Flexcut

Instruction

97-10-30

Responsibility

The FAS Flexcut is designed to cut handle holes in plastic bags from polyethylene film. All other utilization to perforate or seal other materials is prohibited unless confirmation has been given by FAS Converting Machinery AB. FAS Converting Machinery AB takes no responsibility if the equipment is altered or used in a way which was not intended at the time of delivery. If the conditions for use of the equipment are changed FAS Converting Machinery AB shall be contacted.

WARNING!

The Flexcut contains moving parts and therefore there is a risk of personal injury when the machine guards are removed.

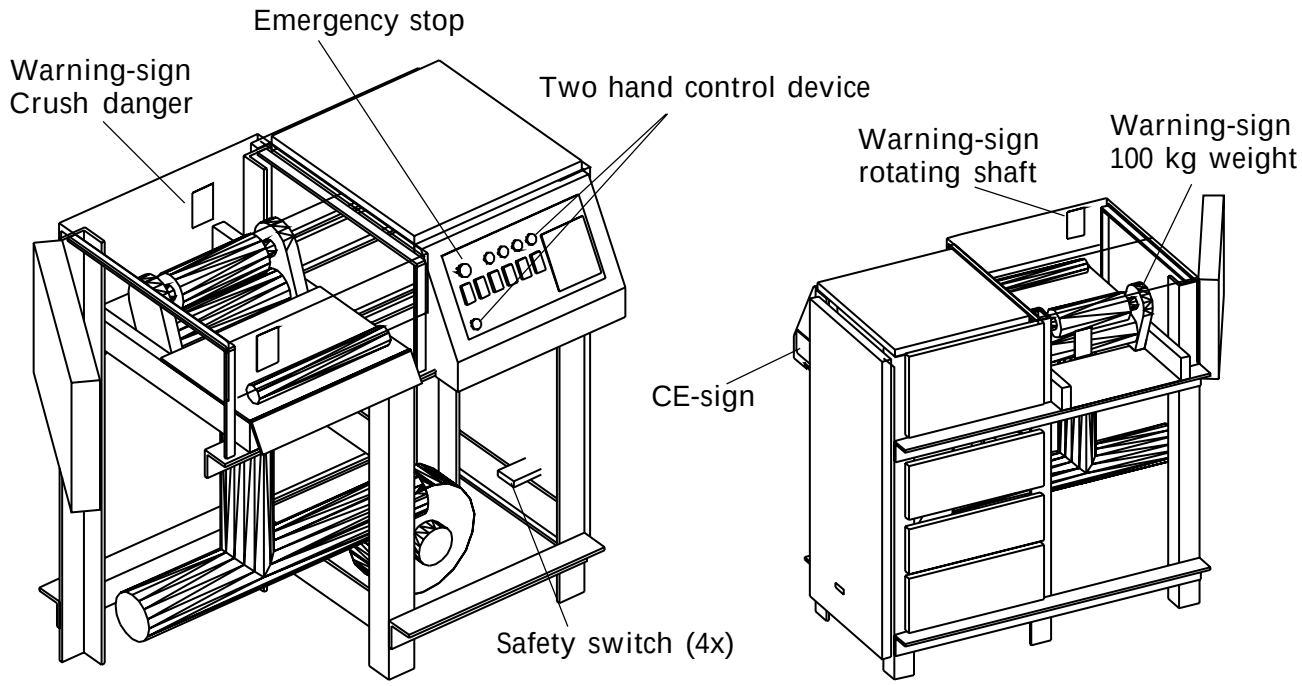
Adjustments to the machine must be performed by authorised personnel only, who must exercise extreme caution at all times.

WARNING!

This machine operates from a mains electrical supply and therefore lethal voltages are present within the machine when it is switched on. All personnel must exercise extreme caution when in the vicinity of the machine when covers, panels or guards are removed.

Safety

For the safety of the operator, the machine is equipped with both fixed and openable guards.
All doors and openable guards are equipped with safety switches for isolating the electrical control-circuit when opened or removed.
The machine has two emergency stop buttons, see figure below on location.



When the machines in a line are working in series, operating the emergency stop, opening or removing one of the openable guards on any of the machines in the line, will cause a complete shut down of the machines. Fixed guards must not under any circumstances be removed from the machine while in operation. Safety-switches must not be tampered with to bypass the safety interlocks, making it possible to open the doors and guards while the machine is in production.
All broken or malfunctioning safety-switches must be replaced immediately.

Bypassing the safety switches

When performing settings and adjustments, the safety switches can be bypassed by setting the bypass turn-key to the hand position. The machine then operates without the clutch-brakes. In order to operate the clutch-brakes when the turn-key is in hand position the two-hand control device must be used. At all times, other than when the machine is under service- or maintenance, the turn-key switch must be disengaged and the key removed.
Servicing and maintenance work must always be performed by authorised personnel only, who must excercise extreme caution to avoid the risk of personal injury.

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Installation

Place the Flexcut between and as close as possible to the Contiflex and Spinner. The distance between the fan outlet and any possible pipe elbow shall be at least 2 m. Refer to Fig. 1.

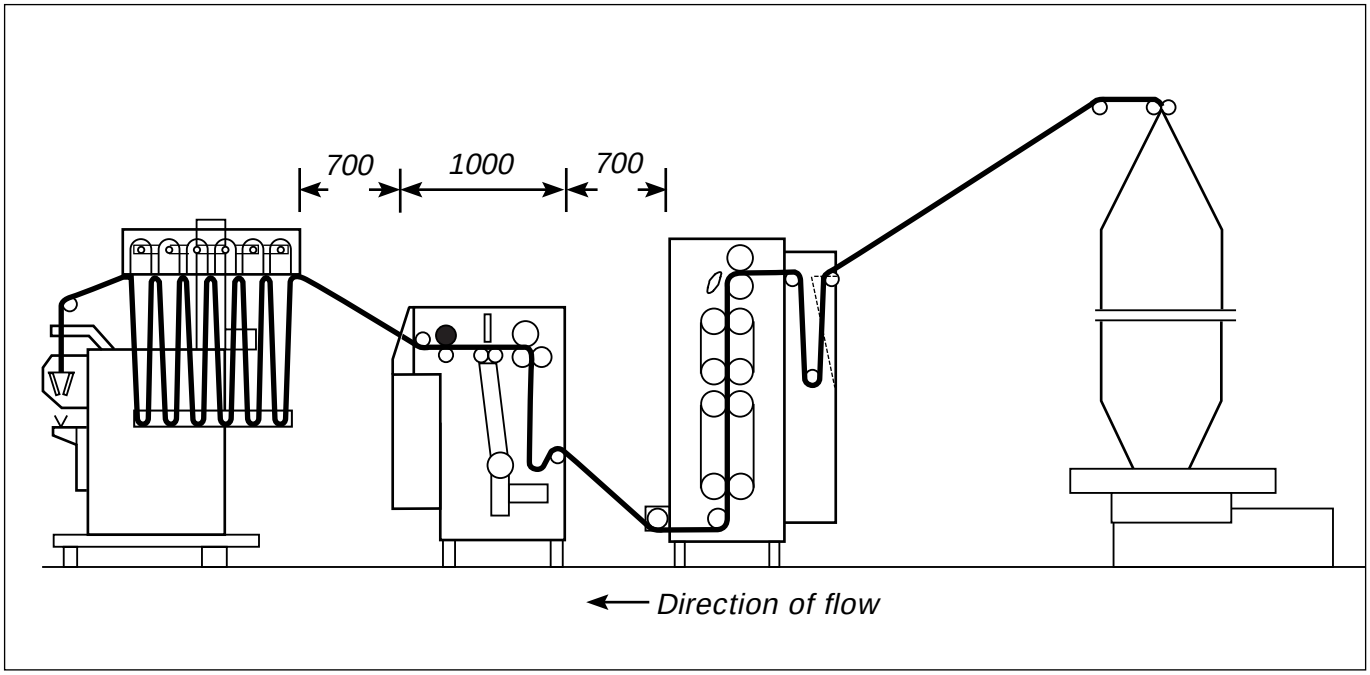


Fig. 1 A typical installation

Do not secure the Flexcut in any way. Instead place it directly on the floor where it can be moved and is easily accessible for servicing. The machine is fitted with wheels that run on rails screwed into the machine frame to enable the machine to be finely set or adjusted laterally.
Refer to Settings and Adjustments.
Electrical and compressed air supply connections are provided at the lower part of the machine. For ease of maintenance the electrical cables and air tubes can be suspended from the ceiling and attached with quick connectors.

Power supply, standard:	380 V, 50 Hz, 3-phase, neutral and earth.
Fuse rating:	16 A
Compressed air supply:	Required pressure: 6 bar
Consumption:	Max 200 litres per minute

Interlocking

The machine can be interlocked to ensure that all machines in the production line stop automatically in the event of a fault in any one machine. The interlocking cable is supplied with the machine.
If interlocking is not used, a special connector must be fitted to the interlock in order for the machine to run. Refer page 18.

The operating panel

1 Emergency stop
2 Saftey Bypass turnkey
3 Reset supply
4 Autostop
5 Manual puls/Two hand control device
6 Main motor ON/OFF
7 Nip ON/OFF
8 Idle roller ON/OFF
9 Cutter ON/OFF
10 Fan ON/OFF
11 Pusher ON/OFF
12 Manual puls/Two hand control device
13 Spark power potentiometer
14 Machine speed potentiometer
15 Control panel display Mac 40

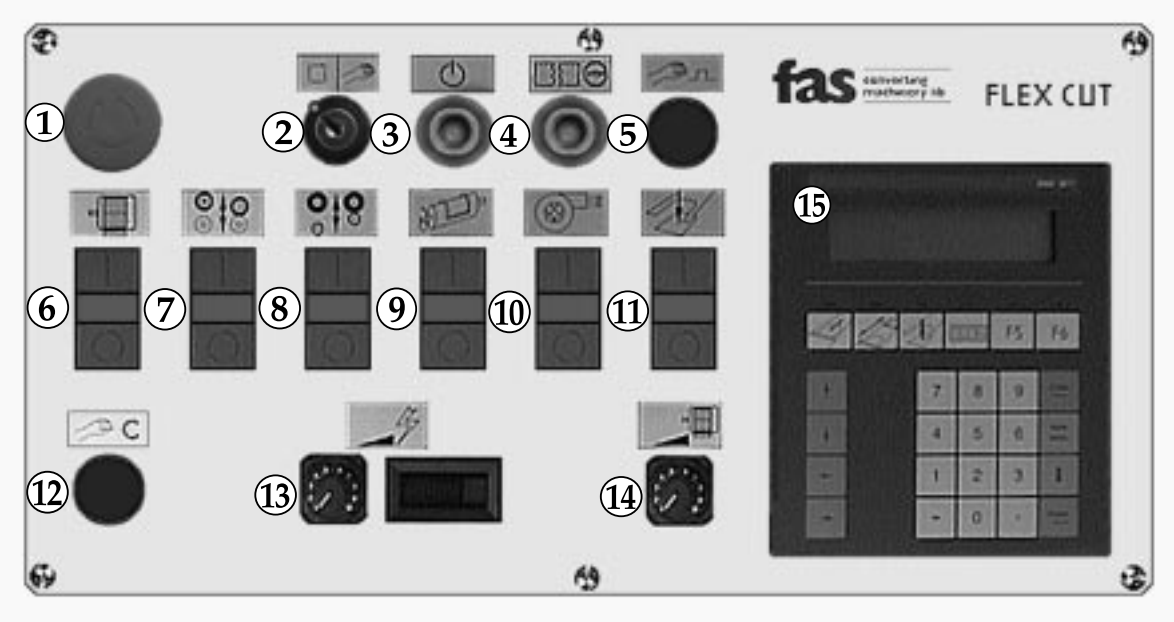


Fig. 2 The operating panel

Using the control panel

The control panel has a built in display which can show five different screens; the Main Menu and four submenus. You view each screen by pressing the appropriate function key, Main Menu, F1,F2 ,F3 or F4.
Function keys F1-F4 is marked with symbols.
The different screens present the parameters read from or entered into the Flexcut PLC-system.
Some parameters can easily be changed by the following procedure:

1 Press appropriate function key (Main Menu, F1, F2, F3, F4).

2 Use the four arrow keys (green) to step to the parameter to be changed. For some menus you will need to use the arrow down (or up) key to see all lines.

3 Enter the new value by using the numeric keys and then press Enter (orange key). If the parameter is an alternative selection (e.g. On/Off), use the Enter key to step through the alternatives.

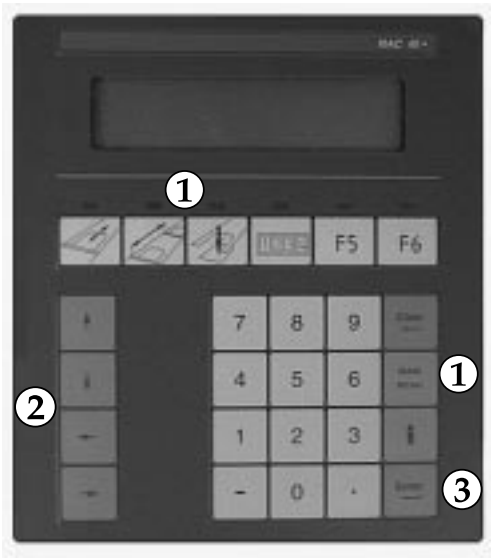


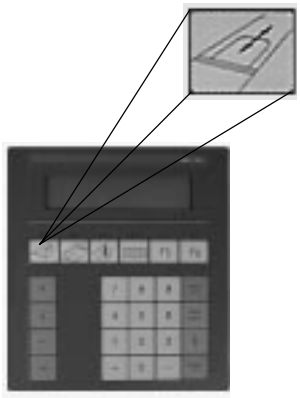
Fig. 3

The five control panel screens

THE MAIN MENU

FLEXCUT

No function



SPARK (F1)

SPARK

In ON position the initiation of the cutter is detected by the spark and delayed by the number of mm set in display REGISTER. In OFF the value in REGISTER is irrelevant.

If spark is ON the indicator lamp (placed above actual function key) illuminates.

SPARK	ON/OFF
register	xxxx mm

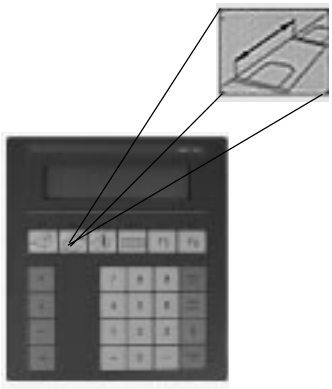
REGISTER

Enter the delay length (in mm) for initiating the cutter after the spark signal.

LENGTH (F2)

In ON position the initiation of the cutter is determined from the settings in length menu.

If lenth is ON the indicator lamp (placed above actual function key) illuminates.



LENGTH

Provided the previous display is set to ON the bag length is entered in this display. If the previous display is set to OFF this value is irrelevant.

LENGTH	ON/OFF
length	xxxx mm

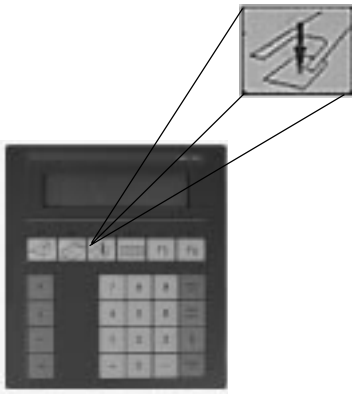
EXHAUST (F3)

EXHAUST 1

Sets the value (in mm) when the exhaust shall start. If SPARK ON is selected the value is counted from the spark.
If LENGTH ON is selected the value is counted from the start of the cutter.

EXHAUST 2

If thmachine is equipt with one exhaust pipe this value is irrelevant.



EXHAUST	1	xxxx mm
EXHAUST	2	xxxx mm

COUNTER (F4)

CNT *1

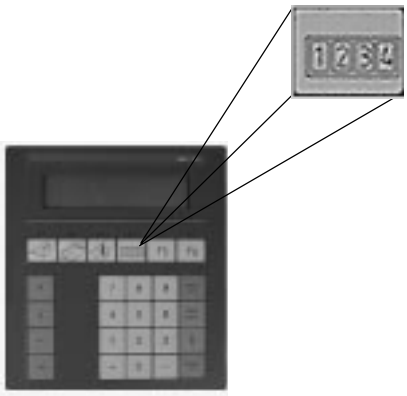
Number of produced bags (up to 9999 bags)

CNT *10000

Number of produced bags *10000.
Example: If the first line shows 9876 *1 and the second line shows 3 *10000 there are 30000+9876=39876 bags produced since last reset.

RESET

Resets the bag counter meters. Press enter on RESET (ACTIVE RESET appears). Connect terminal X21 to +24V. The screen blank when reset is done.



CNT	xxxx	*1
	xxxx	*10000
RESET		ACTIVE

Starting and operation

Before starting

NOTE that if the machine is shut off by means of the emergency stop button, for example, and the cutting tool is not in an upward position, the cutting tool must be manually turned to the upper position before starting.

1 Make sure the cutting tool is in the upper position. Follow the description below;

> *WARNING!*
> *The cutting tool is very sharp, which means that there is a risk of injury caused by cuts.*

Flexcut with bolted cutting tool

To safeguard the cutting tool, the toolshaft is fitted with a brake facility that is activated when the main switch is disengaged, see fig. 4.

* Carefully turn the cutting tool by hand until the cutting area is in the upper position, see figure 5.

Flexcut with fixed cutting tool

To sense the upper position an inductive sensor is fitted that is activated by a cam so that the sensor connects the current supply to the motor only when the cutting area is in the upper position, see fig. 5.

* Open the side door and rotate the cutting tool by hand until the cutting area is in the upper position.
* Close the door.

When cutting in the Flex Cut, gusseted web shall be used. The web shall have two seals (1), with perforation (2) in between. Refer to fig. 6.
The perforation shall be weaker in the middle and stronger at the edges.

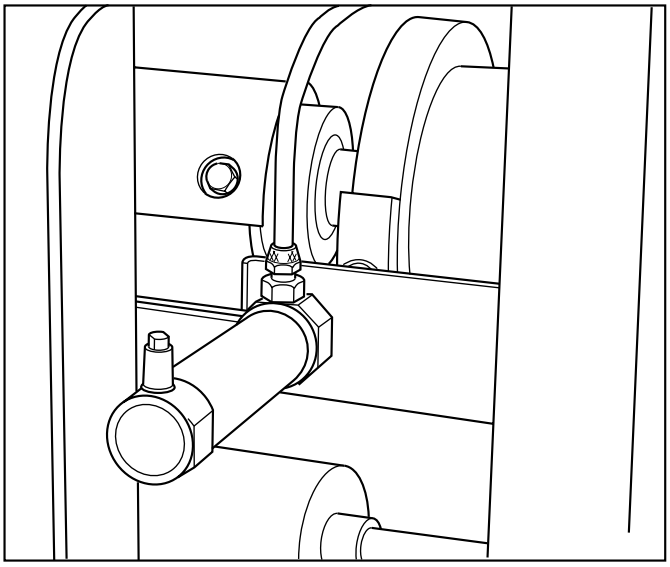


Fig. 4

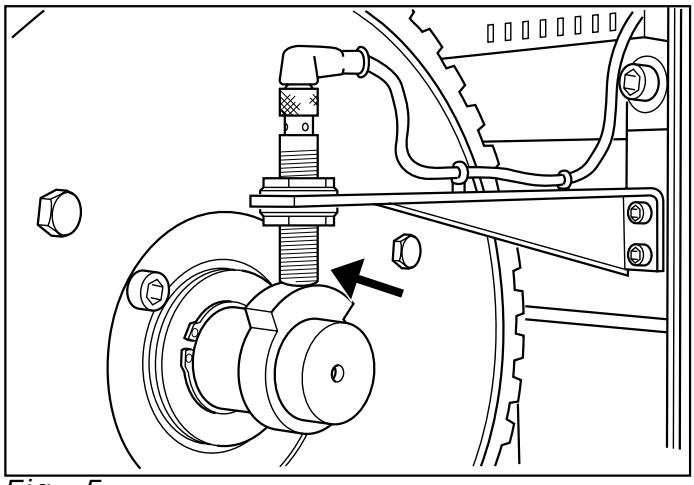


Fig. 5

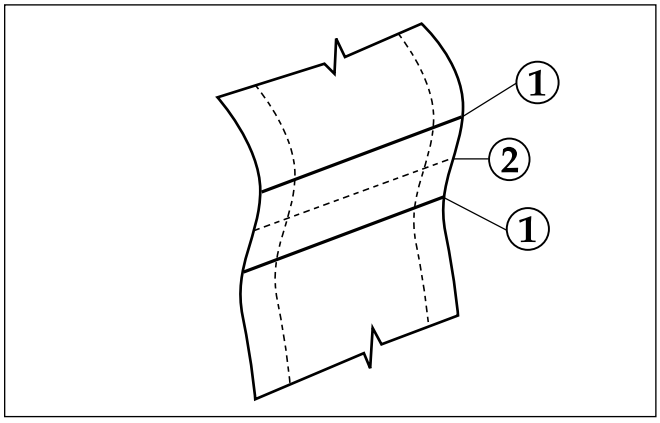


Fig. 6

2 Set the Saftey Bypass turnkey to auto position and remove the key.

3 Place the spark electrode, which is attached to a cylinder, opposite the retaining brace.

4 Place the electrode at a distance of about 2 mm from the (cathode) rod.

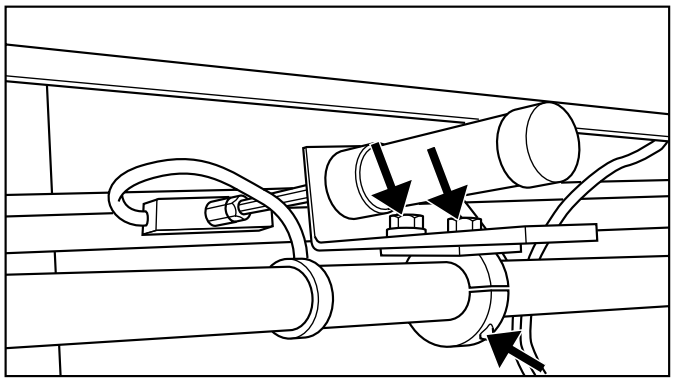


Fig. 7

5 Set the pressure for the rubber roller at 3 bar.

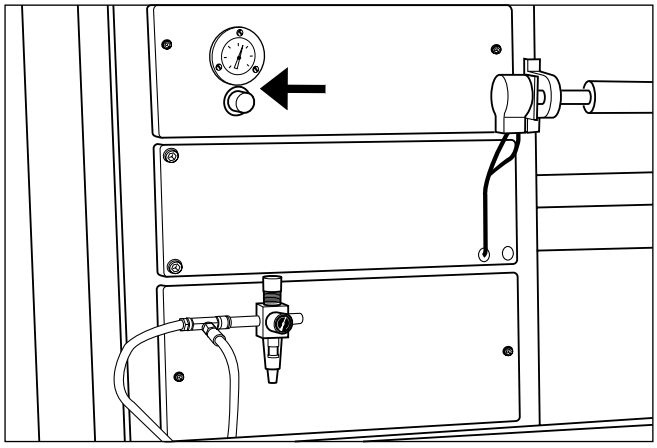


Fig. 8

Starting

1 Check to make sure that the cutting area on the cutting tool is in the upper position, see fig. 9 and 10.

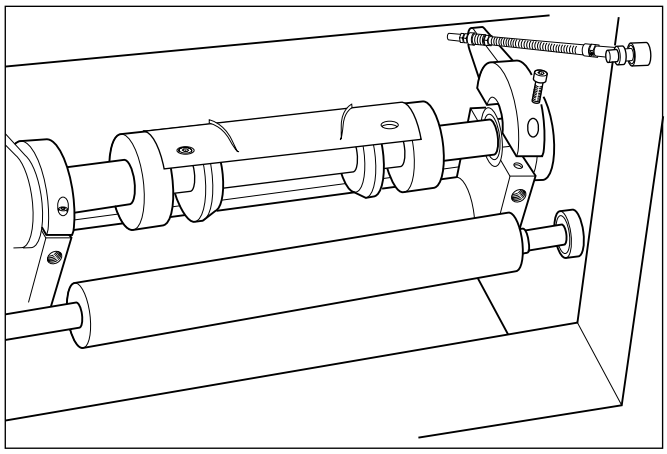


Fig. 9

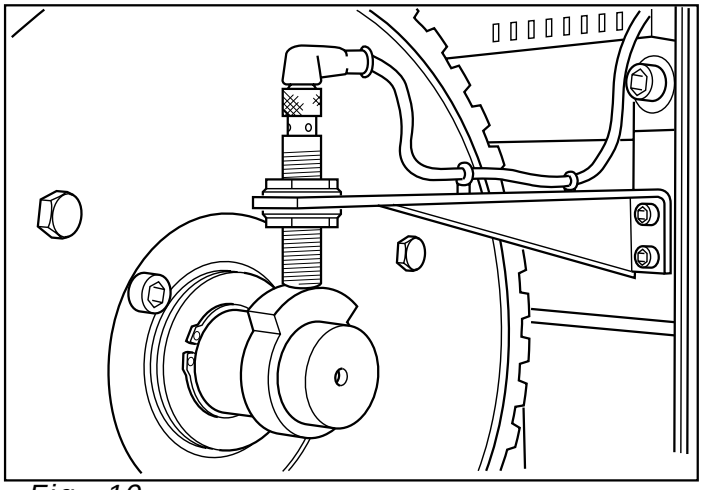


Fig. 10

2 Set the main switch to ON position.

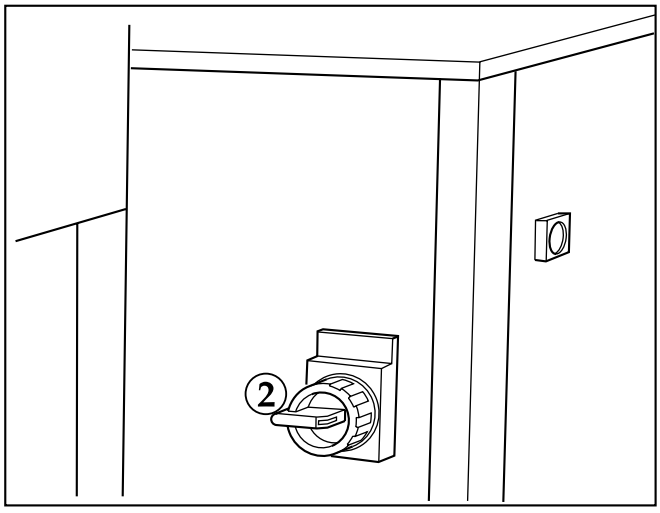


Fig. 11

3 Thread the web through the Flexcut as shown in fig. 12.

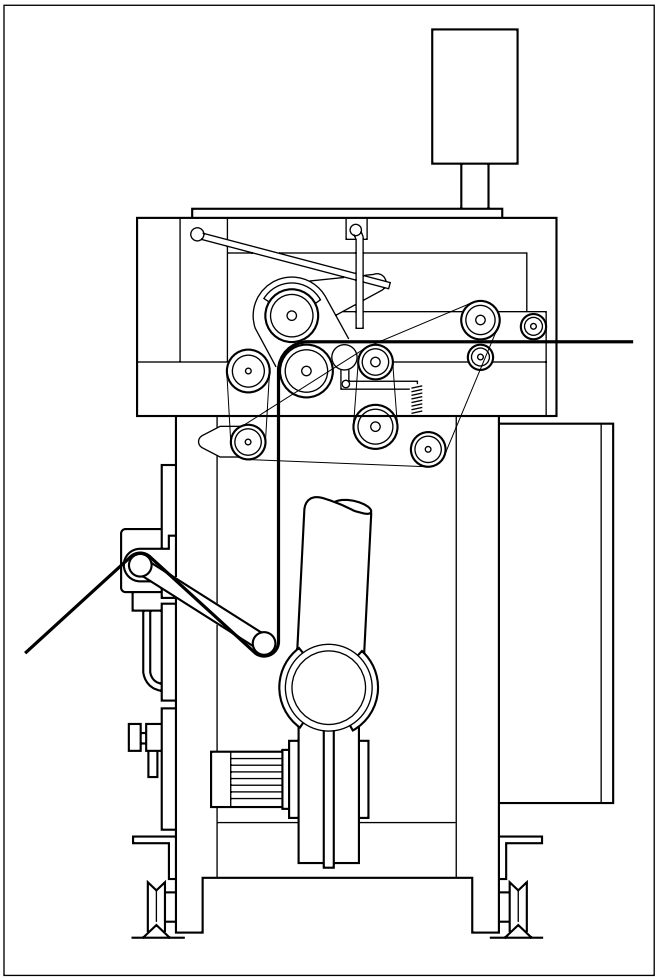


Fig. 12

4 To feed the web inside the Flexcut, press the green button on the rear side of the machine. The web is blown between the contact roller and the cutting tool when the green button is pressed.

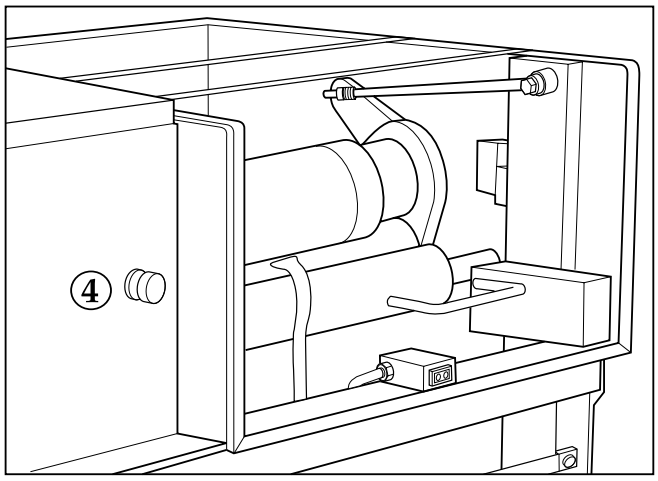


Fig. 13

5 Press RESET. The vacuum pump starts to operate.

6 Check to make sure that the vacuum pump's absolute pressure is set at 0.7 bar.

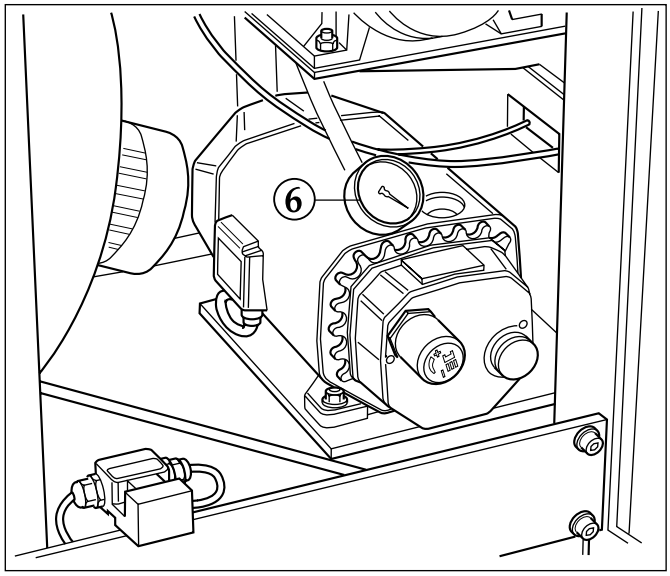


Fig. 14

7 Set the MACHINE SPEED potentiometer to position 0

8 In turn set the MAIN MOTOR, NIP, and IDLE ROLLER buttons to 1. The indicator lamp for each button illuminates.

9 Take the slack web from the Contiflex by carefully adjusting the potentiometer MACHINE SPEED to 100%.

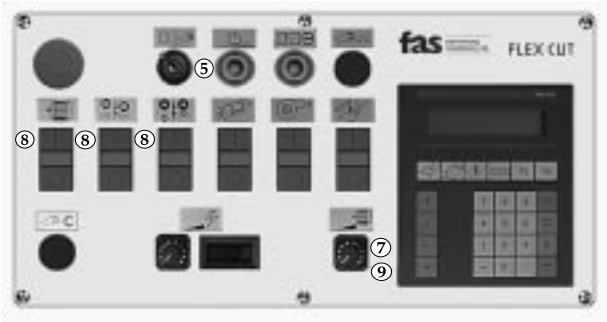


Fig. 15

10 Feed the web to the Spinner accumulator.

11 Make sure the web does not slack between the Contiflex and the Spinner.

12 Set the CUTTER button to 1 to enable the cutting tool to operate. The indicator lamp illuminates

13 Adjust the potentiometer SPARK POWER to a suitable intensity; i.e. until the cutting tool starts to rotate. If running with LENGTH ON spark power is not used.

14 Set the FAN and PUSHER buttons to 1 to start the fan and the pusher function. The indicator lamp for each button illuminates.

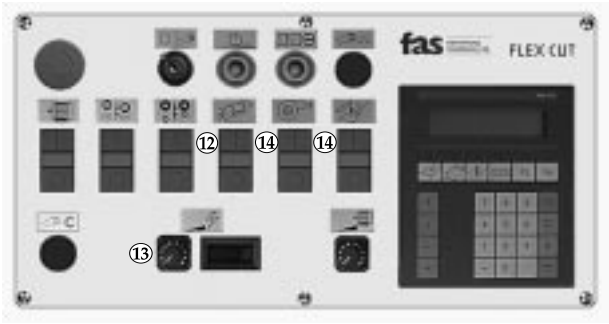


Fig. 16

15 Check the cutout position and if necessary adjust REGISTER in the control panel, see fig. 18.
If running with LENTH ON set bag length to required value.

Fig.17

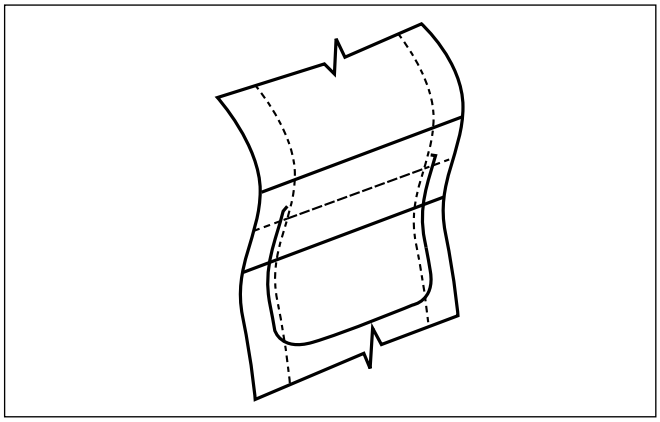


Fig.18

Shutting down

Planned shutdown

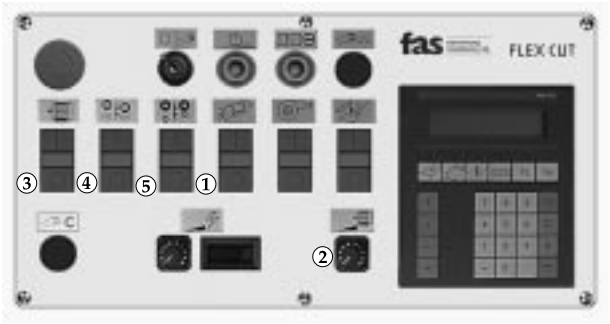


Fig. 19.

1 Set the CUTTER button to 0 to disable the cutting tool to operate.The indicator lamp distinguishes. Fan and Pusher stops automaticly.

2 Set the MACHINE SPEED potentiometer to 0.

3 Set the MAIN MOTOR button to 0 to turn off the main motor.
The indicator lamp extinguishes.

4 Set the NIP button to 0 to open the nip, i.e. to separate the rubber roller from the steel roller. The indicator lamp extinguishes.

5 Set the IDLE ROLLER button to 0 to lower the stretch roller.
The indicator lamp extinguishes.

6 Set the main switch to OFF position.

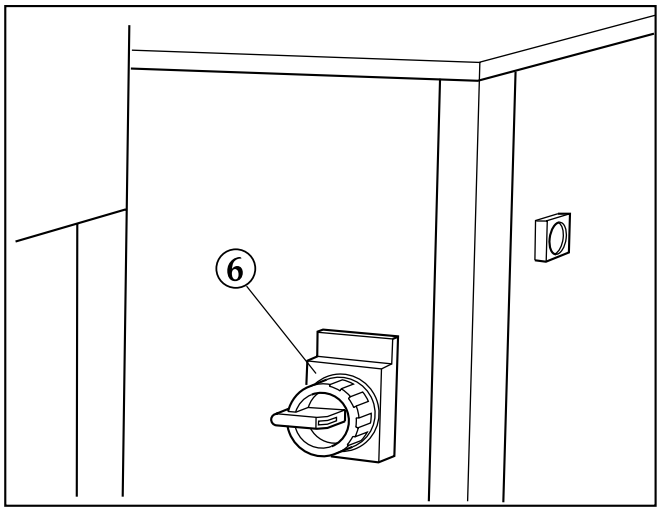


Fig. 20

Emergency shutdown

When any of the emergency shutdown buttons are pushed, the movable parts of the machine cease to function, while the vacuum pump continues to operate.
In case of emergency shutdown the cutting tool must be manually turned to the upper position before the machine can be started.

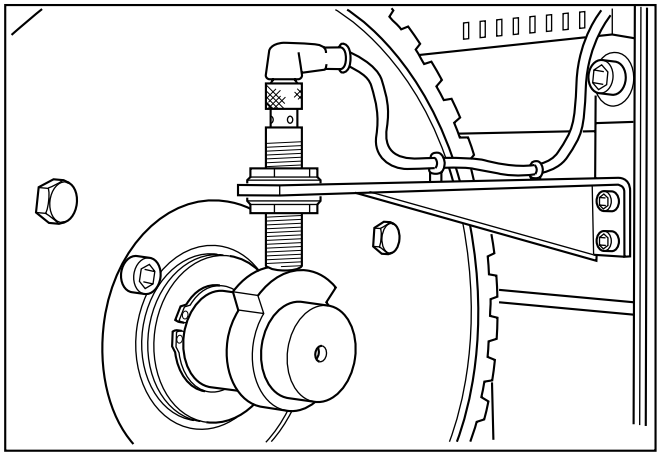


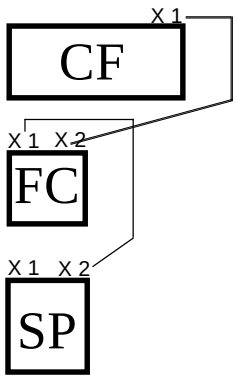
Fig. 21

Automatic shutdown

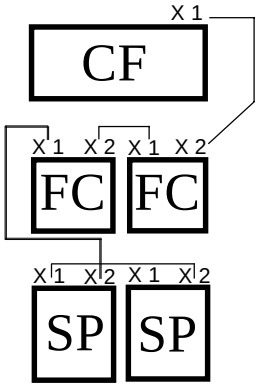
The Flexcut can be interlocked to enable all machines in the production line to stop if any fault should arise in one of the machines (e.g. the dancing roller on the Flexcut or the Spinner falls), see connection below.

1 To enable an automatic shutdown press AUTOSTOPP on the operating panel.

Fig. 22



Single web production



Double web production

Settings and adjustments

Adjustments during operation

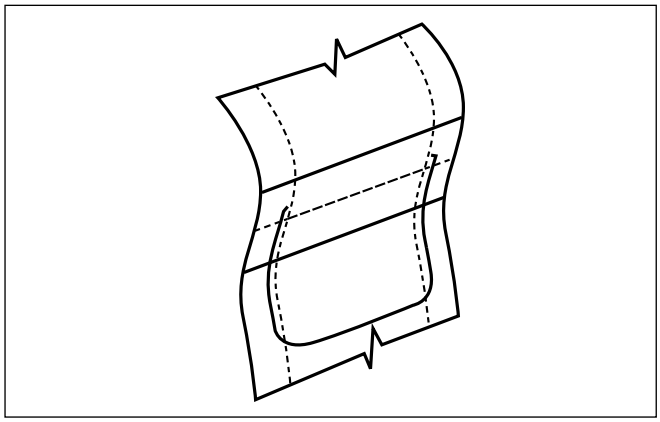


Fig. 23

Setting of cut out position

There are two ways of setting the cutout position.

* Spark: The spark starts the register and the cutting tool starts with the delay set in the register.
* Length: The flexcut measures the length of the bags. This functionneeds a special cutting tool.

Note that only one of the above mentioned settings can be used at the time, the other settings will automatically be set to OFF.

Set the cutout position in relation to the perforation from the control panel display.

Cutting initiates by Register, i.e. a preset length

1 SPARK to ON

2 Adjust the value in REGISTER

3 LENGTH will automaticly goes OFF

SPARK	ON/OFF
register	xxxx mm

Fig. 24

The Flexcut measures the length of the bags

1 LENGTH to ON

2 Set required length

3 SPARK will automaticly goes OFF

LENGTH	ON/OFF
length	xxxx mm

Fig. 25

Lateral setting of machine
Finely adjust the machine laterally by means of the crank handle on one of the wheels.

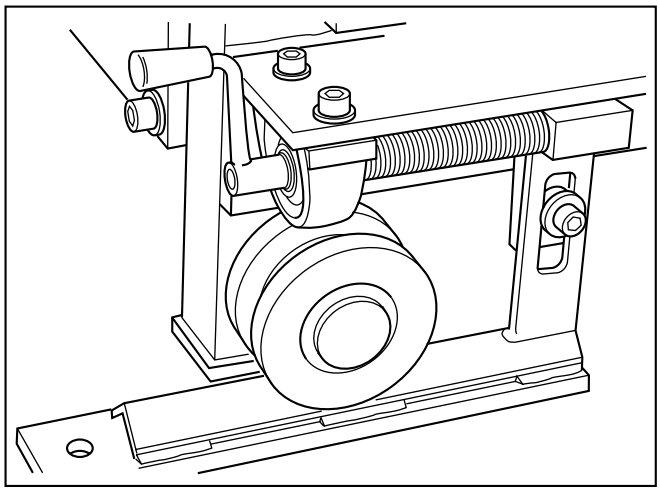


Fig. 26

Other settings

Belt tensioning
The drive belts are correctly tensioned when they can be pushed down between the pulleys by about 1 cm. Readjust the belt tension by loosening the centre screw and moving the bearing housing, see fig. 27.

NOTE !
Excessive belt tension will damage the bearings.

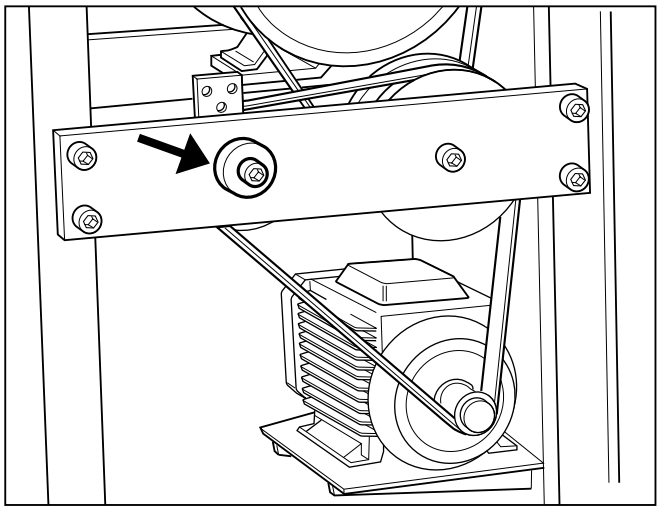


Fig. 27

Checking the vacuum pump's working pressure
The vacuum pump supplies a vacuum to operate the clutch and brake.
The working pressure shall be 0.7 bar. Adjust the pressure by means of the adjusting screw, if so required, see fig. 28.
Clean the filter once a month.

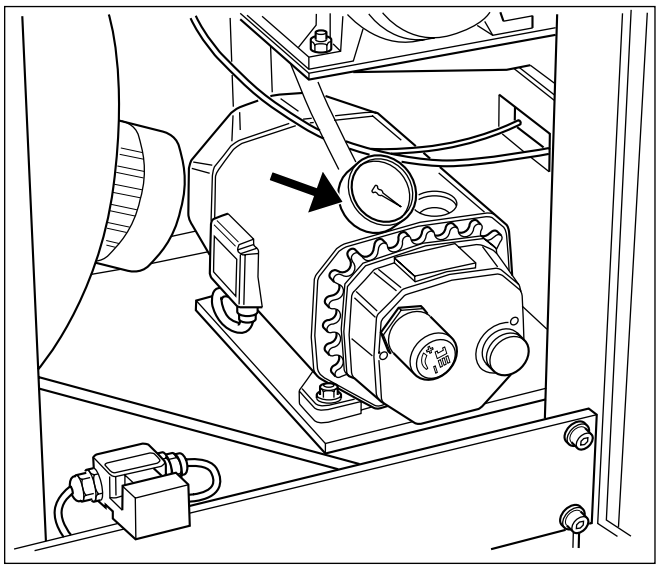


Fig. 28

Clutch/Brake

Check the ventilation louvres regularly to ensure that they have not become clogged and that the bearings are not damaged.

Cutting tool replacement

Cutting tool replacement may be performed by authorized personnel only. If the cutting tool is set incorrectly it will become damaged very quickly.

WARNING!
Take caution when working with the cutting tool as it is very sharp.
There is a risk of personal injury caused by cuts.

NOTE!
Make sure not to damage the edges when replacing the cutting tool

Flexcut with bolted cutting tool

1 Set the main switch to OFF position.

2 Turn the cutting tool to the upper position. Unscrew six attaching screws from the cutting tool shaft and remove the cutting tool.

3 Loosen the two eccentric bearing's lock screws a few turns.

4 Loosen the lock nuts and adjusting nuts on the eccentric setting device a few turns.

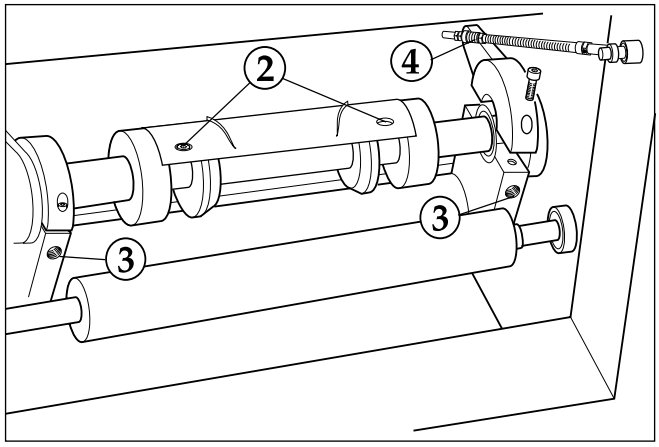


Fig. 29

5 Place the new cutting tool into position, and make sure that it is turned correctly. Fit the six attaching screws. Tighten the screws.

6 Start the machine and feed the web into the machine. Follow the procedures described in section Starting, steps 1-9.

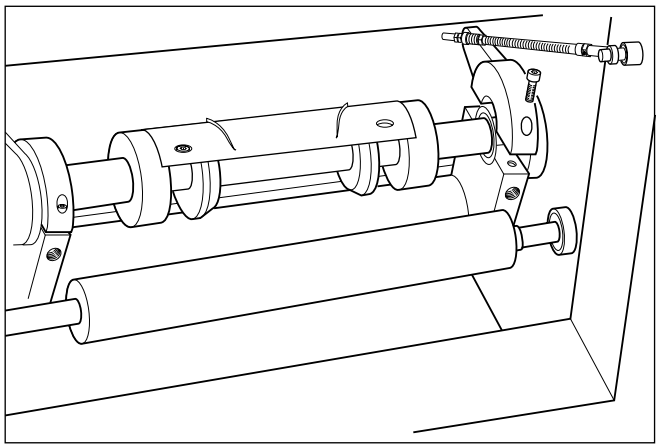


Fig. 30

7 Press MANUAL PULSE button to rotate the cutting tool one full turn.

8 Tighten the adjusting nuts 1/4 turn, and run the cutting tool one full turn. Repeat this operation until the cutting tool cuts satisfactorily in both ends.

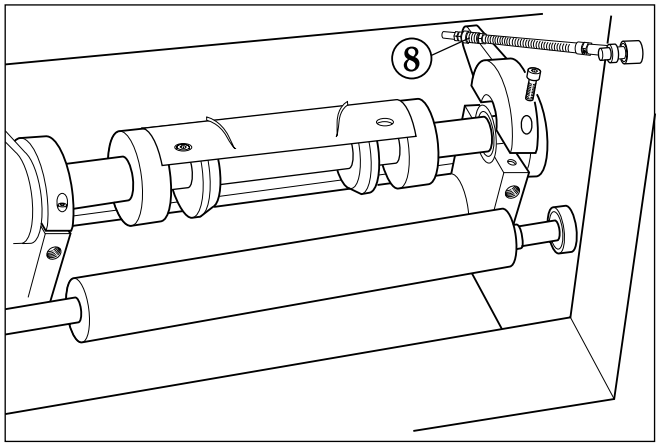


Fig. 31

9 Tighten the eccentric lock screws and re-check the cutting tool function. Tighten the adjusting nuts slightly if so required. Tighten the lock nuts. The cutting tool may raise slightly when lock nuts are tightened, therefore re-adjustment may be necessary.

NOTE!
It is essential that the cutting tool pressure is even on anvil roll to reduce wear. Make sure to adjuste the adjusting nuts not more than 1/4 turn each time, and adjust each end individually. Do not let the cutting tool apply more pressure than necessary to the anvil roll to reduce wear.

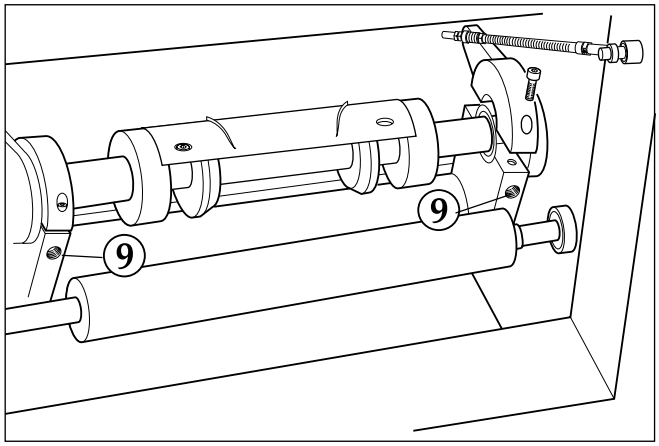


Fig. 32

Flexcut with fixed cutting tool

1 Set the main switch to OFF position.

2 Loosen the six allen screws on flexi-coupling (three at each end) and remove the flexi-coupling.

3 Loosen the two eccentric bearing's lock screws a few turns.

4 Loosen (and remove) the lock nuts, adjusting nuts, washers and rod on the eccentric setting.

5 Loosen and remove the two bearing caps.

Note!
Make sure that the bearing caps are mounted back at the same place.

6 Turn the cutting tool so that the lift-hole is accessible. Mount the eye bolt and carefully lift the cutting tool using a crane.

Note!
The red eye bolt should be mounted on the frame under transport but when the machine is installed it should be placed on the bracket near the cutting tool, see fig 36.

7 Move the drive coupling to the new cutting tool.

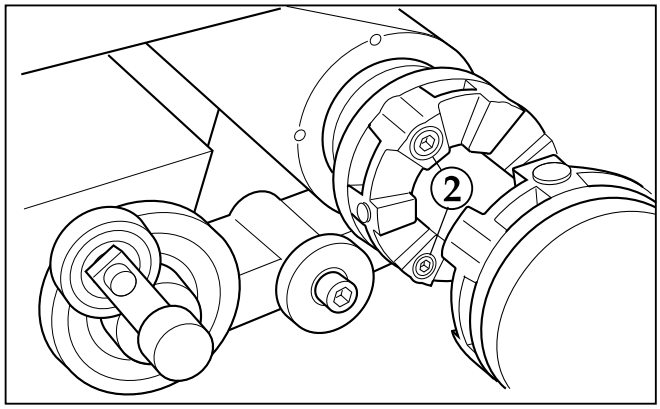


Fig. 33

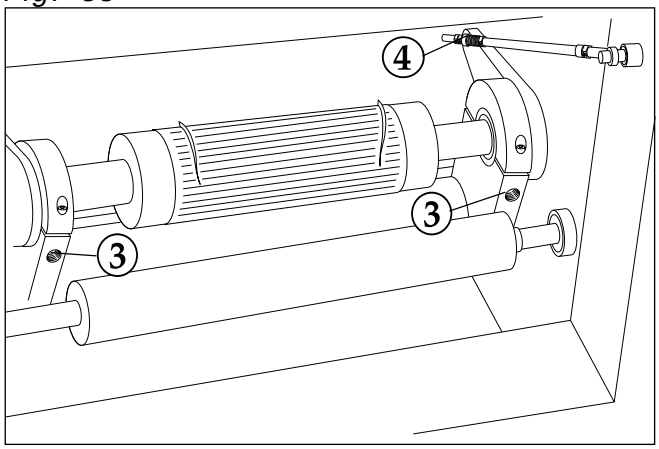


Fig. 34

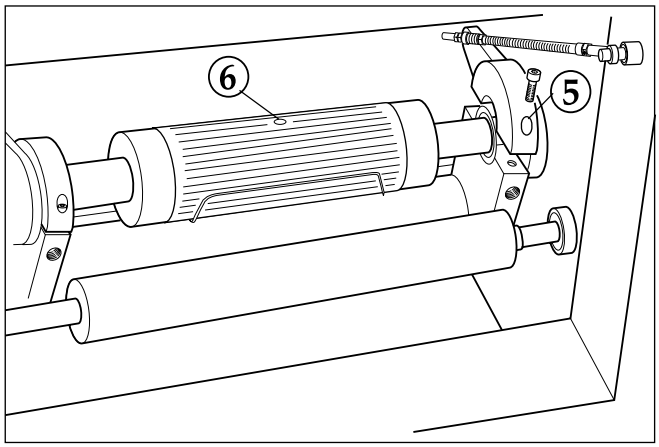


Fig. 35

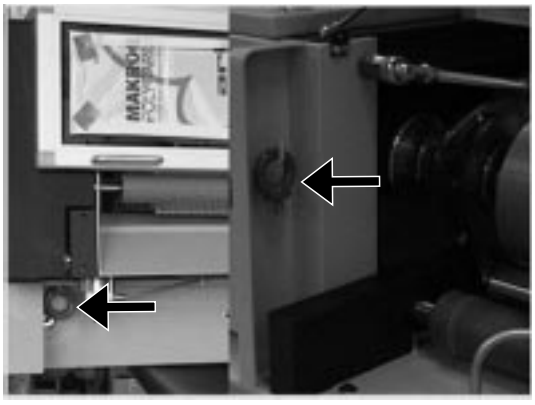


Fig. 36

8 Move the eye bolt to the new cutting tool and carefully lift it in place in the bearing seats.

9 Mount and fasten the two bearing caps. Tighten the screws.

10 Re-assemble the eccentric setting device.
Re-assemble the flexi-couplings.
Tighten the nuts by hand and check the cutting function by rotating the cutting tool by hand.

11 Start the machine and feed the web into the machine. Follow the procedures described in section Starting, steps 1-9.

12 Press MANUAL PULSE button to rotate the cutting tool one full turn.

13 Tighten the adjusting nuts 1/4 turn, and run the cutting tool one full turn. Repeat this operation until the cutting tool cuts satisfactorily in both ends.

14 Tighten the eccentric lock screws and re-check the cutting tool function. Tighten the adjusting nuts slightly if so required. Tighten the lock nuts. The cutting tool may raise slightly when lock nuts are tightened, therefore re-adjustment may be necessary.

NOTE!
It is essential that the cutting tool pressure is even on anvil roll to reduce wear. Make sure to adjuste the adjusting nuts not more than 1/4 turn each time, and adjuste each end individually. Do not let the cutting tool apply more pressure than necessary to the anvil roll to reduce wear.

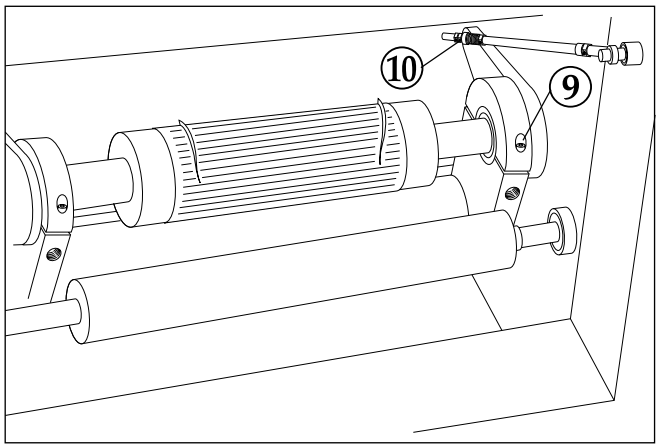


Fig. 37

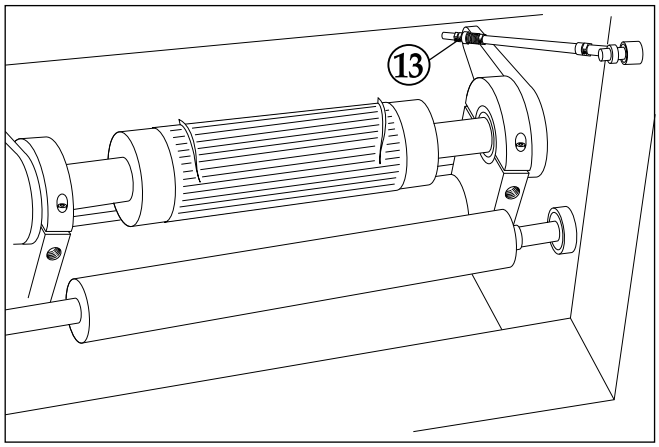


Fig. 38

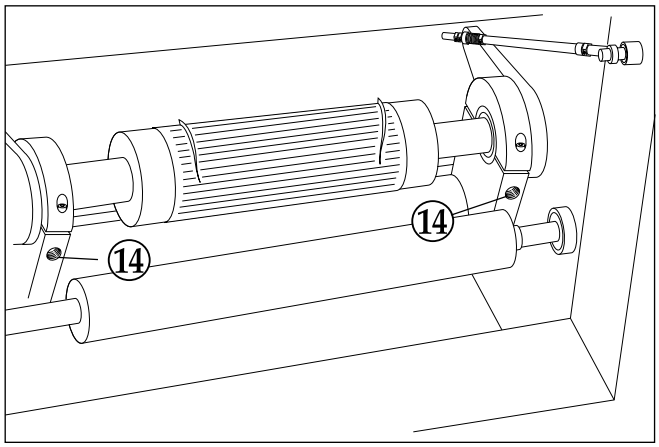


Fig. 39

Lubrication instructions

Pos	Point of lubrication	Lubricant	Interval
1	Bearings, cutting tool holder, 2 nipples	Grease	Once a week
2	Bearings, eccentric unit, 2 nipples	Grease	Once a month
3	Bearings, shafts and rollers, 20 nipples	Grease	Once a week
4	Filter in vacuum pump	To be cleaned	Once a month

Lubricants

Bearings: SKF LIGHT 2 or equivalent

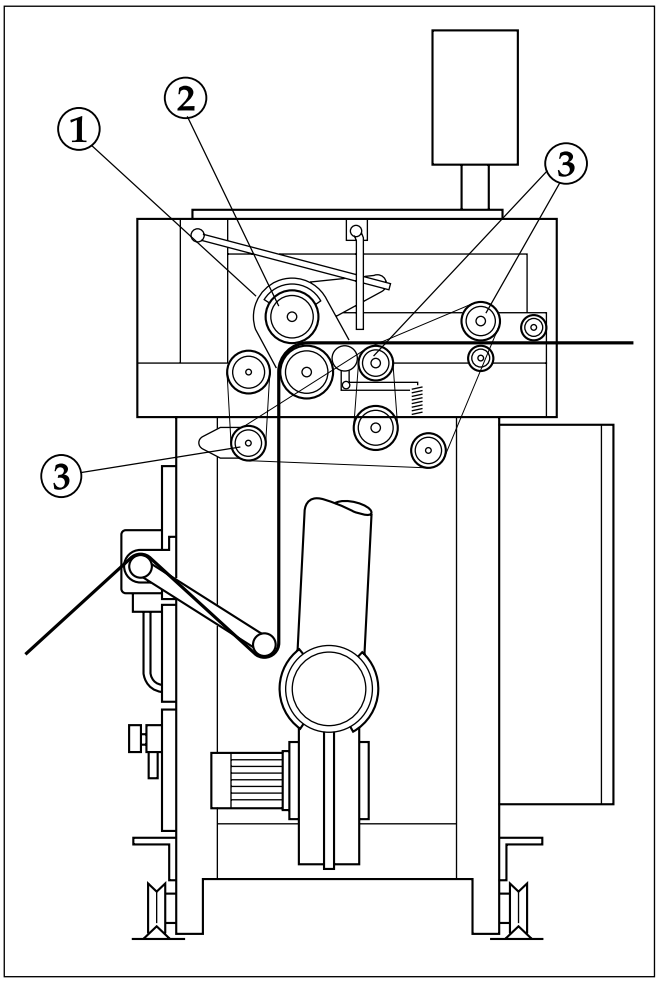


Fig. 40

Fault tracing

Fault	Remedy measure
Cutting tool does not rotate	
Spark electrode in wrong position	Adjust as per fig. 8.
Insufficient spark power	Increase the spark power. Refer to fig. 2, pos. 12.
No spark at all	Replace the spark generator
Cutout not stable in longitudinal position	
Uneven speed in Flex Cut	Check the function of the precision potentiometer.
Flexible couplings worn out	Replace the couplings
Cutout remains in web	
Valve for exhaust not activated	Check the valve
Motor not running	
Circuit breaker released	Reset circuit breaker
Max. current relay released	Machine has been overloaded. Reset.

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