in the same way as the old one. Note the colour coding.

REMARK: The temperature sensor is an iron-constantan combination, no other type of temperature sensor may be used.

11 CHECK

Always carry out the following check procedure after repairs.
- Switch on the machine's main supply.
- Set the thermostat to 50 °C.
- After 5 minutes, check that the temperature indicator has moved up and the rollers are warm.
- If the temperature indicator does not move, but the rollers become warm, then the temperature sensor has been wrongly connected.
- Change over the temperature sensor connectors on the slip ring.
- If the roller does not heat up, check the wiring using the wiring diagram.
- Check the condition of the carbon brushes.
- Check the position of the carbon brushes in relation to the slip rings.

12 MAINTENANCE

Check the sealing rollers every week for sufficient lubrication.
If necessary, lubricate the sealing rollers by greasing the nipples (4 in fig 2270.1).
Remove any excess grease.
The pulling rollers are fitted with bearings which have been lubricated for life. It is recommended however to replace them every two years.
Check the sealing and pulling roller bearings every month by pulling the rollers straight upward.
If there is excessive play in the bearings, replace them.

Recommended lubricants:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Temp 1

Clean the slip rings every month. Also check carbon brushes for wear. If necessary, replace slip rings and carbon brushes.
Carbon brushes for heating and earth: M 87 Bronze.
Carbon brushes for temperature sensor: A 90 Silver graphite.

Check the crown wheels in the drive every month for lubrication, grease lightly if necessary.

Recommended lubricants:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Temp 1.

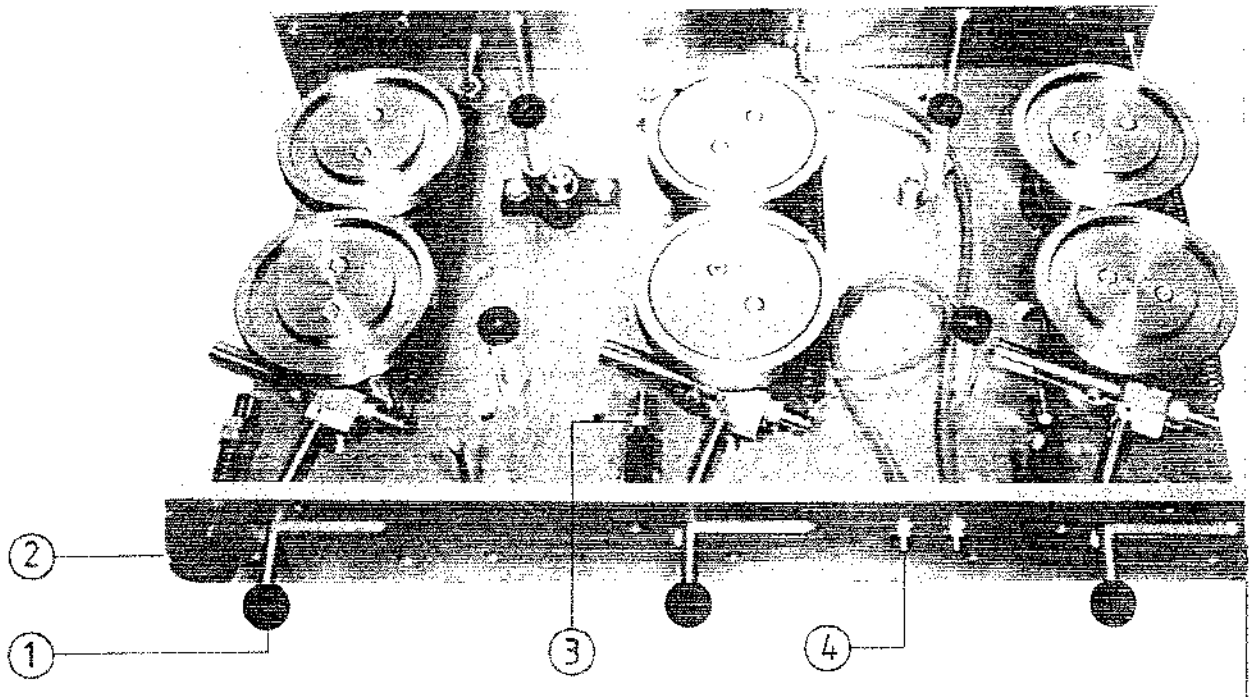


FIG 2270.1

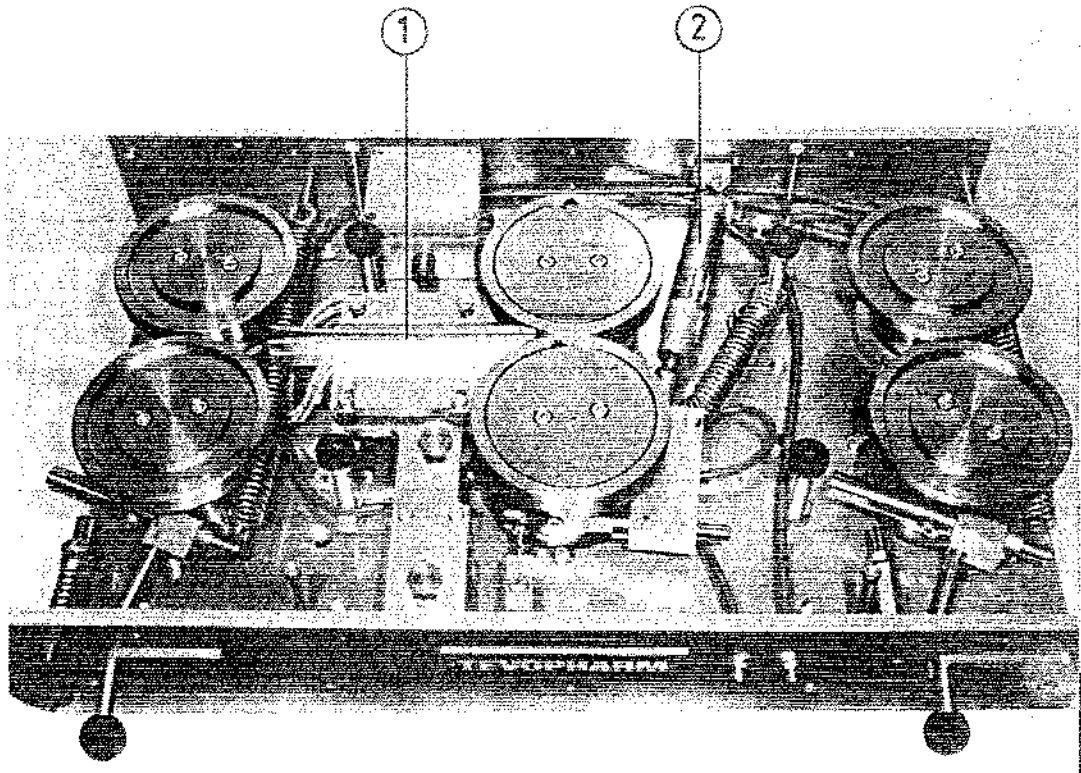


FIG 2270.2

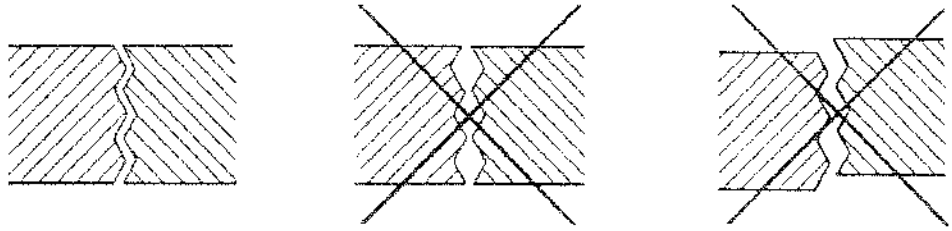


FIG 2270.5

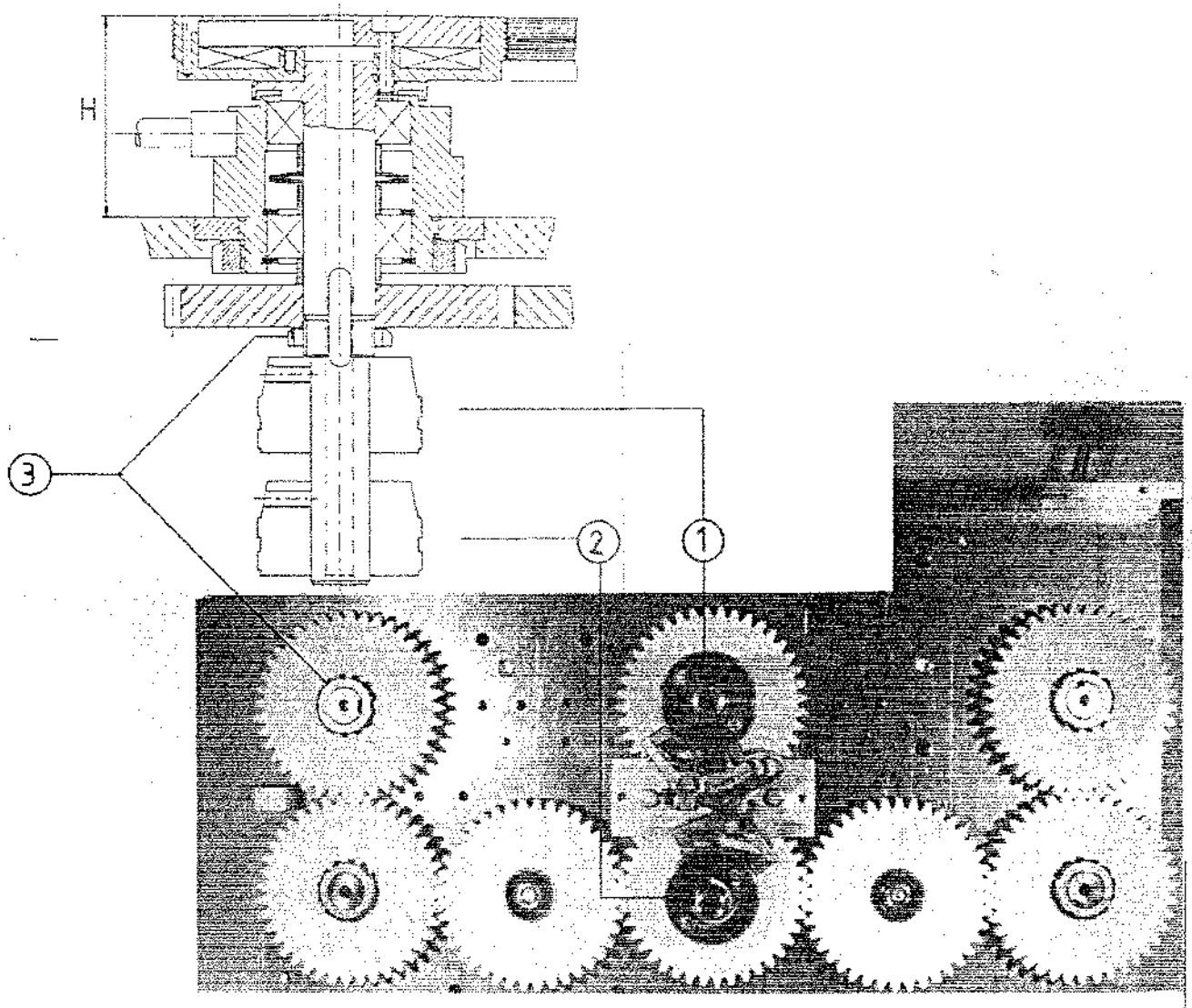


FIG 2270.6

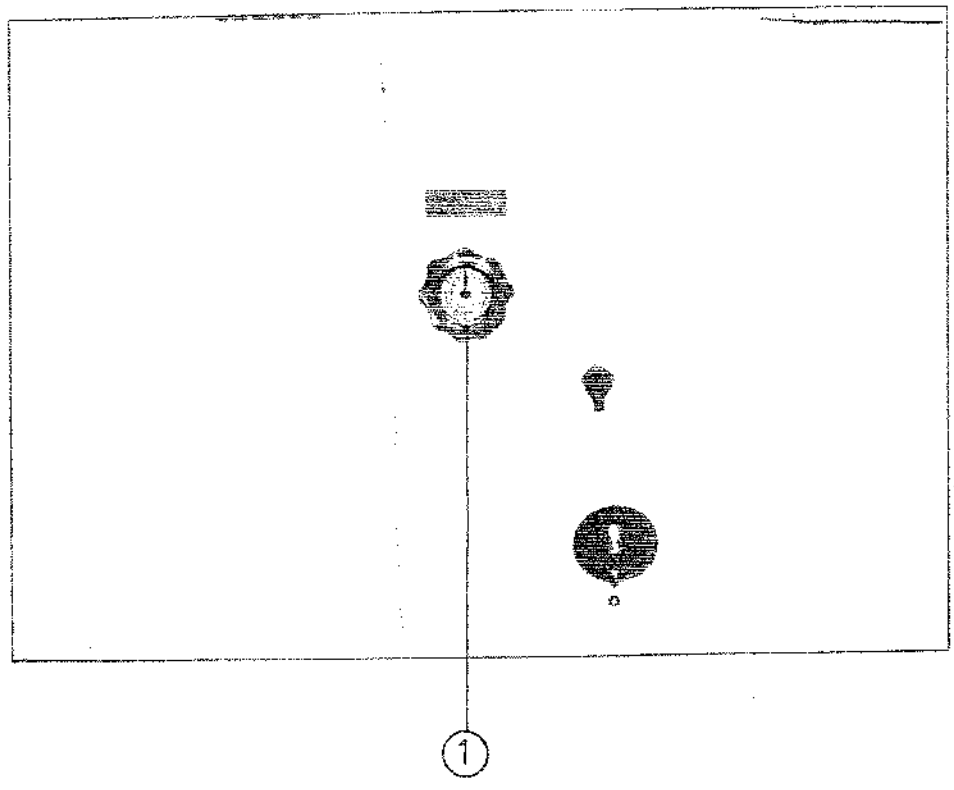


FIG 2270.3

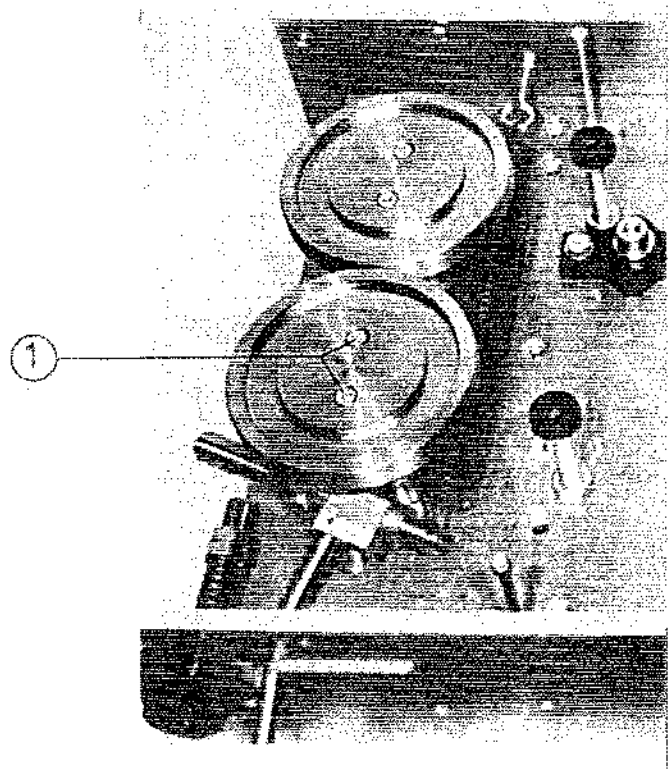
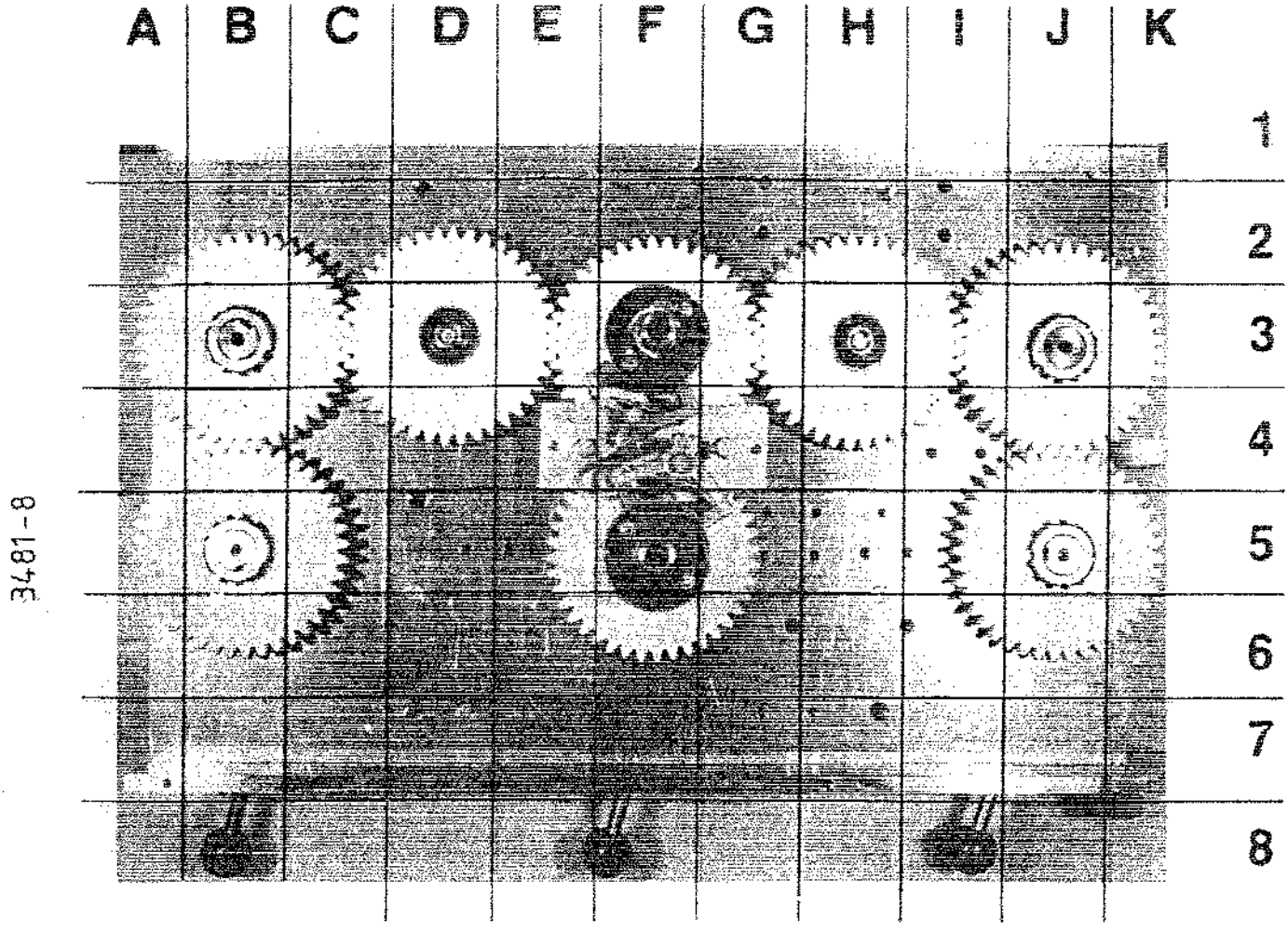
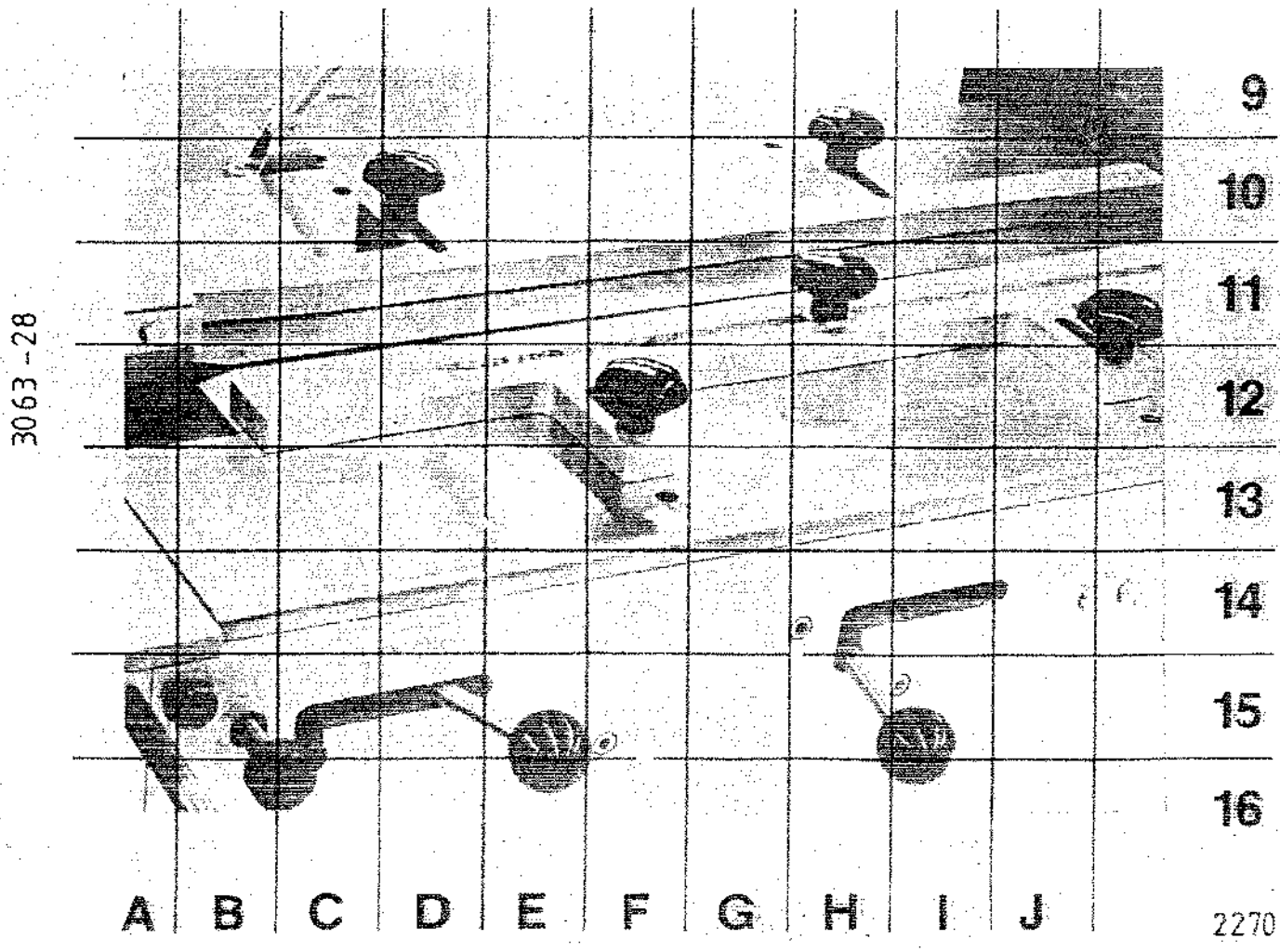
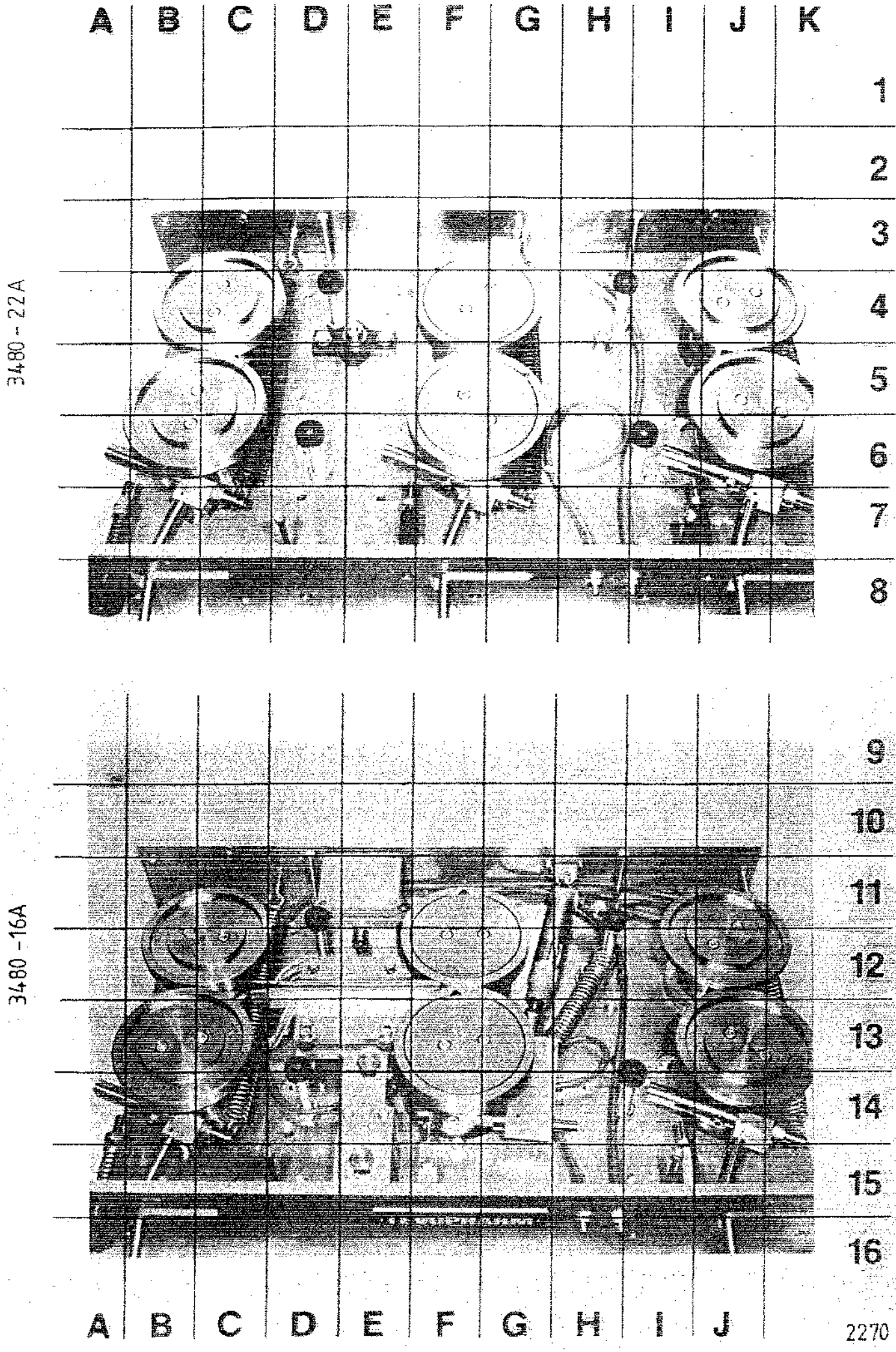


FIG 2270.4


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A B C D E F G H I J
3063-28


A B C D E F G H I J K
1 2 3 4 5 6 7 8
3480 - 22A
9 10 11 12 13 14 15 16
3480 - 16A
A B C D E F G H I J
2270

2300 CRIMPER UNIT

1 GENERAL

The crimper unit seals and cuts the packaging at right angles to the direction of travel.

2 OPERATION

The crimper unit consists of 2 crimper shafts; see figure 2300.1. The crimpers are fitted on these shafts. The blades are fitted in the crimpers. The cross seal is created by a combination of heat and pressure.
If one crimper is mounted on the crimper shaft, the shaft makes one revolution per phase.
If there are 2 crimpers fitted on one crimper shaft, then the shaft makes half a revolution per phase.

> Definition: A PHASE is the cycle of the wrapping machine in which one wrap is produced.

There is a heating element in each crimper and a temperature sensor for each crimper shaft. This temperature sensor controls the thermostat on the electro-panel. This interconnection ensures that the crimpers retain a constant temperature.

Slip rings are fitted to make an electrical connection with the crimpers.

Machines with a single crimper:

- Unscrew the clamp bolts (3 in fig. 2300.3) of the clamp block on the lowest crimper shaft.
- The crimpers can now be turned by hand.
- Set the crimpers (5 in fig. 2300.3) together.
- Block the movement of the crimpers by fixing them with a wood clamp.
- Using the motor handwheel, turn the crimper unit drive so that the centre of the grease nipple of the connecting piece (6 in fig 2300.3) is exactly in line with the top of the shaft with the lock nut. See 7 in fig. 2300.3.
- Tighten the clamp bolts (3 in fig. 2300.3) of the clamp block.
- The groove (8 in fig. 2300.3) in the lower crimper shaft now lies in the extension of the clamp block groove.
- Remove the wood clamp.
- Check the setting.
- Refit the protective hood.

Machines with double crimper:

- Unscrew the bolts (9 in fig. 2300.4) of the clamp ring on the top crimper shaft.
- The crimpers can now be turned by hand.
- Set the crimpers (5 in fig. 2300.4) together.
- Block the movement of the crimpers by fixing them with a wood clamp.
- Using the motor handwheel, turn the crimper unit drive so that the centre of the grease nipple of the connecting piece (6 in fig. 2300.4) is exactly in line with the top of the shaft with the lock nut: See 7 in fig. 2300.3.
- Now tighten the bolts (9 in fig. 2300.4) of the clamp ring crosswise.
- The groove (8 in fig. 2300.3) in the lower crimper shaft now lies in the extension of the clamp block groove.
- Remove the wood clamp.
- Check the setting.
- Refit the protective hood.

5 HEIGHT ADJUSTMENT

The package cross seal must be in the middle in relation to the height of the pack. The crimper unit can be adjusted in height using the handwheel (3 in fig. 2300.2).
Before the crimper unit can be adjusted in height, the discharge conveyor must be moved first. See the chapter "discharge conveyor".

Turn clockwise : Raises the crimper unit.
Turn anti-clockwise : Lowers the crimper unit.

The indication strip (4 in fig. 23002) indicates the height of the crimper unit.

6 SUPPORT ROLLER

A support roller (1 in fig. 2300.5) is fitted on the lower crimper shaft for product support.
If a different height product is packed, the support roller is changed.
The support roller must lie at the same level as the cover plates on the sealing table and discharge conveyor.

7 OPTIONS

CRIMPER ADJUSTMENT
The crimpers can be adjusted in relation to the rest of the machine (see fig. 2300.6). To adjust the crimpers, carry out the following procedure:
- Turn the reverse thread nut (1 in fig. 2300.6)in the direction of the arrow (= LOOSEN) to decouple the drive.
- Turn the crimpers using the milled wheel (2 in fig. 2300.6) until the desired position is reached.
- Tighten the reverse thread nut against the direction of the arrow.

7 ADJUSTING THE CRIMPERS

When adjusting the crimpers, take care of the following points:

- When multiple crimpers are used, crimpers marked "R" are fitted on one shaft, those marked "L" are fitted on the other shaft.

- The profile of the lower crimper must fit the profile of the upper crimper precisely.
  See 1 in figure 2300.7.

- The space between the upper crimper and lower crimper must be the same across the whole width of the crimpers.
  See 2 in figure 2300.7.

- The upper crimper must be vertically above the lower crimper.
  See 3 in figure 2300.7.

These adjustments can be checked by making a print using carbon or carbon paper. The resulting print should be even, the same pressure and across the whole width of the crimper.

> TAKE CARE: When adjusting the crimpers - and checking
> -they must be at operating temperature.
> the upper blade must also be removed.

When the crimpers are correctly adjusted, the play between the crimper shaft gearwheels at operating temperature must be minimal. Excessive play creates extra wear on crimpers and blades.

The crimper pressure must be set so that a good seal is created without ruining the foil.
The wide gearwheel is the driven gearwheel, and the small gearwheel is to eliminate the play between the tooth faces

To adjust and replace the crimpers, carry out the following procedure:
Some of the following items can be skiped when adjusting the crimpers.

- Remove the protective hood.
- Take the upper blade from the crimper and unscrew the 4 bolts (1 in fig. 2300.8) from the adjuster gearwheel.
- Set the crimpers precisely together.
- Unscrew the pressure plates (2 in fig 2300.8) of the tension spring (3 in fig 2300.8) so that both springs (left and right) are still just closed.
- Remove locking plates (5 in fig. 2300.2).
- Unscrew both nuts (6 in fig. 2300.2) until a small space exists between the base of the nut and the top of the top plate (4 in fig. 2300.8).
- Tighten the nuts (6 in fig. 2300.8) finger tight. There will now be no space between nuts and the upper side of the top plate.
- Unscrew the upper crimper fixing bolts and allow the profile of both crimpers to grip exactly. Then tighten both bolts.
  This must be done for every pair of crimpers.
- Tighten both nuts (6 in fig. 2300.2) on the crimper unit about 1/6 of a turn.
- Now tighten the tension spring pressure plates (2 in fig. 2300.8) until the adjusting nut.
- Heat the crimpers to the correct sealing temperature and check foil sealing (make a test seal with paper or foil, also check that the seal pressure to the left and right of the crimper is the same). If seal pressure is too low, slacken both nuts (6 in fig. 2300.2). If seal pressure is too high, tighten the bolts a little. After adjustment lock the bolts with lock plates (5 in fig. 2300.2).
- Both crimper shafts are driven by gearwheels. There is a split gearwheel (5 in fig. 2300.8) fitted to the upper crimper shaft. Turning the small gearwheel against the direction of motion (in relation to the wide gearwheel) eliminate the play between the tooth faces of the gearwheels.
  After adjustment, tighten the 4 bolts (1 in fig. 2300.8).
- Replace the upper blade and adjust correctly.
- Refit the protective hoods.

9 ADJUSTING THE BLADES

The blade grooves in the upper crimper and lower crimper must be clean, take care to remove all product remnants, pieces of foil and bits of old blade shims.
The new blade must come out of the crimper easily.
Ounce a week remove the blades and grease with heat-resistant oil.

THE LOWER BLADE

The lower blade must lie at the same level as the deepest point of the seal profile in the crimper. The blade can be set at the right height by using shims. These blade shims must be as long as the blade.
Before fitting, apply a thin layer of heat-resistant oil to the blade.
When the blade is fitted axial between 2 plates or 2 bolts, then it must be able to move a little, in order to prevent tension build up.
Finally check that the blade cannot fall out of the mounting.

THE UPPER BLADE

The upper blade must cut the foil over the whole width. The blade can be set at the right height by using blade shims. These shims must be as long as the blade.
Before fitting, apply a thin layer of heat-resistant oil to the blade.
When the blade is fitted axial between 2 plates or 2 bolts, then it must be able to move a little, in order to prevent tension build up.
Finally check that the blade cannot fall out of the mounting.
When the blade has been correctly adjusted, no movement can be felt in the upper crimper sliding blocks and the crimper unit will make no noise during the sealing and cutting operation.

If they are improperly set up, the blades will wear very quickly, the crimper profile will be affected and the bearings will be excessively loaded. Thus, poor setting increases the chance of a breakdown.

10 REPLACING THE HEATING ELEMENTS

To replace the heating elements, carry out the following procedure:

- Turn off the main switch.
- Remove the protective hood.
- Remove the crimper shaft temperature sensor wiring from the slip ring (1 in fig. 2300.9).
- Clip off cable tags (dismantle slip ring from crimper shaft if necessary). Note the colour coding.
- Remove wiring from the crimper shaft heating element slip ring (2 in fig. 2300.9).
- Clip off the cable tags. Note the colour coding.
- Dismantle the crimper from the crimper shaft, tie a length of string to the wiring for removing and replacing the wiring in the hollow crimper shaft.
- Remove element from the crimper.
- Coat new element with heat conducting, heat-resistant oil and fit in the crimper.
- Pull the wiring through the crimper shaft with the string mentioned above.
- Fit the crimper loosely on the crimper shaft.
- If the slip ring (1 in fig. 2300.9) has been dismantled, re-fit.
- Cut the element wiring to size, fit cable tags and connect to slip ring contacts (Check blue-red colour coding).
- Turn the crimpers until they are in line. Check that the crimper profile grips properly (make a test seal with paper or foil).
- Tighten crimpers.
- Check that the wiring has been properly connected.

11 CHECK

Always carry out this check procedure after repairs.

- Switch on the main switch.
- Set the thermostat to 50 °C.
- After approximately 5 minutes, check that the thermostat indicator has moved and the rollers are warm.
- If the thermostat indicator does not move, but the rollers become warm, then the temperature sensor has been wrongly connected.
- Change over the temperature sensor connectors on the slip ring.
- If the roller does not heat up, check the wiring using the wiring diagram.
- Check the condition of the carbon brushes and their position in relation to the slip rings.

> REMARKS: The temperature sensor is an iron-constantan -combination, any other type of sensor cannot be used.

12 MAINTENANCE

Clean and check the correct operation of crimpers and blades daily.

The blades should be taken out and cleaned weekly. Before refitting, apply a thin layer of heat-resistant oil.

Check the crimper shaft bearings monthly for play and sufficient lubrication.
Lubricate the bearings by greasing the nipple (2 in fig. 2300.5) and remove any excess grease.

Recommended lubricants:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Temp 1

Check monthly the gearwheels for play and sufficient lubrication.
Clean and grease the gearwheels.

Recommended lubricants:
- Shell, Carnea 3
- Esso, Penoled EP2.
- Mobil, Visolite extra heavy

Check the synchronization mechanism monthly.
Grease the bearings using the grease nipples (9 and 10 in fig. 2300.3).

Recommended lubricants:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Temp 1

Clean the slip rings monthly, also check carbon brushes for wear. If necessary, replace carbon brushes and slip rings.
Carbon brushes for heating element : M 87 Bronze
Carbon brushes for temperature sensor: A 90 Silver graphite

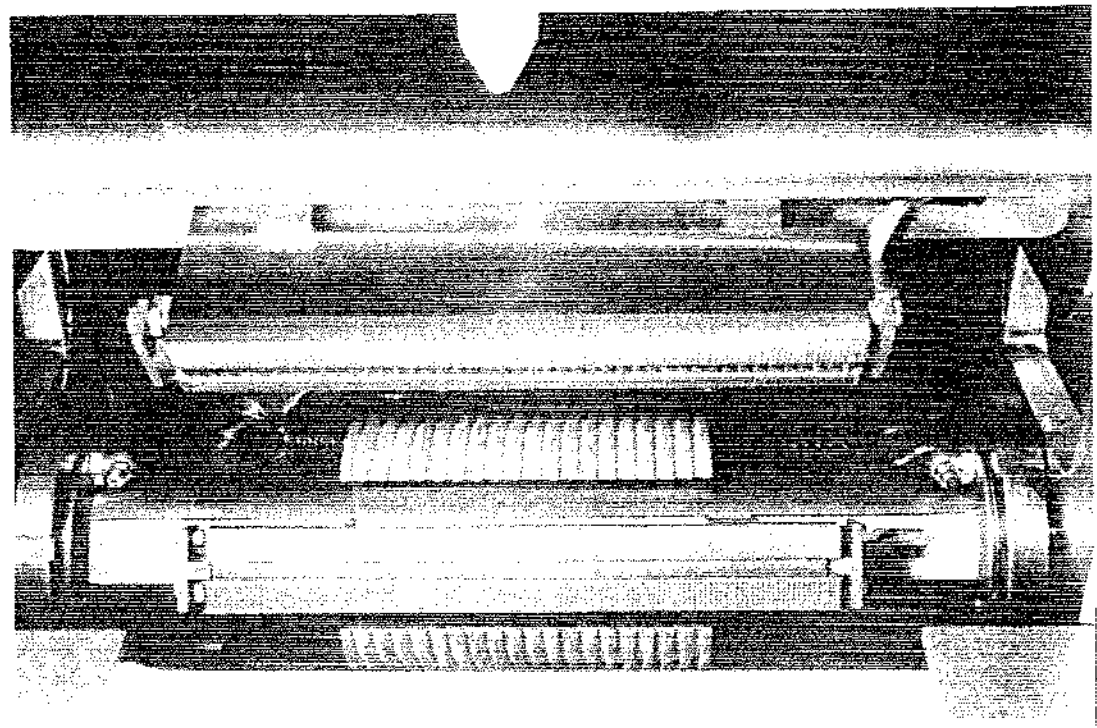


FIG 2300.1

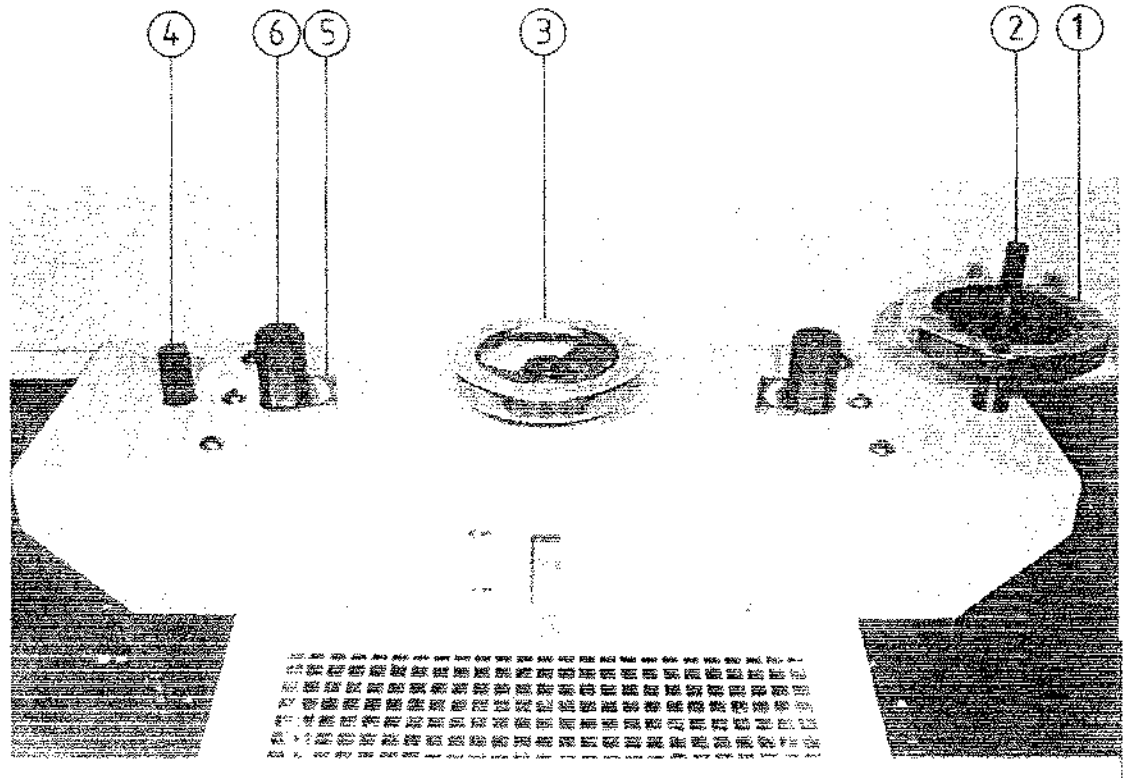


FIG 2300.2

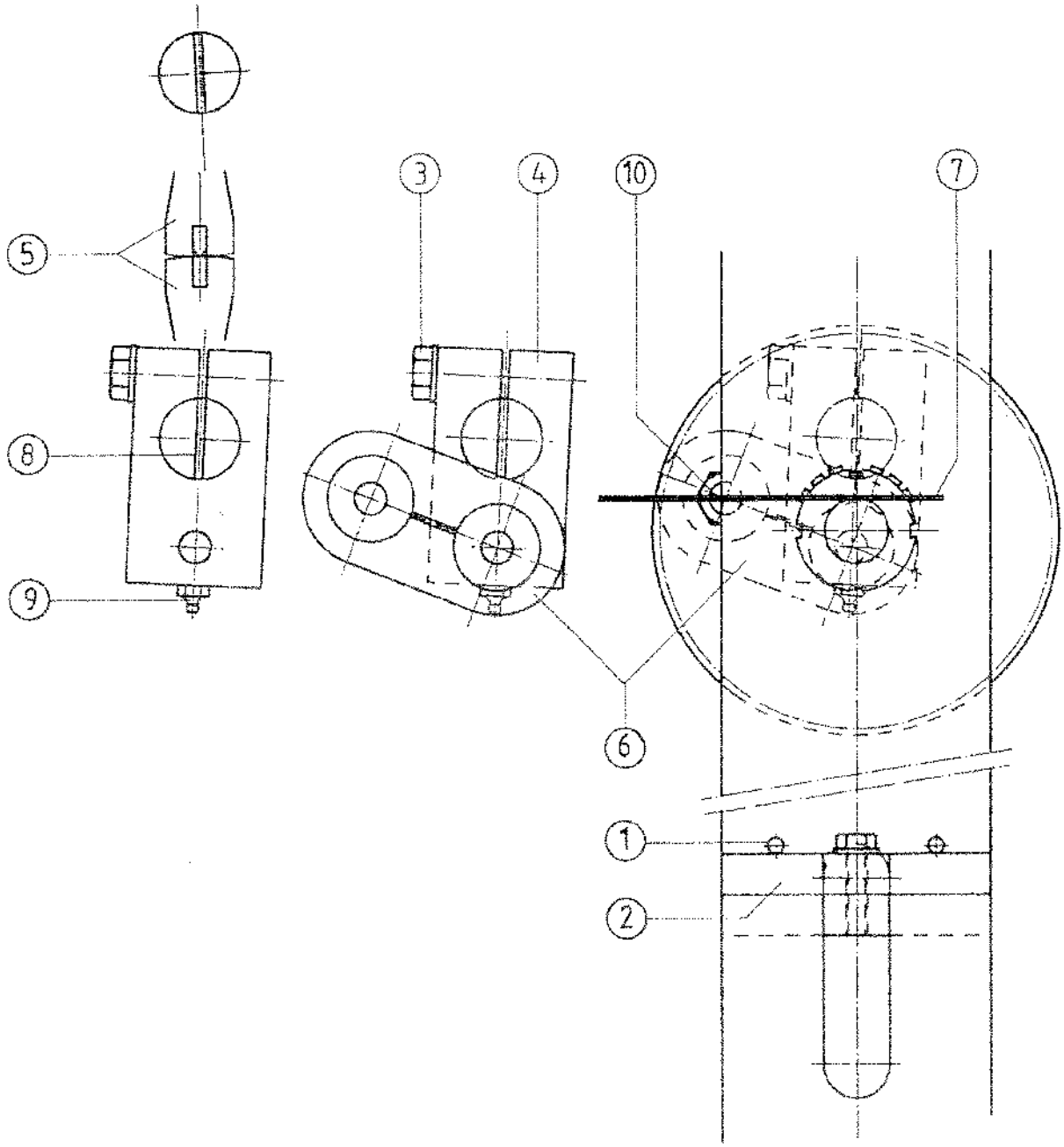


FIG 2300.3

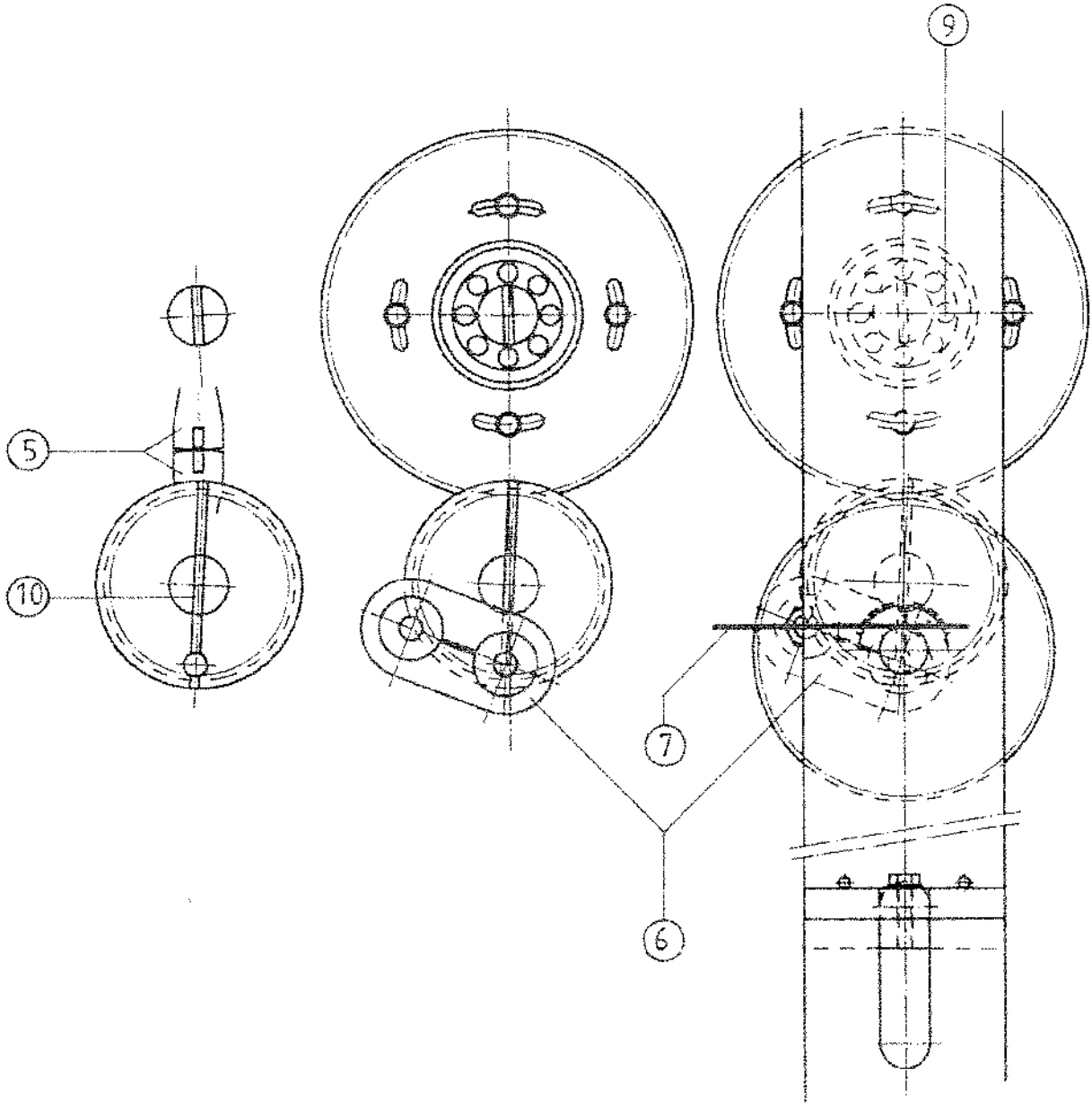


FIG 2300.4

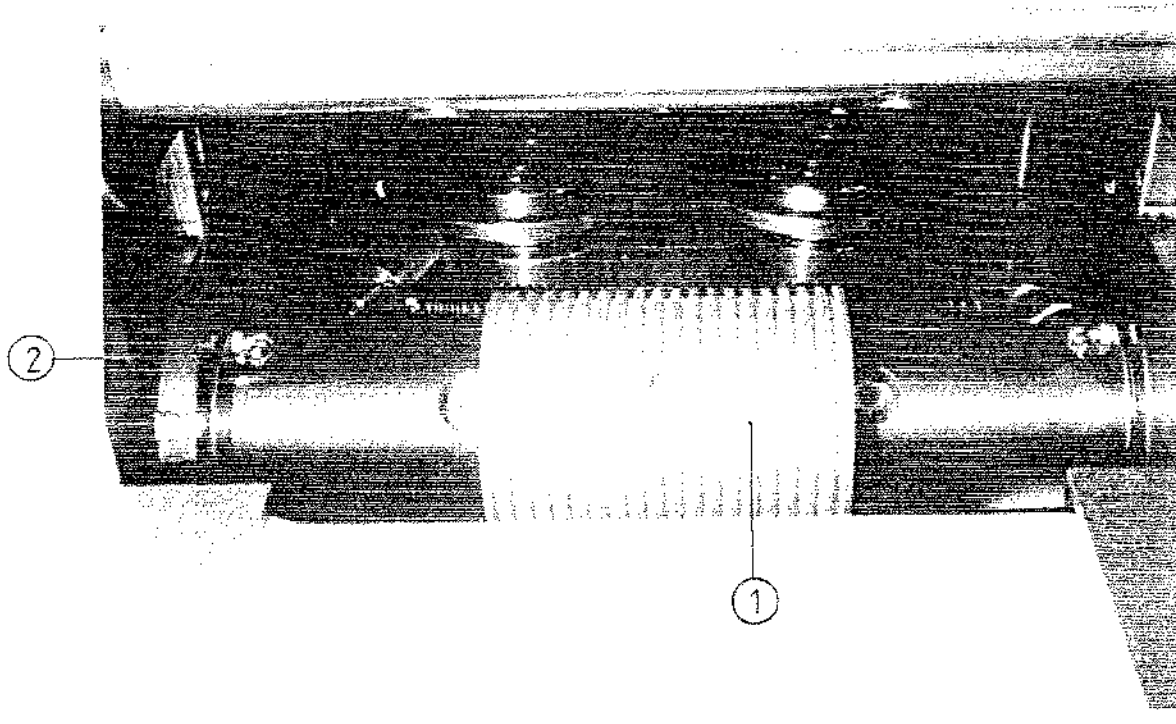


FIG 2300.5

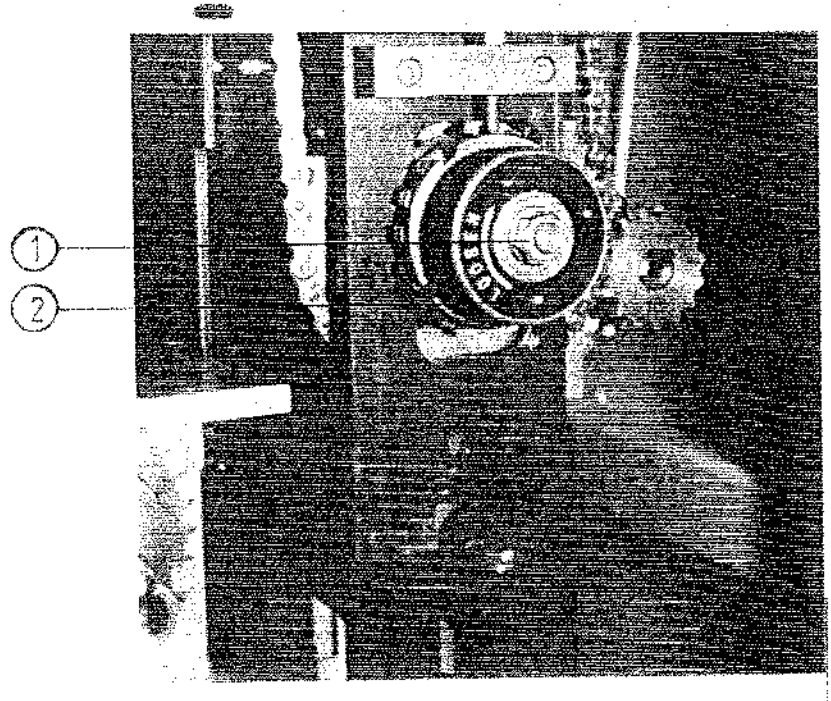


FIG 2300.6

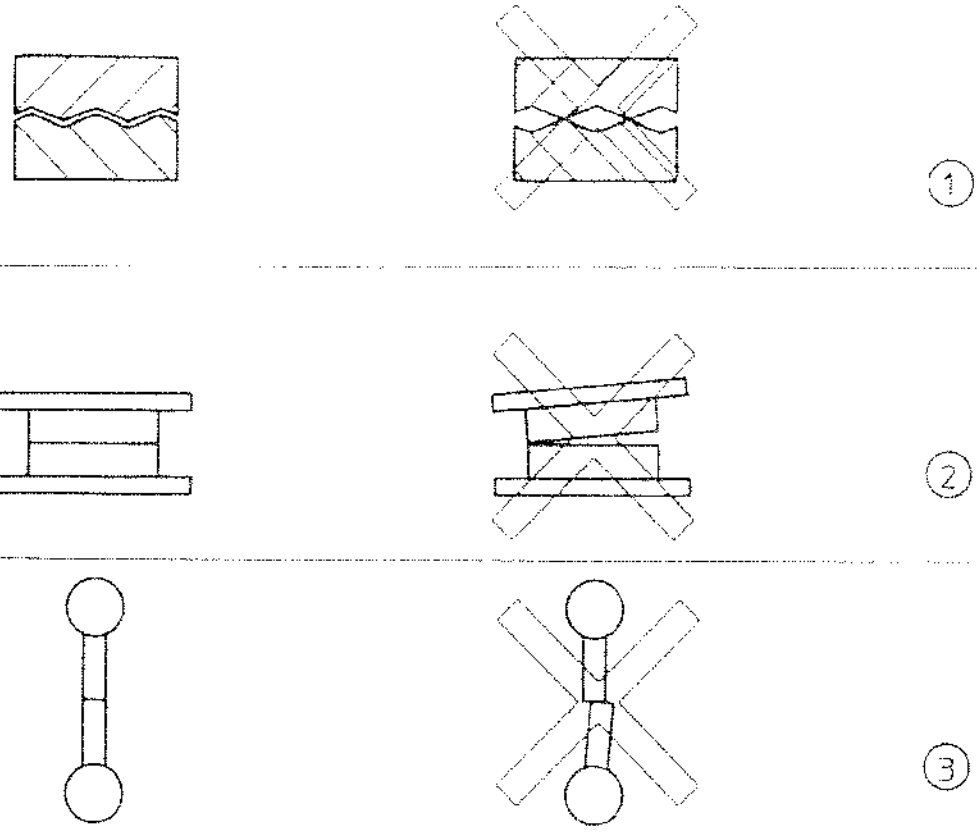


FIG 2300.7

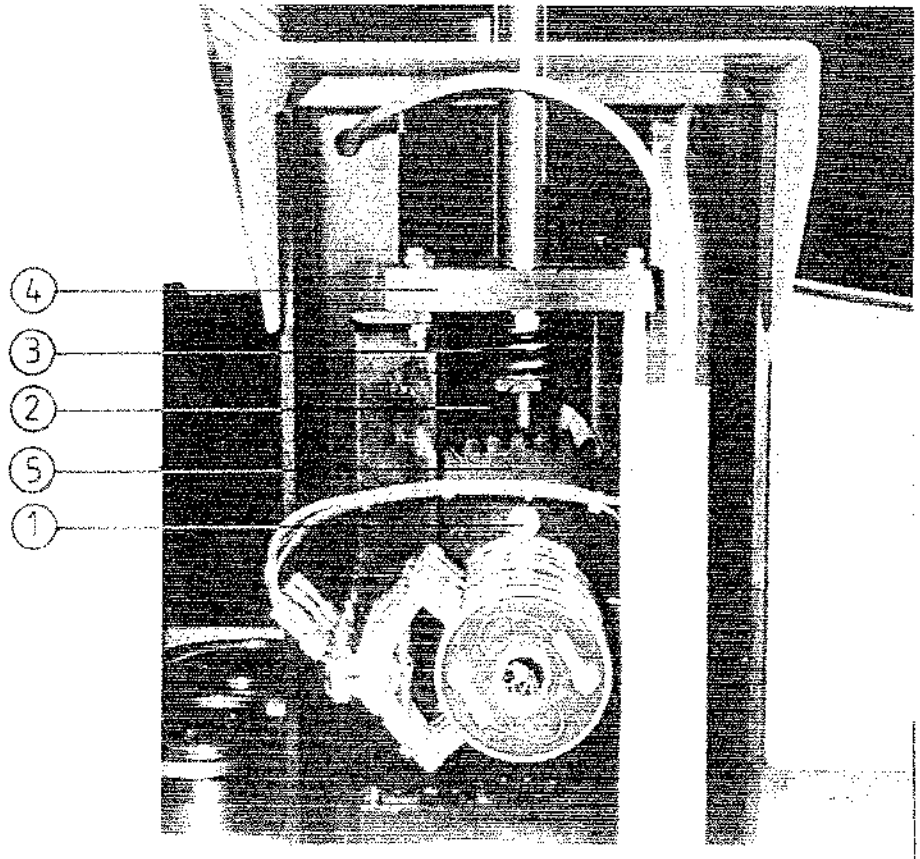


FIG 2300 8

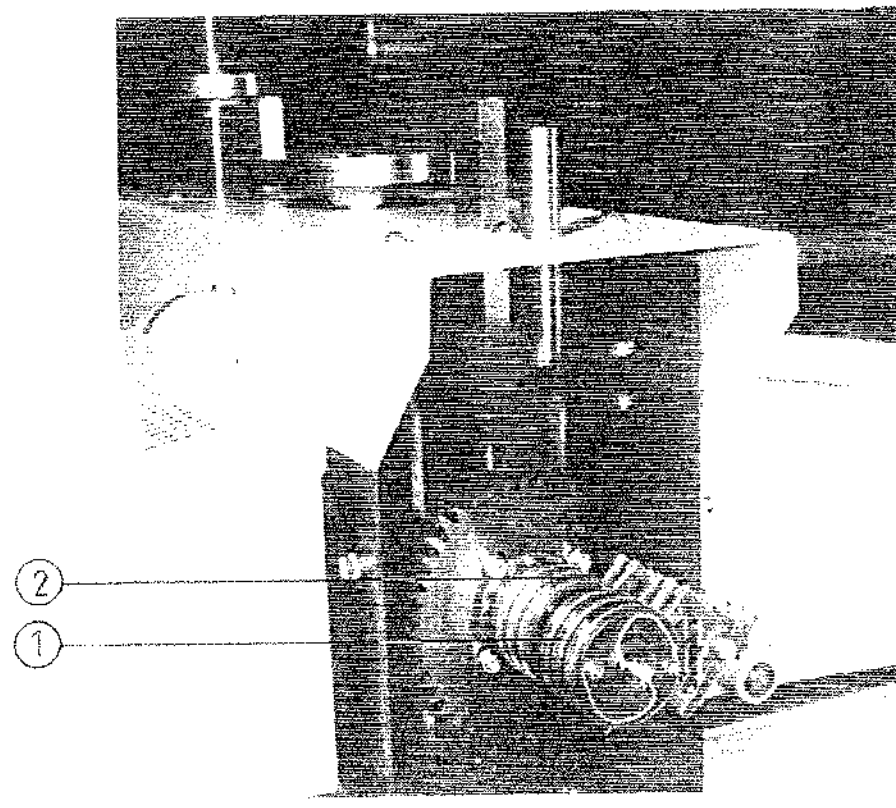
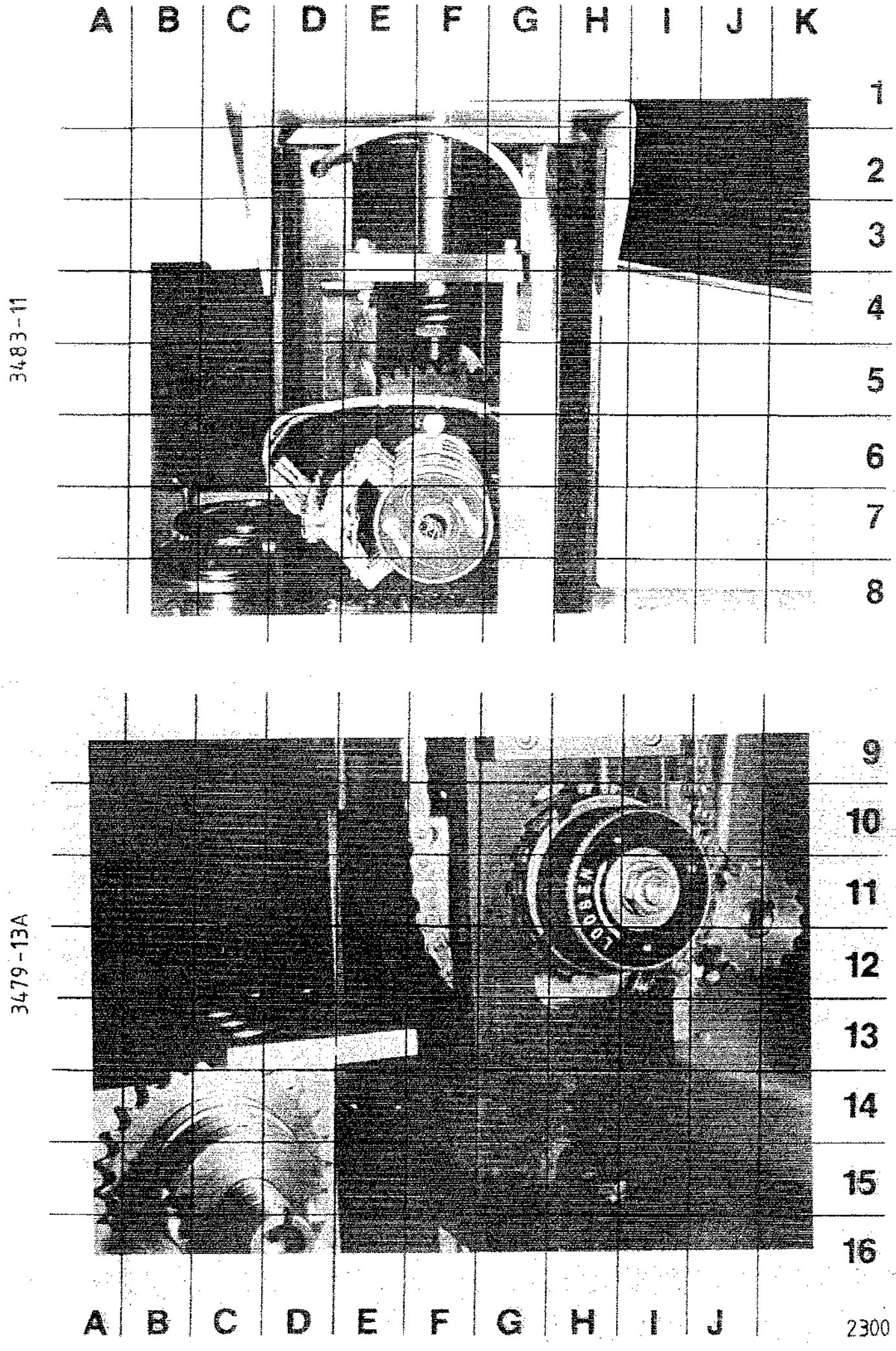


FIG 2300.9

A B C D E F G H I J K
1 2 3 4 5 6 7 8
3479-20A

9 10 11 12 13 14 15 16
A B C D E F G H I J
3479-7A


A B C D E F G H I J K
1 2 3 4 5 6 7 8
3483-11
9 10 11 12 13 14 15 16
3479-13A
A B C D E F G H I J

2330 GUSSETTERS

1 GENERAL

The gussetters (1 in fig 2330.1) fold the foil inward at the front and back of the product so that the cross seal is no wider than the packet. The gussetters are fitted at exactly the same height as the crimpers.
If a product with a different width is to be packed, then the gussetters must be adjusted.
If the width differences are too much, the gussetters have to be changed. "see also Settinglist".

2 WIDTH SETTING

If both gussetters are pointing towards each other, then the distance between the gusseters must be the same as the packet width minus the packet height plus 3 mm.

3 MOMENT OF GUSSETTING

The moment of gussetting can be adjusted by turning the curve discs (1 in fig 2330.2) on the crimper shaft.

Turn in the direction of rotation of the crimper shaft: earlier gussetting.

Turn in the opposite direction of rotation of the shaft : later gussetting.

To adjust the moment of gussetting, carry out the following procedure:
- Inch the machine until the crimper just touches the foil.
- Loosen the gussetting curve disc by slackening the bolts (2 in fig 2330.3).
- Turn the gussetting curve disc until the gussetter starts to push the foil inward.
- Tighten up the gussetting curve disc.
- Inch the machine until the gussetter is alongside the pack again.
- The gussetter must not hold the pack during the return movement.
- If necessary, move the gussetter forward or back.
- Adjust the second gussetter - both gussetters must make the same gussetting movement at the same time.

4 MAINTENANCE

Clean and lightly grease the curve track and curve discs every week.

Recommended lubricants:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Temp 1.

The curve rollers are fitted with grease nipples and should be greased every week.
Remove any excess grease.

Recommended lubricants:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Temp 1.

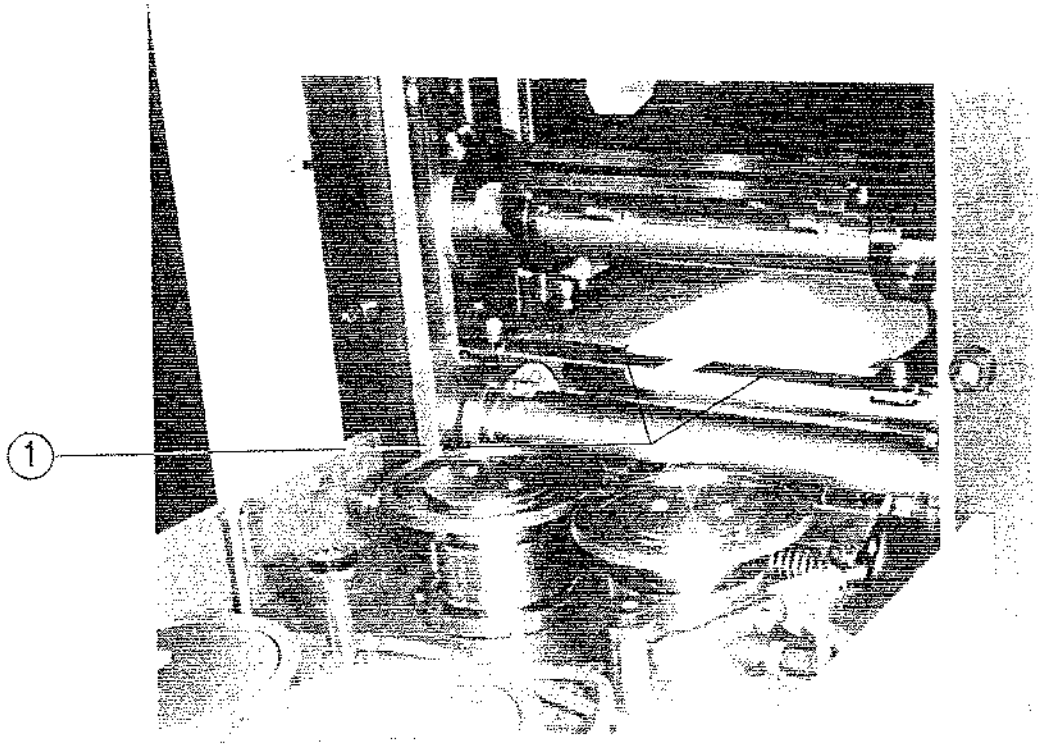


FIG 2330.1

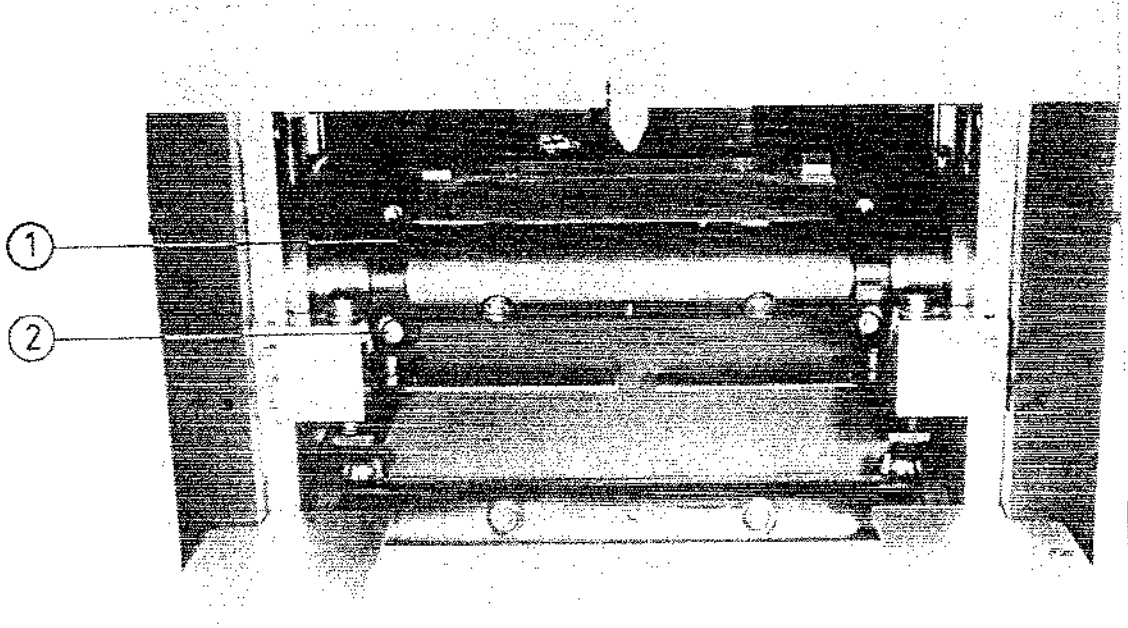


FIG 2330.2

A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7
8
3483-24
3483-21
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
2330

2360 DISCHARGE CONVEYOR

1 GENERAL

The wrapped product leaves the wrapping machine via the discharge conveyor.

2 ADJUSTMENT

The discharge conveyor can be moved lengthwise using the two star knobs (1 in fig 2360.1).
There must be a minimum distance of 10 mm between the discharge conveyor and the lower crimper.

Before the crimper unit is adjusted in height, the following procedure must be carried out;

- Unscrew the 2 star knobs (1 in fig 2360.1) and move the discharge conveyor as far from the crimper unit as possible.
- Remove the cover plate (2 in fig 2360.1).
- Unscrew the end stop bolt (1 in fig 2360.2).
- Set the crimper unit to the correct height (See chapter "Crimper Unit").
- Move the discharge conveyor in the direction of the crimper unit until there is a distance of 10 mm between lower crimper and discharge conveyor.
- Tighten up the 2 star knobs.
- Fit the stop and tighten the bolt (1 in fig 2360.2)
- Refit the cover plate (2 in fig 2360.1)
- Read off the position of the discharge conveyor on the scale strip under the star knob.
- Note the found positions in the Settinglist

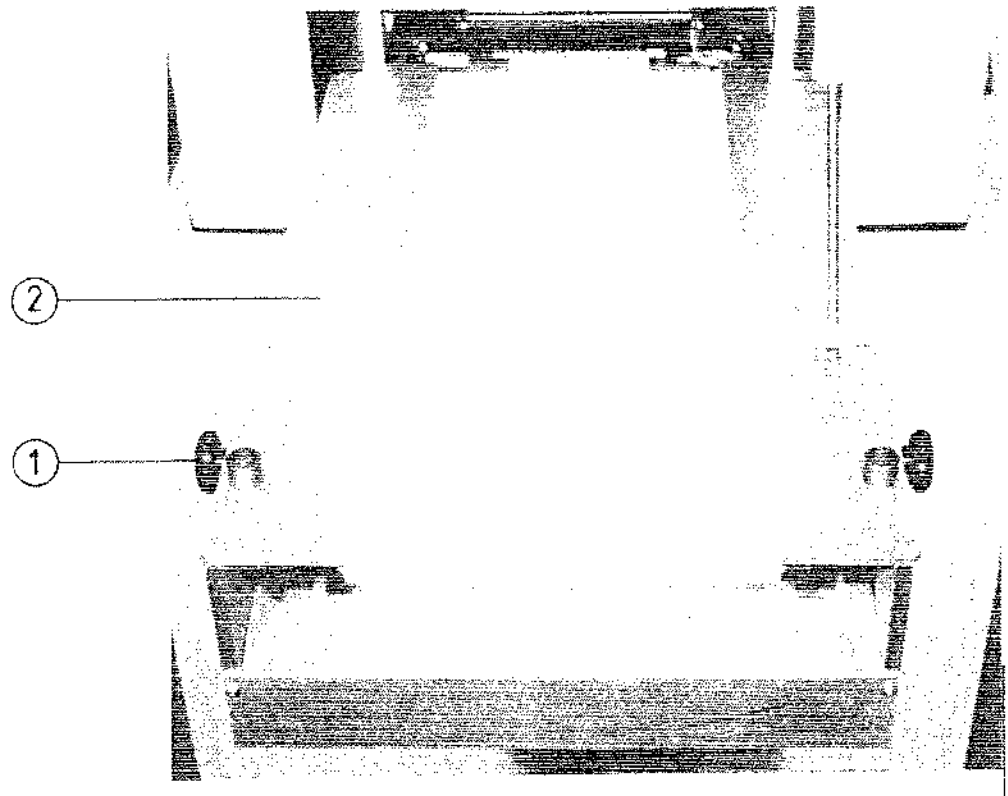


FIG 2360.1

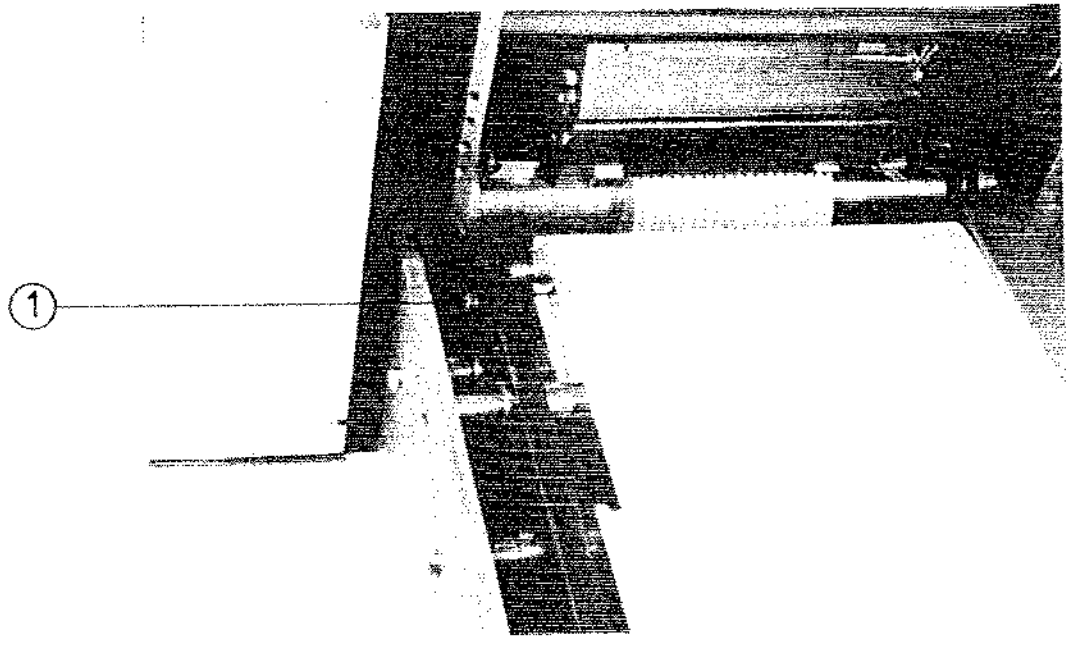
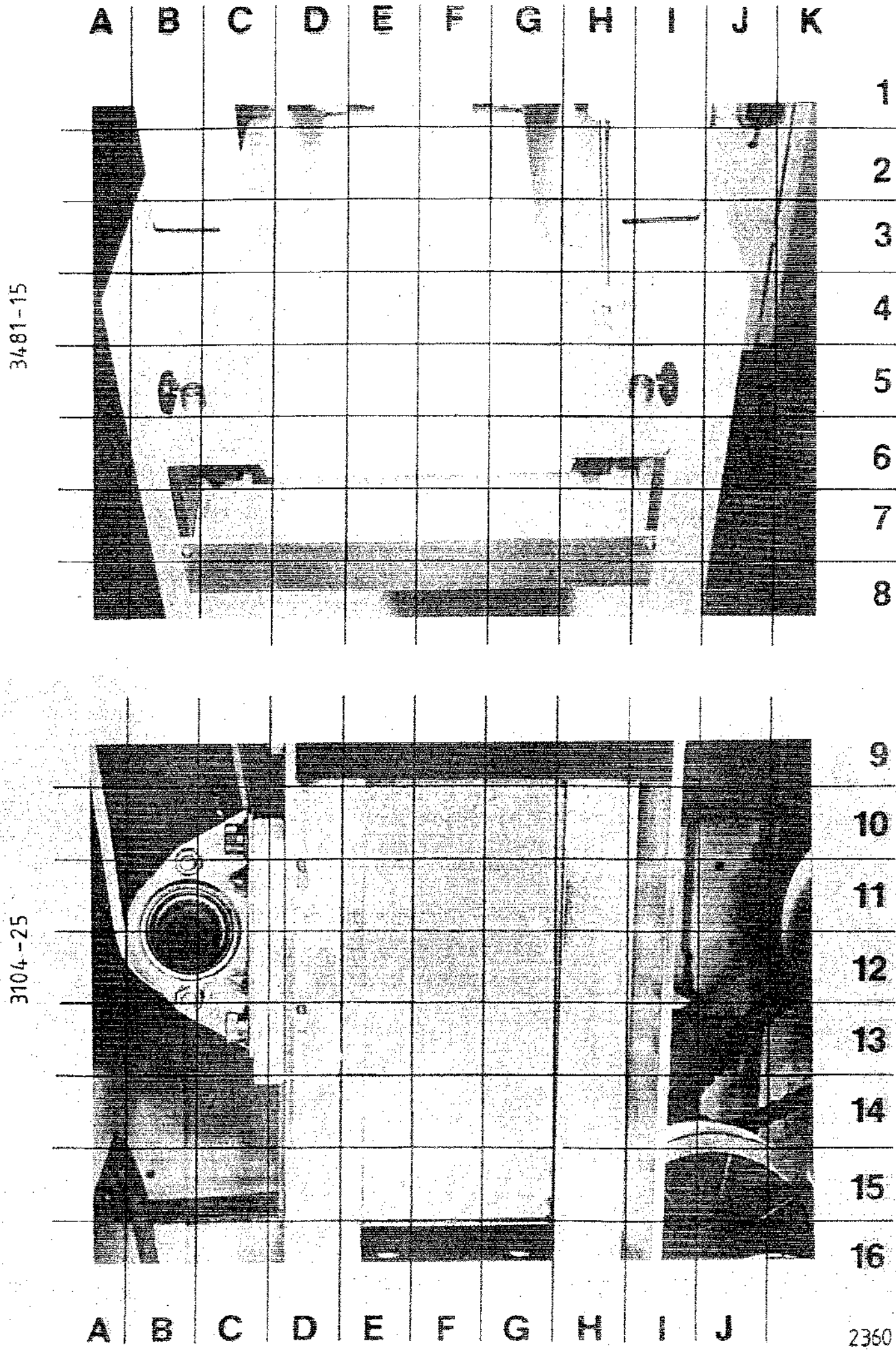


FIG 2360.2


A B C D E F G H I J K
1 2 3 4 5 6 7 8
3481-15
9 10 11 12 13 14 15 16
3104-25
A B C D E F G H I J
2360

2393 SPOT CORRECTION

1 GENERAL

The spot correction on this wrapping machine ensures that the foil is sealed and cut at the correct place in relation to the printing on the foil.

2 OPERATION

If the foil is not being sealed and cut at the correct place when the machine is working this is corrected by accelerating or slowing down the foil for a certain period of time.

The mark detector (1 in fig 2393.1) in the foil tower detects the spot. The time at which the spot passes corresponds to a particular position of the cam (1 in fig 2393.2) connected with the proximity switch S41 and the cam (2 in fig 2393.2) connected with the proximity switch S42, which are mounted on the command shaft of the drive system (see figure 2393.2).
The two cams are offset relative to each other so that there is a tolerance area (A in fig 2393.4) of five to ten degrees (see fig 2393.2).

The mark detector in the foil tower detects a spot. The time at which this occurs corresponds to a particular position of the cams.

Nominal speed.
The mark detector detects a spot. The proximity switches S41 and S42 are above the openings on the cams and are thus not activated. Then the gear wheels with a transmission ratio of 1.00 (2 in fig 2393.3) are operated via the electromagnetic clutch (1 in fig 2393.3).

Minimum speed.
The mark detector detects a spot too early. Proximity switch S41 is not activated but proximity switch S42 is. Then the gear wheels with a transmission ratio of 0.95 (4 in fig 2393.3) are operated via the electromagnetic clutch (3 in fig 2393.3).

Maximum speed.
The mark detector detects a spot too late. Proximity switch S41 is activated but proximity switch S42 is not. Then the gear wheels with a transmission ratio of 1.05 (6 in fig 2393.3) are operated (5 in fig 2393.3).

3 PRINCIPLE

See figure 2393.4.
The PLC counts the number of cycles between the moment that the spot is observed and the tolerance area and converts this into an interval time (B).
The foil speed is corrected by switching in the relevant clutch for twenty times this interval time. This is the correction time (C).
The clutches can correct up to five percent of the nominal speed.
The foil speed is corrected once every revolution of the command shaft.
When the spot is detected as being outside the tolerance area, one of the cams then provides if the spot is too late or too early.
- S41 activated: Spot is too late.
- S42 activated: Spot is too early.

In order to prevent the spot correction being made a number of times per revolution when a multiple crimper is used an extra cam, connected with proximity switch S43 (3 or 4 in fig 2393.2), is fitted. The opening in this cam is the area in which detection occurs (D in fig 2393.4).
Cam double crimper (3 in fig 2393.2).
Cam triple crimper (4 in fig 2393.2).
If the machine is fitted with a double or triple crimper the operation of the spot correction is the same as when a single crimper is present.

The operation of the spot correction is shown schematically in figure 2393.5.

- If the spot is observed too early then S42 is activated and S41 is not. The foil speed is reduced and the pilot light (1 in fig 2393.5) on the electrical panel will light up.

- The machine is set at the correct cut-off length. If the spot is observed in the tolerance area both pilot lights remain off.

- If the spot is observed too late then S41 is activated and S42 is not. The foil speed is increased and the pilot light (3 in fig 2393.5) on the electrical panel will light up.

The LED (2 in fig 2393.5) on the electrical panel registers the tolerance area and lights up once every revolution of the command shaft.
The spot correction can be switched on and off by the switch (4 in fig 2393.5) on the electrical panel.

4 CONTROL

If one of the lights remains on, then the cut-off length has been set either too long or too short. When the machine has been set for normal operation the spot is observed in the foil tower in the tolerance area. For adjusting the cut-off length see the chapter "Adjustment".

There are a number of LEDs on the PLC-print which is situated in the electrical cabinet.
The red LEDs show the input signals.
The green LEDs show the output signals.
Reading from top to bottom:
Input signals:
D1 Cam too late S41 (increase speed).
D2 Cam too early S42 (reduce speed).
D3 Spot.
D4 Spot correction on.
D5 Foil break control.
D6 Detection area S43.

D7 to D12 are not in use.

Output signals:
D1 Foil break control.
D2 Zero position of the machine.
D5 Clutch maximum speed.
D6 Clutch nominal speed.
D7 Clutch minimum speed.

D3, D4 and D8 are not in use.

5 ADJUSTMENT

In order to adjust the spot correction correctly the following steps must be carried out:

- Switch on main switch.
- Switch off spot correction switch.
- Feed in foil.
- Set the correct cut-off length for the foil using the clock indicating knob and with the machine running.
  Clockwise : shorter cut-off length.
  Anticlockwise: longer cut-off length.
- Stop the machine.
- Inch the machine forward until the foil can just be pulled through (manually) the nearly closed crimpers.
- Open the sealing and pull rollers.
- Pull the foil through by hand until the point of cutting is correctly situated under the blade
- Close the sealing and pull rollers.
- Inch the machine on to the zero position on the command shaft, thus in the middle of the tolerance area.
  The LED on the electrical panel will then light up.
- Place the spot under the mark detector using the tension roller in the foil tower (1 in fig 2393.3).
  Switch on the spot correction.
- Make a few packages with the machine.
- If the pilot light (1 in fig 2393.5) lights up too often then shorten the cut-off length.
- If the pilot light (3 in fig 2393.3) lights up too often then increase the cut-off length.

See the accompanying SICK documentation for adjusting the mark detector.

6 FAULTS IN THE SPOT CORRECTION N.T.6

FAULT	POSSIBLE CAUSE	SOLUTION
Mark detector in foil tower works but the foil is not corrected regularly.	Cams are set wrongly.	Reset cams.
	Foil tension is incorrect.	Re-adjust balance roller.
	Crimper synchronization speed relative to the sealing table is too high or too low.	Match crimper synchronization.
	Print quality is poor.	Check if the spot or other indicator on the foil is detected clearly by the mark detector. The foil and print must be of good quality.
	One of the clutches is slipping.	Re-adjust clutch.
	One of the clutches is worn out.	Replace clutch.

FAULT	POSSIBLE CAUSE	SOLUTION
Spot correction does not work.	LED in mark detector gives no signal because lens is dirty.	Clean read lens.
	Read light does not work because bulb is defect.	Replace bulb.
	Read light does not work because power supply is interrupted.	Check wiring and replace mark detector if necessary.
	Mark detector in the foil tower does not react because it is not adjust correctly.	Reset the sensitivity of the mark detector according to the SICK documentation.
	Light-dark switch is set wrongly.	Consult the SICK documentation.
	There is damp in the mark detector (blue indicator is wet).	Warm damp absorber unit and clean the mirror. See SICK documentation.

FAULT	POSSIBLE CAUSE	SOLUTION
	Mark detector in the foil tower is too far from the foil.	Re-adjust the distance according to the SICK documentation.
	One of the signals from the spot correction (S41, S42, S43, spot) is not comming in on the PLC-print.	Check on the PLC-print if the signal LEDs light up per revolution of the command shaft. See section "Spot correction".

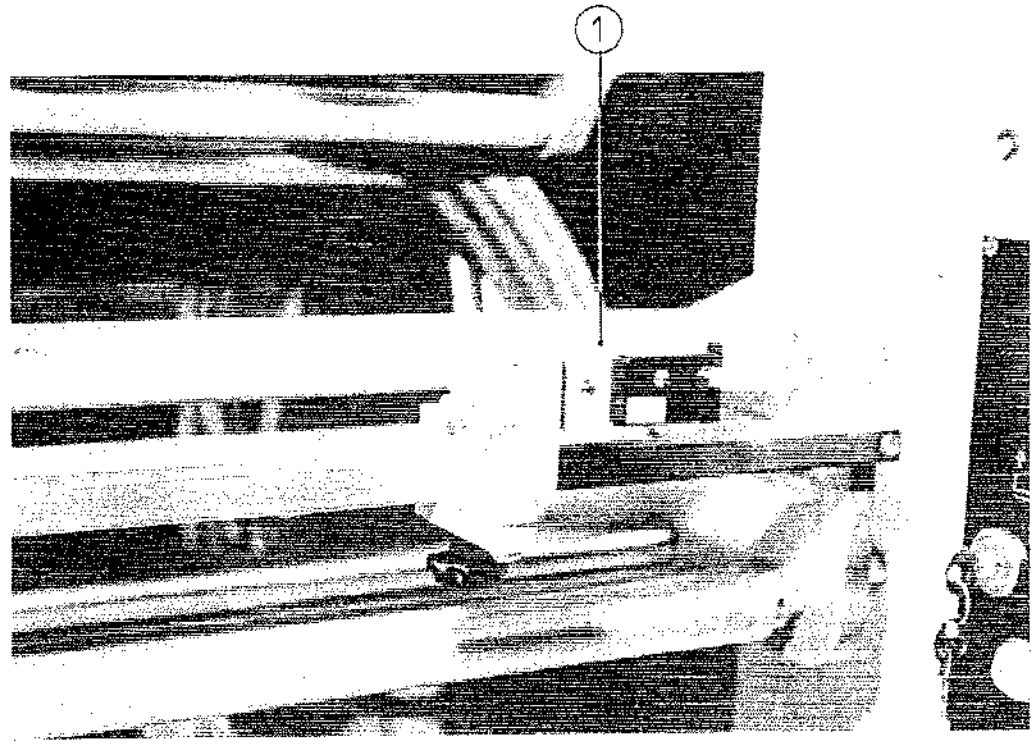


FIG 2393.1

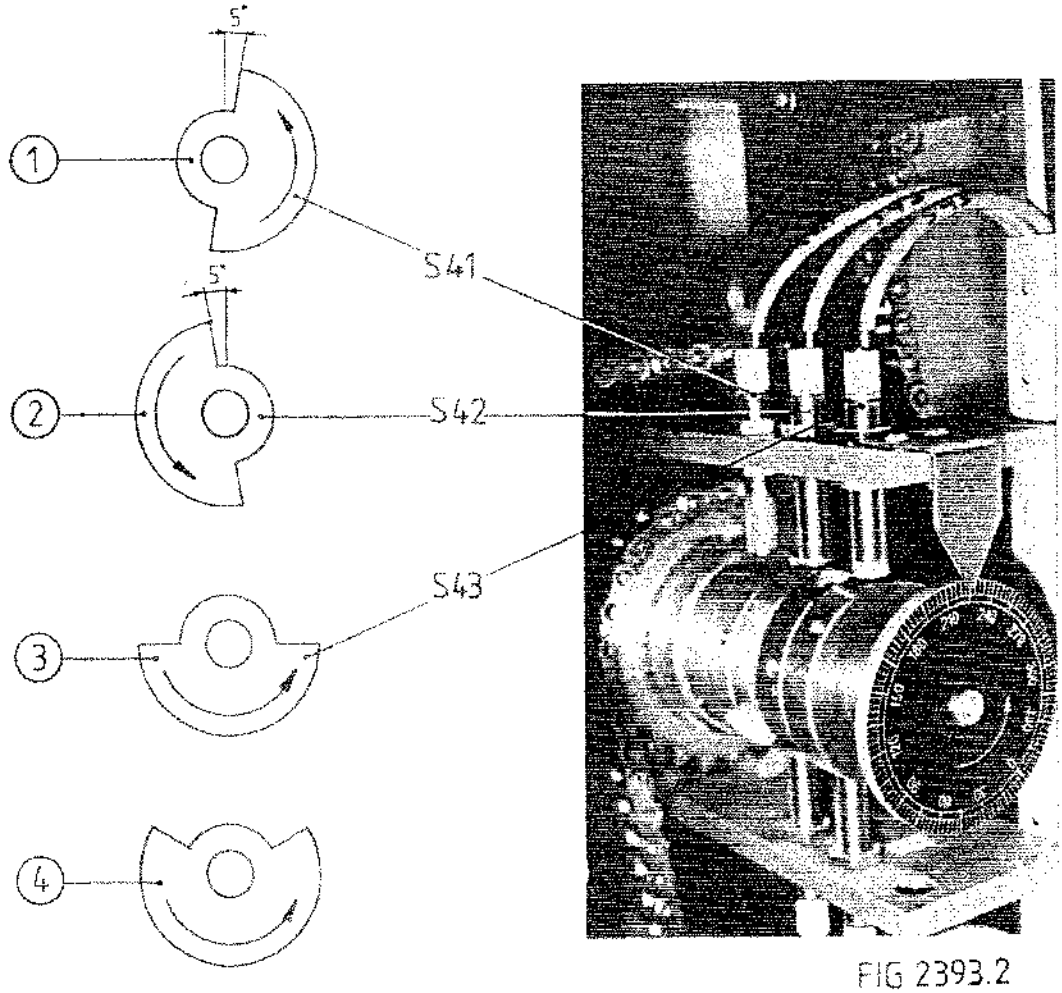


FIG 2393.2

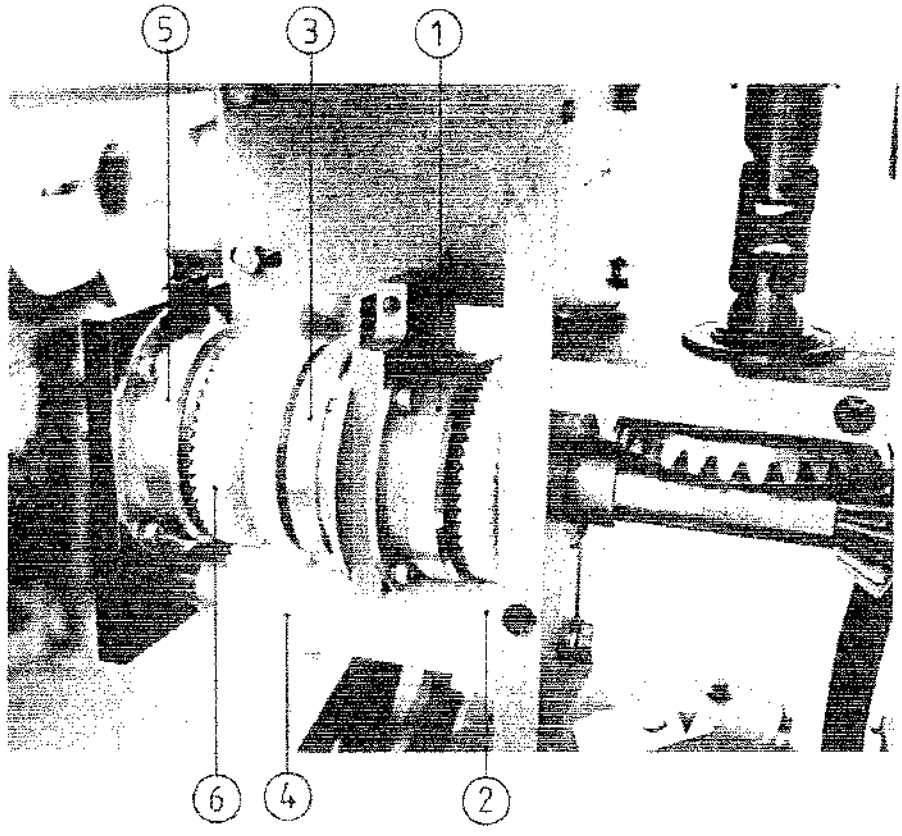


FIG 2393.3

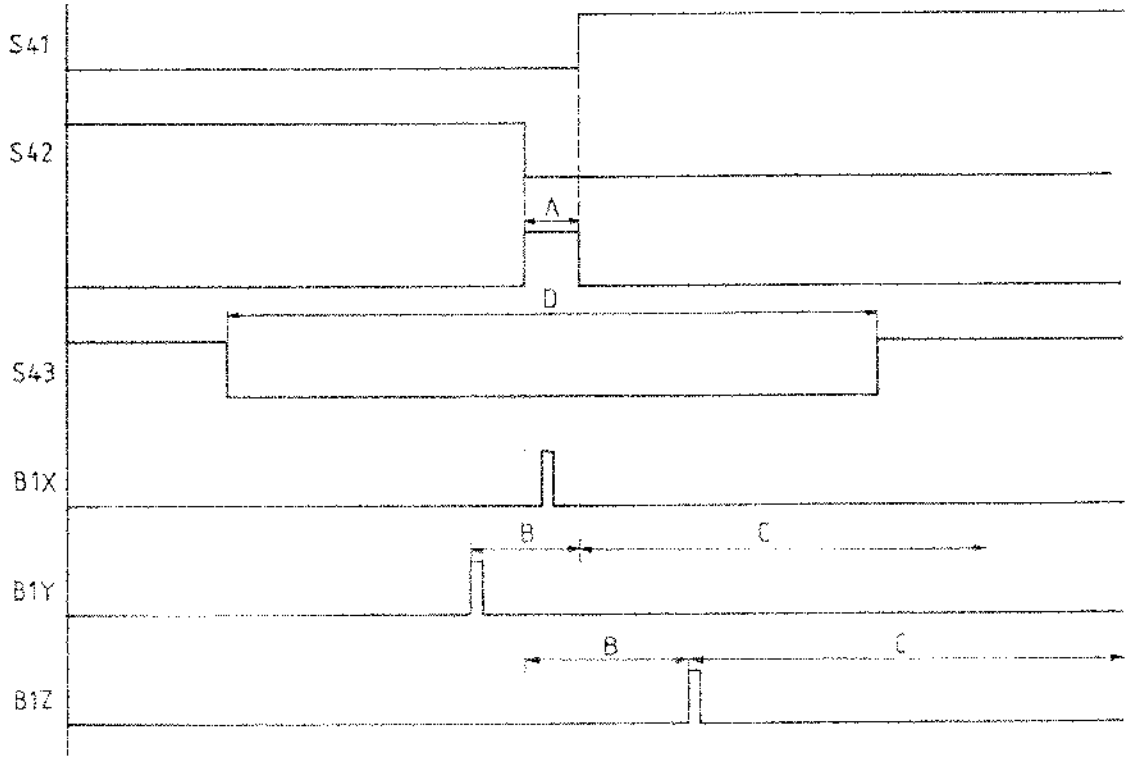
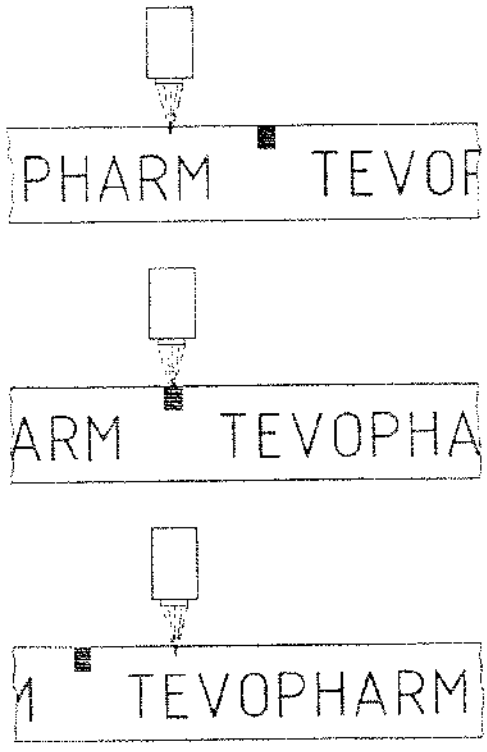


FIG 2393.4



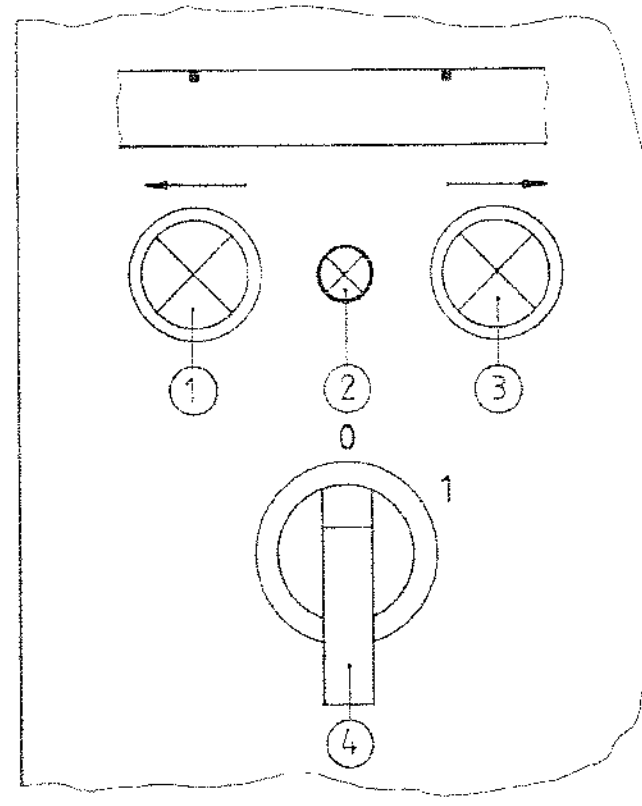


FIG 2393.5

2422 ELECTRICAL

1 GENERAL

The Pack-6 is fitted with both mechanical and operational safety devices.
For this purpose switches are fitted:

- in the main drive system
- on the moveable protective covers
- on the doors.

When one of these switches is activated the machine stops (see wiring diagram).

2 POWER SUPPLY AND WIRING

The electrical installation of the packaging machine is suitable for a power supply as shown on the wiring diagram. The electrical power supply must be protected as shown on the wiring diagram.

See the "Technical specification" for the power usage.

The function of the wiring in the Pack-6 electrical cabinet can be ascertained from the different colours.

BLACK	: 220 V-AC or higher supply voltage.
BLUE	: neutral power supply wire.
RED	: 24V alternating current control voltage.
BLUE	: 24V direct current control voltage.
GREEN-YELLOW	: earth.

3 HEATING ELEMENTS

Heating elements are fitted in the seal table and the crimper unit of the packaging machine for sealing the foil. Heating is controlled by temperature controllers (12 to 15 in fig. 2422.1) with temperature sensors.
All heating elements are separately fused and can be isolated by removing the safety fuses in the electrical cabinet.

4 OPERATING

Push buttons on the packaging machine next to the seal table have been provided for operating the machine.

1 Start button - green (1 in fig. 2422.1)

2 Inch button - black (2 in fig. 2422.1)

3 Stop button - red (3 in fig. 2422.1)

The inch button allows the machine to be turned step by step. This can NOT be done if covers or doors are open. Inching can, however, be carried out when one of the mechanical overloading switches has been activated, in order to get the clutch back in the correct position.

Provision has been made for positioning a padlock in the machine main switch so that the machine cannot be switched on during an inspection, repair or maintenance.

A key switch (4 in fig. 2422.1) is mounted on the electrical cabinet panel. This switch overrides the cover switches above the seal table and the discharge conveyor belt, so that authorised personnel can still inch the machine when the covers are open.

Position O The machine can only be started and inched with the covers closed.
Position I The machine can be inched with opened covers. The machine cannot be started.

Key to figure 2422.1:

1 Start button

2 Inch button

3 Stop button

4 Key switch for cover safety switches

5 Lamp - power on

6 Lamp - machine operating

7 Lamp - thermal overload

8 Lamp - spot correction reduce speed

9 LED tolerance area

10 Lamp - spot correction increase speed

11 Switch - spot correction

12 Temperature controller preheating

13 Temperature controller seal rollers

14 Temperature controller top crimper

15 Temperature controller bottom crimper

The temperature controllers can be switched off with switch S2 on the side of the electrical cabinet.

5 CAMS

Cams fitted with proximity switches are mounted on the command shaft of the machine.
These switches serve to control the machine.

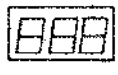
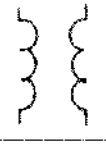
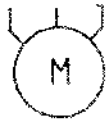
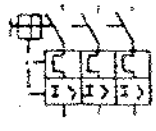
Each cam can be turned relative to the shaft.
The cams associated with S41 and S42 together form the tolerance area.

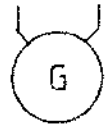
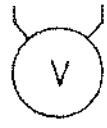
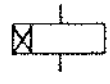
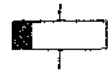
If the cam is turned anticlockwise the appropriate switch sends its signal at a later moment.

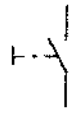
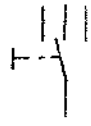
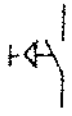
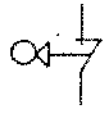
If the cam is turned clockwise the appropriate switch sends its signal at an earlier moment.

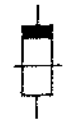
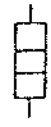
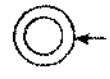
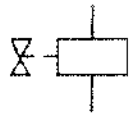
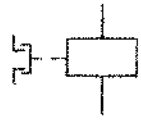
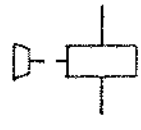
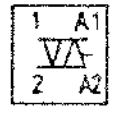
6 WIRING DIAGRAM

The wiring diagrams are numbered with the machine number.
The machine number is given on the machine identity plate.
The wiring diagram is in the electrical cabinet.

SYMBOL		DESCRIPTION
		ALTERNATING CURRENT
		DIRECT CURRENT
	E	EARTH
	U	RECTIFIER
	F	FILTER
	K	AMPLIFIER
	P	OPERATING HOURS COUNTER
	P	DIGITAL DISPLAY
	T	TRANSFORMER
	M	MOTOR
		MOTOR PROTECTION SWITCH

SYMBOL		DESCRIPTION
	G	GENERATOR
	V	VOLTMETER
	K	RELAY
	K	COIL TIME DELAYED ON RELAY
	K	COIL TIME DELAYED OFF RELAY
	K	NORMAL OPEN CONTACT
	K	NORMAL CLOSED CONTACT
	K	CONTACT TIME DELAYED CLOSED
	K	CONTACT TIME DELAYED OPEN
	R	RESISTOR
	R	VARIABLE RESISTOR

SYMBOL		DESCRIPTION
	S	SWITCH
	S	SELECTOR SWITCH
	S	PUSH BUTTON
	S	EMERGENCY STOP
	S	AIR PRESSURE SWITCH
	S	KEY SWITCH
	S	DOOR SWITCH
	S	MECHANICAL OVERLOAD
	B	PHOTOCELL
	S	PROXIMITY SWITCH
	H	LAMP

SYMBOL		DESCRIPTION
	F	FUSE
	E	HEATING ELEMENT
	TK	THERMOCOUPLE
		SLIP RING
	Y	SOLLENOID
	Y	MAGNETIC CLUTCH
	Y	MAGNETIC BRAKE
		CAM OPERATED
	V	SOLID STATE RELAY
		DIODE

3 FORMAT SETTING

When setting the machine on a product mentioned in the settinglist carry out the following procedure.Using the settinglist as reference.

- Fit the right folding box
- Fit the accompanying support points and side guide points (if necessary fit also the inner guides).
- Adjust the width of the side guides.
- Adjust the pitch with the correct carriers and pushers.
- Fit the correct gearwheels in the change set.
- Adjust the support roller on the lower crimper shaft.
- If necessary adjust the gussetters.
- Adjust the height of the crimper unit.
- Adjust the crimper synchronization.
- Adjust the discharge conveyor.
- Adjust the tension roller, return roller and foil arms.
- Adjust the fixed cone on the reel.
- Place the foil.
- Set the paperlenght with operating machine.
- Inch the machine to the "0" point.
- Position the pusher in respect of the ruler on the infeedtable.
- Inch the machine until the pusher is in position in respect of the ruler on the value "position infeedchain crimpers closed".
- Check if the crimpers are closed.
- Make a test run with foil and products and check the settings.
- When necessarry perform corrections.

		1	2	3
1	product name			
2	product dimensions			
8	type foil			
9	foil width			
10	cut-off lenght			
17	wrapping capacity			
18	pusher distance			
26	belt disc			
28	pusher plate w x h			
29	pusher lenght			
33	change set gear wheel Z1			
34	change set gear wheel Z2/Z3			
37	folding box number			
38	support point number			
39	side guide number			
40	inner guide			
44	support roller			
45	tuckers			
51	setting infeed chain at "0"			
52	knob for foil lenght			
54	setting cone foil reel holder			
55	setting tension roller			
56	setting return roller			
57	setting foil arms			
60	setting crimper synchronisation			
61	setting crimper unit height			
62	infeed chain crimpers closed			
65	setting discharge conveyor			
66	setting cam S41			
67	setting cam S42			
82	temperature pre-heating			
83	temperature second sealingrollers			
84	temperature top crimper(s)			
85	temperature bottom crimper(s)			

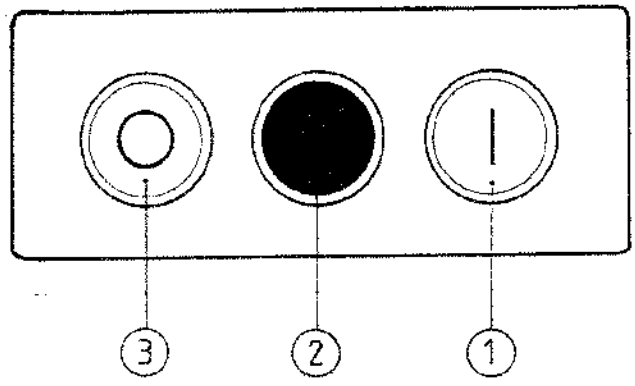
SETTINGLIST PACK-6

ordernummer | klant

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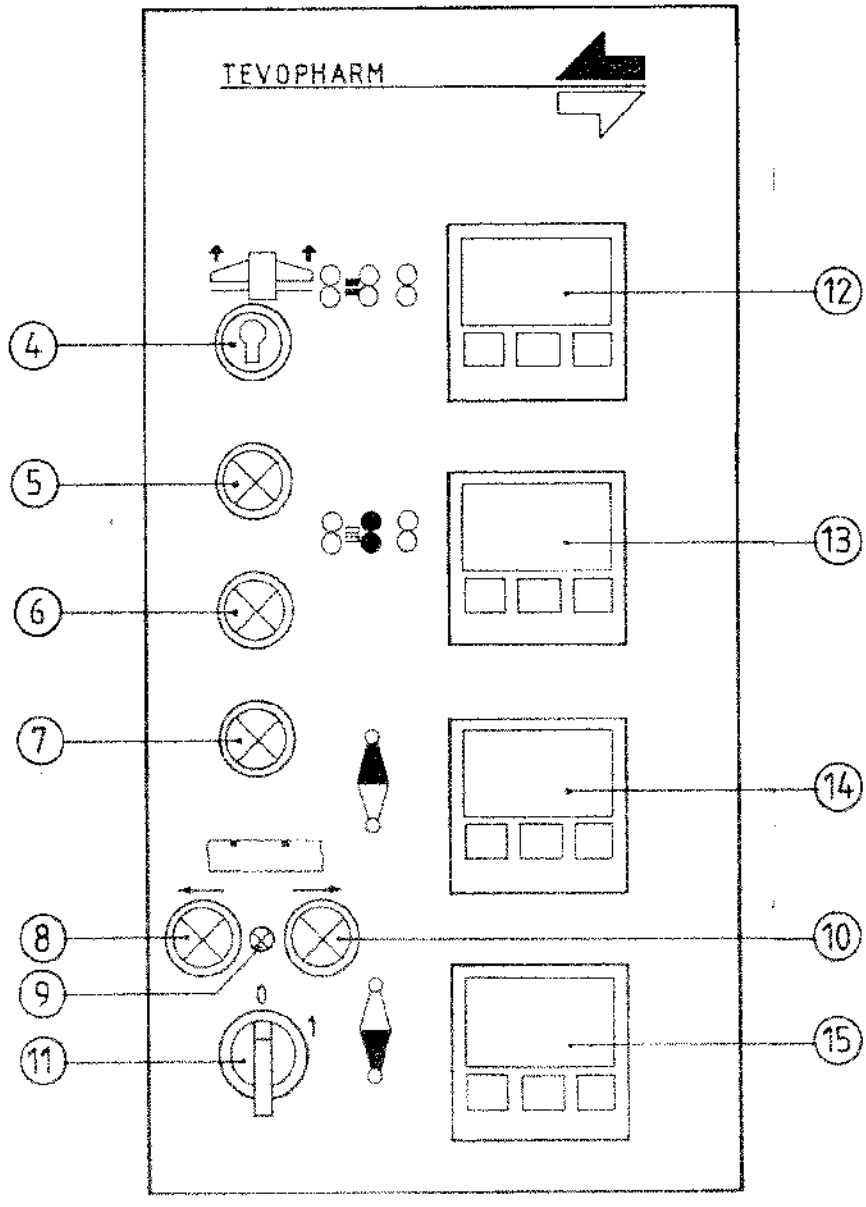


FIG 2422.1

2450 SETTINGS LIST

1 GENERAL

The Pack-6 is set up for a number of previously determined product formats.
The setting values are stated on the setting list in relation to each product format.

2 INFORMATION ABOUT THE SETTINGS LIST.

1 PRODUCT NAME
This product name must be simple for each wrapped product, to prevent confusion during resetting.

2 PRODUCT DIMENSIONS
These are the dimensions of the product in the wrapping.

8 TYPE OF FOIL
This is where the type and specification of the foil used is noted.

9 FOIL WIDTH
The width of the foil is determined by the product dimensions.

10 CUT-OFF LENGTH
The cut-off length of the foil is the distance between two testmarks, when registered foil is being used. When unregistered foil is being used the cut-off length is the same as the length of the foil of the wrapped product.

17 MACHINE SPEED
The machine speed is the mechanical speed at which a good wrapping can be produced without problems.

18 PUSHER DISTANCE
The pusher distance is the distance between the front sides of two consecutive pushers.

26 PULLEY
Pulley 1 has a diameter of 250 mm. On a machine fitted with a single crimper on each crimper shaft the machine speed can be adjusted between 25 and 60 packs a minute. On a machine with two crimpers per crimper shaft, the machine speed can be set between 50 and 120 packs a minute.

Pulley 2 has a diameter of 140 mm. On a machine fitted with a single crimper on each crimper shaft the machine speed can be adjusted between 55 and 110 packs a minute. On a machine with two crimpers per crimper shaft, the machine speed can be set between 110 and 220 packs a minute.

28 PUSHER PLATE W x H
The dimensions of the pusher plate relate to a specific product dimension.

29 PUSHER PIN LENGTH
The length of the pusher pin relates to a specific product dimension. The input chain must be fitted with pusher pins of the same length.

33 CHANGE SET GEARWHEEL Z1
The gearwheel Z1 is the gearwheel that is clamped by the clamp nut against the friction disc and is changed in accordance with the settings list.

34 CHANGE SET GEARWHEEL Z2 / Z3
The gearwheel combination Z2 / Z3 is always changed as a set in accordance with the settings list.

37 FOLDING BOX NUMBER
The folding box number is stamped on the topplate of the folding box and is the same as the registered length, width and height dimensions. There is a different folding box for each product size.

38 SUPPORT POINT NUMBER
This is stamped on the top of the left and right support point.

39 SIDE GUIDE POINT NUMBER
The side guide point number is stamped in the left and right side guide point. The side guide points belong to specific folding box and are fitted on the end of the side guide in front of the folding box.

40 INNER GUIDES
Inner guides are used with certain types of foil and for particular products. The inner guide is mounted on the side guide points.

44 SUPPORT ROLLER
The support roller is mounted on the lower crimper shaft and is numbered. The diameter of the support roller for a particular product is the same as the distance between centres of the crimper shafts minus product height.

45 GUSSETTERS
The gussetters are matched to the product shape in accordance with a model, and must be changed in accordance with the settings list.

51 POSITION INFEED CHAIN AT "0"
The "0" point of the machine is the switching moment of the set-cam for foil correction (S27 or S41) and can be seen on the reference disc on the front of the machine. The "0" point is the only non-adjustable point in the machine, and is therefore defined as the "0" point. In the "0" position the position of the infeed chain can be read in relation to the ruler. The ruler is located on the side guides of the infeed table.

52 POSITION FOIL LENGTH KNOB
The clock knob is located on the front of the wrapping machine. The read-out of the clock knob which is used to set the cut-off length of the foil is noted in hours and minutes.

54 POSITION OF THE FOIL REEL HOLDER CONE
The fixed cone on the foil reel holder is set at the back the same as the value on the ruler which agrees with the width of the foil.

55 POSITION TENSION ROLLER
The tension roller is the roller in the foil tower which can be adjusted forward and backward to set the position of the printing on the foil in the right place. The position of the tension roller is read on the riler on the foil tower side plate.

56 POSITION RETURN ROLLER
The return roller is the last roller before the folding box and is adjusted to get the right distance between the roller and the folding box. The position of the return roller is read from the ruler on the foil arms.

57 POSITION FOIL ARMS
The foil arms are used to set the angle of entry of the foil into the folding box. The position of the foil arms is read from the ruler on the side plate of the foil tower.

60 POSITION CRIMPER SYNCHRONIZATION
The crimper synchronization position is set using the handwheel and read from the ruler in the centre of the handwheel.

61 POSITION CRIMPER UNIT HEIGHT
The crimper unit height is set using the handwheel above the crimper unit cap. The crimper unit height is set so that the top of the support roller lies level with the sealing table and discharge conveyor cover plate. The position of the crimper unit is read from the ruler.

62 POSITION INFEED CHAIN CRIMPERS CLOSED
When the crimpers are closed, the infeed chain is in a particular position in relation to the ruler on the infeed table side guides. Inch the machine until the crimpers are closed. Then read the chain position from the ruler.

65 POSITION DISCHARGE CONVEYOR
The discharge conveyor position can be read on the ruler on the side of the frame by the star knob.

66 POSITION CAM S41
The switch moment of cam S41 is the "0" point of the machine and must not be adjusted. At the S41 switch point, the infeed chain position can be read in relation to the ruler on the side guide. This value must agree with the position of the infeed chain at "0".

67 POSITION CAM S42
At the switch moment of S42 the infeed chain position can be read in relation to the ruler on the side guide.

82 TEMPERATURE PRE-HEATING
The pre-heating temperature is set during test wrapping and is determined by the foil quality and machine speed. The temperature is registered in degrees Celsius.

83 TEMPERATURE SECOND SEALING ROLLER
The sealing roller temperature is set during test wrapping and is determined by the foil quality and machine speed. The temperature is registered in degrees Celsius.

84 TEMPERATURE LOWER CRIMPER(S)
The lower crimper(s) temperature is set during test wrapping and is determined by the foil quality and machine speed. The temperature is registered in degrees Celsius.

85 TEMPERATURE UPPER CRIMPER(S)
The upper crimper(s) temperature is set during test wrapping and is determined by the foil quality and machine speed. The temperature is registered in degrees Celsius.

2481 SETTING PROCEDURE FOR A NEW PRODUCT

Carry out the procedure below for formats (a new product) which have not yet been set. Then note the new values on the setting list.

If the Pack-6 is not fitted with spot correction for registered foil, skip the instructions marked * (asterix).

1- Adjust the width of the side guides on the infeed table and sealing table plating.

2- Fit the correct pusher pins in the carriers and adjust the distances between them.

3- Check that the correct gear wheels have been fitted in the change gear.

4- Fit the folding box with support points and accompanying side guide points.

5- Fit the transport roller on the lower crimper shaft and adjust the height of the crimper unit.

6- Adjust the discharge conveyor lengthwise relation to the crimper unit.

7- Fit the foil roll in the foil tower; centre this in the middle of the machine. Bring the turn roller and the foil arms into the correct positions and feed the foil through the foil tower.

8- Switch on the main switch of the packaging machine and turn the spot correction switch off.

9- Run the foil through the folding box and adjust the foil entry angle.

10- Adjust the sealing table roller pressure depending on the thickness of the foil (first allow to reach seal temperature).

11- Set the puller and sealing rollers in the open position. Feed the foil through the open rollers. Close the rollers.

12- If heat sealing: adjust the temperature controllers for the sealing rollers and crimpers; also check that the crimpers are properly adjusted.

13- Start the machine and adjust the speed of the rollers to the cut-off length of the foil.

14- Adjust the synchronization of the crimpers in relation to foil speed.

15- Stop the machine.

16* Switch on the spot correction switch and inch the machine to the zero position.

17* Open the rollers and feed the foil through so that the spot comes into the mark detector light point in the foil tower. Close the rollers.

18* Start the machine and check that the spot correction is working correctly. If this is correct the LED on the electrical panel should signal once every revolution of the command shaft.

19- Place at least three products between the pusher pins of the infeed table; open the first set of rollers on the sealing table. (Do not take any notice the printing on the packaging material.)

20- Now inch the machine until the first product is just through the folding box. Close the first set of rollers and inch until the front edge of the first product lies level with the front of the cover plate.

21- Loosen the infeed chain from the infeed table.

22- Remove the tension from the foil and open the pull and sealing rollers.

23- Inch the machine until the crimpers are in a good position in relation to the product.

24- Close the pull and sealing rollers and fix the infeed chain.

25- Inch the machine and check that the crimpers are properly positioned.

26- Place at least three products between the pusher pins of the infeed table and then start the machine until the second packet is on the discharge conveyor.

27- Check the packaging of the second packet.

28- If the front of the package is packed tighter or looser than the back then the pusher pin position must be corrected using the hand wheel of the chain adjuster.

29- When a good package has been made, inch the machine until it is empty.

30* Inch the machine until the foil can just be pulled through (manually) the nearly closed crimpers by hand.

31* Open the pull and sealing rollers.

32* Pull the foil through until the point for cutting is correctly situated under the blade.

33* Close the pull and sealing rollers.

34* Inch the machine to the zero position.

35* Use the tension roller in the foil tower to position the spot under the mark detector The LED on the electrical panel will then be alight.

36- Insert products and start the machine. Stop the machine when the second package is on the discharge conveyor.

37- Carry out any necessary corrections, such as on the tension roller in the foil tower and the position of the pusher pins on the infeed table.

38- Run production to check the correct operation of the machine over a longer period of time.

39- Inch the machine to the zero position. Fill in all relevant values on the setting list.

2510 MAINTENANCE

Check the oil in the reduction gearbox regularly, and renew the oil every year. Check curve rollers, threaded rods, gearwheels and such every week and lubricate if necessary.
Lubricate grease nipples and chains lightly every week.

Almost all moving parts have bearings which are lubricated for life, or have bronze or nylon bushes, which do not require lubrication. Recomended is to replace them after 2 years.

Daily maintenance:

- clean the machine with compressed air
- remove dust and dirt particles
- clean guides

Weekly maintenance:

- clean chains and lubricate sparingly
- check toothed belts for correct tension and wear

Monthly maintenance:

- remove covers and clean machine thoroughly
- remove any excess grease
- check machine for wear
- tension chains and toothed belts
- check oil levels and top up or drain and renew when necessary.

Recommended lubricants for the reduction gearbox:
- Shell, Omala 150
- Esso, Spartan EP 150
- Mobil, Mobilgear 629

Recommended lubricants for chains:
- Shell, Carnea B3
- Esso, Penoled EP 2
- Mobil, Visolite extra heavy

Recommended lubricants for sealing rollers and crimpers, gearwheels, curve rollers, curve tracks and bearings:
- Shell, Darina R2
- Esso, Norva 275
- Mobil, Temp 1

2540 TROUBLE SHOOTING

This troubleshooting list gives a summary of the most likely faults and serves as a guide to their solution.
When a fault occurs which is not described in this list, it is recommended that you study the whole description in order to approach and resolve the problem in the most logical way.

1 GENERAL

This trouble shooting is divided into the following problem groups:

Poor quality of the packaging itself 2

Faults during wrapping 3

Faults in the mechanical section 4

Faults in the electrical installation 5

Faults in the spotcorrection: see group spotcorrection

2 POOR QUALITY OF THE WRAPPING ITSELF

FAULT	POSSIBLE CAUSE	SOLUTION
The product is wrapped "too loosely".	The folding box is too big for the product to be wrapped.	Fit correct folding box - see setting list.
	Incorrect angle of entry of the foil in the folding box.	Adjust angle of in accordance with chapter "Folding box".
	When using internal folding box: Internal folding box has not been set correctly.	Re-set the internal folding box.
	Pressure of the first pair of rollers of the sealing table is too low.	Using the setting knob of the first pair of rollers of the sealing table, re-set the pressure on the rollers.

FAULT	POSSIBLE CAUSE	SOLUTION
	Pressure ofthe first pair of rollers of the sealing table is too high.	Using the setting knob of the first pair of rollers of the sealing table, re-set the pressure on the rollers.
	Pressure of the second pair of rollers of the sealing table is too low.	Using the adjusterbolt of the second pair of rollers of the sealing table, re-set the pressure on the rollers.
	Pressure of the second pair of rollers of the sealing table is too high.	Using the adjusterbolt of the second pair of rollers of the sealing table, re-set the pressure of the rollers.
	The cover plates are too far above the sealing rollers.	Adjust cover plates.
Longitudinal seal is not closed	Sealing temperature too low	Reset sealing temperature with thermostat
	Sealing roller pressure incorrect	Readjust sealing roller pressure so that a single layer can be pulled through, but not a double layer (adjust at operating temp.)

FAULT	POSSIBLE CAUSE	SOLUTION
	Heating element doesn't function right.	See electrical faults.
	Check that the seal coating is on the inside of foil.	Place the foil the other way around.
The longitudinal seal opens.	The sealing roller groove profile not located properly.	Readjust sealing roller height.

FAULT	POSSIBLE CAUSE	SOLUTION
The cross seals are not closed.	Sealing temperature is too low.	Re-set sealing temperature using thermostat.
	Insufficient sealing pressure between crimpers.	Readjust spring pressure: see chapter "crimper unit".
	Sealing speed of the crimper is too high in relation to foil speed.	Readjust the sealing speed of the crimper by means of the synchronization.
Cross seals releases.	The crimpertoothing is not gripping.	Readjust crimpers in accordance with description under "Crimper Unit".
	Check if the seal coating is on the inside of foil.	Place the foil the other way around.
	The heating element doesn't function right.	See electrical faults.
One of the cross seals is not closed.	Too much air in package (usually at higher speed).	Pack product more tightly (e.g. fit pressure plate in folding box).
	Blade is set too high.	Readjust blade.

3 FAULTS DURING WRAPPING

FAULT	POSSIBLE CAUSE	SOLUTION
The foil is damaged by the corners of the folding box.	The turn roller is at an angle. Foil roll is eccentrically tensioned. Incorrect entry angle of foil into folding box. The tension in the centre of the foil track is too high/too low.	Readjust angle of entry of foil into folding box in accordance with chapter "Folding Box".
The foil slides away along one side of the folding box.	Foil width is too narrow for size of product.	Measure width required and fit correct foil roll.
	Incorrect angle of entry into folding box.	Readjust angle of entry of foil in the folding box in accordance with chapter "Folding Box".
Product irregularly picked up by the foil in the folding box.	The crimpers are "dragging" on the foil.	Readjust synchronization of crimpers to foil speed.
	Pitch of the infeedchain is shorter than foil cut-off length.	Adjust the pitch of the infeedchain.

FAULT	POSSIBLE CAUSE	SOLUTION
	Pitch of the infeedchain is longer than foil cut-off length.	Adjust the pitch of the infeedchain.

4 FAULTS IN THE MECHANICAL SECTION

FAULT	POSSIBLE CAUSE	SOLUTION
The main motor runs, wrapping machine does not work.	A slipping V-belt.	Tension the V-belt.
	The mechanical overload clutch on the main shaft has released.	Check that the wrapping machine is not jammed. Clear fault, inch machine until clutch grips. If necessary: tighten tension bolts on overload clutch.
Wrapping machine works, but crimper unit is not running.	The slip clutch on crimper mending is loose.	Tighten up the slip clutch on crimper mending.
The wrapping machine works, but the infeedchain does not move.	The slip clutch on the infeedchain is loose.	Tighten up the infeed chain slip clutch.

FAULT	POSSIBLE CAUSE	SOLUTION
Infeedchain with product suffers shocks.	The infeed chain guides are very dirty.	Clean chain guides. Check that the carriers on infeed chain can move freely.
	The return part of the chain is too slack.	Retension the infeedchain and check position of pushers in relation to crimper position.
	The infeedchain slip clutch is not fixed.	Tighten up infeed chain slip clutch.
The wrapped products are transported by the discharge conveyor at irregular intervals.	The distance between discharge conveyor and crimpers is too large.	Push the discharge conveyor lengthwise towards the crimpers. See the chapter "discharge conveyor".
	The support roller is the wrong size.	See settings list for correct support roller size.
	The discharge conveyor is slipping.	Re-tension discharge conveyor.
		Clean discharge conveyor drive roller.
	The blade does not cut the foil completely.	Re-adjust the blade.

FAULT	POSSIBLE CAUSE	SOLUTION
Irregular transport of foil with product.	Slip between foil and the rollers of the sealing table.	Re-adjust the rollers of the sealing table so that a single layer can be pulled through, but not a double layer (adjust at sealing temperature).
	Temperature of sealing rollers is too high, foil is being melted.	Using the thermostat, reset the sealing temperature (see setting list).
	The crimpers hold the product back; too low sealing speed.	Match sealing speed of the crimper (synchronization) to foil speed.
	The crimpers "pull" on the foil.	Match sealing speed of the crimper (synchronization) to foil speed.
The cut-off length varies.	Spot correction of the foil is not operating properly.	Readjust mark detector in foil tower. Re-adjust cams in spot correction drive.

FAULT	POSSIBLE CAUSE	SOLUTION
	The balance roller is set too tight.	Re-set brake tension in balance roller.
The foil runs out of the first set of rollers of the sealing table.	the folding box is too large in relation to product and/or foil width.	Fit correct folding box in accordance with setting list.
	The foil does not come 5 mm under the sealing table rollers.	Check foil width. Check that foil entry angle in folding box is correct.
	The folding box is not in line with infeed table.	Centre folding box so that it is positioned in the middle of the infeed table.
	The foil is not centred.	Re-centre foil roll in foil tower.

FAULT	POSSIBLE CAUSE	SOLUTION
The foil runs out of the rollers of the sealing table.	The foil is not smooth or pulls irregularly.	Change to better quality foil.
	The foil does not track.	Increase or decrease the roller pressure.
	The cross seal is too high positioned in relation to the product.	Re-adjust the height of the crimper unit.
	The pressure of the sealingrollers is too high.	Re-adjust the pressure of the sealingrollers.
	The cover plates are too high over the seal rollers.	Re-adjust the cover plates.
The foil tends to wind around the crimpers.	The sealing temperature of the crimpers is too high.	Set the temperature of the upper and lower crimpers separately using the thermostat so that the foil does not stick on one of the crimpers.
	The sealing speed of the crimpers at the moment of sealing/cutting is different from foil speed.	Re-set the sealing speed of the crimpers(synchroni-zation).

FAULT	POSSIBLE CAUSE	SOLUTION
	Foil is not suitable for process.	Replace foil with suitable type. See setting list.
		Apply silicone releasing agent to crimpers.
	Dirty crimpers.	Clean the crimpers.
	The foil is threaded inside out.	Thread the foil according the foil-run diagram.
	The foilreel is not centre-lined so the coating sticks to the crimpers.	Re-centre the foilreel.
The crimper blade does not cut foil completely.	Blade badly adjusted.	Re-adjust blade in accordance with chapter "crimper unit".
	Blade is worn.	Renew knife and anvil(always as a set).

5 FAULTS IN THE ELECTRICAL INSTALLATION.

Take Care: -TURN the MAIN SWITCH OFF before checking wiring and connections.

-Before carrying out a wiring test: First remove earth wire (Clamp No: 100) from connector strip. After the test, reconnect earth wiring.

FAULT	POSSIBLE CAUSES	SOLUTION
Machine does not work when start button or inch button is pressed.	Electro motor overloaded.	If thermal cut-out check lamp on panel is on, press red thermal relay button (see diagram). Check that the relevant installation has been automatically switched off, switch on if necessary.
	Safety door or cover is open.	Close door or cover.
	Emergency stop is in.	Pull out emergency stop.
	Subsidiary relay on motor is defect.	Check that there is 24 V AC at the coil. Replace relay if necessary.

FAULT	POSSIBLE CAUSES	SOLUTIONS
Green light lights-up when start button pressed, machine does not start.	Electrical motor overloaded.	Motor protection switch triggered, switch on again.
	Subsidiary relay in main motor defect.	Check 24 V AC at coil. Replace relay.
Machine does not operate.	No power supply.	Check supply voltage.
	The stop button on electro-panel is defect.	Fault in stop switch, replace.
Machine works on inch button, but not on start button.	Mechanical overload clutch switch activated.	Inch machine until mechanical overload clutch recess.
	The key switch for the caps is in the wrong position.	Use key to set switch to correct position.
	The start button on electro-panel is defect.	Fault in start switch, replace.

FAULT	POSSIBLE CAUSES	SOLUTION
Heating element too hot.	Temperature sensor wiring makes a short cut with earth.	Cancel short cut.
Thermostat indicator needle swings as machine operates.	Dirty temp. sensor slipring contacts.	Clean sliprings.
	Spring pressure on carbon brushes too low.	Increase pressure by shortening springs.
Heating elements not warm, control lamp is off.	Check that the connections are correct.	Reconnect if required.
	Thermostat off.	Switch thermostat on.
Seal- and pulling rollers operate irregular.	One of the rectifiers is defect.	Replace rectifier.
	One of the clutches is defect.	Replace clutch.

FAULT	POSSIBLE CAUSE	SOLUTION
Heating element fuse switches off when power is switched on.	Short circuit in slip contacts or wiring.	Remove heating element connecting wires. Ohm meter indicates a resistance of 0 (short circuit). Replace or repair wiring.
	Internal short circuit in heating element.	Remove the connecting wires of the heating element. Ohm meter indicates a resistance of 0 (short circuit in the heating element). Replace heating element.
	Short circuit in heating connections.	Remove connecting wires from slip rings. Connect these wires with the frame. The Ohm meter indicates a resistance of 0 (short circuit). Faulty connecting wires are usually instantly recognisable. Replace connecting wires if necessary.

FAULT	POSSIBLE CAUSES	SOLUTION
	Internal earth short-circuit in the heating element.	The connection of the heating element is sound but there is no resistance between the connection and the inside of the heating element. Replace the heating element.
The thermostat is on but the elements are not heated. The control lamp is off. Thermostat indicator points to the right.	Interrupted power circuit between thermo-couple connections (broken wire).	Replace faulty wiring.
	Interrupted power circuit between slip rings an brush holders as carbon brushes are worn out.	Replace carbon brushes.

2570 ORDERING SPARE PARTS

To order spare parts, specification of the part number along with the machine type and number is suffice.
Each part is allocated with a number.
Occasionally this number may have a long space in it, for example: p6-11. 10.016.
This should be seen as one number.

If the required part has not been allocated with a number, then the following procedure should be taken:
- Locate the item in the "ILLUSTRATED PARTS CATALOGUE".
- State the machine type and machine number.
- State the drawingnumber, position, component code and the description.

Electrical components can be ordered from the parts list attached to the circuit diagram or from the "ILLUSTRATED PARTS CATALOGUE".
Components which are described in the documentation (Group 9500 and further) can be ordered from Tevopharm by stating the required component.

Spare parts can be ordered by contacting the Spare Parts Department via the addresses below:

Correspondence address:	Despatch address:
TEVOPHARM-SCHIEDAM BV	TEVOPHARM-SCHIEDAM BV
Dept: Spare Parts	Dept: Spare Parts
P.O. Box 35	Van Heekstraat 32
3100 AA Schiedam	3125 BN Schiedam
The Netherlands	The Netherlands

Telephone: (+ 31) 010 - 4 88 58 99

Telefax: (+ 31) 010 - 4 37 23 52

Telex: 22 3 21 teba nl

FAULT	POSSIBLE CAUSES	SOLUTION
The thermostat is on but elements are not heating up, control lamp is on.	Check resistance. 0 Ohms means short circuit in element connections or defective wiring inside element.	Replace heating elements.
	Ohm meter indicates 0. Short circuit between slip ring and carbon brush holder.	Replace carbon brushes.
	Sealing element fuses blown.	Replace fuses.
	Solid state relay faulty.	Replace the relevant solid state relay.
Thermostat off, but element too hot.	Solid state relay faulty.	Replace the relevant solid state relay.