The background of the page is a 3D-rendered honeycomb pattern. The hexagonal cells are white and grey, with some cells having a gold-colored outline. The pattern is set against a white background with a subtle geometric design of overlapping triangles.

**Recommendations on
Cleaning a
Gala
Underwater
Pelletizing System**

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1 General safety instructions

1.1 Important safety instructions

- Initial start-up, re-operation and any assembly, maintenance or repair work should only be carried out by trained personnel observing all safety instructions in the Operating Instructions
- Electrical work may only be carried out by appropriately trained experts!
- Before any repair or maintenance work is performed, the entire system must be switched off, the absence of tension must be verified, and the power supply must be locked out. Please note that switching off individual components alone will not ensure the safety of the personnel as other functioning system components may still pose dangers.
Attention: Even after the power has been switched off at the mains switch, the mains voltage is still connected to the mains switch itself.
- Be sure that all moving parts have come to a complete stop before any guards or covers are removed.
- The provided safety, monitoring and protective devices must not be removed or impaired in their function or bypassed!
- Only use original spare parts.
- All guards must be properly refitted to the machine after the maintenance or inspection work has been completed.
- All piping connections must be correctly fastened before the system is started.
- All repairs must be properly executed.

1.2 Unauthorized Operation

Removal of safety guards or other safety devices is prohibited.

Starting the pelletizer before it has been coupled to the water box is prohibited.

Never operate the system unless the die plate/water box assembly is firmly bolted to the upstream equipment components.

Never start the dryer unless it has been properly assembled and all screwed joints have been properly tightened.

Any change of the rotor speed is prohibited.

Any exceeding of the maximum permitted speeds is prohibited.

1.3 Risks Involved in Non-observance of the Safety Instructions

Bodily contact with hot water or additives in the water can cause personal injuries.

NEVER place any object into the running equipment, as this can cause severe bodily harm.

Physical contact with any moving part can result in severe personal injury.

Failure to use the foam rubber cutter hub protector can easily result in severe personal injury.

Failure to wear protective clothing while the die plate is exposed can result in severe personal injury caused by molten polymer.

Failure to observe the physical and chemical properties of the polymer can result in severe personal injury.

Handling the cutter hubs can result in personal injury.

1.4 Avoidance of Environmental Damage

Plastic melt residues must be properly disposed of.

Systems of this type may produce plastic fines that may be potentially dangerous to the environment.

The process effluent must be properly disposed of.

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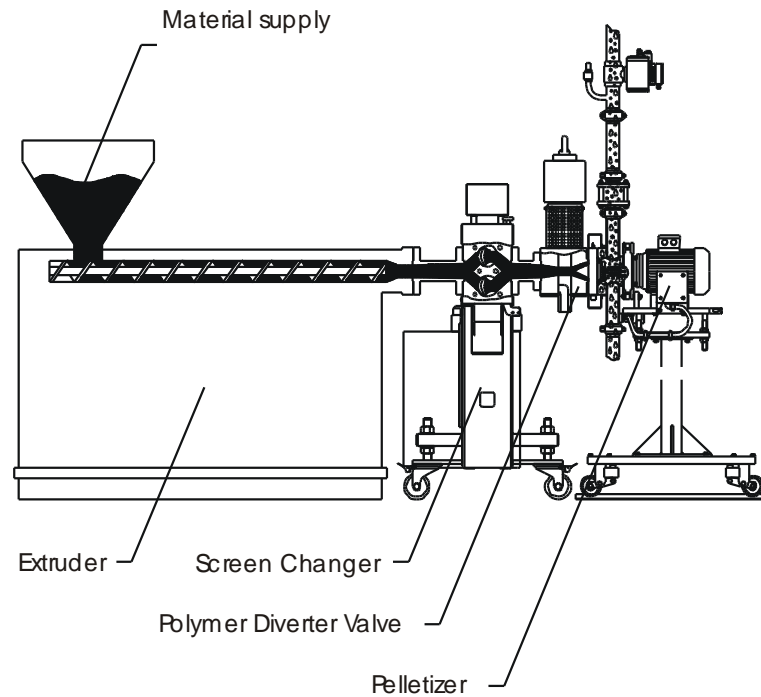
1.5 Residual Hazard

Even when all Safety and Operating Instructions are observed, the following risks may be present:

- Water or process fluid can splash out when guards, couplings, etc. are opened or removed.
- The cutter blades can cause severe injuries.
- At all times there is a danger of injury as a result of molten polymer and hot surfaces.
- Even after the system has been switched off, there is a **risk of burning** by vapor, hot condensate and hot surfaces.

With open cutting chamber there is always a danger of injury caused by plastic melt and water splashing out.

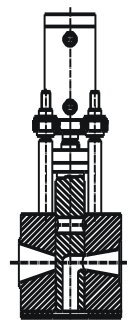
2 Cleaning of the system on the melt side (Polymer diverter valve / die plate /pelletizer)



1. Push the „Automatic Stop“ push button at the control cabinet.

This will trigger the following:

- a) The entire system is stopped.
- b) The polymer diverter valve moves into starting position
- c) The bypass valves are switched to restrict the water circulation to the tempered water system.
- d) The drain valve at the bypass is opened and the bypass is drained.



Starting Position

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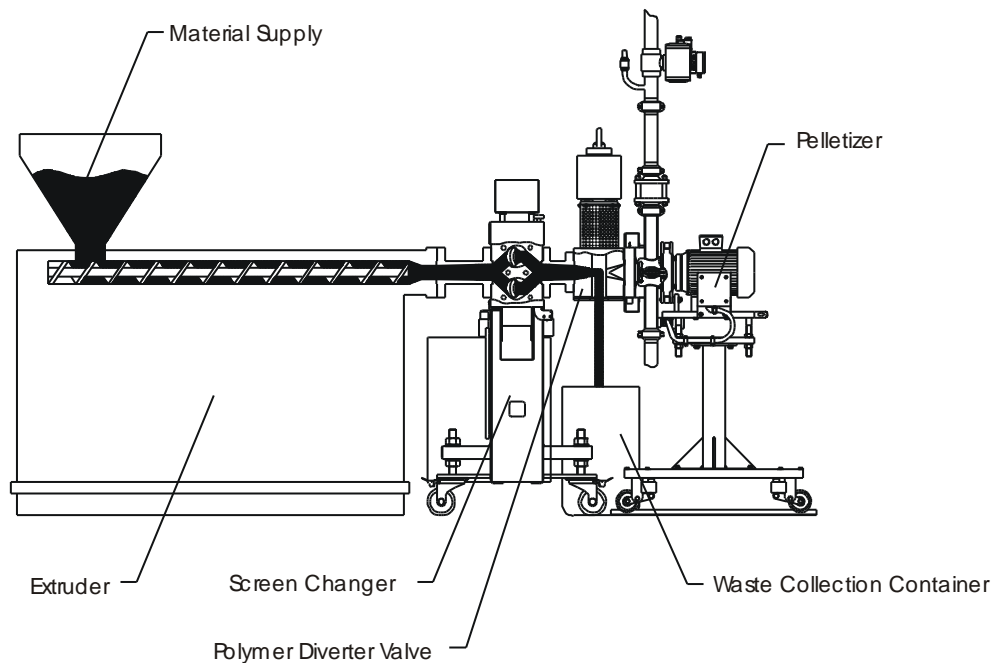
Cleaning of the system on the melt side (continued)

2. Change material in the extruder feed hopper

a) Purge with HDPE or LDPE of a low MFI

b) Purge with similar products or the next material to be processed

3. Set the processing temperature of the material processed last and purge with the new material until the new material appears in the waste collection container below the polymer diverter valve.

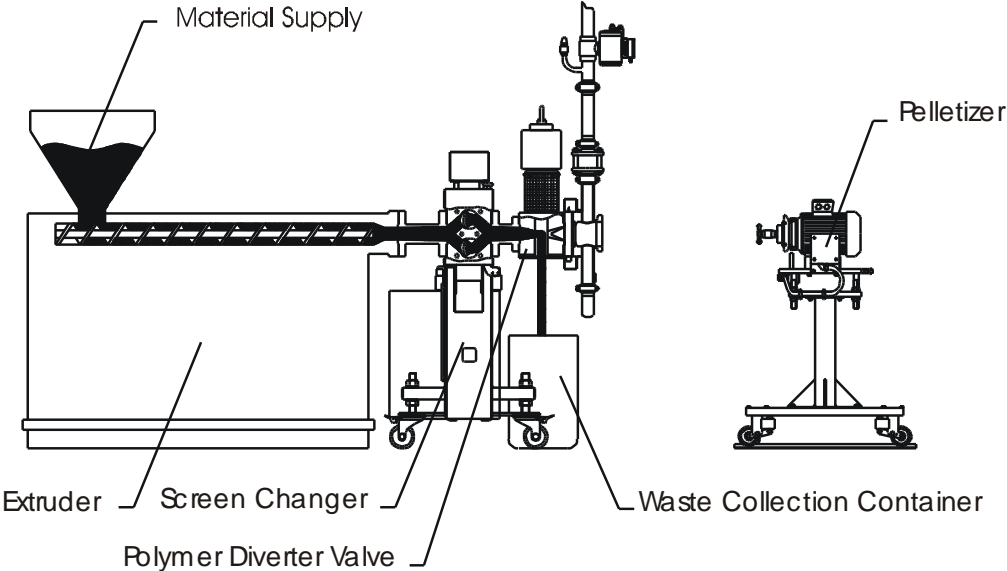


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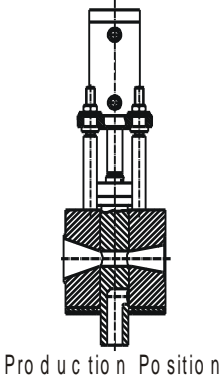
Cleaning of the system on the melt side (continued)

4. Uncouple the pelletizer and pull the pelletizer off the water box.



5. Stop extruder or melt pump.

Move polymer diverter valve into production position and restart the system.



Cleaning of the system on the melt side (continued)

Now the residual old melt that is still present in the polymer diverter valve and the die plate is replaced by the new material.

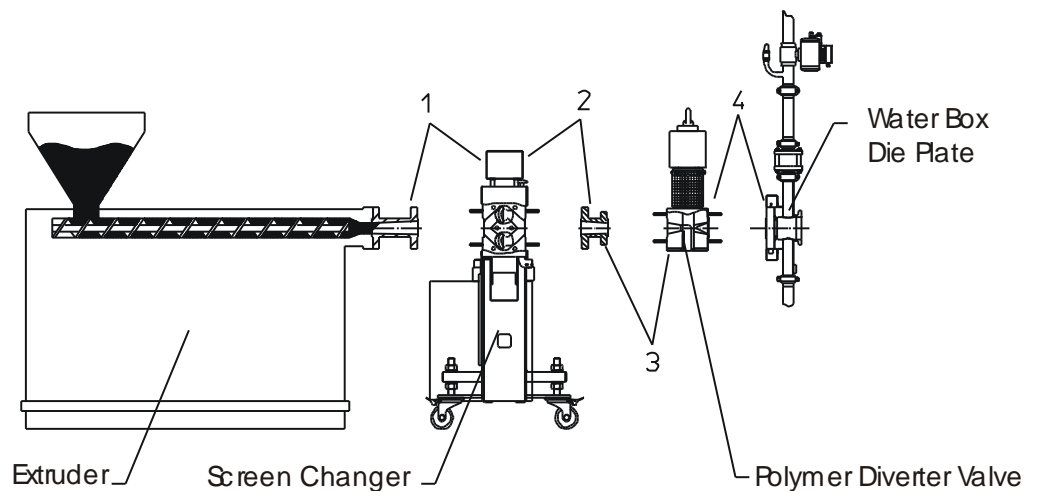
As soon as clean, new melt is pressed out of the die plate holes, the extruder or melt pump can be switched off. Clean the cutting surface of the die plate with a soft scraper.

Attention: Before carrying out the following steps it must be ensured that the control and the power supply of the individual assemblies are fully disabled and locked out!

For the further cleaning of the melt conducting parts proceed as follows:

a) Loosen hex nuts of the joints of

- Adapter – screen changer (1) (if applicable)
- Screen changer – adapter (2) (if applicable)
- Adapter – polymer diverter valve (3) (if applicable)
- Adapter (or PDV) – water box and die plate (4)



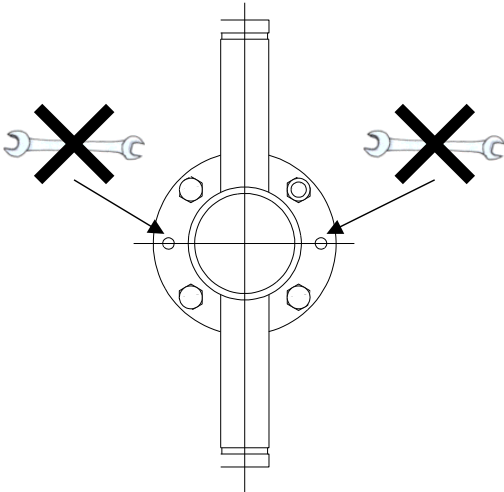
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Cleaning of the system on the melt side (continued)

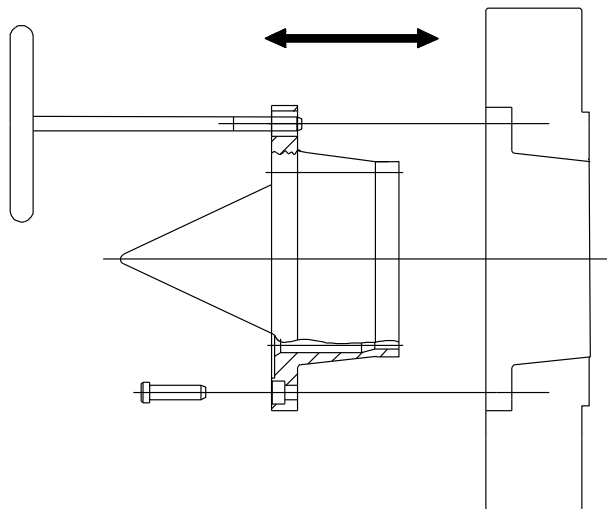
Attention:

Do not loosen the nuts of the stud bolts fastening the die plate to the water box (3 o'clock and 9 o'clock position) when loosening the joint between adapter or polymer diverter valve and water box!



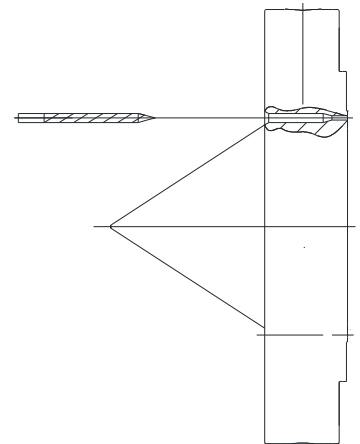
Cleaning of the system on the melt side (continued)

- b) Removal of standard die plate and/or die plate insert
- **Standard die plate:** Pull the cartridge heaters out of the die plate. Then loosen the two fastening nuts holding the die plate to the water box.
 - **Die plate insert:** Use an Allan key to remove the two (2) hexagon socket screws fastening the insert to the body. These screws are on the back of the die plate in 7 o'clock and 1 o'clock position.
 - Insert two T-handles into the two threaded holes on the cone side. Loosen the insert from the body and pull it out.



Cleaning of the system on the melt side (continued)

- c) After removal of the adaptors, the polymer diverter valve and the die plate, blow out the inlet and outlet channels of the adaptor and the polymer diverter valve with compressed air (to assist in the removal of melt residues) and clean them with a brass scraper and a brush (machine drill with brass brush attachment). For this, the piston of the polymer diverter valve must be in production position.
- d) The die plate is cleaned in an oven. Remove the die plate insulation before placing the die plate into the oven as the insulation would burn otherwise. Also remove the sealing washers. Slowly heat the die plate in the oven (200 °C per hour) to 370°C to 400°C and maintain that temperature for six to eight hours. This will bake off residual particles that can then be blown off with compressed air. The cooling of the die plate should also not be faster as with 200°C per hour! The die plate holes can be cleaned with a special drill supplied by Gala (ATTENTION! Never use commercial drills; drill angle and cutting blade are modified.)
- For notes on the reassembly of the die plate, see the corresponding chapter of the Operating Instructions.

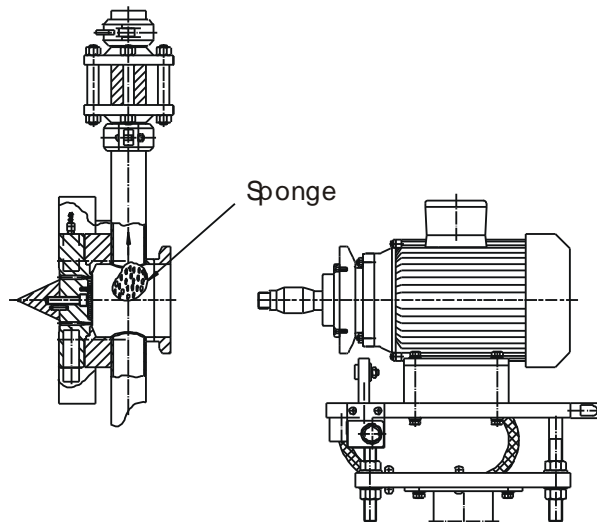


3 Cleaning of the tempered water system (TWS) Including the fines removals sieve (FRS)

3.1 Cleaning of the process water pipeline

1a) Remove cutter hub from the pelletizer shaft.

1b) Push a commercial sponge into the upper pipeline of the water box.



1c) Couple the pelletizer

1d) Push the Start button for the „Blade grinding“ function. This will switch the bypass valve so that water circulates through the entire pipeline without starting the equipment upstream of the pelletizer (extruder and polymer diverter valve). The sponge will now be carried along by the water flow through the pipeline and can take up any pellet fines adhering to the inside surface of the pipeline. The sponge is collected by the agglomerate catcher grille.

Repeat this process two or three times.

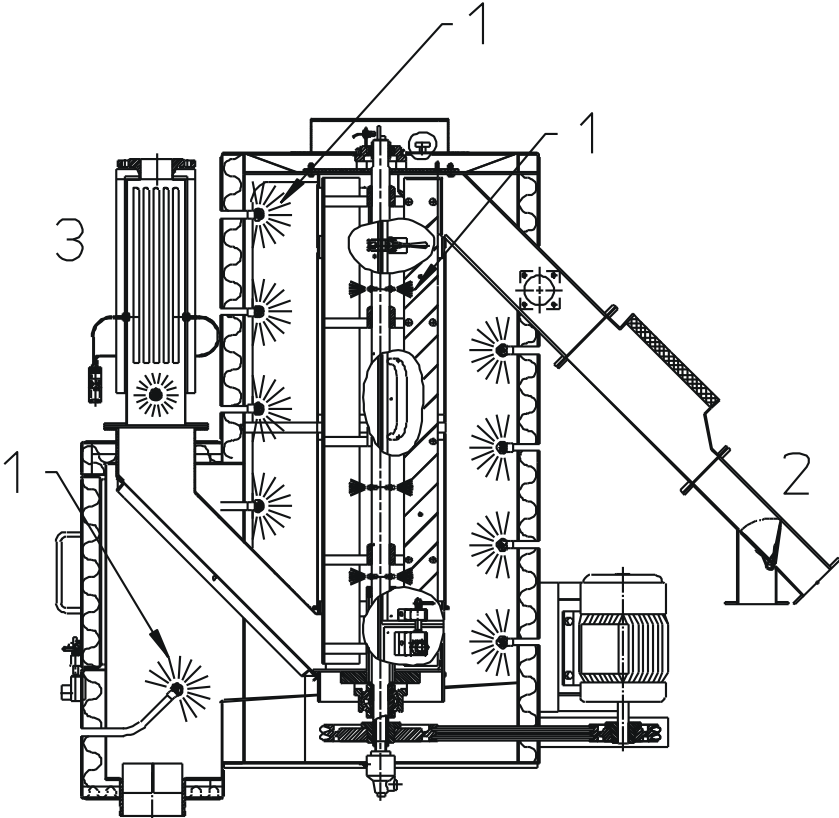
Note:

This type of cleaning can only be performed for systems with agglomerate catcher.

Cleaning of the tempered water system (TWS) including the fines removals sieve (FRS) (continued)

3.2 Cleaning of the dryer

- 1 Dryer cleaning system
- 2 Pellet diverter valve
- 3 Agglomerate catcher



There are two types of dryer cleaning – the ,normal' cleaning (2a) and the cleaning required for a change of product (2b).

Cleaning of the tempered water system (TWS) including the fines removals sieve (FRS) (continued)

2a) Normal cleaning

After longer production runs or once every month, whichever is earlier, the following cleaning procedures should be carried out:

- Activate spray nozzle system if installed.
- Remove and blow out air filters with compressed air.
- Open doors and remove accumulated plastic particles.
- Remove all screens and spray-wash them carefully with water (high-pressure cleaner). Brush or blow off fines particles as required.
- Spray-wash the entire rotor interior.

For notes on assembly/screen installation see corresponding chapter in the Operating instructions.

2b) Cleaning for change of product

- Activate spray nozzle system if installed. This will provide a rough cleaning of the dryer interior.
- Remove all screens (pre-dewatering, inlet and rotor screens).
- Remove filter of the filter casing (if applicable) and blow out filter with compressed air.
- Spray-wash rotor with a high-pressure water jet from the top.
Any residual dirt at the rotor must be removed mechanically using an appropriate tool.

Cleaning of the tempered water system (TWS) including the fines removals sieve (FRS) (continued)

- Spray-wash the entire dryer interior, including pellet water inlet, agglomerate catcher, pre-dewatering device, filter casing and pellet water outlet with water. If necessary, scrape off any pellet residues.
- Carefully clean the outer edges of the retainer rings to ensure a correct seating of the rotor screens.
- Spray-wash all screens carefully with water and then blow them off with compressed air. Major stains must be removed with a paint solvent and subsequent spraying with a high-pressure cleaner.
- Install screens. The downtime can be reduced by having a set of replacement screens ready.
- Thoroughly clean inlet channel. To avoid pellets escaping at the channel, the screen holder must sit tightly on the inlet channel before it is clamped on.
- Insert new or cleaned filters.
- Close all doors.

Cleaning of the tempered water system (TWS) including the fines removals sieve (FRS) (continued)

3.3 Cleaning the water tank

The process water should be renewed about once every week (depending on the degree of pollution).

- Before the water is drained, the water temperature set point should be set to ambient temperature to avoid dirt particles sticking to the heater flange.
- The empty tank can be rinsed with spray water. Avoid directing a high-pressure water jet directly at instruments. Attention: Draining water must be properly filtered and/or disposed of to avoid environmental damage.
- Remove filters and trays and clean them with a water jet. If necessary, brush off any remaining dirt.

3.4 Cleaning the fines removal sieve (FRS)

- Remove the lid of the fines removal sieve.
- Carefully clean the curved screen with a water jet and a fine wire brush. Take out the collecting basin, empty it and spray-wash it with water.
- Insert the basin and put on the lid.