HD Process NZ Ltd
Specialists in sanitary process equipment

Unit 1, 10c Maurice Rd, Penrose, Auckland New Zealand
PO Box 2082, Shortland St, Auckland 1140
Tel 09-580 2520 Fax 09-580 2525
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Instructions for use of HD Process Inline Colloidal Mill

(see associated photos appended below)

These instructions include basic set up for running the machine. And also notes for opening and cleaning the unit.

Opening Head, Cleaning (see details on how to carry this out in the series of photographs below)

Note that this machine is not designed to be cleaned in place for all products as Cleaning fluid being pumped through the mill may not clean all internal surfaces particularly high viscosity or chunky products. Dependent on the product type Operator may be required to open and manually clean on the internal areas by hand.

Section C below describes how to access the mill

Periodic inspections of the mill head

Periodic inspections of the finish of the mill head should be carried out to check for signs of wear or abrasion. As well is ongoing where and fatigue from general operation, from time to time solid or semi solid objects may go through which could cause a problem for the teeth on either the rotor or the stator. It is important that teeth are inspected to ensure their integrity within the units so they do not become detached during operation.

1. **Before you start - Water flushed seals;**

- Water must be kept on the mill seals at all times either permanently flushed or using the water reservoir.
- The mill has a water-flushed (double mechanical) seal. This seal needs to have water on it when the mill is turning. It is **best to be permanently flushed with water**.
- The **water seals can be supplied with water from a static reservoir**. **This reservoir canister (as opposed to permanent flushing) is designed to be used for shorter runs.** The water flush should be closed once the seal area is full of water.

2. **Coolant** water for mill head

- The mill head also has connections for water coolant. Coolant use is optional. Flushing with coolant is recommended for more viscous and heat sensitive products. To connect coolant water please use top (inlet) and bottom (outlet) 3/8" quick connect.

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3. **Mill Set Up and mill gap;**

- The mill is supplied with 2 x spoked handles. These can be wound in to set the positioning of the mill.
- The mill gap reduces as the mill head is wound in.
- The mill has a stopper to avoid over tightening during a trial. This has been set to 0.2mm gap (once fully wound in).
- Each 360 degree turn back from this 'closed' 0.2mm gap adds approx. 0.3mm to the mill gap.
- We recommend during a trial with viscous material to **start with a wider gap, slower product flows**, and **incrementally wind in until the product consistency is suitable**, before incrementally increasing product flow to suitable levels, maintaining appropriate product and coolant flows in order to ensure the product does not overheat.

4. **Pusher pump**

- This mill is deigned to work with a pusher pump. If it is a positive displacement pump then the pump **needs to be protected against over pressurisation** (as product may clog the pump and increase pressure).
- Over pressurisation protection can be done my electronic control means or by using a suitable pressure relief valve.

5. **Flow rate**

- Maximum flowrate for low viscosity product through this pump is ratted at XXXX LPH - however more **viscous and semi solid product will be much less than this**. If trialling it is best to commence with as **wider a mill gap as possible for the product and a relatively low flow rate to avoid over pressurising the pump head (or the pusher pump).**
- It is recommended that in line pressure **at the exiss of the pusher pump (or the inlet to the mill) is monitored with a pressure gauge, pressure transmitted or pressure switch in** order to avoid over pressurisation for either the mill or the pump.

7.5kW/ hour inline unit

6. **Inlets** and **outlets**

- Comes with a 4" triclamp inlet connection (with optional reducer to 3" triclamp)
- 1.5" triclamp outlet
- 1" triclamp drain butterfly valve

7. **Electrical**

- 3 phase, 11kW 2 pole motor (2900 RPM) -see screen shot of nameplate below
- A variable speed control (VSD) may be useful for controlling mill speed during a trial.

Photo of the water flushing seal connection, coolant water (top and bottom) and reservoir (for static water supply for trial)

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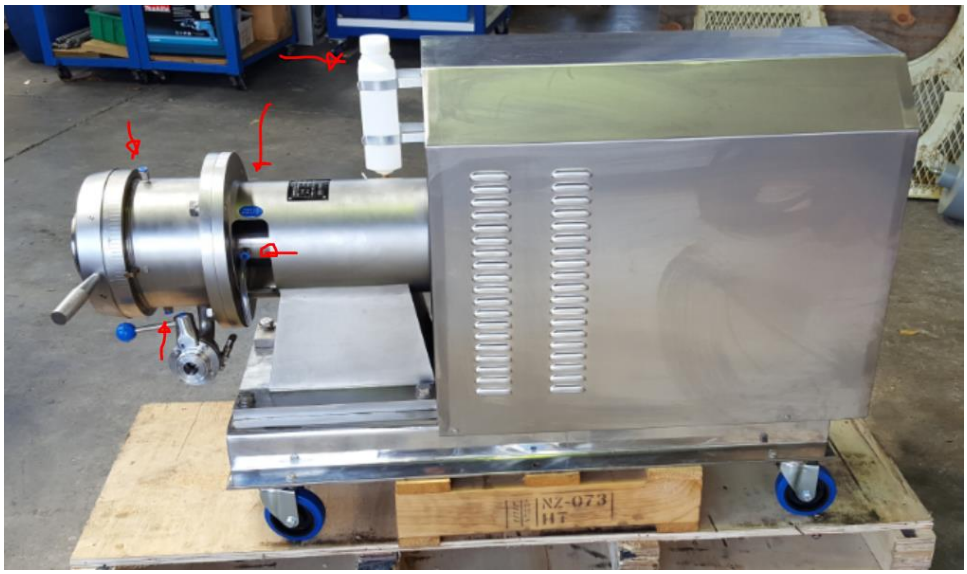
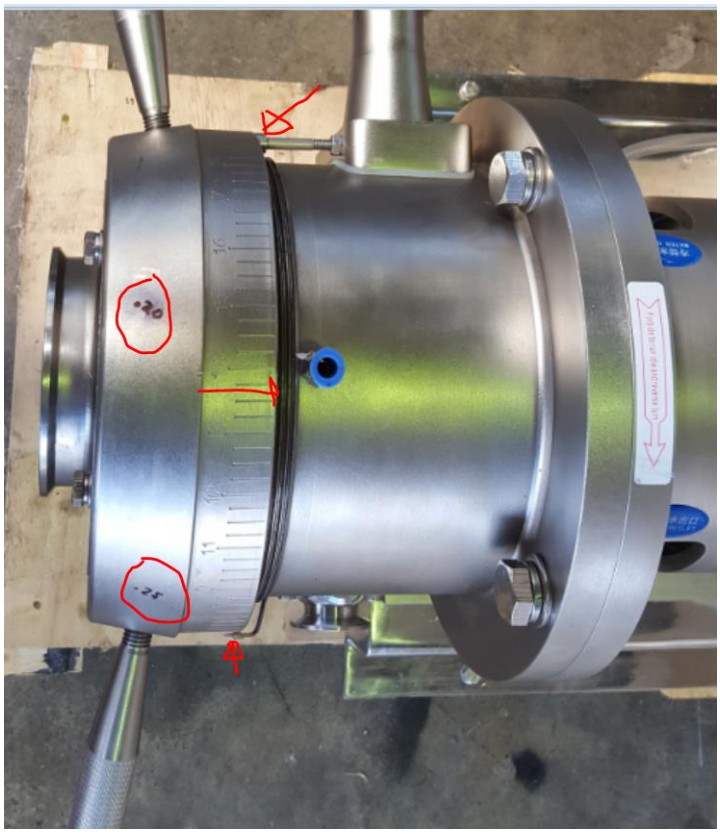


A - Setting the mill gap (See photo)

Photo showing mill stopper (top arrow), indicator arrow (bottom) and handwritten gap indicators (0.20mm, 0.25mm). Also top coolant connection



B - Electrical Name plate (photo)

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C -Mill heads disassembly FOR CLEANING

1. Unscrew the handles two rotations as these clamp the cone in place.
2. Unscrew cone all the way out. Do not touch the four bolts on the front face as this is to separate the cone and the screw mechanism.
3. Once the cone is completely unscrewed use a light mallet to work open the rotor from the cone
4. See 4th photo of a disassembled cone in rotor

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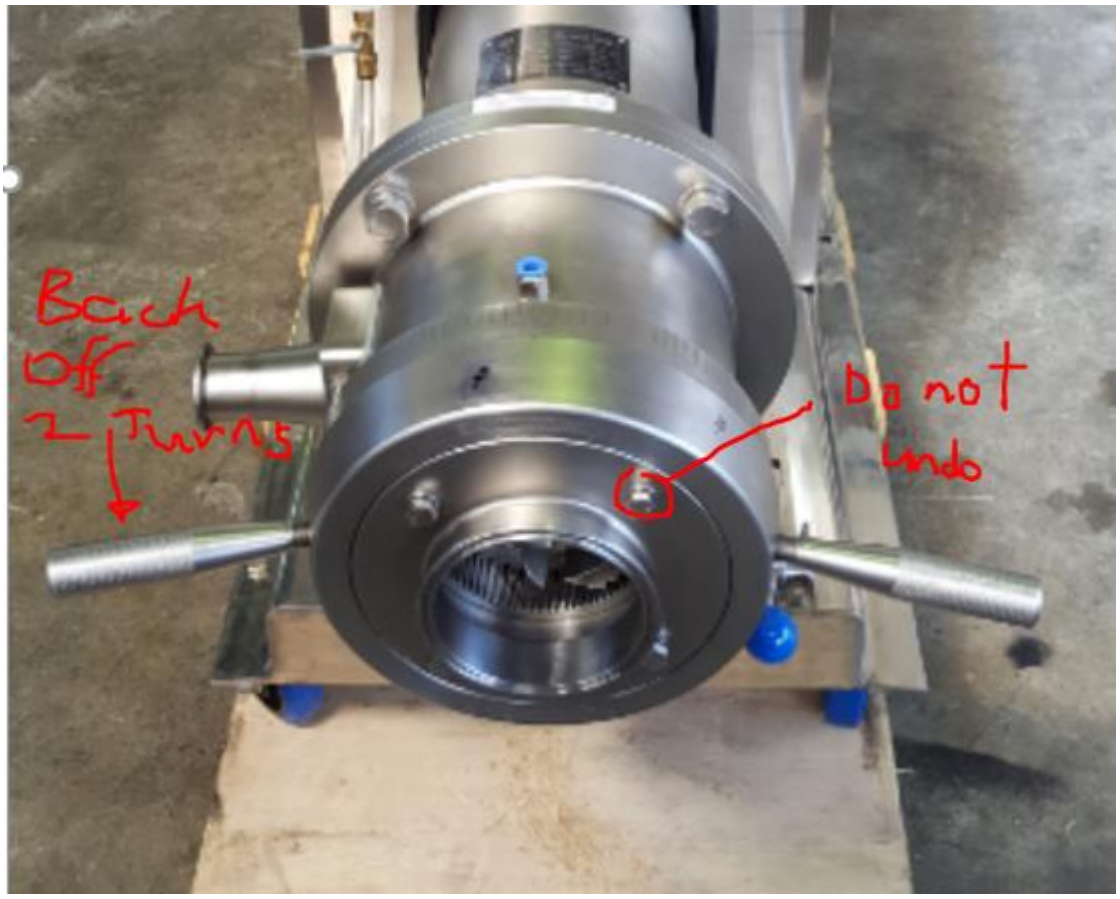

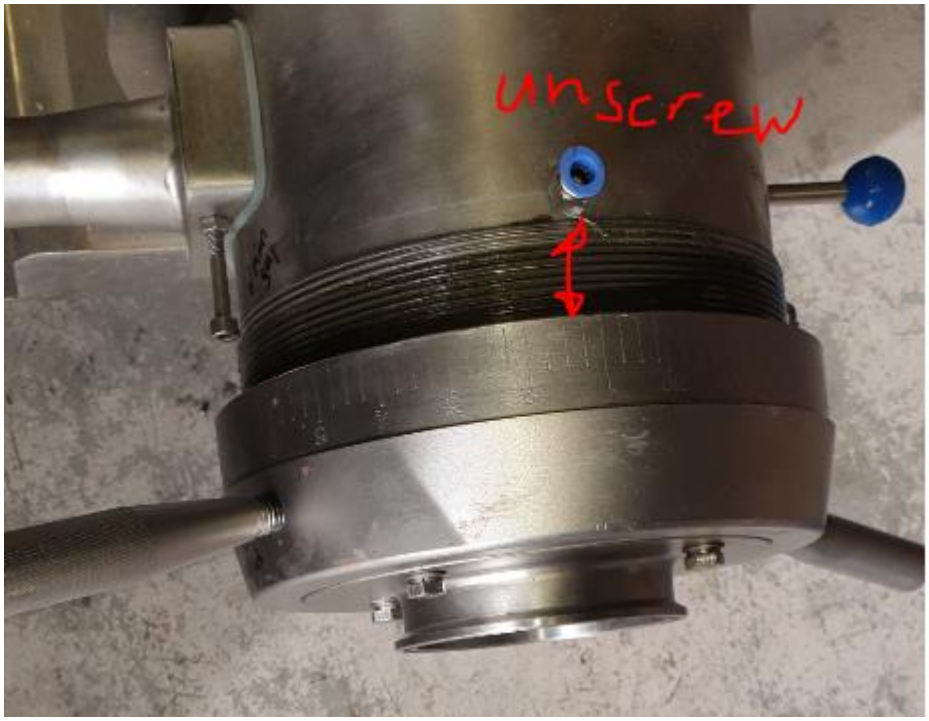

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Mallet - useful to tap the head back in place on the cone.

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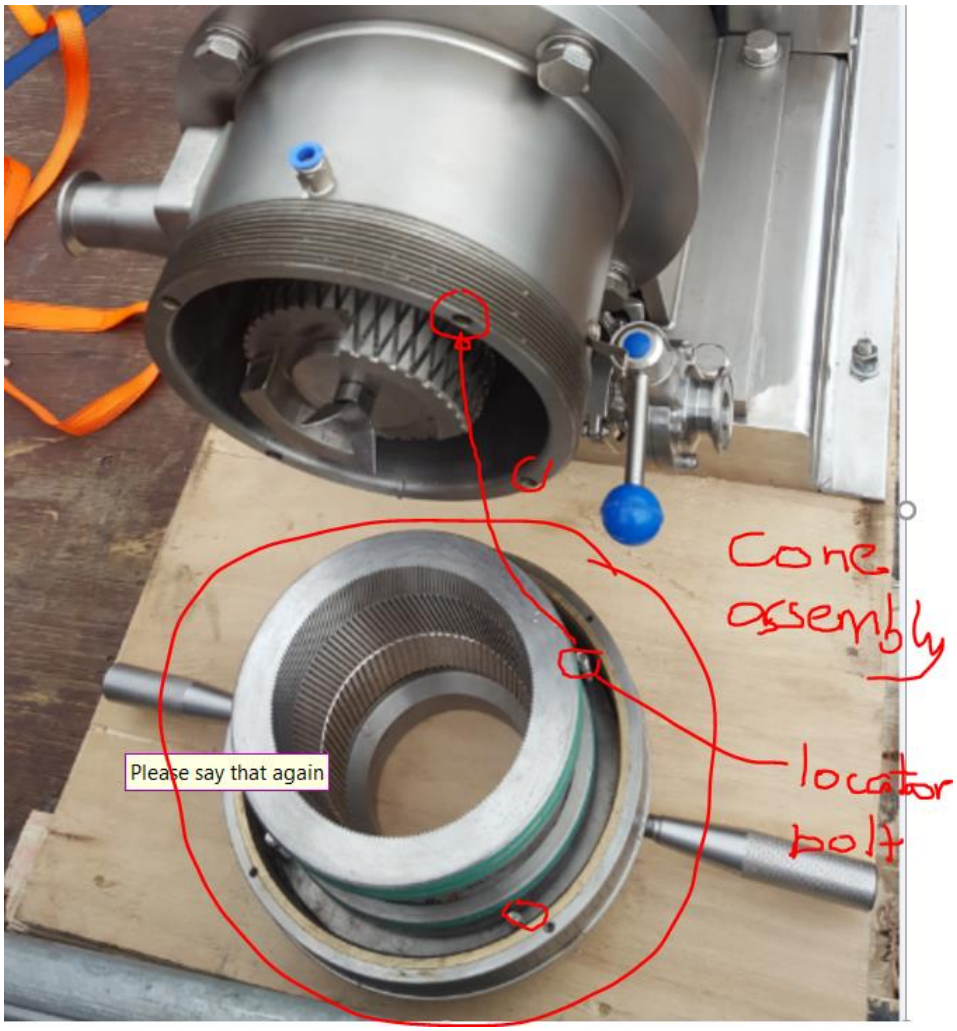

D - Mill heads reassembly AFTER CLEANING

- Tools – light mallet and long screwdriver (for alighing cone locattor bolts with main body)
- Place cone assembly back on main body. Use the light mallet to lightly tap this up to screen position if that is required.
- Screw cone cone assembly back onto main body- it is likely this will stop at some point when the locator bolts touch the main body. Back off one quarter turn
- use a long screwdriver or long rod to rotate the **cone assembly into position so locator bolts drop into holes**
- continue screwing the cone assembly onto main body

END OF MAIN DESCRIPTION – GENERAL PHOTOS FOLLOW

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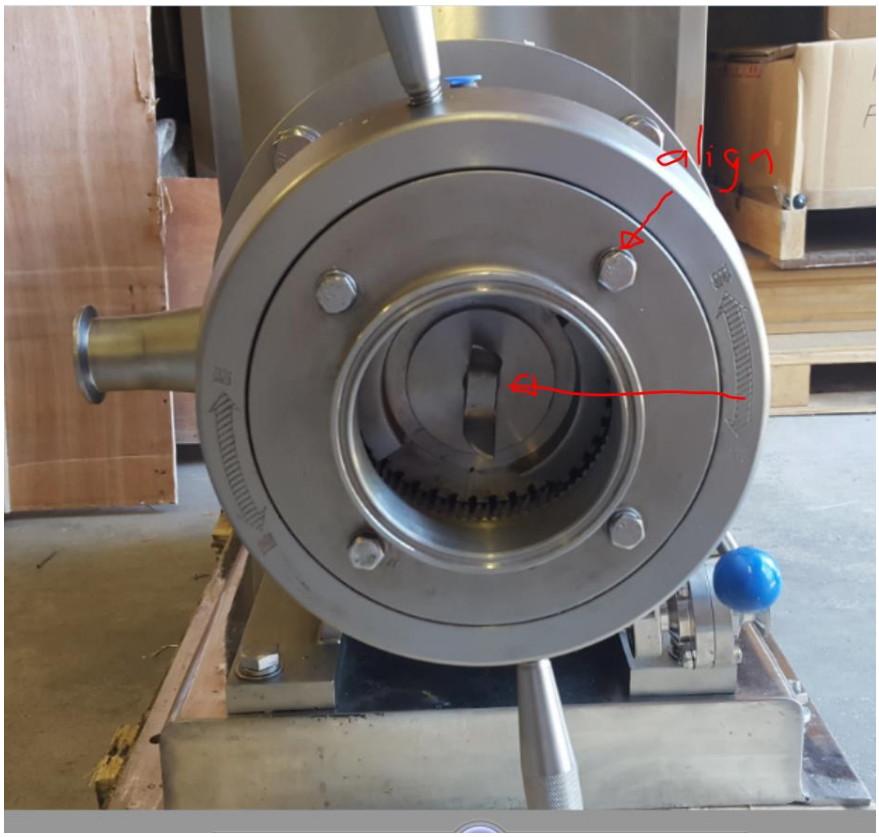

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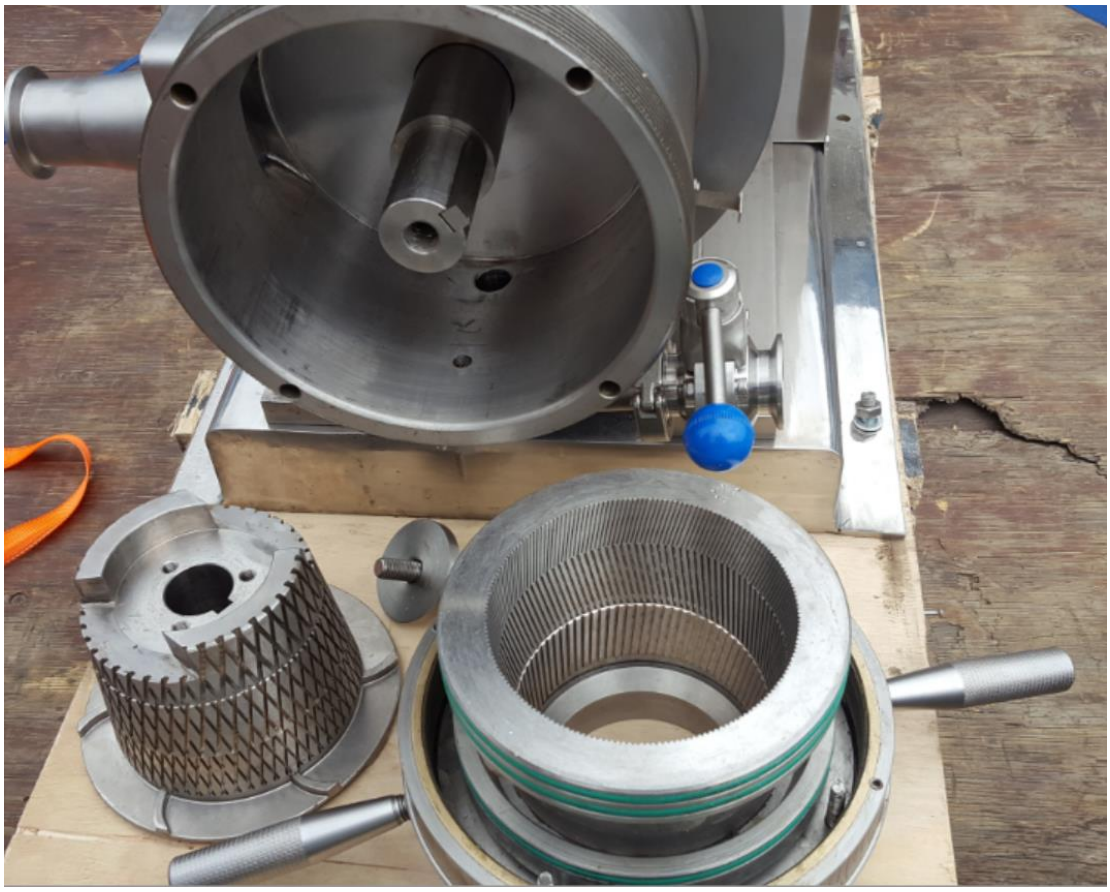

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REASSEMBLY