



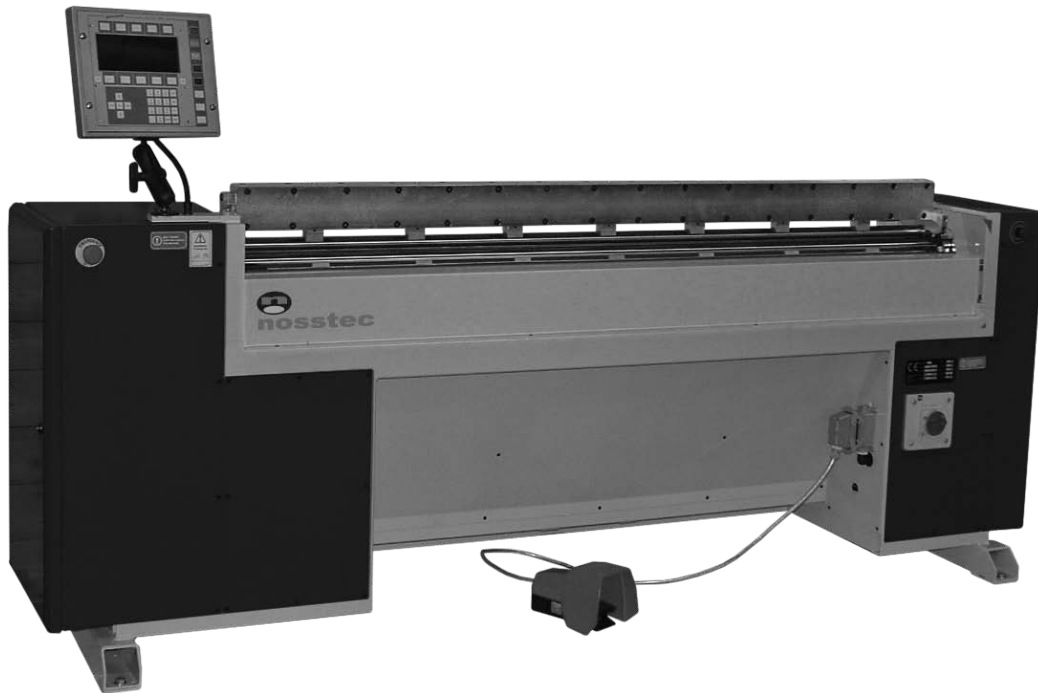
nosstec



Bending Roll Machine 8835

OPERATING INSTRUCTIONS

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Note: We reserve the right to alter specifications without prior notice.

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INTRODUCTION

Preface

This instruction manual is designed to help the user operate the machine correctly. Please read the entire instruction manual before starting to use the machine.

Safety

The machine and any additional equipment have been manufactured in accordance with the health and safety provisions applicable at the time of manufacture – the EU Machinery Directive 98/37/EC, with relevant standards. See also the enclosed "Declaration of Conformity".

If modifications are made to the machinery or equipment, or if replacement parts other than those provided by the manufacturer are used, the machine may no longer satisfy the stipulated safety requirements. The person carrying out such modifications is responsible for ensuring that the applicable safety requirements are met and that a new safety analysis is carried out if necessary. The "Declaration of Conformity" issued by the manufacturer is invalidated by such modifications.

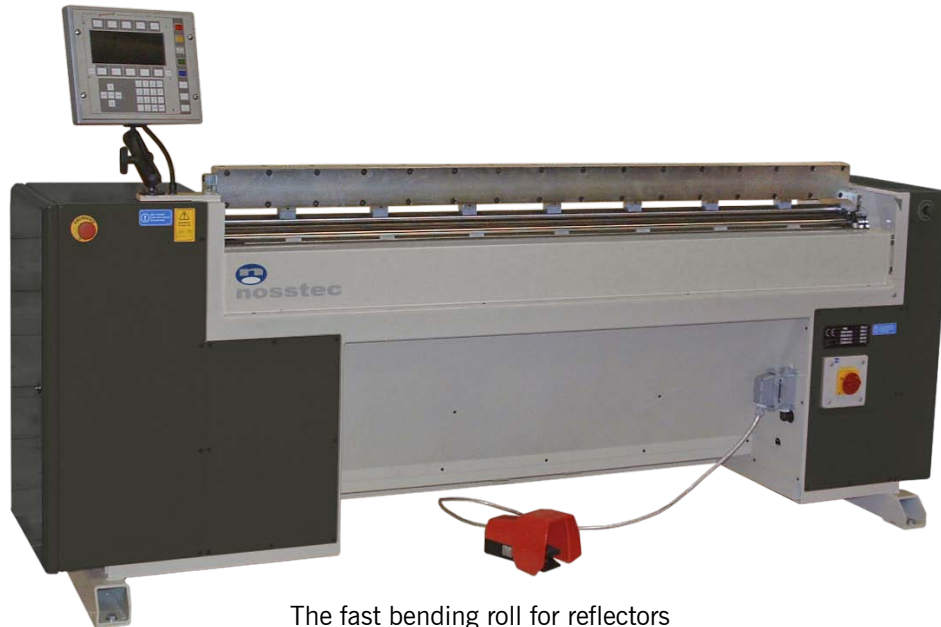


IMPORTANT!

FOLLOW THE SAFETY RULES SET OUT IN THIS INSTRUCTION MANUAL CAREFULLY. THEIR PURPOSE IS TO ENSURE THAT THE MACHINE IS USED CORRECTLY, AVOIDING ELECTRICAL ACCIDENTS, PERSONAL INJURY, EXPLOSION OR FIRE.

Description

Model 8835 is a high speed bending roll for the production of a range of products including reflectors. Using advanced technology and rolls with a diameter of only 35mm, the machine can handle the small radiuses required for the reflectors in small diameter strip lights.



The fast bending roll for reflectors

The machine is designed with three independent bottom rolls to reduce production time to a minimum. All rolls run in adjustable support bearings to permit easy roll adjustment for materials of different thickness and/or hardness. The support of the top roll tilts backwards and forwards automatically to provide maximum room for tight rolling radiuses. The rolls are hardened and chromium plated, with polished surfaces to prevent marking of the rolled material.

The control system can be used to run advanced operations to produce exactly the shape required. The special design of the machine and the programmed independent movement of the rolls mean that the sheet does not need to be handled between prebending and final bending.

200 different programs can be stored for a range of products. You then simply enter the required program number, and the machine handles the entire process to produce the finished product.

The machine is supplied with:

- 1 instruction manual
- 1 electrical diagram
- USB memory for program storage, with instruction manual and electrical drawings
- 1 set of tools

SAFETY

General

In order to satisfy the health and safety requirements, the machine must only be used in accordance with this instruction manual. The machine must only be used by authorised and trained personnel as described below. All protective and safety devices must be intact and installed.

Training

All operators must undergo the training provided by the supplier or else be trained by an operator who has undergone the supplier's training and has considerable experience of the machine. All operators must also carefully read this instruction manual and other instructions from their employer.

The employer is responsible for ensuring that the information has been correctly understood. The scope of training will take account of the experience and knowledge of the operator.

Electrical connection

The machine must only be connected to a 400 volt five-wire system (three phase, neutral and earth). 400, 220 and 24 volts are used in the machine for different functions.

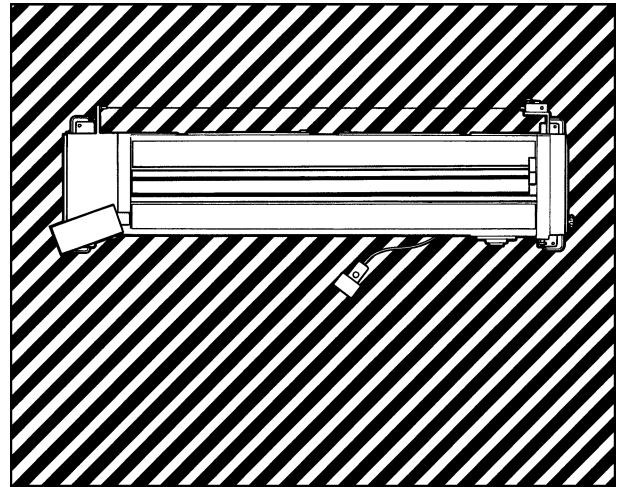


Only authorised personnel are to make connections and carry out repairs to the electrical equipment in the machine!

Danger area

The danger area around the machine (see figure) must be indicated in an appropriate way, for example with markings on the floor.

The size of the danger area depends on the size of the work pieces. In the case of standard reflectors, the danger area must extend 2 metres in front of the machine, 1 metre behind the machine, and 1 metre from the ends. In the case of larger work pieces, the danger area at the front and rear of the machine must be extended.



While work is underway, the operator must ensure that nobody is allowed to enter the danger area. If anyone enters the danger area, work must be stopped immediately.



Only the operator is allowed within the danger area while work is underway and the power is switched on!

Machine anchoring

The machine must be firmly bolted to the floor using four expanding bolts of diameter 12mm. The base plates of the machine have holes intended for this purpose.

Before using the machine

Check that all safety devices are functional and undamaged. Also check that there are no unintended obstructions to the moving parts, for example due to incorrectly fitted protective devices or components. Worn safety devices or machine components must be replaced by an authorised person.

Applications

Never use the machine with materials falling outside the specified capacity range of the machine. See the rating plate and the technical data of the machine in the instruction manual.

SAFETY

Ensure that the environment is suitable

The user is responsible for ensuring that the machine is located in an environment that is suitable for the purpose.

- The machine must be protected against rain and water.
- Do not use the machine in damp or humid rooms.
- Use good lighting.
- The floor must be clean, dry and free of oil and grease patches.
- Do not use highly flammable material close to the machine.
- Dirty workplaces increase the risk of accidents.

Avoid unstable working positions

Make sure the operator uses a safe and stable working position.

Do not keep tools on the machine

Remove all tools from the machine and the immediate area before using the machine.

Repairs only by authorised personnel

Machines and the associated electrical equipment have been manufactured in accordance with the applicable safety rules. All repairs must be carried out by trained and competent personnel. In addition, only original spare parts may be used.

Disconnect power

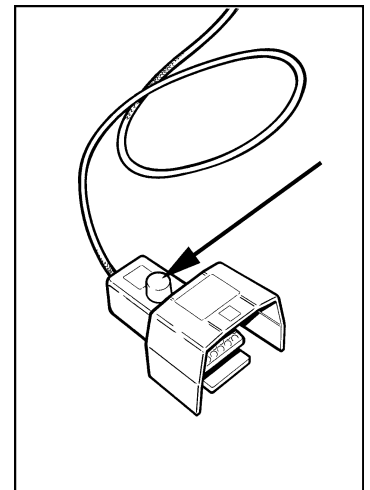
Make sure you disconnect the power supply to the machine before touching potentially live components, by switching of the machine at the main switch or by disconnecting the power supply in the central electrical unit. Never disable the machine's main switch or safety switch.

Keep the instruction manual carefully to avoid damage

The instruction manuals contain important safety information and also important details about operating instructions, maintenance, troubleshooting, etc.

Foot pedal

Check the foot pedal and electrical cable regularly to make sure they are functional and show no signs of damage. Also check the function of the built-in emergency stop function by pressing the pedal to the bottom position. The machine should stop and the rolls should move away from each other. Reset the foot pedal using the Reset key (see figure).

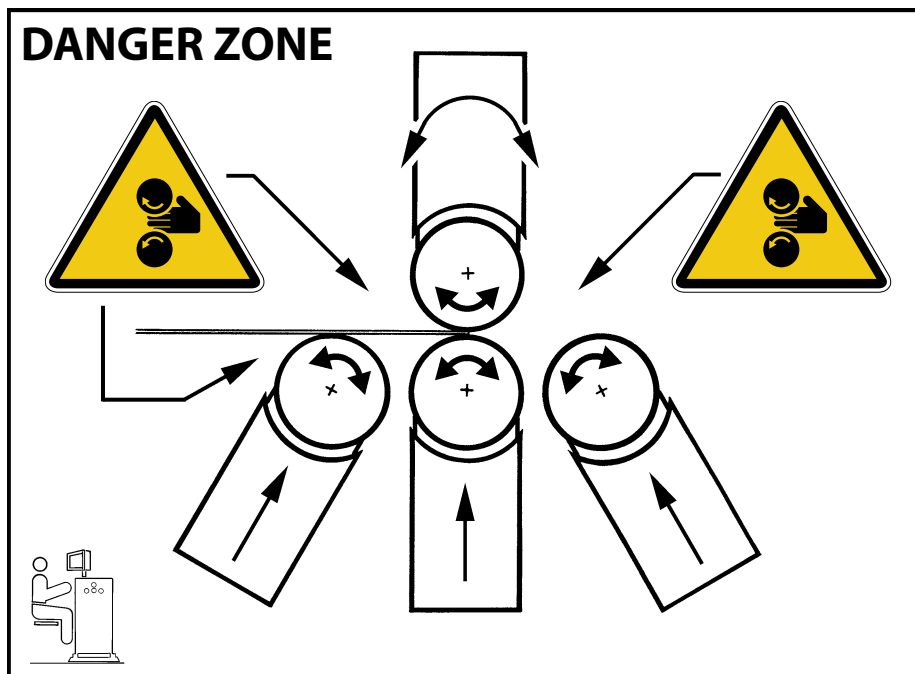


Danger zones

While the power is on, remember never to let any part of your body or your hair, clothing or jewellery come too close to the danger zone.



It is essential that the operator is familiar with and follows the safety rules, because bending rolls cannot be fully protected, leaving an exposed hazardous zone.



WARNING! The machine has exposed rolls which rotate with pinch points. The feed side changes depending on the direction of feed.

SAFETY

Falling work pieces

The work piece is ejected and can fall to the floor when it has been rolled. This means you should take care while working, especially in the case of large work pieces.

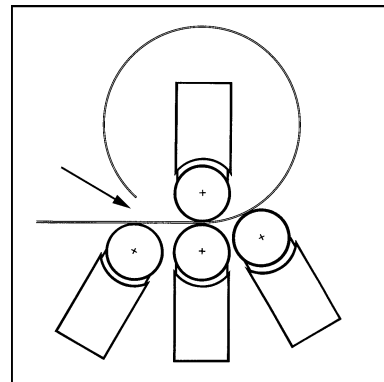
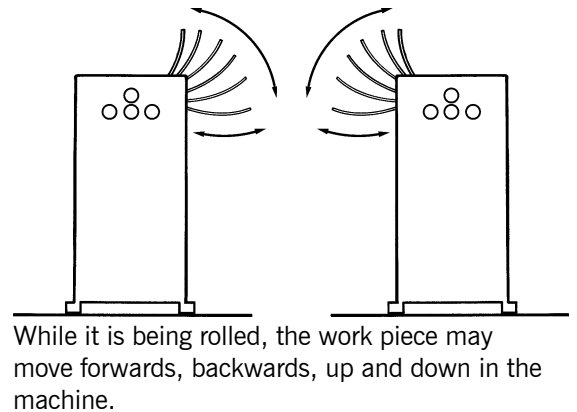
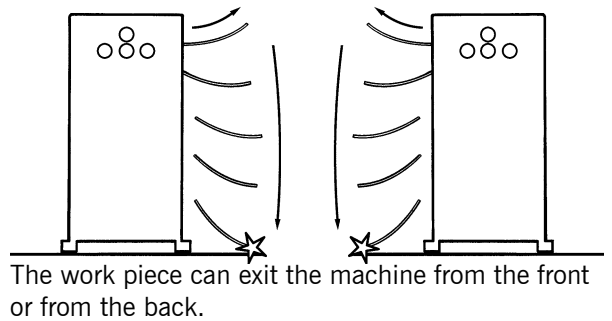
If necessary, use a lift table, overhead crane or other lifting device.

Moving work pieces

While the bending roll is working, the work piece moves up and down. Take care and do not stand too close to the work piece – there is a risk of injury to your torso, arms, legs or face. The machine is fast working, which means the movements are correspondingly fast.

Pinch point in work piece

Remember there is an additional pinch point between the ends of the work piece, as illustrated in the figure.



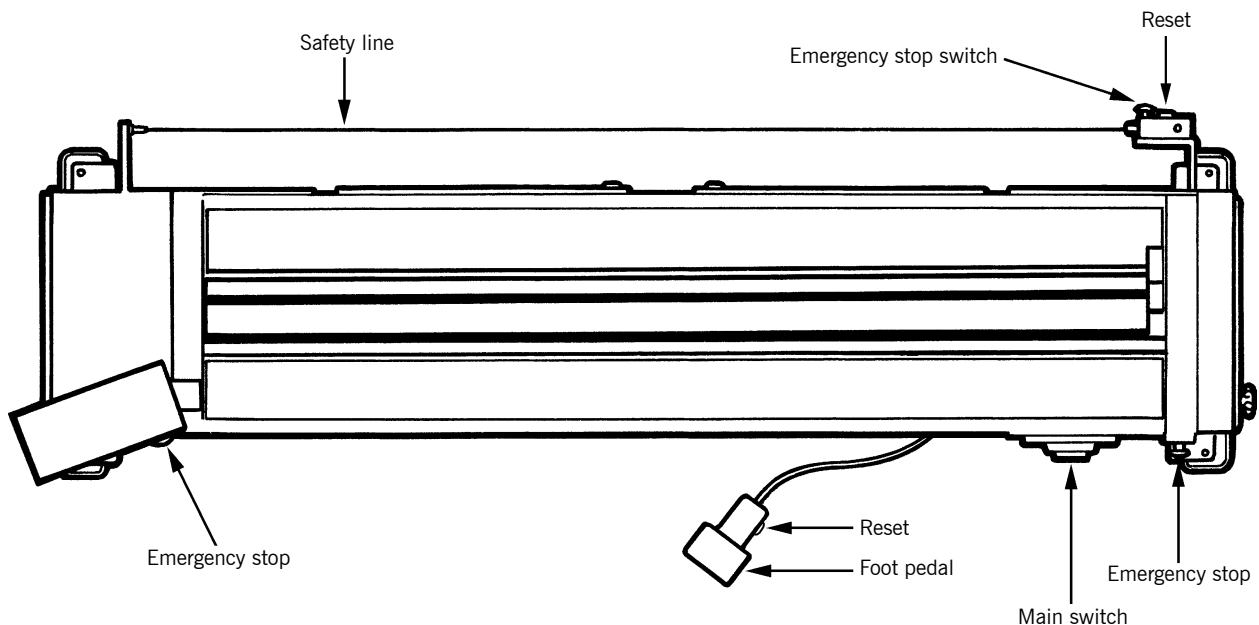
IMPORTANT! NEVER WEAR GLOVES OR LOOSE FITTING ARTICLES OF CLOTHING. Do not wear rings, chains or hanging clothing that might get caught in the machine.

Emergency stop

The machine has a number of safety switches and emergency stop devices:



- The foot pedal has an emergency stop function, which you can activate by pushing down very hard.
- You can activate the emergency stop on the right side of the machine by pressing it.
- You can activate the emergency stop on the left side of the machine by pressing it.
- You can activate the emergency stop on the rear side of the machine by pressing it.
- The safety line in the lower part of the rear of the machine is activated by movement or if it is broken.



To reset the emergency stop, rotate the button anticlockwise, in the direction of the arrow. To reset the stop function of the foot pedal, push down the button on the pedal side. To reset the safety line, press the button on the safety switch at the end of the line on the right of the machine. The machine cannot be restarted until the Reset key on the control panel has been pressed.



IMPORTANT!

The operator must know the location of all the stop and emergency stop functions and how to operate them.

All protective devices must be fitted and the transmission doors must be locked.

SAFETY

Service and maintenance

The risk of injury is often greater during service and maintenance than in normal use because it may be necessary to remove protective devices and to open doors and hatches. This work may only be carried out by personnel who have been trained by the supplier. The main switch must be switched off for service and maintenance work.

Regular checks

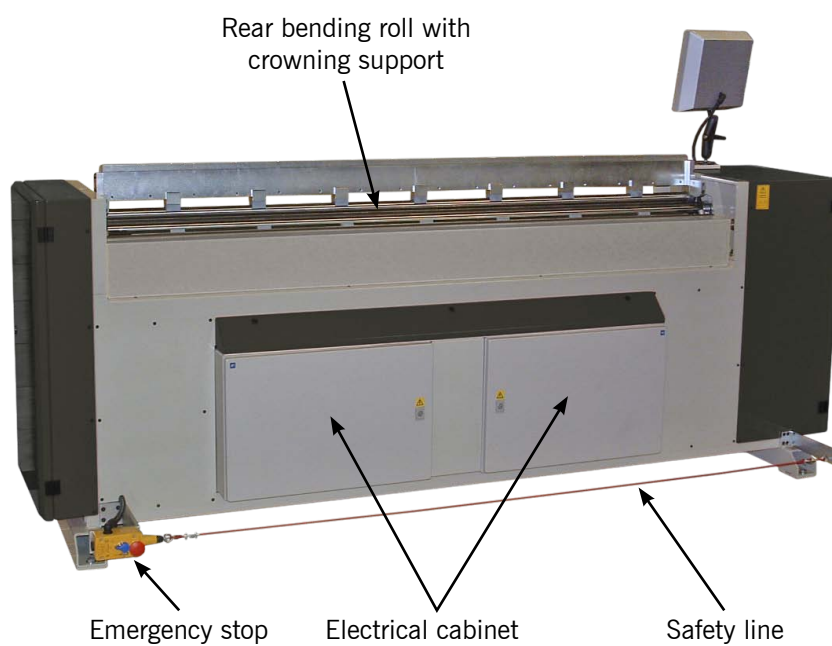
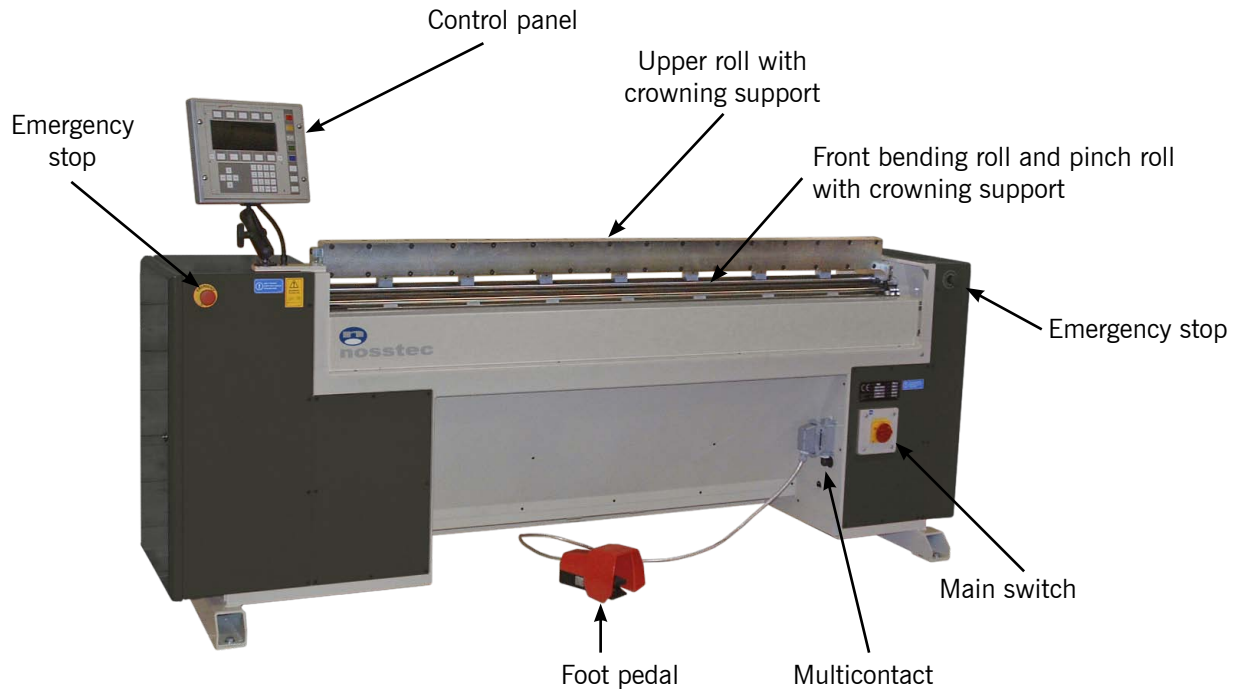
Perform daily checks to ensure that fixed or hinged protective hoods are seated in their correct position and that all screws are tight. While the machine is operating without a work piece, check that the safety switches are working by activating them manually. Every day, check that the foot pedal is working and that the electrical cable to the pedal is undamaged. Carry out regular servicing as set out in the Maintenance section.

About safety in general

The section dealing with safety assumes that the machine will be used as described in the brochure and instruction manual, and that the operator has received the necessary training in the safety aspects relating to the machine and the specific risks associated with this type of machine. If the machine is not used correctly, the manufacturer is not liable for any personal injury or material damage that may result. Please also note the following points.

- Apply all the necessary safety measures to prevent the machine starting during loading, adjustment, spare part replacement, cleaning, repair or maintenance work.
- Never disable the safety devices of the machine.
- Do not remove any component from the machine if it is part of the safety devices.
- Always check that all safety devices have been installed again after repairs, etc.

MAIN COMPONENTS



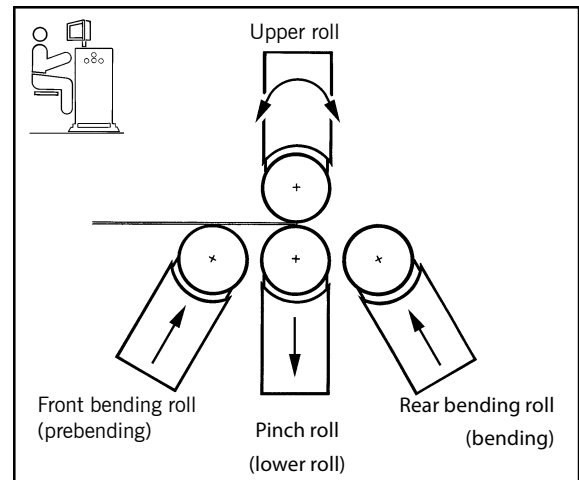
MAIN COMPONENTS

Control system

The control system can store up to 200 programs. Each program contains a maximum of 40 program steps. The standard design of the system consists of four rolls. The control system governs the following four functions: **feed, forward and backward movement of the bending rolls, movement of the lower roll**. Pieces can be worked with infinitely variable radii. This is possible because the feed and bending rolls can operate simultaneously. This function is called **I-pol**. Considerable time savings are possible, depending on the appearance of the piece.

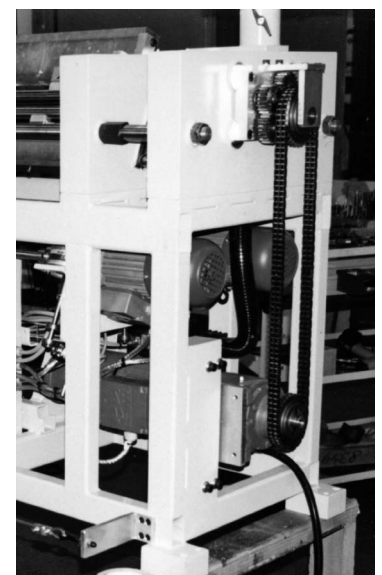
Rolls

There are four rolls, of which the lower three each operate individually. In other words, the front and rear bending rolls work independently of each other. Prebending and final bending are carried out without the need for intermediate handling of the material. All the rolls are fitted with crowning supports in order to compensate for springback. All rolls are driven. The support of the top roll tilts backwards and forwards automatically to give the sheet maximum room during the bending process.



Drive

The four rolls are driven by an electric motor fitted on the left of the machine. The drive system consists of a motor with toothed gearbox, a chain transmission and a torque division gearbox. The lower rolls are raised and lowered using three electric motors. The raising and lowering motors for the front and rear bending rolls are located to the left of the machine, whereas the motor for the pinch roll (lower roll) is located to the right.

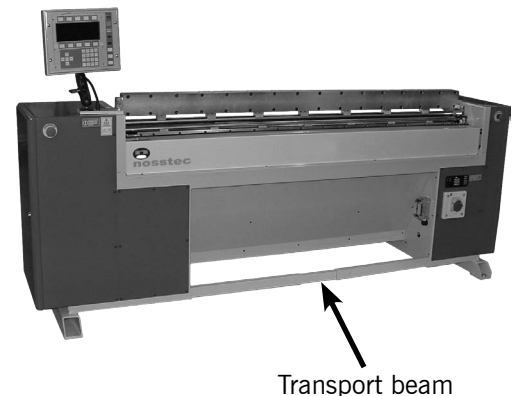


Before transport

The pinch roll must be moved to its upper end position. The bending rolls are moved up to half their stroke length to prevent the upper roll with crowning support from vibrating.

Transport beam

A forklift can be used to lift the machine, but only with the transport beam fitted. The transport beam is removed when the machine is in its new location.



Moving

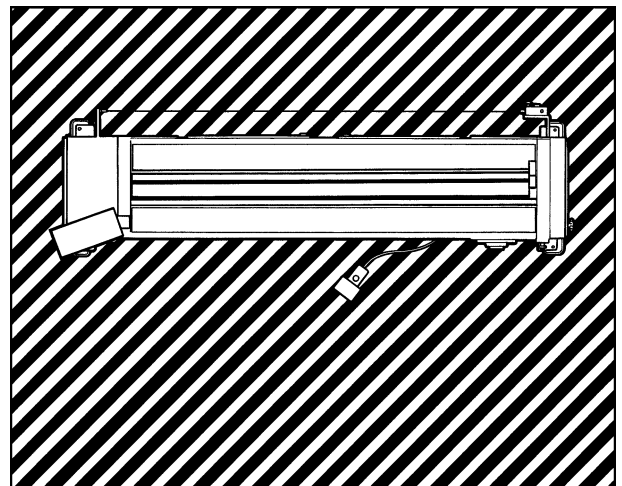
A forklift is used to lift and move the machine. Slide the forks under the machine.

Machine anchoring

Check that the floor is level and completely flat where the base plates of the machine will be placed. The machine must be firmly bolted to the floor using four expanding bolts of diameter 12mm. The base plates of the machine have holes intended for this purpose.

Danger area

The danger area around the machine (see figure) must be indicated in an appropriate way, for example with markings on the floor. The size of the danger area depends on the size of the work pieces. In the case of standard reflectors, the danger area must extend 2 metres in front of the machine, 1 metre behind the machine, and 1 metre from the ends. In the case of larger work pieces, the danger area at the front and rear of the machine must be extended. While work is underway, the operator must ensure that nobody is allowed to enter the danger area. If anyone enters the danger area, work must be stopped immediately.



INSTALLATION

Electrical connection

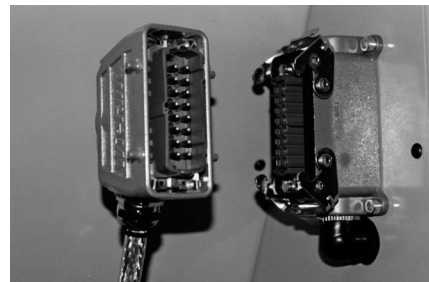
The machine is connected to a 400 volt five-wire system (three phase, neutral and earth). 400, 220 and 24 volts are used in the machine for different functions.



Only authorised personnel are to make connections and carry out repairs to the electrical equipment in the machine!

Foot pedal

Connect the foot pedal multicontact. The machine cannot be operated unless the multicontact is connected.



Foot pedal multicontact

Protective equipment

Check that all protective and emergency stop functions are fitted and are functional.

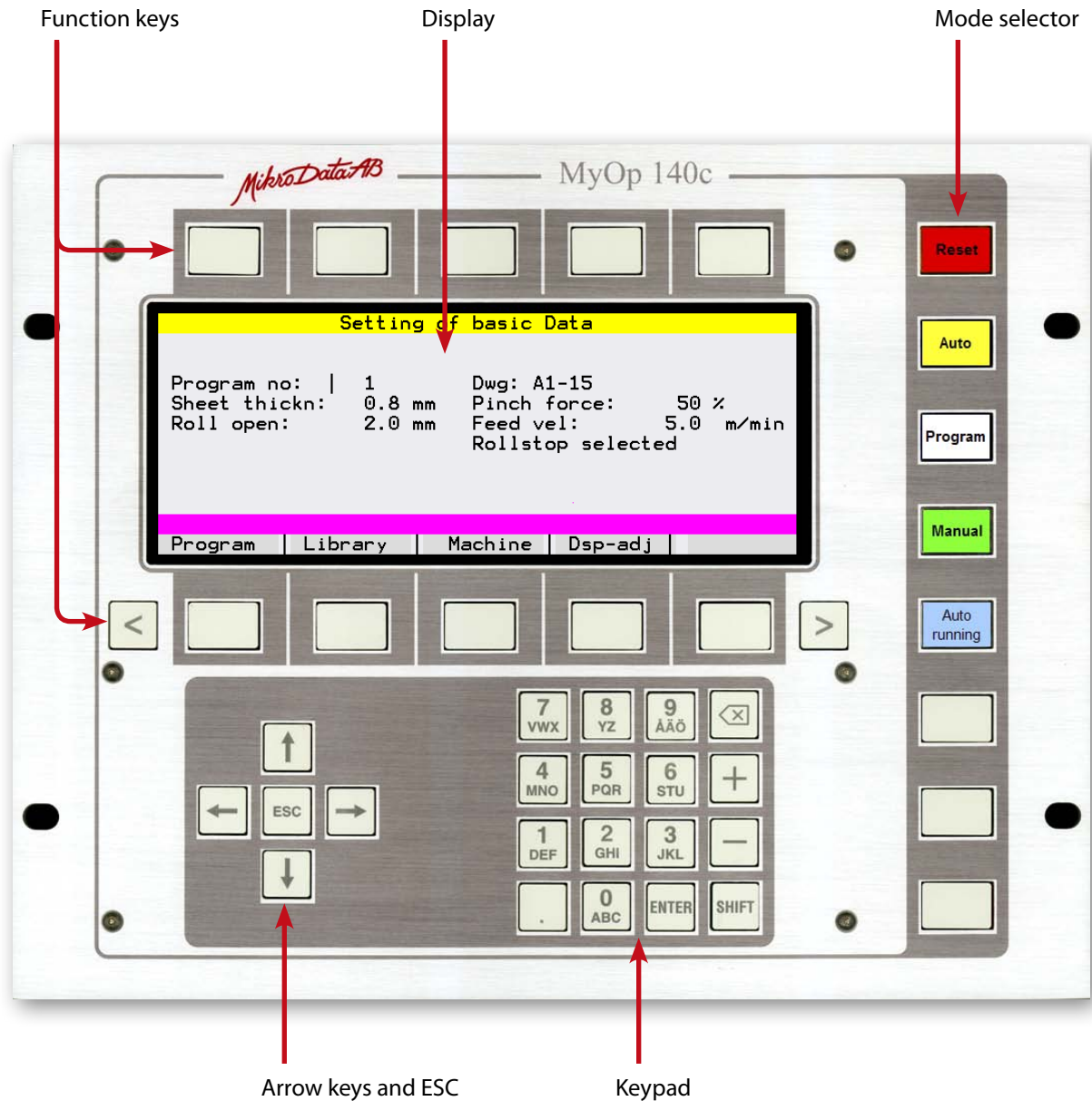
Start

Turn the main switch located at the top right of the machine to position 1.

Check parallelism

A parallelism check must be carried out before the machine is put into use or components are removed. See the section Mechanical adjustments.

Control panel, overview



The control system is managed from the control panel. The panel has a logical layout to make your work easier.

OPERATION

Mode selector

The mode selector consists of five keys with various functions.

Reset

If an emergency stop or other stop function has been activated, the machine and control panel will not restart until you press the Reset key. You also need to press the Reset key if the main power supply has been disconnected. See also Emergency stop in the Security section.

Auto

Auto mode means that the selected program can be started using the foot pedal.

Program

Program mode is used to find specific items, select the language, adjust the display, program new items, change existing items and review existing settings.

Manual

Manual mode is used for the manual bending of special formats, for test runs and for calibration.

Auto running

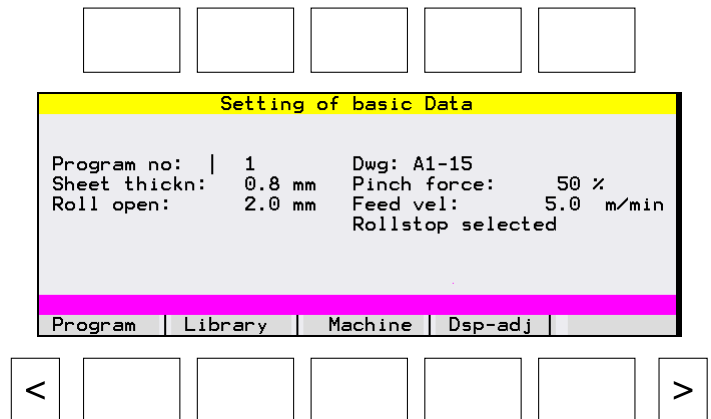
The CYCLE light illuminates while the machine is running a program in Auto mode.



NOTE: In Auto mode, bending takes place automatically when you press the foot pedal. Check the shape of the item before running the program so that you know which movements the machine will make. This means there will be no surprises, which may lead to injury.

Display window

The display of the machine provides the operator with the necessary information about the current operation and the settings. The display shows various screens depending on the current mode of the machine.



Marker

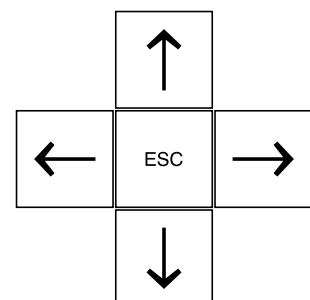
The display contains a marker indicating where your input will go. The marker looks like a line underneath the character, or else like a rectangle.

Function keys

Above and below the display, there are two rows of five function keys. The keys have different functions depending on the current screen in the display. The top and bottom rows of the screen show the function of each button.

Arrow keys and Esc

The arrow keys are used to move the marker around the display.



OPERATION

Keypad

The keypad is used to enter numbers (and letters) at the location indicated by the marker.

Delete key

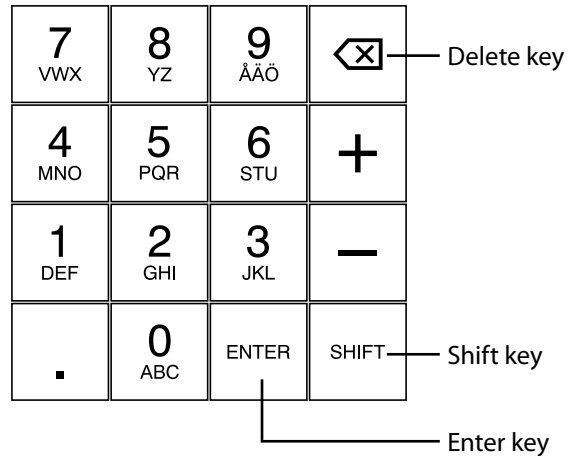
To delete the value you have just entered or the text you have just typed.

Shift key

You can press Shift to switch to letter mode (see below).

Enter key

Press Enter to confirm the value you have just entered.



Entering letters

You can press SHIFT to use the letters shown on the number keys. To type A, press and hold down SHIFT and press the number key 0. To type B, first press and release SHIFT once, then press SHIFT again and hold it down while pressing the number key 0. So to type C, press and release SHIFT twice, then press SHIFT a third time and hold it down while pressing the number key 0.

Example:

0	= 0
<u>SHIFT</u> + 0	= A
SHIFT <u>SHIFT</u> + 0	= B
SHIFT SHIFT <u>SHIFT</u> + 0	= C

Where SHIFT is underlined, press and hold down the key while pressing the relevant letter key.

Program
Menu structure, Program mode

Use the relevant function key to change the screen shown on the display.

Setting of basic Data				
Program no:	1	Dwg:	A1-15	
Sheet thickn:	0.8 mm	Pinch force:	50 %	
Roll open:	2.0 mm	Feed vel:	5.0 m/min	
		Rollstop	selected	

Program	Library	Machine	Dsp-adj	

Adjustment of display				

+	Contrast	-	+	Backlight
				-
				Exit

MACHINE DATA SETTING		8835n rev 1.11
Roll diameter:	35.00 mm (9.1 m/min)	
Chainwheel, z1:	33 Cogs	
Chainwheel, z2:	33 Cogs	
Crowning:	2.60 mm	
Serial code#	195825137:0000	
Total count:	47551	

		US/D/F/S
		Exit

Prog	Drawing-no
0	
1	A1-15
2	A1-25
3	A1-35
4	ZBK153168
5	TITAN-8835
6	EX6-125
7	

Select	Exit

Line	Op	Pause	Stop	Clr prog	Delete
		Prebend	Bend	Feed	mm
1	Run	180.00	0.00	50.0	
2	Run	0.00	290.00	350.0	
3	END	*****			
4					
5					
6					
7					
8					

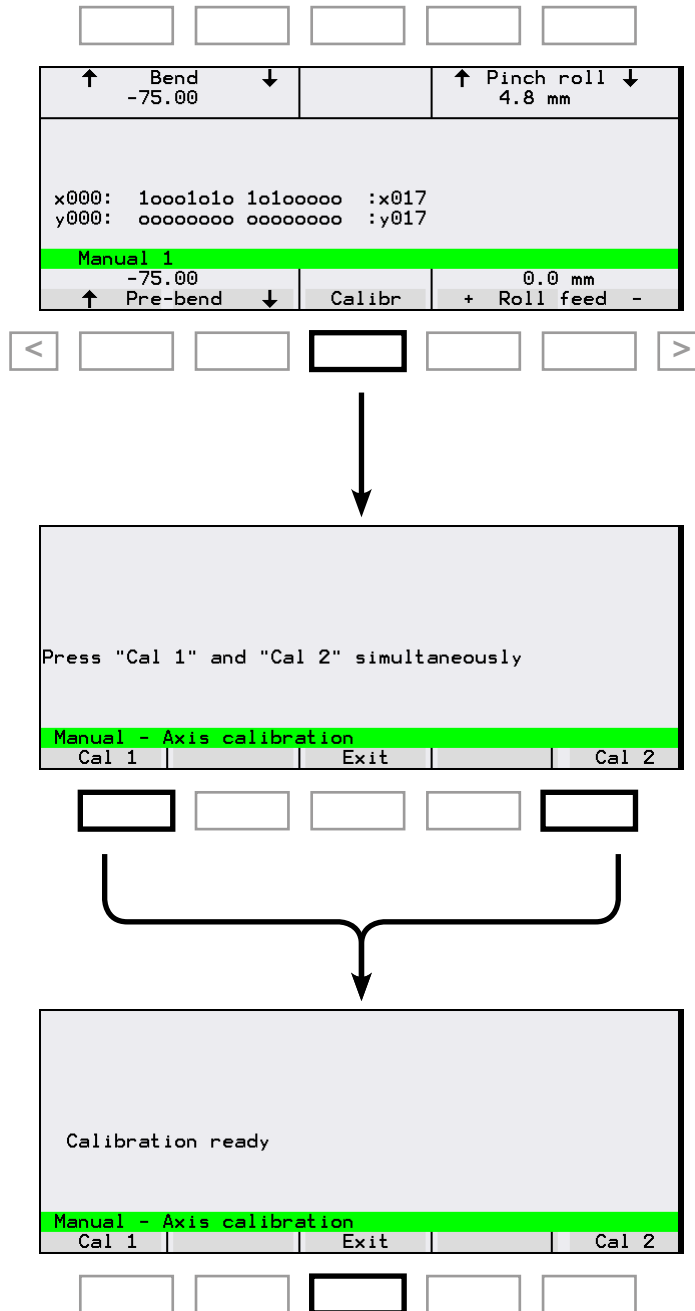
Run	I-pol	End	Insert	Exit	

OPERATION

Manual

Menu structure, Manual mode

The display shows how the function keys are used. Note that the pedal must be held in the operating position for any movement to take place. The calibration function is illustrated below. All movements are performed at lower speeds than in Auto mode.



Manual
Start

Use the main switch to connect the power supply. If the Reset key on the control panel is not illuminated, you must check and reset the emergency stop functions and the stop function in the foot pedal.

Checking functions

Check the function of all rolls using the relevant function key with the pedal pressed down to the operation position.

↑ Bend -75.00	↓		↑ Pinch roll ↓ 4.8 mm
<pre>x000: 10001010 10100000 :x017 y000: 00000000 00000000 :y017</pre>			
Manual 1			
↑ Pre-bend ↓	Calibr		0.0 mm + Roll feed -

OPERATION

Manual

Manual mode

Use the relevant function keys for feed, prebending and bending.

Feed position

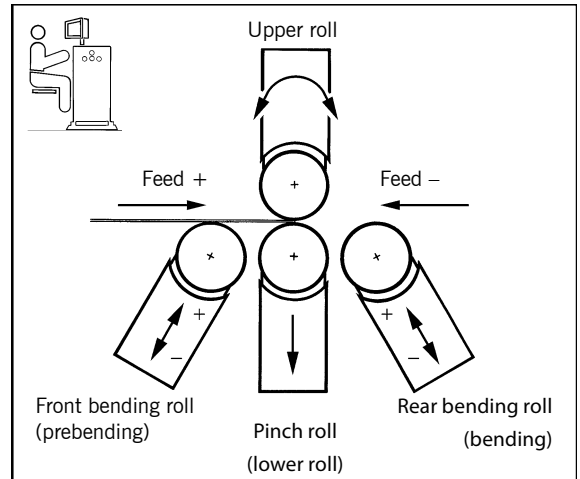
Indicates the current feed position of the work piece. You can reset the value by pressing the number key 0.

Bending/prebending rolls

Indicates the current position of the prebending and bending rolls.

Pinch roll

Indicates the current roll opening.



If you are running a test operation that you will be programming later, read the values and make a note of them so you can use them as a starting point for programming

↑	Bend	↓		↑	Pinch roll	↓
	-75.00				4.8 mm	
<pre>x000: 10001010 10100000 :x017 y000: 00000000 00000000 :y017</pre>						
Manual 1						
	-75.00				0.0 mm	
↑	Pre-bend	↓	Calibr	+	Roll feed	-



Warning! The feed, prebending and bending movements start slowly, but switch to a higher speed after one second.

Program

Program mode

With the mode selector in "Program" mode, you can select, create and change programs. You can also review stored programs and change the machine settings.

Program storage in general

Each "storage folder" (a data file on the memory stick) can handle up to 99 different programs, and each program can consist of up to 50 rows of instructions, 0-49. The control system allows up to 99 storage folders.

The machine comes equipped with a 2GB USB-connected memory stick. This will be sufficient for normal use. If there is a need for another memory stick for some reason, choose a version with a max storage capacity of 4GB and dedicate its use to the machine and its programs. Any other form will drastically slow down the read- and write speed of the control system.

Handling the program library

From the BASIC DATA screen, select "Library" to enter the program management section of the control system. This is where you manage the library of programs, and you have the option of loading and saving the current program.

Prog	drawing-no
0	RUN-IN
* 1	A0001
2	A0002
3	TITAN-8344
4	EX-004
5	
6	
7	
8	

PA000.MY USB Exit

Load Save A..Z

Load

Using the arrow keys you can select which program you want to load. The currently loaded program is marked with an asterisk (*, see screen above). Press the "Load" function key to load the selected program. To load programs stored in other folders, see under USB on how to change storage folder.

Save

When you want to save (or copy) the current program, use the arrow keys to select the program number you want to save to and press "Save". If the program number you have selected is in use, you will get a message (see screen shown) notifying that the position is occupied and you can then press "Save" again to overwrite the program already stored at that position (the previously stored program will be lost and can not be recovered). To save programs in other folders, see under USB on how to change storage folder.

Prog	drawing-no
* 1	A0001
2	A0002
3	TITAN-8344
4	EX-004
5	
6	
7	
8	
9	

Program 4 occupied PA000.MY USB Exit

Load Save A..Z

A..Z

This function key toggles the sorting of the stored programs between the program number ("Prog") and the drawing number/name ("drawing-no") stored.

Prog	drawing-no	A..Z
41	8863	
40	8868	
38	8881	
89	8965-9323	
37	9049	
34	9198	
93	9529	
31	9572	
* 1	A0001	

PA000.MY USB Exit

Load Save A..Z

OPERATION

Program storage in general, continued

USB

Pressing this function key opens the storage folder management. When you use the "Load" and "Save" functions within the USB storage folder management, you load/save an entire library of up to 99 programs in one go. The currently loaded storage folder is marked with an asterisk (*).

File Name	Status
* PA000.MY	Art.0: RUN-IN
PA001.MY	Art.0: SCANIA
PA002.MY	-
PA003.MY	Art.0: CYL35-48
PA004.MY	-
PA005.MY	Art.0: FLÅKTHUS
PA006.MY	-
PA007.MY	-
PA008.MY	-

USB-memory Program-Archives
 Load Save A..Z Exit

Note: Loading another storage folder does not affect the currently loaded program.

The control system allows for up to 99 different storage folders (PA001.MY – PA099.MY), each with up to 99 programs – allowing for a total of 9801 programs to be stored on the USB memory stick.

Load: Loads the currently selected storage folder and all of its up to 99 programs from the USB memory stick. If there are any programs in the loaded storage folder, the names of program 0 in each folder is displayed in the "Status" column. By setting/changing the name for program 0 in the storage folder, you can set/change the name displayed for each storage folder.

File Name	Status
* PA000.MY	Data
PA001.MY	Data
PA002.MY	-
PA003.MY	Data
PA004.MY	-
PA005.MY	Data
PA006.MY	-
PA007.MY	Data

Archive PA000.MY ...
 Loading...

If the current program hasn't been saved, you will be prompted to save the program as well as the entire storage folder.

Save: Saves or copies the currently loaded storage folder (up to 99 programs) to selected folder (PA001.MY – PA099.MY). If you want to save changes to the currently loaded storage folder, press "Save" with the currently loaded storage folder selected (marked with an asterisk, *).

File Name	Status
* PA000.MY	Data
PA001.MY	Data
PA002.MY	-
PA003.MY	Data
PA004.MY	-
PA005.MY	Data
PA006.MY	-
PA007.MY	Data

Current Program pending, must be saved to archive!!!
 Ignore + Ignore Save Exit

If the current program hasn't been saved, you will be prompted to save the program with another press on "Save", or ignore the warning by pressing both "Ignore" buttons at the same time.

A...Z: As with programs, this function key toggles the sorting of the storage folders by order ("File name") or by name ("Status" column).

File Name	Status	A..Z
PA010.MY	Art.0: 8344-RUN-IN	
PA013.MY	Art.0: AC013	
PA003.MY	Art.0: CYL35-48	
PA005.MY	Art.0: FLÅKTHUS	
* PA000.MY	Art.0: RUN-IN	
PA001.MY	Art.0: SCANIA	
PA002.MY	-	
PA004.MY	-	
PA006.MY	-	

USB-memory Program-Archives
 Load Save A..Z Exit

Deleting whole or parts of a program

It is easy to delete all or part of a program. From the BASIC DATA menu, press the function key labelled "Program". This takes you to the program sequence. If you press the "Clr prog" function key on program step 1, the entire program is deleted. "Clr prog" deletes the line containing the marker and all lines after it. The function key labelled "Delete" deletes only the line containing the marker.

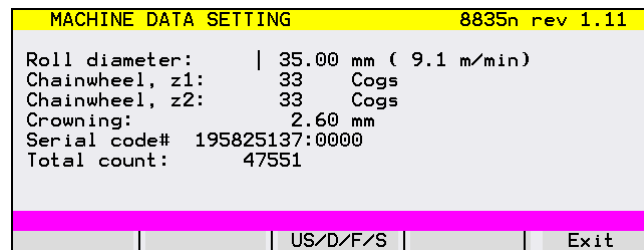
Pause	Stop	Clr prog	Delete
Line	Op	Bend	Feed
5	Run	242.00	80.0mm
6	I-pol	172.00	80.0mm
7	Run	172.00	590.0mm
8	I-pol	242.00	80.0mm
9	Run	242.00	140.0mm
10	I-pol	0.00	60.0mm
11	END	*****	
12			
Run	I-pol	End	Insert
			Exit

OPERATION

Program

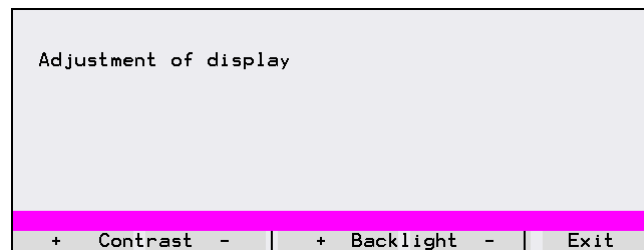
Machine data settings

If you press the function key labelled "Machine" from the BASIC DATA menu, a screen appears with machine data. You cannot change the data—it is displayed for information only. You can also use this menu to select the language you want the control system display to use.



Display adjustment

If you press the function key labelled "Dsp-adj" from the BASIC DATA menu, a screen appears with control system display settings. In this screen, you can use the function keys to increase/reduce the contrast and brightness of the display.



Program
Entering basic data

You can use the BASIC DATA menu to specify the sheet thickness, roll opening, item number, pinch force, feed and roll stop.

Setting of basic Data							
Program no:	1	Dwg:	A1-15				
Sheet thckn:	0.8 mm	Pinch force:	50 %				
Roll open:	2.0 mm	Feed vel:	5.0 m/min				
		Rollstop selected					
<table border="1"> <tr> <td>Program</td> <td>Library</td> <td>Machine</td> <td>Dsp-adj</td> </tr> </table>				Program	Library	Machine	Dsp-adj
Program	Library	Machine	Dsp-adj				

Sheet thickness

Enter the sheet thickness, i.e. the thickness of the material.

Roll opening

Set the roll opening slightly higher than the sheet thickness. This setting is only normally used in roll stop mode.

Item number

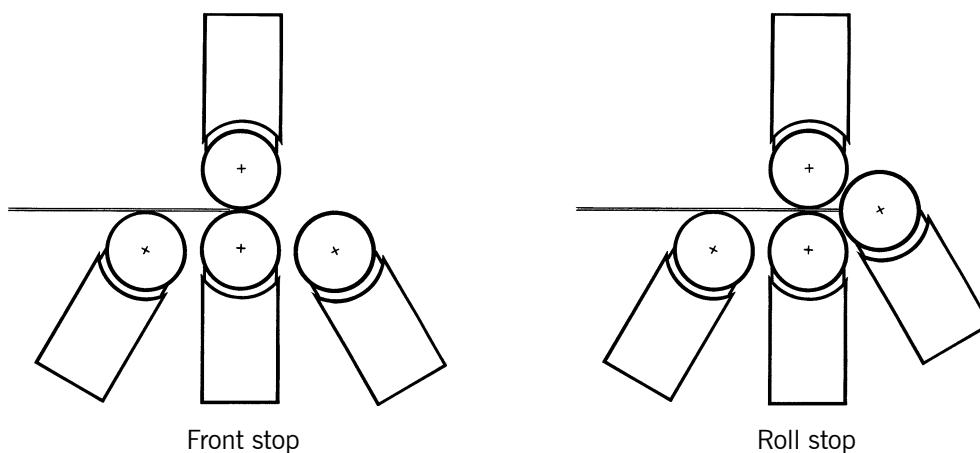
Use the numeric keypad to enter the item number. The item number can also include letters. See the Control panel section for more information about how to enter letters.

Pinch force

The pinch force is normally set to 50% but you can adjust this percentage, for example if the material is colder or warmer than usual or is of a different quality. These factors can make the difference between an acceptable and unacceptable end result.

Roll stop

Select whether you want to use front stop mode or roll stop mode. In roll stop mode, you must also set the roll opening to a suitable value. Front stop mode is the standard mode.



OPERATION

Program

Entering program sequence

Now that you have entered all the basic data, you can input the actual program sequence. From the BASIC DATA menu, press the function key labelled "Program" to access the program sequence. Sequence steps are numbered with line numbers (see figure). You can use the function keys to enter the various commands. When you have finished entering the program sequence, press the function key labelled "Exit" to return to the BASIC DATA menu.

Line	Op	Prebend	Bend	Feed mm	
1	Run	0.00	0.00	54.5	
2	Run	0.00	290.00	70.0	
3	Run	0.00	0.00	221.0	
4	Run	0.00	290.00	70.0	
5	Run	0.00	0.00	161.0	
6	Run	0.00	290.00	70.0	
7	Run	0.00	0.00	221.0	
8	Run	0.00	290.00	70.0	
Run		I-pol	End	Insert	Exit

You can use the following commands:

Run

Enter the values for feed, prebending and bending to be used in the current program step. This command is used to bend a constant radius.

I-Pol (interpolation)

In this function, the feed and bending rolls are synchronised with each other. This function can be used to bend an elliptical shape, for example, or to obtain a more gentle transition at the beginning or end of a radius.

End

The program sequence must always be terminated with this command, which informs the machine that the entire program sequence has been completed.

Insert

Inserts an empty line into the program sequence.

Pause and Stop

Places the machine in pause mode, waiting for the foot pedal to be pressed again.

Clr prog

Deletes the line containing the marker and all lines after it. If this command appears on the first line of the program sequence, the entire program is deleted from memory.

Delete

Deletes the program line containing the marker. Only one program line is deleted at a time.

Program
Programming example

Setting of basic Data				
Program no:	1	Dwg:	A1-15	
Sheet thickn:	0.8 mm	Pinch force:	50 %	
Roll open:	2.0 mm	Feed vel:	5.0 m/min	
		Rollstop selected		
Program	Library	Machine	Dsp-adj	

These are the standard settings in the basic data menu for bending reflectors. The roll opening is set to 0 (zero) because the opening between the upper and lower rolls is used as an end stop for the sheet. The sheet is therefore pressed against the meeting point of the two rolls, and the bending cycle is started with the foot pedal. NB! The pedal must be pressed down throughout the bending cycle.

The pinch force is usually always set to 50%. The value can be adjusted to account for various hard sheet qualities.

The feed velocity can usually always be set to the maximum of 9.1m/min. However, when large reflectors are being worked, it may be a good idea to reduce the velocity slightly.

To make programming as straightforward as possible, the drawings must include the distance of the radiuses, and also the length of the transitions between the radiuses. The transitions should be 20-30mm in length to prevent discrepancies or lines appearing in the bent sheet.

The distances in the drawing are used as guideline values in programming. They may need to be adjusted slightly between themselves to produce the intended shape. However, the total feed distance is always the same as specified in the drawing.

The bending values to produce a particular shape either come from experience, or different values can be tried out. The value may need to be adjusted after the first shape is worked.

OPERATION

Program

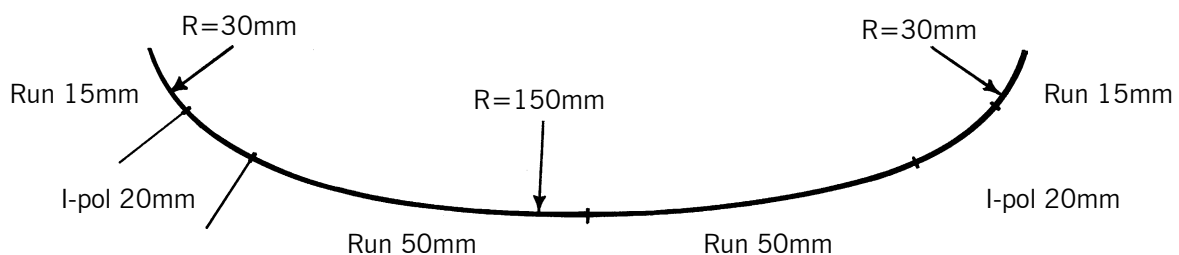
Programming example 1

This piece is an elliptical mid section of a reflector with two radiuses.

Line	Operation	Prebending	Bending	Feed mm	Comment
1	Run	0	0	3	Feeds the sheet between the rolls.
2	Run	300	0	15	The front bending roll is raised and the machine bends the first radius over a distance of 15mm.
3	I-pol	230	200*	20	The front bending roll is changed to the lower value in a synchronised movement, with 20mm feed.
4	Run	230	200	50	The machine bends the constant "central radius" with 50mm feed.
5	Run	0	250	50	The machine switches to the rear bending roll and continues bending the "central radius".
6	I-pol	0	320	20	The front bending roll is changed to the higher value in a synchronised movement, with 20mm feed.
7	Run	0	320	15	The machine bends the last radius with 15 mm feed.
8	END				

* The machine raises the rear bending roll to a value slightly less than the value actually used for bending later. This is done in order to place the roll in the "standby position" ready for bending, primarily to shorten the cycle time as much as possible.

Tip! Add around 10mm to the final feed to make sure the piece is fully ejected from the machine.



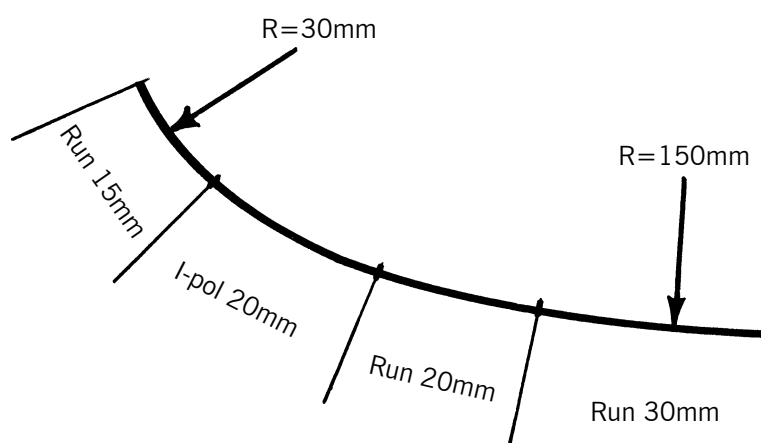
Program
Programming example 2

This piece is an elliptical side section of a reflector with two radiuses.

Line	Operation	Prebending	Bending	Feed mm	Comment
1	Run	0	0	3	Feeds the sheet between the rolls.
2	Run	300	0	15	The front bending roll is raised and the machine bends the first radius over a distance of 15mm.
3	I-pol	230	200*	20	The front bending roll is changed to the lower value in a synchronised movement, with 20mm feed.
4	Run	230	200	20	The machine bends the constant "large radius" with 20mm feed.
5	Run	0	250	30	The machine switches to the rear bending roll and continues bending the last of the "large radius".
6	END				

- * The machine raises the rear bending roll to a value slightly less than the value actually used for bending later. This is done in order to place the roll in the "standby position" ready for bending, primarily to shorten the cycle time as much as possible.

Tip! Add around 10mm to the final feed to make sure the piece is fully ejected from the machine.



OPERATION

Auto

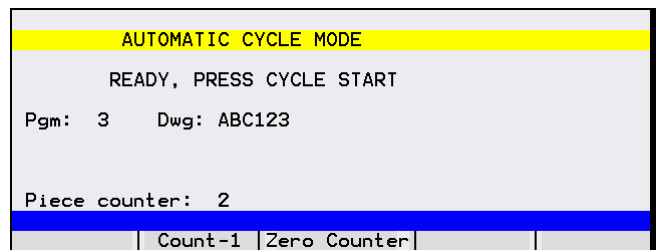
Auto mode

When the machine is in Auto mode, the selected program starts automatically as soon as you press the foot pedal. Note that you must keep the foot pedal pressed throughout the sequence, or the machine will stop.

There is only one menu in Auto mode, showing a range of information including the program number, item number, a piece counter and the next program line.

Piece counter

The machine has a built-in piece counter. The counter is incremented by one every time a program cycle is completed. To reset the counter, press the function key labelled "Zero Counter" when you start working. If a piece has to be scrapped during production, you can correct the counter by pressing the "Count-1" function key, which decrements the counter by one.



SERVICE AND MAINTENANCE

Manual

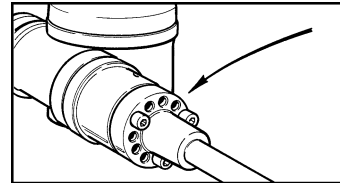
Check parallelism

Raise the pinch roll so that the distance between the upper and lower rolls is 0.5-1.0mm. To check parallelism, use a feeler gauge to measure the distance between rolls. Adjust the rolls if necessary.

Raise the bending rolls to their respective end positions and measure in the same way. Adjust the rolls if necessary.

↑ Bend ↓ -75.00		↑ Pinch roll ↓ 4.8 mm
x000: 10001010 10100000 :x017 y000: 00000000 00000000 :y017		
Manual 1		
-75.00		
↑ Pre-bend ↓	Calibr	+ Roll feed - 0.0 mm

Any necessary roll adjustment is done by rotating the drive shaft coupling. The roll is adjusted by 0.05mm for each hole by which the coupling is rotated.



Zero point calibration

To calibrate the zero point of the machine, switch the mode selector to Manual.

Press the "Calibr" function key. The calibration menu appears, and to complete calibration press both function buttons labelled "Cal 1" and "Cal 2" at the same time. Keep the buttons pressed until the bending rolls have reached their low positions and the text "Calibration ready" appears on screen.

↑ Bend ↓ -75.00		↑ Pinch roll ↓ 4.8 mm
x000: 10001010 10100000 :x017 y000: 00000000 00000000 :y017		
Manual 1		
-75.00		
↑ Pre-bend ↓	Calibr	+ Roll feed - 0.0 mm

Press "Cal 1" and "Cal 2" simultaneously			
Manual - Axis calibration			
Cal 1		Exit	Cal 2

Calibration ready			
Manual - Axis calibration			
Cal 1		Exit	Cal 2



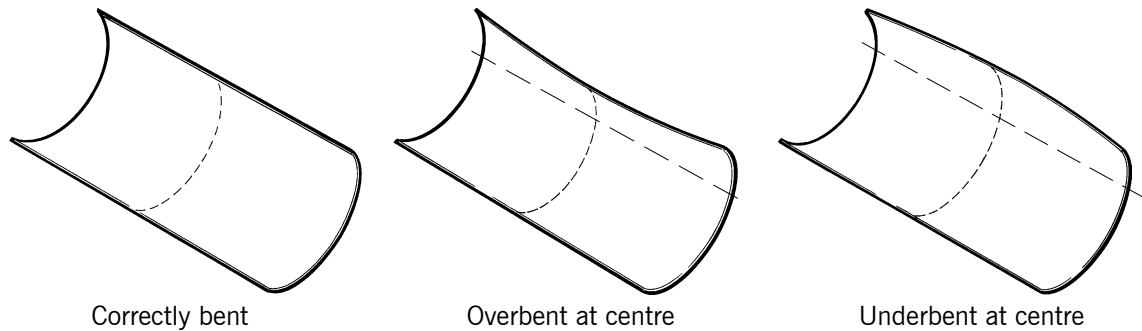
IMPORTANT! Verify the zero point and other functions in accordance with the instructions above before starting to use the machine or after it has been disassembled.

SERVICE AND MAINTENANCE

Adjusting the crowning support

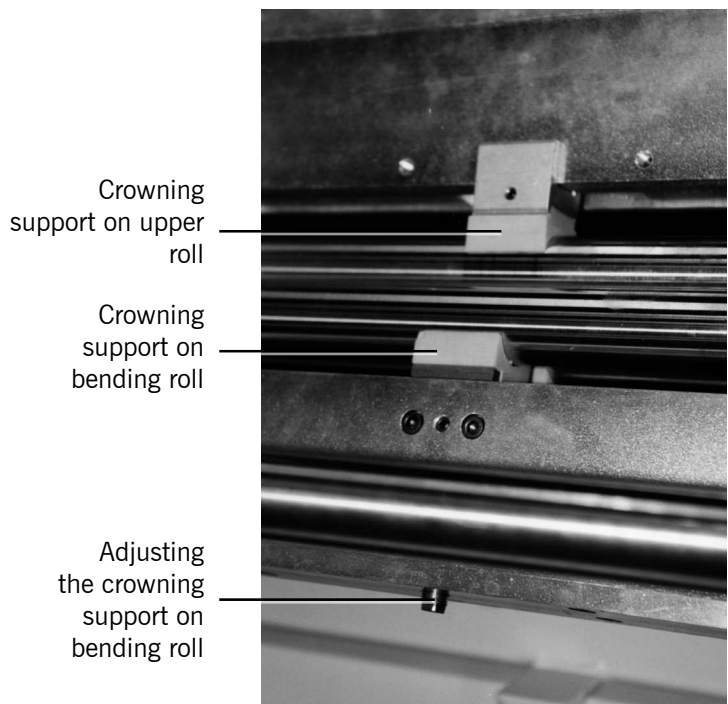
If the work piece is warped, underbent or overbent, the crowning support needs to be adjusted. Reduce the crowning slightly if the work piece is overbent, or increase it if the work piece is underbent.

The figure below illustrates, in an exaggerated way, work pieces that have been correctly bent, overbent and underbent.



You can use an ordinary screwdriver from above to adjust the crowning of the upper roll, but you will need the square spanner supplied with the machine toolkit to adjust the three lower rolls.

When adjusting the crowning, i.e. the tension of the crowning supports, you should start with the lower roll and the bending rolls. Assume that the roll is straight when it is not subject to load, and position the central support. Tighten the support $\frac{1}{2}$ a turn. Adjust the side supports so they are seated against the roll. Position the support on the upper roll, but do not tighten. Bend a test sheet. If it is underbent as shown in the figure above, tighten the upper roll as much as the lower rolls. Test again and adjust if necessary. If the first test piece is overbent, the tension of the lower rolls must be reduced by half. Bend a test sheet and adjust if necessary. Now check that the bent piece has the same radius throughout its length. If not, individual supports may need to be adjusted.



After the crowning of all the rolls has been carefully adjusted, it will only be necessary to adjust the upper roll to account for differences between products.

SERVICE AND MAINTENANCE

Lubrication

The machine must be lubricated using high quality grease once a month in normal use.

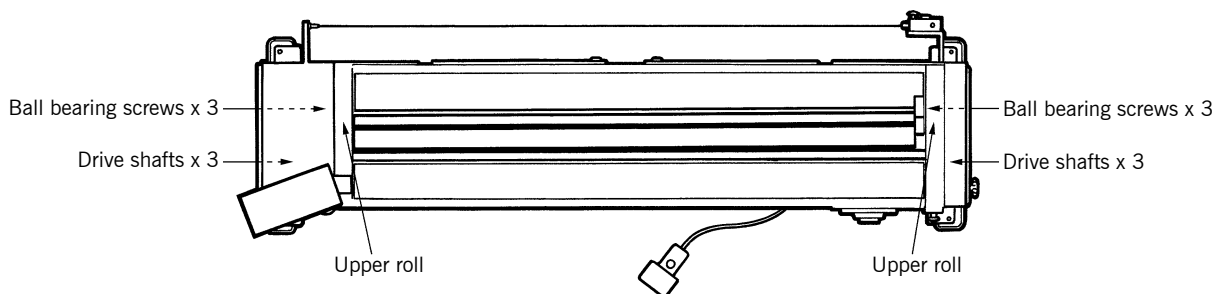
The grease cups for the ball bearing screws and drive shaft can be accessed from the ends of the machine. If the grease cups for the ball bearing screws are not in the right position for lubrication, close the doors and start the feed until they move to the right position.



Ball bearing screws

Grease cup

Location of grease cups



The drive chains must be lubricated every six months using a grease gun or oil spray. All gears are lubricated for life and never need additional lubrication.

Chain tension

Check the tension of the drive chain when necessary. You should be able to deflect the chain approximately 20mm sideways with slight pressure applied to the middle of the open section. It is particularly important to check the chain tension during the run-in period of the drive chains.

Cleaning the machine

The machine should be cleaned at regular intervals, and the working area around the machine should also be kept clean for maximum safety.



The drive chains must be lubricated every six months, and the chain tension must be checked when necessary.

The figure also shows the grease cups for the drive shafts (marked with a circle).

TROUBLESHOOTING

Troubleshooting

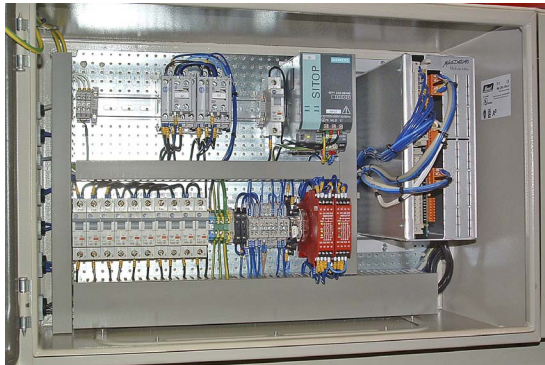
This section describes the most common problems together with their causes and solutions.

Symptom	Likely cause	Solution
The machine does not start even though the power supply is connected.	An emergency stop function or other stop function has been activated.	Check and reset all emergency stop functions and reset the machine by pressing RESET on the control panel.
The machine does not start even though the power supply is connected.	A fuse or motor protection device has been triggered, or the multicontact of the foot pedal is not connected.	Check the fuses and motor protection devices, see page 39. Check the multicontact of the foot pedal, see page 8 and 16.
The work piece is warped, underbent or overbent.	The crowning supports of the rolls are incorrectly adjusted.	Adjust the crowning, see page 36.

FUSES AND MOTOR PROTECTION

Fuses and motor protection devices

The machine is equipped with two electrical cabinets, accessible at the rear of the machine. The cabinet on the left contains circuit breakers, glass fuses and safety relays, and the cabinet on the right contains frequency converters and relays. If the machine does not work properly, you should check the circuit breakers and glass fuses, and also the motor protection devices. The machine can also be disabled by the stop and emergency stop functions. Check that three phases are connected to the machine. If not, check the circuit breakers in the main cabinet.



Electrical cabinet with fuses



Electrical cabinet with frequency converters

Cabinet A1

ID	Type	Function	
F1A	Circuit breaker	Frequency converter U1	Feed/lift
F1B	Circuit breaker		
F1C	Circuit breaker		
F3A	Circuit breaker	Frequency converter U3	Bending, rear
F3B	Circuit breaker		
F3C	Circuit breaker		
F4A	Circuit breaker	Frequency converter U4	Bending, front
F4B	Circuit breaker		
F4C	Circuit breaker		
F10	Circuit breaker	DC system G1	Power supply 24V
F11	Circuit breaker	Brakes, cooling fan	Feed/lift
F601	Wire fuse	Control system	24VDC
F602	Wire fuse	Control current	24VDC
Q1, Q2	Main contactors		
G1	DC system	Power supply 24VDC	
KA1	Emergency stop relay	Emergency stop chain	
KA10	Emergency stop relay	Foot pedal, start	
KA01	Emergency stop relay	Reset emergency stop chain	
MyLoc 140	Control system		

Cabinet A2

ID	Type	Function	
U1	Frequency converter	Feed/lift	
U3	Frequency converter	Bending, rear	
U4	Frequency converter	Bending, front	
K1	Contactors	Feed	
K2	Contactors	Lift	
KA11	Relay	Brake, feed	
KA12	Relay	Brake, lift	
Q0	Switch	Main switch	

Cabinet A0

ID	Type	Function	
Q0	Switch	Main switch	

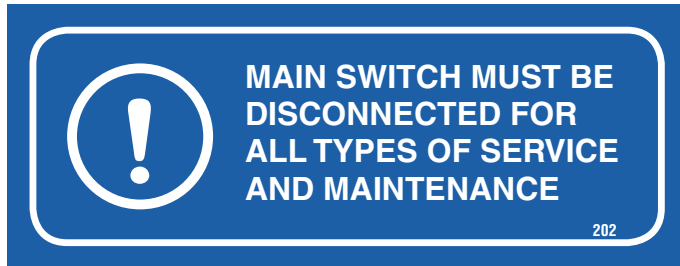
TECHNICAL DATA

Technical data, model 8835

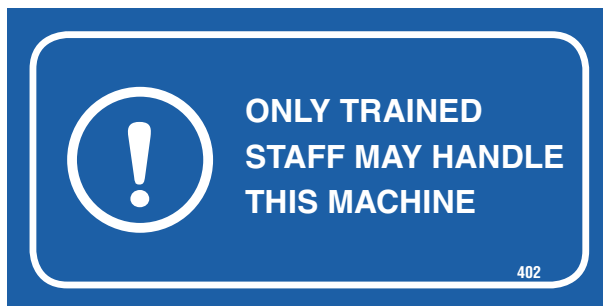
Overall dimensions (length x width x height)	2500x800x1400 mm
Total weight	900 kg
Supply current	16 A
Supply voltage 3-phase	400 volt
Maximum feed velocity	9.1 m/min
Maximal sheet thickness aluminium (250N/mm ²)	0.5 mm
Maximal working width	1890 mm
Roll diameter	35 mm
Motor, roll drive	0.75 kW
Motor, bending rolls	0.37 kW
Motor, pinch rolls	0.37 kW

In our constant efforts to improve our products, we retain the right to change the design and specifications at any time without prior notice.

MACHINE PLATES AND STICKERS



Blue background, white text



Blue background, white text



Red background, white text



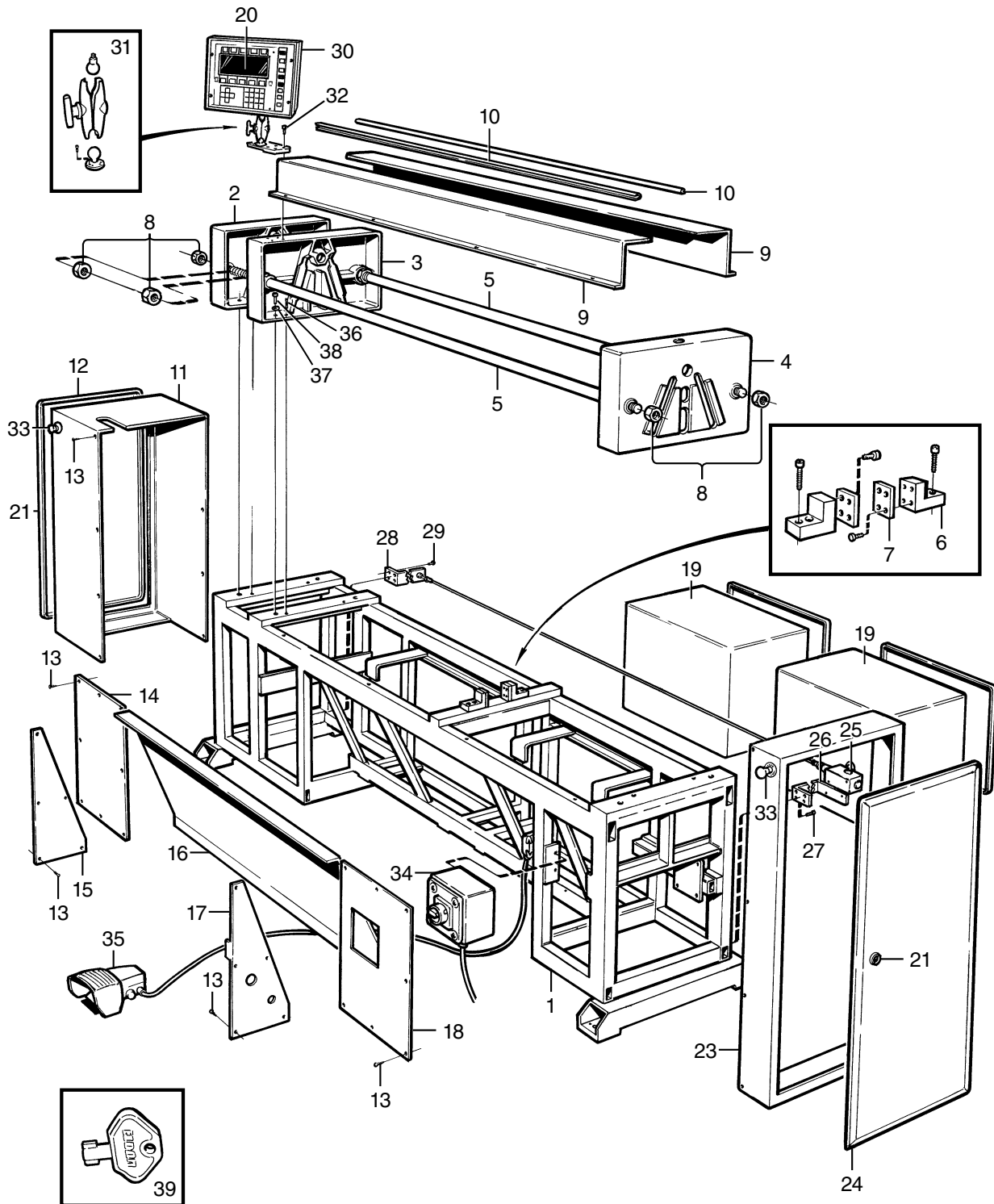
Yellow background, black text



Yellow background, black text

SPARE PARTS

CHASSIS



NMVI0010 Rev. 3



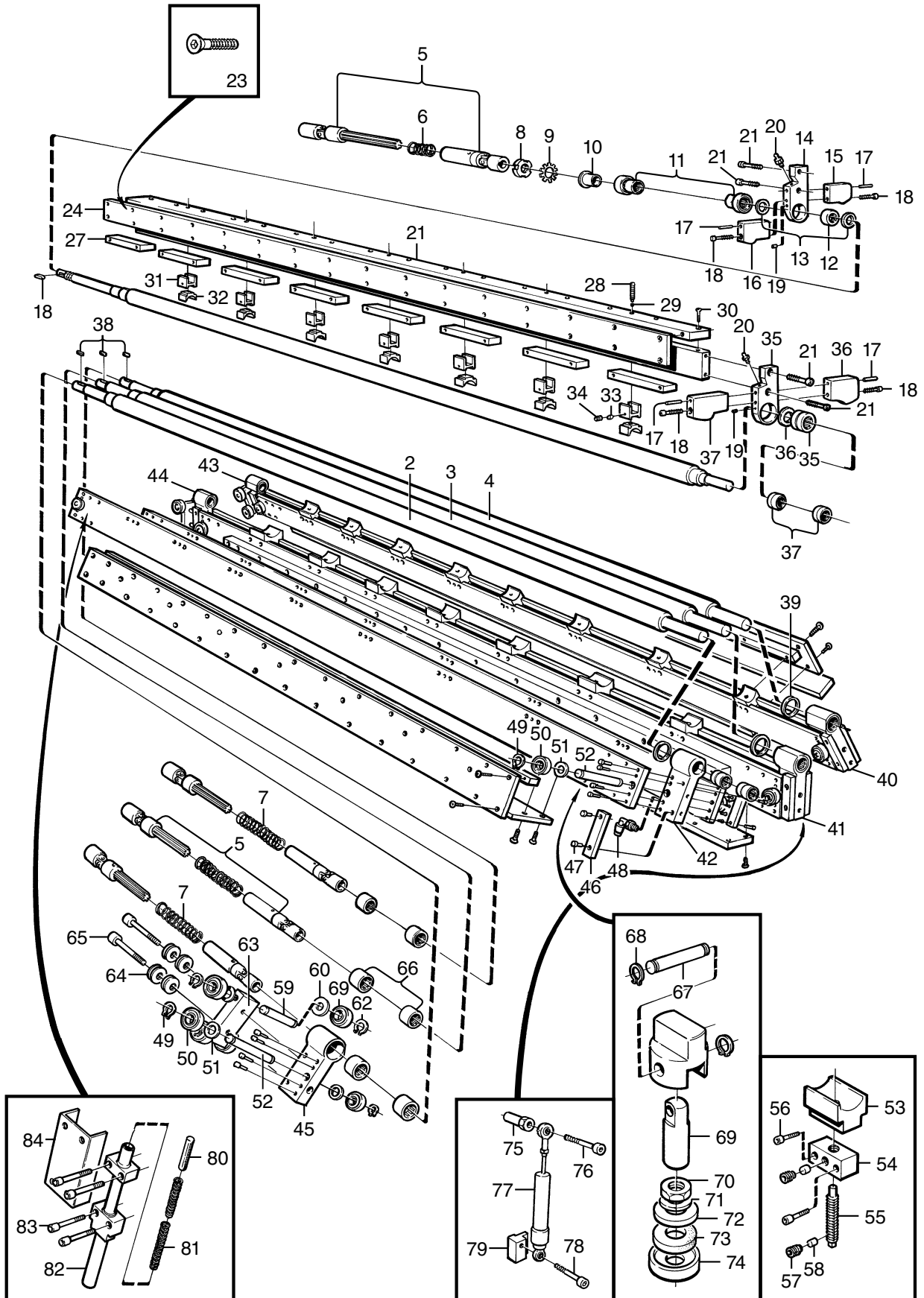
CHASSIS

Position	Qty	Description
1	1	Frame
2	1	End piece
3	1	End piece
4	1	End piece
5	2	Strut
6	2	Support
7	2	Slide plate
8	8	Nut
9	2	Protective panel
10	2	Rubber strip
11	1	Cover
12	1	Hatch
13		Screw
14	1	Cover panel, front left
15	1	Side panel, left
16	1	Front panel
17	1	Side panel, right
18	1	Cover panel, front right
19	2	Electrical cabinet with door

Position	Qty	Description
20	1	Control panel
21	2	Lock
23	1	Cover
24	1	Hatch
25	1	Emergency stop switch
26	1	Fixing
27		Screw
28	1	Fixing
29		Screw
30	1	Enclosure for control panel
31	1	Compl. fixing
32	4	Screw
33	2	Emergency stop
34	1	Main switch
35	1	Foot pedal
36	6	Tension pin
37	6	Washer
38	6	Screw
39	1	Key

SPARE PARTS

ROLLS



NMVI0020 Rev. 3



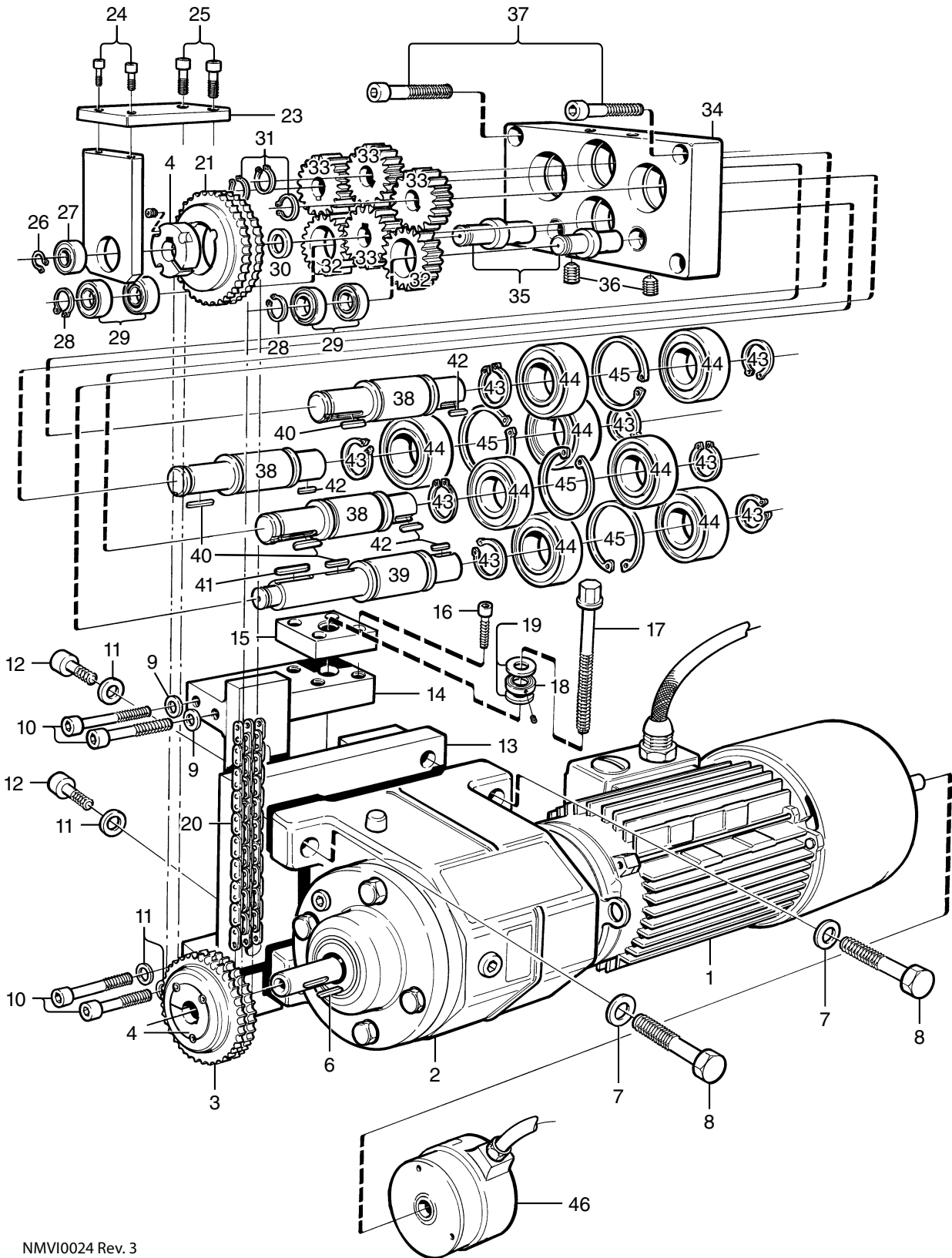
ROLLS

Position	Qty	Description
1	1	Upper roll
2	1	Front bending roll
3	1	Lower roll
4	1	Rear bending roll
5	4	Ball coupling
6	1	Spring
7	3	Spring
8	1	Shaft nut
9	1	Lock washer
10	1	Spacer
11	2	Combination bearing
12	1	Needle bearing
13	2	Spacing washer
14	1	Bearing house, left
15	1	Support arm, rear left
16	1	Support arm, front left
17	4	Cylindrical pin
18	4	Screw
19	2	Stop screw
20	2	Grease nipple
21	4	Screw
22	1	Stop wedge
23	64	Screw
24	1	Crowning support, front bracing
25	1	Crowning support, upper bracing
26	1	Crowning support, rear bracing
27	8	Crowning support, spacer
28	8	Adjusting screw
29	8	Plastic peg
30	16	Screw
31	8	Guide shoe fixing
32	8	Guide shoe
33	8	Plastic peg
34	8	Screw
35	1	Needle bearing
36	1	Spacer
37	2	Needle bearing
38	3	Stop wedge
39	3	Spacer
40	1	Bearing housing, rear right
41	1	Bearing housing, centre right
42	1	Bearing housing, front right

Position	Qty	Description
43	1	Bearing housing, rear left
44	1	Bearing housing, centre left
45	1	Bearing housing, front left
46	12	Guide strip
47	24	Screw
48	6	Grease nipple
49	12	Lock ring
50	12	Deep groove ball bearing
51	12	Spacer
52	6	Shaft
53	23	Guide shoe
54	23	Fixing
55	23	Adjusting screw
56	46	Screw
57	46	Stop screw
58	46	Plastic peg
59	6	Shaft
60	12	Spacer
61	12	Deep groove ball bearing
62	12	Lock ring
63	3	Yoke for support rolls
64	12	Spring washer
65	6	Screw
66	12	Needle bearing
67	6	Shaft
68	12	Lock ring
69	6	Fixing for ball screw
70	6	Nut
71	6	Washer
72	6	Cover
73	6	Damping washer
74	6	Housing
75	1	Spacer
76	1	Screw
77	1	Position sensor
78	1	Screw
79	1	Fixing
80	2	Piston
81	4	Spring
82	2	Damper fixing
83	8	Screw
84	2	Cover

SPARE PARTS

DRIVE



NMVI0024 Rev. 3



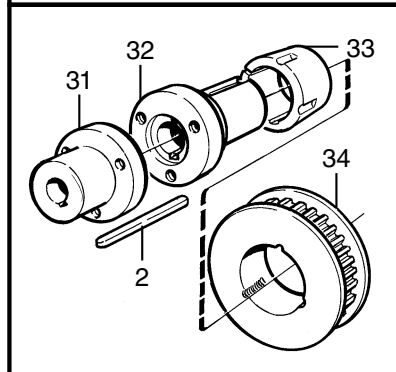
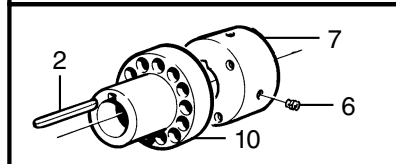
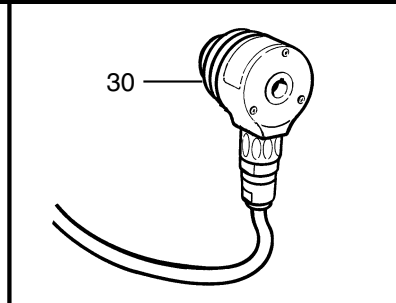
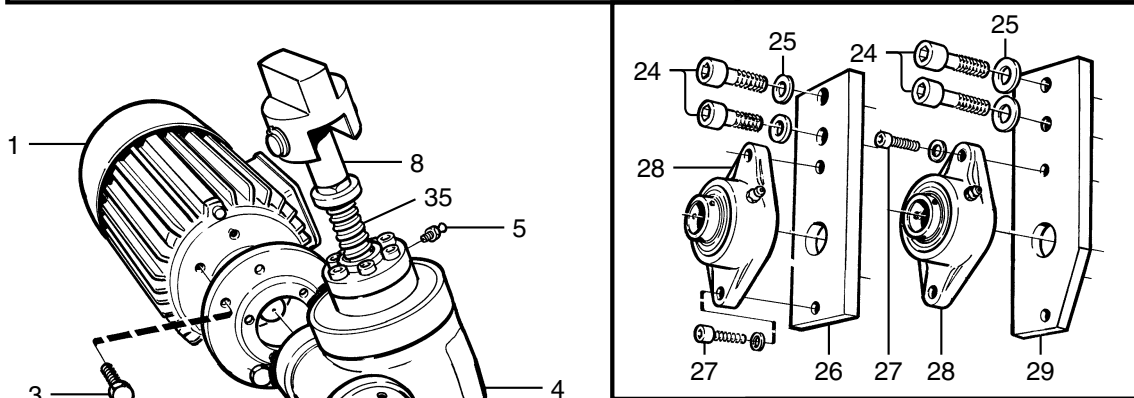
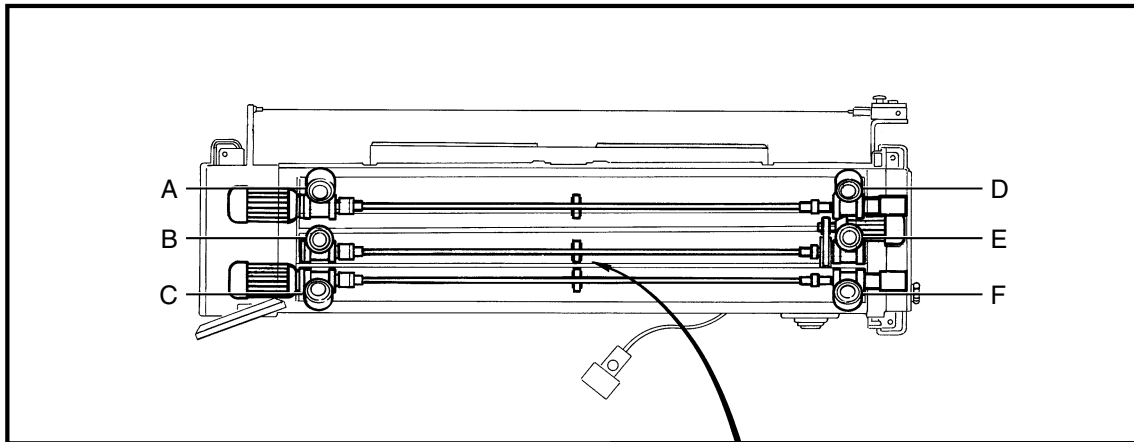
DRIVE

Position	Qty	Description
1	1	Motor
2	1	Gearbox
3	1	Chain drive
4	2	Hub
5	-	-
6	1	Stop wedge
7	4	Washer
8	4	Bolt
9	4	Washer
10	4	Screw
11	2	Washer
12	2	Screw
13	1	Motor fixing
14	1	Washer
15	1	Washer
16	4	Screw
17	1	Bolt
18	1	Washer
19	1	Screw
20	1	Drive chain
21	1	Chain drive
22	1	Shaft fixing
23	1	Shaft fixing

Position	Qty	Description
24	2	Screw
25	2	Screw
26	1	Lock ring
27	1	Ball bearing
28	2	Lock ring
29	4	Ball bearing
30	1	Spacer
31	3	Lock ring
32	2	Gear wheel
33	4	Gear wheel
34	1	Shaft housing
35	2	Shaft
36	2	Stop screw
37	4	Screw
38	3	Drive shaft
39	1	Drive shaft, lower roll
40	4	Stop wedge
41	1	Stop wedge
42	4	Stop wedge
43	8	Lock ring
44	8	Ball bearing
45	4	Lock ring
46	1	Pulse generator

SPARE PARTS

BALL BEARING SCREWS



NMVI0025 Rev. 3



BALL BEARING SCREWS

Position	Qty	Description
1	1	Motor
2	6	Stop wedge
3	8	Screw
4 A-F	6	Worm drive gear
5	6	Grease nipple
6	6	Stop screw
7	5	Shaft coupling
8		See rolls
9	12	Screw
10	5	Shaft coupling, adjustment
11	3	Shaft
12	6	Fixing
13	3	Threaded rod
14	3	Stop screw
15	3	Indexing ring
16	3	Fixing
17	6	Washer
18	8	Screw

Position	Qty	Description
19	3	Fixing
20	3	Sensor
21	6	Screw
22	3	Washer
23	3	Screw
24	6	Screw
25	6	Washer
26	1	Fixing, central
27	4	Screw
28	3	Bearing
29	2	Fixing
30	2	Pulse generator
31	1	Shaft coupling half
32	1	Shaft coupling half
33	1	Hub
34	1	Toothed wheel
35 A-F	6	Ball screw

DECLARATION OF CONFORMITY

Declaration of conformity

as per the EC Machinery Directive 98/37 EG, Annex II A.

Manufacturer: Nossebro Mekaniska Verkstad AB
SE 465 30 NOSSEBRO +46 512 298 80

Distributor: Nosstec AB
SE 465 30 NOSSEBRO +46 512 298 85

herewith declare that:

Machine:

Type

.....
Serial No

is manufactured in conformity with:

- The Council Directive of 2006/42/EG
- EMC Directive 2004/108/EG
- Low voltage directive 2009/96/EG

.....
Place and date

.....
Signature, Managing Director



nosstec

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