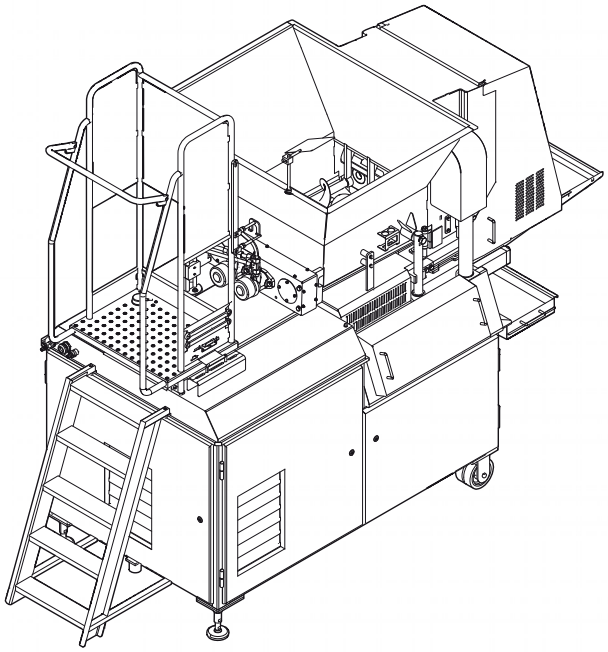

GEA MultiFormer 600

Machine number: E022110205312
Customer: Sol Cuisine

Original operating instructions

Date: 03-2019

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GEA Food Solutions Bakel B.V. P.O. Box 1 5760 AA Bakel The Netherlands	Visiting address: Beekakker 11, 5761 EN BAKEL Tel.: +31 492 349 349, Fax: +31 492 349 416 gea-foodsolutions.info@gea.com, www.gea.com KvK Eindhoven, 17044170; Dutch V.A.T. no NL005235911B01

EC - Declaration of conformity for machines

in accordance with EC Machinery Directive 2006/42 /EC, Annex II 1. A

Manufacturer:	GEA Food Solutions Bakel B.V. Beekakker 11 5761 EN Bakel, The Netherlands

We, as manufacturer, declare in sole responsibility that the machinery

Name:	Forming machine
Model:	GEA MultiFormer 600
Serial number:	E022110205312

complies to all relevant provisions of this and the following directives:

Relevant EC Regulations:	2006/42/EC	EC Machinery Directive
	2014/30/EU	EMC-Directive
	EC 1935/2004	Articles with foodstuff contact
	EU 10/2011	Plastic materials and articles
Applied harmonized standards, in particular:	DIN EN 61000-6-2:2006-03	Immunity for industrial environments
	DIN EN 61000-6-4:2011-09	Emission for industrial environments
	EN 15165	Forming machines - Requirements for safety and hygiene

Remarks:	We also declare that the special technical documentation for this machine has been created in accordance with Annex VII, Part A and we obligate to provide these upon reasoned request from the individual national authorities by data transfer.

Authorized person for compiling and handing over technical documentation:	GEA Food Solutions Bakel B.V. Alex Vlemmings Beekakker 11 5761 EN Bakel, The Netherlands

Bakel, 20-03-2019

Gerard Bastiaansen, Director

About this manual

The GEA MultiFormer, hereafter referred to as ‘the machine’, is manufactured by GEA. This manual provides information about day-to-day use, cleaning, maintenance and repair.

Subject(s)	Chapter(s)	Intended user(s)
Safety, Description	1, 2	All authorised personnel
Transport, installation	3	Local service personnel
Operation	4	Operator
Cleaning	5	Operator, cleaning personnel
Maintenance, Troubleshooting	6, 7	Operator, service personnel

– Familiarise yourself with the content;

– Follow all instructions;

– Never change the order of the operations to be carried out.

TABLE OF CONTENTS

1 SAFETY

1.1 Important information

This manual is intended to help you operate this machine safely and effectively. It is intended for use by people who have followed the training programme that this manual accompanies. If you have not followed this programme, but would like to do so, contact your supervisor or training manager. For details of training given by GEA, refer to ‘Further help and information’ later in this chapter.

This machine was designed with safety in mind, and includes features to help prevent injury and damage. However, all powerful machines can be dangerous if misused. This manual is intended to help you operate the machine in a safe manner. In this manual, the user is the body with authority over and responsibility for the machine - usually a company or a corporation. An operator is a person who physically interacts with the machine and/or the machine's control systems under the direction and with the consent of the machine's user. In GEA manuals, an operator includes a person who cleans the machine.

It is your responsibility to operate this machine in accordance with all the safety instructions and procedures in this manual, and with all other safety procedures in your workplace. It is the user's responsibility to make sure that the machine is correctly installed, configured, commissioned, operated, serviced and maintained and that such actions are only carried out by people who have been fully and properly trained for those tasks. It is also the user's responsibility to make sure that the machine is only used in full accordance with laws - and regulations, which have the force of law - in the jurisdiction in which the machine is installed.

Warning!

- Before attempting to use the machine, read, understand and know all the safety information in this chapter. Pay particular attention to all warnings and cautions throughout this manual. If you do not follow all the warnings and procedures in this manual, this could lead to serious injury to yourself or others, including death.
- If there is any safety instruction or procedure that you do not understand, do not use the machine. Contact your supervisor and arrange proper training on the use of the machine. Use of the machine without understanding and following all the safety instructions and procedures in this manual could lead to serious injury to yourself or others, including death.

Warning!

Do not use the machine until you are sure that the routine checks described have been completed and that the routine preventive maintenance programme is up-to-date. If any part of the machine is known (or suspected) to be defective or wrongly adjusted, do not use the machine until a repair has been made. Operation of the machine with defective or wrongly adjusted components could create safety hazards. This could lead to fatal or other serious personal injury.

Warning!

Do not use the machine until you have received adequate and proper training in its safe and effective use. If you are unsure of your ability to use the machine safely and effectively, do not do so. For information about training, refer to ‘Further help and information’ later in this chapter. The use of the machine without proper and adequate training could lead to fatal or other serious personal injury. Never attempt to remove, modify, over-ride or frustrate any safety device on the machine. Interfering with safety devices could lead to fatal or other serious personal injury.

1.2 Warning signs

Safety signs are attached to the machine to give safety information. All safety signs are repeated and usually further explained in this manual.

Classification of safety signs

Safety signs are of the three internationally accepted types and described below.

Warning sign that identifies a hazard.

In this example: Electric shock.

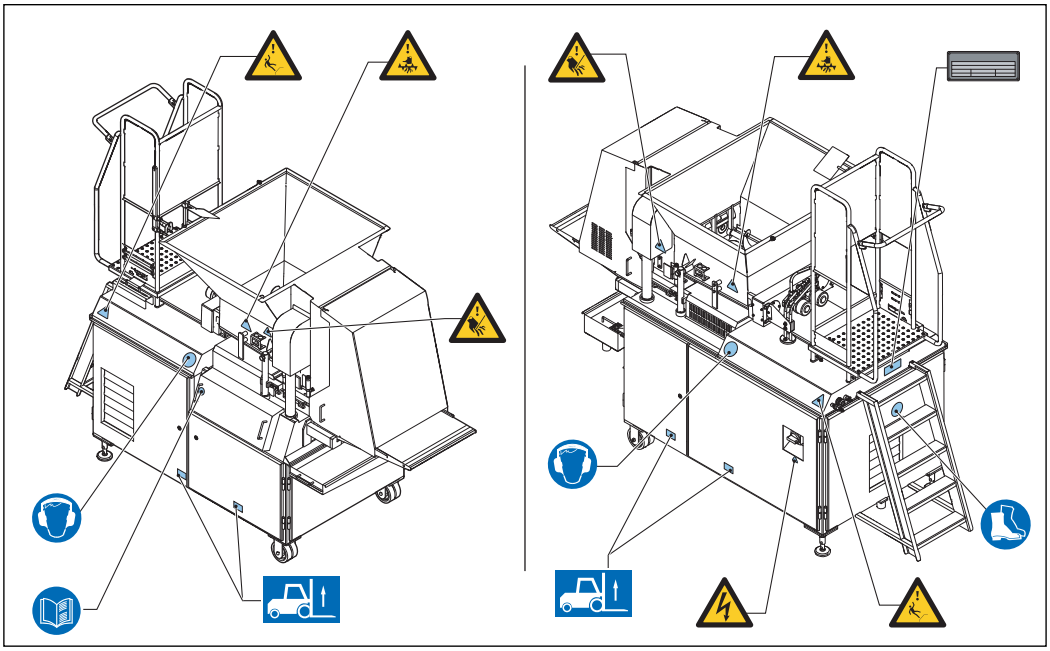
Mandatory action sign that communicates an action to be taken to avoid a hazard.

In this example: Wear protective gloves.

Prohibition symbol that defines a prohibited action.

In this example: Do not touch.

Signs on the machine



Signs

	High voltage.		Keep hands away from augers.
	Hearing protection compulsory.		Safety shoes compulsory.
	Slippery surface.		Read the manual.
	Hand injury.		Lift position.

Danger, Warning, Caution and Attention

Warning notices are classified according to the level of danger that hazardous situations present. Classification is based on a probability assumption of being exposed to a given hazardous situation and the consequences involved.

Classification	Significance
Danger!	DANGER indicates an imminently threatening hazardous situation that, if not avoided, will cause severe injuries or death.

Classification	Significance
Warning!	WARNING indicates a potentially hazardous situation that, if not avoided, can cause severe injuries or death.
Caution!	CAUTION indicates a potentially hazardous situation that, if not avoided, can cause slight injuries.
Attention!	ATTENTION indicates a potentially hazardous situation that, if not avoided, can cause machine damage.

1.3 Intended use

The machine is an assembly to mould food products within the following specifications:

Item	Specification
Shape	Flat, three dimensional (3D) and double 3D.
Basic material	Chopped meat, chicken breast, fillet of fish, prawns.
	Vegetables, potato slices, noodles, macaroni, rice.
	Consult GEA for other possible use.

Any other or additional use will be considered to be not in conformity with the purpose. GEA will not accept any liability for improper use. Use this machine in a technical perfect condition in conformity with the purpose described above.

1.4 Modifications

Warning!

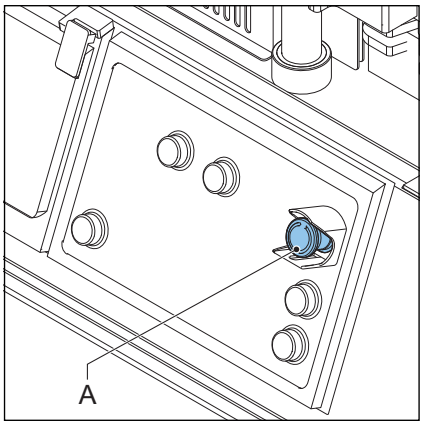
Do not attempt to make any modifications or alterations to the machine without the prior express agreement of GEA Food Solutions Bakel B.V. Unauthorised modifications or alterations to the machine could lead to serious personal injury, including death.

GEA is always willing to discuss improving the value of its machines to users by means of modifications or alterations. Refer to ‘Further help and information’.

1.5 Safety devices

Emergency stop

Hit the Emergency stop (A) in case of an emergency. All electrical power supply will be interrupted immediately.



Cover guards Access to the process areas within the machine is prohibited.

Signs on the machine The signs on the machine are part of the safety provisions. They must not be covered over or removed, and must be present and legible during the entire life of the machine.

- Check this regularly;
- Replace or repair signs that have become illegible or damaged.

Password To get access to a level of the system, personnel must enter a password. Changing a password is reserved to local service engineers and to the GEA service engineer (level 5).

1.6 Safety precautions

During normal production

The machine must only be operated when the cover(s) is (are) closed.

– Be sure that there is nobody in its immediate vicinity;

– Make sure that the environment around the machine is dry, clean and lit sufficiently well;

– Keep away from moving parts.

Raise the hopper

Warning!

Always place a support block when the hopper is raised. This is necessary to prevent crushed fingers due to unintended or accidental lowering.

During maintenance and repair

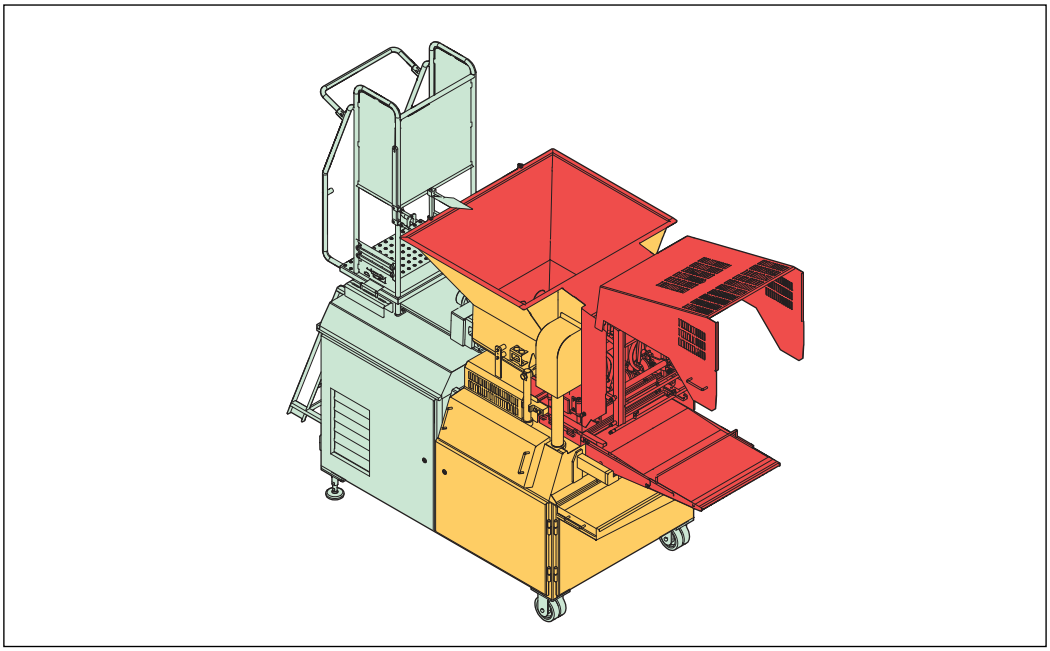
Warning!

Switch off and lock the main switch before inspection and maintenance work.

Wait at least two minutes after switching off before carrying out repair work on electrical components.

1.7 Hygiene levels

Areas at the machine



Non-product contact surface. (Green)	Splash area. (Yellow)	Product contact surface. (Red)

Definitions

Product contact surface

Machinery surfaces that are exposed to the product and from which the other materials can drain, drip, diffuse or be drawn into (self-returned) the product or product container. Indicated as red.

Splash area

Area composed of surfaces where product may come into contact and does not return to the product. Indicated as yellow.

Non-product contact surface

All other exposed machinery surfaces including, where applicable, the splash area. Indicated as green.

Special hygiene rules

– Observe the hygiene, i.e. no condensation, foreign bodies, lubricants and the like above or near the product contact surface (sealing, piping, air-conditioning, motors etc.);

– Take care that no products fall where they do not belong, outside of the product contact surface.

1.8 Users

Personnel qualifications

- The machine is designed only for personnel being 14 years or older. Consider the respective national regulations for occupational safety and health;
- Only personnel who have been given permission are allowed to work with or on the machine;
- All personnel must only carry out the work they have been trained to perform. This applies to both maintenance work and the normal machine operation;
- All personnel working with or on the machine must have free access to the applicable manuals;
- The operators must be familiar with all situations that may occur so that they can act rapidly and effectively in the event of emergencies.

Personal and food hygiene

The machine processes food for - usually - human consumption. So the highest standards of hygiene are to be maintained within the process area.

Warning!

As an operator, you should have received training in personal and food hygiene from your employer(s). If you have not, do not use the machine or enter the process area. Arrange training with your supervisor or training manager. Working in the process area without a good understanding of hygiene can lead to contamination of food and even food poisoning.

- Wash your hands thoroughly before entering the process area;
- Remove your watch and any loose jewellery before entering the process area;
- If suffering from an illness or infection, get a doctor’s approval before working;
- Wear all provided protective clothing and headgear in the way instructed or recommended by your employers;
- Never take food or drinks into the process area;
- Never take glass containers or objects into the process area;
- Keep all tools in a box or bag.

1.9 Disposal

For economic purpose

GEA offers you a return policy for used GEA machines. Contact your local sales representative for details.

Final disposal

The use and maintenance of the machine includes no environmental dangers. Most parts can be disposed in the regular way.

Warning!

Make sure to dispose the parts in compliance with local legislation, regulations, instructions and precautions concerning health, safety and environment.

Dismantle the machine as follows:

- Dismantle the machine in easy to handle parts;
- Have an expert supervise the dismantling process;
- Dispose the dismantled parts according the regulations.

1.10 Further help and information

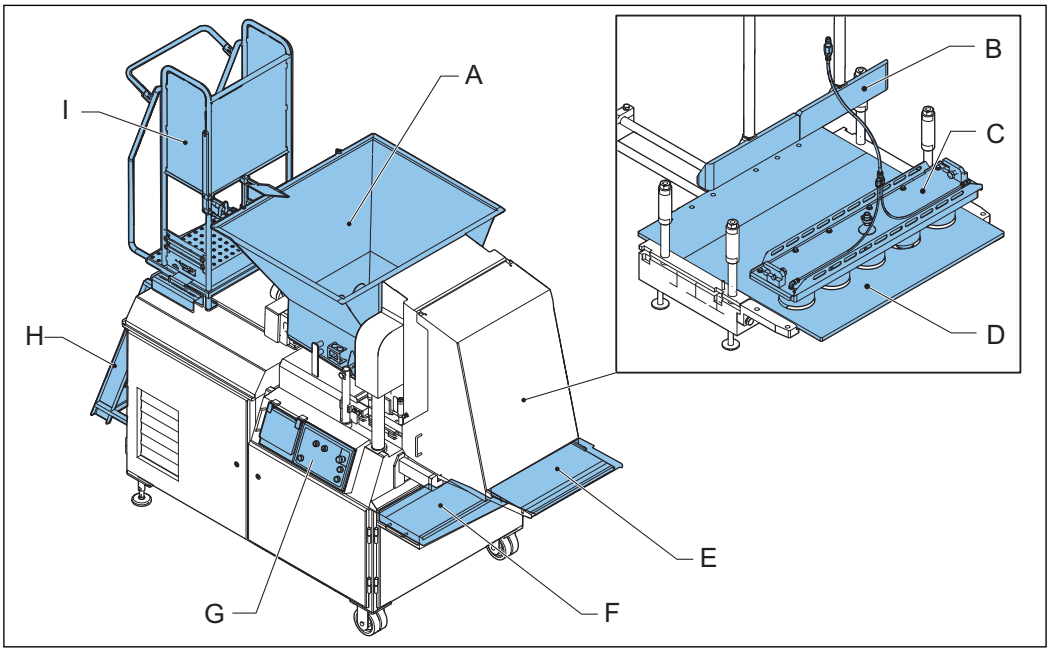
GEA Food Solutions Bakel B.V. is committed to provide the highest levels of support to users and operators of its products. Depending on the particular product, the support package on offer may include:

- Training - the GEA Education Programme;
- The GEA Service Management System;
- 24-hour global support;
- Maintenance agreements;
- Service contracts;
- Tooling service;
- Reconditioning and refurbishment.

Contact GEA for further information.

2 DESCRIPTION

2.1 Main items



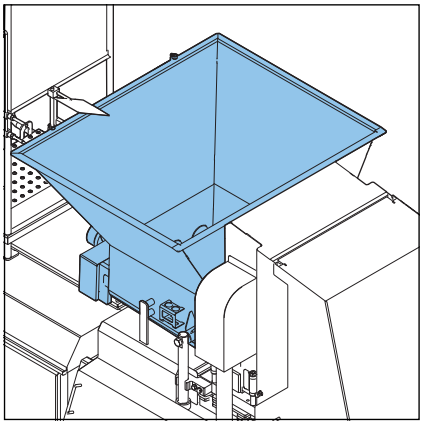
A Hopper
B Press block
C Knockout unit
D Form plate
E Conveyor
F Drip tray
G Control panel
H Steps
I Platform

2.2 Working principle

Within the machine there are five main functions. These five functions represent the working of the machine.

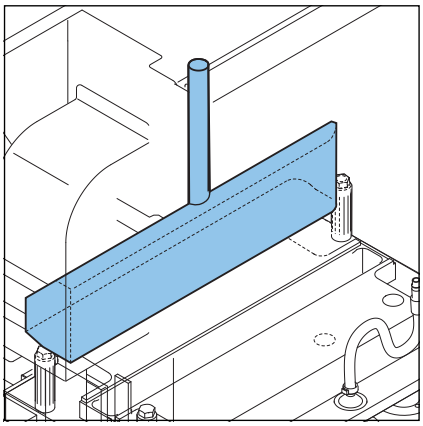
Hopper

- contains the product to be processed;
- feeds the product into the press block.



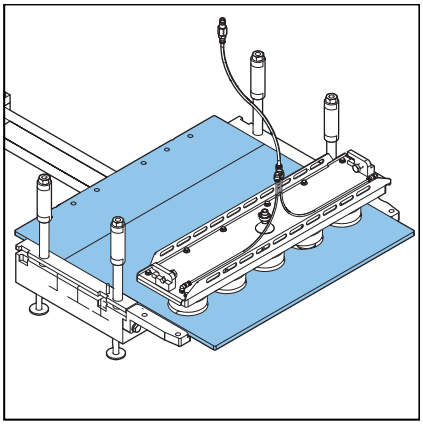
Press block

- pressurizes the product;
- feeds the product into the forming unit.



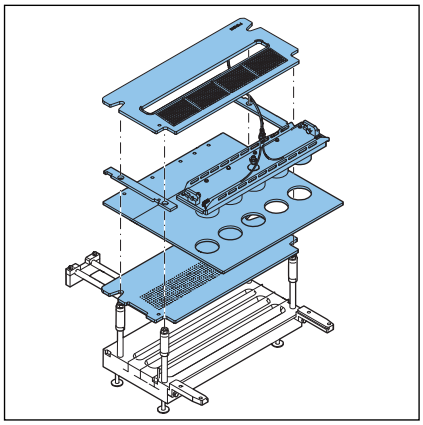
Forming unit

- forms the product;
- moves the formed product to the knockout.
- composed of the tooling set and the filling set.



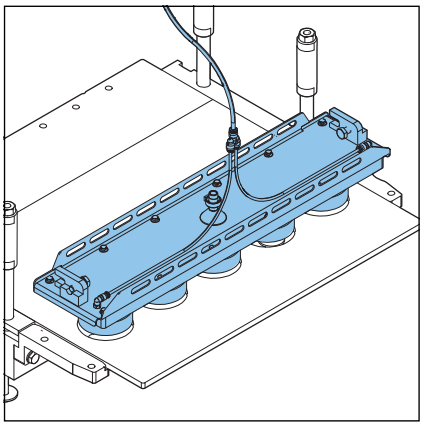
Tooling set & filling set

– consist of product specific parts (tooling set) and product independent parts (filling set).



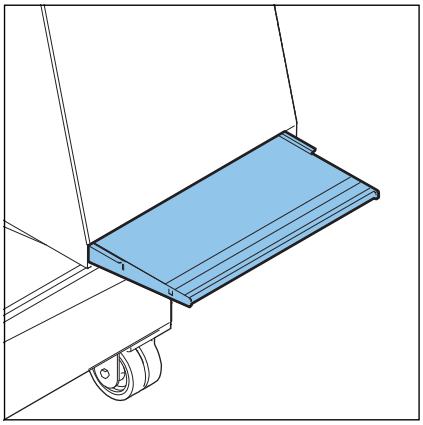
Knockout unit

– knocks the formed product out of the forming unit.



Conveyor

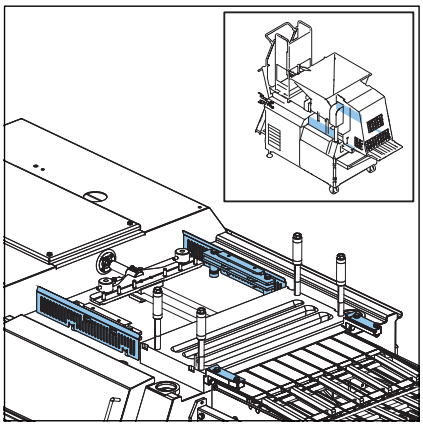
– transports the formed product from the machine.



Form plate support

– supports the form plates with a thickness of less then 6 mm;

– prevents the form plates from bulging out or bending during a pushed forward movement.



2.3 Specifications

Standard machine

Item	Specifications
Machine dimensions (width x depth x height) in mm	1240 x 3300x 2700
Weight in kg	1800
Material	Stainless steel
Noise emission	83 dB(A)
Water pressure	4 bar max.
Compressed air pressure	6 bar
Compressed air consumption	300 litres/minute
Hydraulic tank capacity	160 litres

Form plate dimensions

Item	Specification
Form plate width	600 mm
Form plate height	6 - 40 mm

Ambient conditions

Item	Condition
Temperature with air cooling	5 °C < T < 25 °C
Temperature with water cooling	5 °C < T < 40 °C
Relative humidity	< 95 %

Type plate

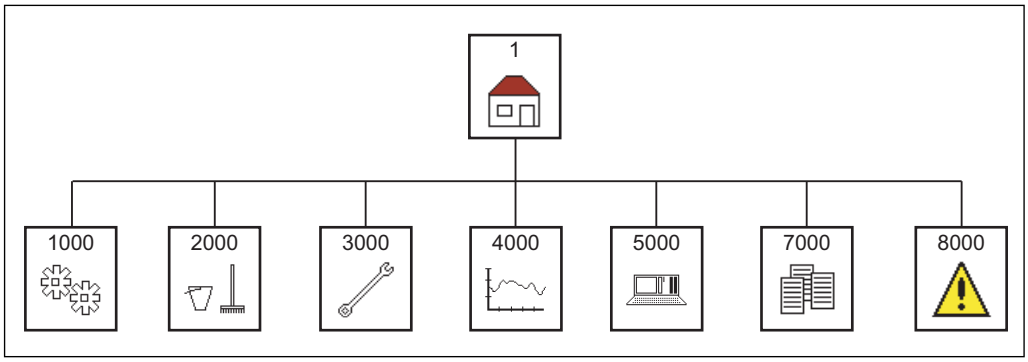
The (standard) GEA type plate is located on the back of the machine. The type plate contains information about the items, listed below:

Item	
Type	Machine serial number
Year	Supply voltage [V]
(number of) Phase	Frequency [Hz]
Power [kW]	Full-load current [A]
Patent	

2.4 Control panel

2.4.1 Main menu

Menu structure



Screen	Title	Level	See
1	Main	Operator	2.4.3
1000	Production	Operator	2.4.4
2000	Cleaning	Operator	2.4.5
3000	Maintenance	Service	2.4.6
4000	Statistics	Service	2.4.7
5000	System settings	Service	2.4.8
7000	Offline recipe	Service	2.4.9
8000	Alarm	Operator	2.4.10

2.4.2 Screen

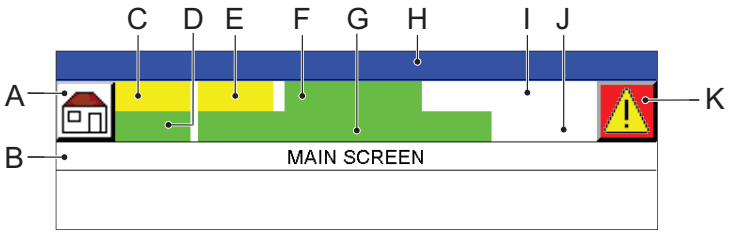
The screen is arranged in three parts.

– The screen header;
– The central workspace;
– The menu bar at the bottom.

String background

Colour	Explanation
Green	The actual state of the item [process values].
Yellow	The state of the item, with the possibility to change the item [set points].
Blue	The actual information [calculates values]; A reset function
White	General and status information.

Screen header



A Shortcut icon
B Screen title
C Screen number. *Shortcut to the screens with a keypad.*
D User level
E Password
F Recipe number
G Title on-line recipe
H Status line
I Date
J Time
K Alarm icon

Header icons

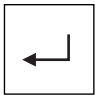
Shortcut to the main screen.	Go to screen 8000. Alarm indicator: –White Alarm icon: No alarms. –Alternate red Alarm icon. At least one alarm message waits for acknowledgment. –Red Alarm icon. All waiting alarm messages are acknowledged, but at least one alarm is not solved.
Shortcut to a set screen.	

Menu bar

The menu bar at the bottom contains navigation and general function icons.

General bar icons

Go to the next screen.	Scroll up.
Go to the previous screen.	Scroll down.
Go back one menu level.	Scroll screen up.

	Select a recipe or acknowledge an alarm.		Scroll screen down.

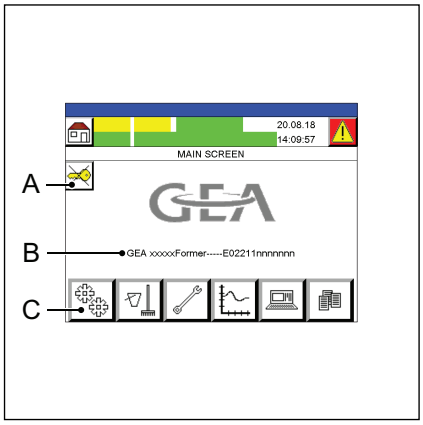
Central workspace

The central workspace is unique for every screen. The workspace can contain these items:

- Icons: Activate a machine function/action or show the condition of a machine part.
- Strings: Show text or values.
- Illustrations: Show an overview of a machine part. An illustration can contain a hotspot that gives access to related screens of the machine part.

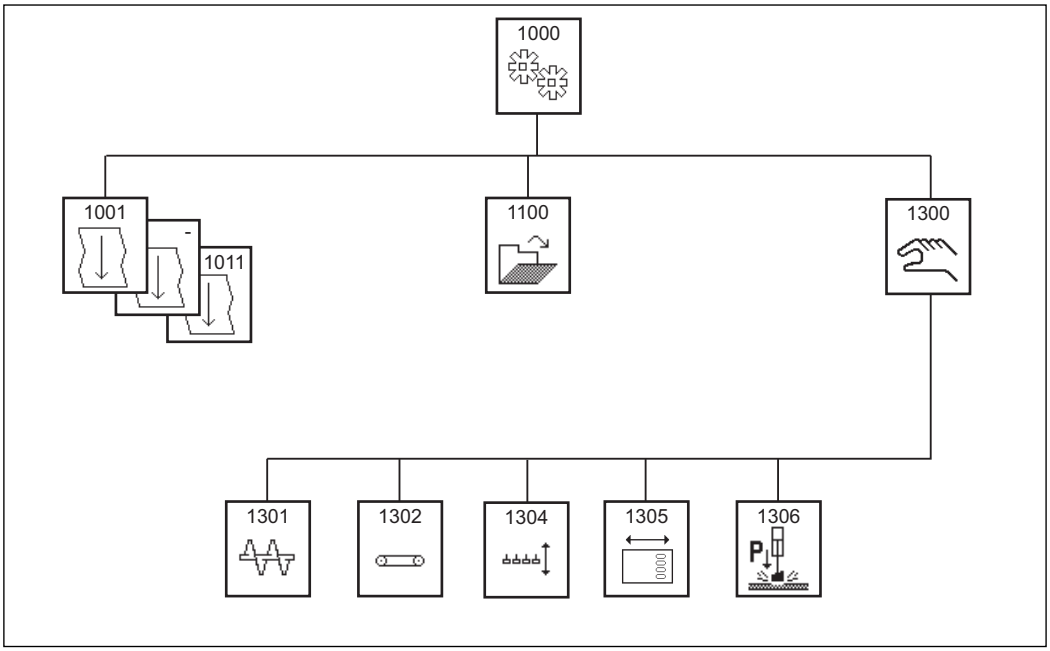
2.4.3 Main (screen 1)

A Logout from the actual level.
B Machine information: Machine type and number.
C Main menu icons: The main screen is the start in the menu structure.



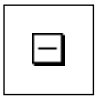
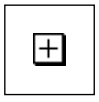
2.4.4 Production

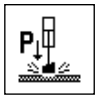
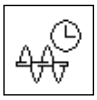
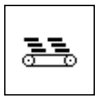
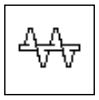
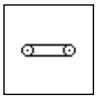
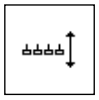
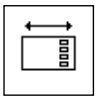
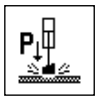
Menu structure



Screen	Title	Level	Description
1000-1011	Production	Operator	To set the production settings. Explained in this section.
1100	Load recipe	Operator	To select a recipe.
1300 - 1310	Manual	Operator	To start a part of the machine manually.

Icons

	Load recipe menu. *Go to screen 1100.*		Save. Saves the machine settings to a recipe. *Pop-up window: save, save as and cancel.*
	Decrease value.		Increase value.
	Start function.		Manual menu. *Go to screen 1300.*
	Move to left		Move to right
	Move upwards		Move downwards

	Production speed.		Press block pressure.
	Auger time.		Overlapping stacks.
	High-capacity paper interleaver.		Augers on/off menu. *Go to screen 1301.*
	Conveyor on/off menu. *Go to screen 1302.*		Knockout up/down menu. *Go to screen 1304.*
	Form plate in/out menu. *Go to screen 1305.*		Press block up/down menu. *Go to screen 1306.*
	Synchronization conveyor (SNC).		

Screen 1000

Item	Description
Name	The recipe title.
Number	The recipe number.
Comment	Information about the actual recipe.

Screen 1001

Item	Description
Production > speed [strokes/minute]	The number of strokes the form plate makes per minute.
Press block [bar]	The pressure in the press block. (30 - 150 bar)
Augers > time [s]	The time the augers are on per stroke of the press block. (0 - 0.6 seconds)
Augers > automatic time adjustment	To activate automatic time adjustment. This setting reduces the auger timer until the down stroke has been completed (with step filling) and the press block goes up.

Screen 1002

Item	Description
Conveyor > speed [m/minute]	Conveyor speed.
Conveyor> run out time [s]	The time the conveyor continues to run after production has stopped. (0 - 25 seconds)

Screen 1022

Item	Description
Form plate > stroke: length [mm]	The stroke length of the form plate needs to be filled.
Form plate > position (press blocks: up) [mm]	The position of the form plate (outwards stroke) where the press block is raised.
Form plate > speed [m / min]	The calculated speed of the form plate.

Screen 1003

Item	Description
Knockout > time [s]	The duration of the stroke of the knockout to the lowest position. (0 - 0.2 seconds)
Air blast > offset [s]	The timing of the air blast of the knockout in relation to the lowest position of the knockout. (-0.05 - 0.05 seconds)
Knockout > heating	To activate the knockout heating.

Screen 1004

Item	Description
Filling [s]	The time the form plate stops to be filled. (0 - 0.5 seconds)
Press block > delay time [s]	The time the stroke of the press block is delayed after the start of the inward stroke of the form plate. (0 - 0.2 seconds)
Step filling	To activate step filling. This setting divides the stroke of the press block into several steps over several strokes of the form plate before the press block is raised.
Press block > pressure build up: delay time [s]	When step filling is activated, this value replaces the Press block> delay time when the press block is not raised. (0 - 0.3 seconds)

Screen 1005

Item	Description
Nozzle (front side) > delay time [s]	The delay time before the nozzle starts to spray after the start of the inward stroke of the form plate. (0 - 3 seconds)
Nozzle (front side) [s]	The time the nozzle sprays water. (0 - 1 seconds)
Nozzle (back side) [s]	The time the nozzle sprays water. The nozzle starts to spray at the start of the inward stroke of the form plate. (0 - 1 seconds)

Screen 1006

Item	Description
Nozzle (knockout) > delay time [s]	The delay time before the nozzle starts to spray after the form plate is in the knockout position. (0 - 3 seconds)
Nozzle (knockout) [s]	The time the nozzle sprays water. (0 - 1 seconds)
Bridge breaker	To activate the bridge breaker in the hopper.

Screen 1007

Item	Description
External synchronization	To activate external synchronization. When this setting is activated the machine will wait for a synchronization signal from another machine or sensor before each stroke of the form plate.
Stack > height [products]	The number of products that are stacked. (1 - 5 products) *Adjust in the off-line recipe menu.*
Filter time [s]	The time the synchronization signal must be present before the machine responds. (0 - 1 seconds) Note: this setting is only visible when external synchronization is activated.
Delay time [s]	The time the machine waits after the synchronization signal and filter time before the form plate stroke is made. (0 - 1 seconds)

Screen 1008

Item	Description
Stack > height [products]	The number of products that are stacked. (1 - 5 products)
Run time after product [s]	The time the belt runs after each stroke. (0 - 1 seconds)
Run time after stack [s]	The time the belt runs after each stack. (0 - 10 seconds)

Screen 1009

Item	Description
Stack > height [products]	The number of products that are stacked in each tray. (1 - 5 products)
Trays per plate [trays]	The number of trays that are filled on each stroke. (1 - 4 trays)
TTCM > infeed time [s]	The time the trays need to be transported from the stopper on the infeed side to the form plate. (0 - 1 seconds)
TTCM > outfeed time [s]	The time the trays need to outfeed. (0 - 1 seconds)

Screen 1010

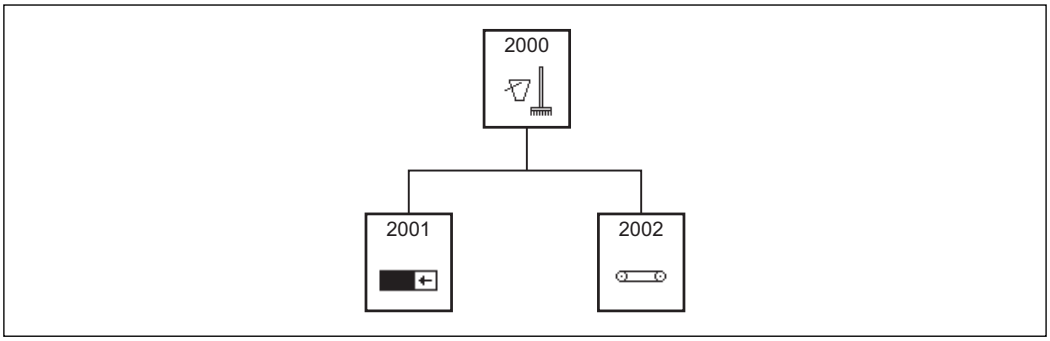
Item	Description
Form plate > stop moment [s]	The time the form plate stops in the outfeed stroke for the stick inserter to insert the sticks. (0 - 1 seconds)
Form plate > halt time [s]	The duration the stick inserter presses the sticks into the product. (0 - 1 seconds)

Screen 1011

Item	Description
Stack > height [products]	The number of products that are stacked. (1 - 5 products)
Paper between product	To have the interleaver place a paper between the products.
Paper under stack	To have the interleaver place a paper under the stack.
Suction cup > time [s]	Suction time for the interleaver. (0 - 1 seconds)

2.4.5 Cleaning

Menu structure



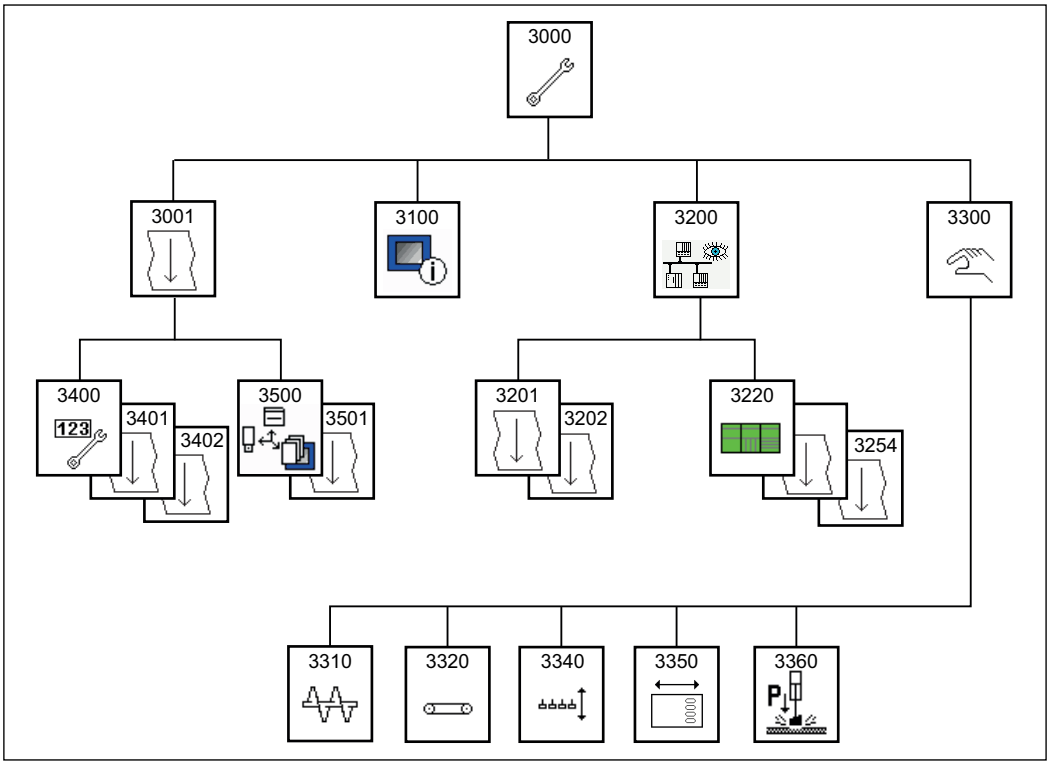
Screen	Title	Level	Description
2000	Cleaning	Operator	Cleaning selection menu.
2001	Cleaning timer	Operator	The cleaning timer counts back from 30 to 0 seconds. During the count back time the touch-screen can be cleaned.
2002	Conveyor	Operator	To move the belt of the conveyor to clean the belt.

Icons

	Cleaning timer menu. *Go to screen 2001.*		Conveyor belt on/off menu. *Go to screen 2002.*

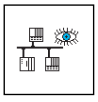
2.4.6 Maintenance

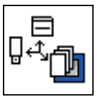
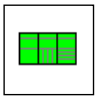
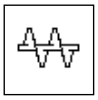
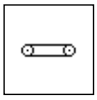
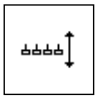
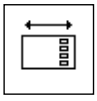
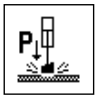
Menu structure



Screen	Title	Level	Description
3000	Maintenance 1	Service	Maintenance selection menu.
3001	Maintenance 2	Service	Maintenance selection menu.
3100	Software	Service	Gives software version information.
3200	Network	Service	Network selection menu.
3201	CPU Info	Service	Gives the number of operating hours, the number of warm and cold starts, the slave number and the battery status.
3202	CPU logbook	Service	Gives the CPU log-file.
3220-3254	Slave 5: I/O Menu	Service	Gives the analog and digital I/O information.
3300-3390	Manual	Service	To start a part of the machine manually.
3400-3404	Service settings	Service	Optional setting. Can contain machine specific settings or production line settings.
3500	Module settings	Service	To export information: configuration, recipe and data.

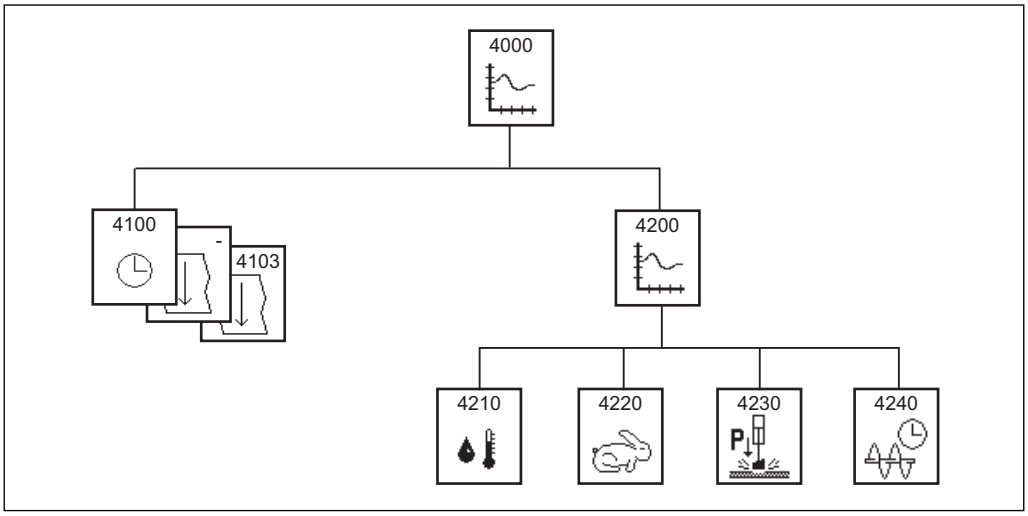
Icons

	Software menu. *Go to screen 3100.*		Network menu. *Go to screen 3200.*

	Manual menu. *Go to screen 3300.*		Start function.
	Service settings menu. *Go to screen 3400.*		Data backup menu. *Go to screen 3500.*
	Slave 5 menu. *Go to screen 3220.*		Augers on/off menu. *Go to screen 1301.*
	Conveyor on/off menu. *Go to screen 1302.*		Knockout up/down menu. *Go to screen 1304.*
	Form plate in/out menu. *Go to screen 1305.*		Press block up/down menu. *Go to screen 1306.*
	Update software.		Restore software.
	Delete software.		

2.4.7 Statistics

Menu structure



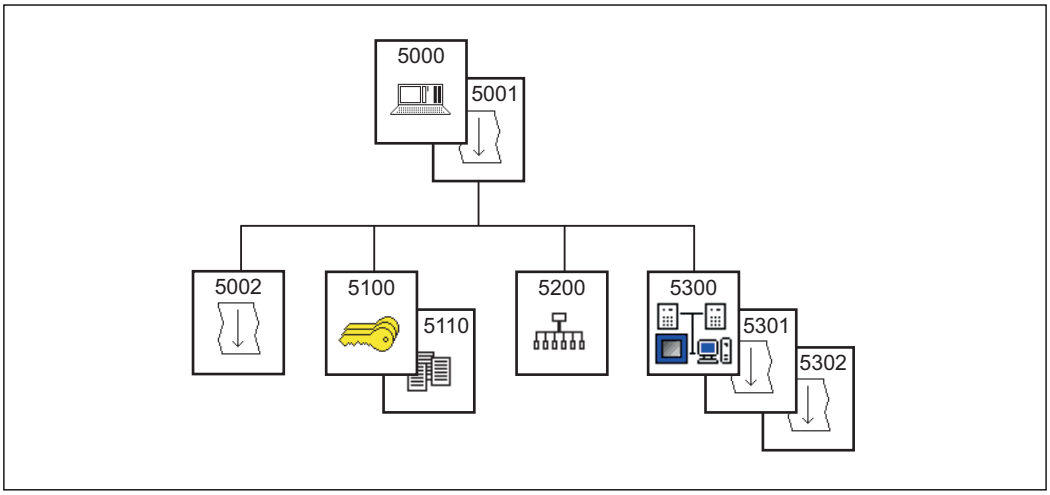
Screen	Title	Level	Description
4000	Statistics	Service	Statistics selection menu.
4100-4103	Operating hours	Service	Gives the operating hours, the number of starts and the number of overload trips for the machine parts.
4200	Statistics	Service	Statistics selection menu.
4210	Oil temperature statistics	Service	Shows a graphic of the temperature of the oil in the hydraulic unit [°C].
4220	Production speed statistics	Service	Shows a graphic of the production speed of the machine [1/minute].
4230	Press block pressure statistics	Service	Shows a graphic of the pressure in the press block [bar].
4240	Augers statistics	Service	Shows a graphic of the time the augers turn.

Icons

Operating hours menu. *Go to screen 4100.*	Statistics. *Go to screen 4200.*
Oil temperature statistics. *Go to screen 4210.*	Production speed statistics. *Go to screen 4220.*
Press block statistics. *Go to screen 4230.*	Augers statistics. *Go to screen 4240.*

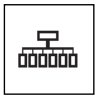
2.4.8 System settings

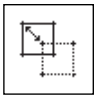
Menu structure



Screen	Title	Level	Description
5000	System settings 1	Service	To change the language, the date and the time.
5001	System settings 2	Service	To change the home shortcut.
5002	System settings 3	Service	To change the auto logout time and the measuring units.
5100	Password levels	Service	Shows the password levels.
5110	Change passwords	Service	To change the passwords.
5200	Shortcut	Service	To use and change the menu shortcuts.
5300	System communication ethernet	Service	To change the optional network settings.
5301-5302	System communication powerlink / can	Service	Shows the network settings.

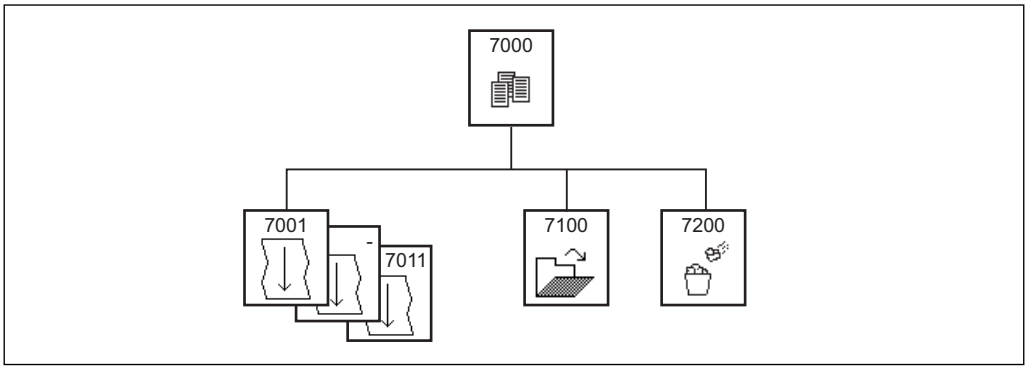
Icons

	Decrease contrast.		Increase contrast.
	Select language.		Password levels menu. *Go to screen 5100.*
	Change passwords. *Go to screen 5110.*		Shortcut menu. *Go to screen 5200.*
	System navigation. The shortcut to a screen.		System communication ethernet menu. *Go to screen 5300.*

	Touch calibration.

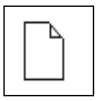
2.4.9 Offline recipe

Menu structure



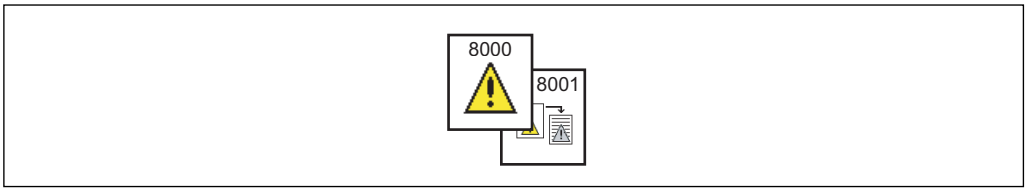
Screen	Title	Level	Description
7000 - 7011	Offline recipe	Service	Offline recipe settings. To set the same parameters as in the production menu. Refer to section 2.4.2 "Screen".
7100	Load offline recipe	Service	To select a offline recipe.
7200	Delete recipe	Service	To delete a recipe.

Icons

	Load recipe menu. *Go to screen 7100.*		Save. Saves the offline recipe settings to a recipe. *Pop-up window: save, save as and cancel.*
	Delete recipe. *Go to screen 7200.*		New recipe with default settings.

2.4.10 Alarms

Menu structure



Screen	Title	Level	Description
8000	Actual alarms	Operator/service	Actual alarms and selection screen.
8001	Alarm history	Operator/service	Alarm history.

Icons


Actual alarms. *Go to screen 8000.*


Extra alarm information.


Alarm history. *Go to screen 8001.*

Item	Description		
Alarm statuses	A	Active	New alarm.
	T	Triggered	New alarm.
	R	Reset	Alarm reset.
	U	Unacknowledged	Alarm is reset without acknowledge.

3 TRANSPORT AND INSTALLATION

3.1 Transport

General

When the machine and its additional equipment is delivered:

– Check the components for possible transport damage;

– Make sure the delivery is complete. Refer to the sales and delivery conditions.

Improper transport does not entitle the recipient to replacement under the term of warranty. In case of doubt, contact the supplier before transportation.

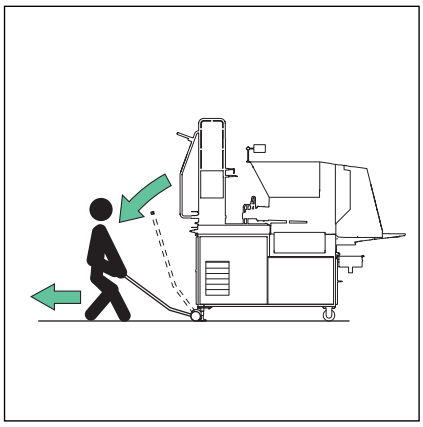
GEA does not accept any responsibility for corrosion damage that occurs due to improper storage, such as in a humid location.

Internal transport

1. Connect the transportation lever.
2. Move the machine.
3. Remove the transportation lever.

Warning!

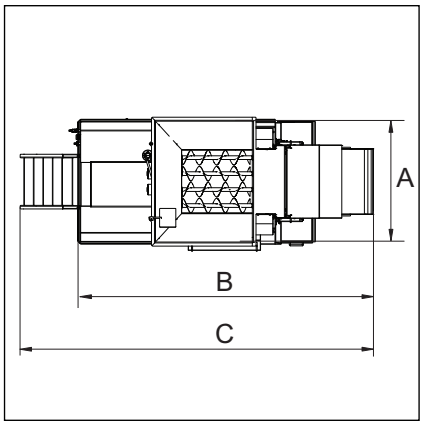
Do not let go of the transportation lever when it is loaded. The transportation lever will slam up.



3.2 Installation

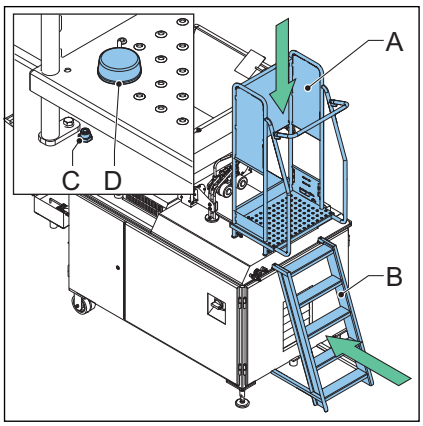
General

1. Place the machine on a flat and level surface. For dimensions (A), (B) and (C) refer to section 2.3 "Specifications".
2. Remove all the transport packaging.
3. Level the machine.



Platform

1. Place the platform (A) on the machine.
2. Attach the hose for the foot button (D) to the connection on the machine (C).
3. Attach the steps (B).

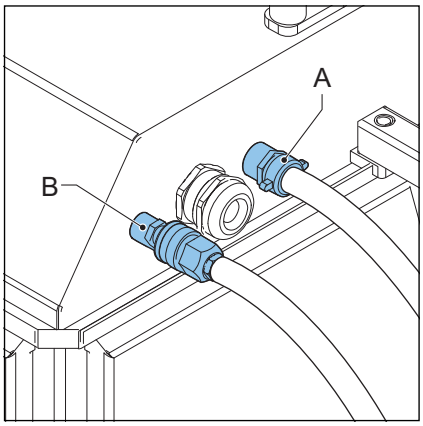


Electricity

1. Connect the 3-phases to the connection block within the electrical cabinet.
2. Earth the machine according to the local regulations.
3. Change the polarity of two phases if the phase order is wrong.

Connections

1. Connect the compressed air facility (B).
2. Connect the water supply (A). Use a hose clamp.
3. If desired, connect a water outlet hose to the collection tank. Use a hose clamp.



Password GEA control

The GEA control includes different levels to prevent unauthorized access.

Level	Description	Default
0	Operator	-
1	Cleaning	147

Level	Description	Default
2	Production	369
3	Production > development	1604
4	Maintenance	1310

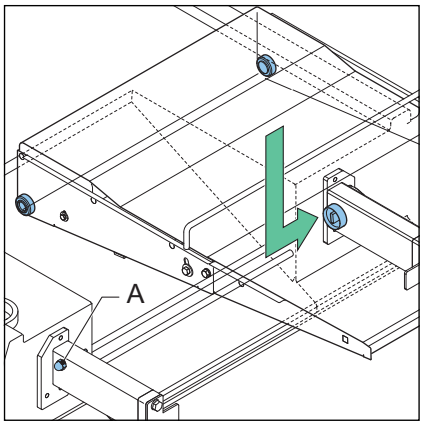
GEA recommends to change the passwords after installation and from then on every month.

1. Go to screen 5100 (Password levels).
2. Change the passwords.

3.2.1 Conveyor belt

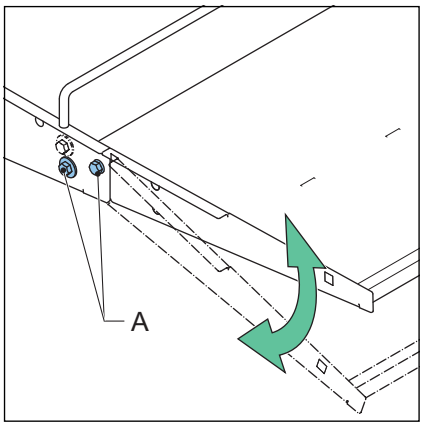
Conveyor belt installation

1. Unscrew the bolt (A). *Unscrew until the bolt does not stick out.*
2. Turn the conveyor belt drive roll so it is oriented the same as the cam on the drive wheel.
3. Install the conveyor with the groove of the conveyor belt drive roll over the drive wheel cam.
4. Tighten the bolt.
5. Install the collection tank.



Conveyor belt position

1. Unscrew the bolts (A) a few turns.
2. Set the height of the conveyor belt.
3. Tighten the bolts (A).

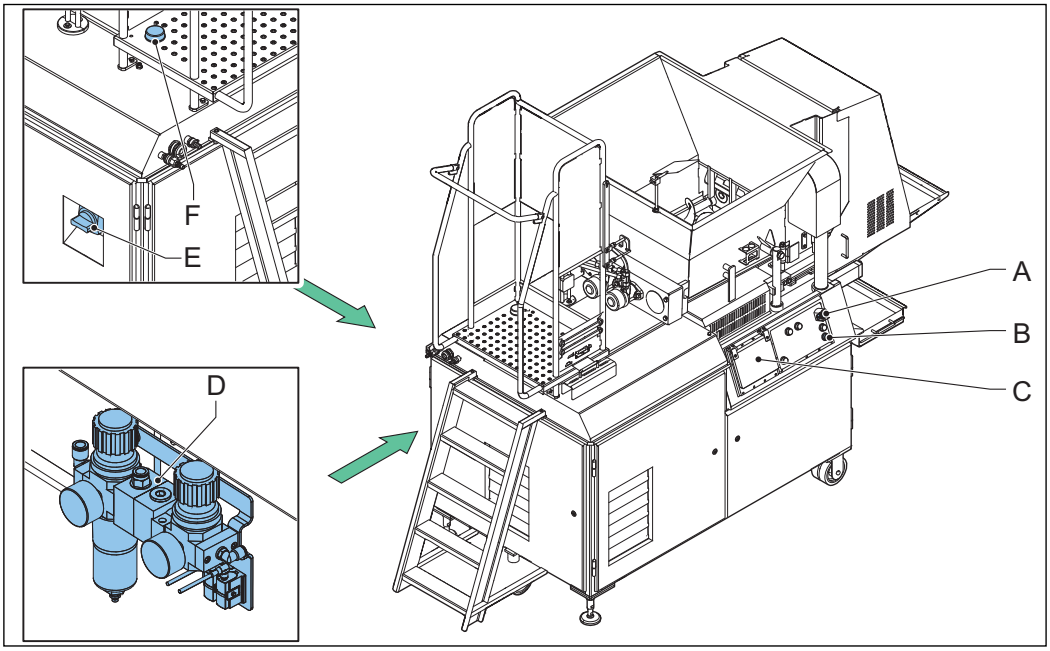


4 OPERATION

Warning!

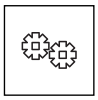
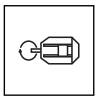
- Do not attempt to use the machine unless you have read and understood all the information in the safety chapter and you are sure of your ability to use the machine safely;
- Do not attempt to use the machine unless you know how to stop it in an emergency as described under emergency stop in the safety chapter.

4.1 Overview



A Emergency stop
B Control buttons
C Control panel
D Air pressure control
E Main switch
F Platform foot button

4.2 Control buttons

	Production.		Hydraulics.
	Hopper up.		Hopper down. *This is a two-hands control with the Hopper up/down button.*

4.3 Settings before production

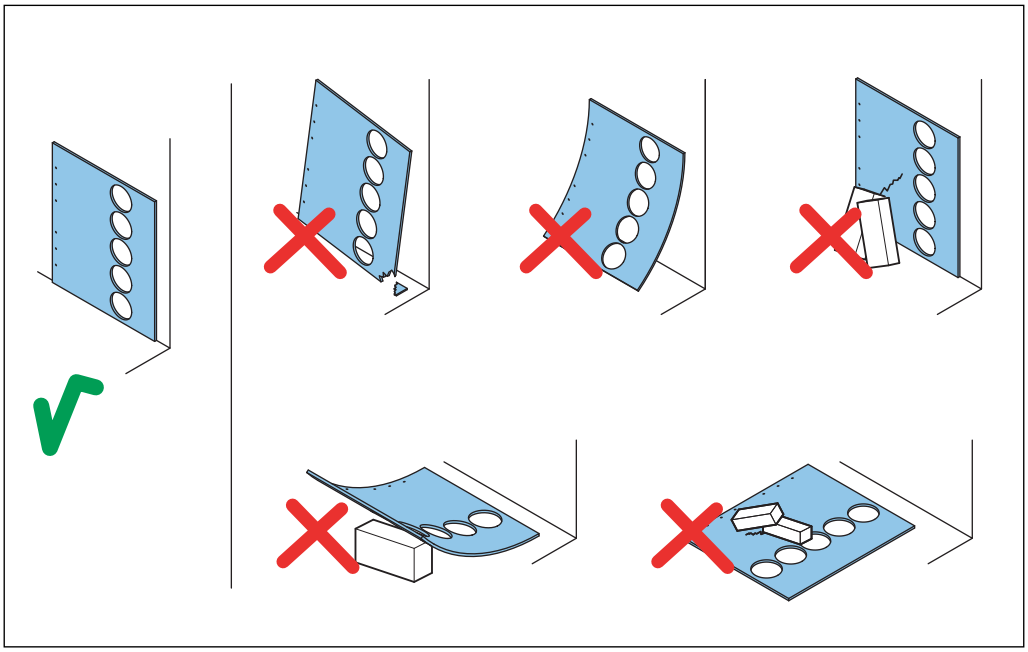
Warning!

Make sure the hydraulic unit is OFF before working on parts of the machine.

4.3.1 Handling of the plates

Storage of the plates

The plates have to be properly stored when not installed in the machine.



Daily inspection

1. Inspect the form plate for cracks.

Caution!

Dispose of a cracked form plate. Never install a cracked form plate in the machine.

2. Inspect all plates for scratches, burrs, grooves and sharp edges. *Repair the plates before installation.*

4.3.2 Exchange the form plate

Caution!

Check all plates before use in the machine.

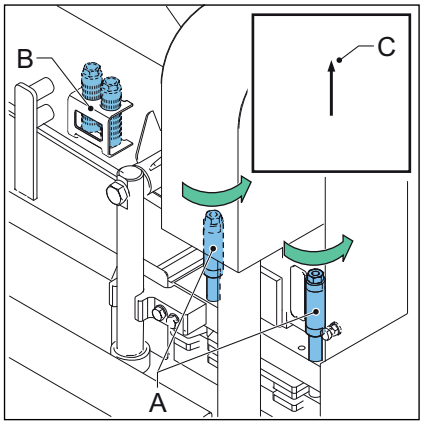
Refer to the section 4.3.1 "Handling of the plates".

Raise the hopper

Warning!

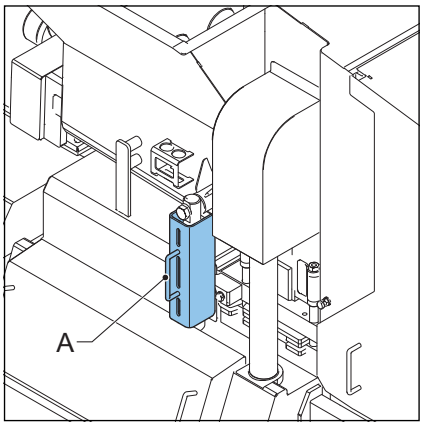
Always place a support block when the hopper is raised. This is necessary to prevent crushed fingers due to unintended or accidental lowering.

1. Loosen the four hopper nuts (A).
2. Place the hopper nuts in the special holder (B) on the machine.
3. Push the *Hopper up* button (C). *The hopper goes up.*
4. Raise the hopper to its highest position.



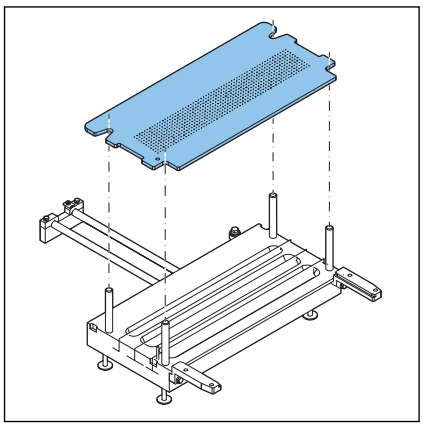
Install the support block

1. Install the support block (A) or a comparable block system. *Refer to the picture alongside.*



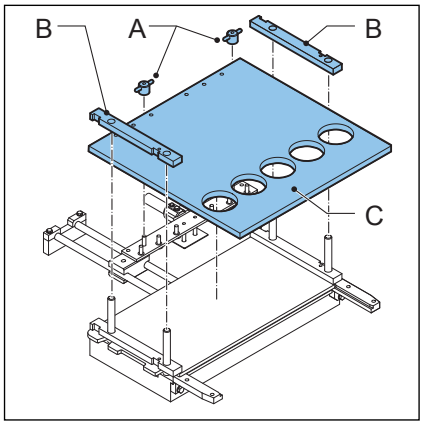
Install the bottom plate

1. Place the bottom plate on the base plate.



Install the form plate

1. Lubricate the form plate and the side guides. *Use only edible lubricants.* Refer to section 6.2.1 "Lubrication".
2. Place the side guides (B) over the threaded rods. *The grooves in the side guides must be on the outside.*
3. Place the form plate (C).
4. Tighten the wing nuts (A).

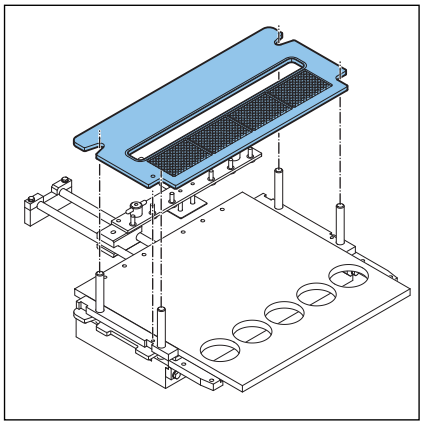


Install the top plate

1. Place the top plate.

Warning!

The edge of the hole in the top plate is razor sharp.



Remove the support block

1. Raise the hopper to its highest position.
2. Remove the support block.

Lower the hopper

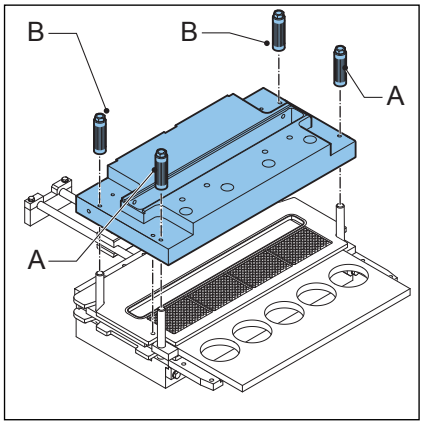
Warning!

Make sure there are no fingers or objects between the hopper and the machine when lowering the hopper.

Attention!

Keep to the described sequence when fastening the hopper nuts.

1. Push the *Hopper down* buttons. *The hopper goes down.*
2. Fasten the hopper nuts (A) to centre (align) the hopper. *Use a spanner.*
3. Tighten the hopper nuts (B).
4. Tighten the hopper nuts (A).



4.3.3 Exchange the plates for 3D and double-3D products

When making 3D or double-3D products the tooling set is different than when making flat products. There is an extra double-3D plate when making double-3D products and there is a different top plate when making double-3D and 3D products.

⚠ Caution!

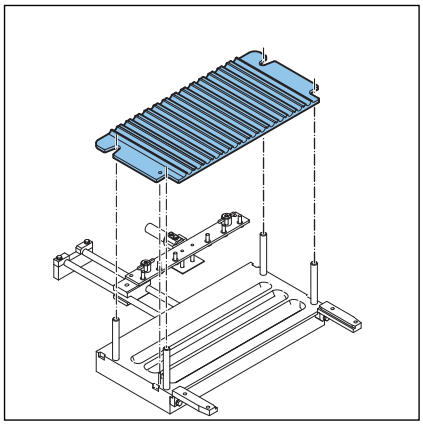
- ▶ Check all plates before use in the machine.

Refer to section 4.3.1 "Handling of the plates".

- ▶ For MultiFormer 400 machines only, do not use plates from a previous MultiFormer 400 machine without the adapter kit. *The thickness of the plates for previous machines is 33 mm, measured at the thinnest part of the plate. The thickness of the new version plates is 11 mm, also measured at the thinnest part of the plate*.

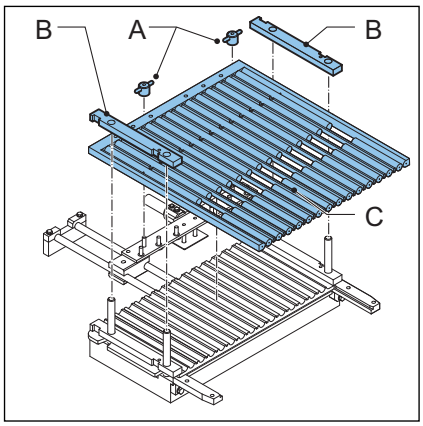
Install the double-3D plate

1. Place the double-3D plate on the bottom plate when making double-3D products.



Install the 3D form plate

1. Lubricate the form plate and the side guides. *Use only edible lubricants.* Refer to section 6.2.1 "Lubrication".
2. Place the side guides (B) over the threaded rods. *The grooves in the side guides must be on the outside.*
3. Place the form plate (C).
4. Tighten the wing nuts (A).

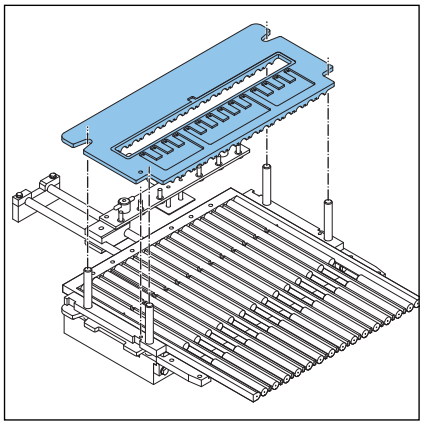


Install the top 3D plate

1. Place the 3D top plate.

Warning!

The edge of the hole in the top plate is razor sharp.



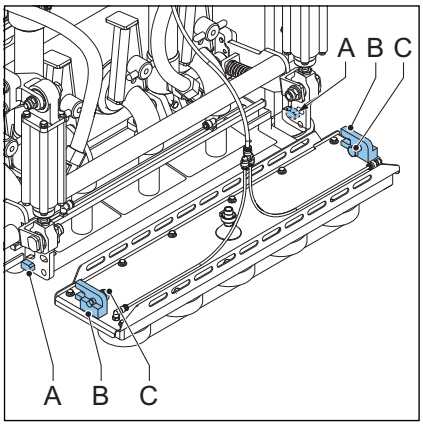
4.3.4 Exchange the knockout

Attach the knockout unit

Attention!

Make sure the knockout unit is of the same tooling set as the form plate.

1. Open the front cover.
2. Slide the brackets (B) of the knockout unit over the cams (A).
3. Tighten the bolts (C).
4. Connect the hoses for water and air supply.



Disassemble the knockout unit

1. Disassemble the knockout unit in the reversed order.

Check the alignment

1. Go to screen 1304 (Knockout).
2. Touch the *Start* icon. *The knockout goes down.*
3. Check if the knockout cups fall into the holes in the form plate correctly. *The clearance should be the same all round.*

Note

If the alignment is not correct, check if the plates and knockout are installed correctly.

Refer to section 6.2.3 "Knockout alignment".

4. Touch the *Start* icon. *The knockout goes up*.

4.4 Production

At the start of production it is assumed that:

– The hopper is filled with raw material;

– The form plate and knockout are installed.

Caution!

Do not start the machine when the form plate is not lubricated with edible oil.

4.4.1 Start

Slow start

Start up the machine slowly after a standstill of more than two hours, after cleaning, and in case of 3D and double 3D production.

A slow speed start offers the possibility of watching the movement of the form plate.

1. Step up the speed slowly until the form plate moves smoothly. *Do not tighten the nuts of the hopper too tight, to allow for the plates to adjust themselves.*
2. Tighten the hopper nuts a few minutes after the start of production.

Normal start

1. Push the *Hydraulics* button. *The hydraulic unit starts.*

Warning!

When the hydraulic unit starts or stops the shutters of the cooler will open or close. Do not put your fingers or any object between the shutters.

2. Go to screen 1301 (Augers).
3. Touch and hold the *Start* icon until the filling chamber is filled with product.
4. Go to screen 1000 (Production 1).
5. Set the pressure parameter to minimum pressure. *Touch the "-" icon next to the Press block pressure icon.*
6. Reduce, if necessary, the production speed to be able to set the pressure with minimum product loss. *Touch the "-" icon next to the Production speed icon.*
7. Push the *Production* button.
8. Increase the pressure until the products are formed properly.
9. Adjust the conveyor belt speed to the production speed.

Attention!

Different batches of the product to be formed can differ in their properties. For this reason the pressure has to be adjusted for every batch.

4.4.2 Recipe handling

Load a recipe

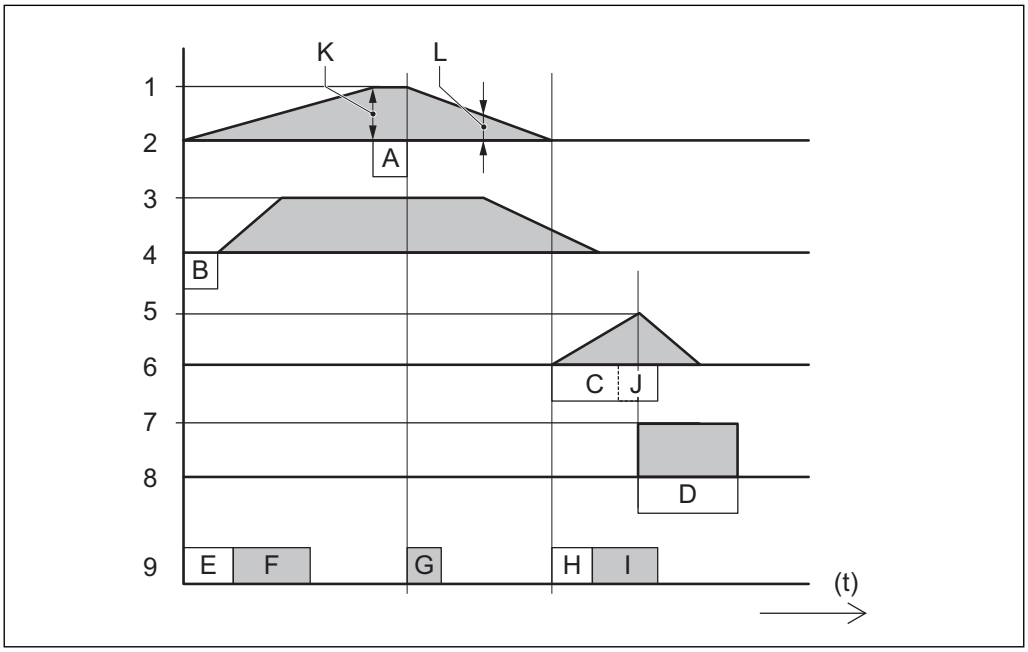
1. Go to screen 1100 (Load recipe).
2. Enter a password, if required.
3. Select the recipe to be loaded.
4. Touch the *Confirm* icon.

Save a recipe

1. Go to screen 1000 (Production 1).
2. Touch the *Save* icon. On the screen appears ‘Recipe already exist’.
3. Touch *Yes* to overwrite the existing recipe.

4.4.3 Adjustments during production

During production, several timing settings can be adjusted to optimize the production quality and speed. For information on how to adjust these settings refer to section 2.4.4 "Production".



1 Form plate in
2 Form plate out
3 Press block down
4 Press block up
5 Knockout down
6 Knockout up
7 Augers on
8 Augers off
9 Nozzles

A Filling [s]
B Press block > delay time [s]
C Knockout > time [s]
D Augers > time [s]
E Nozzle (front side) delay time [s]
F Nozzle (front side) [s]
G Nozzle (back side) [s]
H Nozzle (knockout) delay time [s]
I Nozzle (knockout) [s]
J Air blast > offset [s]
K Form plate > stroke length [mm]
L Form plate > position (press block: up) [mm]

4.4.4 Empty the hopper

1. Push the *Hydraulics* button.
2. Go to screen 1301 (Augers).
3. Touch and hold the *Start* icon until the last material is moved to the press block.
4. Push the *Production* button.
5. Run the machine until the hopper is empty.

4.4.5 Stop production

1. Push the *Production* button.
2. Push the *Hydraulics* button. *The hydraulic unit stops.*

Warning!

When the hydraulic unit starts or stops the shutters of the cooler will open or close. Do not put your fingers or any object between the shutters.

5 CLEANING

Warning!

- Do not attempt to clean the machine unless you have read and understood all the first aid procedures that apply to your workspace and to the cleaning products that will be used;
- If there is any safety instruction or procedure that you do not understand, do not clean this machine. Contact a supervisor and arrange for proper training on the cleaning of the machine;
- Cleaning the machine without understanding and following all the safety instructions and procedures could lead to serious injury to yourself or others.

5.1 General

Warning!

- Switch off and lock the main switch before cleaning.
- Cover the control panel prior to cleaning.

Machine

– Never spout directly at electrical components, bearings and chains.

Personnel

– Always wear the acquired protective clothing;

– Take care not to slip on the wet or greasy floor. It is recommended to wear protective shoes.

Chemicals

– Always apply to the prescribed protective means. Refer to the label and the safety regulations on the package;

– Always comply with the prescribed doses;

– Stick to the contact time and temperature.

Instructions

– After cleaning, make sure no physical or chemical dirt and remnants are left;

– Dry the machine thoroughly before switching it ON again;

– Act conscientiously.

5.2 Day-to-day cleaning

Day-to-day cleaning is a task of the cleaning staff (a part of the operators task). The cleaning staff must clean the machine regularly and keep the machine clean.

Machine part	Method	Frequency	See
Hopper	Pressure cleaner	Daily	5.3.1
Press block	Pressure cleaner	Daily	5.3.2
Knockout	Manual cleaning	Daily	5.3.3
Forming unit	Cloth, hot water	Daily	5.3.4
Conveyor	Manual cleaning	Daily	5.3.5
Collection tank	Pressure cleaner	Daily	5.3.6
Control panel	Manual cleaning	Daily	5.3.7
Product contact surface	Manual cleaning	Daily	5.3.8
Splash area	Manual cleaning	Daily	-
Non-product contact surface	Manual cleaning	Weekly	-
Machine interior	Hose down	Weekly	5.3.8

5.2.1 Cleaning detergents

Warning!

- ▶ Refer to the Material safety data sheet of the chemicals used. Take appropriate protection measures;
- ▶ The use of other not verified chemicals could lead to undesirable damage of the material surface and so to not cleanable situations.

Detergents

Cleaning procedure & Chemicals Brand (Manufacturer)		**%**	**°C**	**Minutes**
Foaming	Alkaline cleaning P3-topax 19 (Ecolab)	2 - 5	50 - 60	15 - 20
	Alkaline cleaning Supergel (VG3) (Diversey)	3 - 5	50 - 60	15 - 30
	Alkaline cleaning Unifoam (VF34) (Diversey)	3 - 4	50 - 60	approx. 15
	Neutral disinfection P3 - triquart (Ecolab) Either by spraying or foaming	1 - 3	15 - 60	5 - 10
	Periodically to remove mineral stains. Acidic cleaning P3 - topax 52 (Ecolab)	2 - 5	50 - 60	15 - 20
	Acidic cleaning Acifoam (VF10) (Diversey)	3 - 5	50 - 60	approx. 15
	Acidic cleaning Acigel (VG7) (Diversey)	3 - 5	50 - 60	15 - 30
Cleaning bath/ Soak-in	Acidic cleaning Bruspray Acid (VA19) (Diversey)	1 - 2	60 - 80	15 - 45
	Alkaline cleaning Divoflow NTC (VC26) (Diversey) If necessary Cipton (VC11)	2	60 - 80	15 - 45
Rinsing	Water Remove the residues of the disinfectant. Water of drinking quality, preferable with medium pressure.		50-60	

Attention!

Concentration depends on:

- the water hardness. Verify the local value.
- pollution of the machine. Refer to the instructions provided by the manufacturer.

5.2.2 Equipment

Cleaning equipment

The cleaning equipment (not part of the machine) includes a dosing system for the cleaning detergent. The cleaning equipment also includes a high-pressure system, limited to 15 bar, and a post-rinse water-system, limited to 5 bar.

Warning!

If not properly applied, high-pressure cleaning equipment can move dirt in an uncontrolled manner.

Follow the instructions of the foam supplier for proper foaming.

5.2.3 Cleaning water

Water hardness

The table gains an insight of the values in relation to the water type. GEA recommends 5 - 10 °e.

Water type	Salt concentration [mg/litre]	Water hardness		
		English [°e]	French [°fH]	German [°dH]
Very soft	0 - 20	0 - 5	0 - 7	0 - 4
Soft	20 - 40	5 - 10	7 - 15	4 - 8
Moderate	40 - 60	10 - 15	15 - 22	8 - 12
Relatively hard	60 - 80	15 - 23	22 - 32	12 - 18
Hard	80 - 120	23 - 38	32 - 55	18 - 30
Extreme hard	> 120	> 38	> 55	> 30

Water quality

Drinking-water quality.

5.3 Cleaning procedure

Caution!

Make sure the shutters for the cooler of the hydraulic unit are closed or covered when using a pressure cleaner.

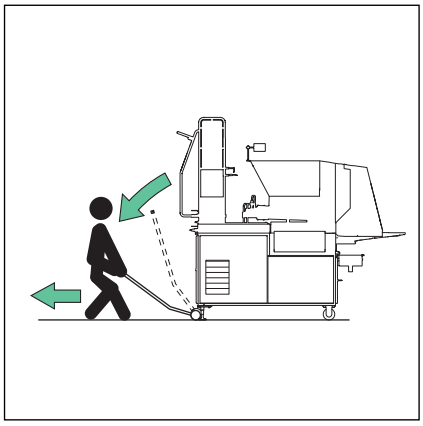
Caution!

Close the control panel cover when using a pressure cleaner.

Moving the machine

It can sometimes be useful to move the machine to another location for cleaning. To move the machine:

1. Connect the transportation lever.
2. Move the machine.
3. Remove the transportation lever.



Warning!

- Do not let go of the transportation lever when it is loaded. The transportation lever will slam up and can cause personal injury.
- To use the transportation lever safely, a distance of 2,5 meter should be kept clear of obstacles.

5.3.1 Hopper

Warning!

Use only the steps and platform to reach the position for cleaning the hopper.

1. Disassemble the forming unit and the press block. *Refer to sections* 4.3.2 and 7.3.11 .
2. Close the front cover.
3. Push the *Hydraulics* button to turn on the hydraulic pump.
4. Use the steps to climb onto the platform.
5. Push the foot-button on the platform to rotate the augers.
6. Clean the hopper. *Use a pressure cleaner.*

Caution!

Do not stick the pressure cleaner nozzle between the augers.

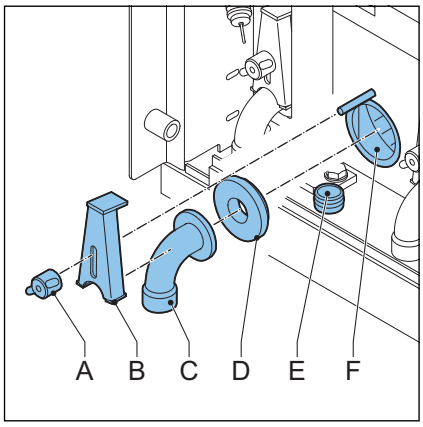
5.3.2 Press block

Press block cleaning

1. Clean the pressure chamber. *Use a pressure cleaner.*
2. Disassemble the press block. *Refer to section* 7.3.11 "Place the filling strip (option: type 600)".
3. Disassemble the air venting pipes.
4. Clean the pressure chamber and the press block bar. *Use a pressure cleaner.*
5. Clean the auger bearings. *Use a pressure cleaner and clean through the air venting pipe holes.*
6. Clean the press block guide. *Use a pressure cleaner and clean from the outside.*
7. Clean the air venting pipes and the air venting pipe connections.

Air venting pipe assembly

1. Place the plastic ring (D) over the hole (F) and place the air venting pipe (C) over the connection pipe (E) and against the plastic ring.
2. Place the clamp (B) over the air venting pipe (C).
3. Tighten the wing nut (A) to lock the clamp.



5.3.3 Knockout

1. Take away the knockout unit. Refer to section 4.3.4 "Exchange the knockout".
2. Clean the knockout unit.

5.3.4 Tooling set

1. Disassemble the tooling set. *Refer to section* 4.3.2 "Exchange the form plate".
2. Clean the parts.

Caution!

- ▶ Do not let any plastic part lay in water longer than the contact time stated for the cleaning detergent. This can cause deformation.
- ▶ Prevent temperature differences between the top and bottom sides of the plates during cleaning.
- ▶ Be careful not to damage the plates.
- ▶ Use the cleaning car.

Attention!

Do not use the cleaning car for storage. The plates will bend under their own weight.

5.3.5 Conveyor

1. Clean the belt.
2. Go to screen 2002 (Conveyor belt).
3. Touch and hold the *Start* icon until another part of the belt can be reached.

5.3.6 Collection tank

1. Take away the grate.
2. Clean the grate.
3. Clean the collection tank. *Use a pressure cleaner.*

5.3.7 Control panel

Caution!

Do not hose down the control panel. This will damage the screen.

1. Go to screen 2001 (Cleaning timer). *The screen will be inactive for 30 seconds.*
2. Clean the screen. *Use a cloth and soft soap.*

5.3.8 Product contact surface

1. Open the panels which give access to the machine interior.
2. Cautiously hose down the product contact surface.

Caution!

Do not hose directly onto lubricated parts.

5.4 Cleaning stainless steel

Introduction

Main parts of this machine are designed with stainless steel. This material is applied because of its durability. This durability is secured by

– periodic cleaning,

– with suitable means and materials,

– and with a proper after treatment.

Cleaning products have each their own specific effect on stainless steel. Consult by any doubt always the instruction leaflet (instructions for use), or contact the manufacturer.

Indifferent to the used cleaning detergent:

1. Remove after cleaning all leavings with a moist sponge or cloth.
2. Act conscientious.

⚠ Caution!

Do not use disinfectants (such as chlorine and domestic bleach), hydrochloric acid and ferriferous abrasive. Never use steel wool.

5.4.1 Cleaning

Normal washing liquid and soft soap are suitable detergents to clean stainless steel. If necessary: use a degreasing spray.

Preferably, do not use protective wax. It offers no extra protection against corrosion. Stainless steel protects itself. The other way round: waxing can have the wrong effect because it is possible that dirt adheres to a wax coating.

Slight pollution

Dirty fingerprints, light deposit, and the like.

Method:

1. Wipe the surface with a cloth, a cleaning detergent and water.
2. Use, if necessary, an abrasive that does not scratch stainless steel (for instance CIF).

If required:

1. Spray the surface with a purifier (for instance 3M Stainless steel).
2. Polish up the surface with a soft dry cloth.

Strong pollution & slight damage

Strong deposit, little corrosion, shoal scratches, and the like.

Method:

1. Wipe the surface with a cloth, a cleaning detergent and water.
2. Clean up the spots. Use a special cloth (Scotch Brite) and an abrasive.

If required:

1. Spray the surface with a purifier (for instance 3M Stainless steel).
2. Polish up the surface with a soft dry cloth.

Water consumption

With regard to the use of water, the general instruction that applies is: avoid the use of abundant water in the vicinity of a machine.

Still, there can exist the necessity to have cleaning activities with abundant water. In such cases: protect the machine.

1. Cover the electrical cabinet with plastic material.
2. Check after each cleaning activity if moisture or fluid has entered the electrical cabinet.

6 MAINTENANCE

Warning!

- ▶ Do not attempt to use the machine unless you have read and understood all the information in the safety chapter and you are sure of your ability to use the machine safely;
- ▶ Do not attempt to use the machine unless you know how to stop it in an emergency as described under emergency stop in the safety chapter.

6.1 Safety

Important conditions for safe operation without problems are:

– accurate, continuous inspections;

– following all safety instructions.

Warning!

- ▶ Switch off and lock the main switch before cleaning.
- ▶ Refer to chapter 1: Safety.

– Avoid a mixture of different lubricants;

– Choose lubricants, adapted to the ambient temperature.

Warning!

Turn off the hydraulic unit before maintenance or repair tasks.

6.2 Activity matrix

The activity matrix gives an overview of the maintenance tasks.

Daily

Inspection	Check	Action	See
Plates	Scratches, burrs and cracks	Repair or replace	4.3.1
Cleanliness equipment	Contamination	Clean, if necessary	5
Hydraulic oil level	Level	Add oil, if necessary	-
		Search for leaks	-
Conveyor belt	Damage	Repair or replace	6.2.2
Pneumatic air pressure	Pressure	Adjust	-
	Condensation level	Drain	-
Safety devices	Emergency stops Cover switches	Repair or replace	-
Machine assembled correctly	Assembly	Change, if necessary	-

40 hours

Inspection	Check	Action	See
Plates	Flatness	Replace	4.3.1
Inside equipment	Contamination	Clean	5
Oil temperature hydraulic system	Temperature		-
Oil level outfeed conveyor drive unit	Level	Add oil, if necessary	-
		Search for leaks	-
Chain outfeed conveyor	Wear	Replace	-
	Tension	Adjust	-
Hydraulic system	Leakage	Repair or replace	-
Pneumatic system	Leakage	Repair or replace	-
Outfeed conveyor	Wear	Repair or replace	6.2.2
	Tension	Adjust	6.2.2

250 hours

Inspection	Check	Action	See
Bottom- and top plate	Wear	Repair or replace	4.3.2
Mechanical press block seal	Leakage	Repair or replace	6.2.8
Knockout unit	Alignment	Adjust	6.2.3
Press block guiding	Wear	Repair or replace	6.2.5

Inspection	Check	Action	See
Augers	Damage	Repair or replace	6.2.10
	Drive unit	Repair or replace	6.2.11
Knockout mechanism	Wear	Replace	6.2.4 / 6.2.5

2000 hours

Inspection	Check	Action	See
Hydraulic oil analysis	Contamination Oil purity classification: NAS 1638: 9 ISO 4406: 18 / 15	Replace	-
Conveyor rolls	Wear	Replace	-
Auger bearings	Wear	Replace	6.2.12

Preventative	Action	See
Hydraulic cylinders	Replace	6.2.7
Hydraulic oil filters	Replace	-
Knockout cylinders	Replace	6.2.6
Press block guiding seals	Replace	6.2.8
Electronic / hydraulic system	Calibrate	6.2.13

6000 hours

Inspection	Check	Action	See
Hydraulic oil tank	Contamination	Remove sludge	-
Frame and cowling	Alignment Weldings Damage	Repair or replace	
Hopper lift mechanism	Functioning	Repair or replace	6.2.15

Preventative	Action	See
Top plate	Replace	4.3.2
Knockout mechanism	Replace	6.2.5

6.2.1 Lubrication

Machine parts

Lubricator	Application	Frequency
Shell Ondina Oil 15	Form plate assembly	Daily, first production run
Klüber 4UH1-15	Conveyor belt chain and sprocket	Every 40 hours
Klüber 4UH1-68	Variator	Every 2000 hours
Klüber paralique GA 351	Bearings	Every 2000 hours
Shell Tellus T68	Hydraulic oil	Every 2000 hours
Cassida HF68	Hydraulic oil	Every 2000 hours
Bel-Ray No-Tox HD Hydraulic Oil 68	Hydraulic oil	Every 2000 hours

6.2.2 Wire mesh belt

Wire condition

The wire mesh belt is lightly damaged.

1. Bend the links into shape.

A part of the wire mesh belt is damaged.

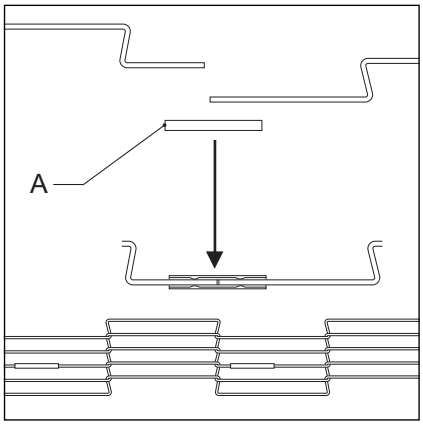
1. Cut the links to remove the damaged parts of the wire mesh belt.
2. Thread the new part into one end of the wire mesh belt. *Use the smallest wire mesh belt part possible.*

The wire mesh belt is worn.

1. Cut the links in one row.
2. Remove the wire mesh belt.
3. Guide a new wire mesh belt into the machine.

Wire connection

1. Cut each last link at 1/3 length; start at the second row.
2. Connect the wire mesh belt ends with the cut links. *If this can be just done, the tension is correct.*
3. Connect the cut links with the supplied bushes (A). *Use pliers to fix the bushes to the links.*



Wire tension

Check the wire mesh belt for low tension. A loosely running wire mesh belt runs noisily.

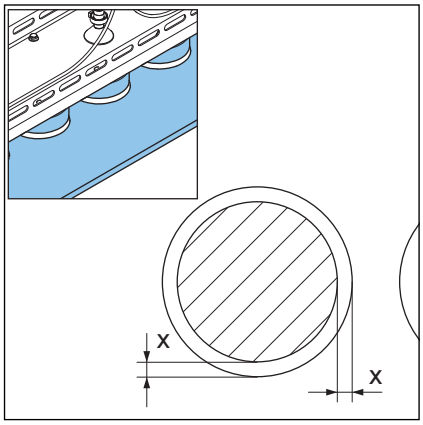
1. Verify which links are redundant.
2. Remove the redundant links to achieve the correct tension.

6.2.3 Knockout alignment

Knockout alignment

Attention!

The knockout position is correct when the knockout cups do not touch the form plate but fall into the holes in the plate. The clearance must be the same all round.



1. Push the *Hydraulics* button. *The hydraulic unit starts.*
2. Go to screen 1305 (Form plate).
3. Touch the *Start* icon to set the form plate in the knockout position.
4. Push the *Hydraulics* button. *The hydraulic unit stops.*
5. Go to screen 1304 (Knockout).
6. Touch the *Start* icon. *The knockout drops down.*
7. Open the front cover. *Access to the knockout and form plate*.
8. Adjust the alignment of the knockout and form plate. *Refer to the next paragraphs for details.*
9. Check the alignment.
10. Close the front cover.
11. Touch the *Start* icon. *The knockout goes up.*

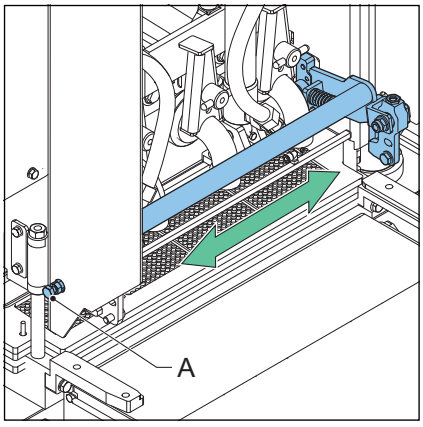
Sideways knockout position

Caution!

This adjustment has consequences for the exchange of other tooling sets.

Attention!

Do not tighten the bolts too much. Make sure the knockout can still move up and down freely but without any play.



1. loosen the lock nuts of the bolts (A) on both sides of the machine.
2. Use the bolts (A) to centre the knockout in sideway position.
3. Adjust the bolts until the knockout position is correct.
4. Tighten the bolts.
5. Tighten the lock nuts.

Form plate position

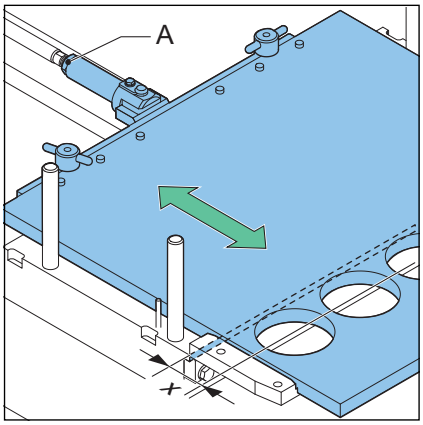
This adjustment has consequences for the exchange of other tooling sets.

1. Unscrew locknut A.
2. Rotate the cylinder rod to adjust the form plate position. *Use a spanner.*

Warning!

Do not damage the piston rod.

3. Adjust until the distance X between the centerline of the hole in the form plate and the edge of the base block is 80 mm.
4. Tighten locknut A.



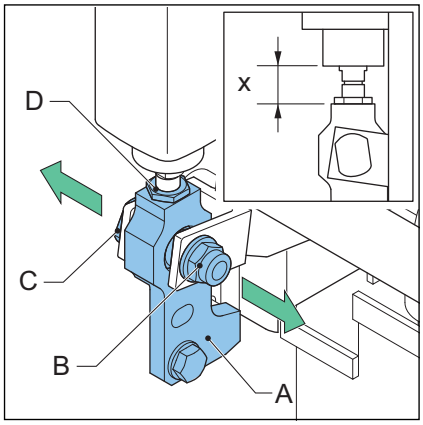
6.2.4 Knockout cylinder rod end bearing

Rod end bearing

Attention!

Make sure the bearing is pressed against the rim in the rod end hole. If the bearing is not pressed in far enough the assembly will not fit.

1. Loosen the nylock nut (B).
2. Take away the connection bolt (C).
3. Measure and write down the distance (X) between the rod end and the cylinder.
4. Unscrew the locknut (D).
5. Loosen and take away the rod end (A).
6. Replace the bearing.



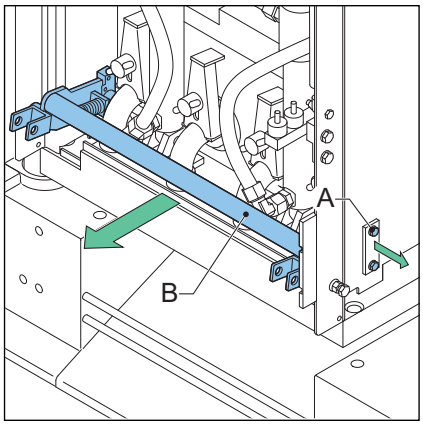
Assembly

1. Assemble in the reverse order. *Screw the rod end on the cylinder rod to the distance X measured before it was removed.*

6.2.5 Knockout mechanism

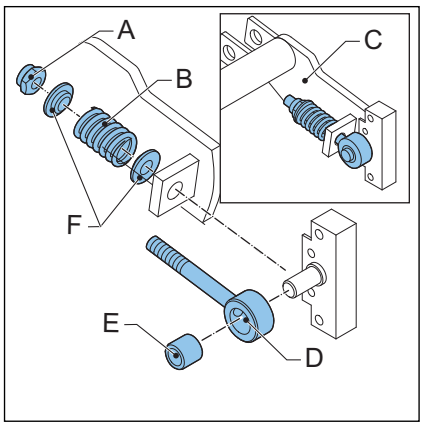
Knockout mechanism

1. Remove the rod head. Refer to section 6.2.4 "Knockout cylinder rod end bearing".
2. Loosen the two bolts (A) on both sides of the machine.
3. Take away the knockout mechanism (B).



Bearing

1. Loosen the nylock nuts (A).
2. Take away the springs (B) and the rings (F).
3. Take away the cross beam (C).
4. Take away the rod end (D).
5. Replace the bearing (E) in the rod end.



Assembly

1. Assemble the knockout mechanism in the reverse order.

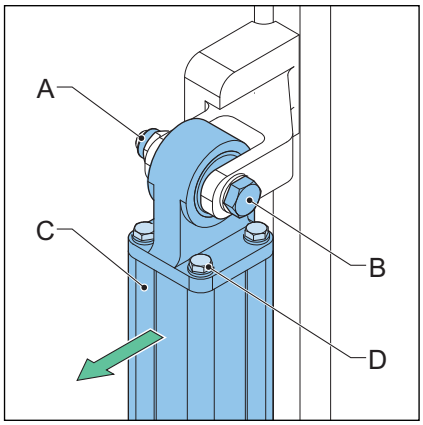
Attention!

The spring has to be tensioned to a level where it can be compressed with a reasonable amount of manual force.

6.2.6 Knockout cylinder

Cylinder

1. Disconnect the rod head. Refer to section 6.2.4 "Knockout cylinder rod end bearing".
2. Disconnect the pneumatic hoses and sensor wires from the cylinder.
3. Remove the nylock nut (A).
4. Remove the bolt (B).
5. Remove the four bolts (D).
6. Remove the cylinder (C)



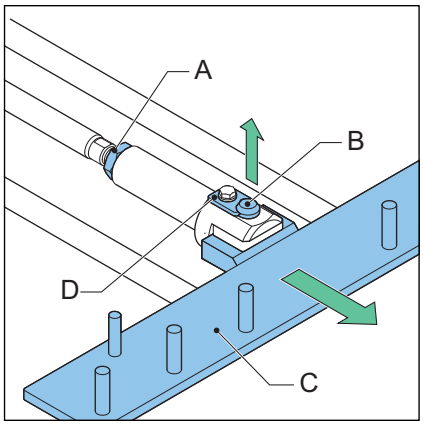
Assembly

1. Replace the cylinder.
2. Assemble in the reverse order.

6.2.7 Form plate cylinder

Form plate connection bracket

1. Remove the lock bolt (D).
2. Take away the pin (B).
3. Slide away the form plate connection bracket (C).
4. Unscrew the locknut (A).
5. Take away the rod end.

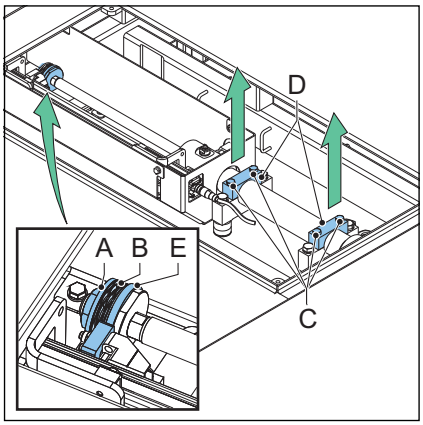


Cylinder

Warning!

Only remove the upper part of the clamping blocks. Do not change the alignment of the lower part of the clamping block.

1. Disconnect the hydraulic hoses.
2. Remove the nut and washer (A).
3. Remove the spring (B)
4. Disconnect the linear position sensor (E) from the cylinder.
5. Remove the clamping block bolts (C) of both blocks.
6. remove the upper parts of both clamping blocks (D).
7. Remove the cylinder.



Assembly

1. Assemble in the reverse order.
2. Install a form plate and a knockout.
3. Check the alignment of the form plate and the knockout. Refer to section 6.2.3 "Knockout alignment".

6.2.8 Press block seal

Warning!

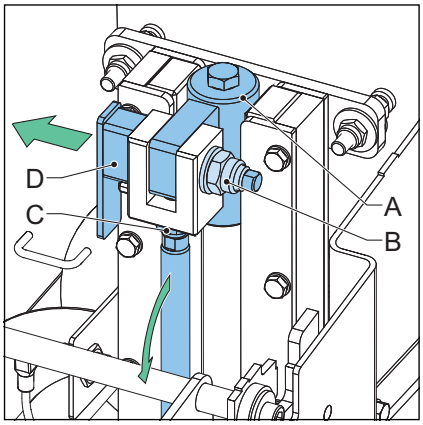
Do not change the alignment of the guiding of the guiding blocks.

Press block

1. Take away the press block. Refer tot section 5.3.2 "Press block".

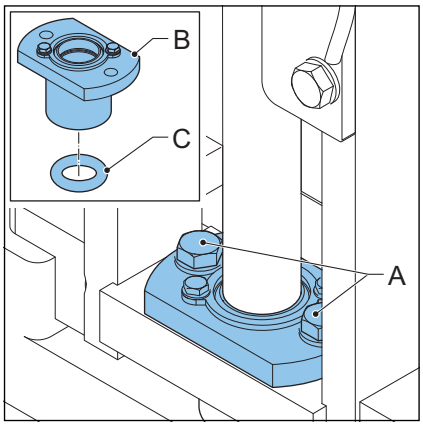
Guiding block

1. Remove the nylock nut (B).
2. Take away the connection pin (D).
3. Take away the guiding block (A).
4. Turn away the cylinder (C).



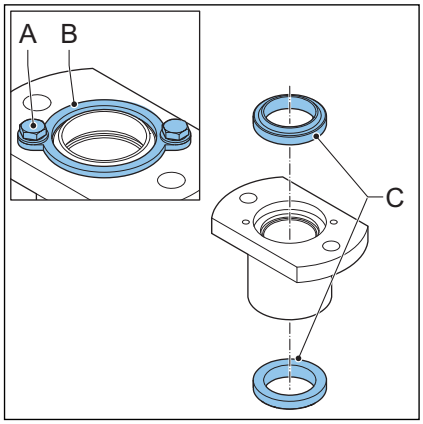
Guiding sleeve

1. Loosen the two bolts (A).
2. Take away the guiding sleeve (B).
3. Take away the O-ring in the guiding sleeve hole in the machine (C).



Press block seal

1. Loosen the two blocking ring screws (A).
2. Take away the blocking ring (B).
3. Take away the two scrapers / seals (C).



Inspection

1. Inspect the parts for damage or wear. *Replace if necessary.*

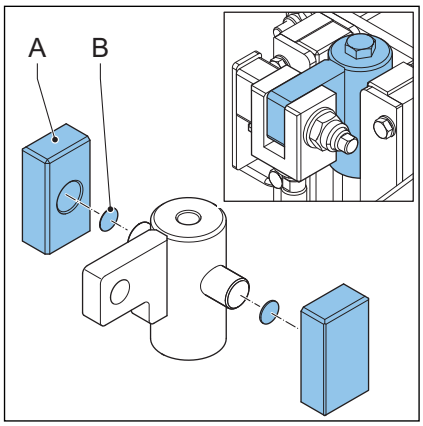
Assembly

1. Assemble the press block seal in the reverse order.

Attention!

Use Loctite 243 to secure the blocking ring screws.

6.2.9 Press block guiding blocks



1. Take away the press block guiding blocks (A). Refer to section 6.2.8 "Press block seal".
2. Take away the two plastic blocks.
3. Take away the filling discs (B) in the plastic blocks. *Keep the filling disc sets together.*
4. Place the filling discs in the new plastic blocks. *Place the filling discs exactly as in the old situation.*
5. Check that the guiding blocks are running without play.
6. Assemble the press block guiding blocks in the reverse order.

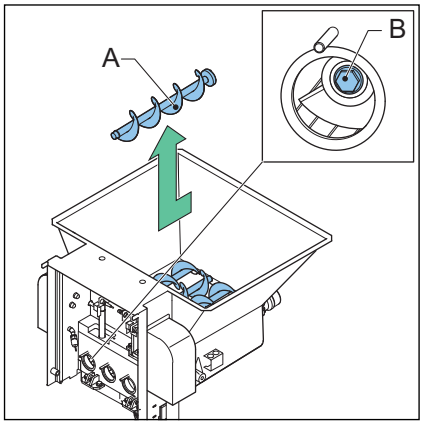
6.2.10 Augers

Augers

Attention!

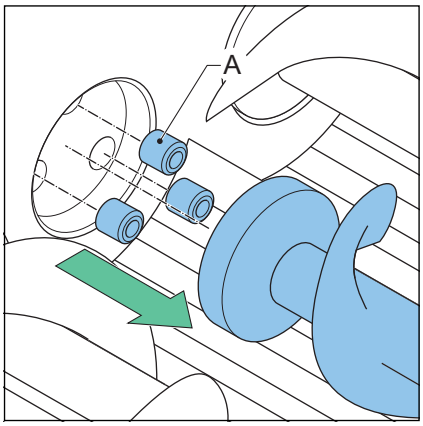
Depending on the rotation direction of the auger, the bolt can have right or left-handed thread.

1. Take away the air venting pipes. Refer to section 5.3.2 "Press block".
2. Loosen bolt B.
3. Take away the auger (A). *From inside the hopper, pull back the auger and lift it out.*



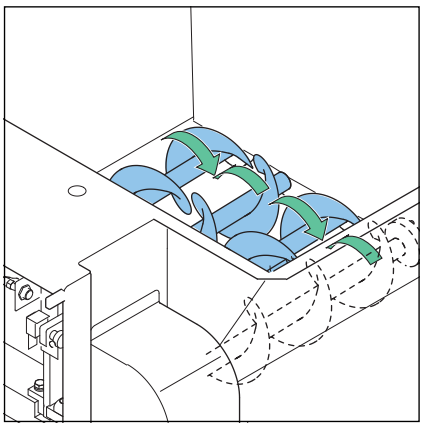
Rubber bushes

1. Check the rubber bushes (A) for deformation. *Replace in case of deformation.*



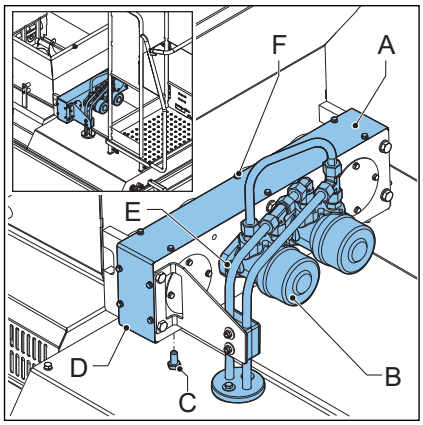
Assembly

1. Repair or replace the auger.
2. Reassemble the auger in the reverse order. *Make sure the augers are installed in the right orientation of rotation.*



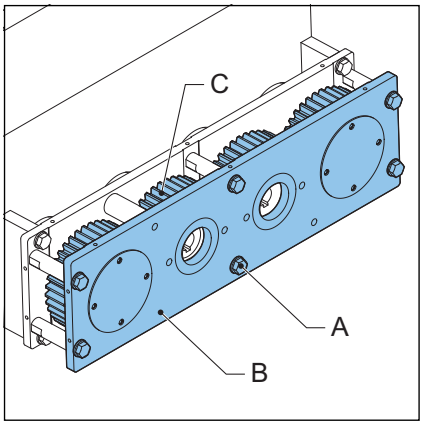
6.2.11 Auger drive unit

Covers & hydraulic motors



1. Take away the augers. Refer to section 6.2.10 "Augers".
2. Loosen the six bolts (F) of the top cover (A) of the auger drive.
3. Take away the top cover of the auger drive.
4. Loosen the six bolts (C) of the bottom cover (D) of the auger drive.
5. Take away the bottom cover of the auger drive.
6. Disconnect the hydraulic pipes.
7. Loosen the two bolts (E) of each hydraulic motor (B).
8. Take away the hydraulic motors.

Gears



1. Loosen the six bolts (A) of the rear plate (B).
2. Take away the rear plate.
3. Take away the gears (C).

Inspection

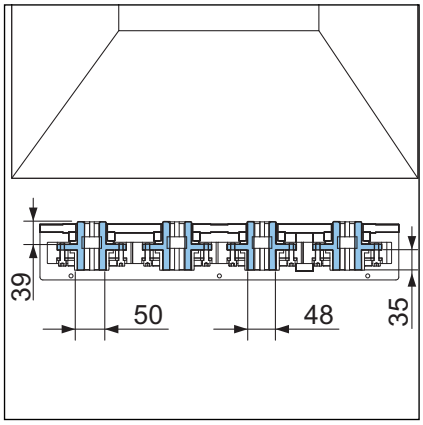
1. Inspect the gears and bearings of the drive unit for damage or wear.
2. Repair or replace the parts if necessary.

Assembly

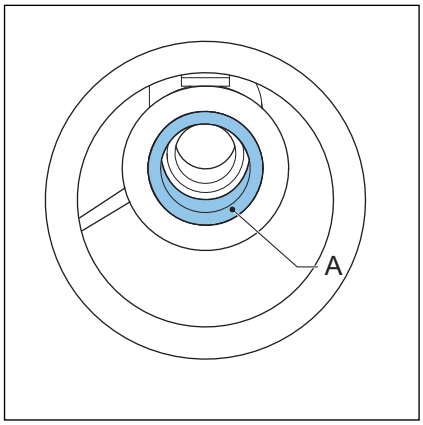
1. Assemble the drive unit in the reverse order.

Attention!

- The gear hubs have a length of 39 mm at one side and 35 mm at the other. The side of 39 mm has to face to the hopper side of the drive unit.
- The inner two gears have an outside hub diameter of 48 mm at the side that is 35 mm long. All other outside hub diameters are 50 mm.



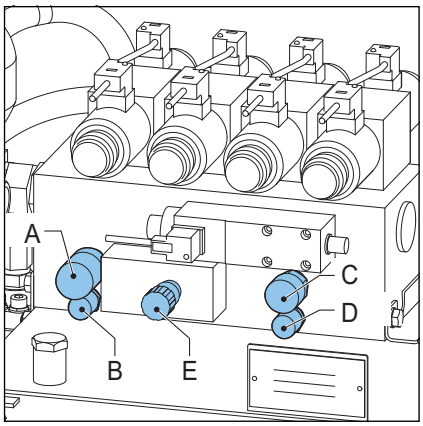
6.2.12 Auger bearings



1. Remove the auger. Refer to section 6.2.10 "Augers".
2. Remove the bearing (A). *Use a bearing puller.*
3. Press in the new bearing.
4. Install the augers.

6.2.13 Hydraulics calibration

Form plate cylinder pressure

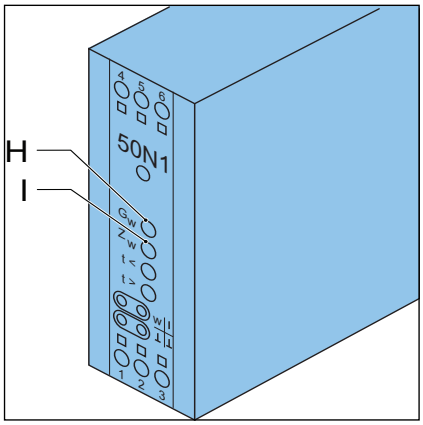


1. Loosen the sealing plug of MP1 (B).
2. Connect a pressure gauge to MP1 (B).
3. Unscrew the locknut of P1 (A).
4. Turn safety valve P1 (A), all the way (counterclockwise).
5. Open the valve (E) all the way (counterclockwise).
6. Push the *Hydraulics* button. *The hydraulics are now ON.*
7. Turn safety valve P1 (A), three revolutions in (clockwise). *Set the pressure to 130 bar (on the pressure gauge).*
8. Go to screen 1305 (Form plate).
9. After moving the form plate cylinder 2 or 3 times up and down, touch the *Form plate forward* icon and hold for 5 seconds. *The system is now pressurized.*
10. Adjust safety valve P1(A). *Set the pressure to 130 bar (on the pressure gauge).*
11. Tighten the locknut P1 (A), (replace plastic cap).
12. Touch the *ACK* icon.
13. Touch the *Form plate forward* icon. *The system is now depressurized.*
14. Push the *Hydraulics* button. *The hydraulics are now OFF.*
15. Disconnect the pressure gauge.
16. Attach the sealing plug of MP1 (B).

Press block cylinder pressure

Warning!

t < and t > are set by the factory. These must not be adjusted.



1. Loosen the sealing plug of MP2 (D).
2. Connect a pressure gauge to MP2 (D).
3. Unscrew the locknut of P2 (C).
4. Turn safety valve P2 (C), all the way (counterclockwise).
5. Push the *Hydraulics* button. *The hydraulics are now ON.*
6. Turn safety valve P2 (C), three revolutions in.
7. Go to screen 1306 (Press blocks) in manual menu.
8. After moving the press block cylinder 2 or 3 times up and down, touch the *Press block up* icon and hold for 5 seconds. *The system is now pressurized.*
9. Set in the OP the maximum pressure to 150 bar.
10. Adjust safety valve P2 (C). *Set the maximum pressure to 150 bar (on the pressure gauge).*
11. Tighten the locknut P2 (C).
12. Open the electrical cabinet.
13. Set in the OP the pressure to 30 bar. If the gauge pressure is different, adjust with screw Zw (I) on the amplifier 50N1.
14. Set in the OP the pressure to 150 bar. If the gauge pressure is different, adjust with screw Gw (H) on the amplifier 50N1.
15. Repeat step 12 and 13 until both values are correct. *Normally two or three times.*
16. Check a few random pressures (80 - 100 - 120 bar) and the rising and falling speed.
17. Touch the *Press blocks up* icon. *The system is now depressurized.*
18. Push the *Hydraulics* button. *The hydraulics are now OFF.*
19. Disconnect the pressure gauge.
20. Attach the sealing plug of MP2 (D).
21. Close the electrical cabinet.

6.2.14 Pressure switch

The pressure switch is actuated by pneumatic pressure and the switching point is adjustable. The pressure switch measures the presence of compressed air, the output is an electrical signal.

De pressure switches are located next to the pressure regulator.

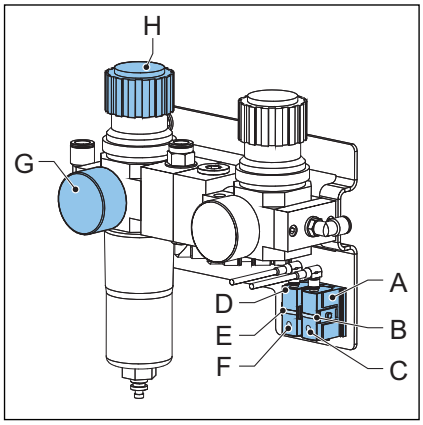
The switching pressures is 4 bar for the overall machine pressure and 0.25 - 0.30 bar for the foot pedal.

Attention!

Make sure that there is power supplied to the sensor for at least ten seconds after releasing the edit-button, this to store the current pressure in the sensor.

Adjustment of the pressure switches

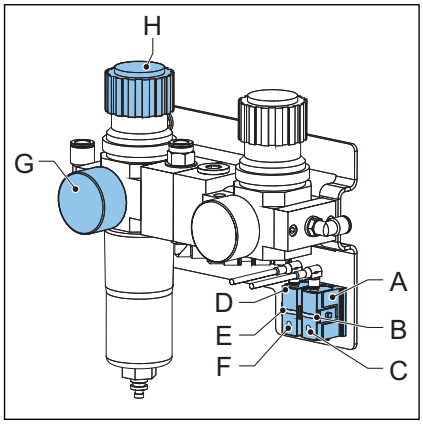
Overall machine pressure



1. Switch on the machine.
2. Set the air pressure to 4 bar, by turning the knob (H) on the main pressure regulator. *Use the pressure gauge (G) to read the pressure.*
3. Press the edit-button (C) of the pressure switch (A) for more than two seconds, until the LED (B) flashes.
4. Release the edit-button (C). The current pressure is saved as the switching pressure.
5. Do a test-run wit different pressures to ascertain whether the pressure sensor switches as required. *At an active switching signal, the LED illuminates.*
6. Set the air pressure of the main pressure regulator back to 6 bar. *Using the knob (H) and the pressure gauge (G).*

Foot-pedal pressure switch

This test has to be done with two persons, one to operate the foot-pedal and one to adjust the pressure switch.



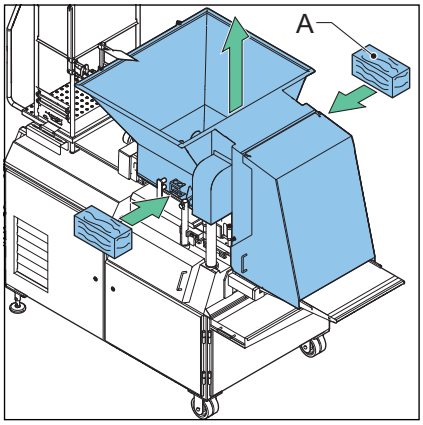
1. Switch on the machine.
2. Operate the foot-pedal by pushing it in totally, keep it pushed in for the time of the adjustment
3. Press the edit-button (F) of the pressure switch (D) for more than two seconds, until the LED (E) flashes.
4. Release the edit-button (F). The current pressure is saved as the switching pressure.
5. Release the foot-pedal.
6. Operate the foot-pedal several time to ascertain whether the pressure sensor switches as required. *At an active switching signal, the LED illuminates.*

6.2.15 Hopper lift mechanism

Support blocks

If, for any reason, the hopper lift mechanism must be dismantled:

1. Push the *Hopper up* button. *The hopper goes up*.
2. Place two wooden support blocks (A), with a maximum width of 75 mm, under the hopper.
3. Push the *Hopper down* buttons at the same time. *The hopper lowers onto the support blocks.*
4. Fasten the hopper-nuts to secure the hopper.
5. Turn the main switch to OFF. *The machine is OFF.*



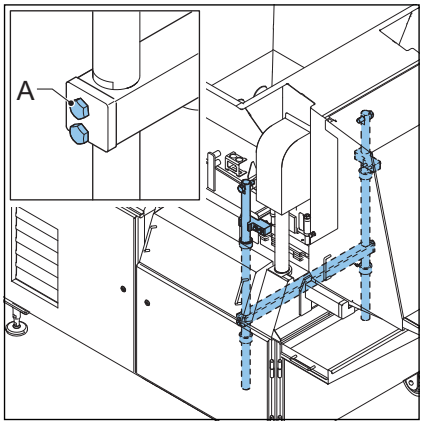
Cross beam

1. Loosen the four cross beam bolts (A).

Warning!

Do not loosen the bolts if the hopper is not supported.

2. Take away the cross beam.



Assembly

1. Tighten the cross beam bolts to 40 Nm. *Secure the bolts with Loctite 243.*
2. Turn the main switch to ON. *The machine is ON.*
3. Remove the hopper-nuts.
4. Push the *Hopper up* button. *The hopper goes up.*
5. Take away the wooden support blocks.

7 TROUBLESHOOTING

Warning!

- Do not attempt to use the machine unless you have read and understood all the information in the safety chapter and you are sure of your ability to use the machine safely;
- Do not attempt to use the machine unless you know how to stop it in an emergency as described under emergency stop in the safety chapter.

7.1 Safety

Warning!

- Switch off and lock the main switch before inspection and repair;
- Refer to chapter 1: Safety.

The control panel only displays information about errors that are detected by the machine control. When a critical error occurs, the machine stops automatically. The control cannot detect every error that results in an unacceptable output. The operator has to observe whether the machine functions correctly.

Emergency stop The emergency stop button can be pushed by accident or on purpose.

Warning!

Never reset an emergency stop if it is not clear who pushed the button and why.

7.2 Error messages

The error messages are divided in two qualifications, error messages intended for operators and error messages intended for service personnel.

7.2.1 Operator

Code	Alarm text (message)	Solution	See
	Emergency stop	Unlock the emergency stop and reset.	-
	Cover not closed (front side)	Close the front cover.	-
	Knockout> downwards: time-out	Set a longer knockout time.	2.4.4
	Hopper> not in position	Lower the hopper.	-
	Emergency stop> following machine	Refer to the manual of the following machine.	-
	No clearance from following machine	Refer to the manual of the following machine.	-

7.2.2 Service personnel

Code	Alarm text (message)	Solution	See
	Air> pressure too low.	Check the air supply.	-
	Oil> temperature too high	Wait for the oil to cool down.	-
		Check the functioning of the oil cooler.	-
	Oil> level too low	Add oil.	-
		Check the system for leaks.	-
	Phase: failure or reversal	Change the polarity.	3.2
	Conveyor> motor overheated	Wait for the motor to cool down.	-
		Check conveyor functioning.	-
	Knockout> downwards: time-out	Set a longer knockout time.	2.4.4
		Check the knockout valve.	7.3.4
	Knockout> upwards: time-out	Check the knockout sensor.	-
		Check the knockout valve.	7.3.4
	Form plate> not in	Check linear position sensor of the form plate.	7.3.4
		Check if the form plate speed is not too low.	-
	Form plate> not out	Check linear position sensor of the form plate.	7.3.5
		Check if the form plate speed is not too low.	-
	Form plate> middle position not detected	Check linear position sensor of the form plate.	7.3.5
		Check if the form plate speed is not too low.	-
	Frequency converter> error	Refer to the frequency converter manual	-
	Hydraulic pump> pump overheated	Check the coupling between the pump and motor.	7.3.6
	Hydraulic pump> delta: no feedback signal	Check the coupling between the pump and motor.	7.3.6
	Oil cooler: device overheated	Check the functioning of the radiator and radiator fan.	-
	Hopper> not in position	Check the sensors on the hopper lift cylinders.	-

7.3 Observed deviations

7.3.1 Machine problems

7.3.1.1 Operator

Problem	Possible cause	Solution (See)
Knockout cylinder does not go down.	The knockout time is too short for the knockout to make a full stroke.	Set a longer knockout time.

7.3.1.2 Service personnel

Problem	Possible cause	Solution (See)
Knockout cylinder does not go down.	The sensor on the knockout is defective.	Repair or replace.
	Air pressure or air flow to the knockout cylinders too low.	7.3.3
	The knockout cylinders are defective.	Repair or replace.
Knockout cylinder does not go up.	The sensor on the knockout is defective.	Repair or replace.
	The air pressure or air flow to the knockout cylinders is too low.	7.3.3
	The knockout cylinders are defective.	Repair or replace.
The form plate connection bracket is damaged.	Accident.	7.3.7
Loud mechanical noise of the hydraulic cylinder.	Wear of the end-buffer	Adjust the flow control valve of the end-buffer. 7.3.9
Fork of the bridge-breaker does not rotate.	The pawl does not catch the gearwheel.	Adjust the deten tion rubber or replace the pawl, 7.3.10 .

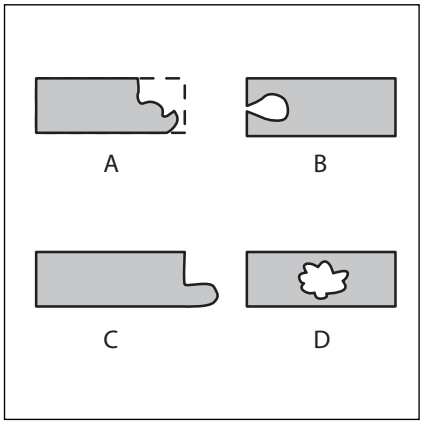
7.3.2 Product problems

Problem	Possible cause	Solution (See)
Product quality fluctuates	The temperature of the processed material fluctuates.	7.3.12
The form plate does not fill enough	The pressure in the press block is too low.	Increase the pressure.
		7.3.11 (for type 600).
	Too little raw material in the press block.	Check by activating the augers manually for two seconds. Adjust the auger time if necessary.
	The delay time is too long.	Reduce the delay time.
	The filling time is too short.	Increase the filling time.
	The form plate stroke is too short.	Increase the stroke length (default = 270 mm).
	The press block is raised too early.	Decrease the position press block up (default = 150 mm)
The form plate overfills	The pressure in the press block is too high.	Reduce the pressure.
	The press block delay time is too short.	Increase the press block delay time.
	The filling time is too long.	Reduce the filling time.
There is a tear in the product	The stroke of the form plate is too long.	Increase the press block delay time.
		Decrease the stroke length (default = 270 mm).
There is a cavity in the product	The air can not escape from the form plate.	Check the air venting pipes.
		Install a bottom plate with air venting holes.
	Too much water is applied to the forming unit.	Reduce the time the nozzles spray water.

Problem	Possible cause	Solution (See)
The knockout does not free the product well	The timing of the air pulse is not right.	Adjust the air blast offset time.
	The knockout is too fast.	Increase the knock-out time.
	The pressure of the air pulse is too low.	7.3.3

Product problem descriptions

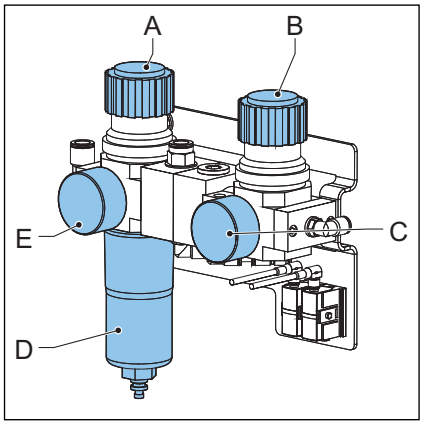
A The form plate does not fill enough.
B There is a tear in the product.
C The form plate overfills.
D There is a cavity in the product.



7.3.3 Air pressure

Adjustment

Knob (A) controls the system air pressure, knob (B) controls the air pressure of the knockout air blast.



To adjust the system air pressure:

1. Turn the knob (A) of the main pressure regulator (D) Clockwise or counterclockwise to adjust the system air pressure. *Use the pressure gauge (E) to read the pressure*.

To adjust the pressure of the knockout air blast:

1. Turn the knob (B) Clockwise or counterclockwise to adjust the knockout air blast pressure. *Use the pressure gauge (C) to read the pressure*.

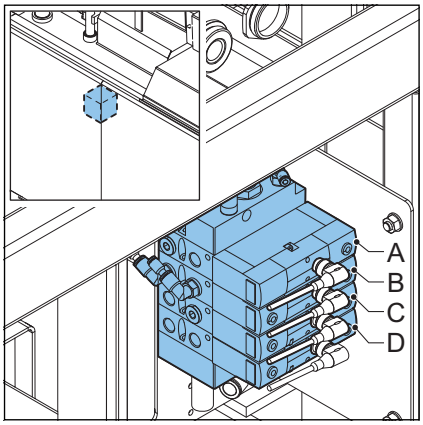
7.3.4 Manual operation

The pneumatic and hydraulic valves can be operated manually.

Pneumatic valves

Use a pin to push on the blue buttons to operate the valves.

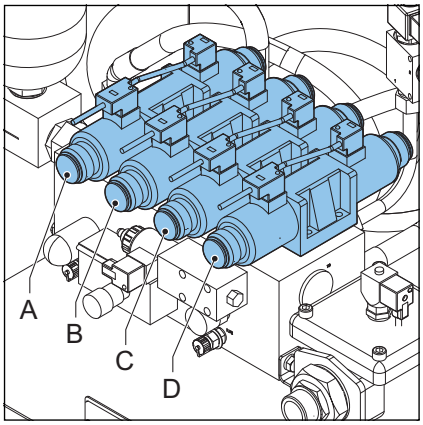
A The knockout cylinders.
B The hopper lifting cylinders.
C The radiator shutters cylinder.
D The knockout air blast.



Hydraulic valves

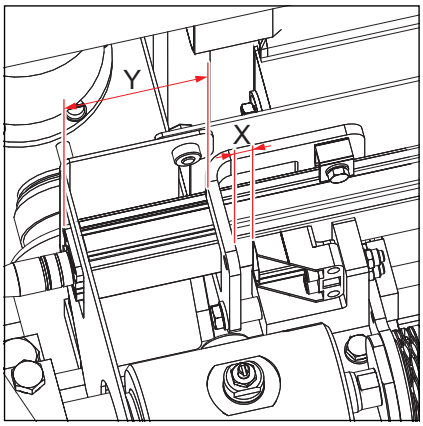
Turn the knobs on the sides of the valves to operate the valves.

A Augers
B Form plate drive
C Press block left
D Press block right



7.3.5 Linear position sensor calibration

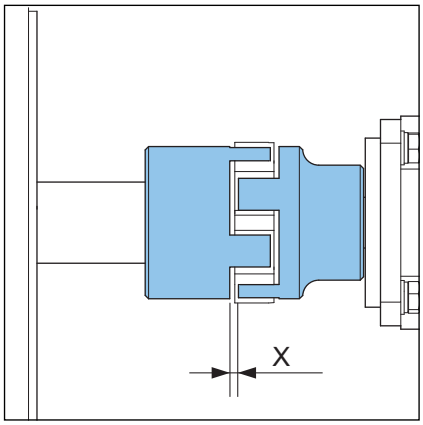
The zero point needs to be calibrated if new software is installed or if the form plate cylinder or the linear position sensor is replaced.



1. Check if the linear position sensor is aligned proper Y = ± 63 mm.
2. Go to screen 3350 (Manual).
3. Push the *Hydraulics* button. *The hydraulic unit starts.*
4. Touch the *Left* icon. *The form plate moves in.*
5. Touch and hold the *Right* icon. *The form plate moves out and the value x = ± 13 mm.*
6. Hold the *Right* icon for several seconds till the message appears that the form plate is positioned. *The linear position sensor zero point is now calibrated.*
7. Touch the *ACK* icon.
8. Push the *Hydraulics* button. *The hydraulic unit stops.*

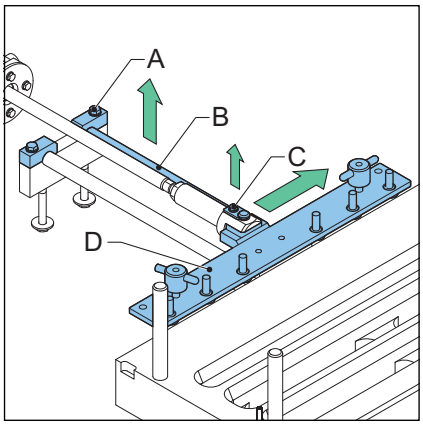
7.3.6 Hydraulic pump coupling

1. Check if the gap (X) between the coupling halves is at least 3 mm.



7.3.7 Form plate connection bracket

Removal



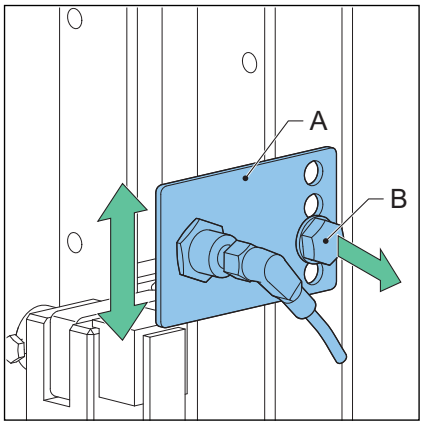
1. Take away the lock ring of the pin (C).
2. Take away the pin.
3. Slide away the form plate connection bracket (D).
4. Loosen the clamping block bolt (A).
5. Take away the clamping block.
6. Take away the guide shaft (B).
7. Take away the form plate connection bracket (D).

Assembly

1. Replace in the reverse order.

7.3.8 Press block stroke adjustment

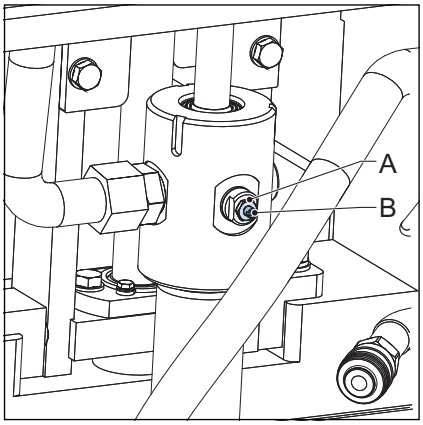
When the machine is set to step filling, it can occur that the last step does not provide enough volume to create proper products. If this problem occurs, the position of the sensor that triggers the return stroke has to be moved.



1. Loosen the sensor bracket bolt (B).
2. Move the sensor bracket (A) to a different position.
3. Tighten the sensor bracket bolt.

7.3.9 End-buffer cylinder adjustment

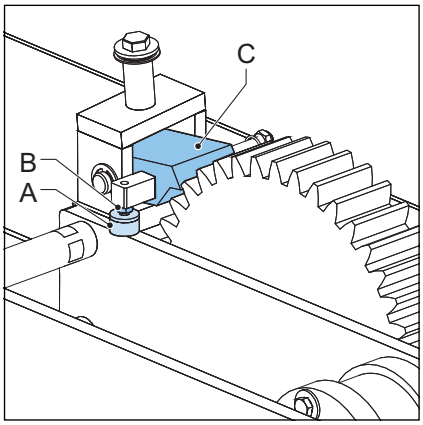
When the cylinder makes a loud mechanical noise, which indicates the beginning of wear of the end-buffer, it is possible to adjust the flow control valve. When it is not possible to reduce the mechanical noise, it is necessary to replace the cylinder.



1. Loosen the lock-nut (A).
2. Turn the adjustment screw (counter)clockwise to minimize the mechanical noise. *Replace the cylinder if a minimization of the mechanical noise is not possible.*
3. Tighten the lock-nut (A).

7.3.10 Detention rubber adjustment (400 only)

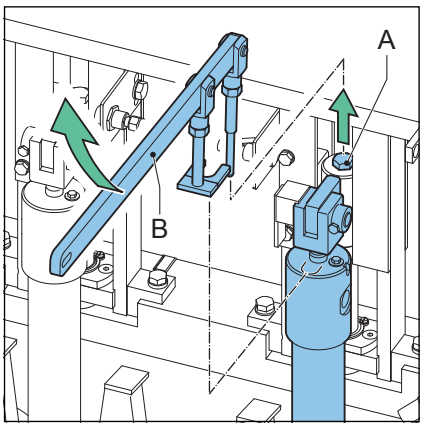
1. Loosen the lock-nut (B).
2. Turn the detention rubber (A) clockwise, this will lower the pawl (C). *Replace the pawl (C) if necessary.*
3. Tighten the lock-nut (B).



7.3.11 Place the filling strip (option: type 600)

If a sufficient pressure can not be achieved to properly fill the form plate, the pressure can be raised by placing a filling strip in the pressure chamber.

Disassembly



1. Go to screen 1306 (Press blocks).
2. Touch the *Start* icon and set the press block bar to its lower position.
3. Loosen the bolt (A).
4. Take away the press block bar. *Use the special lever (B) supplied with the machine.*

Warning!

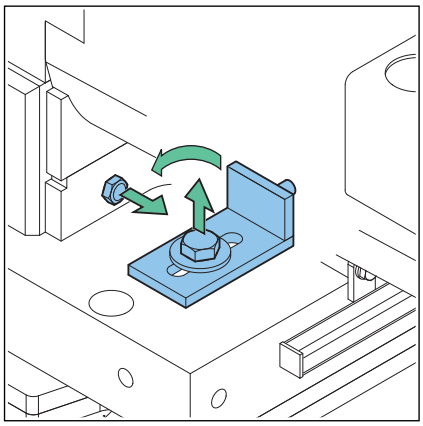
Do not catch the press block bar with your hands.

5. Pull out the press block bar between the threaded rods at the side of the machine.

Assembly

1. Put the press block bar into the pressure chamber.
2. Fix the press block bar with the bolt.
3. If the filling strip is not fitted: check if the plugs are fitted correctly.

Place the filling strip



1. Loosen the plugs.
2. Take the plugs out of the holes.
3. Move the plugs out of the way.
4. Fasten the plugs.
5. Place the filling strip.
6. Fasten the filling strip with nylock nuts. *Use a spanner.*

7.3.12 Product temperature control

The quality of the product can fluctuate if the temperature of the processed material fluctuates. Take care of a constant temperature of the processed material. To compensate the temperature difference:

1. Decrease the press block pressure if the material temperature increases.
2. Increase the press block pressure if the material temperature decreases.

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