aquapurge REMOVE CARBON RESTORE CONTROL

BBU

Injection Moulding Instructions

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Special Instructions for very small Screws (Ø ≤18mm)

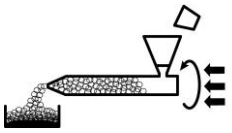
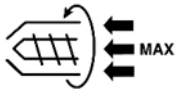
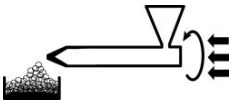
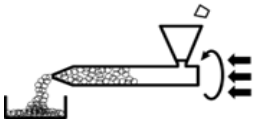
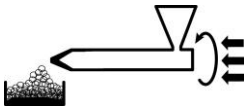
DO NOT USE THROUGH FILTER OR MIXER NOZZLES OR ON HOT RUNNERS

Aquapurge products are not intended to be incorporated in finished plastic goods. In the view of the many factors that may affect processing and application, users should make their own independent determination that the products are suitable for their intended use and can be used safely and legally.

Clearing Carbon and Colour and Material Change Instructions

Explanation:
BBU is an aggressive, stiff carbon removal system. It is designed to mechanically scrape carbon off screws, barrels and nozzles at normal processing temperatures.

Ensure Health & Safety Precautions are read and understood before use

	**Step 1:** With the screw empty of previous material, add **BBU** to the cleaned hopper throat **(1kg per 100 tonne of machine size)** then screw back and inject until the purge is white. **(beige / oatmeal colour if temperature is over 260°C)**
	**Step 2:** Increase back pressure to **maximum** and purge until it is white again (or beige / oatmeal)
	**Step 3:** Run machine completely empty (This is **very important** as the material is self-emptying **[see Page 3, Fig 1],** if you let it). Once empty continue screw rotation for a **further 10 seconds**
 	**STEP 4.** Still using maximum back pressure **"Starve – Feed"** the next production material 5 times **(Fill hopper throat and empty hopper throat 5 times – until the flights of the screw are visible)** then empty the screw completely
	Step 5: Reduce back pressure and fill the hopper with next production material. Screw back and inject until there is no evidence of **BBU** in the purge

Note: On the first application you may require as much as **5 kg per 100 Tonne** of machine size to get through historical carbon build-up **(i.e. 500 Tonne = 25 kg)**, but after that purge and in general only 1kg per 100 tonne is required.

For very small screws (Ø ≤18mm) mix **BBU** with a commodity polyolefin at a 50/50 ratio.

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Strip-Down Instructions

Explanation:

BBU is an aggressive, stiff carbon / material removal system. It is designed to mechanically scrape carbon and material off screws, barrels and nozzles at normal processing temperatures **(up to 340ºC)**

It is imperative that after purging with BBU the screw is completely empty before disassembly.

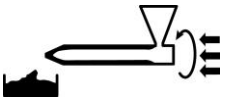
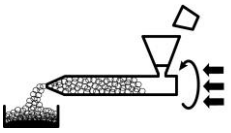
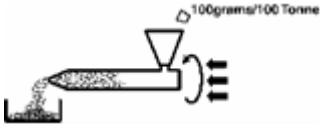
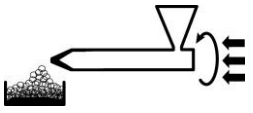
	Empty machine of the last production material.
	Add **BBU** to the cleaned hopper throat and screw back and inject until the exiting **purge is brilliant white**. Increase back pressure to maximum and purge until it is brilliant white again.
	**If moulding (i.e. Melt Temperature) above 260ºC** reduce heats to 220ºC and allow to stabilise so that the screw and not just the barrel have reached the 220ºC temperature. You **MUST** now purge a small quantity of **BBU** 100grms / 100 tonne of machine size to ensure all "sticky" **BBU** has been removed.
	**(STARVE)** Run the screw empty (***This is very important*** *as the material is self- emptying if you let it [**see Fig 1**]*) Once empty continue screw rotation for a **further 10 seconds** This will ensure the screw is both clean and as empty as possible

Fig 1

Strip equipment and ensure all **BBU** has been removed **HOT** before reassembly.

NOTE: Strip down should take place immediately after purging at a recommended temperature between 200ºC - 220ºC

If hot, **BBU** normally only requires rubbing with a rag to remove.

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Notes & Tips

Changing from high temperature materials to lower:

It is important to realise that when purging, molten material is always easier to remove than solid. For this reason, when changing to a lower temperature polymer you should always purge the higher temperature material at the higher temperature first with **BBU**. If higher temperature polymers have a processing temperature above 340ºC then reduce the barrel temperatures to 340ºC **(ensure that this is within the melting point temperature of the production polymer)** and then purge with **BBU**. You should then empty the barrel completely and reduce heats to the processing temperature of the lower following material. Then purge again with **BBU** at the lower temperature to clear any "sticky" **BBU** and ensure that the equipment is fully clean.

First time use in a machine which processes high temperature materials:

The main issue with this scenario is that there is likely to be residue of the high temperature material remaining in the equipment. For this reason, on the first occasion, assuming you will be using the **BBU** to change from all high heat materials in the future:

- Purge at the current temperature using the instructions until clean

- Empty the screw **COMPLETELY**

- Increase the temperatures to the processing temperatures of the high temperature material

- Reduce heats back down to 340ºC if hotter

- Purge with **BBU** using the instructions until clean

- Empty the screw **COMPLETELY**

- Reduce heats to the required temperature of the next production material

- Purge with **BBU** again to remove any "sticky" **BBU** and **EMPTY** the screw **COMPLETELY**

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Notes & Tips Continued

Causes of poor cleaning performance:

❖ Degraded material in the feed section of the screw

BBU is a mechanical cleaning purging compound, for this reason it will not clean the feed section of screws and barrels very effectively. The state of your feed section can be checked by looking down a cleaned hopper throat whilst doing suck back or decompression of the screw.

❖ Worn screw or barrel

This is likely to have various effects on the moulding process, increased shear heat, increased screw back time, increased degradation and slower cycle time. It will also affect the performance of **BBU** which will no longer be self-emptying and may require additional quantity to clean due to poor compression (*leakage*) in the worn section.

❖ Large nozzle orifice or mismatched endcap and screw tip geometry

As mentioned above, **BBU** cleans mechanically therefore a large nozzle or mismatch of the angles between the endcap and screw tip effectively reduces compression. This results in poor scrubbing efficiency.

Also, **BBU** then becomes more difficult to remove on certain materials such as PC, ABS, Amorphous Nylon etc.

❖ Screw not emptied completely

This can happen if the **BBU** has been purged above 260ºC. Having a polyolefin based carrier the PP % becomes very “sticky” above 260ºC and does not allow the screw to self-empty.

After purging at the higher temperature reduce the temperatures to 220ºC and allow to stabilise. Purge with a small quantity to **BBU** 100 grams per 100 tonnes and the screw will now empty completely.

❖ Screw throat gelation (Melting)

BBU is a coarse powder with a polyolefin base, it will therefore melt quicker than standard polyolefin granules. For this reason, only put **BBU** into the hopper throat WHEN you are going to purge.

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Safety Precautions

	Do not use BBU for material with processing temperatures below 160°C
	Do not use BBU for material with processing temperatures above 340°C
	It is *NOT* recommended that BBU is used through tools (*hot runners, manifolds etc.*) **Not suitable for machines with filter or mixer nozzles, spring loaded shut off nozzles or nozzle diameters smaller than 2.5 mm** **For very small screws (Ø ≤18mm) mix BBU with a commodity polyolefin at 50 / 50 mix rate** Always purge behind a purge guard Ensure adequate ventilation especially at elevated temperatures
PPE	 Wear suitable protective clothing when cleaning down equipment, using, handling or viewing the hot or cold **BBU**
	If contact with skin occurs, wash with cool water
	In case of eye contact, irrigate with plenty of cool water
	Do not swallow product
	In situations of excessive shear heat place purgings in cool water to eliminate fumes

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