Thor

Part 2

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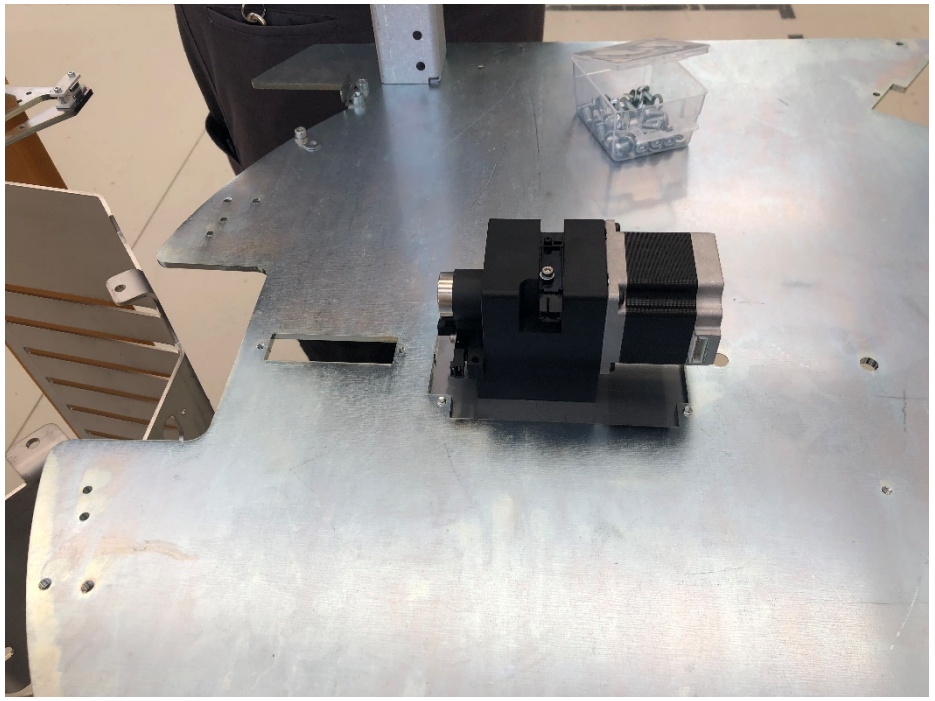
Thor: Pump Motor



The motor that drives the coloring group is fixed in the center of the machine.

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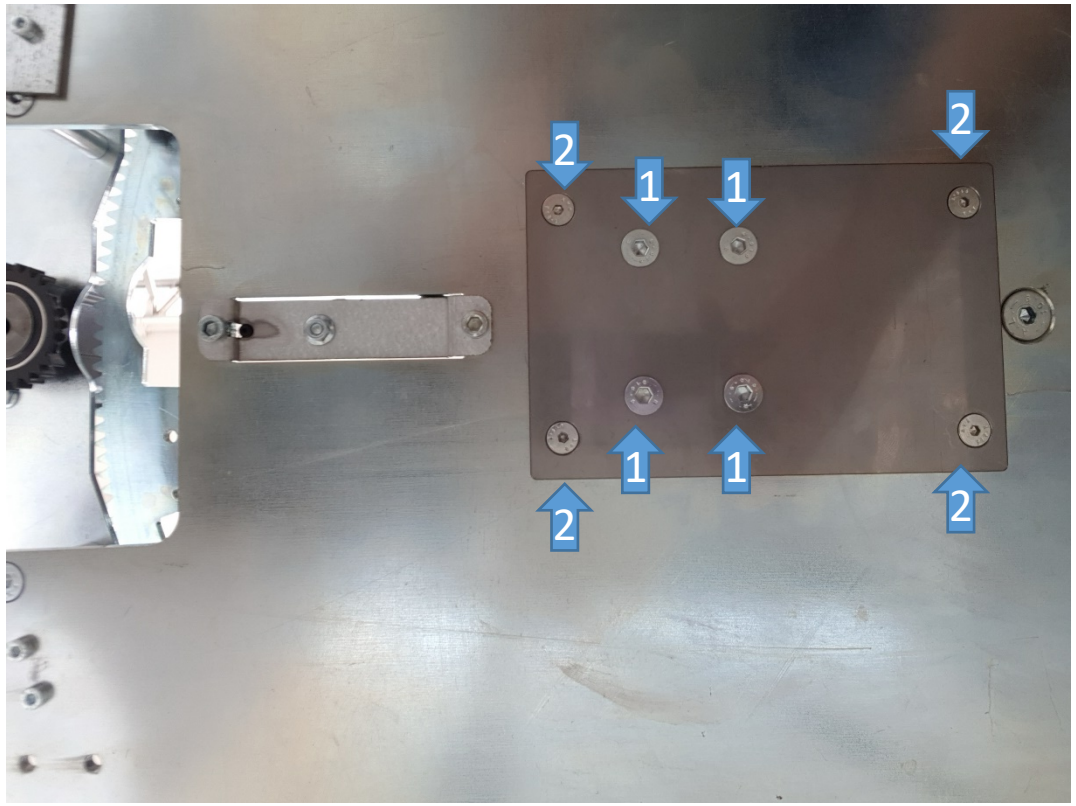
Thor



The motor is fixed to the support, which in turn is fixed to a sheet with 4 screws m5 (1), which is mounted on the machine at the bottom with 4 screws m4 (2).

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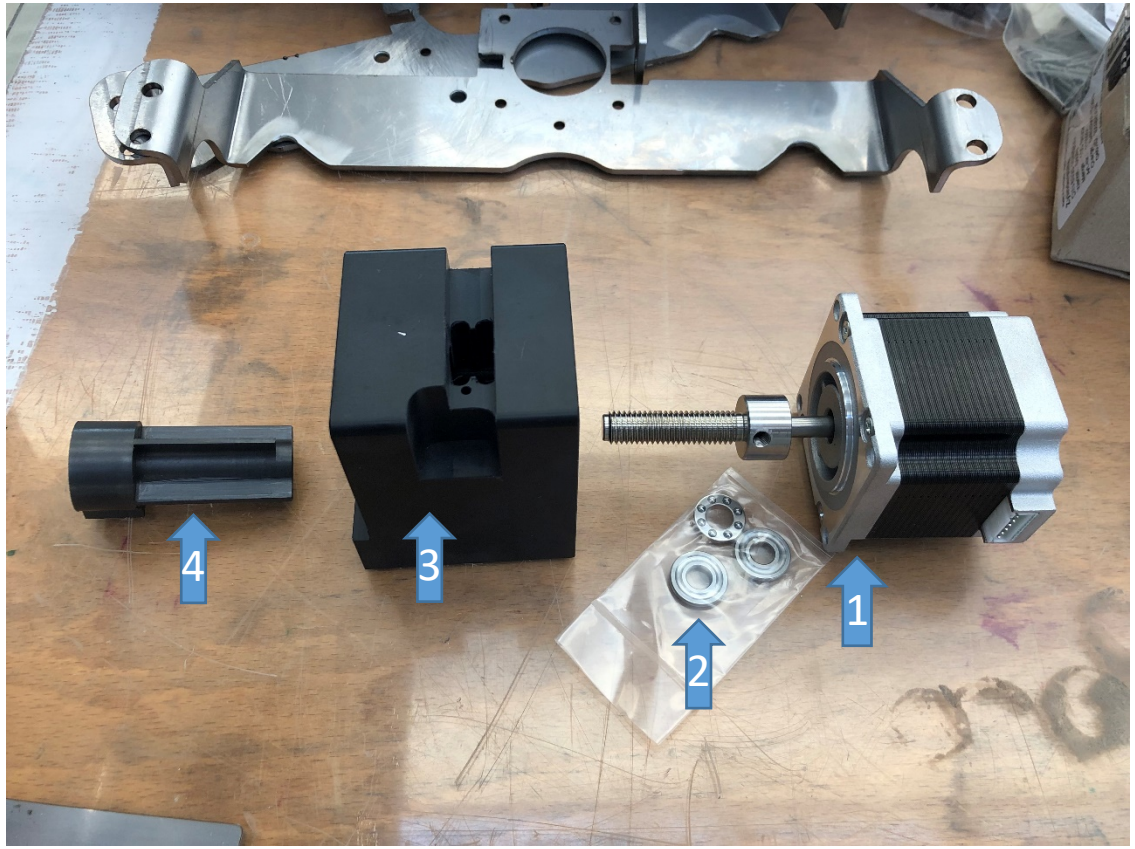
Thor: Motor group coloring



1 • Stepper motor.
2 • Bearings
3 • Support
4 • Mother screw.

The motor is fixed with 4 Torx 4x18.

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The support (1) of the photocell coupling is fixed on the mother screw with 2 allen 2.5m
And the photocell (2) with an allen of 2.5

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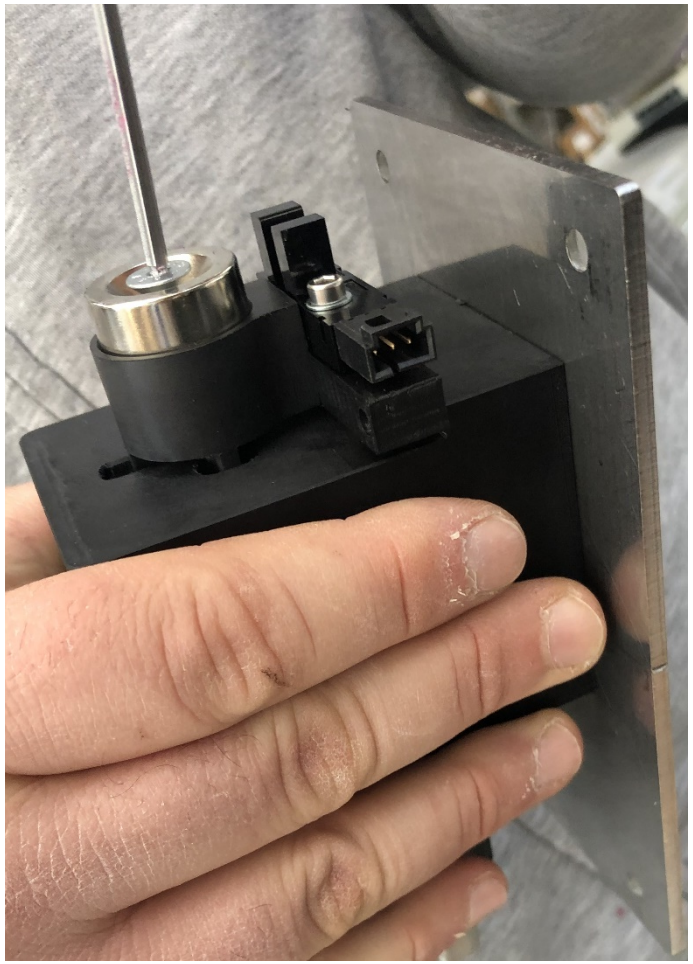

The magnet is fixed on the outside of the mother screw with an allen of m5.

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In the upper part the photocell (1) that counts the steps of the motor is fixed, with an allen 2.5m.

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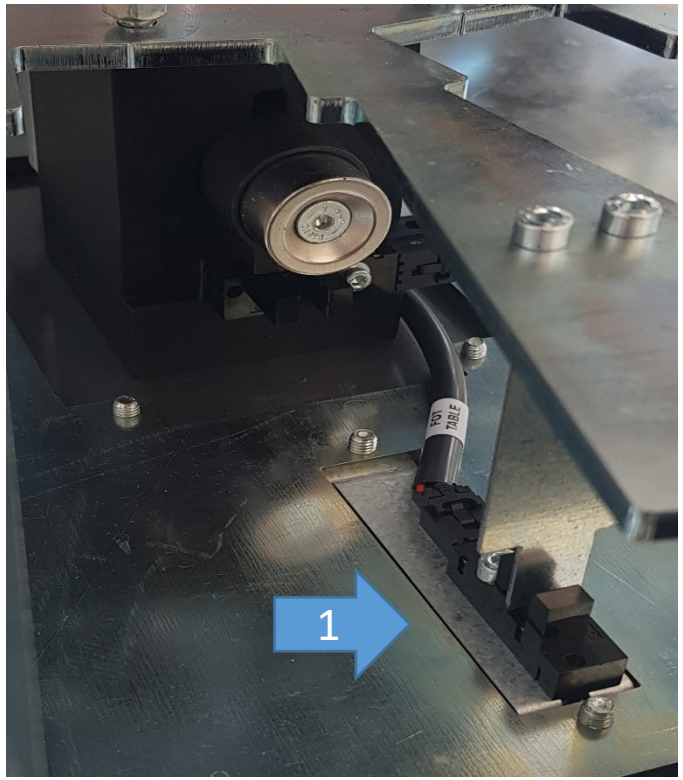
Thor: Photocell 0 (home)



The photocell (1) from the 0 position (home) is fixed to a sheet with an m3 allen, and mounted from the bottom on the chassis with two m4 allen.

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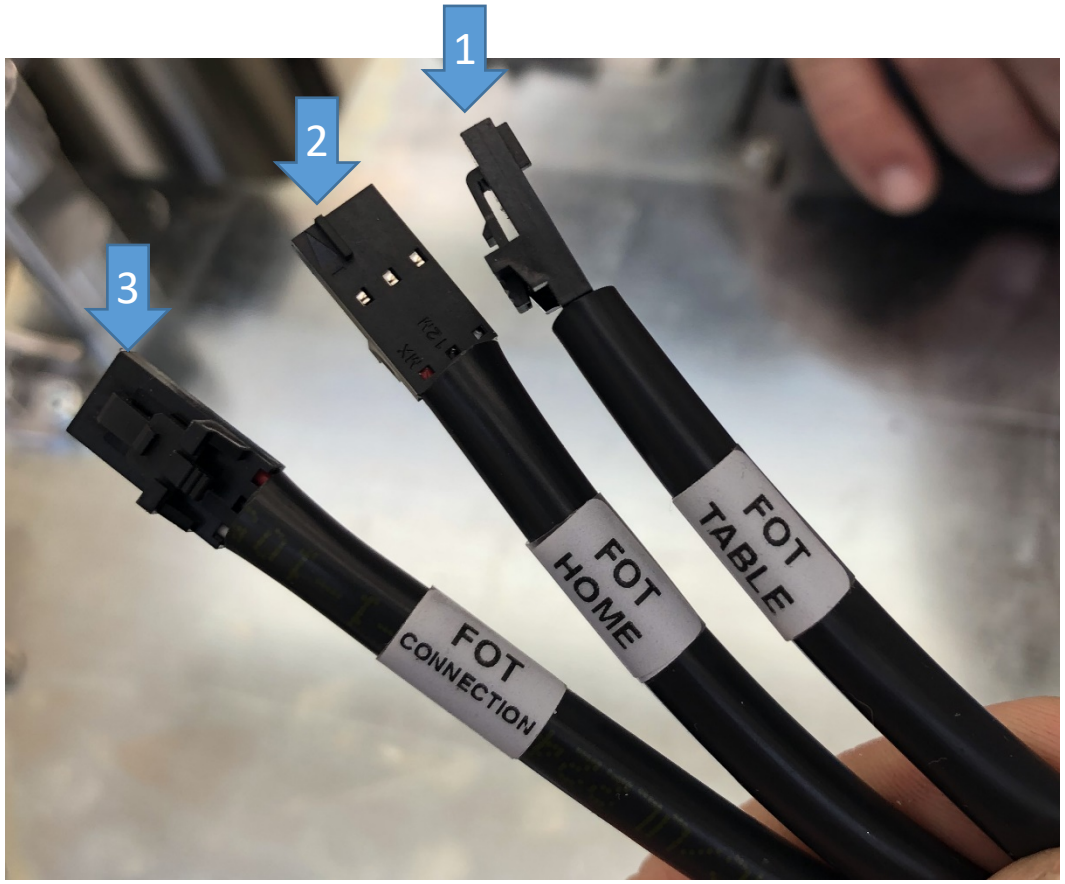
Thor



In this image are the three cables for the In this image are the three cables for the photocells.

1 • Cable for the photocell of point 0 (Home) of the carousel.
2 • Cable for the photocell that counts the steps of the motor when dispensing. (Home)
3 • Cable for the photocell coupling with the pump. Cell phones.

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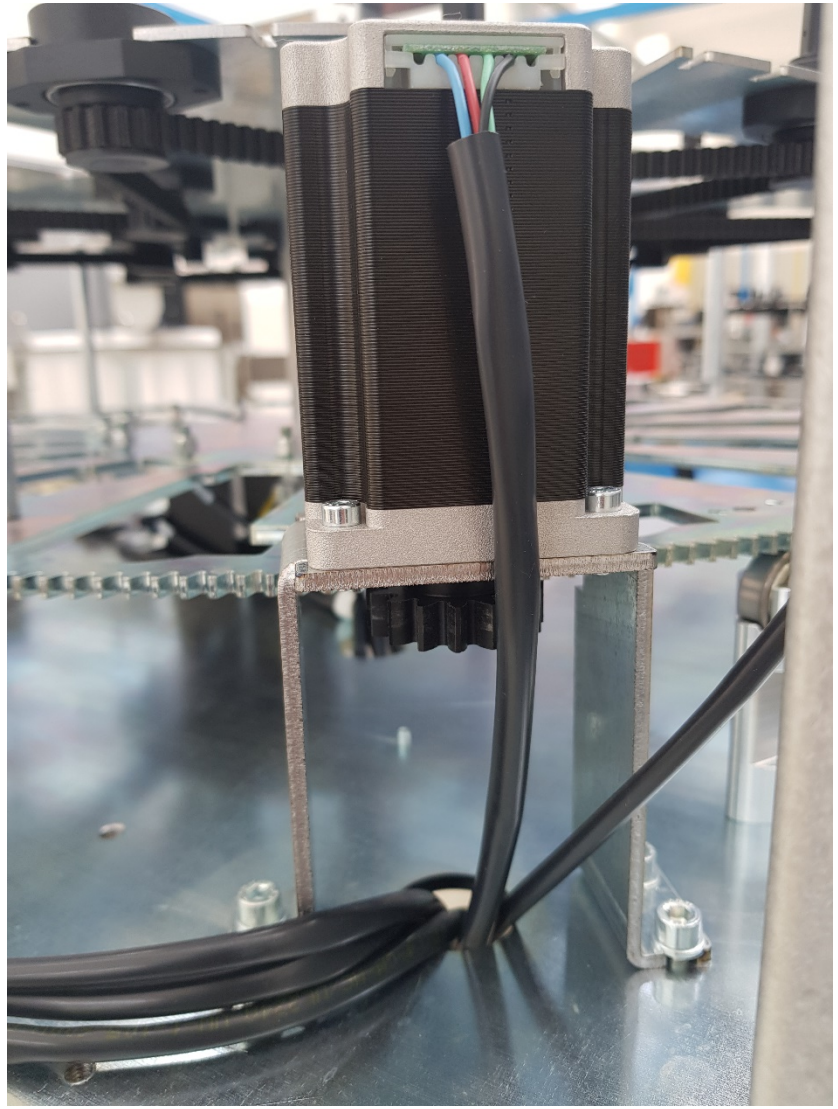
Thor: Motor Carousel



The carousel motor has a gear that is attached to the shaft with two M4 studs.
The teeth of the gear are coupled to the toothed part of the carousel
It is fed at 48 volt

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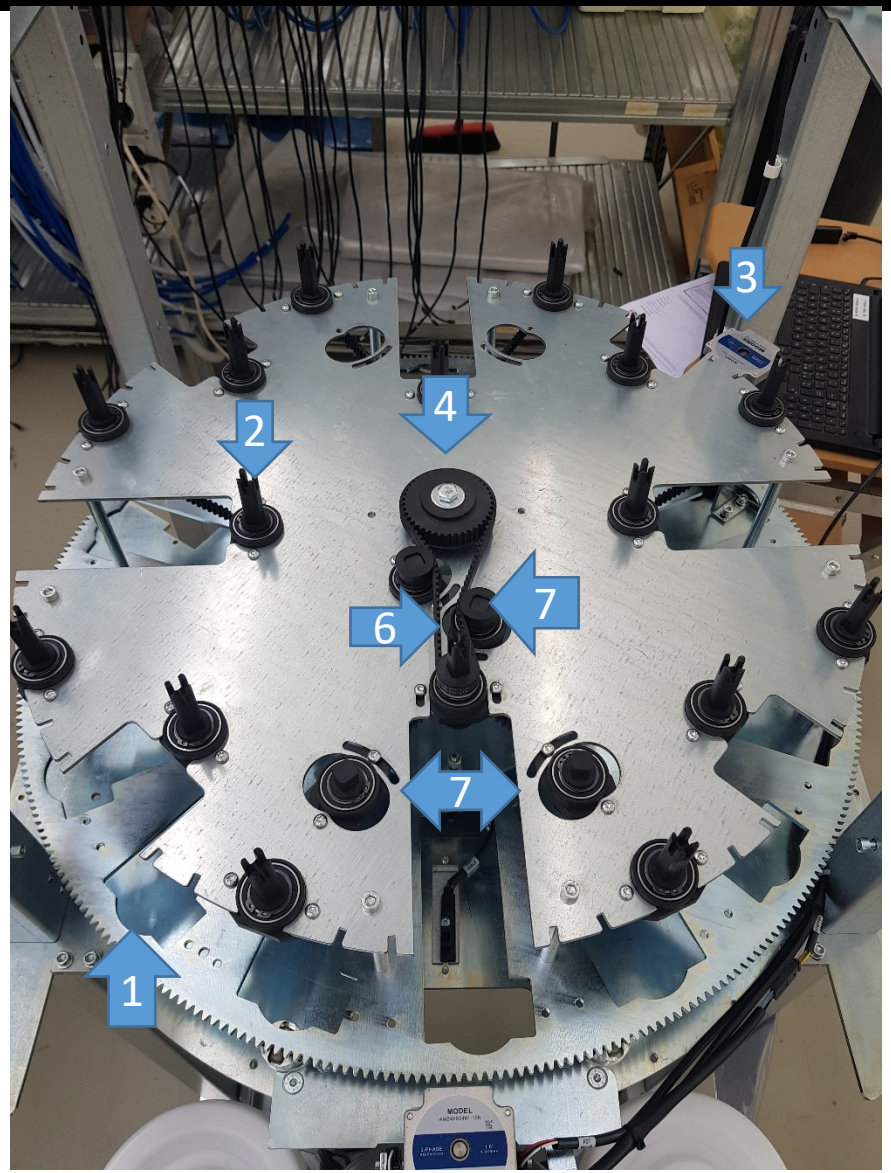
Thor: Carousel



Description

1 • Joint for coloring groups (16)

2 • Agitation coupling (16)

3 • Carousel motor

4 • Central drive shaft

5 • Central drive shaft

6 • Transmission belt

7 • Belt tensioning regulators

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In the lower part of the central sheet we find the belt that makes the agitation couplings move.
These 3 agitation couplings serve to tighten the belt. (Red)
Drive shaft (1) has two brackets on each side.

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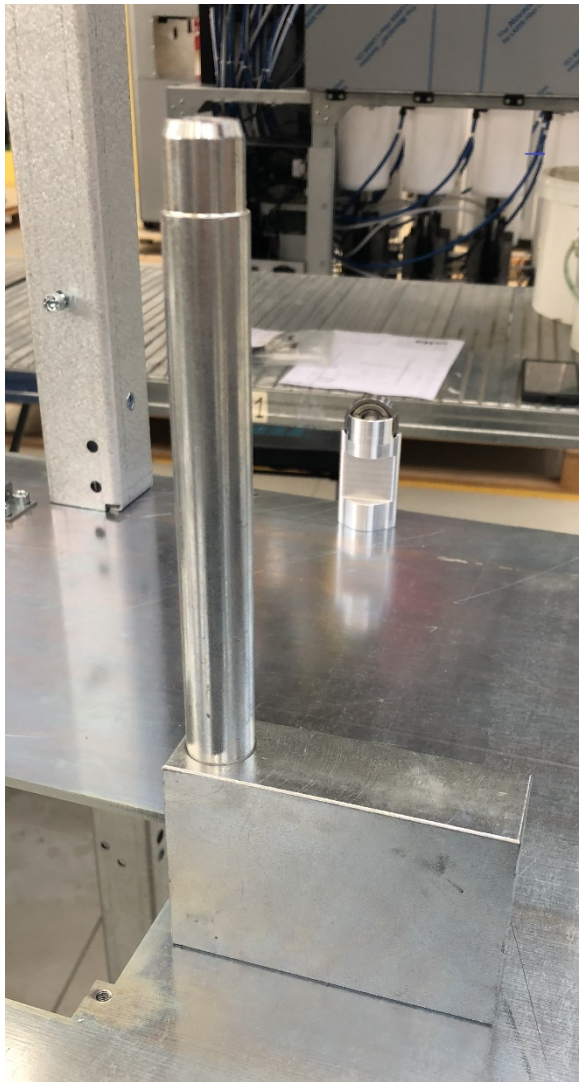
Thor



Bolt where the carousel is embedded.

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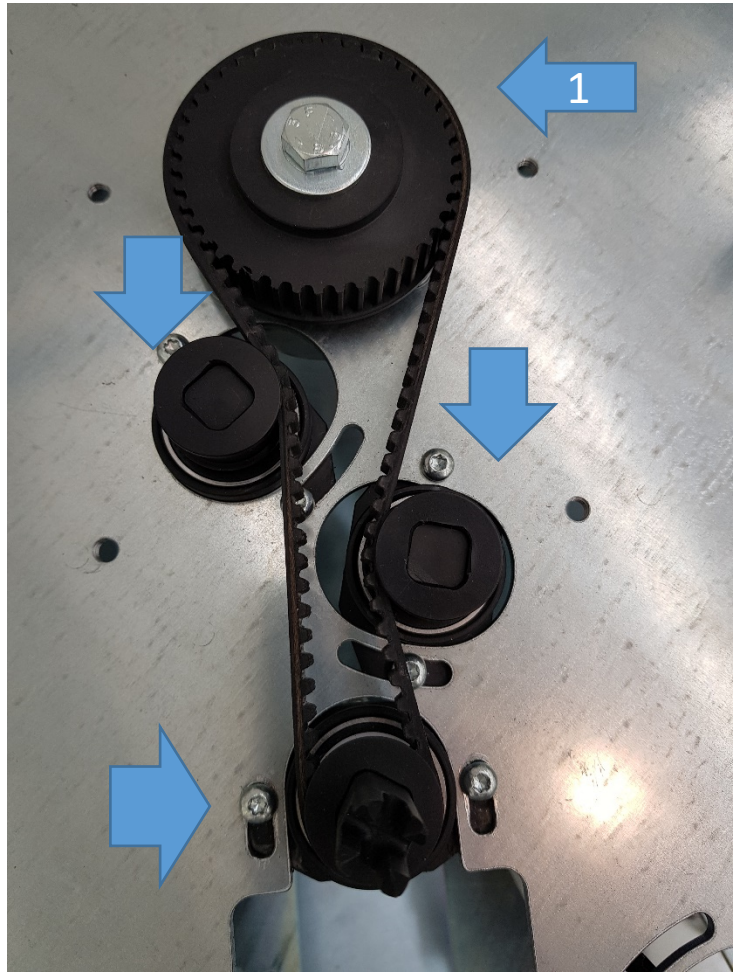
Thor



In the central shaft is fixed a gear (1) and a belt that is connected to a stirring coupling, to regulate the tension of the belt the 3 movable tensioners are used.
Tention also comes to the agitation belt.

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Thor

Agitation coupling.
Inside has a bearing, fixed with an elastic ring.

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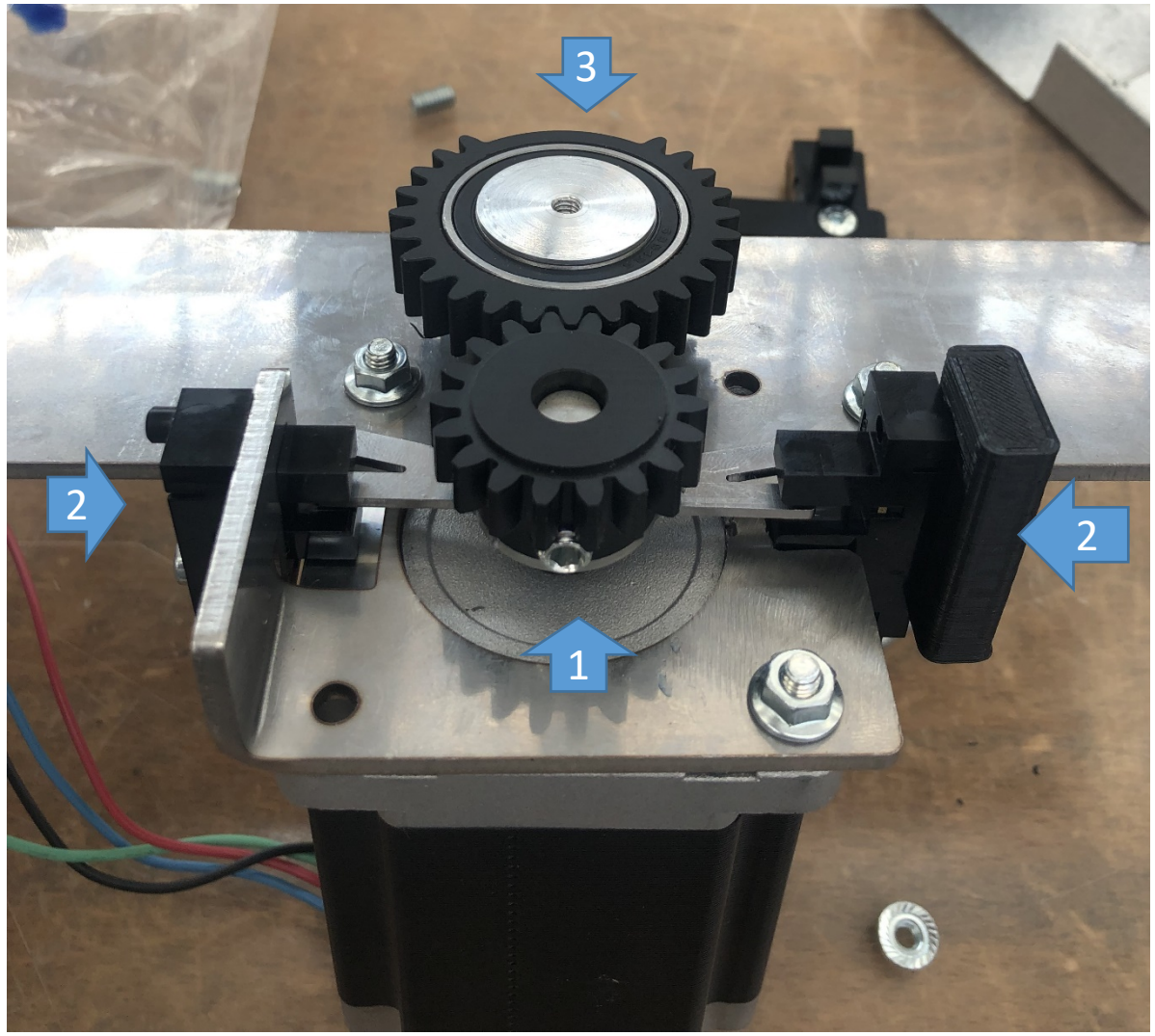
Thor:



The actuator has the pinion (1) fixed to the motor with two m4 studs (on the two flat parts of the shaft), two photocells (2) that count the movements.
A gear (3) that opens the valves, inside has a bearing, when changing a component always respect the initial position.
As in photo.

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Thor

Coloring group

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Thor: How to change a coloring group

The coloring group is fixed with two 5x12 allen.

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Thor

With a move out and up we unlock the group.

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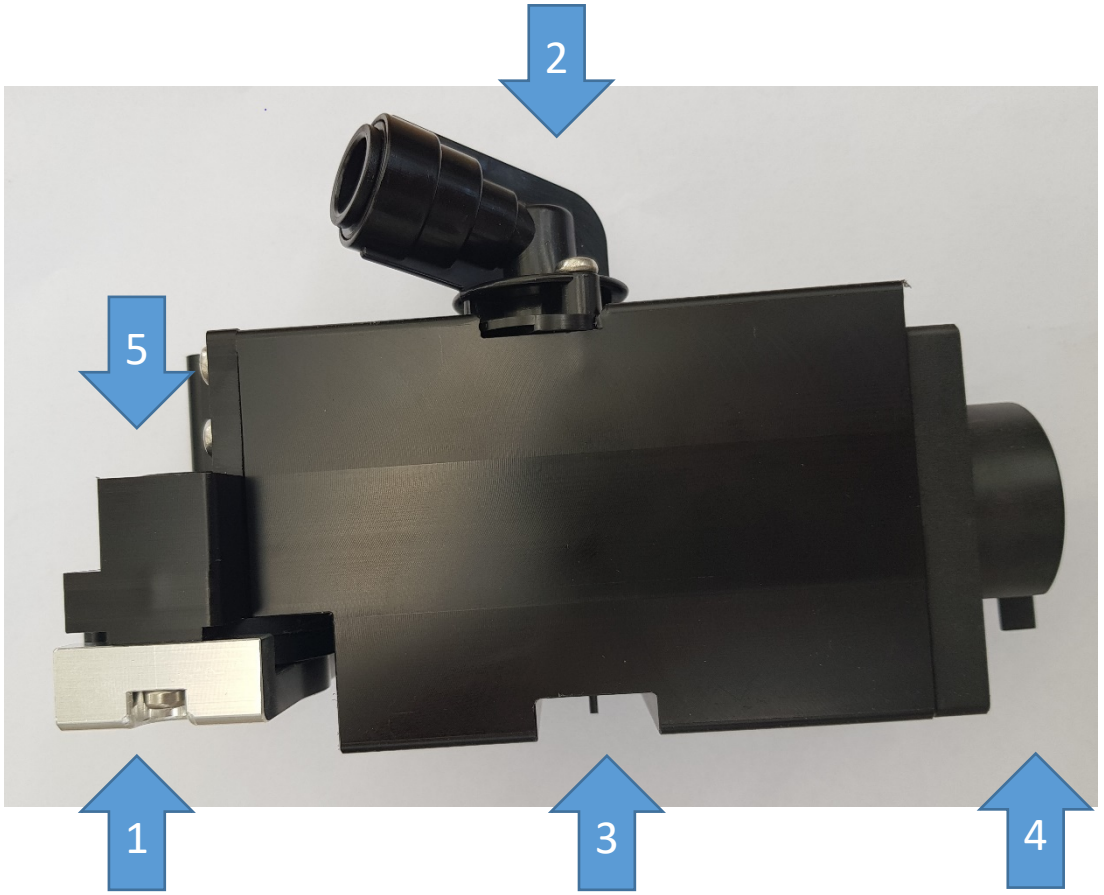
Thor: pump



Description:

1 • Valve

2 • Suction

3 • Position flag

4 • Coupling flag

5 • Recircle

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Thor

View of the part that is coupled with the motor of the pump, washer (1) of iron that sticks to the magnet that is in the mother screw.

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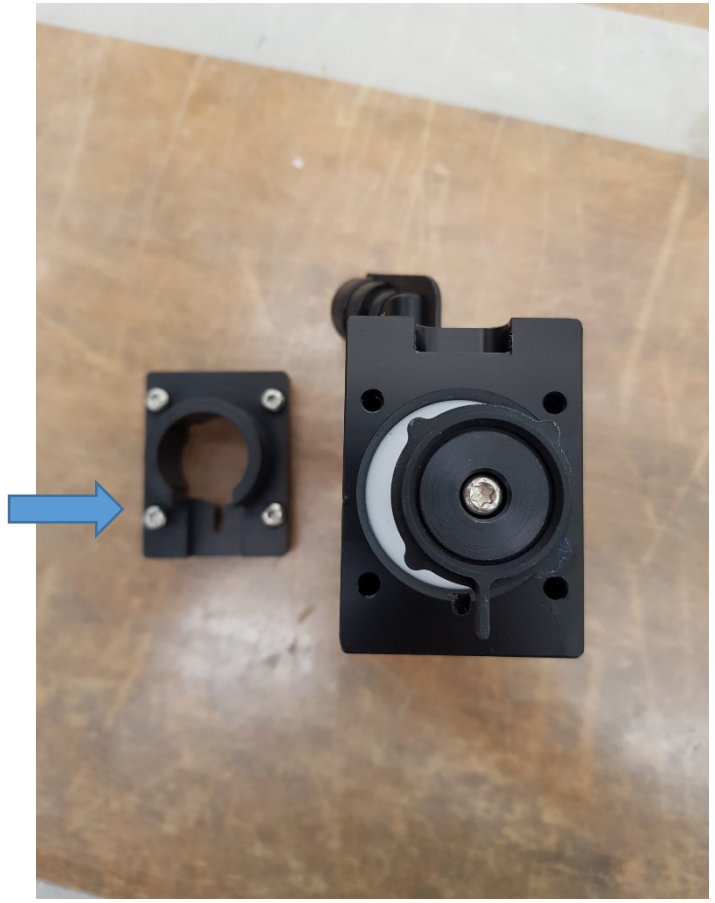
Thor



By unscrewing the 4 Torx 4x18 screws, the bellows is accessed

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Thor

Bellows with the piston screwed

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Thor

Piston with spring

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The particularity that large and small quantities can be made with this bellows: For large amounts of 0.038, use the entire route, for small amounts they will extend the bellows until they touch the bottom of the chamber and use only the smallest diameter part, reaching 0.0077.

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In the membrane valve there is a valve to membrane

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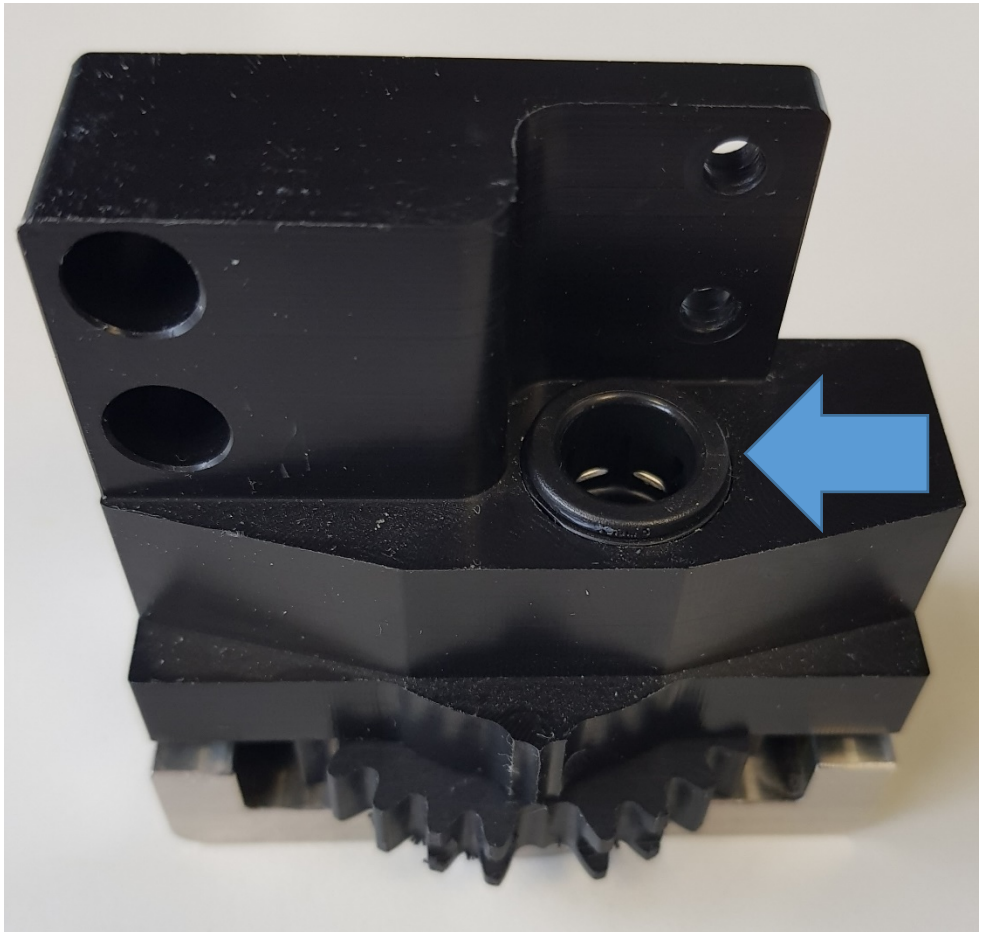
Thor



The dispensing valve has the recirculation orifice

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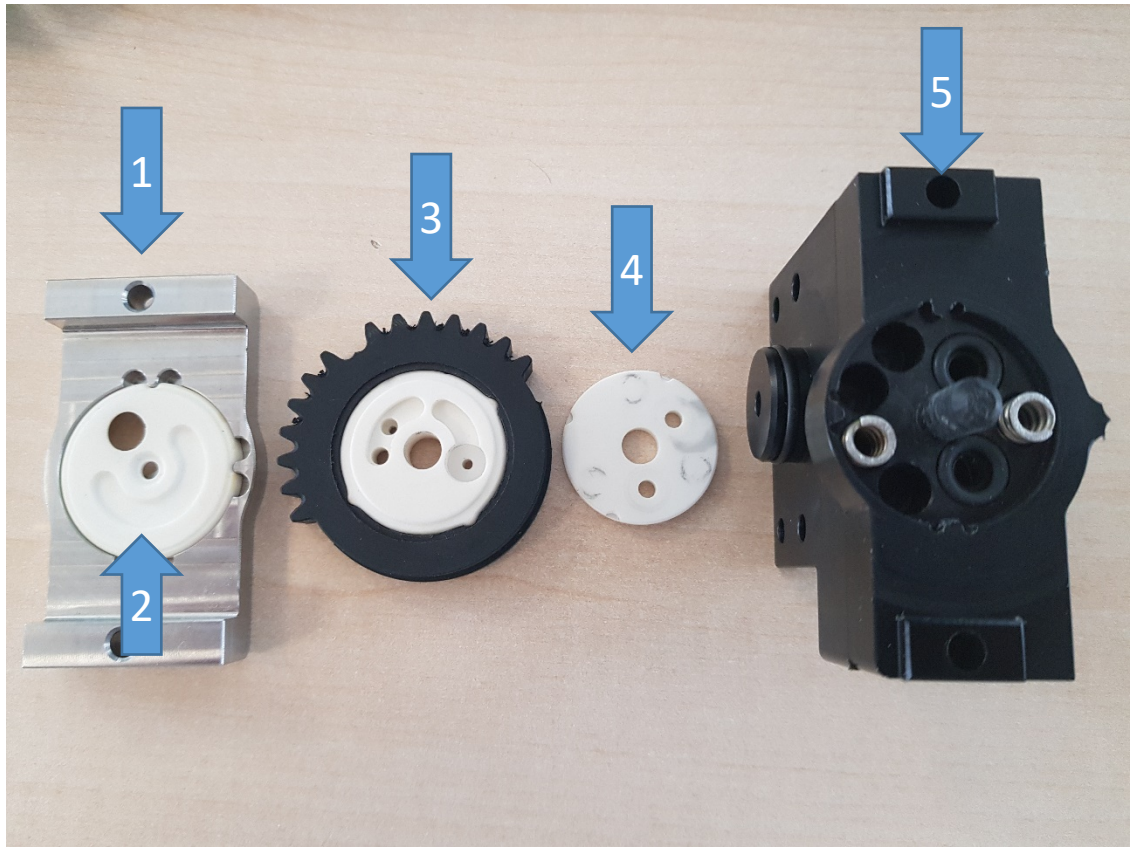
Thor: Valve



1 • Support to fix the ceramics to the body of the valve (2 torx 4x18).
2 • Fixed disk.
3 • Disc embedded in gear, with 2 holes: one dispensing and one recirculation.
4 • Fixed disc that fits into the valve body, with two holes one to dispense one for recirculation.
5 • Valve body.

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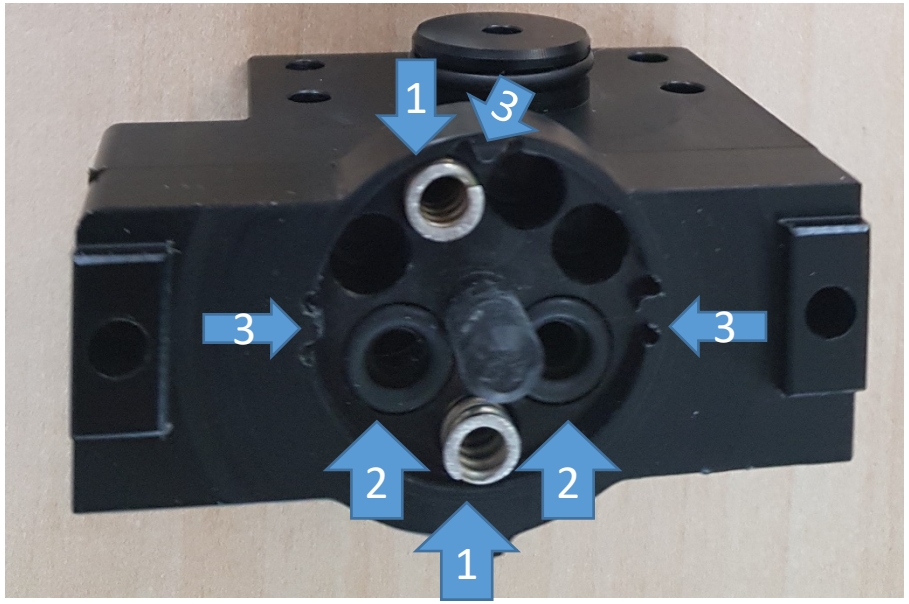
Thor



In valve body we find two springs (1), the two o-rings (2) are placed where the product passes, the disc is embedded in pressure in three (3) points that do not allow it to move.

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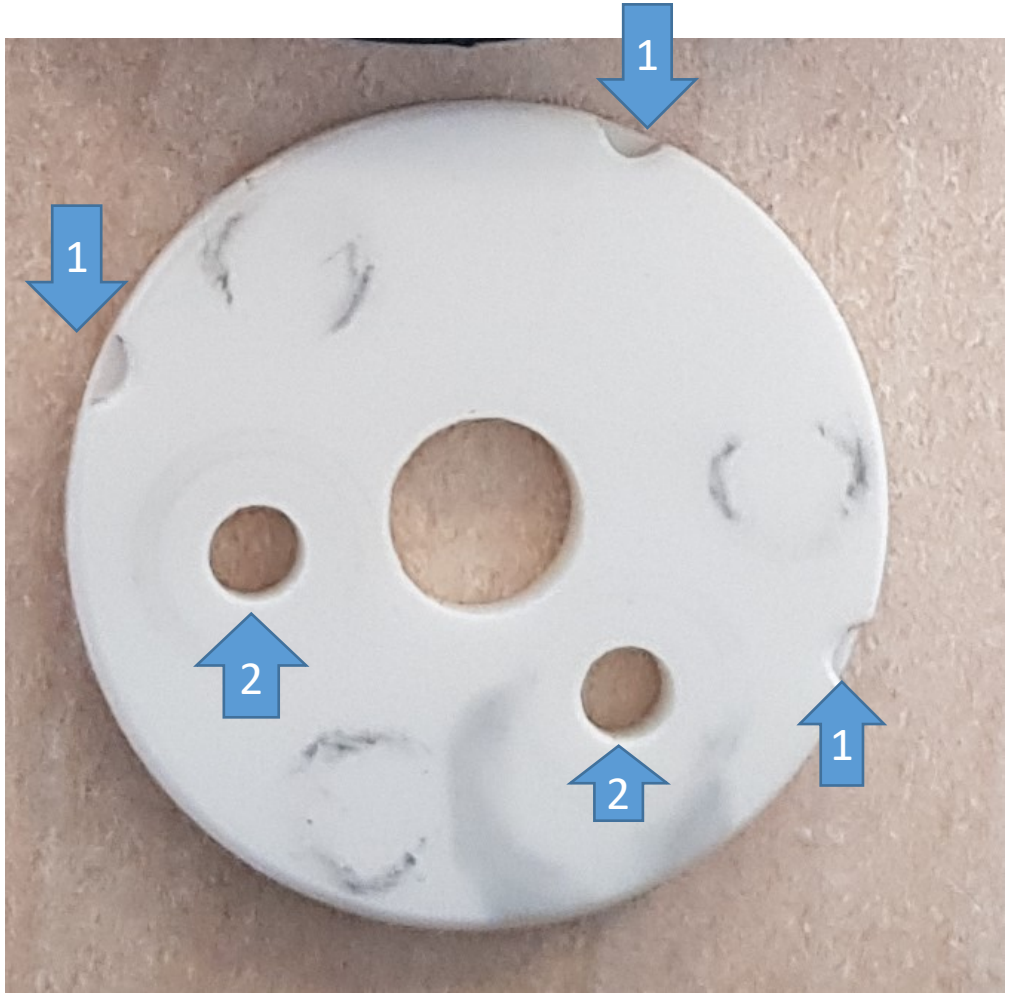
Thor



Disc that is embedded in the body of the valve.

1 • locking points.

2 • holes where the o-rings are supported.

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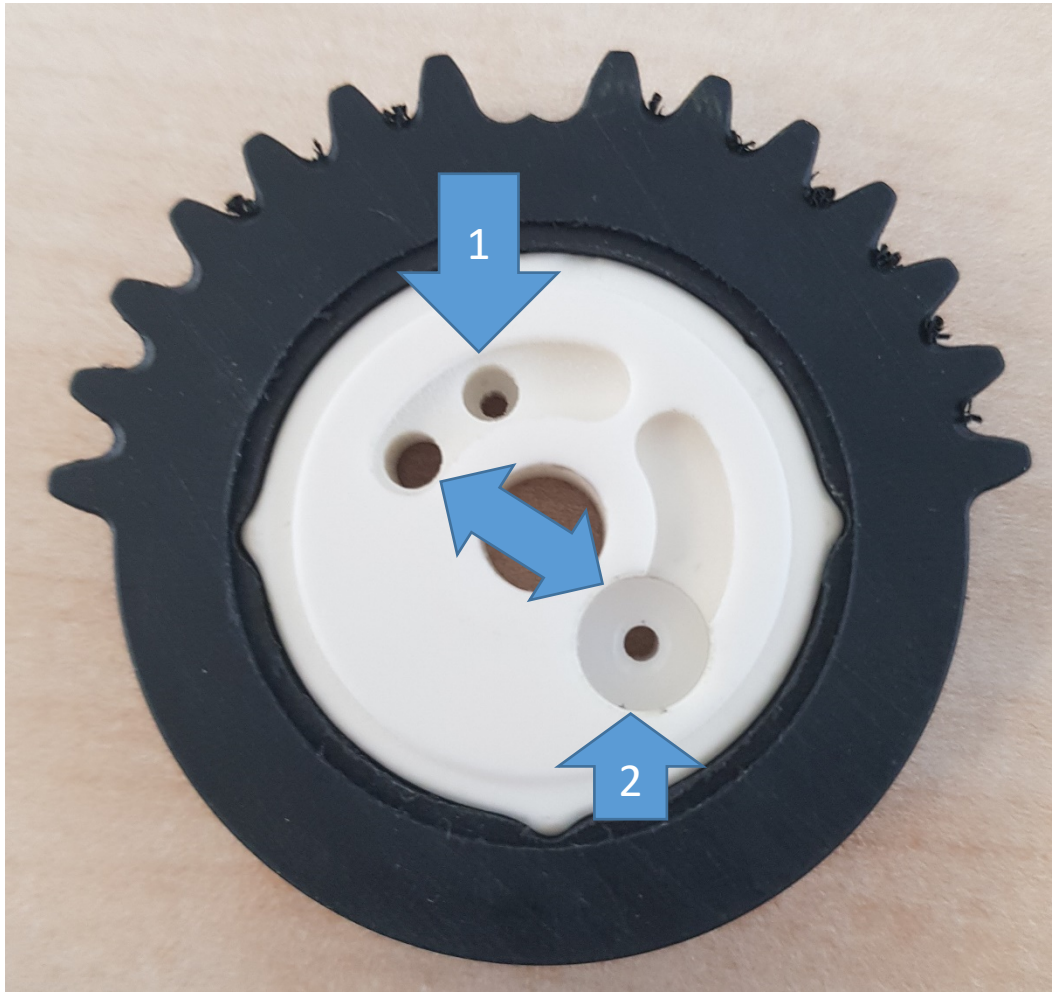
Thor



Disc embedded in the gear.
This disc moves in a clockwise direction to dose the small quantities (1) and counter-clockwise the large quantities (2), when this right (closed the valve) are two holes that serve to recirculate.

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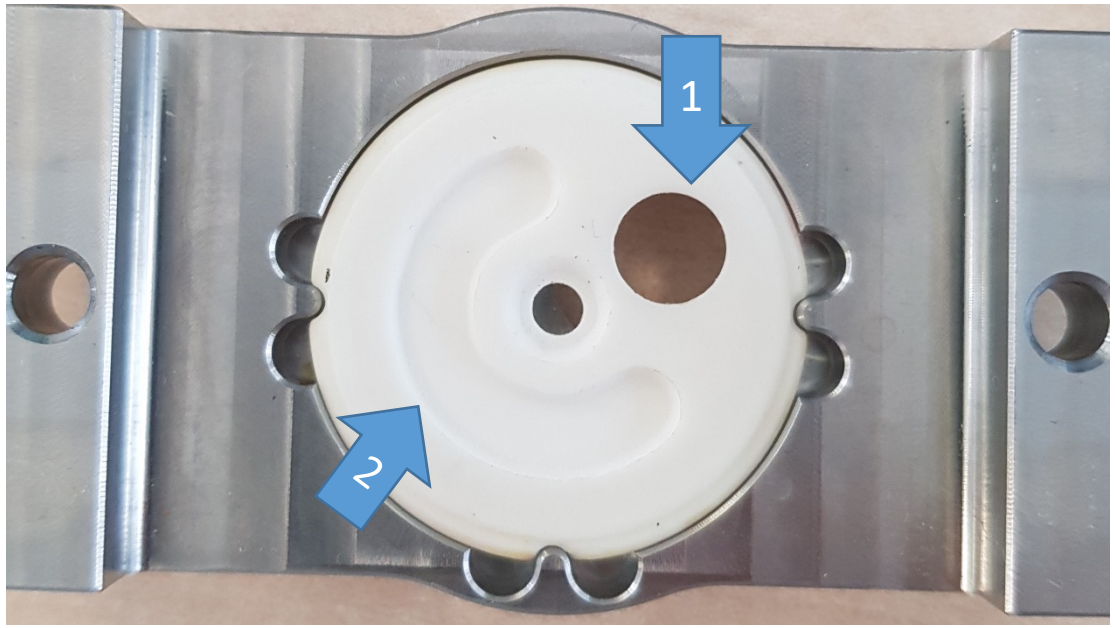
Thor



In this fixed disc has the dosing hole (1), and the channel (2) that when closed the valve serves to recirculate, by this system it is not necessary to purge this pump because the product is always in motion.

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Thor

Electrical parts

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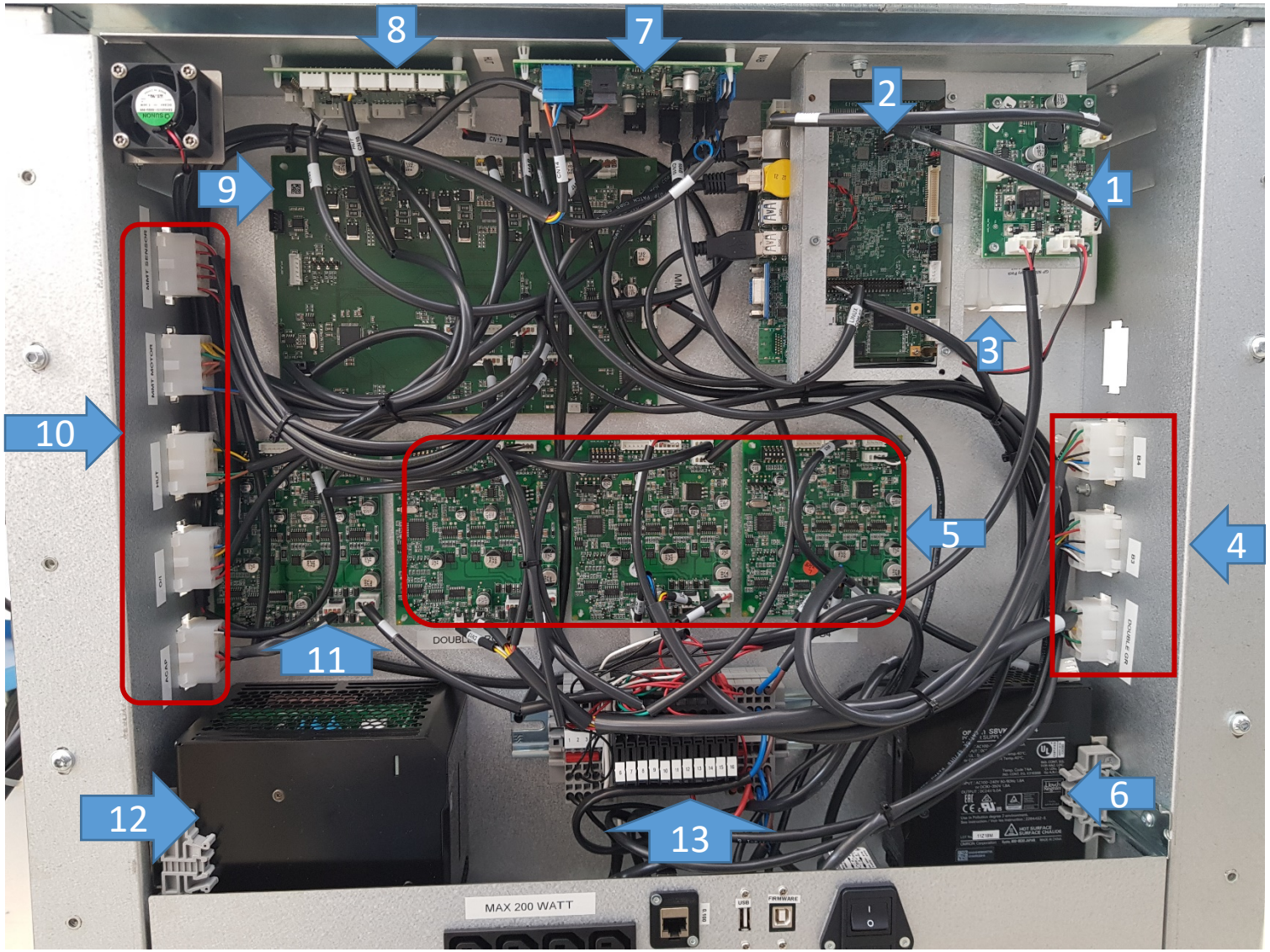
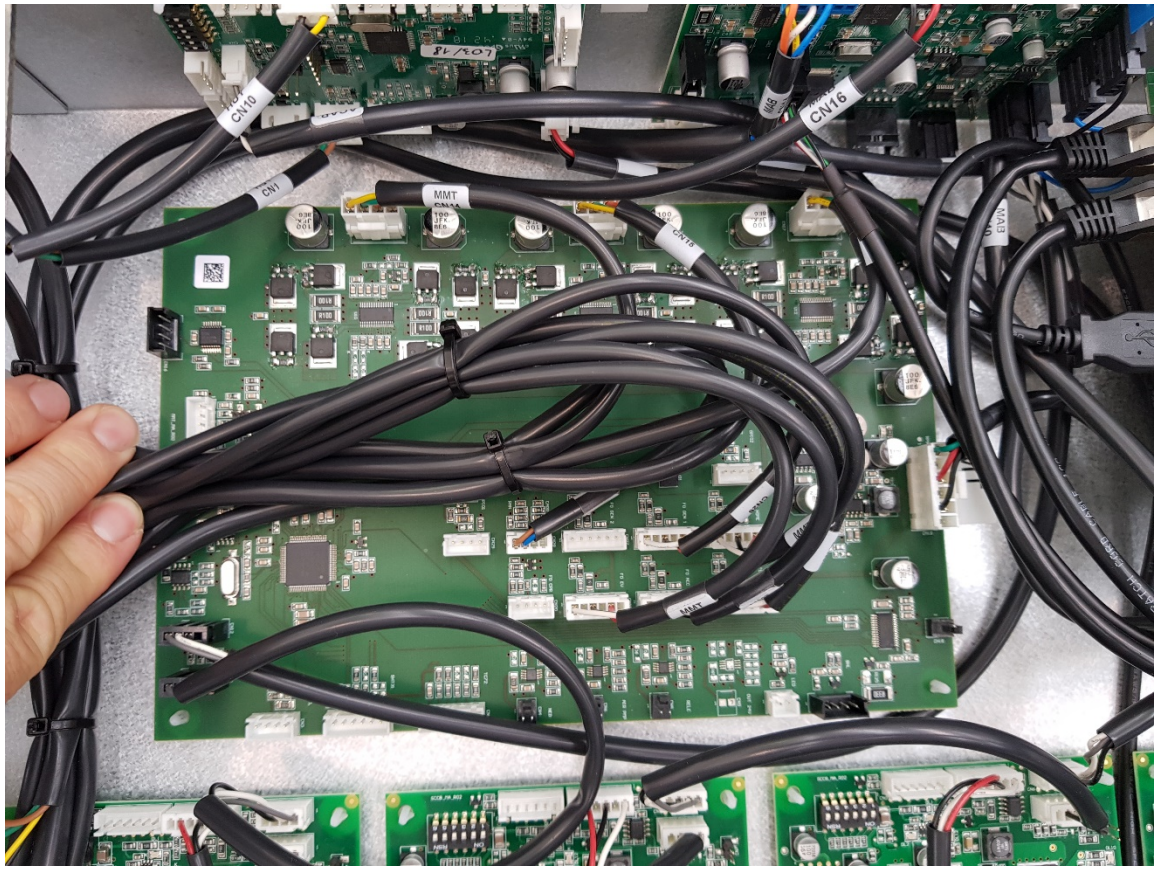
Thor: electric device

7 • MAB Card
8 • Humidifier
9 • Tinting Card
10 • Connectors photocells, motor, humidifier, pulsating, Autocap.
11 • Autocap card.
12 • 48 volt power supply
13 • Fuses.



1 • SPB Card
2 • Linux Card
3 • Battery
4 • Base connectors.
5 • Base / semi-finished cards
6 • 24volt power supply.

Thor: Tinting card



The following components are connected to the tinting card:
3 engines (carousel, pump, valve), photocells, Autocap, base pumps.

And pass the information to the MAB.

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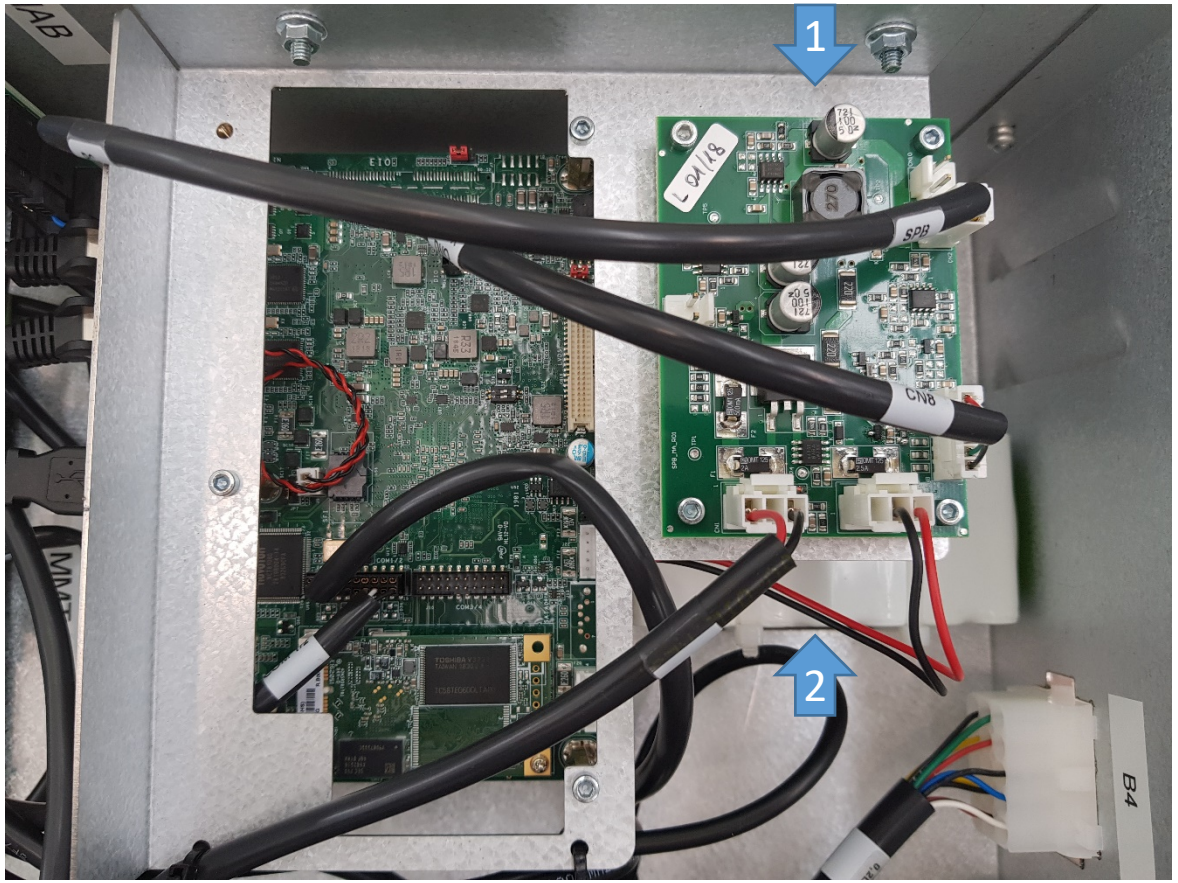
Thor: SPB card



The SPB card (1) fulfills the function of once the machine is turned off to maintain it for about 10 seconds with power to avoid losing the data, the card is powered at 24 volt and with the batteries at 12 (2) volt it feeds the Linux card.

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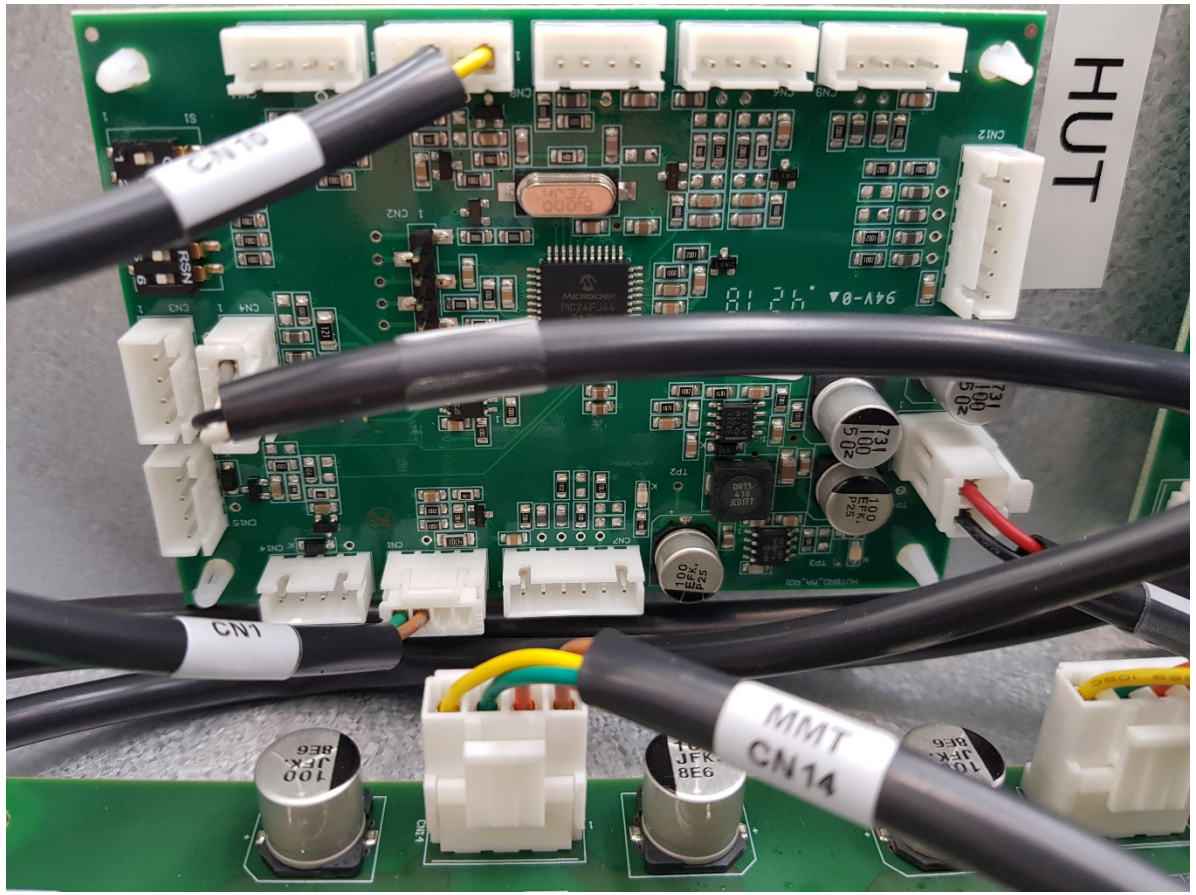
Thor: Humidifier card



The Humidifier Card operates the humidifier

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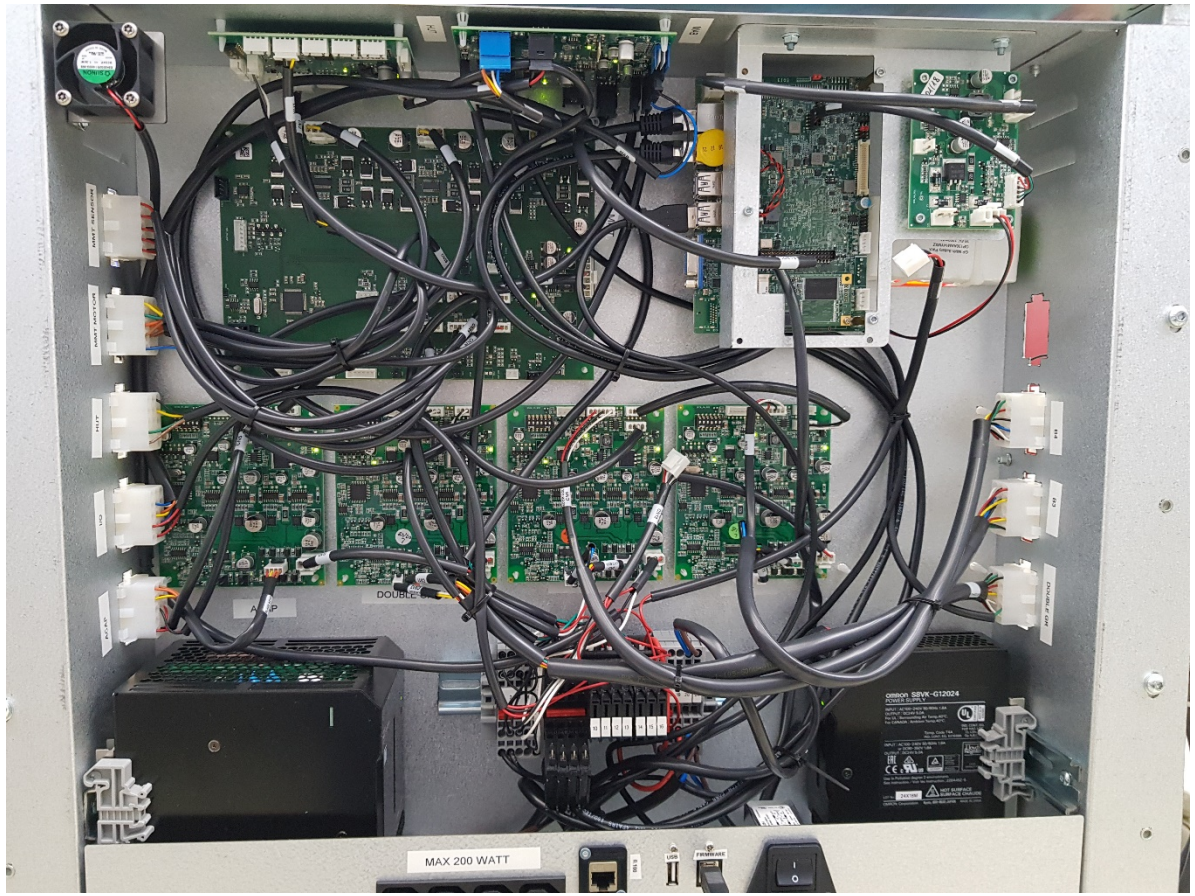
Thor:Programming



All cards already comes with the boot loader and firmware

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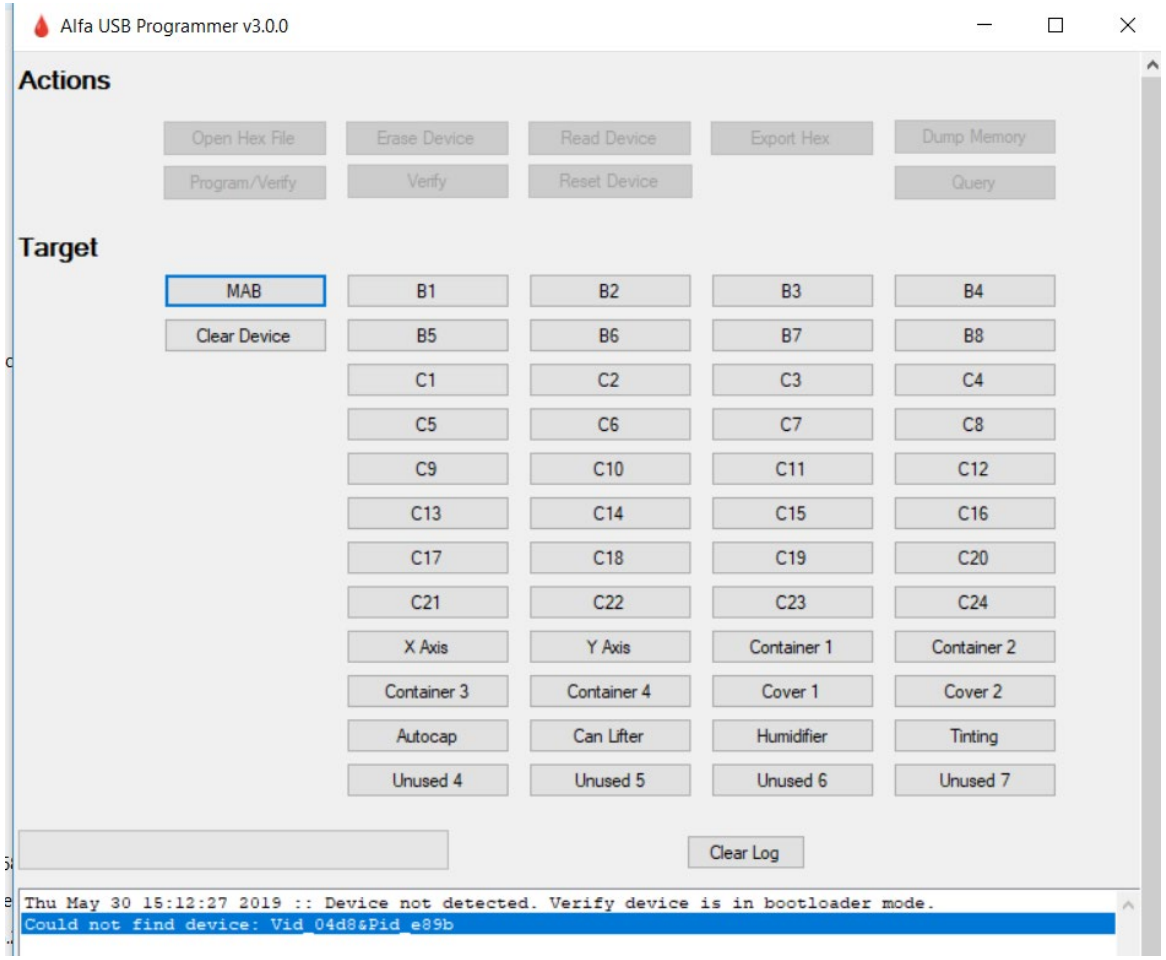
Thor



If the firmware needs to be updated, only the "Alfaboot loader app" program is used.

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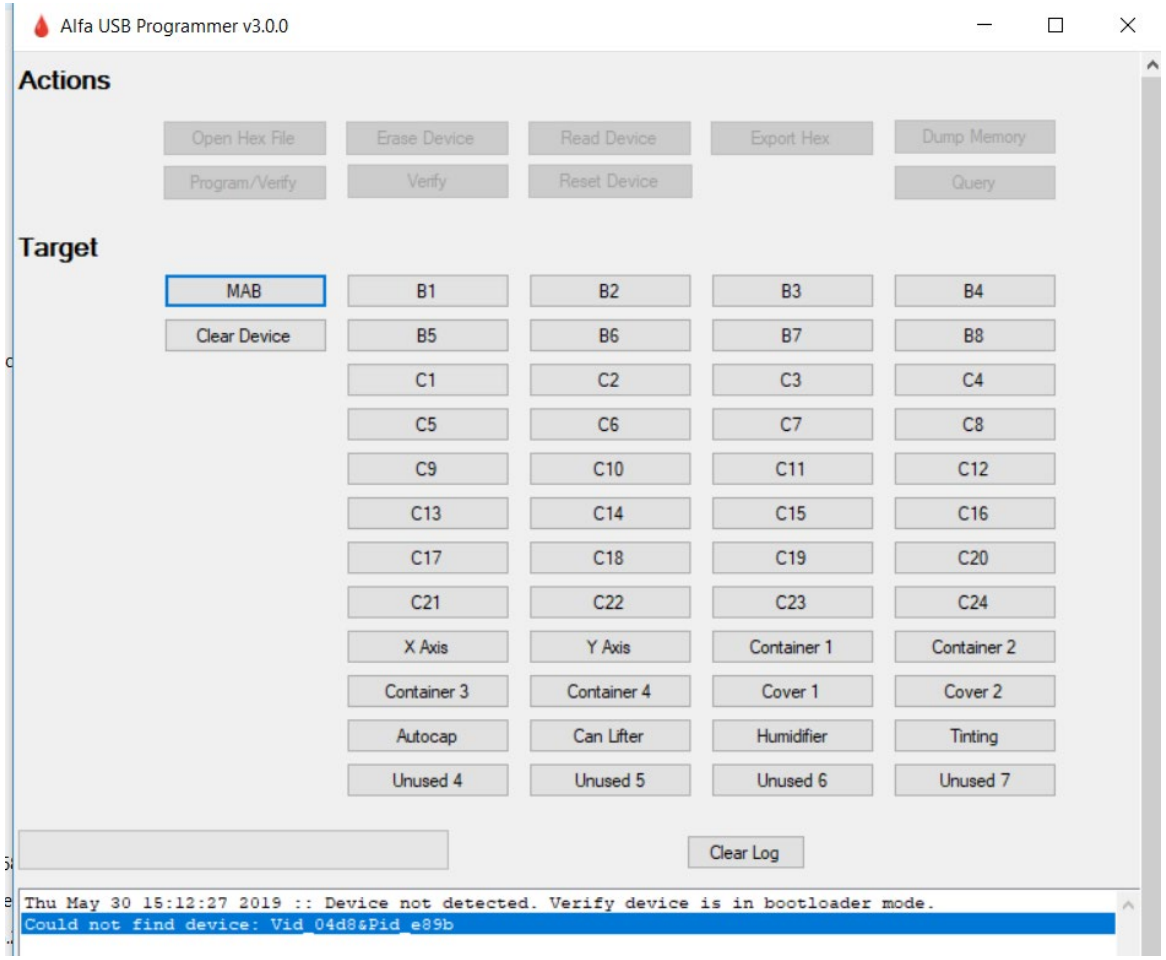
Thor



The program "Alpha Bootloader App" was modified by adding the cards:

Tinting

Humidifier

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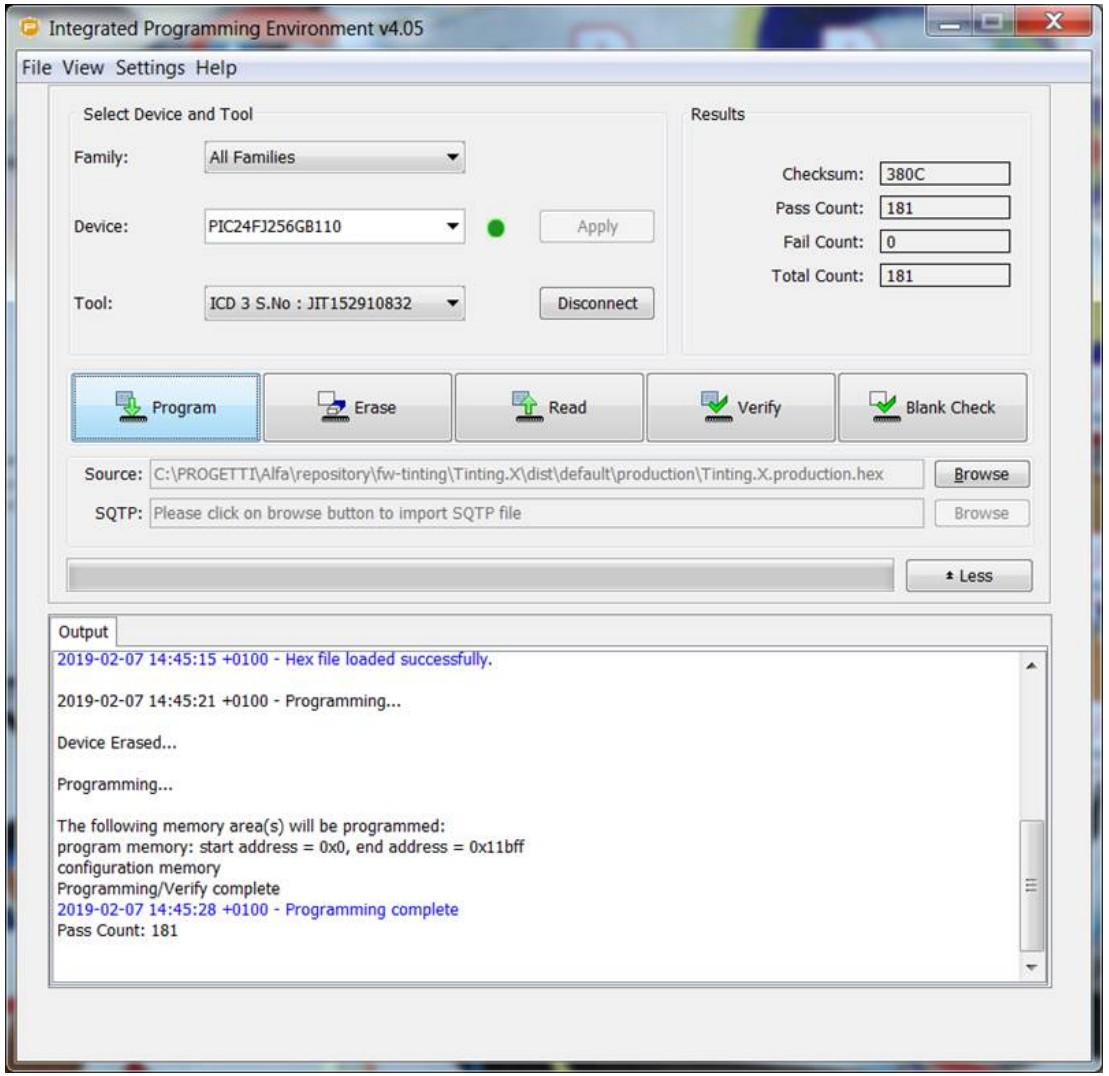
Thor



To load the boot on the card Tinting and Humidifier, you have to use the program "MPLAB IPE V4.0.5"
The device tinting:
PIC24256GB110

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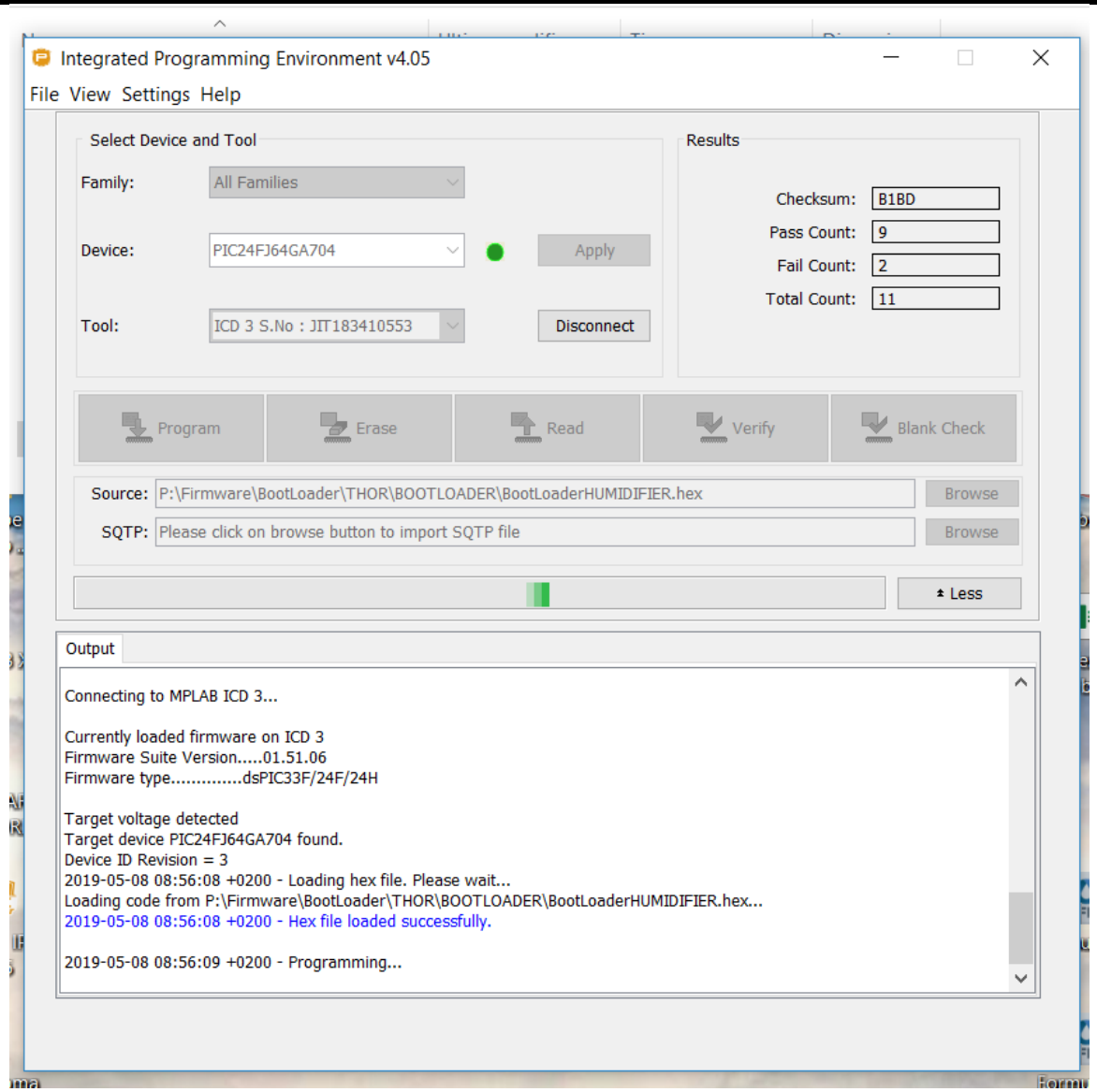
Thor



Humidifier Card
Device:
PIC24FJ65GA704

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Thor

MPLAB ICD 3 programmer.
Note: It is not necessary to buy it, we will send the spare parts already programmed

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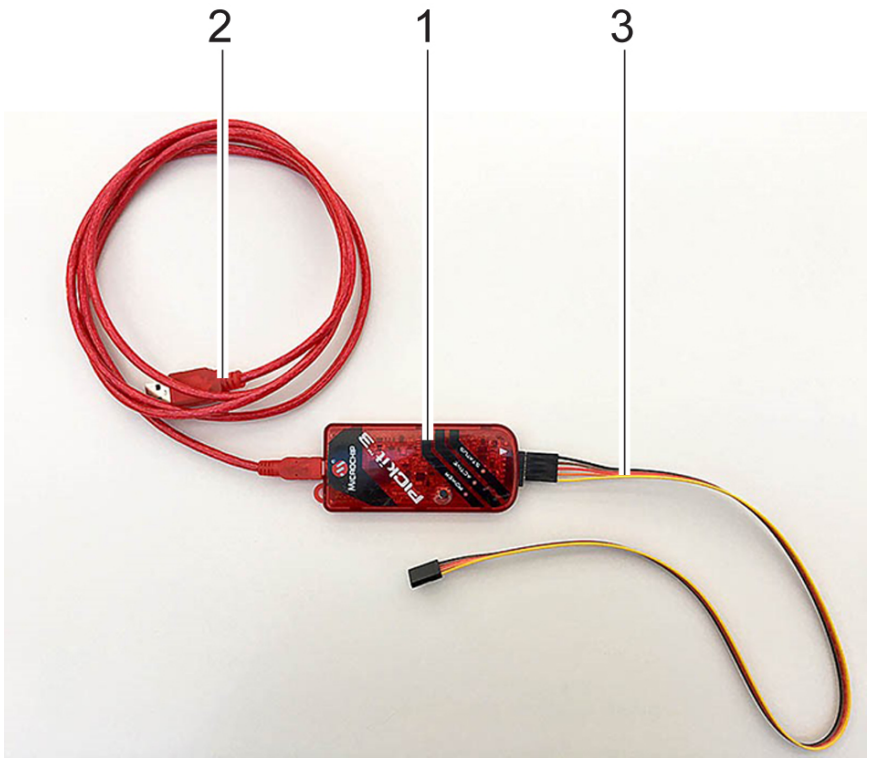
Thor



For Autocap cards, semi-finished pumps, Mab.
The Pick it 3 programmer and Mplab iDE v892 software are used

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Thor

Autocap

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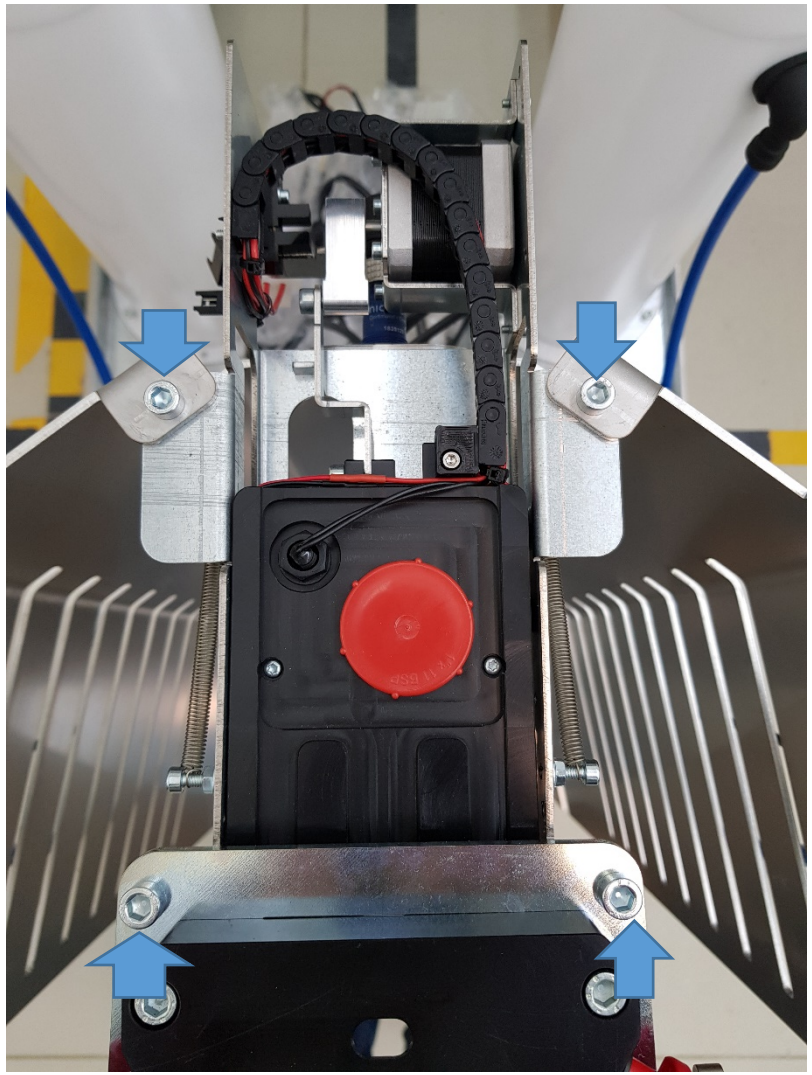
Thor



The Autocap is fixed with 4 Allen screws 5x16, to the chassis of the platform.

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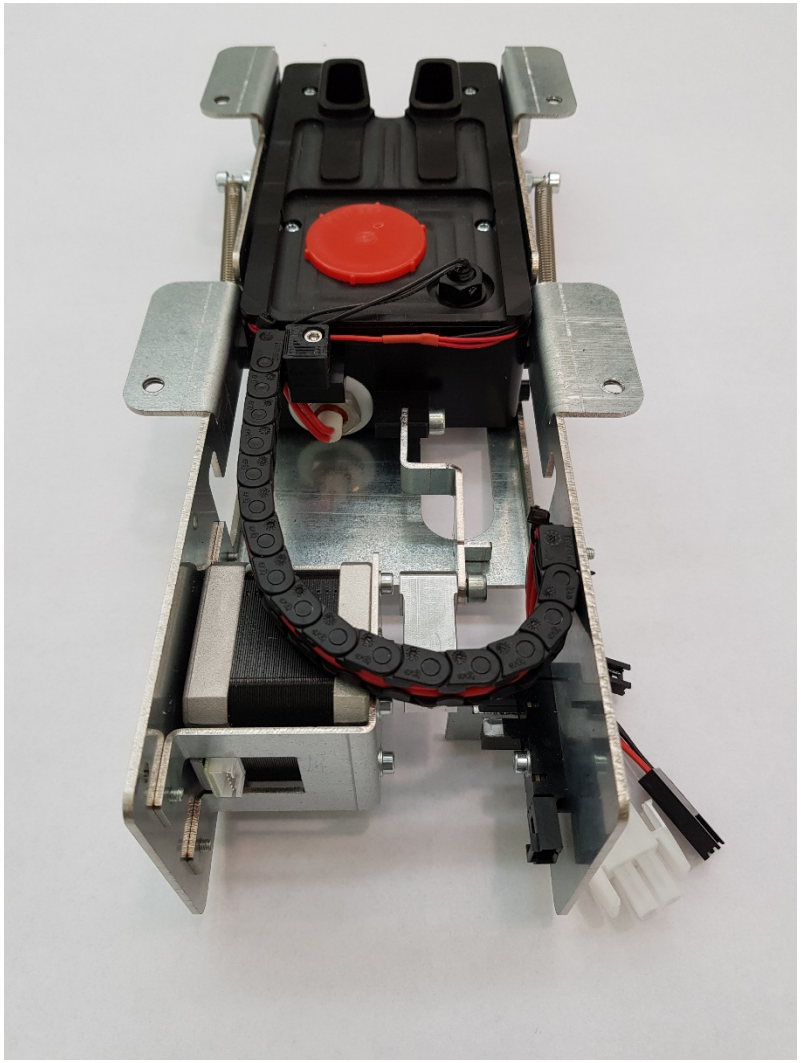
COLORPAINT DISPENSER

Thor



Disconnecting the cables from the motor, centering laser, resistance, photocell, level sensor, you can take out the Autocap.

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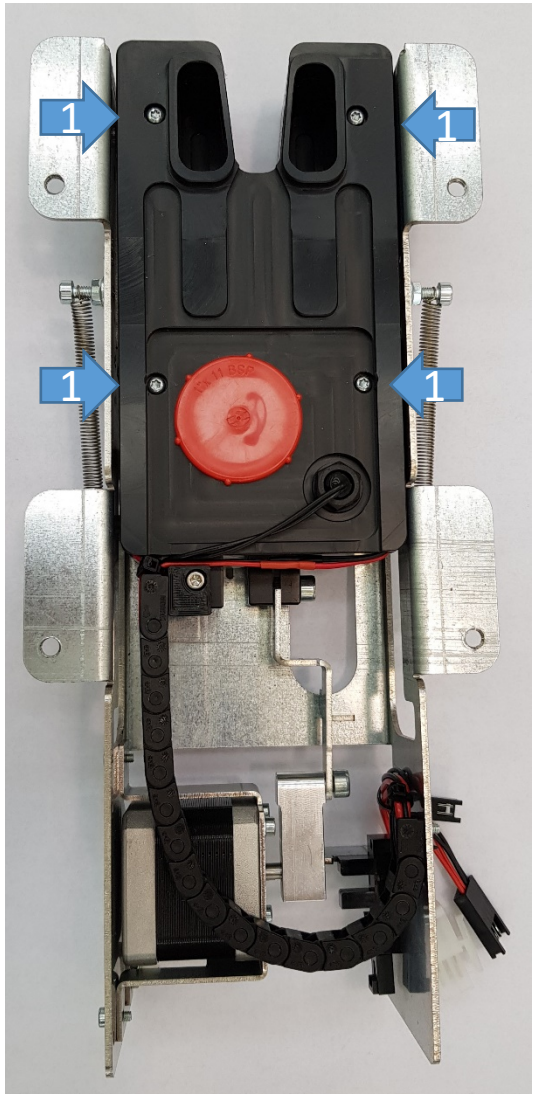
COLORPAINT DISPENSER

Thor



Removing the 4 screws (1) from the lid access the tank, the laser, the level sensor and the resistance.

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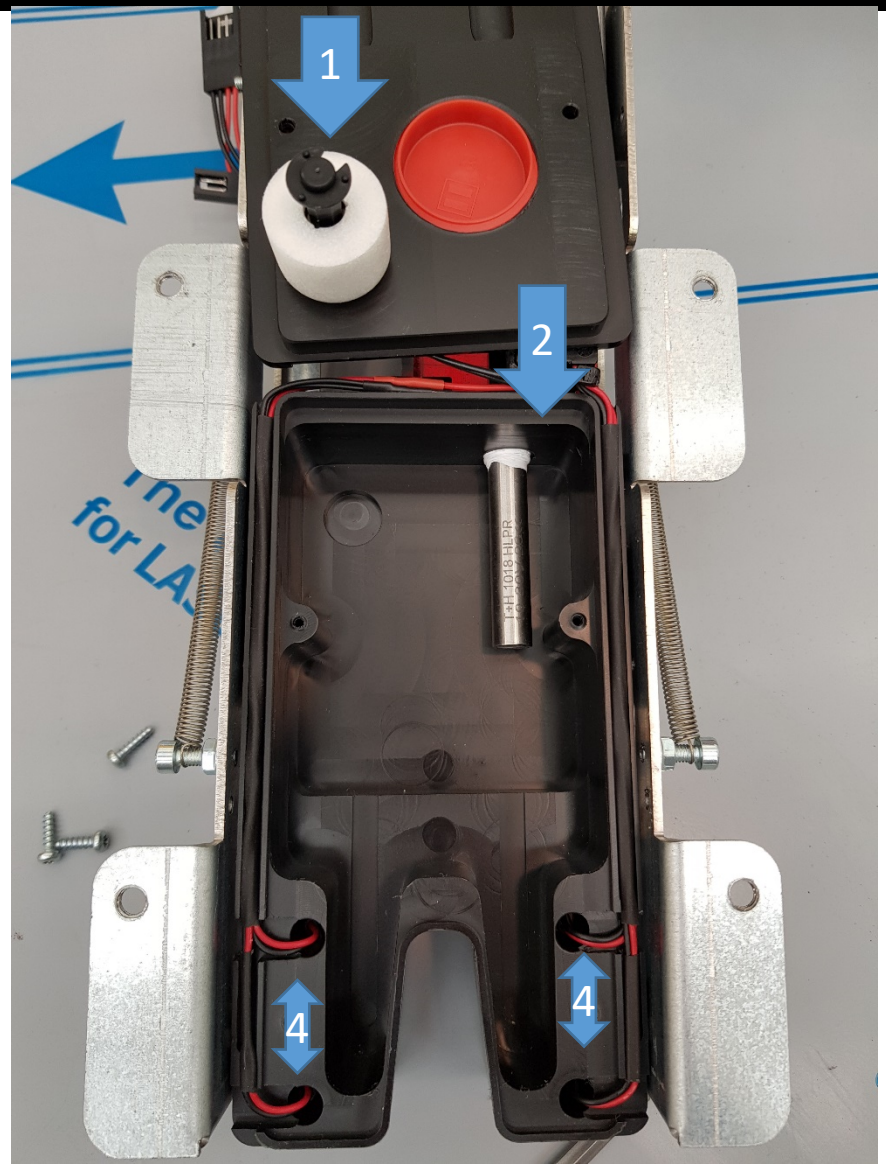
COLORPAINT DISPENSER

Thor



Inside the canisters are: water level sensor (1), resistance (2), 4 laser lights (3).

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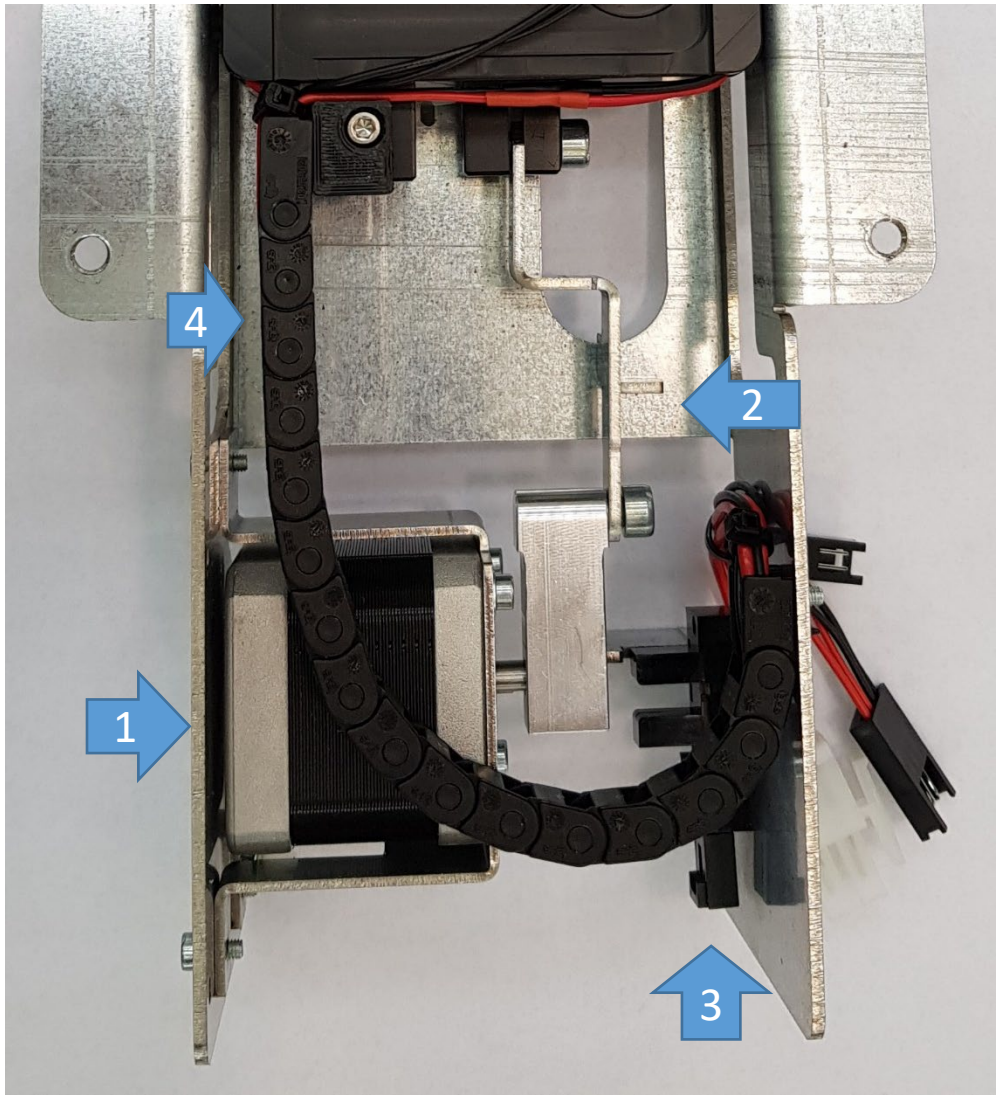
Thor



The mechanism for opening and closing the Autocap is operated by the stepper motor (1), when the opening movement the flag (2) is positioned in the photocell (3), in the chain (4) are the sensor cables Water level, resistance, laser cable.

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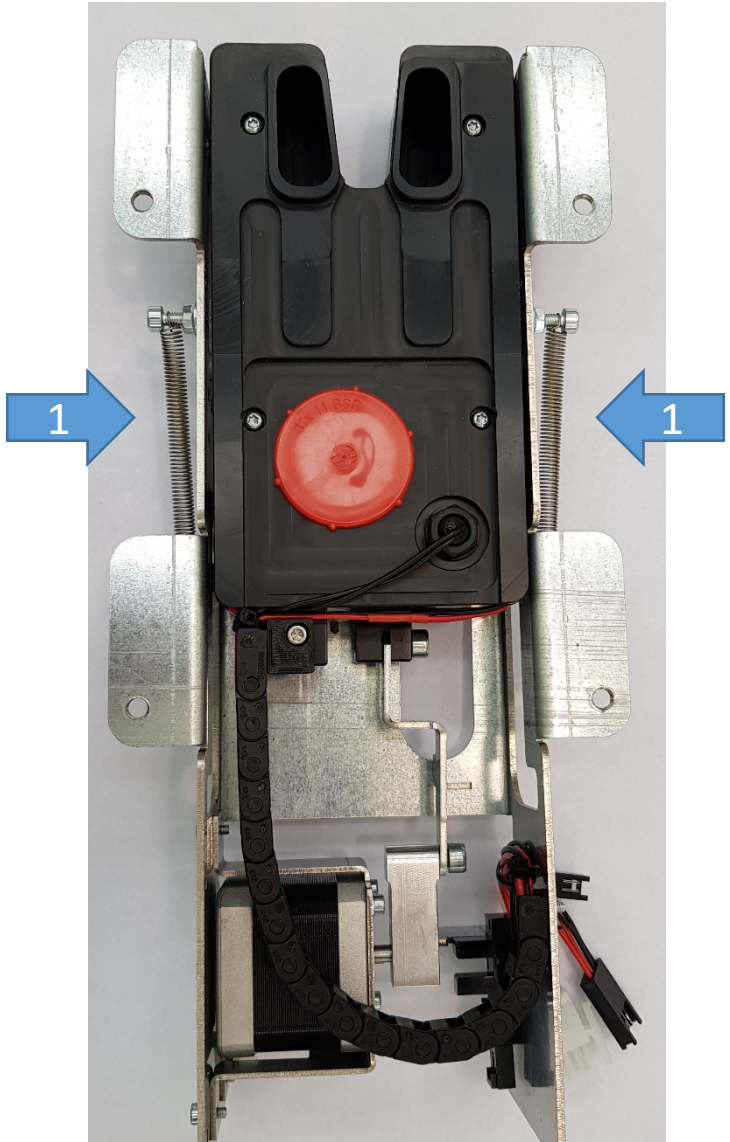
Thor



These two springs (1) help the closing movement

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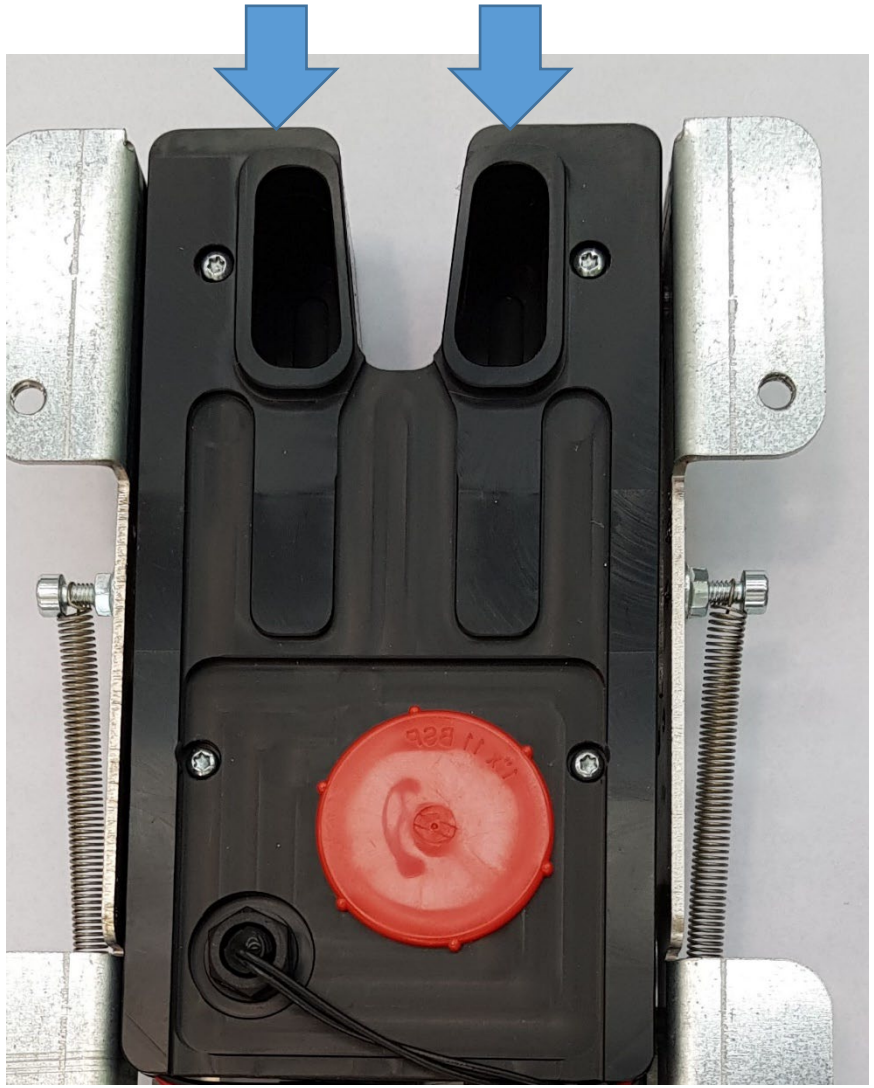
Thor



Sponges are embedded in these holes.

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Alfa Tint

V 1.4.5

alfa
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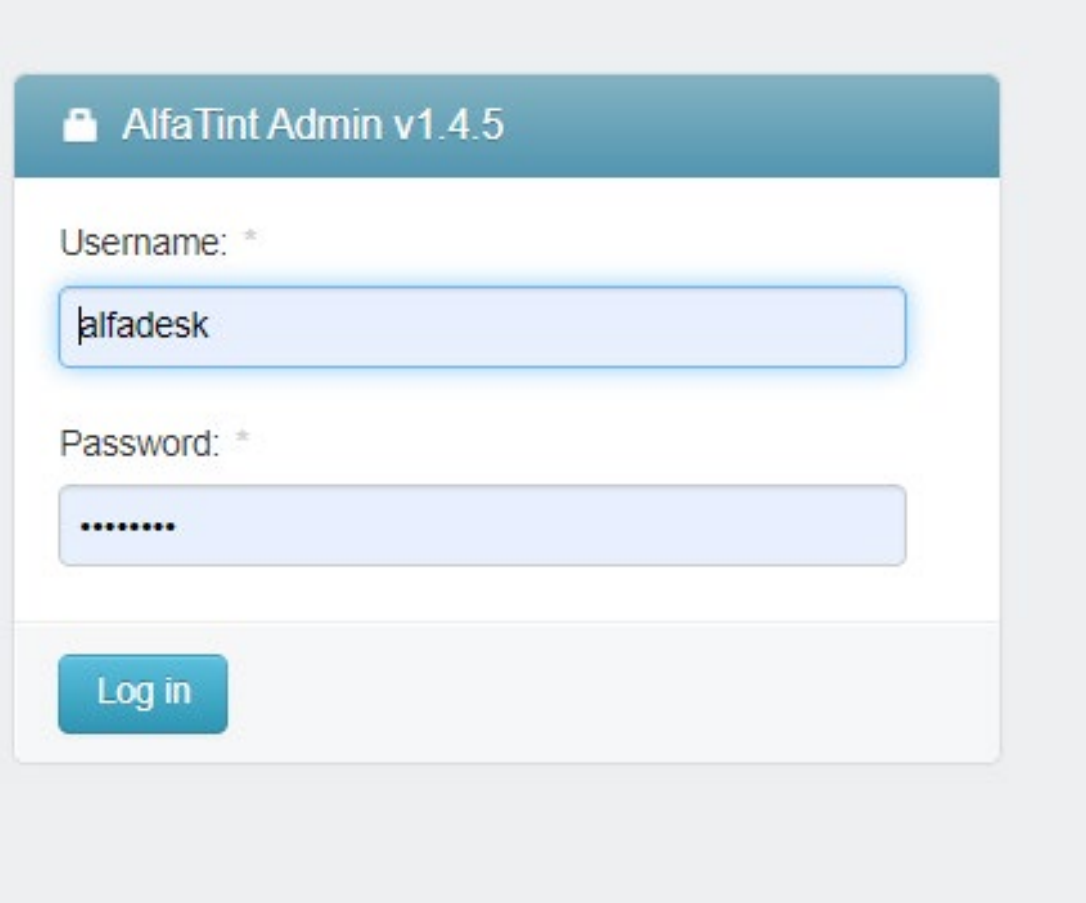
Thor



The password and user is the same "alfadesk"

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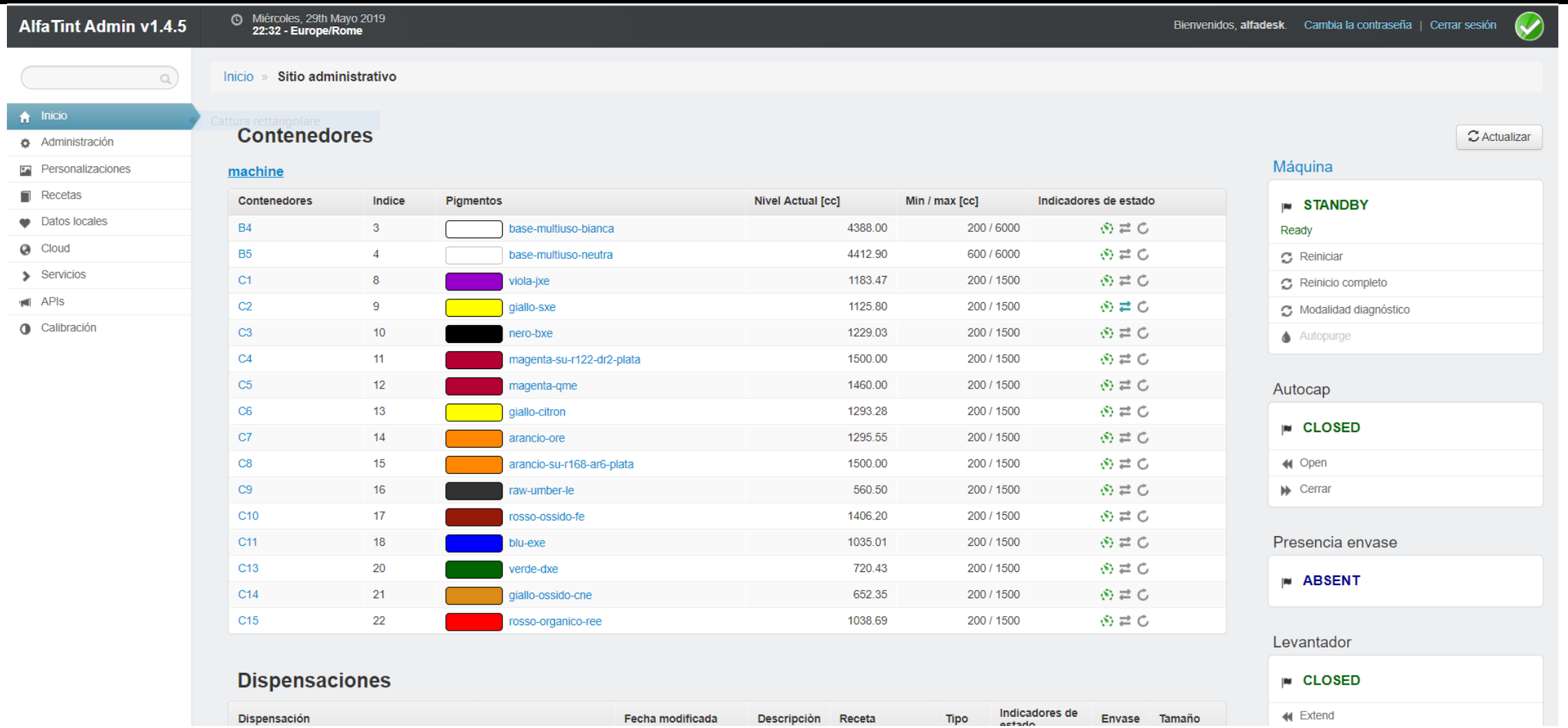
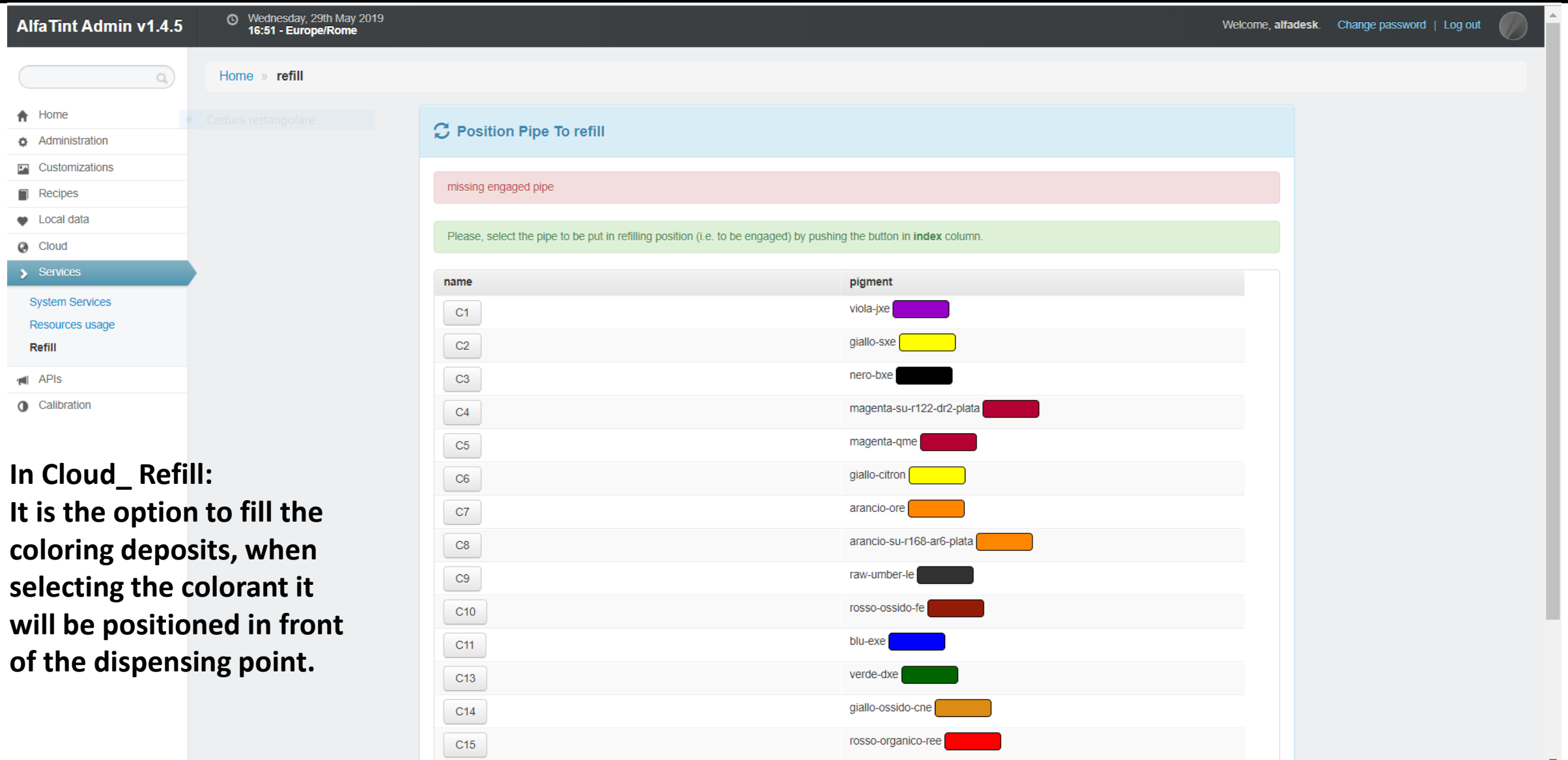
Thor



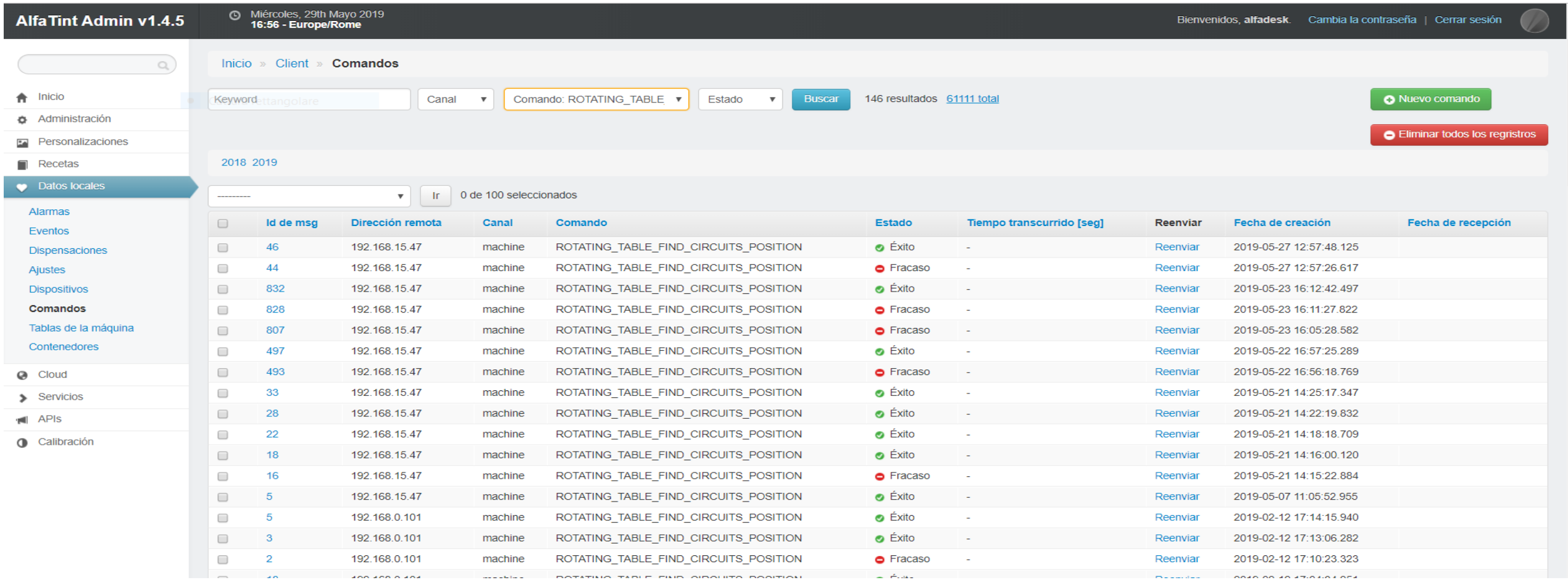
Start page is the same as version v1.4.0

Thor



In Cloud_ Refill:
It is the option to fill the coloring deposits, when selecting the colorant it will be positioned in front of the dispensing point.

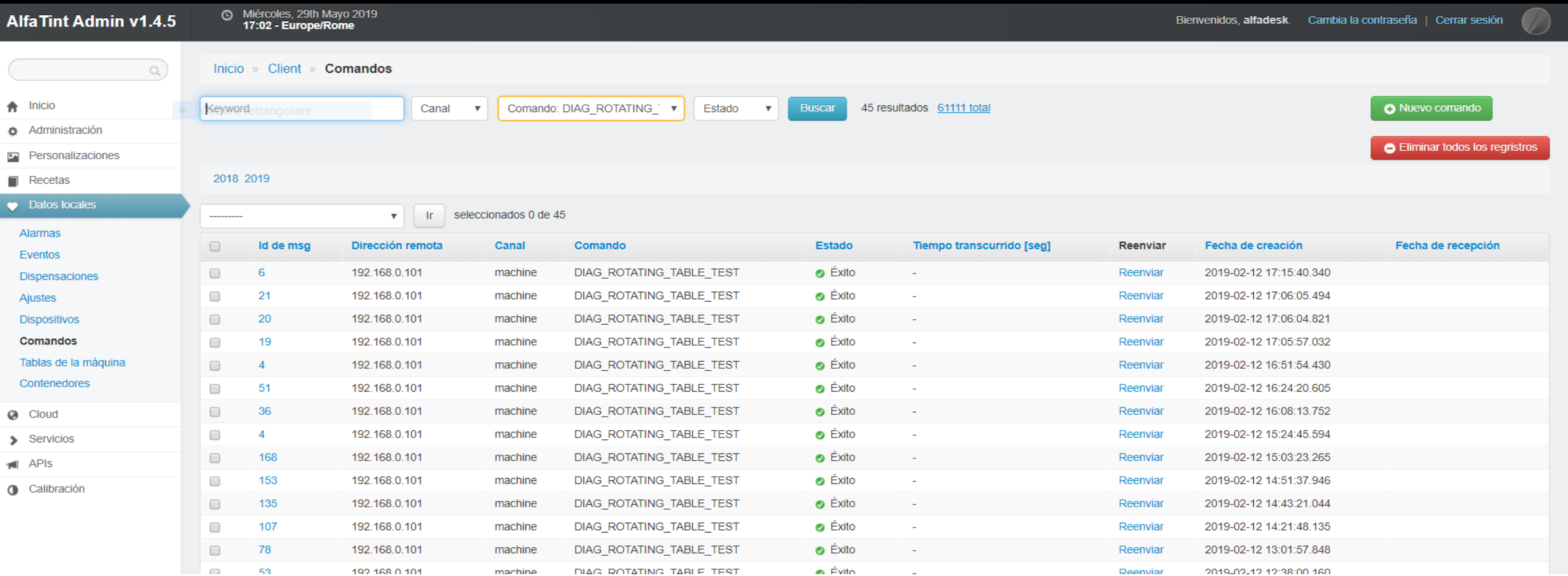
Thor



Id de msg	Dirección remota	Canal	Comando	Estado	Tiempo transcurrido [seg]	Reenviar	Fecha de creación	Fecha de recepción
46	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-27 12:57:48.125	
44	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Fracaso	-	Reenviar	2019-05-27 12:57:26.617	
832	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-23 16:12:42.497	
828	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Fracaso	-	Reenviar	2019-05-23 16:11:27.822	
807	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Fracaso	-	Reenviar	2019-05-23 16:05:28.582	
497	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-22 16:57:25.289	
493	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Fracaso	-	Reenviar	2019-05-22 16:56:18.769	
33	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-21 14:25:17.347	
28	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-21 14:22:19.832	
22	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-21 14:18:18.709	
18	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-21 14:16:00.120	
16	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Fracaso	-	Reenviar	2019-05-21 14:15:22.884	
5	192.168.15.47	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-05-07 11:05:52.955	
5	192.168.0.101	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-02-12 17:14:15.940	
3	192.168.0.101	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Éxito	-	Reenviar	2019-02-12 17:13:06.282	
2	192.168.0.101	machine	ROTATING_TABLE_FIND_CIRCUITS_POSITION	Fracaso	-	Reenviar	2019-02-12 17:10:23.323	

a new command :ROTATING_TABLE_FIND_CIRCUITS_POSITION

Thor



A new command: DIAG_ROTATING_TABLE_TEST

Thor

As the Thor has the carousel and each dye one position, when making a pump change and you want to continue working without that coloring group, you have to follow the 4 steps below.

1 • In Device_Machine, I deactivate the coloring group.

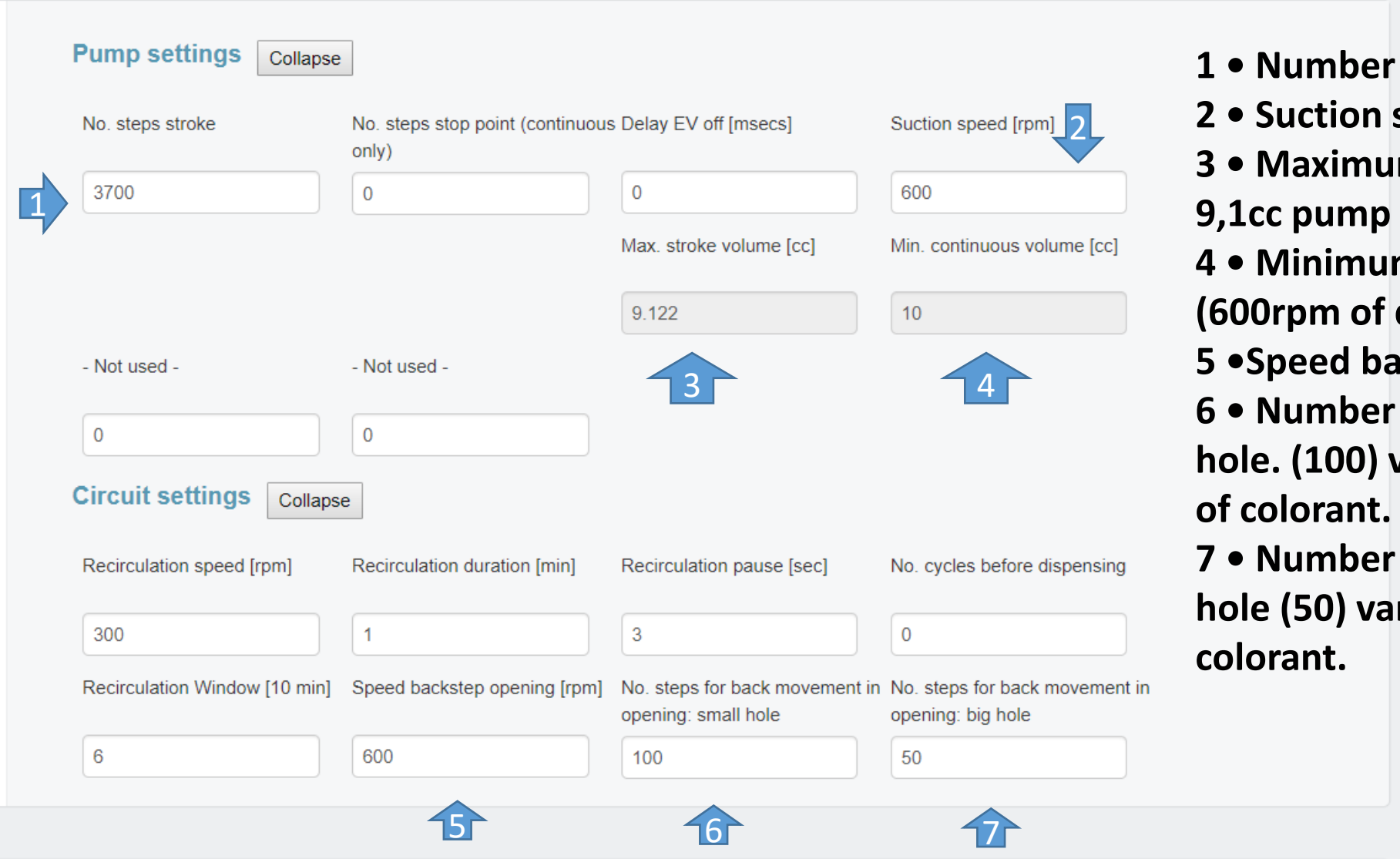
2 • I reset

3 • Carried out a self-recognition of the groups in the carousel with the command "rotating_table_find_circuits_position"

4 • I carry out a test to verify that everything is configured with the command "Diag_rotating_table_test"

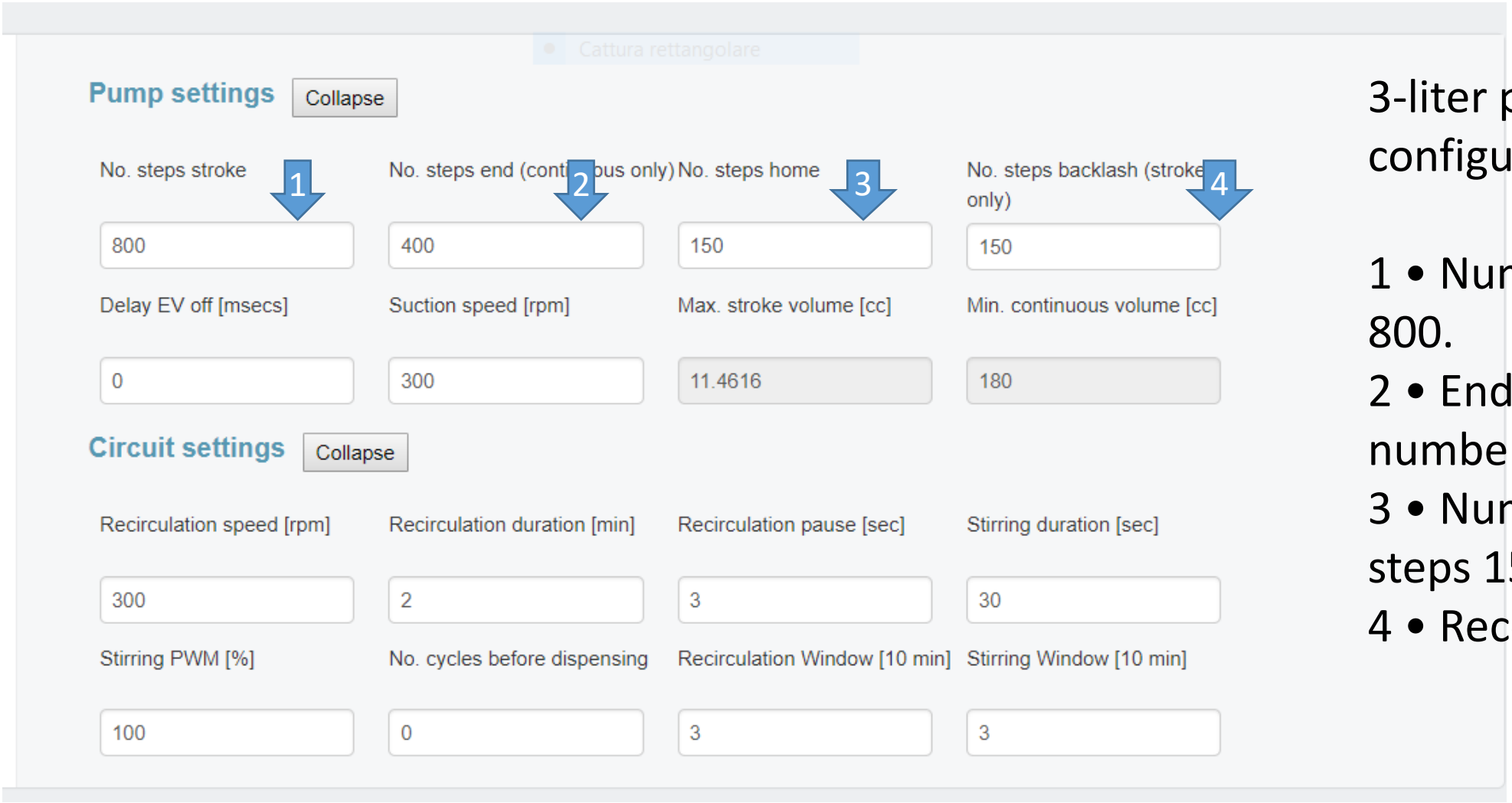
Once repaired or replaced the group perform the same steps for activation

Thor: Pump configuration



1 • Number of steps 3700.
2 • Suction speed 600rpm.
3 • Maximum volume in a single stroke of 9,1cc pump (599rpm dispensing)
4 • Minimum volume in 10cc continuous. (600rpm of dispensing)
5 •Speed backstep opening (rpm)
6 • Number of suction steps with the small hole. (100) variable depending on the type of colorant.
7 • Number of suction steps with the large hole (50) variable depending on the type of colorant.

Thor



3-liter pump is configured:

1 • Number of steps 800.
2 • End of steps number 400
3 • Number of start steps 150.
4 • Recoil steps 150.

Thor: Device

The humidifier and the tinting card are active on the Device.

Thor

Calibration

alfa
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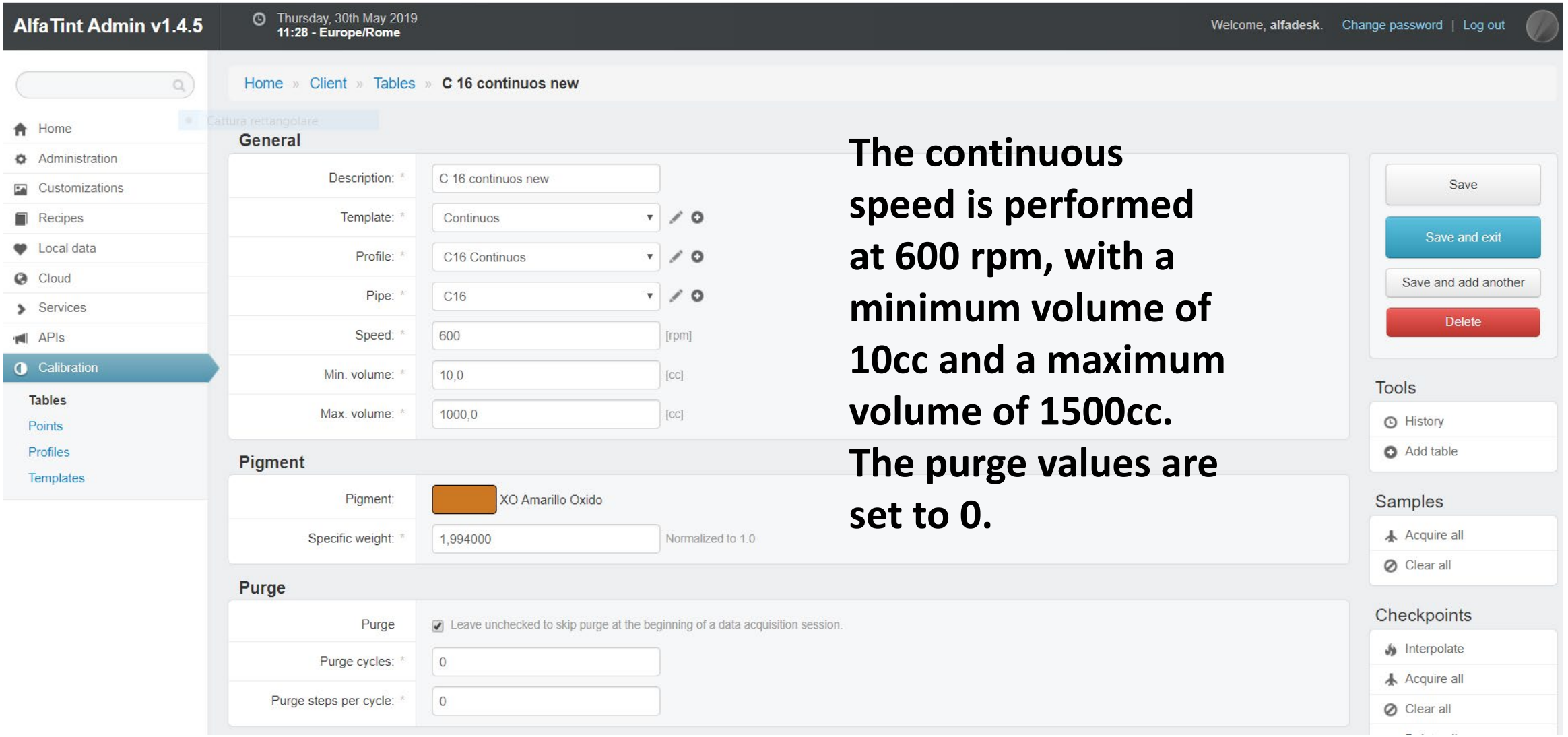
Thor



The continuous speed is performed at 600 rpm, with a minimum volume of 10cc and a maximum volume of 1500cc. The purge values are set to 0.

Thor

In continuous 3 weighing are made

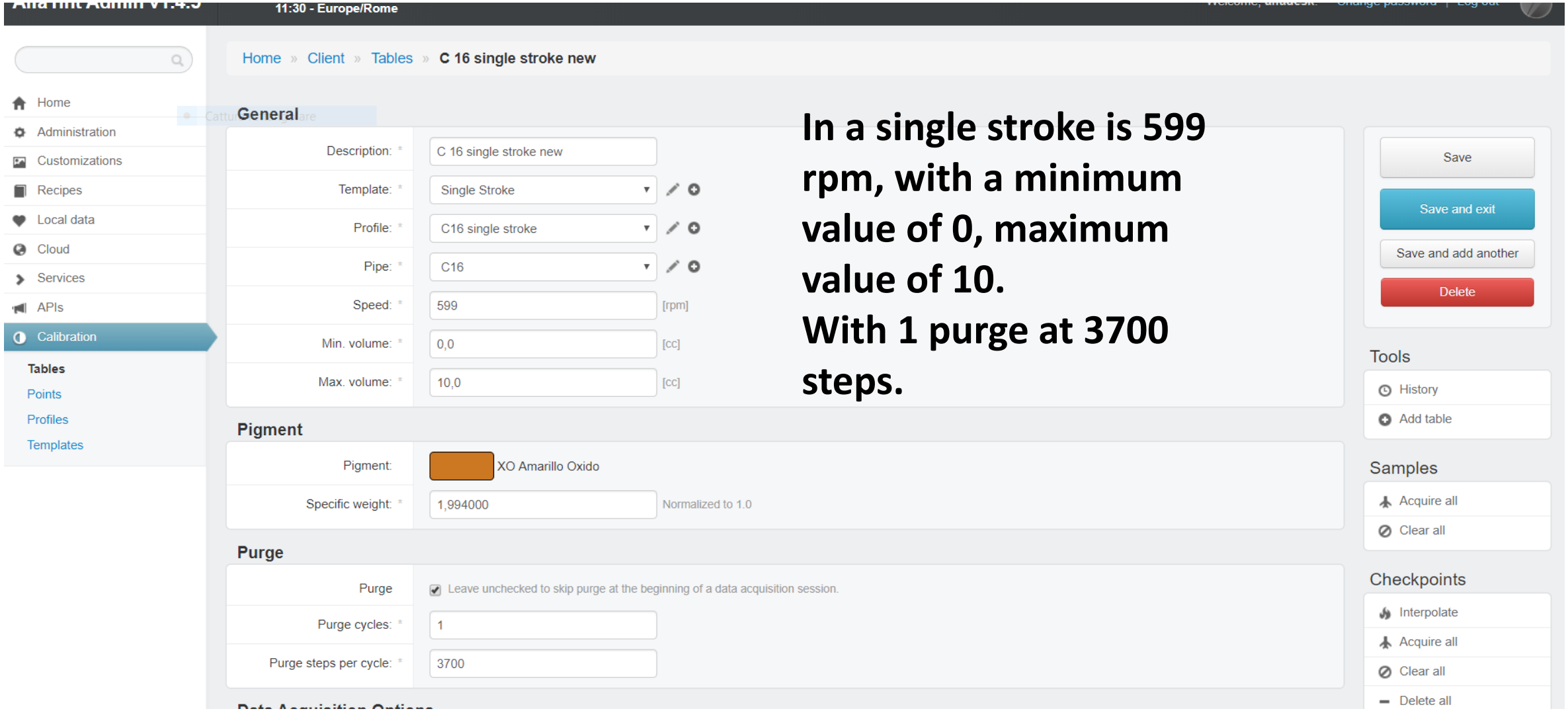
Samples

Sample	Sampled on	Iterations	Steps	Weight [g]	Volume [cc]	Std deviation (abs)	Std deviation (pct)	Clear?	Delete?
SP4579561d-a4fe-4d76-8c21-269cbd9639e0	May 22, 2019, 9:46 a.m.	2	3700	18.5855	9.3207	0.0069	0.07 %	Clear	Delete
SP5b451ba0-1355-4d8a-b5f5-f8f54679aa99	May 22, 2019, 9:45 a.m.	2	18500	92.7496	46.5143	0.0009	0.00 %	Clear	Delete
SP21316eab-bfea-453a-addf-3c0fa70711dc	May 22, 2019, 9:43 a.m.	1	37000	185.5904	93.0744	0.0000	0.00 %	Clear	Delete

Additional Samples

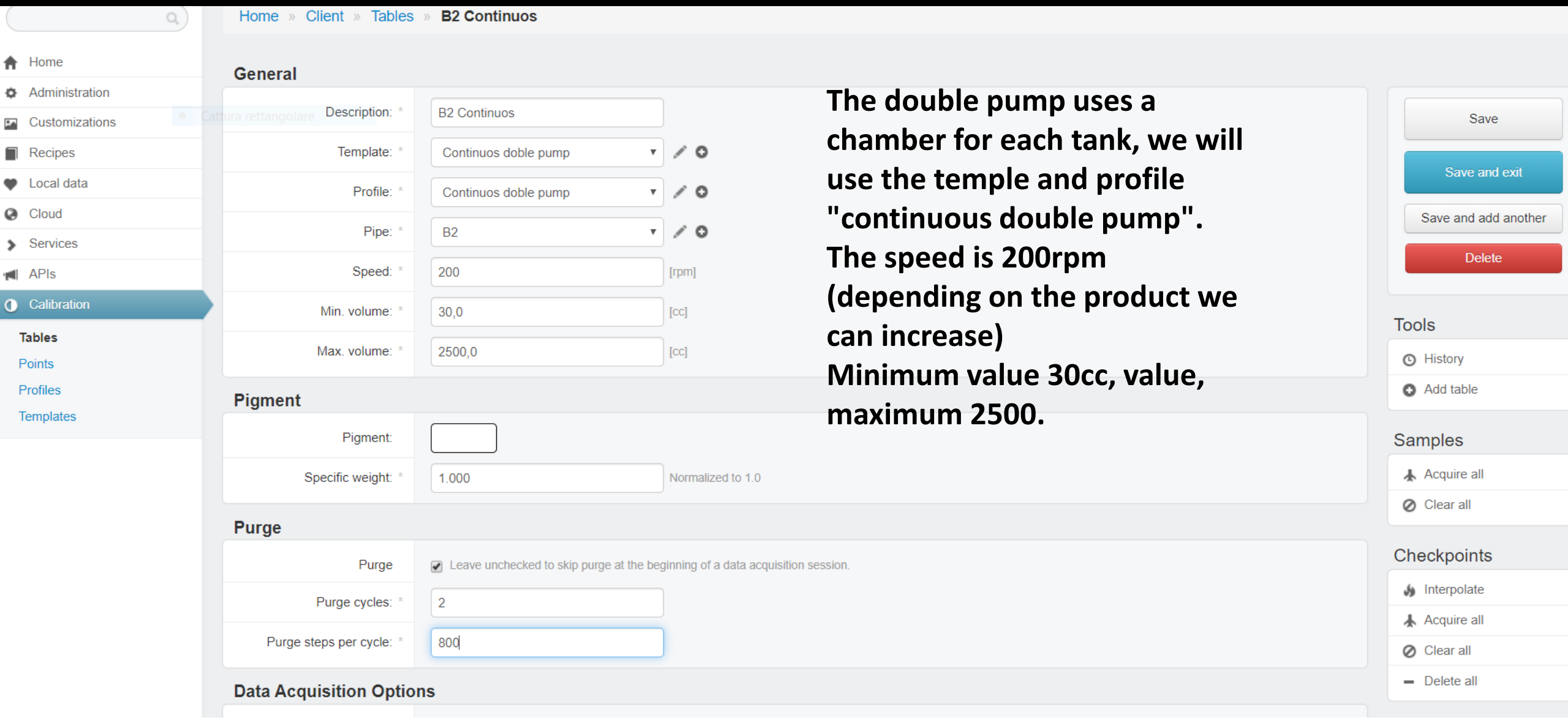
Iterations	Steps	Delete?

Thor



In a single stroke is 599 rpm, with a minimum value of 0, maximum value of 10.
With 1 purge at 3700 steps.

Thor



The double pump uses a chamber for each tank, we will use the temple and profile "continuous double pump".
The speed is 200rpm (depending on the product we can increase)
Minimum value 30cc, value, maximum 2500.

Thor

n continuous we will carry out these heavy ones

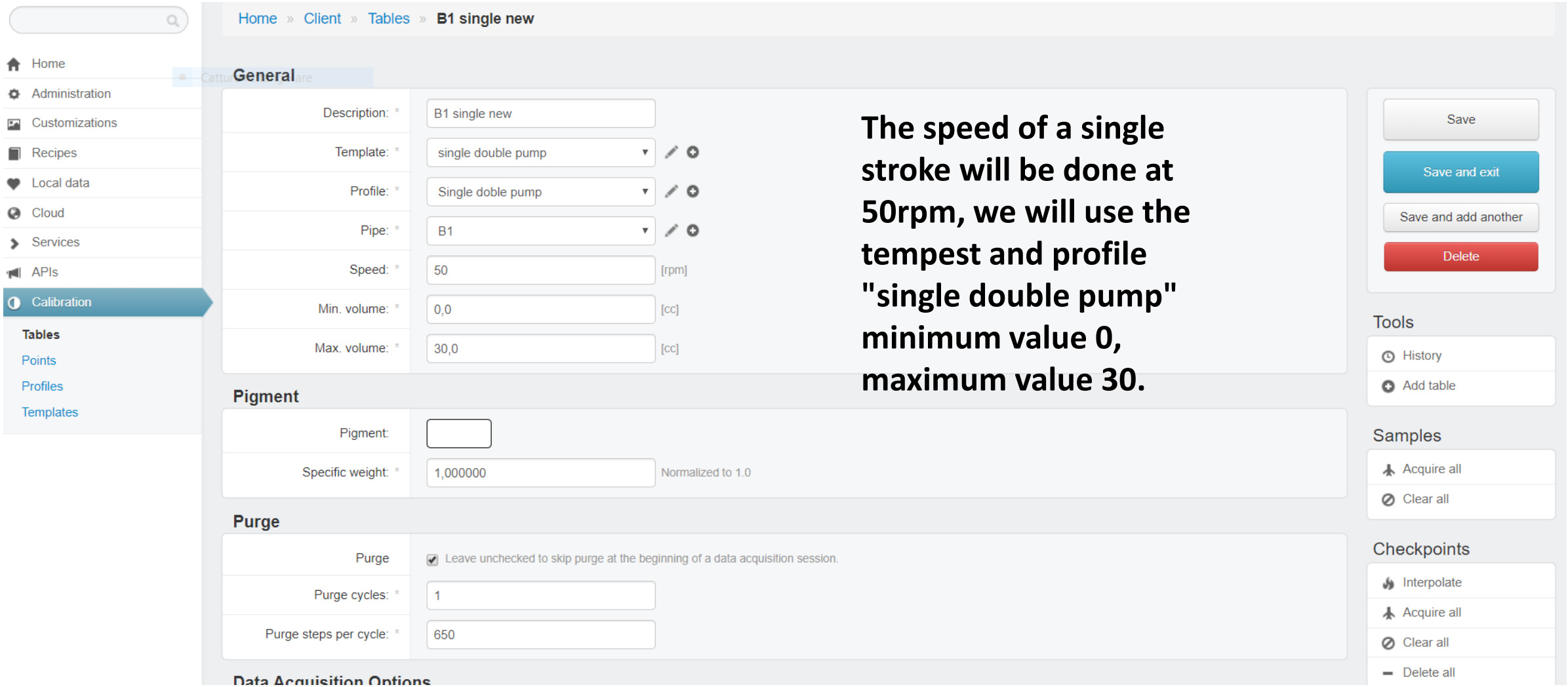
Samples

Sample	Sampled on	Iterations	Steps	Weight [g]	Volume [cc]	Std deviation (abs)	Std deviation (pct)	Clear?	Delete?
SP784db5d6-ae37-4751-8ca2-f2ffe31ea404	May 8, 2019, 1:14 p.m.	2	800	26.2150	26.2150	0.0650	0.25 %	Clear	Delete
SP1ae17743-e35b-41b8-b22a-ffca308da553	May 8, 2019, 1:15 p.m.	2	3200	109.1800	109.1800	0.0300	0.03 %	Clear	Delete
SP74645aeb-df28-446e-9e9b-daedd29e7afd	May 8, 2019, 1:16 p.m.	2	8000	274.9400	274.9400	0.1800	0.07 %	Clear	Delete
SPb38c7716-41db-447f-9d13-bcf7c49f4695	May 8, 2019, 1:17 p.m.	2	16000	549.0750	549.0750	0.4150	0.08 %	Clear	Delete

Additional Samples

Iterations *	Steps	Delete?

Thor



The speed of a single stroke will be done at 50rpm, we will use the tempest and profile "single double pump" minimum value 0, maximum value 30.

Thor

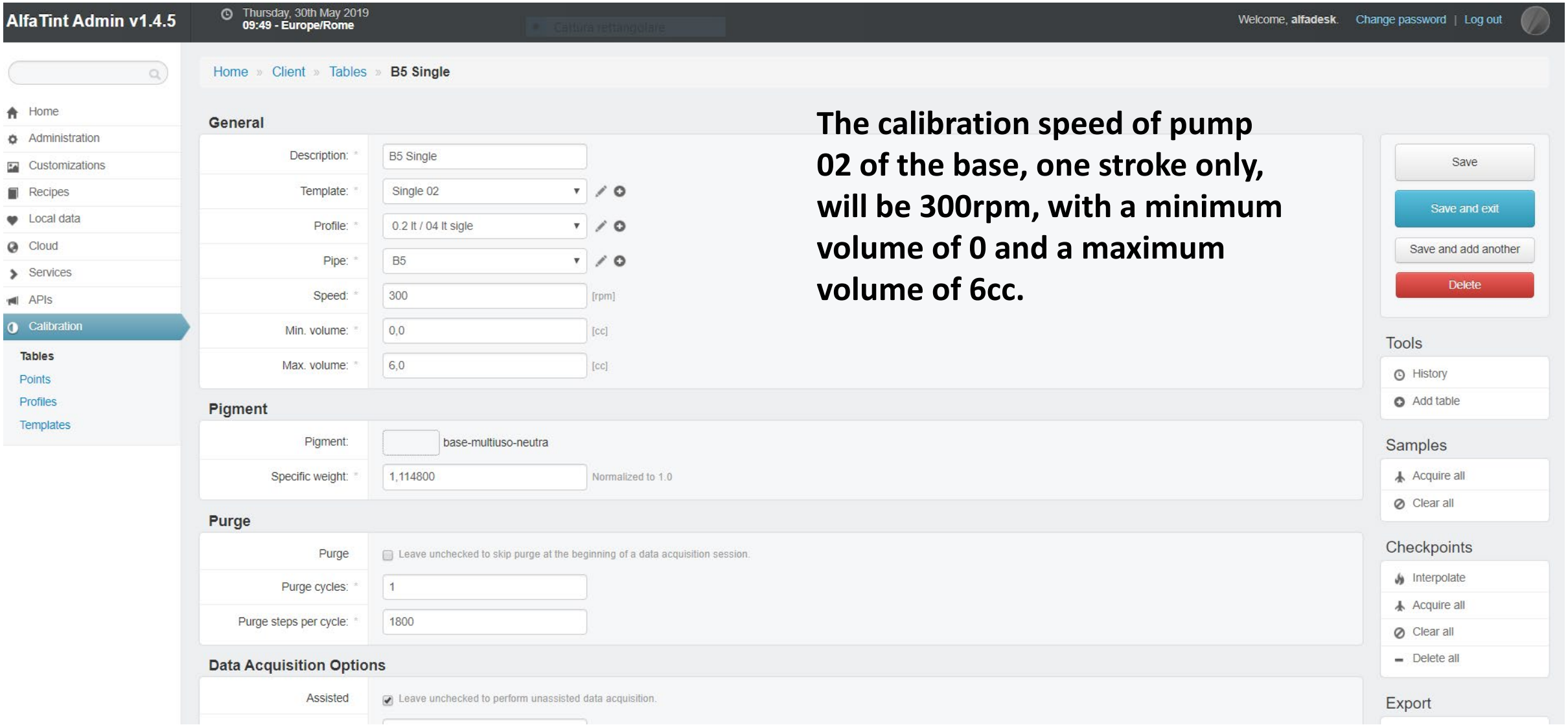
At low speed these heavy

Samples

Sample	Sampled on	Iterations	Steps	Weight [g]	Volume [cc]	Std deviation (abs)	Std deviation (pct)	Clear?	Delete?
SPaa83404f-f585-4a0a-a030-b5f4099b284d	May 8, 2019, 1:02 p.m.	2	650	19.5050	19.5050	0.1250	0.64 %	Clear	Delete
SPdcad1873-e946-4e1b-a45e-5939e4f98dee	May 8, 2019, 1:03 p.m.	2	500	15.1900	15.1900	0.0100	0.07 %	Clear	Delete
SP90256286-0ead-439f-bf77-6a57e964e782	May 8, 2019, 1:03 p.m.	2	350	10.6800	10.6800	0.0300	0.28 %	Clear	Delete
SPeeff7c8d-98cf-4b4d-9ffd-5bbfbaf458fd	May 8, 2019, 1:03 p.m.	2	100	2.9400	2.9400	0.0000	0.00 %	Clear	Delete
SP089410b9-85a1-4b24-9088-203dcee8abca	May 8, 2019, 1:04 p.m.	2	75	2.1350	2.1350	0.0050	0.23 %	Clear	Delete
SPed64804d-f1fa-4064-b9d3-6ddede1c9cba	May 8, 2019, 1:04 p.m.	2	50	1.3800	1.3800	0.0200	1.45 %	Clear	Delete

Additional Samples

Thor



The calibration speed of pump 02 of the base, one stroke only, will be 300rpm, with a minimum volume of 0 and a maximum volume of 6cc.

Thor

In low speed these heavy ones will be realized

steps

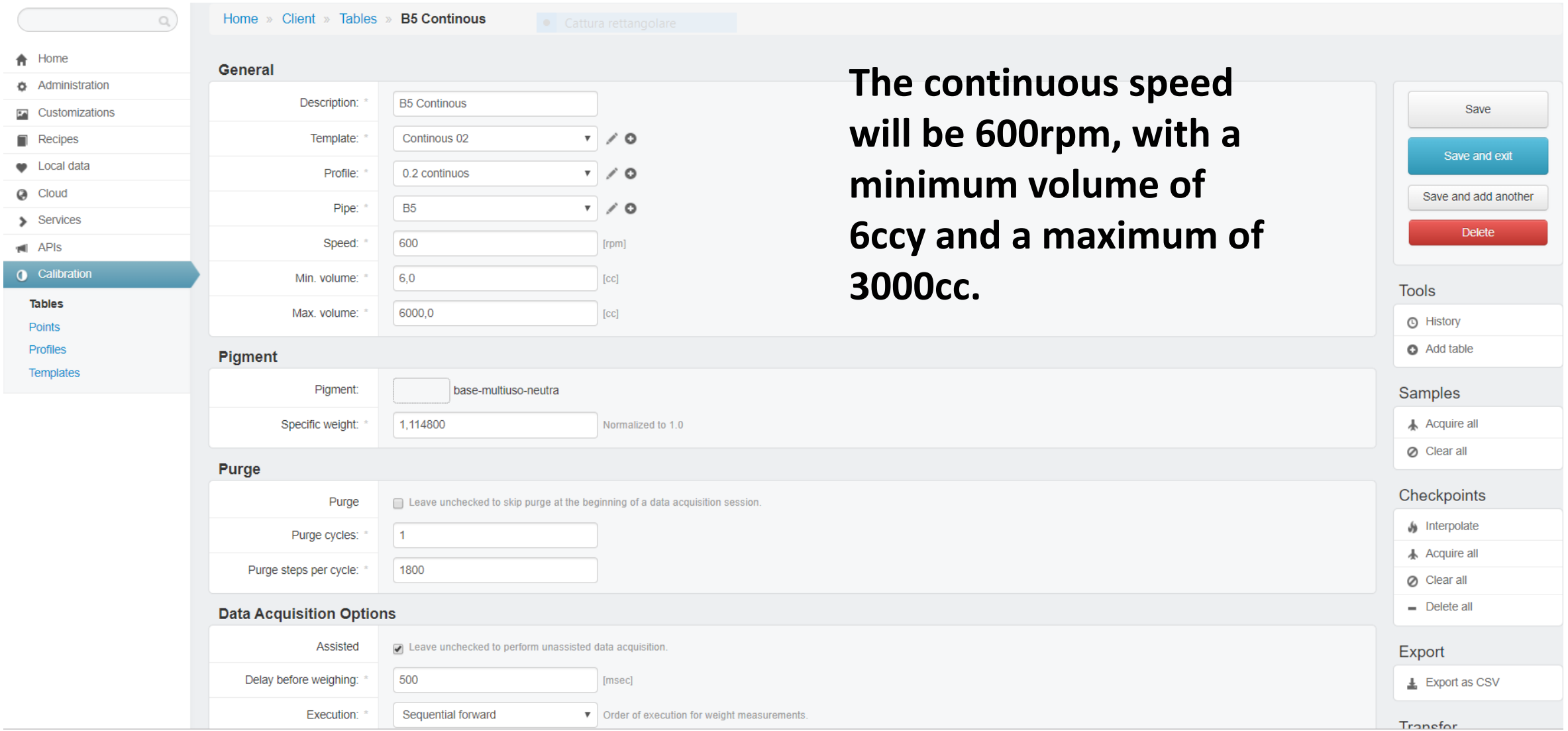
Samples

Sample	Sampled on	Iterations	Steps	Weight [g]	Volume [cc]	Std deviation (abs)	Std deviation (pct)	Clear?	Delete?
SP83ec2b2f-1966-4153-986f-fdf68a47a87e	Feb. 21, 2019, 1:53 p.m.	2	1800	5.2493	4.7088	0.0038	0.08 %	Clear	Delete
SP855c7a31-2944-49fb-8207-65e134e44a5b		2	1200		Collect			Clear	Delete
SP81ebc7b2-2747-4ed5-9998-ac7a7df5cac0	Feb. 21, 2019, 1:54 p.m.	2	600	1.8586	1.6672	0.0017	0.10 %	Clear	Delete
SP4252fc59-a81d-43a3-8810-e47612ad5d87		2	300		Collect			Clear	Delete
SP4e1f19ff-6a6d-48d8-9e08-965d169a4727	Feb. 21, 2019, 1:55 p.m.	2	100	0.4499	0.4036	0.0017	0.42 %	Clear	Delete
SPe3890394-79b0-4eec-8dce-53a648b941fa		2	50		Collect			Clear	Delete
SPb423dca2-cb73-48e6-a164-49e407c8e098	Feb. 21, 2019, 1:56 p.m.	2	20	0.2137	0.1917	0.0019	1.01 %	Clear	Delete
SP651b5d00-bdf6-4102-b327-3411c36b3460	Feb. 21, 2019, 1:57 p.m.	2	10	0.1784	0.1600	0.0004	0.25 %	Clear	Delete
SPa709e475-235a-4ca6-ae7b-473fd7e98b41	Feb. 21, 2019, 1:58 p.m.	2	5	0.1565	0.1403	0.0008	0.54 %	Clear	Delete

Additional Samples

Iterations	Steps	Delete?

Thor



The continuous speed will be 600rpm, with a minimum volume of 6ccy and a maximum of 3000cc.

Thor

In continuous speed these heavy ones are realized

Samples

Sample	Sampled on	Iterations	Steps	Weight [g]	Volume [cc]	Std deviation (abs)	Std deviation (pct)	Clear?	Delete?
SP08534482-d62a-423d-b3d3-edef139ebfe6	Feb. 21, 2019, 12:55 p.m.	2	2400	6.3217	5.6707	0.0001	0.00 %	Clear	Delete
SP5164b056-c4f9-49d7-838b-53a2394ffb77		2	4800		Collect			Clear	Delete
SP56f935c6-d980-48e9-aaa0-224932a6cf4d	Feb. 21, 2019, 12:56 p.m.	2	9600	25.2437	22.6442	0.0240	0.11 %	Clear	Delete
SP88893c3d-3794-492a-b4c6-29a0f6297c4d		2	24000		Collect			Clear	Delete
SPda2a9508-1663-459b-82ae-721497da5d1f	Feb. 21, 2019, 12:57 p.m.	1	48000	125.6841	112.7414	0.0000	0.00 %	Clear	Delete

Additional Samples

Thank you!

alfa
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