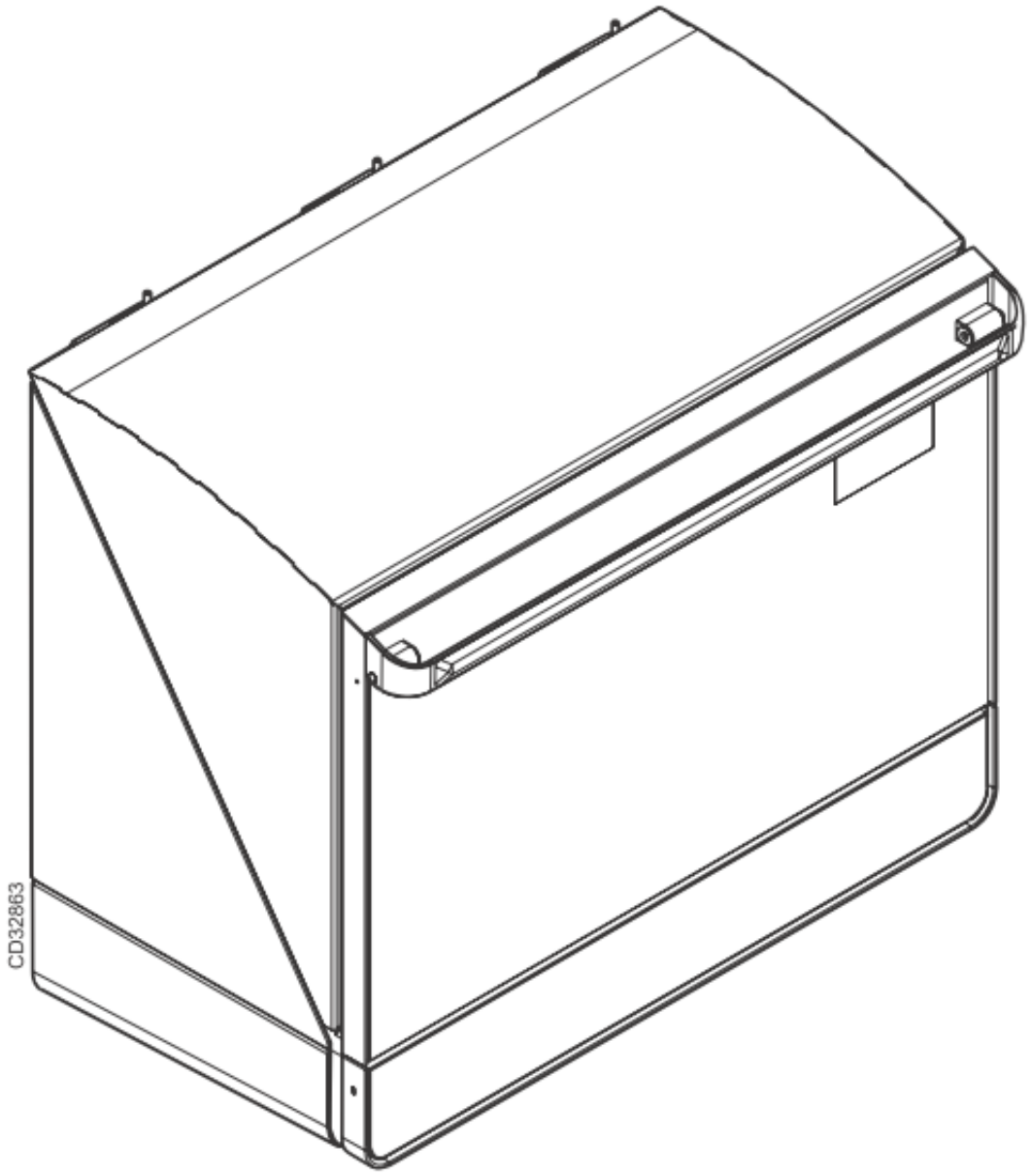
Herd Navigator
FAQ Memo



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1 Introduction.

This is the third version of a Memo intended to be used by service technicians working with the Herd Navigator system.
This third version includes new chapters as well as some existing chapters are updated, mainly to cover the HN version 2 systems as well.
However the process of constantly developing and filling the memo with the necessary information, will continue.
We are therefore very interested in getting your feedback, on both the things that are in the Memo, and the things that you miss in the Memo.
In this way we can help each other to develop a "handbook" allowing all Herd Navigator Technicians to have the necessary information and guidelines to do their job the best way.

The Memo contains four main Chapters
A trouble shooting section: with description of error messages, and the possible causes and actions.
In this section there is references to relevant chapters in the next section.
A best practice / How do I section: This section has descriptions of the different procedures for working with and operating the Herd Navigator systems.
This includes things as cleaning, adjustments, assembly instructions, simulating operation for test purposes. Ect.
An Info section:
This section has useful information on upgrades made on the system, and where to find the latest technical diagrams ect.
An Appendices section:
This section has chapters on how to download firmware, list of settings ect.

1.1 Revision History

Date	Revision	Responsible	Comments
2010-09-23	1.1	PEC	1. released version
2010-12-10	2.0	PEC	2.1.15 incubator 90%.... updated. 2.1.16 Quarantine, updated. 2.2 VMS and VMS sample …., added. 2.4 Using sample all function , added 3.1.6 Mounting tube for milkpump, added. 3.1.7 Air detector , updated. 3.2.1. procedure for cleaning….updated 3.2.2. Measuring water amounts.. added. 3.2.3 Cleaning position ……, added. 3.3 HN /C200 cleaning, now in English. 4.1 Menu overview SI, added. 4.2 Menu overview AI, added. 4.3 Menu overview AC, added. 4.5 Connecting the AI to drain, added. 4.6 Tube connections on sampler verII, added 4.7 Replacing the SI CIP box …, added. 5.1.3 Update orders in AC, added. 5.2 updating Firmware in HN units, added. 5.3 updating boards with bootloader, added. Mounting of BD on detergent, removed. General minor error corrections.
2011-04-08	3.0	PEC	3.1.6 Mounting tube for milkpump, updated. 3.2.1 Procedure for cleaning……, updated.

			3.2.2 measuring the water …….,updated 3.2.3 Adjustment of clean pos….,updated. 3.4.1 Recalibration of sampler transf…, added. 5.5 Updating FPGA software on HN2.., added. 5.6 HN2 AI startup settings, added.

2 Trouble shooting.

2.1 HSM error messages:

2.1.1 AI State = Wait

Description: An error In the AI has occurred causing the AI to restart, after restart the AI is unable to initialize all modules and go to standby mode.

Causes / Actions: Restart AI, if it doesn't go to standby mode: Open AI, restart again and check witch module that doesn't initialize.
Look for errors on that module.

2.1.2 DosageLineOpenTimeout

Description: The SI has sent a sample to the AI. The AI has not responded to that, and the sample will timeout.

Causes / Actions: Check if AI is in Standby or Auto mode: if not restart AI, if it doesn't go to standby mode: Open AI, restart again and check witch module that doesn't initialize.
Look for errors on that module.

2.1.3 DosageMissed

Description: The SI has sent a sample to the AI. The AI has not responded to that, and the sample will timeout.

Causes / Actions: Check if AI is in Standby or Auto mode: if not restart AI, if it doesn't go to standby mode: Open AI, restart again and check witch module that doesn't initialize.
Look for errors on that module.

2.1.4 BD1Posttimeout

Description: The backend of the sample send from SI has not been detected by BD1 within the expected timeslot. (the front end has been detected.)

Causes / Actions: Check for leaks in the Safety/flush valve and the filter.
Check that the Tube from SI to AI has the correct length, and that the BD1 is placed at correct distance from SI.

References: 2.1.3 How to manually test Safty/flush and Filter valve in SI (Needs Vacuum):
2.1.2 How to simulate samples trough SI :

2.1.5 BD5PostSampleTimeout

Description: The backend of the sample send from SI has not been detected by BD5 in the expected timeslot. (the front end has been detected.)

Causes / Actions: Check filter operation, if filter doesn't lift, no air will be present in the tube after the sample. Check mounting of BD5. Check tube length is correct between MV arm and Flush valve.

References: 2.1.7 Correct mounting of the Air detector assembly

2.1.6 BD5PresampleTimeout

Description: The sample send from SI has not been detected by the BD5 within the expected timeslot.

Causes / Actions: IF this error occurs together with BD3 errors, look for actions at BD3 errors.
Else it could be caused by leaking milk pump tube (pressure side) or check filter and safety/flush valves.

References: 2.1.3 How to manually test Safty/flush and Filter valve in SI (Needs Vacuum):
2.1.2 How to simulate samples trough SI :

2.1.7 BD3 Air

HSM Error message:

Description: Sample detected at BD3 but sample has been to short or there has been air bubbles in the sample.

Causes / Actions: Check MV arm tube for leakage. Check positioning of MV arm. Check lift of MV arm.
References: 2.1.5 Adjustment of Index on SI Multivalve.

2.1.8 BD3PresampleTimeout

Description: No sample has been detected at BD3 within the expected timeslot.

Causes / Actions: Test milking at farm, thus no milk samples taken at all.
Error in milk pump or milk pump tube, in the SI.
Error in safety flush valve.
No milk sent from sampler.
Mainline out valve on AI clogged.

References: 2.1.3 How to manually test Safty/flush and Filter valve in SI (Needs Vacuum):
2.1.2 How to simulate samples trough SI :

2.1.9 EL_AC_OFF_EXTERNAL_BUS

Description: The Alcom node no. that the AC uses is used by another unit on the Alcom bus.

Causes / Actions: Change Alcom node No. For AC on the external Canbus (alcom)

2.1.10 Heart beat : AC

Description: No connection to AC,

Causes / Actions: Restart unit. Check farm internet connection.

2.1.11 Heart beat : AI

Description: No connection to AI,

Causes / Actions: Restart unit. Check farm internet connection.

2.1.12 Heart beat : SI

Description: No connection to SI,

Causes / Actions: Restart unit. Check farm internet connection.

2.1.13 Heart beat : DSM

Description: No connection to DSM software,

Causes / Actions: Restart pc. Check farm internet connection.

2.1.14 Heart beat: PC

Description: No connection to the DSM pc,

Causes / Actions: Restart pc. Check farm internet connection.

2.1.15 Incubator 90% RH / or visible signs of liquid in the IM.

Description: The Too high humidity in the AI incubator compartment. Probably caused by leakage in the dosage or waste system in the AI. If there is visible liquid in the Incubator, it can be milk, water, diluent or a mix of the three.

Actions:
-Open the AI.
-Clean of any visible liquid in the Incubator compartment.
-Check for leakage and fix or replace any broken tubes or connections.
-Leakage in the dosage system can sometimes only be visible with working pressure on the tubes, to get this:
-Request a prime of diluent from the AI display, and check for leaks in the diluent system.
-Request a CIP from the AI display, and check for leaks in the mainline, and dosage line.
-Check that the waste tube has a slope all the way, otherwise it can overflow.
-Clean the AI thoroughly for any residues of milk/diluent/water. If the incubator disk needs cleaning, remove it and clean it with a soft brush and lukewarm soap water.
-If the humidity is high in the incubator after cleaning, a bag of desicant (used to load in storage) can be placed in the waste container. Instruct the farmer to remove the bag after next milking session.

2.1.16 Quarantine

Description: The quarantine indicates that there is a problem with the dosage system in the Herd Navigator.
If there is a problem with the dosage system it is likely that the dosage volume will be to little or no dosage at all. This situation will affect the measurements of all four constituents, leading to false reactions in the bio-models, and leading to false alarms. The LDH sticks is sensitive to the dosage volume and no or little dosage will show up as very low LDH, and out off range results. To avoid false input to the bio-models ,the level of the measurements on the LDH sticks is continuously monitored. If the general level of LDH (measured over a number of samples) drops, the Quarantine function gets active. The quarantine function will then make sure that all these results are quarantined and not used in the Bio-models. Furthermore the quarantine function will stop measuring on BHB, Urea and progesterone sticks. The monitoring of the LDH measurements will continue, and the quarantine function will detect if the results will revert to normal levels again. After a given number of good LDH results the quarantine will be cancelled and the measurement on all constituents will continue.
Most often the quarantine requires a visit by the service technician to clean the complete dosage system.

Causes / Actions: Leaks in dosage system, or tubes clogged.
Inspect all tubes and clean the complete milk line from SI to AI.
Note that a given number of "good" samples are required after a quarantine, before the quarantine is cancelled.

Reference: 2.2.1 Procedure for complete cleaning of milk transport system between SI and AI.

2.2 VMS and VMS sampler errors in HSM.

TransferFailed: (Bd4.xPresampleTimeout, x=TubeNo.)
1. Error in VMS sampler, no milk from the sampler to the transfer tube.
2. Wrong pressure in transfer tube, caused by milking pressure in the VMS.
3. If on a new installation, it could be caused by a wrong setting in the ”detect Window” in AC. The SI will try to detect the lead end of the sample at a time where the sample is either before or after Bd4.x.
4. Incorrect mounting of Bd4.x, or Bd4.x has been exposed to water.

Bd4PostsampleTimeout: (only warning)
1. Sample in VMS sample container is to big.
2. Too high pressure resistance in the transfer tube, causing decreased performance of milk tube pump. could be caused by pinched tube..
3. Incorrect mounting of Bd4.x, or Bd4.x has been exposed to water.

Bd4PostsampleTimeout+ Bd5PostsampleTimeout: (only warnings)
1. Incorrect mounting of Bd4.x, or Bd4.x has been exposed to water.

Bd4PostsampleTimeout+ Bd5PostsampleTimeout+ Bd1PostsampleTimeout:
1. Incorrect mounting of Bd4.x, or Bd4.x has been exposed to water.

Bd4Air:
1. Sample in VMS sample container is too little.
2. Air bubbles in the sample.

Bd5PresampleTimeout:
1. Lead end of sample has been detected by Bd4.x, but no sample entered BD5. Could be caused by defect in SI stop valve (pinch valve) or missing sample from VMS.
2. Incorrect mounting of Bd5, or Bd5 has been exposed to water.

Bd5Air:
1. Sample in VMS sample container is to little.
2. Air bubbles in the sample..

Bd5PostsampleTimeout:
1. Incorrect mounting of Bd4.x, or Bd4.x has been exposed to water.
2. Incorrect mounting of Bd5, or Bd5 has been exposed to water.
3. Coatings in main line tube (ø2mm) causing malfunction of Bd5, could be caused by cleaning problems.

Bd5PostsampleTimeout+ Bd1PostsampleTimeout:
1. Incorrect mounting of Bd4.x, or Bd4.x has been exposed to water.
2. Incorrect mounting of Bd5, or Bd5 has been exposed to water.
3. Coatings in main line tube (ø2mm) causing malfunction of Bd5, could be caused by cleaning problems.

Bd1PostsampleTimeout:

1. Incorrect mounting of Bd1, or Bd1 has been exposed to water.
2. Coatings in main line tube (ø2mm) causing malfunction of Bd5, could be caused by cleaning problems.

Ready For CIP Timeout:
1. Error in heating the CIP containers in the SI

Ready For CIP Timeout+Fill Timeout:
1. Error in water supply or water level sensors in CIP containers in SI

Fill Timeout:
1. Error in water supply or water level sensors in CIP containers in SI

No AI-CIP water:
1. Error in water supply or water level sensors in CIP containers in SI

Bd5 eller Bd1 CIP Air Detect:
1. Air has been detected in Bd5 or Bd1 during cleaning,
2. Check HSM->Climate->cleaning diagram below. to see if it is a bubble or missing water.
3. If it is a bubble it is OK
4. if missing water ict could be an error in water supply or water level sensors in CIP containers in SI

SI Detergent Empty:
1. Empty Detergent container, or an air bubble has been detected by the detergent Bd.

2.3 Trouble shooting on samplers.

Error types :

1. Sampler is not connected to the bus..
2. Sampler is not taking milk in.
3. Sampler is unable to empty the milk out of sampler.
4. The sample is not reaching the MV, after leaving the sampler.
5. The sample reaches the MV but is not transported further from here.

Error type 1 : Sampler is not connected to the bus..

.

action download new firmware version, remember to erase old version first.

error type 2 : Sampler is not taking milk in.

Typical causes : No vacuum, Tube has fallen of, Knife not correct mounted.
Malfunction of sampler valve.

Error type 3: Sampler can not empty the milk out again.

Typical causes: tube fallen off, top valve can not open, dump valve can not open.

Error type 4: The sample does not reach the MV.

Typical causes: tube fallen off, top valve can not open, Transfer valve can not open, Speed Valve can not close.

Error Type 5: The sample reaches the MV, but is not transported further from here.

Typical causes: Speed valve can not open.

Trouble shooting on samplers.
Start by checking:
-Vacuum at the samplers are min. 32kPh,
-The pulsator works as it should,
-Alcom-bus is correctly connected

Start the sampler test function in the AC.
Go to the AC menu Item: 4 -> 2 -> 5 Sampler Test.

Sampler Index = the first sampler you want to test where 0 = 40 1 = 41, etc.

Number of samples. = Number of samplers from the Sample Index sampler and on, typically set to 1

because you only look at a sampler at a time.

Delay = time each valve is open at a time, while routine run in ms. Recommended 1000 - 2000ms, so there is plenty of time to see each valve open / close.

When you press OK, the test will start until you press Enter again, or test times out.

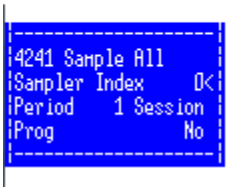
the test makes the valves alternately opened and closed again. This can be from seen on the 5 LEDs on the circuit board
If you suspect a particular valve, and find it hard to see if it closes / opens as expected, then you can connect a VPR 100 to the stud and see if vacuum rise / fall as expected when it operates.

If there is a vacuum all the time, there is a big change for the O-ring on the solenoid valve is leaking / missing, or magnet missing.

REMEMBER THAT AFTER THE USE OF THE SAMPLER TEST RUTINE
YOU SHOULD RESTART THE ENTIRE SYSTEM BEFORE YOU LEAVE THE FARM.

2.4 Using the "Sample all" function in the AC.

When trouble shooting on the Herd Navigatorsystem the "sample all" function in the AC can be very helpful.
This function ensures that all cows milked on a given milking point/vms are sampled. This will make it possible to monitor and troubleshoot on more samples during the milkingsession



The sample all is in menu 424 in the AC,

Sampler index: determines the given sampler/vms that "sample all" should be applied to.
On VMS: index 1 = VMS-1, Index 2=VMS-2, ect.
On Parlour:index 0 = sampler node 40, Index 1= sampler node 41, ect.

Period: determines the no. of milking sessions that the "sample all" should be applied to. It's only recommended to set this to **1 session**, or **OFF,** to stop "sample all"

Prog: if set to **yes** progesterone measurements will be made on samples from this sampler / VMS.

LDH: if set to **yes** LDH measurements will be made on samples from this sampler / VMS.

BHB: if set to **yes** BHB measurements will be made on samples from this sampler / VMS.

Urea: if set to **yes** Urea measurements will be made on samples from this sampler / VMS.

OK: saves the selected settings for the given sampler/VMS..

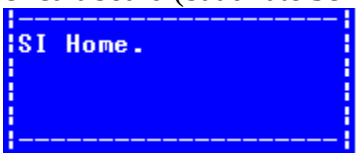
NOTE: for using the "sample all" on more samplers/VMS each sampler / VMS has to be set individually.

3 Best Practices / How do I.

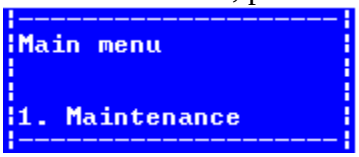
3.1 Sample Intake

3.1.1 Activate Sample simulation in SI. (Parlour only and needs Vacuum).

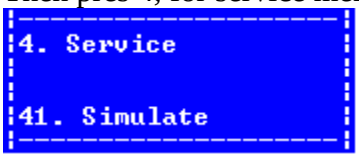
First get acces to the menu in SI… this can be trough AC via Ethernet, or direct whit RS-232 cable to the circuit board (baud rate 38400).



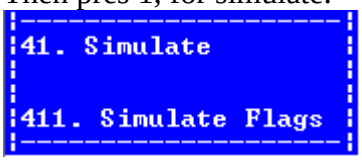
If not in the menu, press M



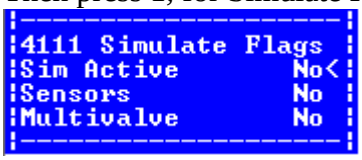
Then pres 4, for service menu.



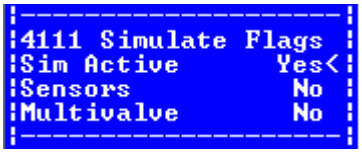
Then pres 1, for simulate.



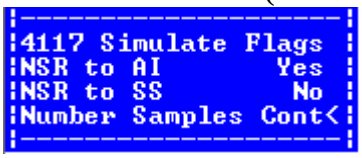
Then press 1, for Simulate Flags.



Activate Sim Active.



Activate NSR to AI (New Sample Ready), and chose Cont on Number Samples.(continuous samples)



If complete test, then Sim AI = No, else chose Yes, for simulating AI (f.eks. if the AI is disconnected, or need to separate the test from the AI).

After pressing OK, the test start, and will take samples from the first sampler on the Multivalve.

3.1.2 How to simulate samples trough SI :

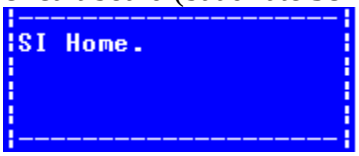
Needed: 1 bottle water or milk. (Normally used a ½L soda bottle and taken water/milk on the farm).

1. Take silicone tube from Sampler 40, of the transfer tube inside the SI.
2. Fill water in the bottle, and put it a good place near the SI, so the tube can reach it. But do NOT put the tube in the bottle yet.

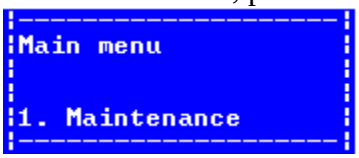
3. Turn on the Vacuum.
4. Start the Simulating in SI, using the "**Activate Sample simulation in SI" guide.**
5. Then, when the Multivalve arm moves to the Sampler 40 position, and lift the arm… put the tube down in the water.
6. The SI will now suck the water up from the bottle, past BD3, then past BD5, and then open release the arm + open the filter, to fill air in the tube.
7. If there is no problems, then the arm will lift again, and take a sample again.
8. If there is a problem, the arm will move to home position, and pump cleaning water to the AI, and then start over again… if it fails more than 2-3 times, then the simulation needs to be activated again.
9. When the test is finish, and problem is solved, the power should be taken on the hole system, so it restarts to make sure the SI is not in simulation mode anymore.

3.1.3 How to manually test Safty/flush and Filter valve in SI (Needs Vacuum):

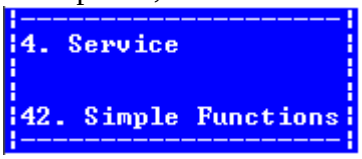
First get acces to the menu in SI… this can be trough AC via Ethernet, or direct whit RS-232 cable to the circuit board (baud rate 38400).



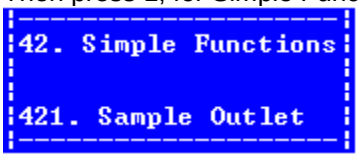
If not in the menu, press M



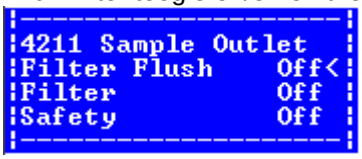
Then pres 4, for service menu.



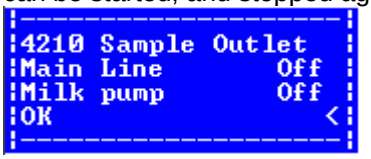
Then press 1, for Simple Functions



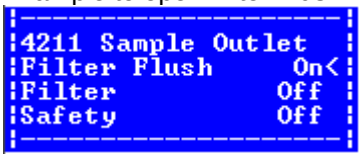
With Enter toogle on/off on the valve to test.



In same menu, Main Line valve can be tested also (the on inside the AI, on the side whit drain tube). And Milk pump can be started, and stopped again.



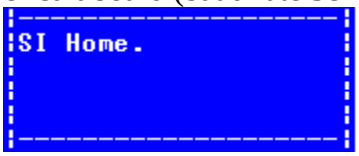
Example to open Filter Flush



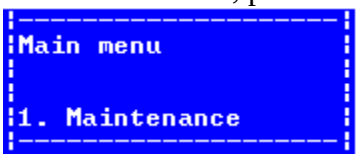
When finished testing, make sure to restart the complete system, to restore normal operation for the SI.

3.1.4 Start Cleaning from SI menu :

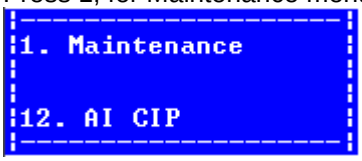
First get acces to the menu in SI… this can be trough AC via Ethernet, or direct whit RS-232 cable to the circuit board (baud rate 38400).



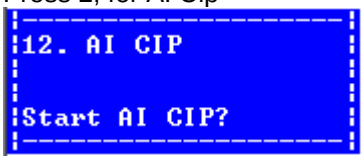
If not in the menu, press M



Press 1, for Maintenance menu



Press 2, for AI Cip



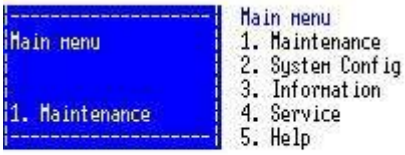
Press Enter to activate CIP, and the SI starts to fill Clean and Rinse whit water, and heat it up. In about 20-25min, the CIP is started.

3.1.5 Adjustment of Index on SI Multivalve.

3.1.5.1 Adjustment:

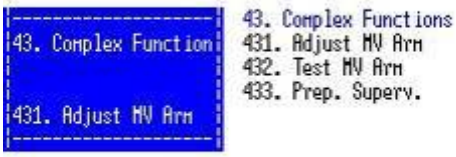
Make sure the SI is turned on, and that Vacuum for the SI is on.

Use the service interface via terminal or AC
Press **M** for Main Menu.



Press **4** for Service, and press **enter** for service password.

Press **3** to go to Complex functions.

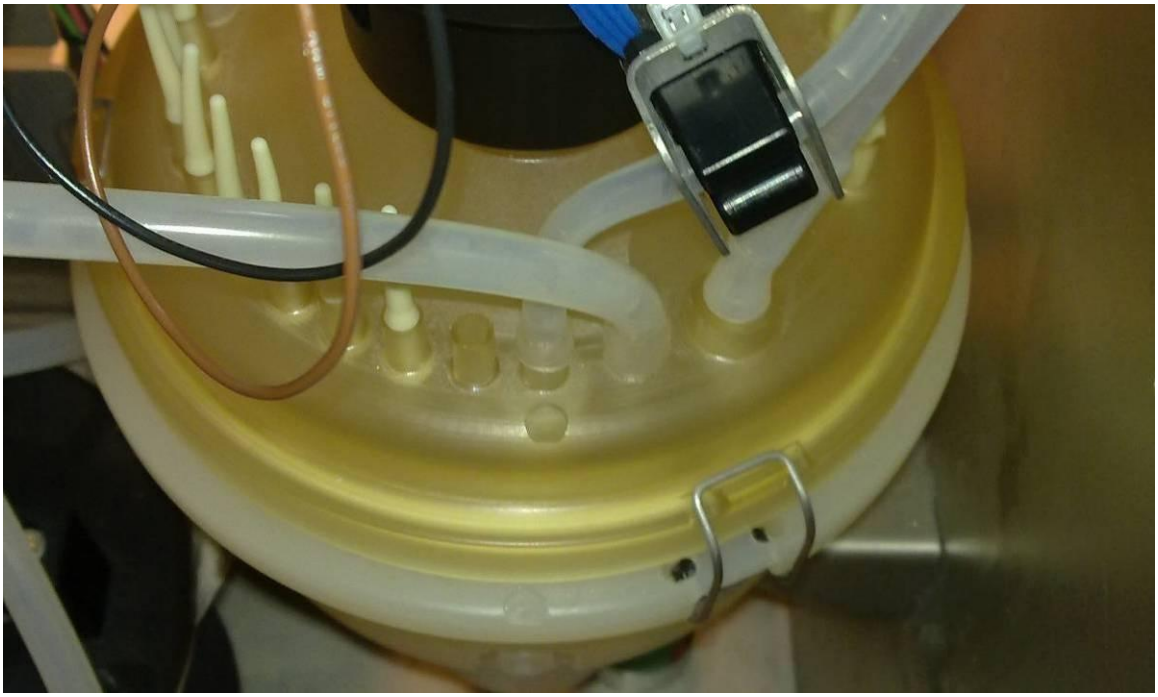


Press **Enter** to go to Adjust MV Arm.

The Current Offset from Index value is displayed.
The multi valve arm is now positioned at pos. 1, (the stud with the cylindrical mark) and the arm will be lifted so that the tube on the arm is in contact with the lid on the multivalve.

Note the position of the arm in relation to the stud at pos.1. The tube should be centered with the stud.

- if the arm is to far to the left, the offset value has to be decreased.
- if the arm is to far to the right the offset value has to be increased.



Use the ↑ (arrow up) and ↓ (arrow down) to change the Offset setting. When you have release the arrow key, the arm lift will be released and the arm moved to the new Offset position, and lifted again.

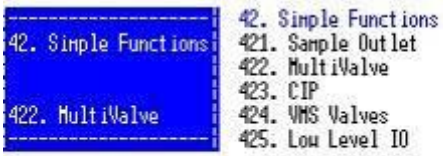
Continue until the arm is correct positioned (centered) at the stud at pos.1.

Press Enter and the Offset value vill be saved.

The Offset from index value is now set.

3.1.5.2 Check of Adjustment.

After adjustment the position has to be checked.
Press the ← (arrow left) and **2** to move to simple functions menu.



Press **2** for multivalve.

Move curser to “lift arm” and press **enter** to change to “On”.
Move curser to “Arm position” and pres **enter** and change position by entering the number of the new position**,** (pos. 16 is a position easy to se on the other side of the multivalve)
Press **enter** and the arm will move to the new position, and be lifted after moving.
Check the centering of arm related to the stud on different positions on the range of the multivalve.
Set “lift arm” to off before leaving the menu.

Note: if the arm is not centered on all studs move back to the adjustment chapter and correct the adjustment..

Note: that there are different types of MV lids, one with 28 studs and one with 32 studs. In the settings menu (menu 231) the MV type has to be selected to the correct one.
28 studs= (2x14) and 32 studs = (2x16).
If this setting is wrong the distance between the multivalve positions will not match the distance between the studs on the multivalve lid.

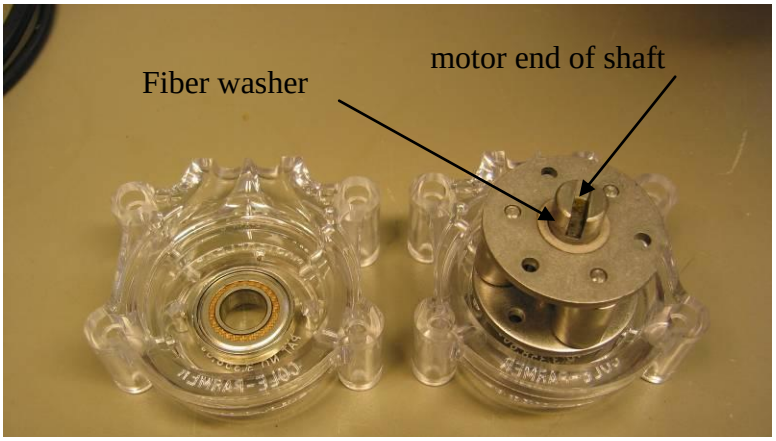
3.1.6 Mounting the Tube for Milkpump in the Sample Intake.

Article no. 5356080241 Lattec p/n : 60026782

The spare part consists of the tube with a threaded fitting mounted in one end.
The same spare part is used for the VMS and Parlour installations and on both HN1 and HN2 versions of the sample intake.

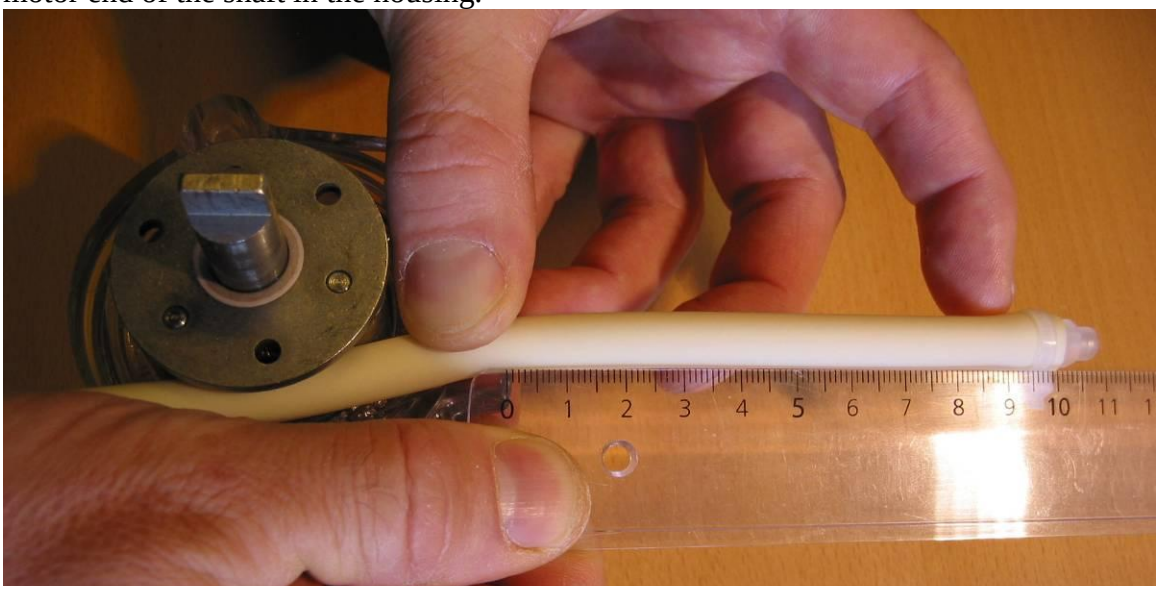
3.1.6.1 Removal of the old tube:

Unscrew the 4 screws holding the milk pump housing, and remove the housing from the motor shaft. Take the two parts of the pump housing apart and remove the tube. Ensure that the fiber washers are in place at each side of the pump rotor. Note that the rotor shaft is not symmetrical it has to be oriented so that the end with the groove will engage with the shaft on the motor. Clean the pump housings and the rotor if necessary.



3.1.6.2 Mounting of the new tube.

Ensure that the new tube is clean and undamaged. The Tube must NOT be lubricated with any kind of lubrication.
The pressure side of the tube should have a length of 100 mm after the pump.
Position the tube in the housing so that the end of the tube with the threaded fitting is in the right hand groove of the housing and protruding 100mm from the housing. The rotor should be oriented with the motor end of the shaft in the housing.



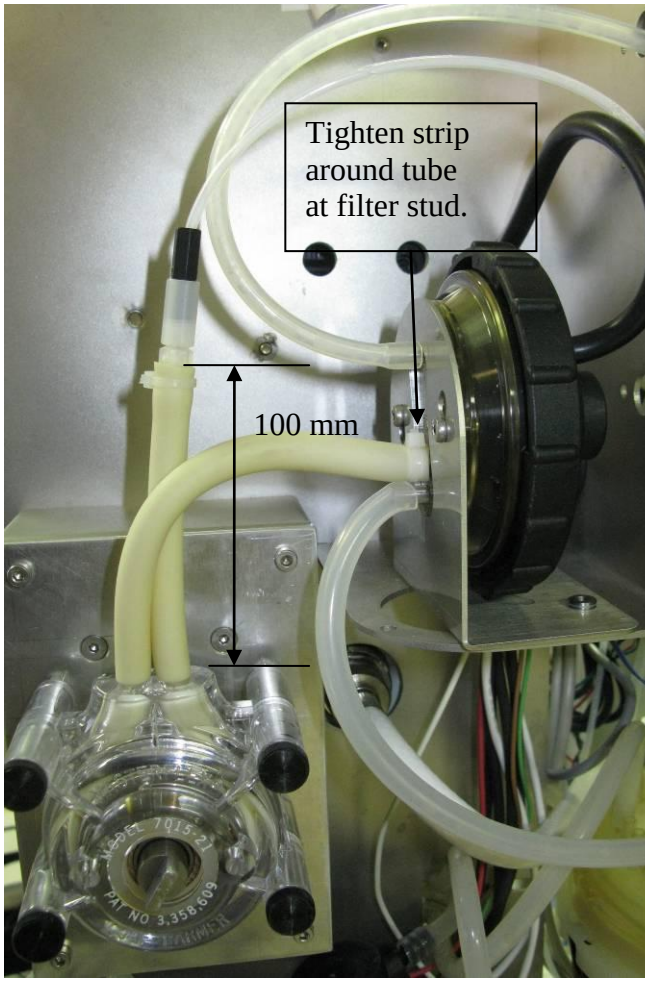
Push the tube in to the groove around the rotor. Rotating the rotor can help this. When the tube is in the groove all around the rotor, mount the other half of the housing. Make sure not to pinch the tube when pushing the housing parts together.

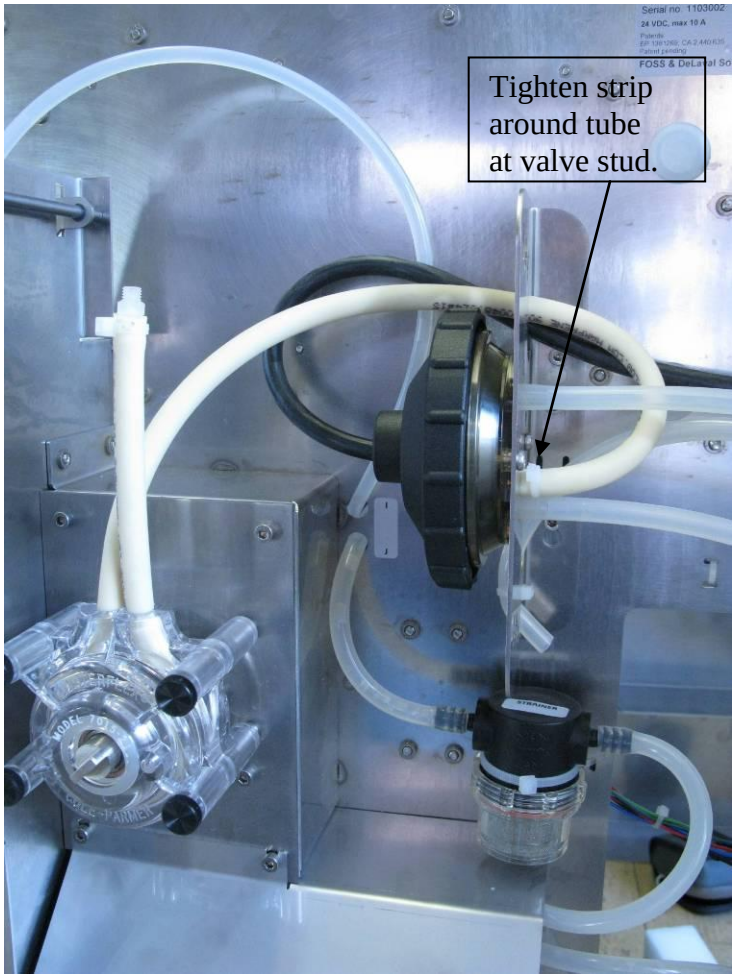
Check the length of the tube on the pressure side, it should be 100 mm. Mount the pump housing on the motor shaft and fit the 4 screws holding the housing to the motor. The other end of the tube should be fitted as shown on the later pictures.

Connecting the tube on VMS installation:

HN version 1 (left picture) the length of the tube should be cut so that the tube will fit into the outlet of the filter. The 100 mm tube on the pressure side should be mounted to the tube going from the SI to the AI. Note that a plastic strap needs to be tightened around the tube at the filter stud.

HN version 2 (right picture) the tube has the correct length. The 100 mm tube on the pressure side should be mounted to the tube going from the SI to the AI. Note that a plastic strap needs to be tightened around the tube at the filter end.

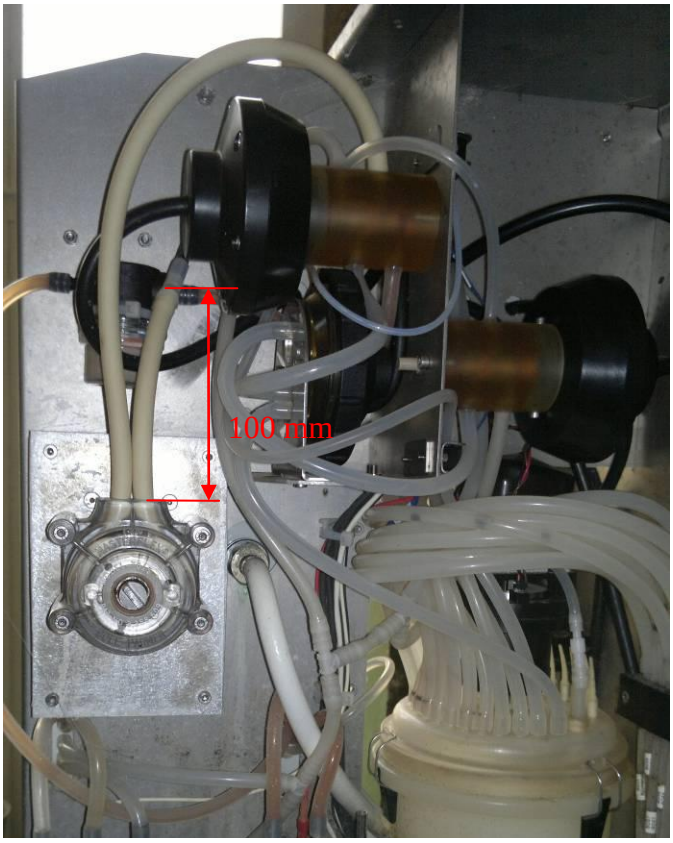


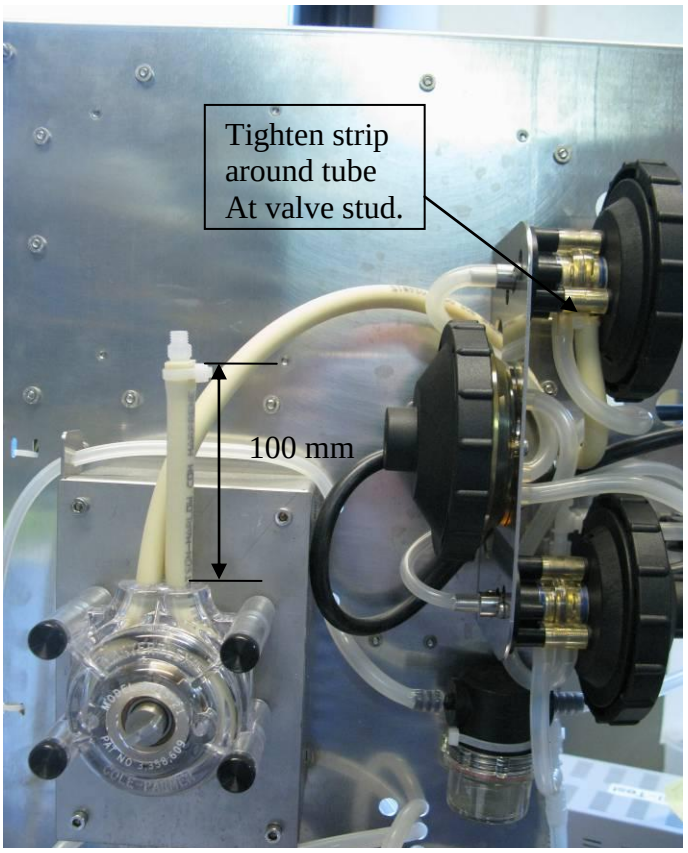


Connecting the tube on Parlour installation:

HN version 1 (left picture): The suction end of the tube should be fitted into the switch valve, as shown on the picture. (no need to cut tube)
The 100 mm tube on the pressure side should be mounted to the tube going from the SI to the AI.

HN version 2 (right picture): The suction end of the tube should be fitted into the switch valve, as shown on the picture (no need to cut tube). Note that a strip has to be tightened around the tube at the valve stud.
The 100 mm tube on the pressure side should be mounted to the tube going from the SI to the AI.





3.1.7 Correct mounting of the Air detector assembly, BD1,BD5,BD3 and BD4.

3.1.7.1 Important information: Keeping the BD dry.

The sensors may never be left wet or with drops of fluid on as this can cause system failures.

If the inside of SI unit has to be cleaned it can be hard to avoid the sensors getting wet. If the sensors get wet they have to be thoroughly dried.
BD3 and/or BD4 should be dismounted from the tube and dried with compressed air and a dry cloth. Assemble as described in appendix 2
BD1 and BD5 should not be dismounted from the tube but carefully dried with compressed air and a dry cloth. Take great care to blow away all fluid that is on the sensor beneath the tube.

3.1.7.2 BD1 installation

BD1 installation should always be in a cable trunk.
The sensor should always be tilted at least 45° from horizontal to ensure that fluid in the tube can flow away from the sensor. To keep the sensor in preferred position it is to be mounted on the supplied mounting plate (pn60045400). The sensor cord should go out from beneath the sensor to prevent water from running down the cord into the sensor. Cable ties are used to fix the tube to the plate. Be careful not to mount the cable ties to tight as this can damage the tube.

If possible BD1 should be in a vertically mounted cable trunk. Horizontally mounted cable trunks can be used but then the cable trunk opening must point outwards and not upwards! This is to ensure that the tube and the sensor can be mounted in a way so that the fluid in the tube will flow away from the sensor

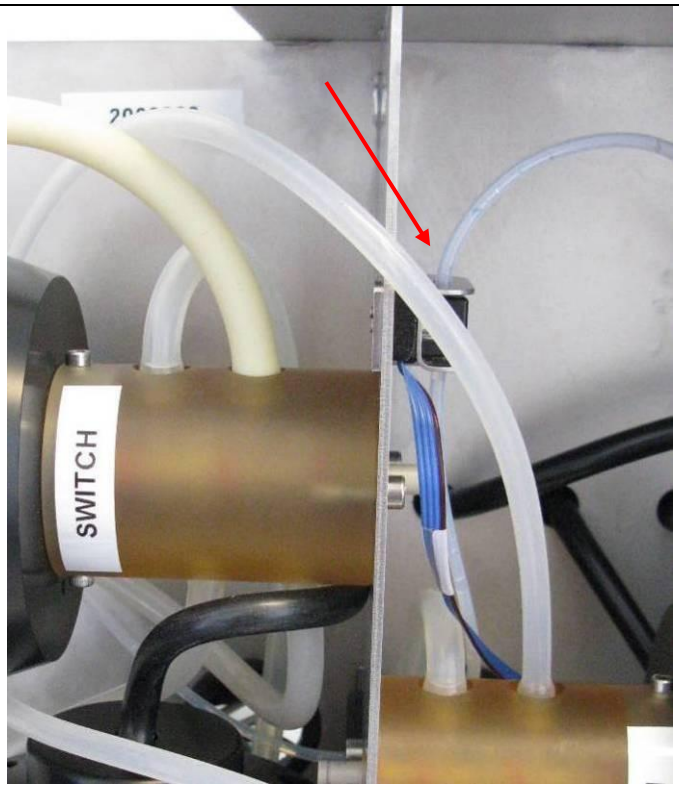
Where and how the sensor should be mounted on the tube is described in Appendix 1 -2

Upgrade kit BOM:

1 x cable trunk mounting plate pn:60045400
4 x cable ties PN: 00049254

3.1.7.3 BD5 installation in parlor SI

BD5 is mounted on the tube as described in appendix 1-2.. The sensor is mounted on the valve bracket as shown, through the existing holes above the filter flush valve. Both the tube end and the sensor cord should go out from beneath the sensor.



The tube goes through the hole in the valve bracket and is connected to the pump (see picture for VMS installation). Earlier models are without a hole in the bracket and therefore the tube has to go around the bracket instead.

Upgrade kit BOM:

2 x M3x12 allen screws pn: 00219147

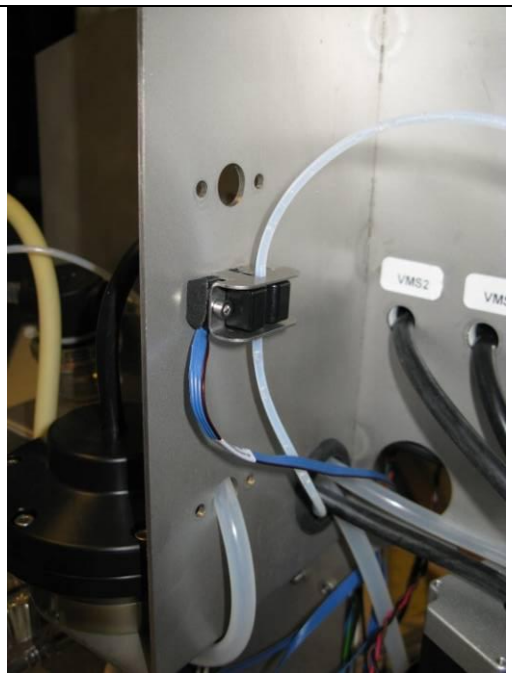
3.1.7.4 BD5 installation in VMS SI

BD5 is mounted on the tube as describet in appendix 1-2.. The sensor is mounted on the valve bracket as shown, through the existing holes above the filter . Both the tube end and the sensor cord should go out from beneath the sensor.

The tube goes through the hole in the valve bracket and is connectet to the pump

Upgrade kit BOM:

2 x M3x12 allen screws pn: 00219147



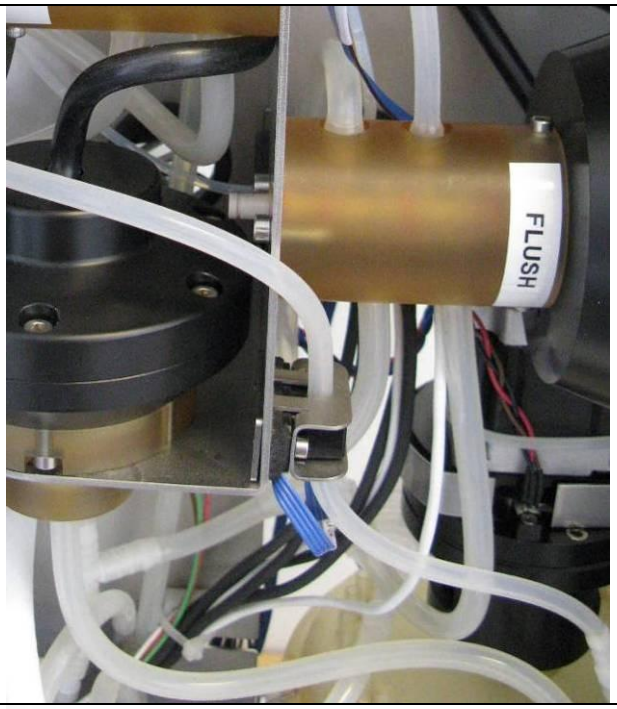
3.1.7.5 BD3 installation, (Parlour only)

The sensor is to be fixed to the cabinet through ø4mm holes which have to be drilled in the valve bracket on the cabinet. Remove the SI filter unit before drilling. Use the sensor bracket bottom plate to mark up for the holes.

Mount the sensor as described in appendix 2 approximately 150mm from the ø3 (ID) tube end.

The ø3 (ID) tube end is connected to the MV tube with pn:60045272 tube/tube connector.

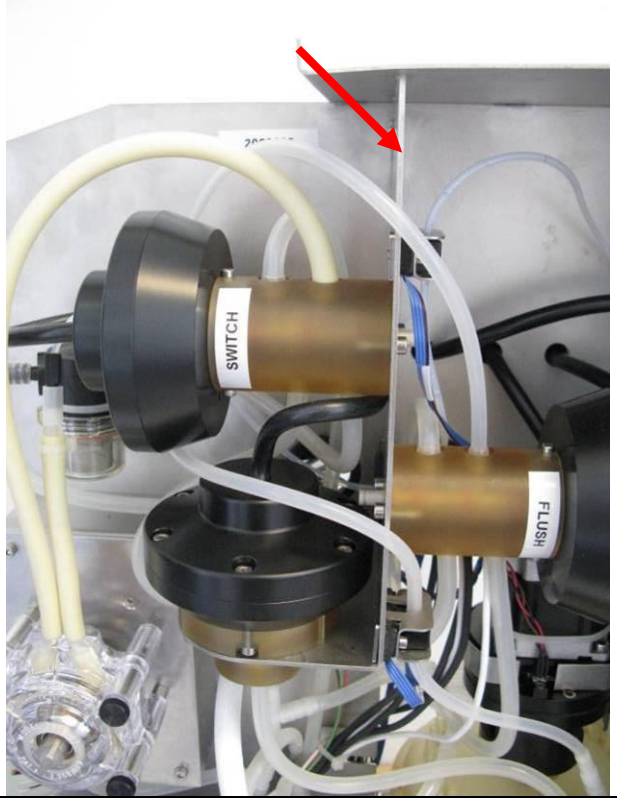
As the valve bracket is between the sensor bracket and the bottom plate the allen screws used are 12mm long instead of the original 10mm. (supplied with upgrade kit). The sensor cord should go out from beneath the sensor to prevent water running down the cord in the sensor.



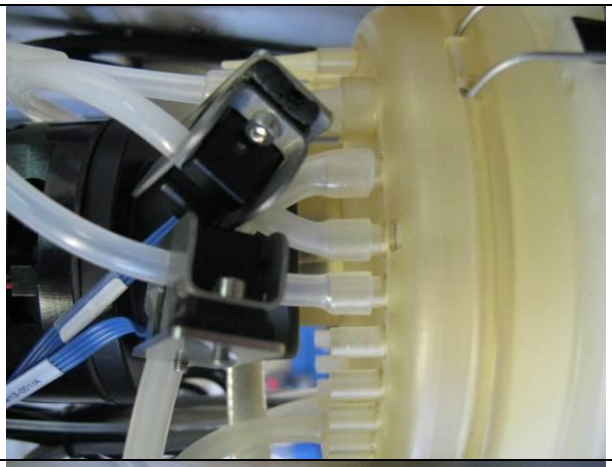
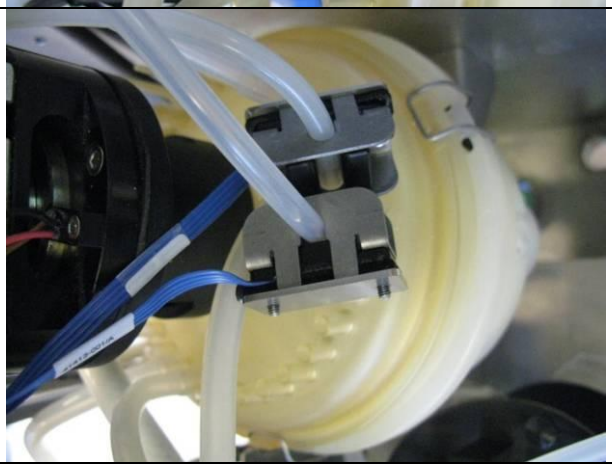
The ø3 (ID) silicone tube should go from the sensor around the switch valve and then connect to the filter flush valve

Upgrade kit BOM:

1 x 700mm ø3 (ID) silicone tube pn:00702571
1 x tube/tube connector pn: 60045272
2 x M3x12 allen screws pn: 00219147



3.1.7.6 BD4 installation, (VMS only)

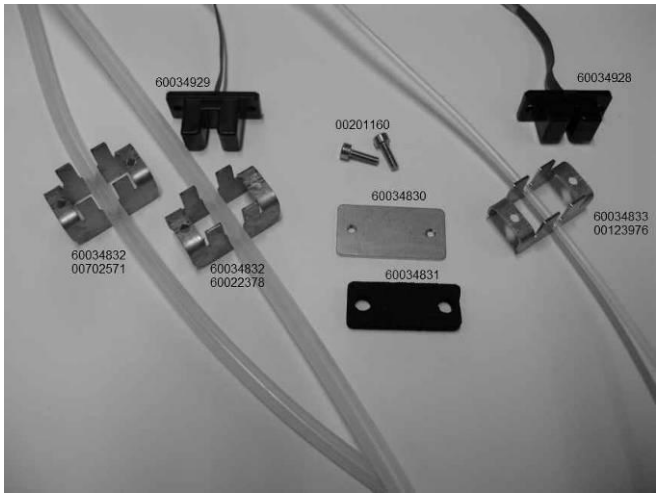
BD4 should be mounted on the silicone tube approximately 30mm above the MV.	
Sensor and bracket should be assembled as described in appendix 2	

BOM:

- For BD1
  Fixture : 60036311
  BD : 60034994

- For BD5
  Fixture: 60036311
  BD : 60035121

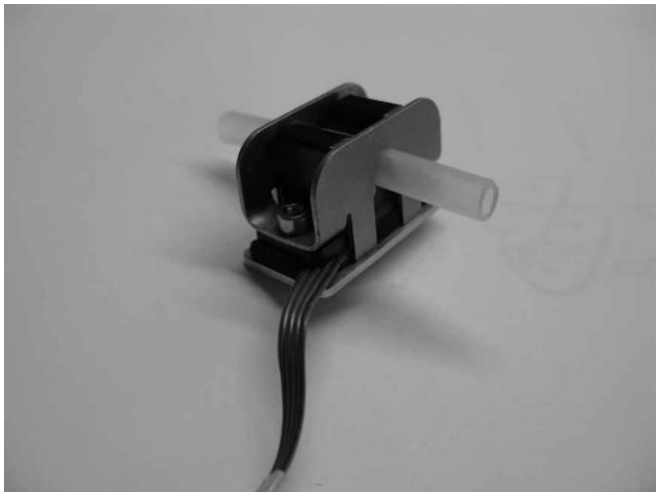
- For BD3 and BD4
  Fixture: 60036312
  BD : 60043597

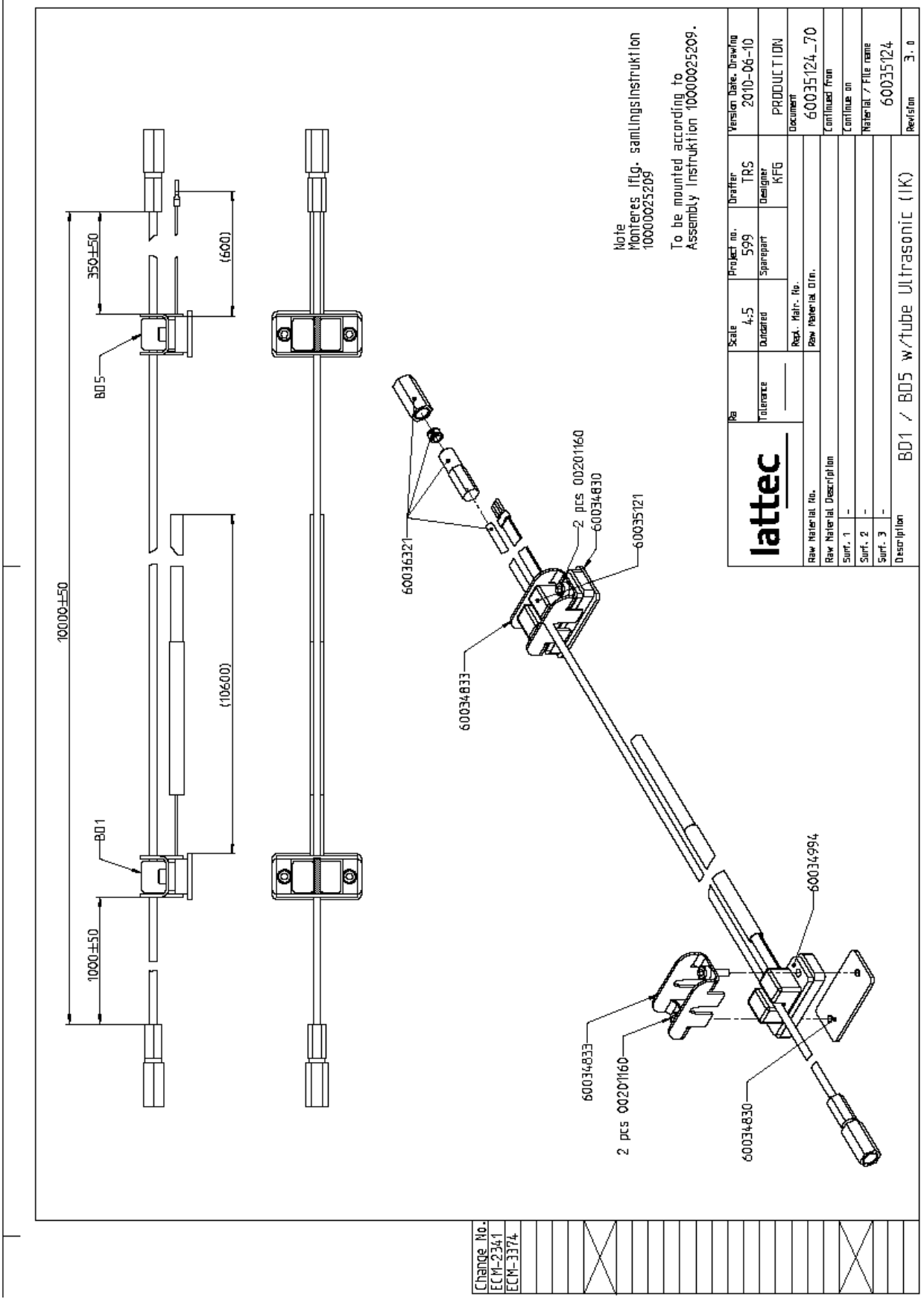


There are 3 types of tubes. For all types the mounting procedure is the same:Fit the bracket on the tube and then push down the BD until the tube touches the bottom of the sensor slid. Then fold the ribbon so it lies between the mounting hole and the bracket.

NB. BD1, BD5, and BD3 may only be mounted once at a particular position. If replacement or inspection demands remounting do so 20mm before or after the previous positioning.

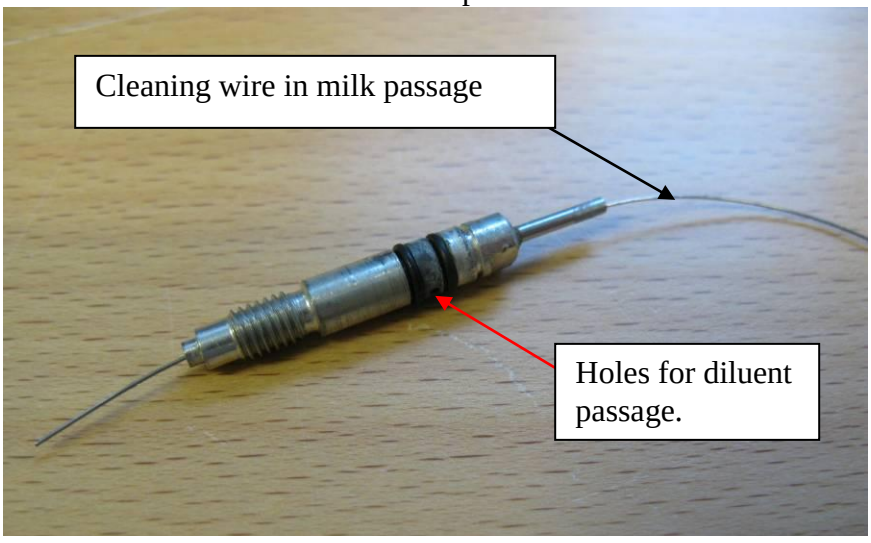
Remove the protective tape from the foam pad and glue it onto the detector. Make sure that the holes in pad and bracket are centered.

When mounting the BD on the SI cabinet or on the mounting plate, the screws should be tightened until the bracket touches the cabinet/plate.	


Note
Monteres iflg. samlingsinstruktion
100000025209
To be mounted according to
Assembly Instruktion 100000025209.
lattec
Tolerance
Scale 4:5
Project no. 599
Sparepart
Drafter TRS
Designer KFG
Version Date, Drawing 2010-06-10
PRODUCTION
Document 60035124_70
Raw Material No.
Raw Material Dim.
Raw Material Description
Surf. 1 -
Surf. 2 -
Surf. 3 -
Continued from
Continue on
Material / File name 60035124
Description BD1 / BD5 w/tube Ultrasonic (IK)
Revision 3.0
Change No.
ECM-2341
ECM-3374
10000±50
1000±50
350±50
(600)
(10600)
BD1
BD5
60036321
2 pcs 00201160
60034830
60035121
60034833
60034994
60034833
2 pcs 00201160
60034830

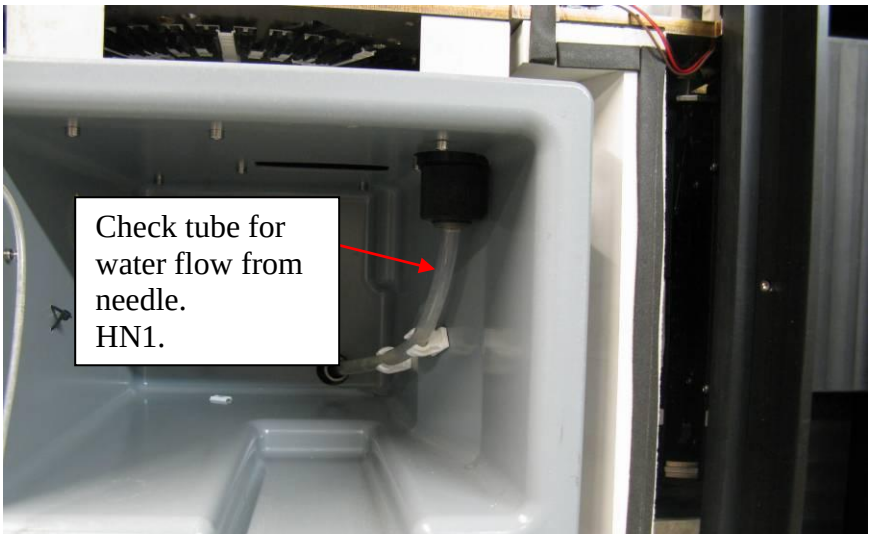
3.2 Analyzer Instrument (AI).

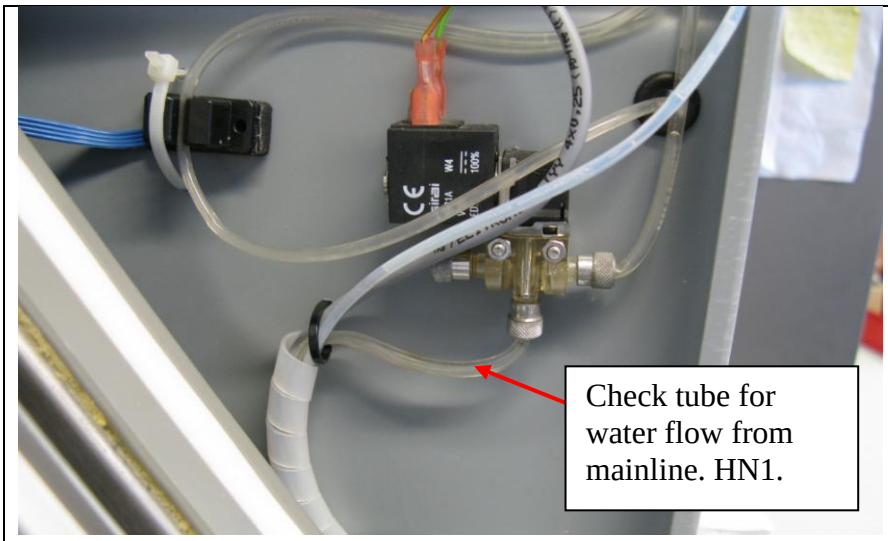
3.2.1 Procedure for complete cleaning of milk transport system between SI and AI.

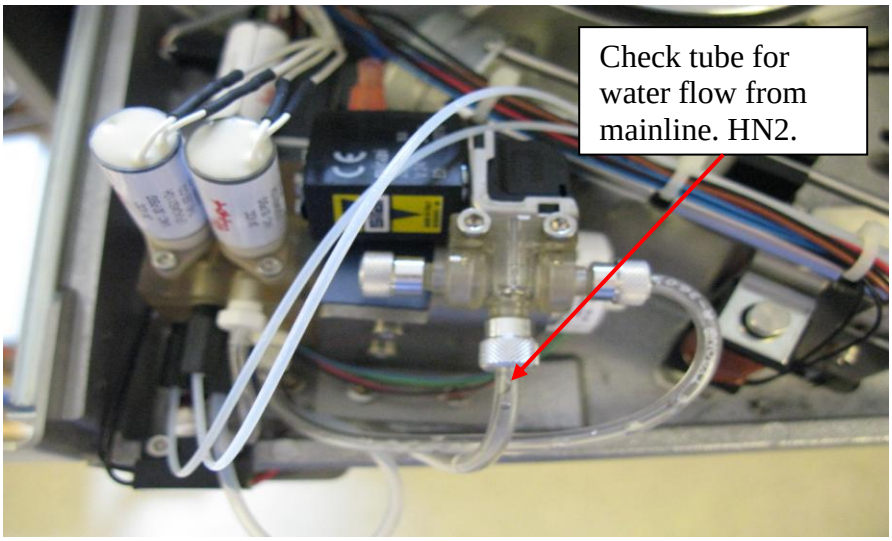
Description:	Tools/spareparts
Step.1 Empty the AI for all sticks. (Menu 5.4 change to service and menu 4.3.6 empty storage). Keep the sticks in an airtight container together with one or two desiccant bags, until they can be loaded again. Open the AI and look for visible milk residues in the tubes. Look for signs of leakage. Open cable trunk and inspect the tubing between the SI and AI for coatings, clogs and ensure it is free from sharp bends.	
Step.2 Remove dosage needle for cleaning. Check both milk and diluent passages for clogs. Clean with detergent solution and compressed air (if available). Cleaning wire can be used in the milk passage, but if the diluent passage can't be cleaned the needle has to be replaced. Needle will be mounted later in the procedure.  	*Dosage needle. 60026827*

Step.3
Disconnect the tube from the SI to the AI at the connection app. 1m from the AI. Place a bucket or similar under the end of the tube to collect the water leaving the tube during cleaning.
Request a Cleaning from the SI, (SI menu 4.2.3.2.6 Req. CIP).
Check tube for coatings and repeat cleaning if necessary.

Reconnect the tube with the tube to the AI, and request a new Cleaning. (SI menu 4.2.3.2.6 Req. CIP).
Check that water flows both from the dosage needle and from the mainline out tube.







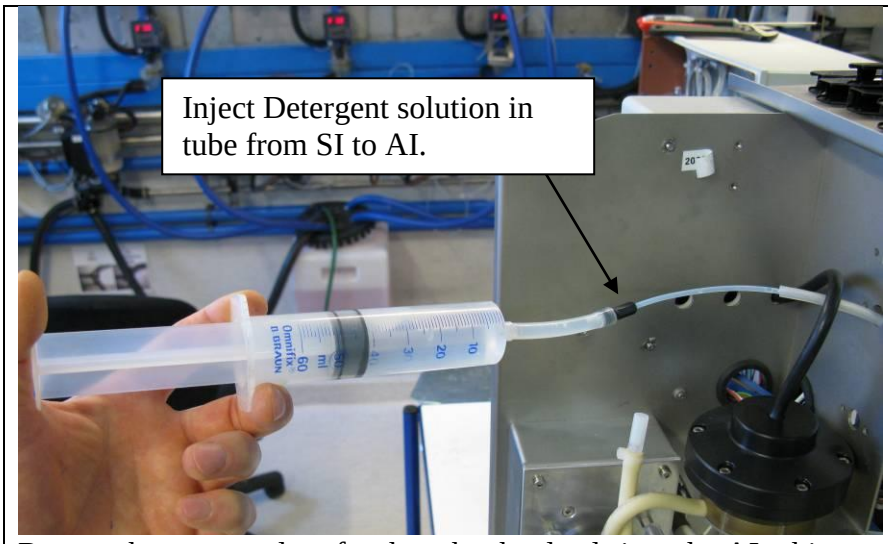
Check tubes for coatings and repeat cleaning if necessary.
If tubes are cleaned efficient, jump to Step 5.
If coatings or clogs remain in the tubes, continue to Step 4.

Step.4 (Only if Step.3 didn't give efficient cleaning)

Disconnect the tube from the AI to the SI. Disconnect both at the connection just after the milk pump in the SI and at the connection just outside the AI (as in Step 3)

Inject a solution of hot water and 1/50 detergent (from SI) through the tube until all milk residues and coatings are removed.
(use a big syringe and a short silicone tube connection for the injection)

Ø2 Tube kit 60036321



Repeat above procedure for the tube that leads into the AI , this should be done with the DM valve both in dosage line and mainline position.
Change valve position in menu 4.2.3.1.5 Change DMvalve.

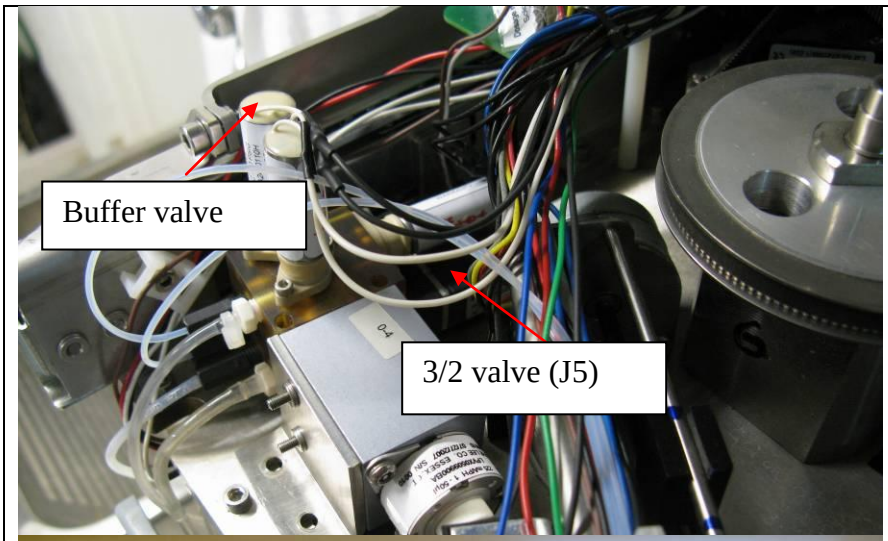
If unable to receive a sufficient cleaning of the tubes, or the tubes have bends. The tubes must be replaced.

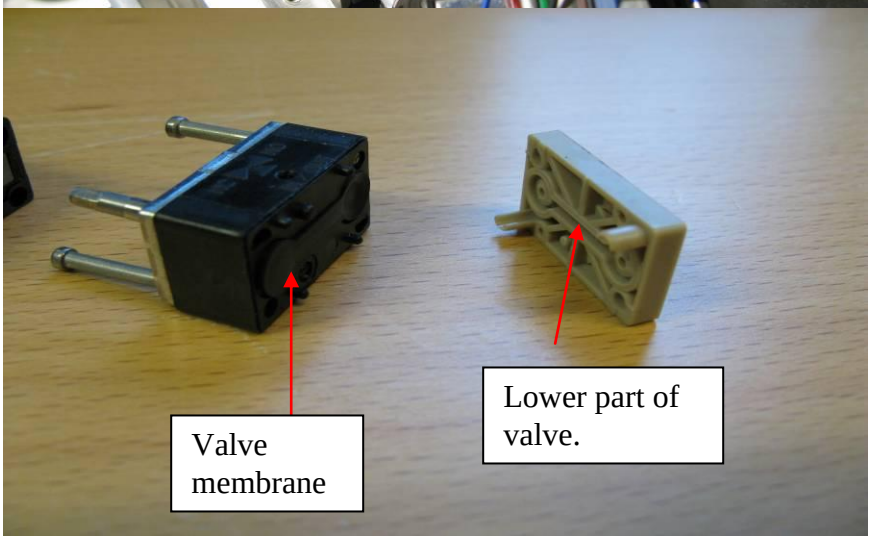
Connect the tube at both ends and request a Cleaning from the SI, (SI menu 4.2.3.2.6 Req. CIP).

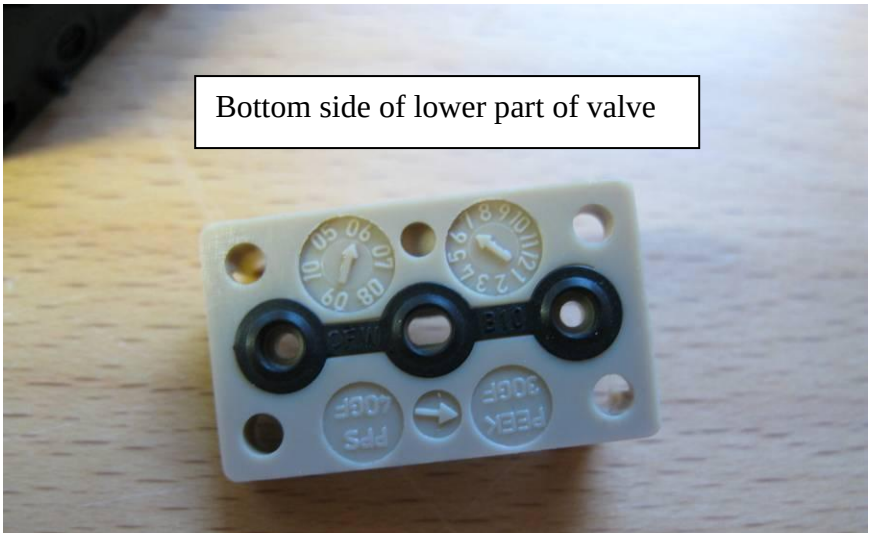
Check that cleaning water is flushed through both the dosage line and the mainline.

Step.5
Dismount the Flow module and disconnect the tube and wire connections to the module.
Remove the 3/2 valve (J5) and remove the lower part of the valve base to get access to the valve membrane. Clean the membrane and the lower part of valve base. Don't use compressed air on membrane.

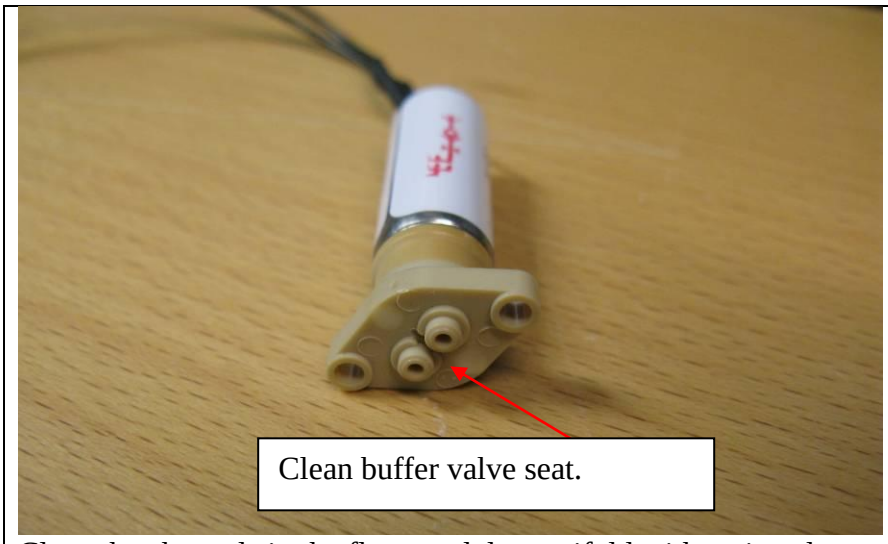
Pipe cleaner



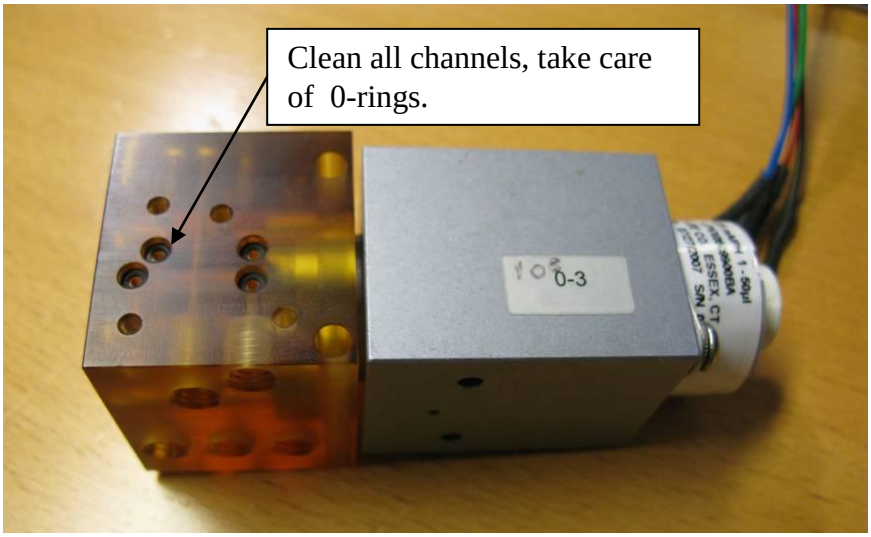




Remove the buffer valve (J8) and clean the valve seat.



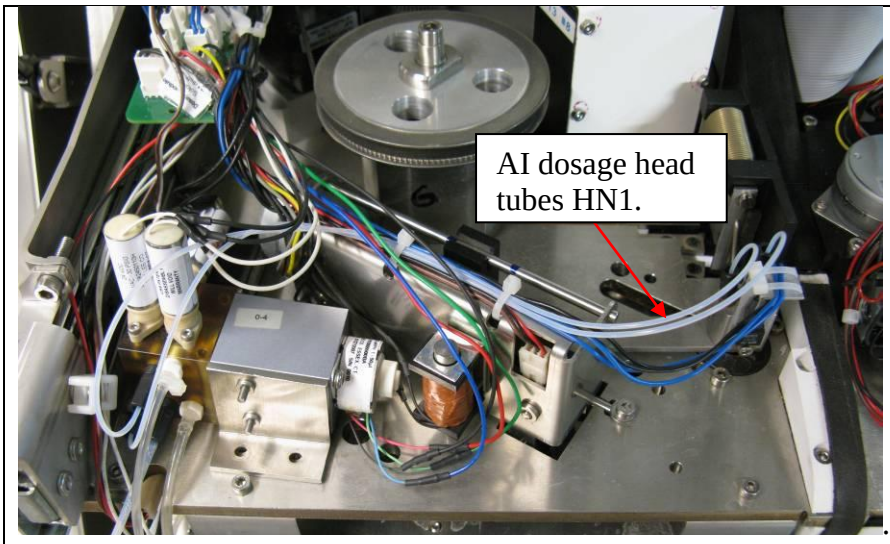
Clean the channels in the flow module manifold with a pipe cleaner and a detergent solution. Inspect and ensure that all impurities and coatings are removed.



Reassemble module, and remount on the AI.

Step.6
Replace the tubes from the flow module to the dosage head if there is any signs of coatings or bends (AI dosage head tubes)

Ø1 tubekit 60005192



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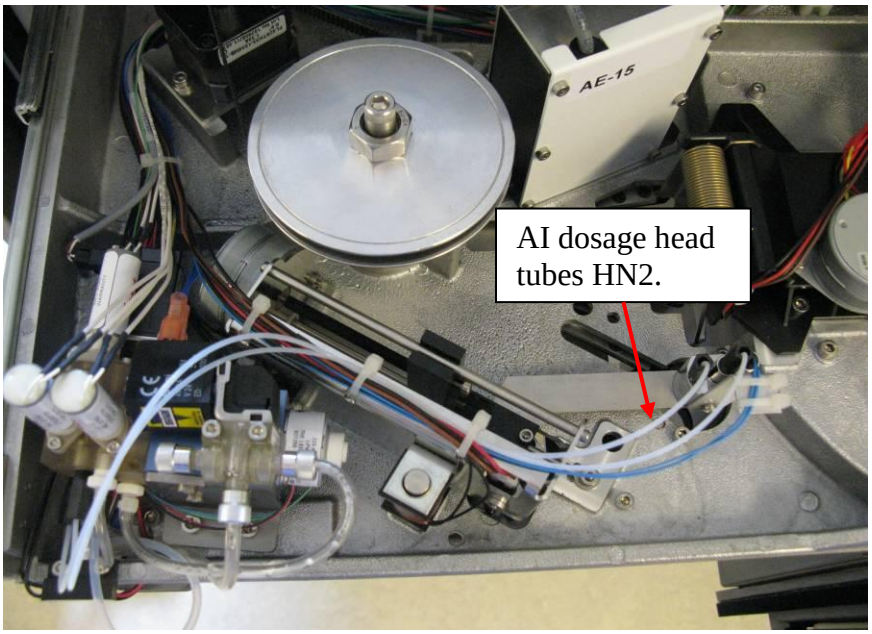

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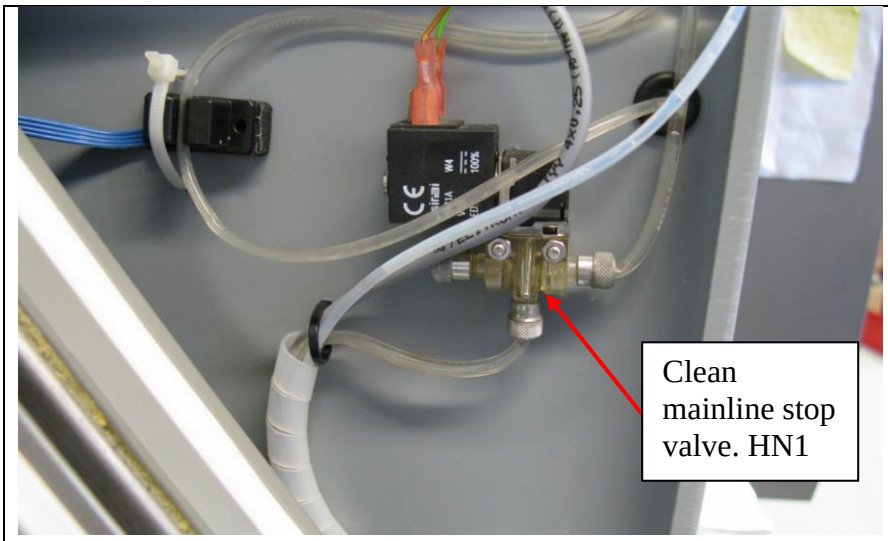
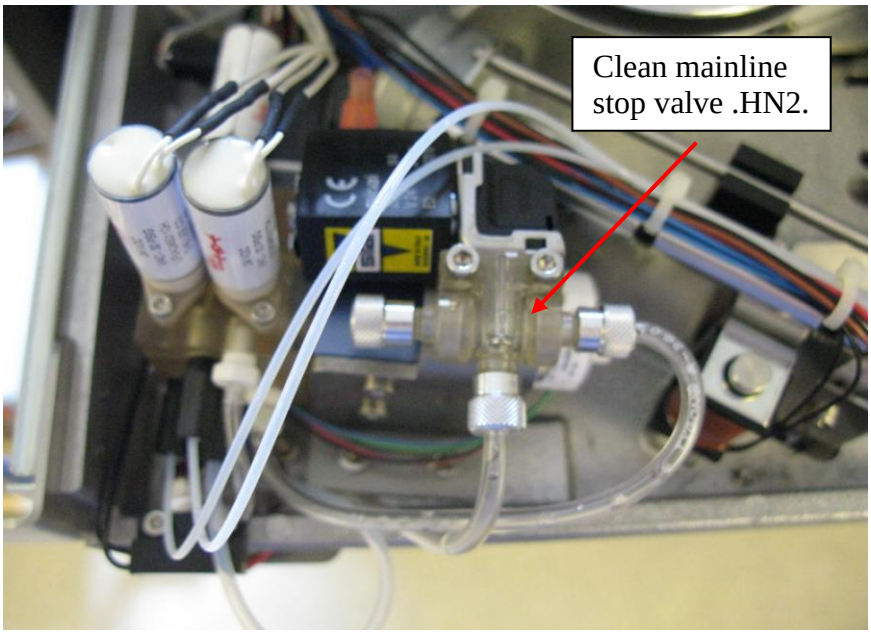
Step.7
Inspect and clean the mainline stop valve and the connected tubes.
Replace the tubes if they have coatings or if they feel “hard”

Tube ø2.4
60037361





Step.8
Remove diluent tube and diluent needle and clean with the detergent solution.

Step.9
Remove the waste funnel and clean the funnel and the tube with the detergent solution.

Step.10
Assembly all parts and mount the dosage needle in the dosage head.

Request a CIP from the AI. (menu 4.2.3.2.6 Req. CIP)
Check and measure the amounts of water flushed through both the dosage line and the mainline.
Se chapter 3.2.2 Measuring the water amounts during AI cleaning.
Repeat the necessary cleaning steps if the amounts are too low.

Step.11
Close AI and refill sticks once the clima conditions are ok.

Tubes overview

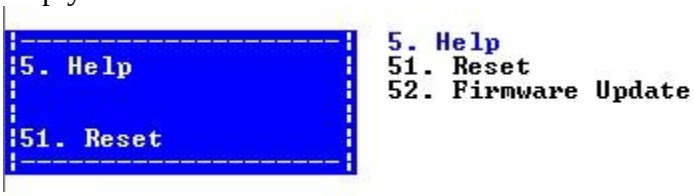
Delaval no.	Lattec no.	Name	Description
86064701	60005191	AI mainline tube	From outside AI to manifold.
85175301	60005192	AI dosage head tube	From manifold to dosage head (2 pcs.)
	60005193	AI diluent tube HN1	From diluent bag to manifold.
	60026876	AI mainline out tube HN1	From manifold to mainline out valve.
86064901	60043861	AI mainline out tube HN2	From manifold to mainline out valve.
86064801	60043839	AI diluent tube HN2	From diluent bag to manifold.

3.2.2 Measuring the water amounts during AI cleaning.

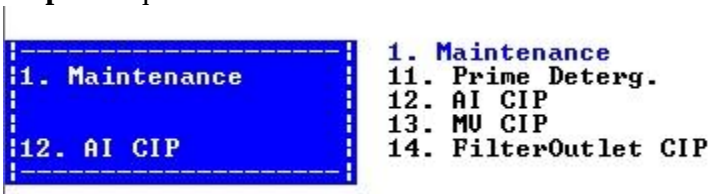
During a CIP of the AI, water is flushed through both the main line and the dosage line. The amount of water indicates if there is clogging or sharp bends on the tubes. It is therefore a useful "tool" for trouble shooting, when fixing quarantine and dosage problems.
The measuring can be done both before, and after cleaning the system as described in chapter: 3.2.1Procedure for complete cleaning of milk transport system between SI and AI.

Tools needed:
2 suitable containers, to collect Water from the AI. 0,5 liter or bigger.
A measuring cup with scale intervals in min 20 ml.

Step 1: Reset the SI, SI menu 5.1.
When the SI is reset it starts an "empty pipe", this ensures that the tube between SI and AI is empty.

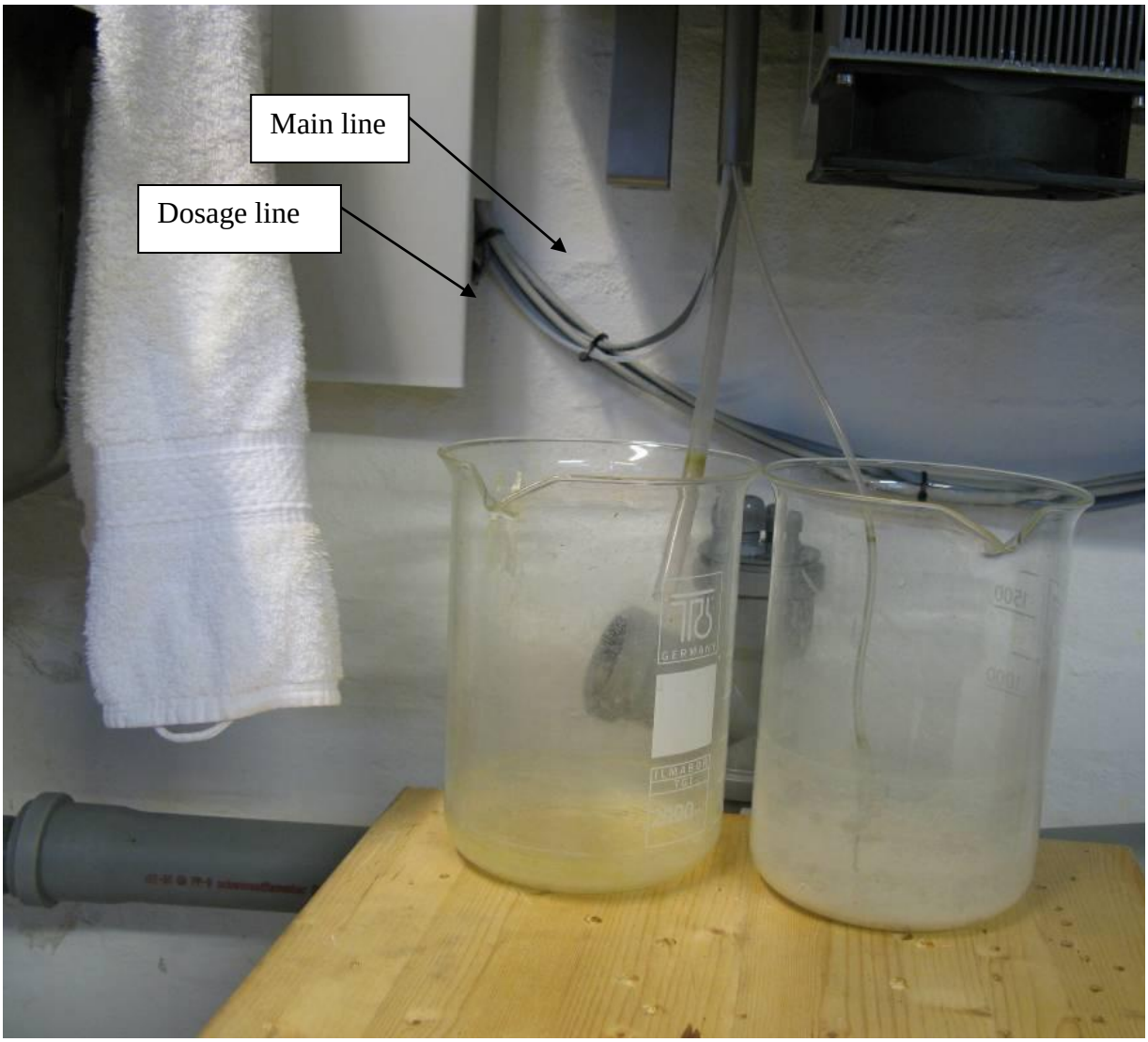


Step 2: Request a CIP from the SI menu.



Note the CIP can be requested from the menu on the HN1 AI as well.

Once the CIP is requested the SI prepares for CIP. The SI fills the water containers and start heating. Note that the heating can take about 15min. before the CIP process actually starts.



Step 3: While waiting for the heating to finish.
Place 2 suitable empty containers under the AI, and insert the 2 tubes from the AI. (as shown on the picture)
The Container with the thin tube will collect the water flowing through the main line.
The container with the thick tube will collect the water flowing through the dosage needle.

Step 4: When the CIP starts, monitor the water flow in the 2 containers. The water starts flowing from the main line (thin Tube) then switches to the dosage line (thick tube) and then switch back to the main line.

Step 5: Measure the amount of water in each container using a suitable measuring cup.

The amount should not deviate far from these nominal values.
Parlour : Main Line : app. 315ml Dosage Line: 370 ml.
VMS: Main Line : app. 315ml Dosage Line: 370 ml.

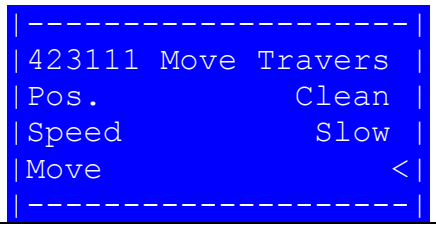
Step 6:
If the water amount is to low, look for clogging, bended tubes or leaks in the system.
If both amounts are to low: look in SI, tube from SI to AI, and Manifold.
If Main line is ok, and Dosage is low, look in needle or tubes from manifold to needle.
If Dosage line is ok, and main line is low. Look in mainline stop valve, tubes connected to this valve or in the manifold.
Refer to Chapter 3.2.1Procedure for complete cleaning of milk transport system between SI and AI.

3.2.3 Adjustment of dosage needle clean position.

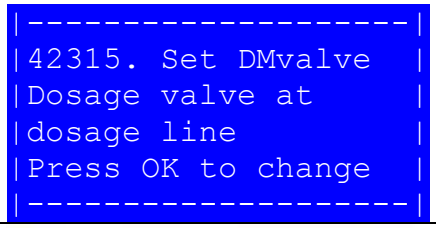
Clean position can be adjusted as a part of the AI module test or after installation at the farm. If the adjustment is done as a part of module test it is necessary to have either a SI connected or a separate pump, to deliver cleaning water.
This adjustment procedure describes both the HN1 and the HN2 version.

HN1
Open the AI and remove the insulation top.

On the AI terminal move travers to cleaning position (menu423111)

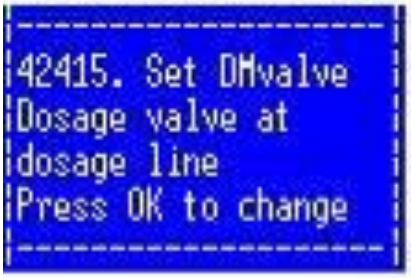


HN1
On the AI terminal set DMvalve to dosage line (menu 42315)

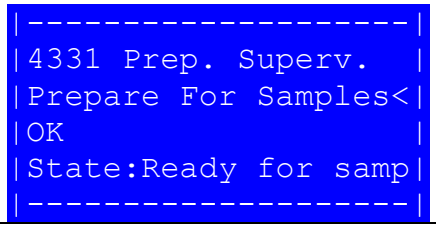


HN2
Remove the AI Front, loosen the beam and pull the beam out.
On the AI terminal window move the DOM travers to cleaning position. (menu 424110)

HN1
On the AI terminal set DMvalve to dosage line. (menu 42415)

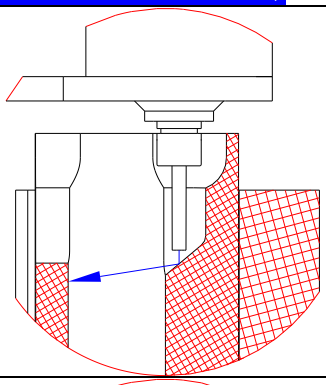
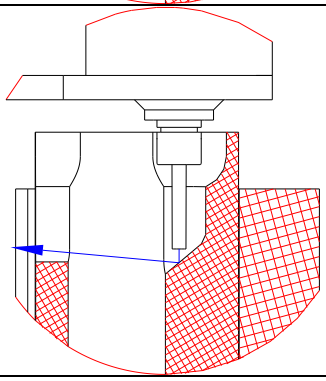


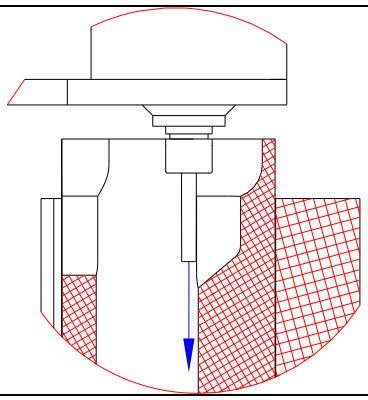
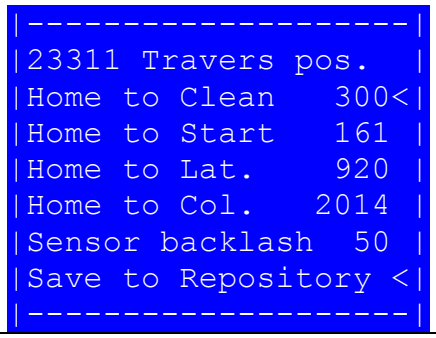
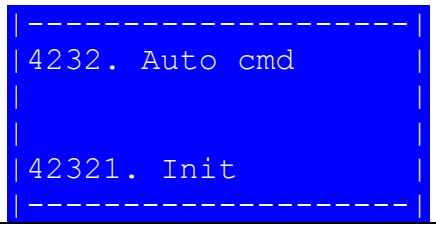
On **SI terminal** fill water in Rinse container



Set valves to deliver water from rinse container:
 	
On **SI parlor** terminal →
 	
On **SI VMS** terminal turn vacuum **on** and then →
	<pre>|--------------------|
	|4231 CIP |
	|Rinse WaterIn Off<|
	|Rinse WaAirOut On |
	|Clean WaterIn Off |
	|--------------------|</pre>
	<pre>|--------------------|
	|4221 MultiValve |
	|Arm Position 11<|
	|Lift Arm On |
	|Wash Inlet Off |
	|--------------------|</pre>

Start the pump	<pre>|--------------------|
	|4215 Sample Outlet |
	|Safety Off |
	|Main Line Off |
	|Milk pump Normal*|
	|--------------------|</pre>

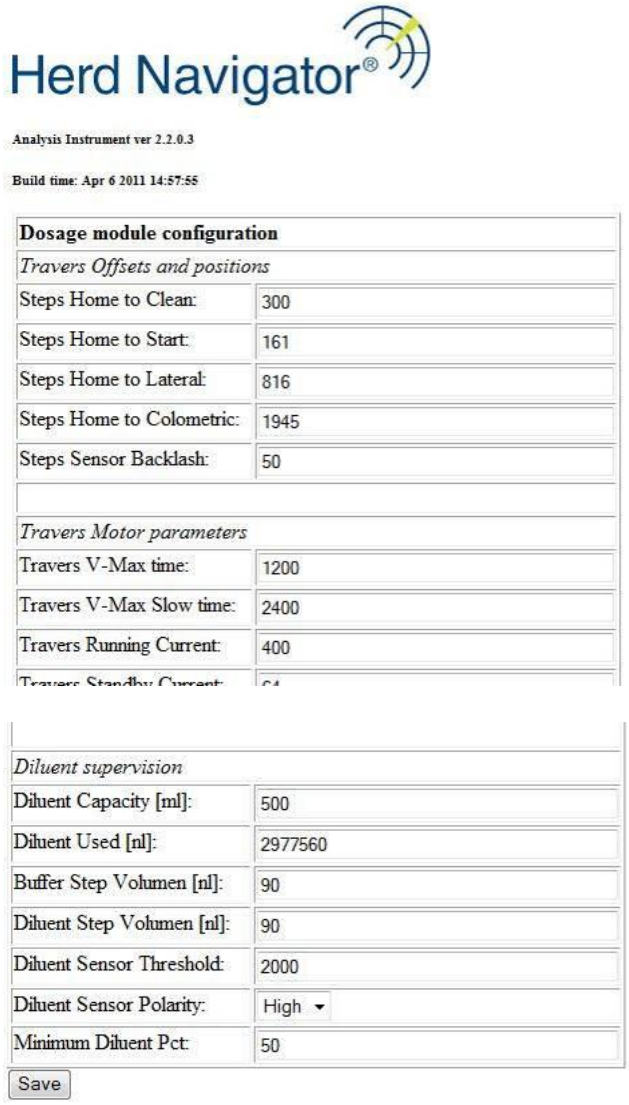
Use a flashlight to light up the dosage funnel and see if the water is coming out of the dosage needle. The water should come out of the needle with high velocity, hit the slanted surface of the dosage funnel and be deflected to the opposite side and then flow out through the waste tube. Stop the pump	
If the water is deflected to high so it flows out of the funnel, the setting for “home to clean” most likely should be smaller (default is 300). Stop the pump	

If the water is not hitting the surface of the funnel and just flowing directly out through the tube the setting “home to clean” should be bigger (default is 300). Stop the pump	
HN1 If the position needs adjusting, change the setting “home to clean” and save to repository. ±40 represent approximately ±1mm change in needle position.	
HN1 Initialize dosage module and check the position again	

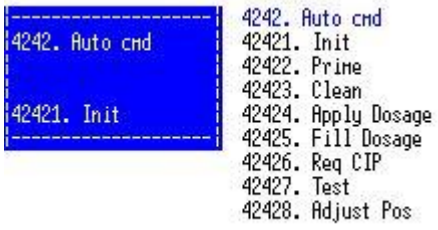
HN2
If the position needs adjusting, open the Dosage module configuration page in the AI web interface.

Change the setting “Steps home to clean”.
±40 steps represent approximately ±1mm change in needle position.

Remember to click the “save” button below on the page, to save the new value.



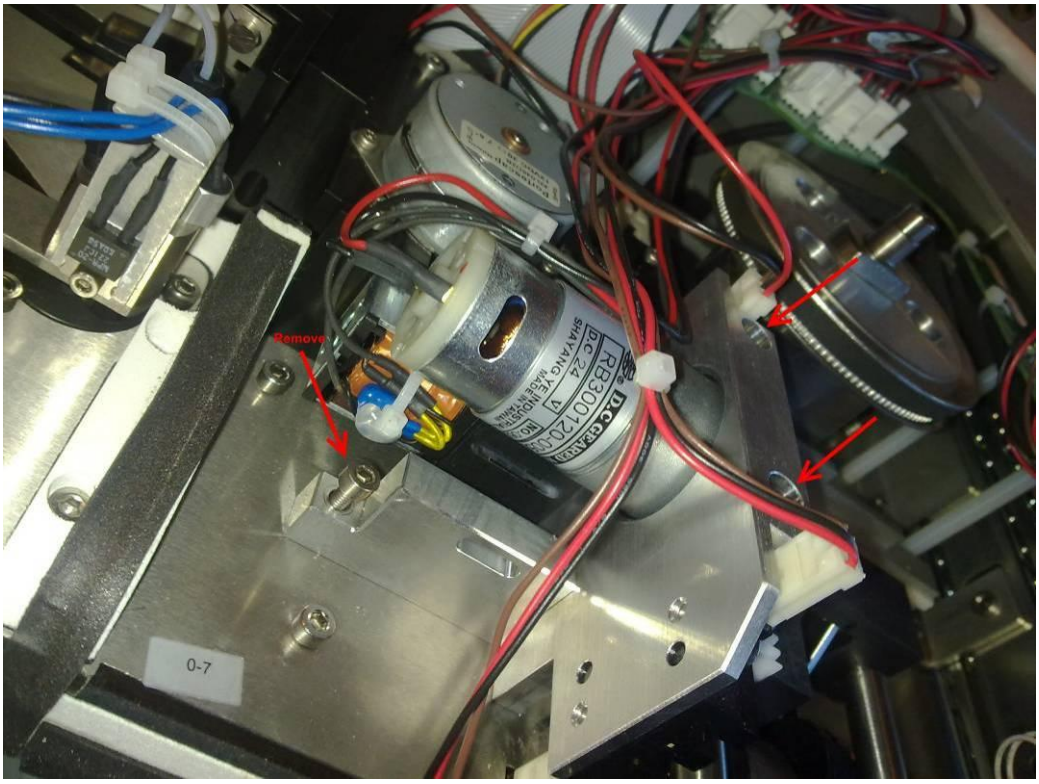
HN2
Initialize dosage module and check the position again
(menu 42421).



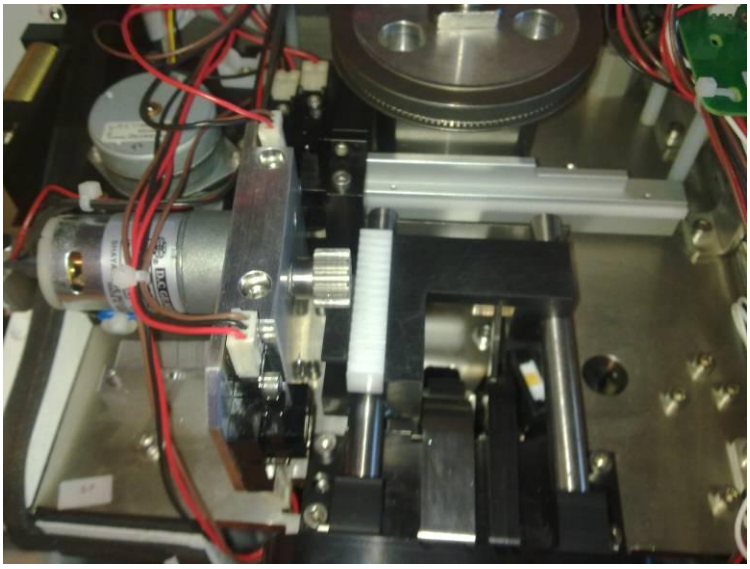
3.2.4 Howto – Close Hatch Manualy.

1. Open the Analyser.
2. Take out the powerplug.

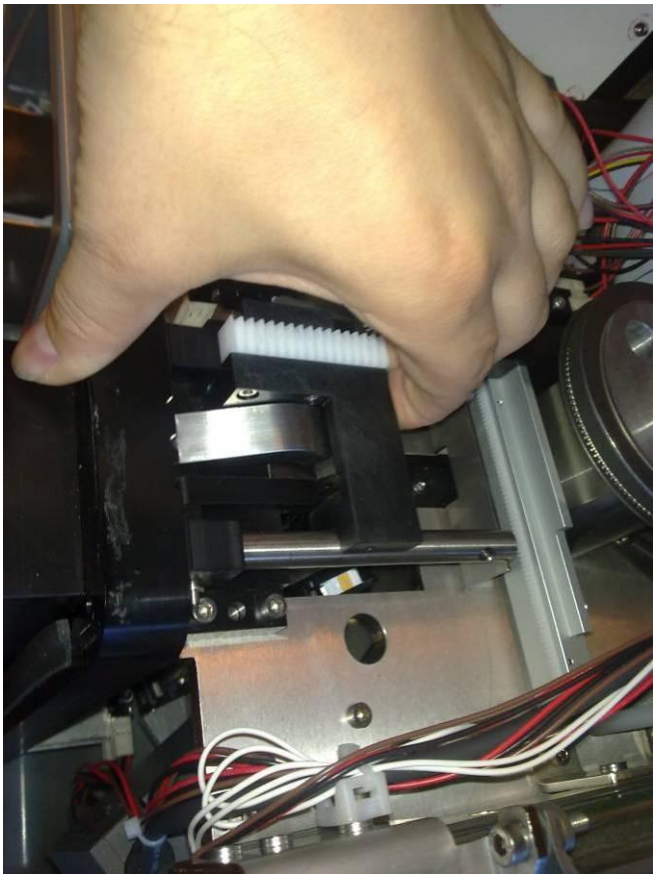
3. Release the motor to the door. by removing the 3 screws that secure the motorbracket to the Beam.



4. And move it away from the Hatch.



5. Take the slide all the way out to the door. (be careful that the storage is positioned correctly).



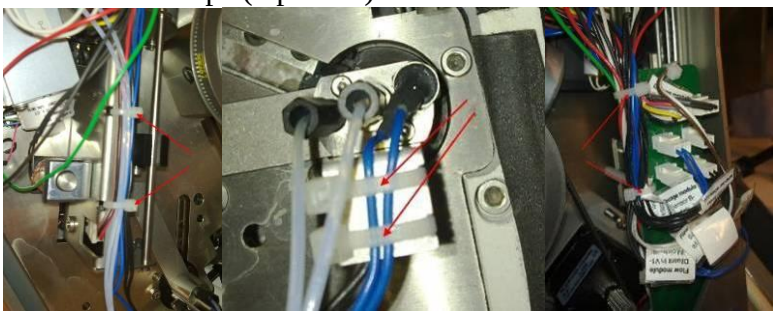
6. And when the slide is hold out, gently close the door, so the slide goes back, and the door stays closed. (Se the movie how it is done.)
7. When the door is closed, put the motor back on, and turn on the power to se the door stays closed.

3.2.5 Replacing Flow and Dosage module + 2 years AI service.

1. Open AI (Se service Memo).
2. **Write down all plug connections to the circuit board just to be sure.**
3. Disconnect Tube connection from SI and Diluents back on Flow module.

4. Disconnect Tube connection to drain on Stop Valve.

5. Remove the strips (6 pieces.) on wires and tubes.



6. Screw out the 2 screws in Flow module, 2 screws on Dosage module, and 2 bolts on Stop Valve.
7. Take of all parts together, and put it all in a plastic bag, and close it.

8. Mount the new parts, the dosage module has new screws, but Flow module and Stop valve had to use the old ones.
9. Connect all the wires again.
10. Connect the two new tubes from dosage module, to flow module (part nr. 60005192)
11. Connect the tube from SI again.
12. Connect the new tube from Flow module to stop valve (part nr. 60026876)
13. Connect the new tube from Diluents bag to flow module (part nr. 60005193)
14. Connect the tube from stop valve to drain again.
15. Make sure all tubes and wires is fit correct, and then put 6 new strips on again, just to hold, but not to tight so it damage the tubes.
16. Take new diluents, and connect it.
17. Make a Diluents prime whit the AI menu 1-Maintaince -> 2-Relpace Diluents. And watch if there are any leaks… after a complete replace, 3-4 primes is needed to make sure all air is out of the system again.
18. Make a cleaning whit the AI menu 1-Maintaince -> 4-Request clean , and watch when the water comes trough, that there is no leaks.
19. If there is no leaks and all is well fitted, close the analyzer, restart the whole system whit taking the power, and make sure the Analyser goes to standby mode.
20. Load Drybags, and when the AI is ready, load sticks and change the Drybags an extra time.
21. Then HN is ready again.

What is in the package from Lattec :

And some new Diluent.

Check AI for leaks on Diluent supply.

Problem :

LDH, Urea, and BHB is working whit no problems, but a Progsteron is missing control line.

Reason to the error :

No diluents / not enough mixed whit the sample on the progesterone stick.

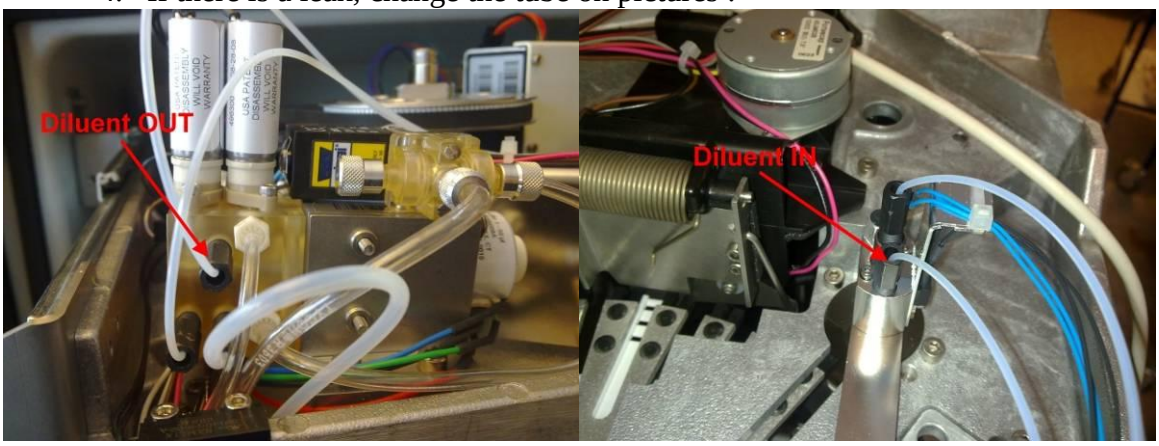
Possible errors:

1. There is a leak on the diluents supply line between the flow module and dosage module.
2. No O-rings on the Needle, or the needle is not put on correctly.

Solution on the problem :

Problem 1 :

1. Open AI, as described on the service Memo.
2. When the AI is open, start a Diluents prime : AI menu :
    a. 4 Service -> 2 Simple func -> 3 Dosage -> 2 Auto cmd -> 2 prime.
    b. If it is needed, choice 1. Init first instead of 2. prime.
3. When priming, watch if there is any leaks on the tube between Flow module, and Dosage module (Se pictures).
4. If there is a leak, change the tube on pictures :



Problem 2 :

1. Take out needle.
2. Check if both O-rings is there.
3. Put in Needle incl. O-rings again.

3.3 HN and Delaval C200 parlour cleaning.

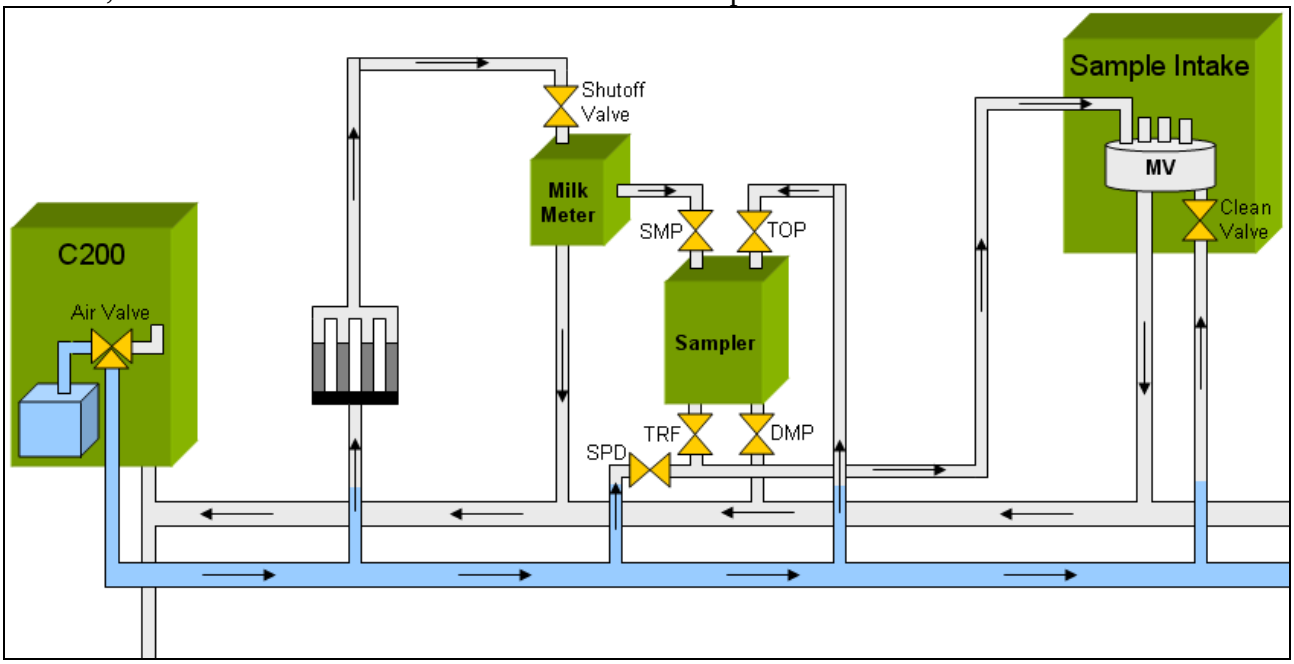
This Chapter describes how the Herd Navigator and the Delaval C200 is working together during the cleaning of parlour systems.
The parameters in the Delaval C200 and the Herd Navigator that have influence on the cleaning process is described.

3.3.1 Abbreviations

HN: Herd Navigator
SMP: Sampling Valve
TOP: Top Valve
TRF: Transfer Valve
SPD: Speed Control Valve
DMP: Dump Valve

3.3.2 Herd Navigator and C200 installation in the parlour.

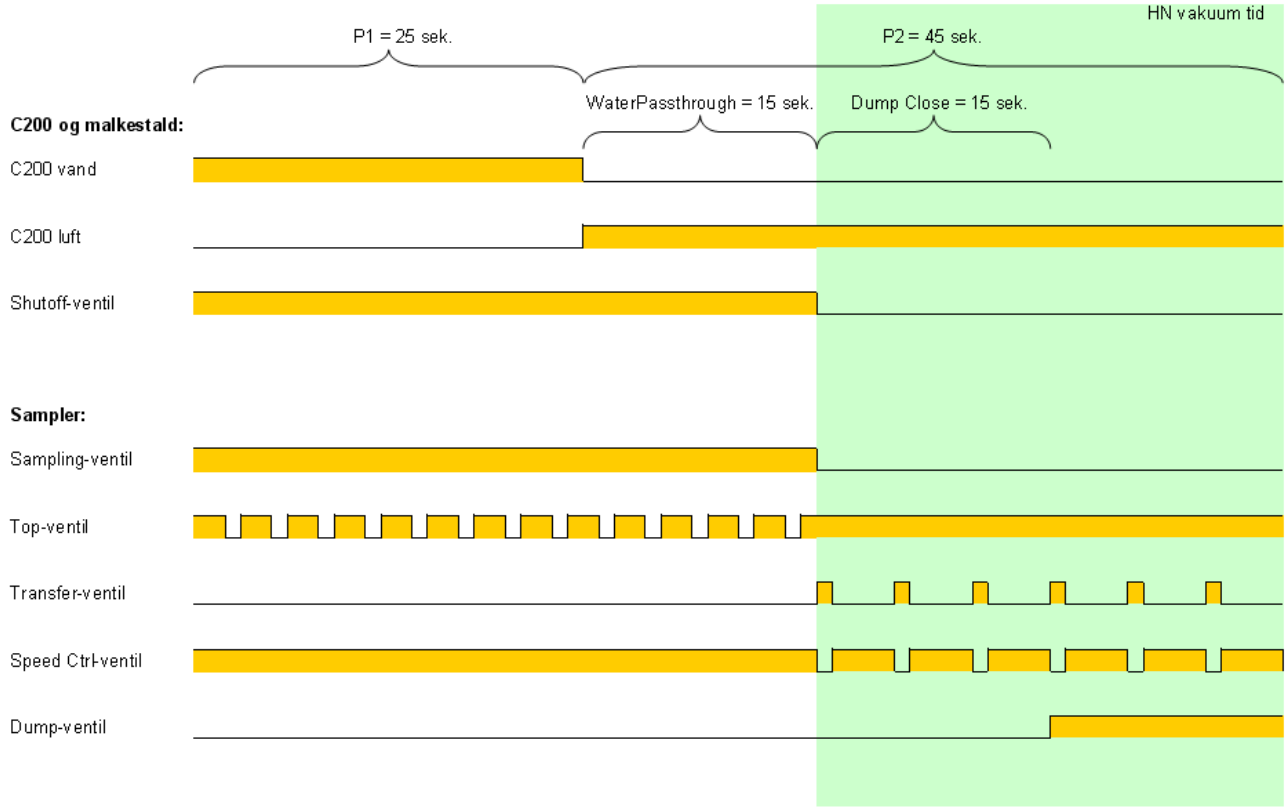
Figure 1 illustrates how the HN, the DeLaval C200, and the parlour is connected during the cleaning process. The sampler is cleaned by a flow of cleaning water through the Top valve and the Sampling valve. The sampler is emptied through the Transfer valve and the Dump valve. The Speed control valve is cleaned with cleaning water directly from the CIP line. The transfer tube between the sampler and the Sample Intake, is cleaned with water and air from the Transfer valve, and the Speed control valve. The Multivalve in the sample intake is cleaned with cleaning water from the transfer tubes, and the clean valve.
The C200 send messages to the HN on the ALCOM bus when the cleaning is started and finished, and each time the C200 Air valve is closed or opened



Figur 1. C200 and HN installation

3.3.3 C200 and HN cleaning sequence.

The cleaning of the parlour milking system will be changed when the HN is installed.
The princip of the changed cleaning process is that the Shutoff valves will be used to alternate between letting the vacuum through the milking clusters and through the HN samplers. This is done to ensure sufficient vacuum supply in both milking clusters and samplers during the cleaning process.
In figure 2 the sequence created by the parameters P1 and P2 during the cleaning is illustrated. The timing of the C200 Air valve, the Shutoff valves and the valves in the Samplers during this sequence are shown.
This sequence is repeated several times during both prerinse, finalphase and circulation cleaning. To ensure that the samplers have enough cleaning time with all vacuum (shutoff valve turned off) P2 has to be increased with minimum 30 sec.
The total cleaning time off the C200 shall be increased equivalent to ensure the same cleaning time of the parlour as without the HN installed.
Refer to the table below for description of all the relevant parameters.



Figur 2. Timing for C200 Air valve,, Shutoff-valves and Sampler valves..

3.3.4 C200 parametre

Parameter:			**HN Default:**	
P1	Flushing Pulse, Water	Time for water should be increased.	25	sec.
P2	Flushing Pulse, Air	Time for air, to be increased with min, 30 sec.	45	sec.
P3	Blowing after prerinse	Time must be doubled?	4	min.
P4	Blowing after middle phases	Time must be doubled?	4	min.
P5	Blowing after final phase	Time must be doubled?	8	min.
P10	Temp. Limit, return water	Return Temperature shall be decreased	40	°C
P11	Temp. Limit, outgoing water	Outgoing temperature shall be increased.	82	°C
P15	Node address	Must be 75	75	-
P16	Versionsnumber	Software version 1.12 or newer	1.12	-
P17	Min. time circulation cleaning	Time must be doubled	15	min.
P22	External air injection delay	Individual adjustment	?	Sec.
P23	Extra flushing pulse air time (Trombone)	Individual adjustment	?	Sec.
P28	Acid/desinfection circulation (cleaning time)		15	Min.
P29	Pulse after blowing air time ON	Must not be 0, in order to dry the HN.	10	Sec.
P30	Pulse after blowing air time OFF	Must not be 0, in order to dry the HN.	10	Sec.
P50	Cleaning program	C200 timing for HN isadapted for cleaningprogram 2	2	-
P54	Heater	Heater must be installed	1	-
P58	ALCOM-bus	C200 sends messages to HN during cleaning.	1	-

3.3.5 AC and SC parameters

The AC has 3 parameters with influence on the cleaning process:

Regulator Block: (menu 217)
This parameter is set depending on whether there is a regulator block installed or not. If a regulator block is installed, the shutoff valve is controlled by this, if not the MPE/MPC controls the shutoff valve. If a regulator block is installed the value is set to ON, if not it is set to OFF. Default value is OFF. (se Figure 3.)

Fig 3. Regulator block installed: yes=ON, No= OFF.

SC Water Passth (menu 2232).:
The value for SC WaterPassth. must always be equal to the value of the Water Passthrough Time parameter in the SI. (See description in chapter 3.3.6)
Default value is 15 Sec. See figure 4.

Figurer 4. SC Water Passth. must be equal to Water Passthrough Time in SI.

SC Dump Close: (menu 222):
The value of the Dump Close parameter determines how long time the Dump valves are closed after the Shutoff valves are closed. When the Dump Close time is passed the samplers are emptied through the Dump valves.
The default value is 15 sec. See figure 5

Figur 5. SC Dump Close

3.3.6 SI parameter

Water Passth.Time (menu 24)
The SI has 1 parameter with influence on the cleaning process. This is the Water Passthrough Time. This value determines the delay between the opening of the C200 air valve and the closing of the shutoff valves. Once the shutoff valves are closed the vacuum through the milking clusters are closed.
Default value is 15. sec. Se figure 6.

Figur 6. SI, Water Passthrough Time.

3.3.7 C200 parameters from diff. HN Farms.

Table A: C200 parameters from Tange Skov gård (TSG)– 20. oktober 2009

Nr.	Funktion	Range	Unit	Default	TSG
P1	Flushing pulse, Water	1-120	Sec.	10	25
P2	Flushing pulse, Air	1-120	Sec.	10	45
P3	Blowing after prerinse	0-15	Min.	3	4
P4	Blowing after middle phases	0-15	Min.	4	4
P5	Blowing after final phase	0-15	Min.	6	6[1]
P10	Temp. Limit return water	25-113	°C	40	38
P11	Temp Limit outgoing water.	50-185	°C	70	82
P15	Node adress	5-125	-	75	75
P16	Versionnumber	Kun læs	-	-	1.12
P17	Min. time circulation cleaning.	4-45	Min.	8	12
P22	External air injection delay	0-120	Sec.	30	20
P23	Extra flushing pulse air time (trombone)	0.5-60.0	Sec.	1	2.2
P28	Acid/desinfection circulation (cleaning time)	0-15	Min.	8	15
P29	Pulse after blowing air time ON	0-60	Sec.	0	0[2]
P30	Pulse after blowing air time OFF	0-60	sec.	0	0[2]
P50	Cleaning program	-	-	1	2
P54	Heater	-	-	0	1
P58	ALCOM-bus	-	-	0	1

[1] Should possible be increased to 8.

[2] Must not be0, in order to dry the HN

Table B: C200 parameters on Hanninggård HNG – 1. december 2009

Nr.	Funktion	Range	Unit	Default	HNG
P1	Flushing pulse, Water	1-120	Sec.	10	25
P2	Flushing pulse, Air	1-120	Sec.	10	45
P3	Blowing after prerinse	0-15	Min.	3	4
P4	Blowing after middle phases	0-15	Min.	4	4
P5	Blowing after final phase	0-15	Min.	6	8
P10	Temp. Limit return water	25-113	°C	40	?
P11	Temp Limit outgoing water.	50-185	°C	70	?
P15	Node adress	5-125	-	75	75
P16	Versionnumber	Kun læs	-	-	1.12
P17	Min. time circulation cleaning.	4-45	Min.	8	15
P22	External air injection delay	0-120	Sec.	30	15
P23	Extra flushing pulse air time (trombone)	0.5-60.0	Sec.	1	2.0
P28	Acid/desinfection circulation (cleaning time)	0-15	Min.	8	15
P29	Pulse after blowing air time ON	0-60	Sec.	0	10
P30	Pulse after blowing air time OFF	0-60	sec.	0	10
P50	Cleaning program	-	-	1	2

P54	Heater	-	-	0	1
P58	ALCOM-bus	-	-	0	1

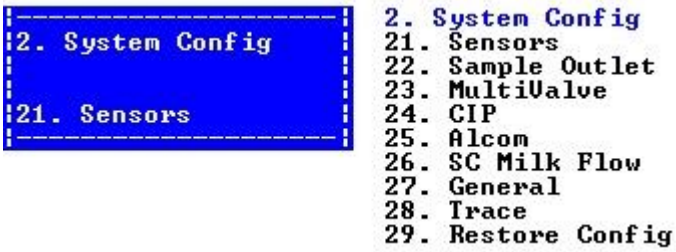
Table C: C200 parameters on Idasminde IDA – 3. december 2009

Nr.	Funktion	Range	Unit	Default	HNG
P1	Flushing pulse, Water	1-120	Sec.	10	25
P2	Flushing pulse, Air	1-120	Sec.	10	45
P3	Blowing after prerinse	0-15	Min.	3	4
P4	Blowing after middle phases	0-15	Min.	4	4
P5	Blowing after final phase	0-15	Min.	6	8
P10	Temp. Limit return water	25-113	°C	40	?
P11	Temp Limit outgoing water.	50-185	°C	70	?
P15	Node adress	5-125	-	75	75
P16	Versionnumber	Kun læs	-	-	1.12
P17	Min. time circulation cleaning.	4-45	Min.	8	15
P22	External air injection delay	0-120	Sec.	30	13
P23	Extra flushing pulse air time (trombone)	0.5-60.0	Sec.	1	2.5
P28	Acid/desinfection circulation (cleaning time)	0-15	Min.	8	15
P29	Pulse after blowing air time ON	0-60	Sec.	0	10
P30	Pulse after blowing air time OFF	0-60	Sec.	0	10
P50	Cleaning program	-	-	1	2
P54	Heater	-	-	0	1
P58	ALCOM-bus	-	-	0	1

3.4 Sampler.

3.4.1 Recalibration of sampler transfer time.

Each sampler has an individually calibrated value for the "sampler transfer time". The value corresponds to the time for the sample to travel from the sampler to the BD3 detector in the sample intake. The value is automatically calibrated during the first samples taken from the samplers.
After a complete service or upgrade of samplers, the value has to be recalibrated. The value is automatically calibrated if the value is reset to 0.
The value can be reset in the SI menu. The value can be reset for each sampler individually or for all samplers. If work has been done on only some of the samplers, these should be reset individually.



Select menu 2.6 SC milk flow.

Select menu 2.6.3. to reset the value for all samplers on the installation.

Select menu 2.6.1. or menu 2.6.2 to reset the value for individually samplers.

Hints:
If a sampler calibrates OK, but has problem taking samples afterwards, the problem might be related to the speed valve, as this valve isn't used during the calibration.

If a sampler has problems to calibrate, this could also be related to the speed valve, if it's constantly open.

4 INFO:

4.1 Menu overview for the Sample Intake, (SI)

1. Maintenance
    - 11. Prime Deterg.
    - 12. AI CIP
    - 13. MV CIP

2. System Config
    - 21. Sensors
    - 22. Sample Outlet
    - 23. MultiValve
    - 24. CIP
    - 25. Alcom
    - 26. SC Milk Flow
        - 261. SC0-SC19 Times
        - 262. SC20-SC39 Times
        - 263. Clear All Times
    - 27. General
    - 28. Trace
        - 281. Show Trace
        - 282. Set Trace level
        - 283. Trace all from
        - 284. Refresh trace
        - 285. Clear trace
    - 29. Restore Config
        - 291. All
        - 292. Central
        - 293. Bus Handling
        - 294. MMI
        - 295. Supervision
        - 296. CIP Handling
        - 297. Sample Object
        - 298. MultiValve
        - 299. Sample Transfer
        - 290. Bubble Detect

3. Information
    - 31. System

- 311. Software Ver.
- 312. Stack Free
- 313. Mailbox Free
- 314. CPU Load (Not implemented)
- 315. Show Menu List

32. ModuleInfo
    - 321. Sensors
    - 322. Sample Outlet
    - 323. MultiValve
    - 324. CIP
    - 325. Electr & Clima
    - 326. VMS Sensors
    - 327. VMS Valves
    - 328. Low Level IO

4. Service

41. Simulate
    - 411. Simulate Flags
    - 412. Message To SI
        - 4121. MilkingStarted
        - 4122. MilkingStopped
        - 4123. Clean. Started
        - 4124. Clean. Stopped
        - 4125. DetectSample
        - 4126. Canc.Detection
        - 4127. PrepareForCip
        - 4128. IniCheckSteps
        - 4129. ReqRinseDosage
        - 412?. SampleOnTheWay
        - 412?. NewSampleReady

42. Simple Functions
    - 421. Sample Outlet
    - 422. MultiValve
    - 423. CIP
    - 424. VMS Valves
    - 425. Low Level IO

43. Complex Functions
    - 431. Adjust MV Arm
    - 432. Test MV Arm
    - 433. Prep. Superv.

5. Help

51. Reset
52. Firmware Update

4.2 Menu overview for the Analyser instrument (AI)

1. Maintenance
    - 11. Refill Storage
    - 12. Replace Diluent
    - 13. Replace Detergent
    - 14. Request Clean
    - 15. Waste Cartridge
    - 16. Cow Verification

2. System
    - 21. Trace
        - 211. Set Trace level
        - 212. Trace all from
            - 2121. System
            - 2122. Module
        - 213. Trace all SID
        - 214. Refresh trace
        - 215. Clear trace
    - 22. Simulator
        - 221. BR Test
        - 222. TM Test
        - 223. SV Test
        - 224. HOST Test
            - 2241. Test flags
            - 2242. Analyse sample
        - 225. SIC Test
        - 226. OR Test
    - 23. Configuration
        - 231. Display
            - 2311. Contrast
        - 232. Storage
            - 2321. Constit type
                - 23211. C1
                - 23212. C2
                - 23213. C3
                - 23214. C4
                - 23215. Desiccant
                - 23216. Keeper Config
            - 2322. Position
            - 2323. Motor
            - 2324. Door timers
            - 2325. Restore sticks
            - 2326. Restore defaul
        - 233. Dosage

2331. Travers pos.
2332. Motor
2333. (Unused) (Not implemented)
2334. Pumps
23341. Pump steps
23342. Pump motor
23343. Pump Valves
23344. Diluent watch
2335. UP/Down
2336. Restore default
234. Incubator
2341. Motor
2342. Position
2343. Restore def
235. Stick Mover
2351. Motor
2352. Position
2353. Restore def
236. Supervision
2361. Storage
2362. Incubator
2363. Dosage
2364. Fans
2365. Humidity limit
2366. Temp. limit
2367. Temp. control
2368. Restore def
237. Bus
2371. Alcom
238. Central
239. Optical
24. Restore default
25. Factory Settings

3. Information
31. AI Information
32. System
321. Stack Free
322. Mailbox Free
323. Show Menu List
324. System resources
33. Service times (Not implemented)
34. Log information (Not implemented)
35. Module info.
351. Info host (Not implemented)
352. Info storage

3521. Constit type
35211. C1
35212. C2
35213. C3
35214. C4
35216. Keeper
3522. Boundary
3523. Repository
353. Info barcode (Not implemented)
354. Info dosage
3541. Boundary Motor
3542. Boundary Pump
3543. Repos Motor
3544. Repos Pumps
355. Info Incubator
3551. Boundary
3552. Repository
356. Info optical
3561. Boundary
357. Info StickMover
3571. Boundary
3572. Repository
358. Info Superv.
3581. Storage Bound
3582. Storage Rep
3583. Incubator Bound.
3584. Incubator Rep
3585. Dosage Bound
3586. Dosage Rep
3587. Cabinet Bound
3588. Cabinet Rep
359. Change settings
36. Stick status
37. Diluent status

4. Service (OK)
41. Simulating
411. Simulate all HW
412. Simulate Indiv.
42. Simple functions
421. Storage
4211. SM Init
4212. Init to Tunnel
4213. Move Rel Pos
4214. Slot to Tunnel
4215. Const to Tunn.

- 4216. Sweep Barcode
- 4217. Open hatch
- 4218. Adjust Offset

422. Barcode
- 4221. Init reader
- 4222. Read barcode
- 4223. Resend barcodes

423. Dosage
- 4231. Integr. cmd
  - 42311. Move Travers
  - 42312. Step Travers
  - 42313. Set Needle
  - 42314. Move Pump
  - 42315. Set DMvalve
- 4232. Auto cmd
  - 42321. Init
  - 42322. Prime
  - 42323. Clean
  - 42324. Apply Dosage
  - 42325. Fill Dosage
  - 42326. Req CIP
  - 42327. Test
  - 42328. Adjust Pos

424. Incubator
- 4241. IM Init
- 4242. Init to Tunnel
- 4243. Move cabin
- 4244. Do stroke
- 4245. Multi strokes
- 4246. Adjust Offset
- 4247. Meas Pos Steps

425. Optical
- 4251. Init ORM
- 4252. Read stick
- 4253. Read SW Rev.

426. Stick Mover
- 4261. Init StickMove
- 4262. Move StickMove
- 4263. Tunnel Stick

427. Supervision
- 4271. On/Off
- 4272. Test

43. Complex func
- 431. Empty All
- 432. Read barcode
- 433. Dosage on stick

434. Dosage and read
435. Discharge
436. Empty Storage
437. Read standards
438. Fix Cartridge
439. Tunnel Stick

44. Lo Level func
441. FPGA Read Reg.
442. FPGA Write Reg.

45. Test WatchDog

5. Change Mode
51. Stop
52. Maintenance (Not implemented)
53. Standby
54. Service
55. Auto
56. Reset All
57. RAM test

4.3 Menu overview for the Analysis controller (AC)

1. Maintenance (Not implemented)

2. System Config (OK)
    - 21. AC (OK)
        - 211. Extern Bus (Not implemented)
        - 212. Intern Bus (OK)
        - 213. CAN (Not implemented)
        - 214. Ethernet (OK)
        - 215. Alcom (OK)
            - 2151. Intern (OK)
            - 2152. Extern (OK)
        - 216. Outputs (OK)
        - 217. AC Settings (OK)
        - 218. Trace (OK)
            - 2181. Show Trace (Not implemented)
            - 2182. Set Trace level (OK)
            - 2183. Trace all from (OK)
            - 2184. Refresh trace (OK)
            - 2185. Clear trace (OK)
        - 219. Reposistory (OK)
    - 22. SC (OK)
        - 221. Milking (OK)
        - 222. Cleaning (OK)
        - 223. Alcom (OK)
    - 23. SI (Not implemented)
    - 24. SS (Not implemented)
    - 25. AI (Not implemented)
    - 26. VMS (OK)
        - 261. Timers (OK)
        - 262. Detect windows (OK)

3. Information (OK)
    - 31. AC Information (OK)
        - 311. System (OK)
            - 3111. Software Rev. (OK)
            - 3112. Stack Free (OK)
            - 3113. Mailbox Free (OK)
            - 3114. CPU Load (Not implemented)
            - 3115. Show Menu List (OK)
            - 3116. Show Mail Sizes (OK)
        - 312. Alcom (OK)
        - 313. Dump (OK)
    - 32. SC Information (OK)

321. SW Revion (OK)
322. Configuration (OK)

33. SI Information (Not implemented)
34. SS Information (Not implemented)
35. AI Information (Not implemented)

4. Service (OK)
41. AC Service (OK)
411. Simulate On/Off (OK)
412. Tell DSM-Sim (Not implemented)
413. Tell E-Bus-Sim (OK)
4131. Milking Session (OK)
4132. Cow Ident (OK)
4133. Milking Event (OK)
4134. Milking Data (OK)
4135. Cleaning Session (OK)
4136. Cleaning Event (OK)
4137. Sim Milking (Not implemented)
4138. Sim Cleaning (OK)
414. Tell I-Bus-Sim (OK)
4141. Send Exception (OK)
4142. Send Result (OK)
4143. Send Cartridge (OK)
4144. Send Tell Mode (OK)
4145. Send Req Clock (OK)
4146. Send BC Except (OK)
415. Clear DSM DB (OK)
416. Clear ServiceLog (OK)
417. Send Test Email (OK)
418. Test Watch Dog (OK)
42. SC Service (OK)
421. Simulate SC (OK)
422. Change Status (OK)
423. Monitor Status (OK)
424. Sample All (OK)
425. Sampler Test (OK)
43. SI Service (Not implemented)
44. SS Service (Not implemented)
45. AI Service (Not implemented)
46. VMS Service (OK)
461. Debug (OK)
47. Remote MMI (OK)

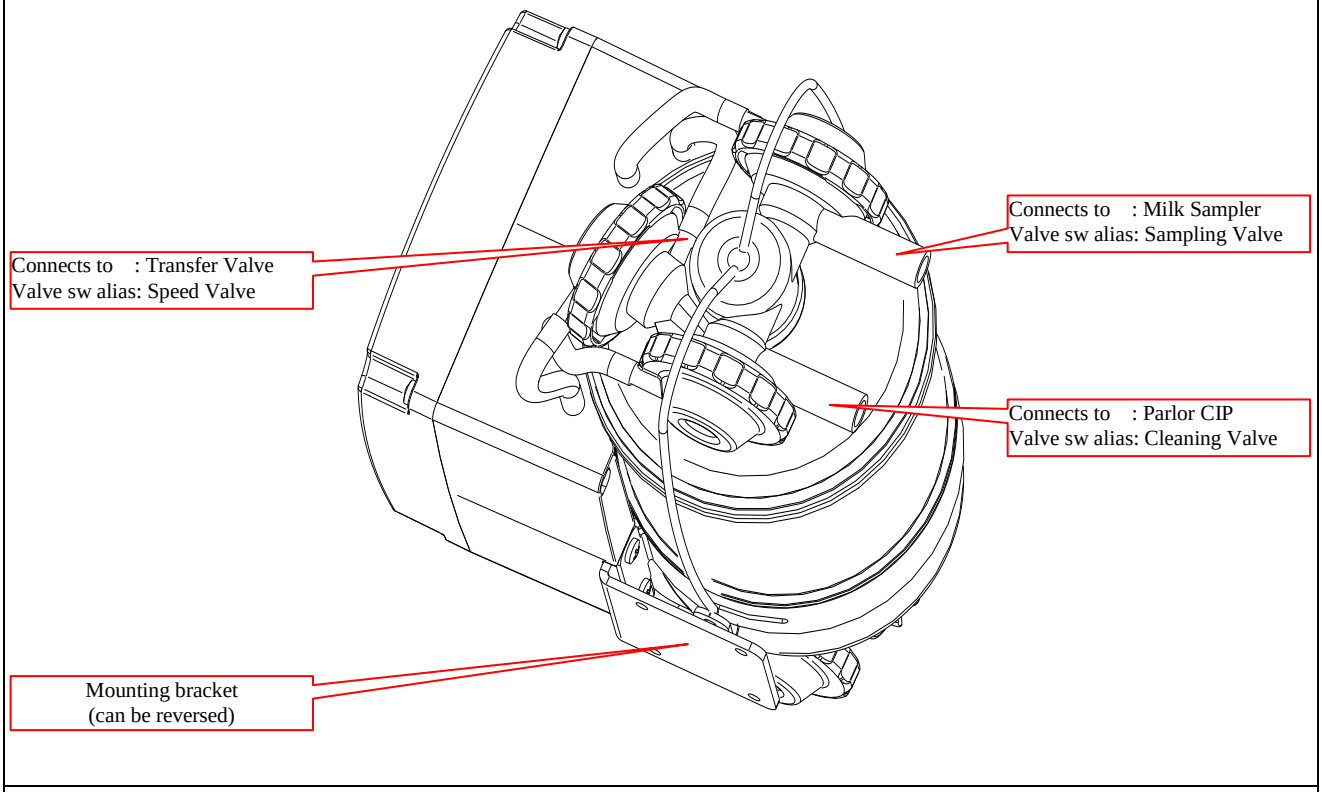
5. Mode (OK)
51. Reset (OK)
52. Firmware Update (OK)

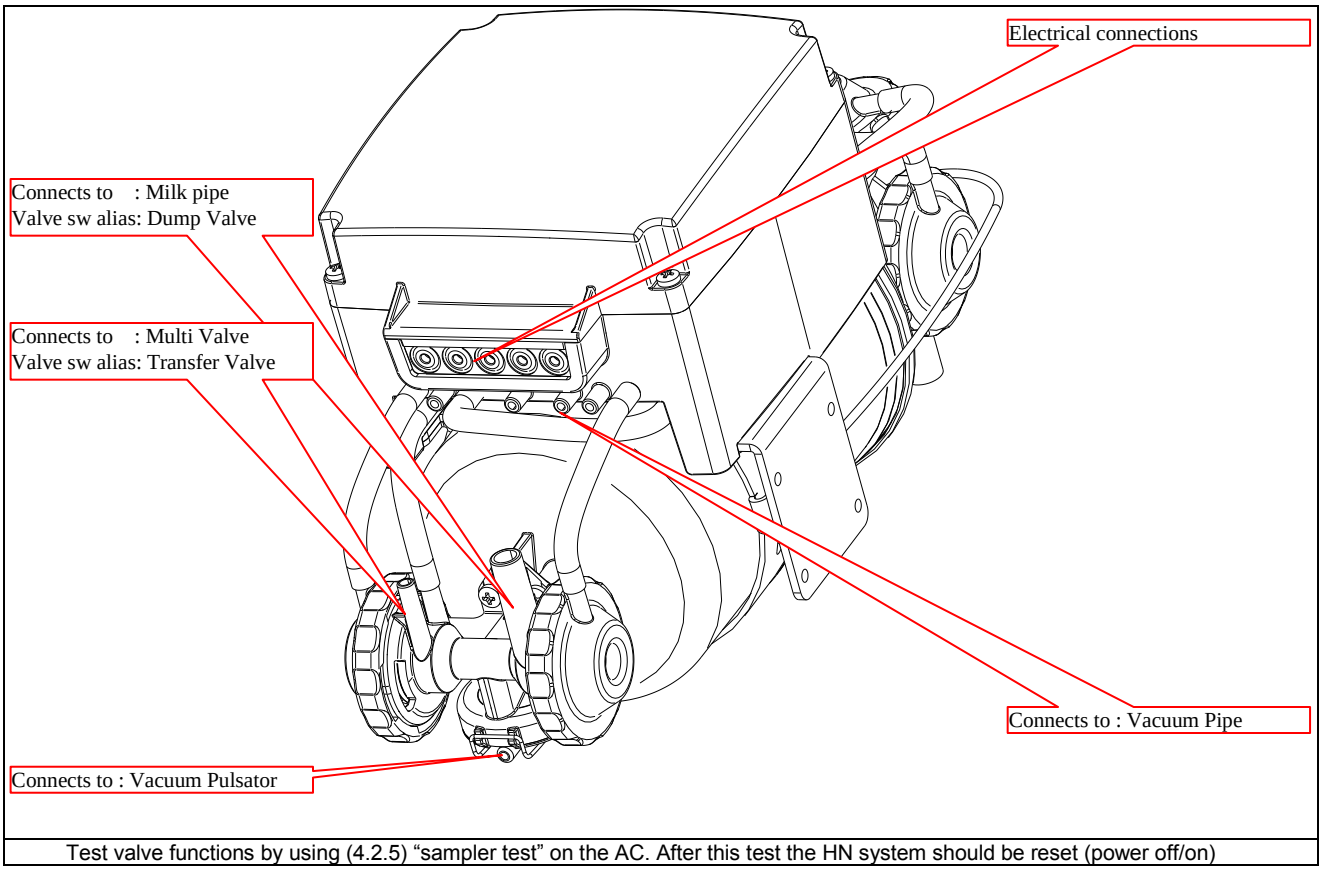
4.4 Connecting AI to the drain with pn:60045416

Ø50mm drain pipes are used to connect the AI to the waste water system. The pn:60045416 includes modified plug with cable glands and a 67° ø50 single branch. The extra opening of the single branch is used as an overflow and occasionally to flush the drain pipes with hot water (for cleaning).

When the AI waste tube (ø10) is fixed in the drain it is important to keep the end of the tube visible trough the overflow but still above the highest possible water level. Furthermore it is important that the ø10 tube has a positive slope all the way from the AI to the drain.
The mainline tube (ø4) should be fixed with the end below the overflow (to prevent splatter).

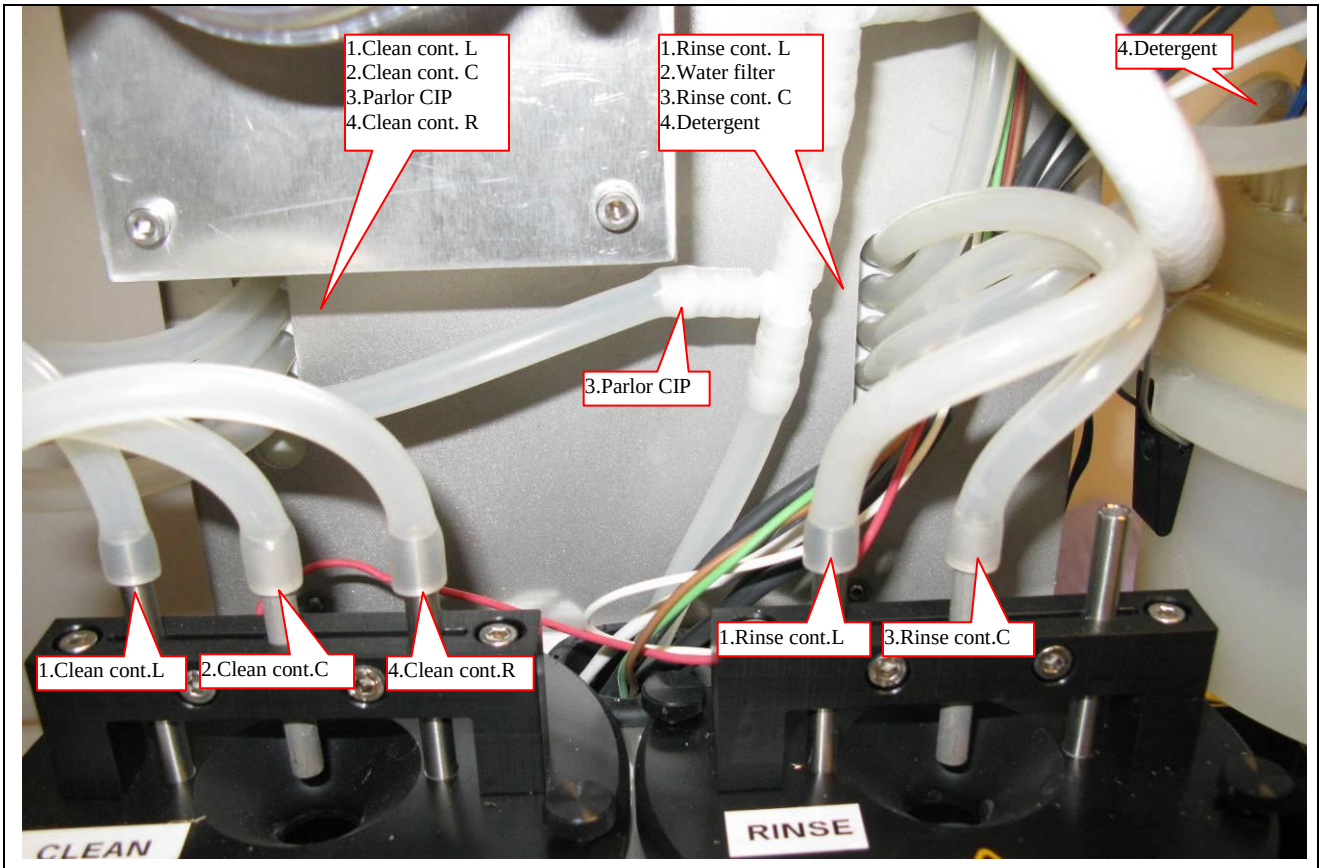
4.5 Tube Connections on Sampler version II





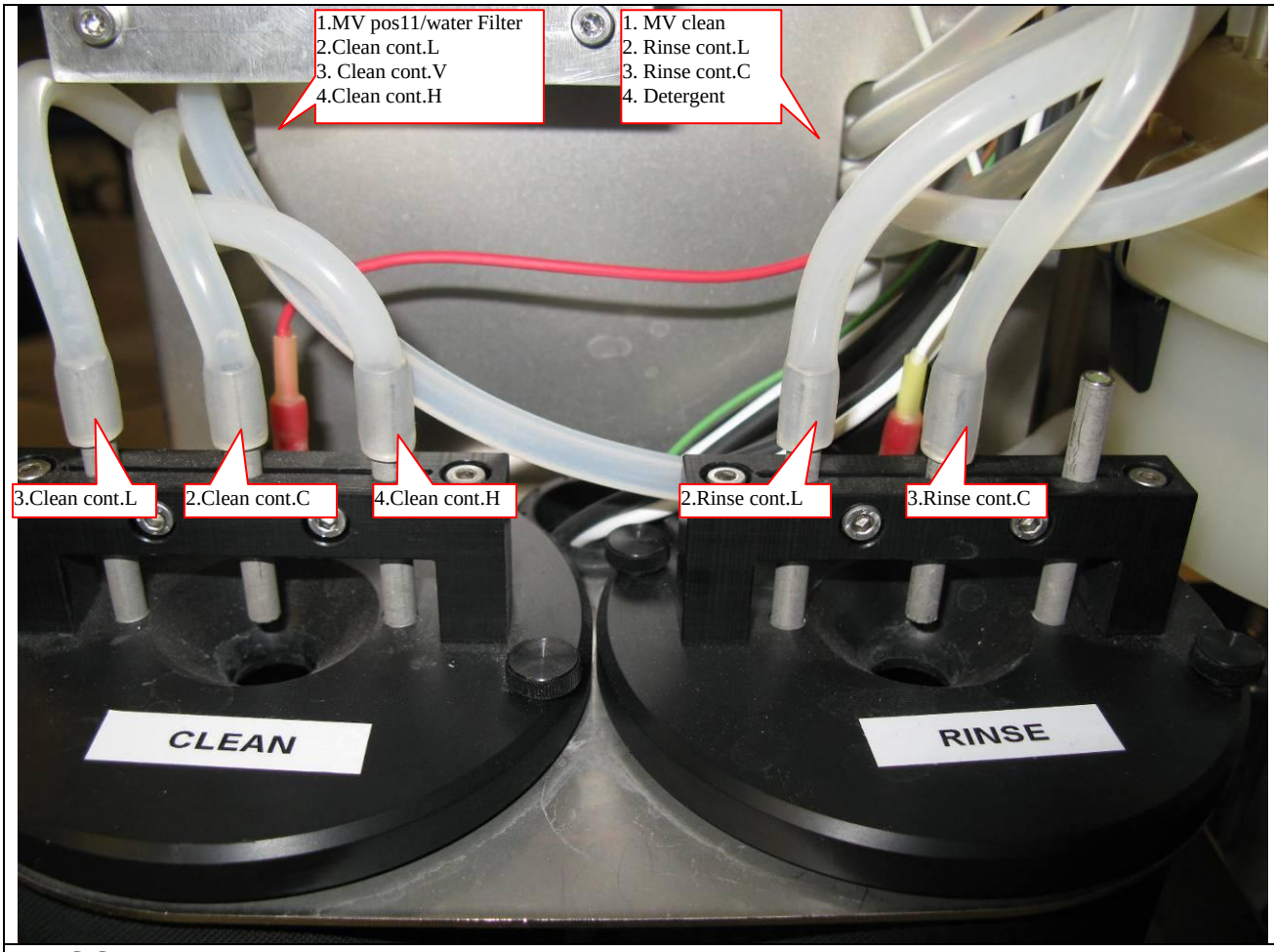
Test valve functions by using (4.2.5) “sampler test” on the AC. After this test the HN system should be reset (power off/on)

4.6 Replacing the CIP box in the Parlour/VMS Sample Intake (upgrade).



Parlor SI

1. Dismount and Replace SICIP box. All tubes and wires coming out of the old box are to be exchanged. Only exception is the detergent BD which is reused.
2. Connect tubes as shown above
3. Move the existing Detergent BD from old box to the new. BD is mounted directly on the 6mm silicone tube aprox. 50mm from the pump
4. Connect the electrical connectors to the controller board and strap the wires with cable ties.
5. Start SI and connect to it via Teraterm
6. In the menu “Service-simple functions-cip” (4.2.3) do:
   toggle “rinse water out” on/off (4.2.3.1) and observe if rinse container starts filling
   toggle “clean water out” on/off (4.2.3.3) and observe if clean container starts filling
   toggle “detergent pump” on/off (4.2.3.5) and observe if detergent is pumped to the clean container
7. For testing it is necessary to temporally change water temperature settings:
   In the menu “System config-CIP” (2.4) do:
   change setting for “clean temp” (1.2) to : 10 (default is 57)
   change setting for “rinse temp” (1.3) to : 10 (default is 40)
8. In the menu “maintenance” (1) do:
   “AI CIP” (1.2) and observe the cip and check that water is used from both rinse and clean container
9. In the menu “System config-CIP” (2.4) do:
   change setting for “clean temp” (1.2) back to : default (57)
   change setting for “rinse temp” (1.3) back to : default (40)
10. Reset the HN by unplug/replug the power



VMS SI

1. Dismount and Replace SICIP box. All tubes and wires coming out of the old box are to be exchanged. Only exception is the detergent BD which is reused.
2. Connect tubes as shown above
3. Move the existing Detergent BD from old box to the new. BD is mounted directly on the 6mm silicone tube aprox. 50mm from the pump
4. Connect the electrical connectors to the controller board and strap the wires with cable ties.
5. Start SI and connect to it via Teraterm
6. In the menu “Service-simple functions-cip” (4.2.3) do:
   toggle “rinse water out” on/off (4.2.3.1) and observe if rinse container starts filling
   toggle “clean water out” on/off (4.2.3.3) and observe if clean container starts filling
   toggle “detergent pump” on/off (4.2.3.5) and observe if detergent is pumped to the clean container
7. For testing it is necessary to temporally change water temperature settings:
   In the menu “System config-CIP” (2.4) do:
   change setting for “clean temp” (1.2) to : 10 (default is 57)
   change setting for “rinse temp” (1.3) to : 10 (default is 40)
8. In the menu “maintenance” (1) do:
   “AI CIP” (1.2) and observe the AI cip and check that water is used from both rinse and clean container
   MV CIP” (1.3) and observe the MV cip and check that water is coming from the nozzle in the bottom of the MV
9. In the menu “System config-CIP” (2.4) do:
   change setting for “clean temp” (1.2) back to : default (57)
   change setting for “rinse temp” (1.3) back to : default (40)
10. Reset the HN by unplug/replug the power

5 Appendices:

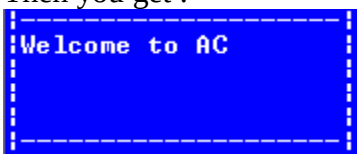
5.1 AC

5.1.1 Remote connection to AI or SI trough AC whit ethernet :

In windows, run telnet X.X.X.X where X.X.X.X is the IP address of the AC.

Login = Lattec password = Merkur

Then you get :



Pres M for Menu :

Press 4 for service menu.

Press 7 for Remote MMI

Enter the node address to acces (SI = 10, AI = 19)

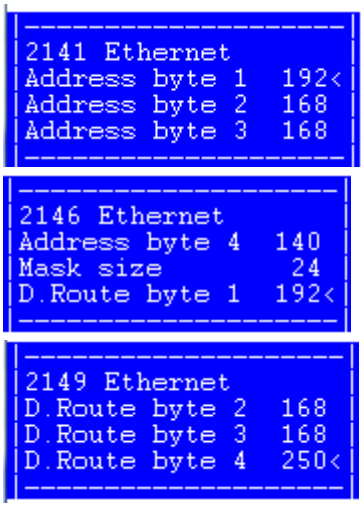
Now you are controlling the selected node address :

When finish, use H for home, 3 times, and you return to the AC.

5.1.2 AC basis settings IP address (Reset / New instalation) (VMS / Parlour)

Use the terminal whit the RS-232 cable to setup the IP:

To set the IP in the AC, you need the RS-232 cable, and use following menu 2-1-4 (System Config -> AC -> Ethernet) :



Address byte 1 to 4 is the IP address, in this example 192.168.168.140 on a VMS farms.

Mask size is the subnet :

16 = 255.255.0.0
24 = 255.255.255.0
28 = 255.255.255.240

D.route byte 1 to 4 is the IP nr. For the router / gateway, in this example 192.168.168.250

When IP-adresses of the AC and IP-adress of the Default Route is set, turn off the power, and remove the RS-232 cable.

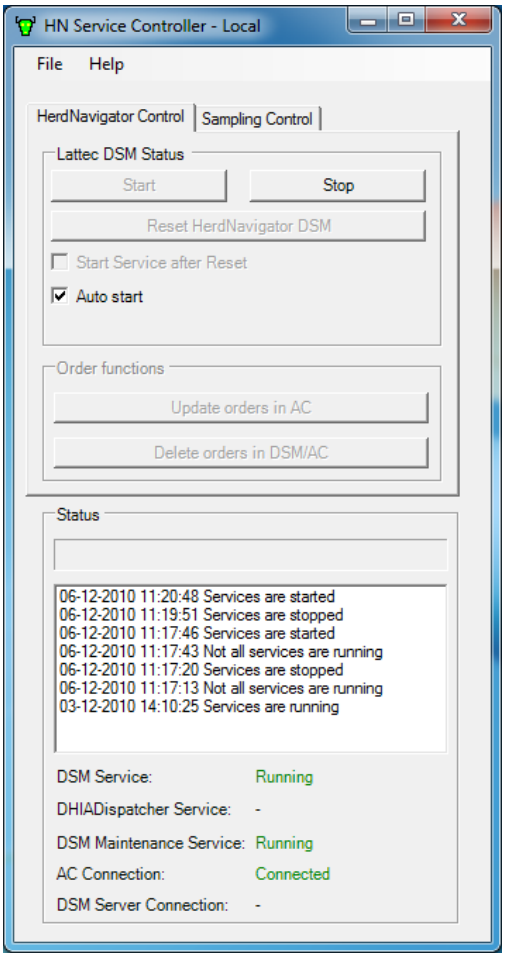
After power up all other settings is done whit the browser on the PC.

5.1.3 Update orders in AC / HN service controller.

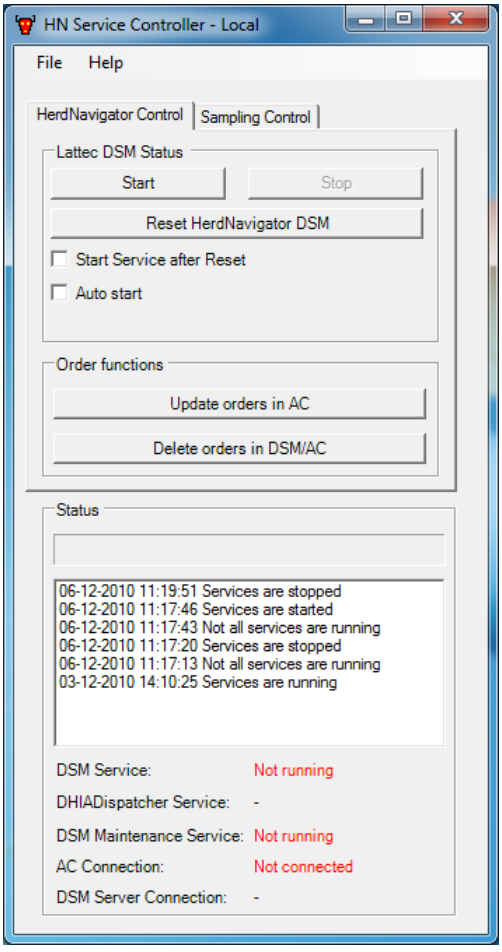
If the AC has been updated or replaced the orders send from the DSM has to be updated. This is done in the HN service controller program.

The DSM Service Controller program is started from the 'Start' folder. A '**green cow**' is seen in the taskbar if the HerdNavigator Services are running and a '**red cow**' is seen if it is not.
HerdNavigator Local: The DSM Service Controller controls the main DSM Service.
HerdNavigator Central: The DSM Service Controller controls the main DSM Service and the DHIADispatcher service.
Right click the cow icon in the taskbar and select 'Show' to show the application. If not opened at once use the 'ALT Tab' keys to select the application.

Service started.



Service stopped.



Follow these 3 steps to update orders in AC:

1: Stop Herd Navigator DSM:

The DSM Services are stopped by pressing the **Stop** button. A dialog asking "Disable Auto Start?" will be shown. Answer "Yes".

2: Update orders in AC:
Press the "**update orders in AC"** to Resend orders defined in the DSM to the AC.
(This feature is only enabled if the DSM services are stopped)

3: Start Herd Navigator DSM:
The DSM Services are started again by pressing the **Start** button. A dialog asking "Enable Auto Start?" will be shown. Answer "Yes".
Check that the service is running, ("**green cow**") and that the "enable auto start" is checked.

IMPORTANT: **Never** press the "delete orders in DSM/AC, as this will delete all calculated orders.

5.2 Updating firmware in HN Units

5.2.1 Tools Needed :

1. RS-232 Cable (Not a Null modem cable) or USB->RS232 converter cable.
2. HexLoad http://www.segger.com/cms/downloads.html?pid=30 (This guide use version 3.00h but newer will do).

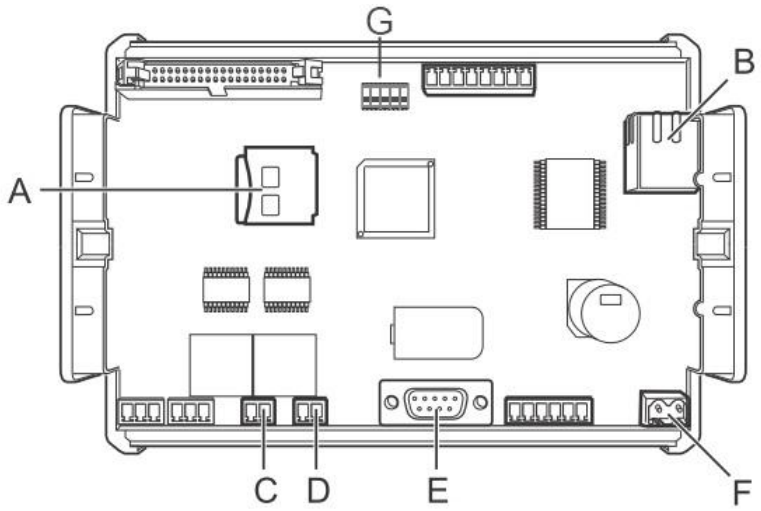
5.2.2 Preparation and Connection to the Unit

Generally the three main units in the Herd Navigator system, AC, AI and SI are programmed with the same tools and in the same way. The only differences between the three are the connection of the serial cable and the location of the DIP switches on the boards.

1. Turn **off** power to the Unit.
2. Connect the RS232 cable from PC to Unit.
3. Check that all DIP switches on the Unit is in position OFF
4. Turn on power to the Unit.

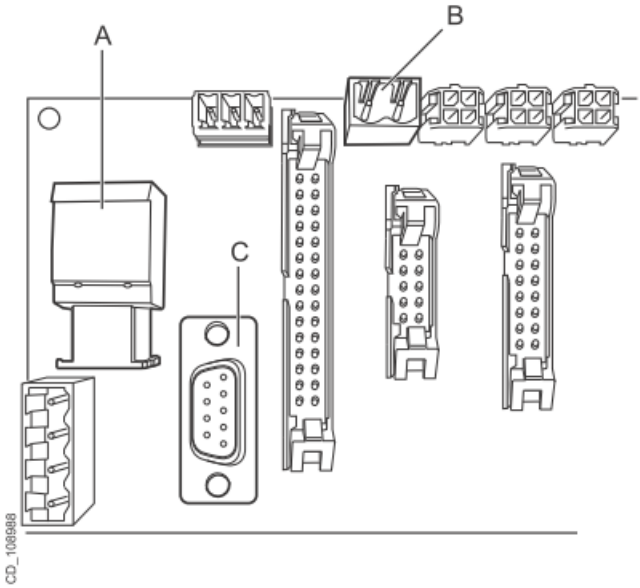
5.2.2.1 AC connections

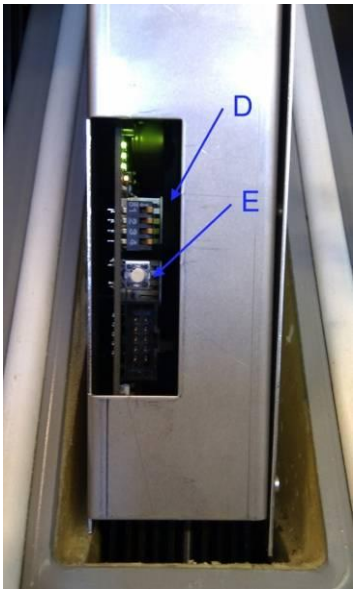
The serial RS232 connector is located at **E**.
The DIP switch block is located at **G**.



5.2.2.2 AI connections

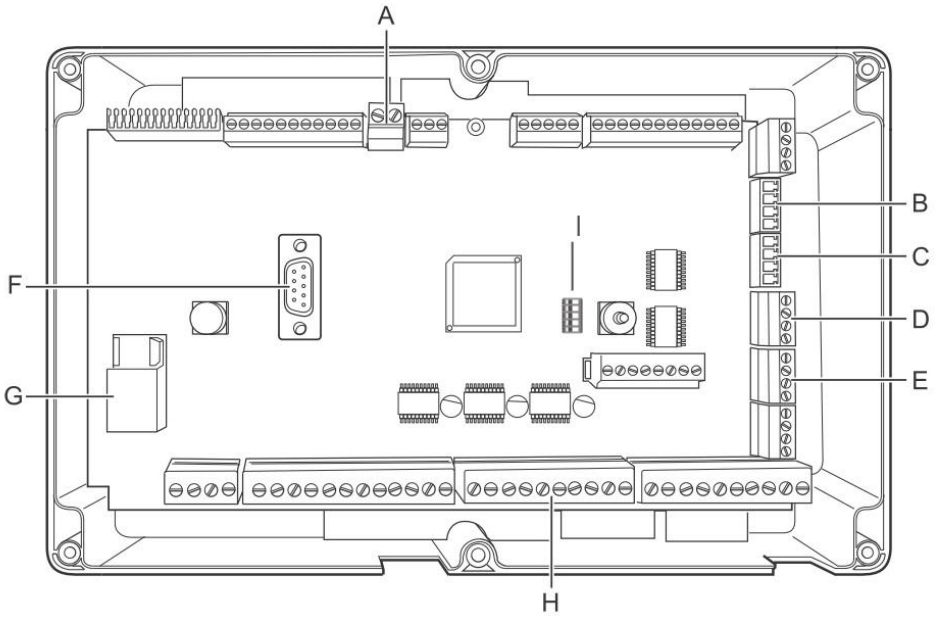
The serial RS232 connector is located at **C**.
The DIP switch block is located at **D**.





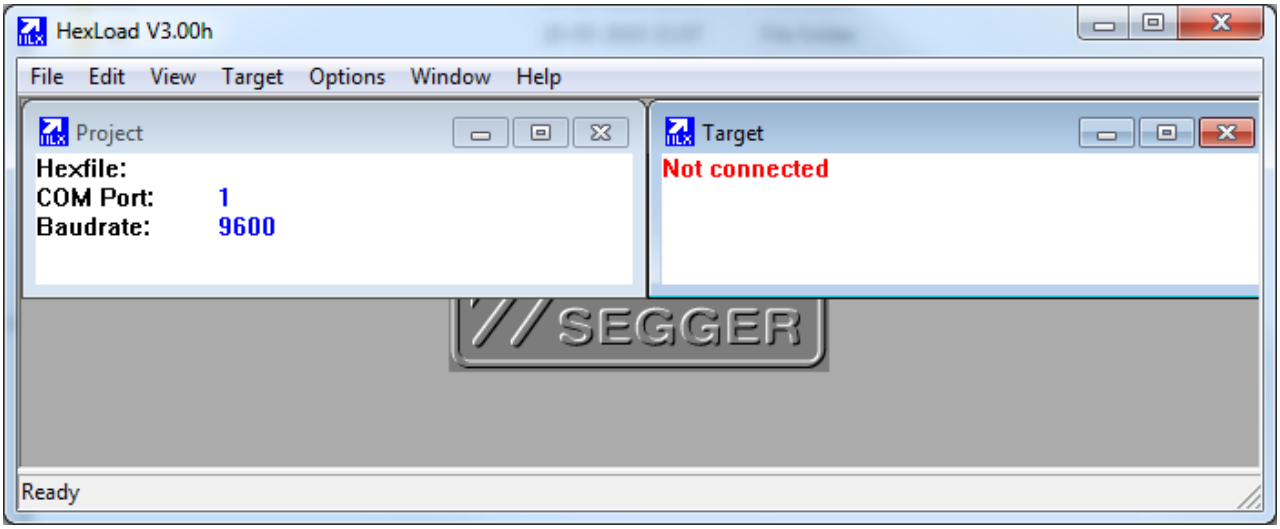
5.2.2.3 SI connections

The serial RS232 connector is located at **F**.
The DIP switch block is located at **I**.

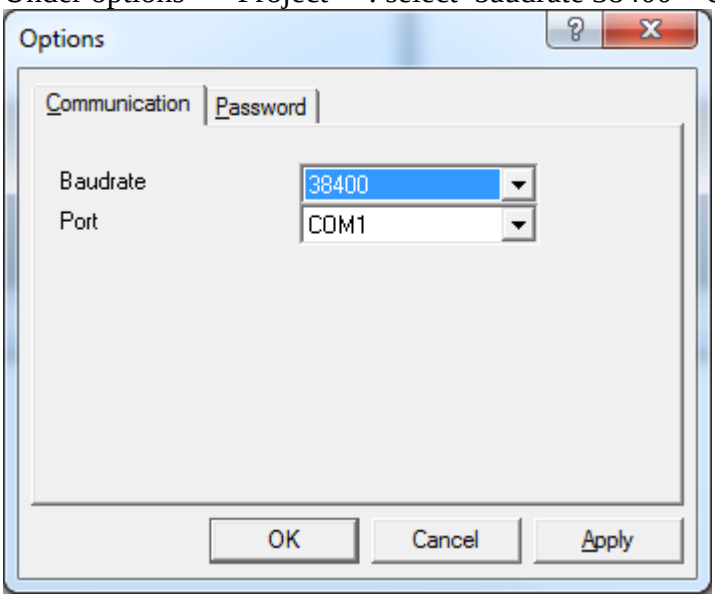


5.2.3 Programming the Unit

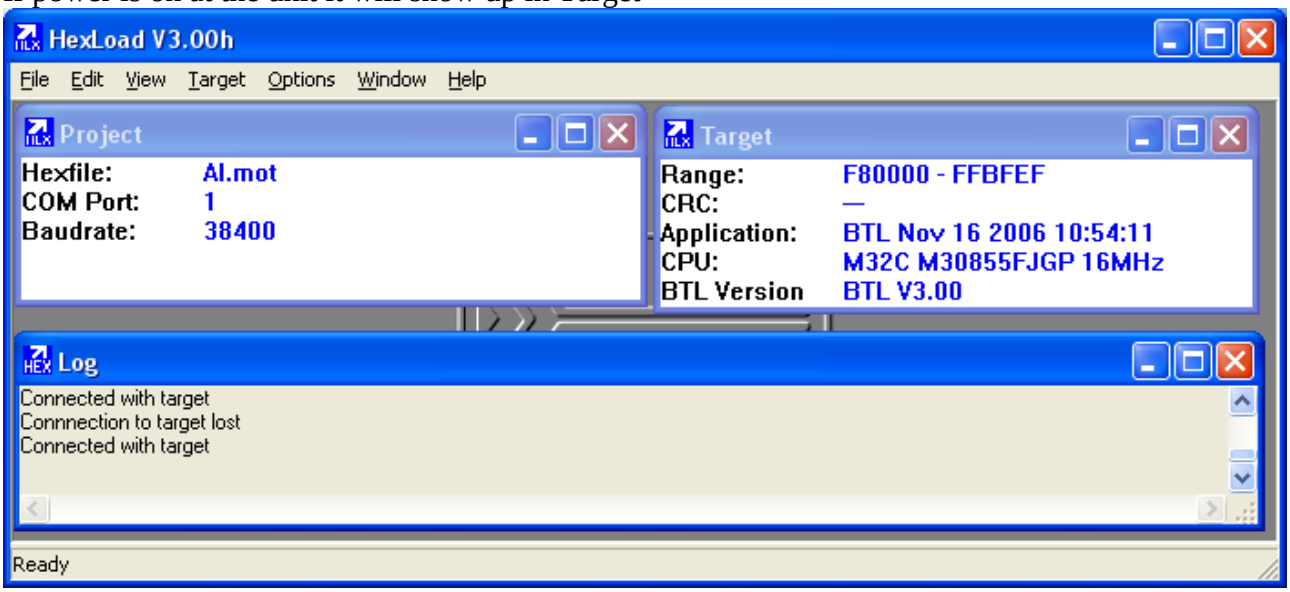
Start Hex loader program version 3.00h.



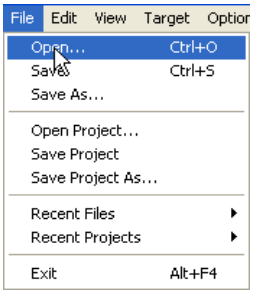
Under options - > Project : select baudrate 38400 + comport used.



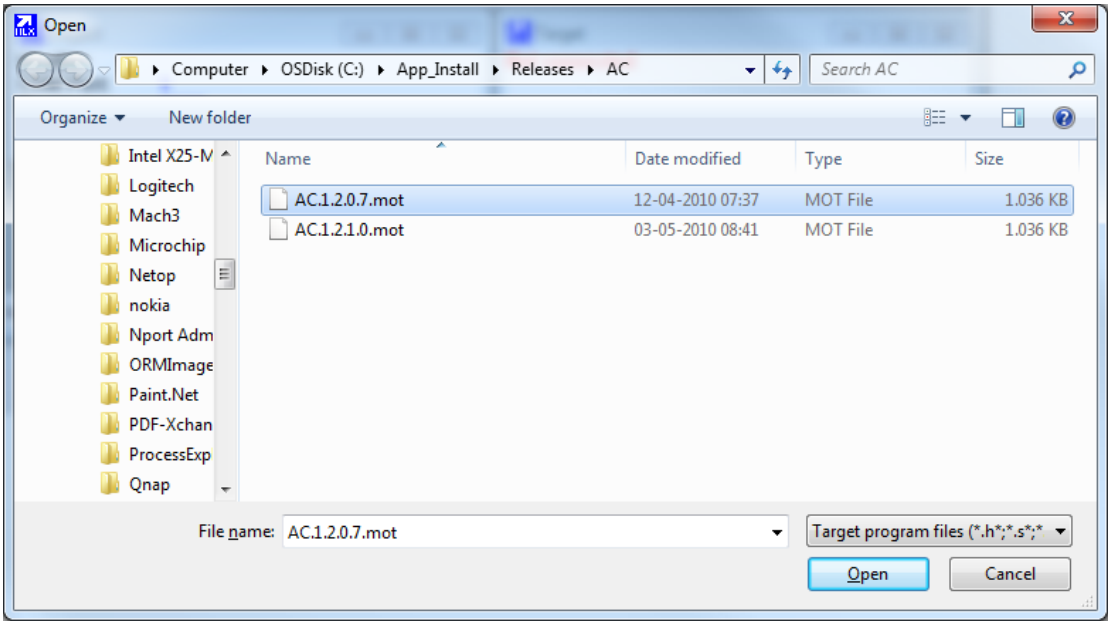
If power is on at the unit it will show up in Target



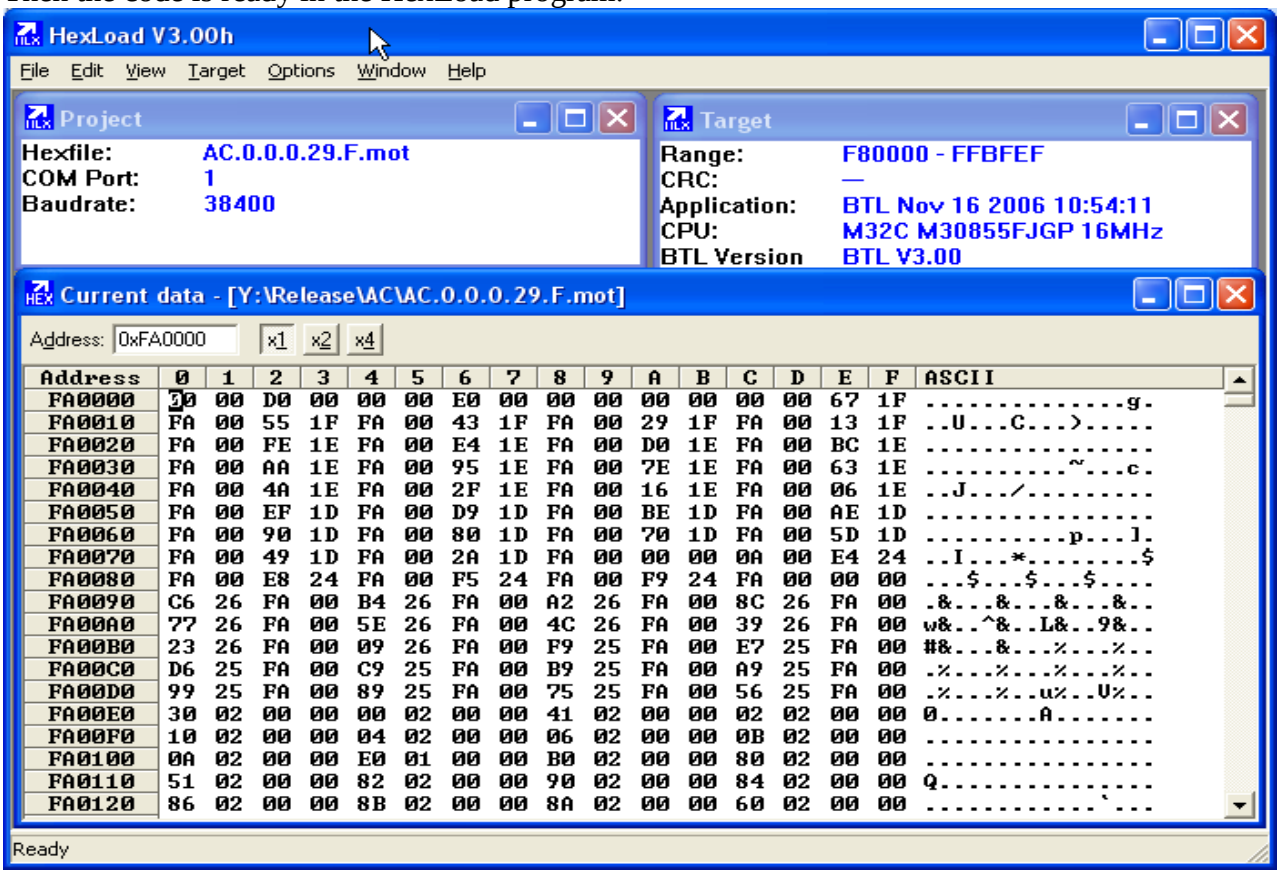
Then Open file from the File Menu.



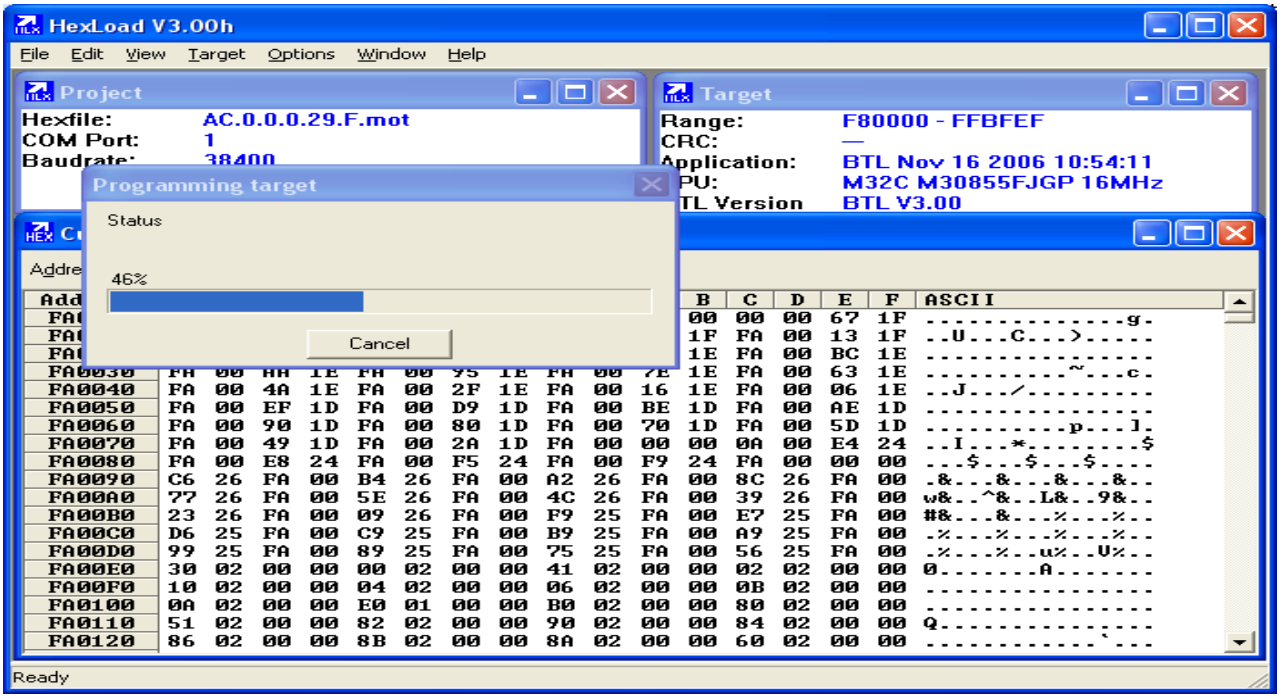
Chose the latest software version for the given unit (AC,SI,AI).



Then the code is ready in the HexLoad program.



Push F9 button or choose auto in the Target Menu.
When programming the status line is displayed.



When the programming and check is done, click OK.

When turning off the HexLoad program the Unit board starts running (Flashing LED) again.

Remember to check that the Farm dependent settings still are correct, or else correct them.

5.3 *Updating the AC, AI, or SI boards with new version of the bootloader.*

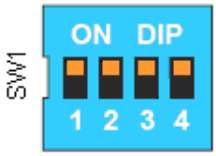
(If the M16C Flasher program isn't installed, refer to the installation guide at the end of this chapter)

This procedure is identical for the AC, AI and SI units, however the Code-file itself is different for the units. Be sure always to use the latest released file.

Step 1: Turn the power to the unit off.

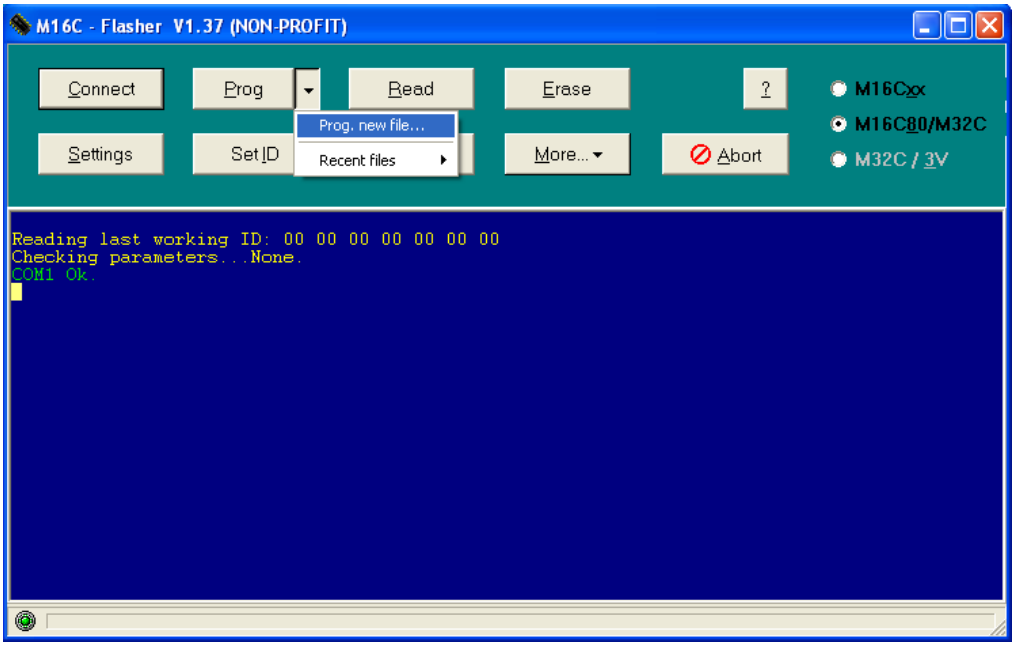
Step 2: Connect the PC to the unit with a RS232 serial cable

Step 3: Open the M16C flasher program.

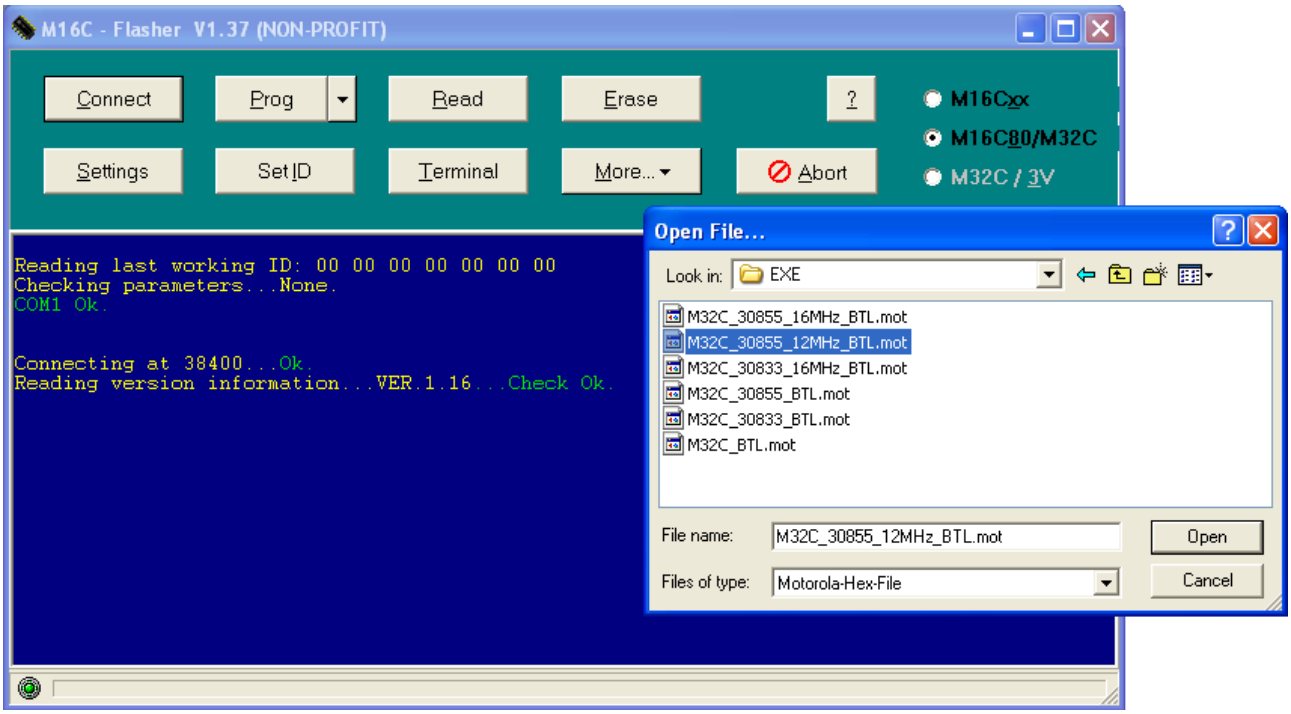


Step 4 : Set the DIP switch on the board with all switches set to ON. (as shown on the figure).

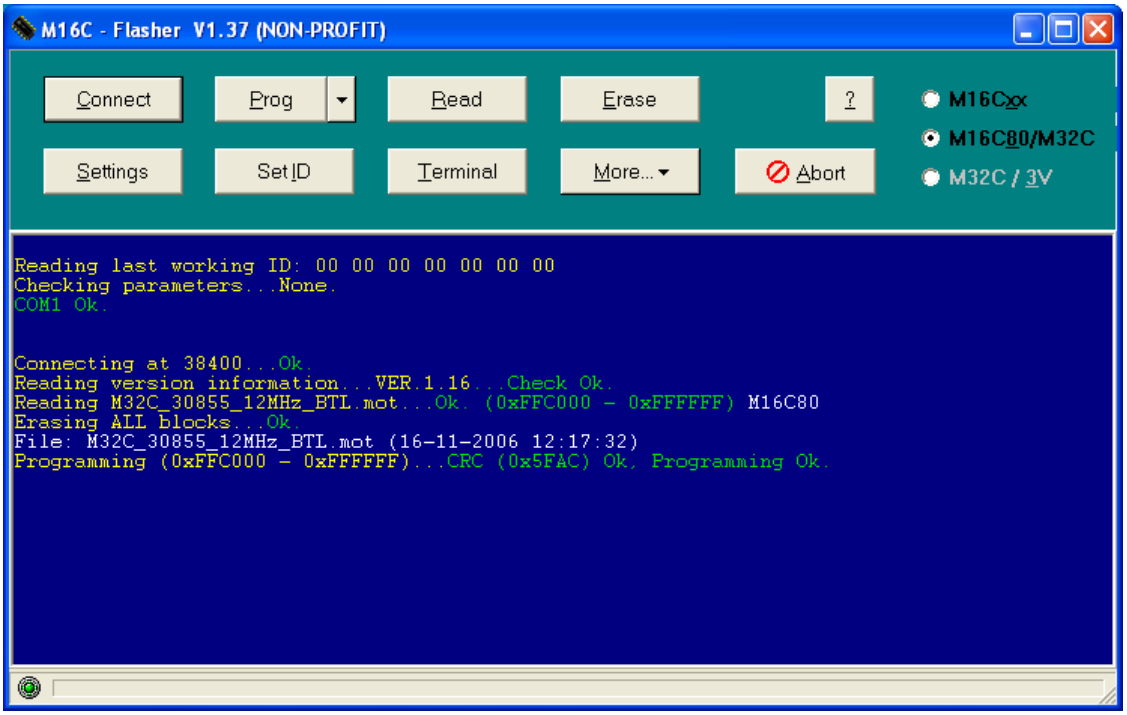
Step 5: Turn the power to the unit ON.



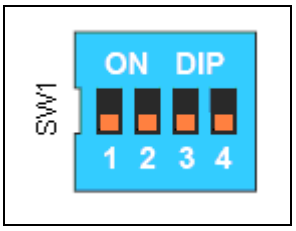
Step 6: Click the arrow on the "Prog" button and select "prog. new file."



Step 7: Select the file with the latest released version of the code, and press open. (filename here is just for illustration).



Step 8: Wait until the programming is finished and the "Programming Ok" is displayed.

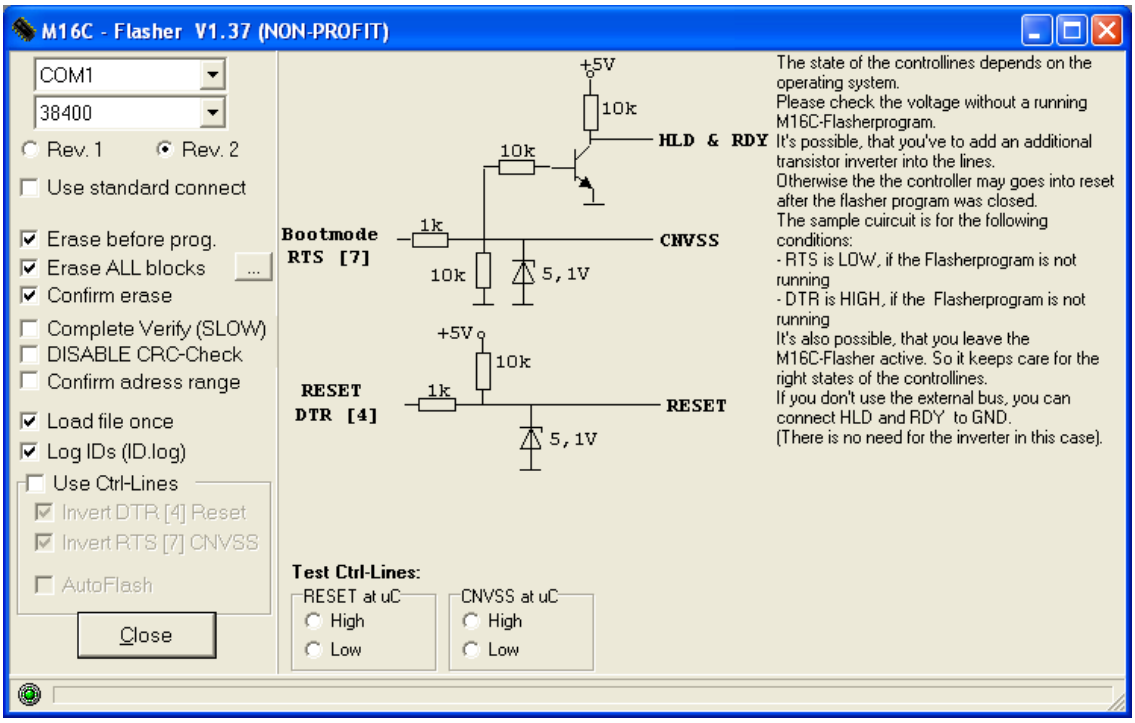


Step 9 : Set the DIP switch on the board with all switches set to OFF.(normal operation mode) (as shown on the figure).

The procedure is now finished and the board is now ready for firmware download. Refer to chapter 5.2 updating firmware in the HN units.

Installation guide to the M16C Flasher program, if not installed on the PC.

Run the M16C Flasher version 1.37 installations program. Click the "Settings" button and apply the settings as shown in this figure.



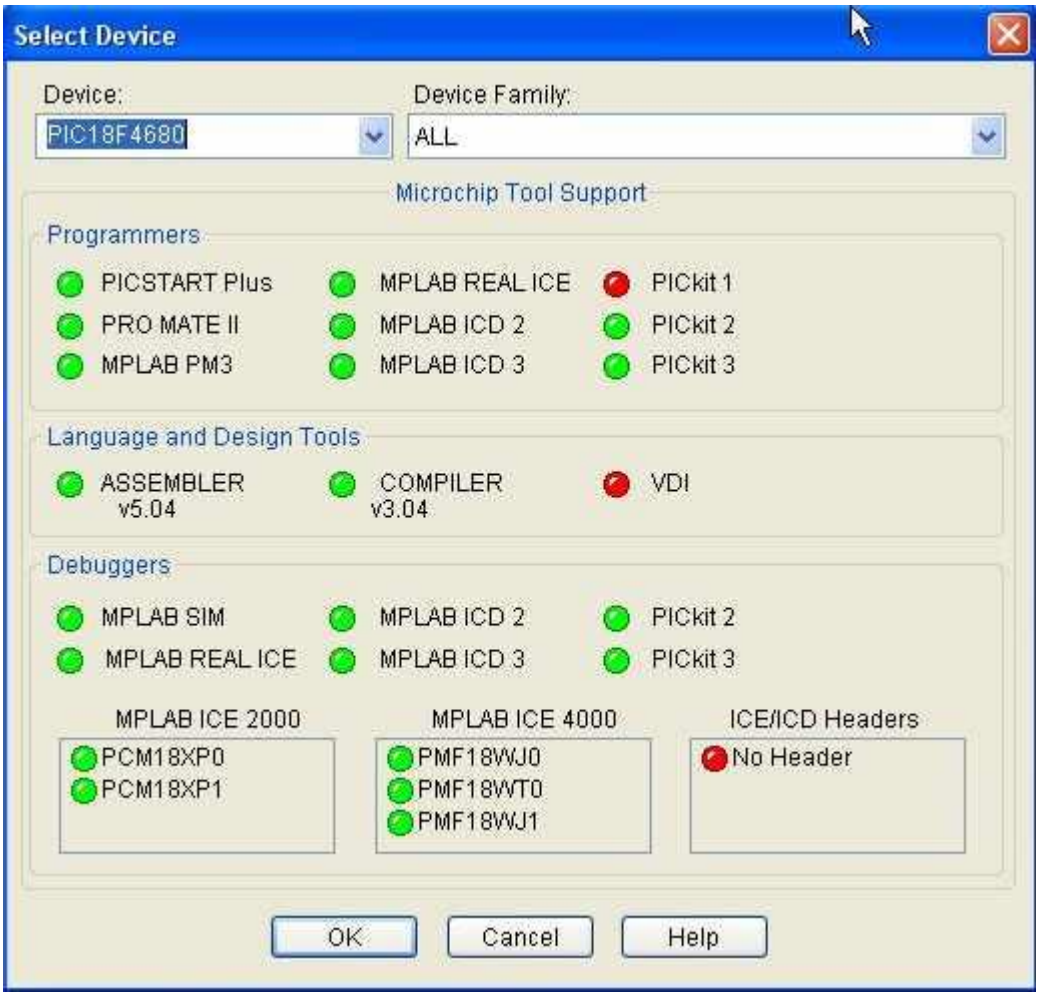
5.4 Sampler programming guide :

Tools needed :

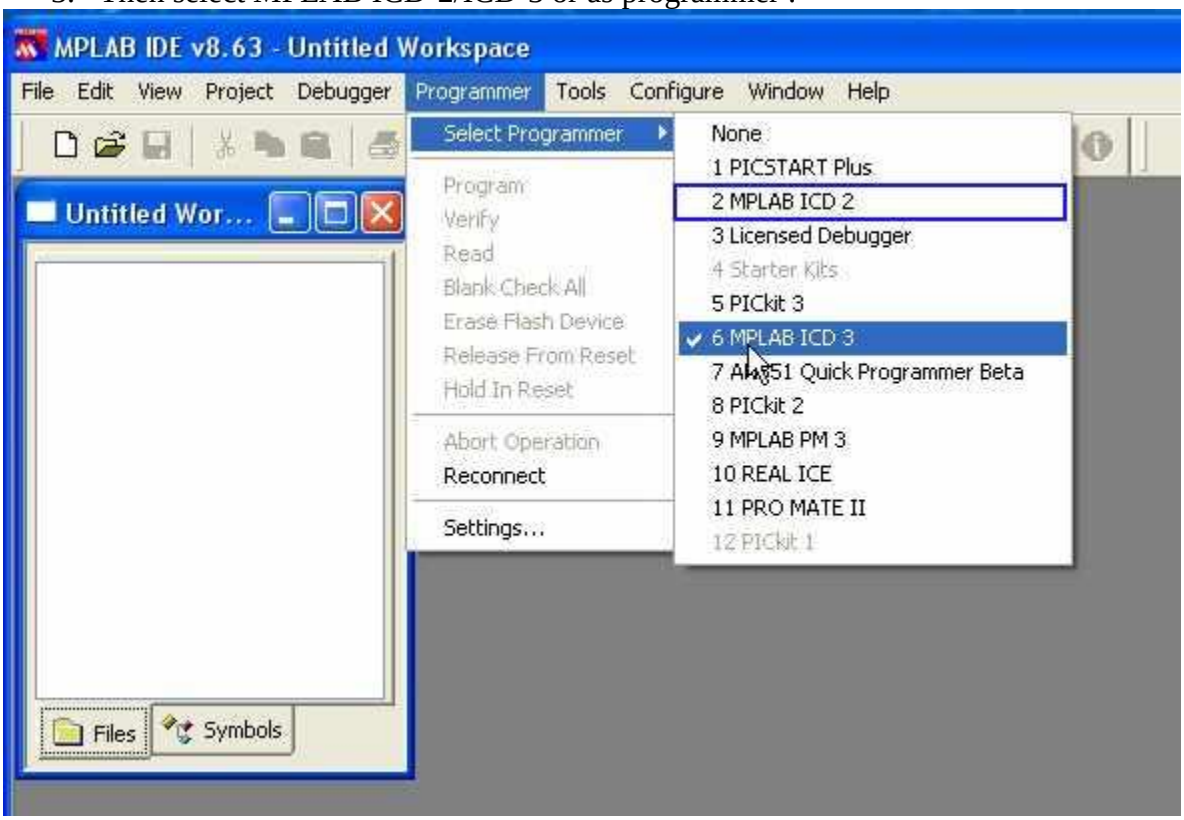
1. Microcchip ICD-2 or ICD-3
2. MPLAB IDE from www.microchip.com (this guide use version 8.xx)

1. Connect the MPLAB ICD-2/ICD-3 to the PC.

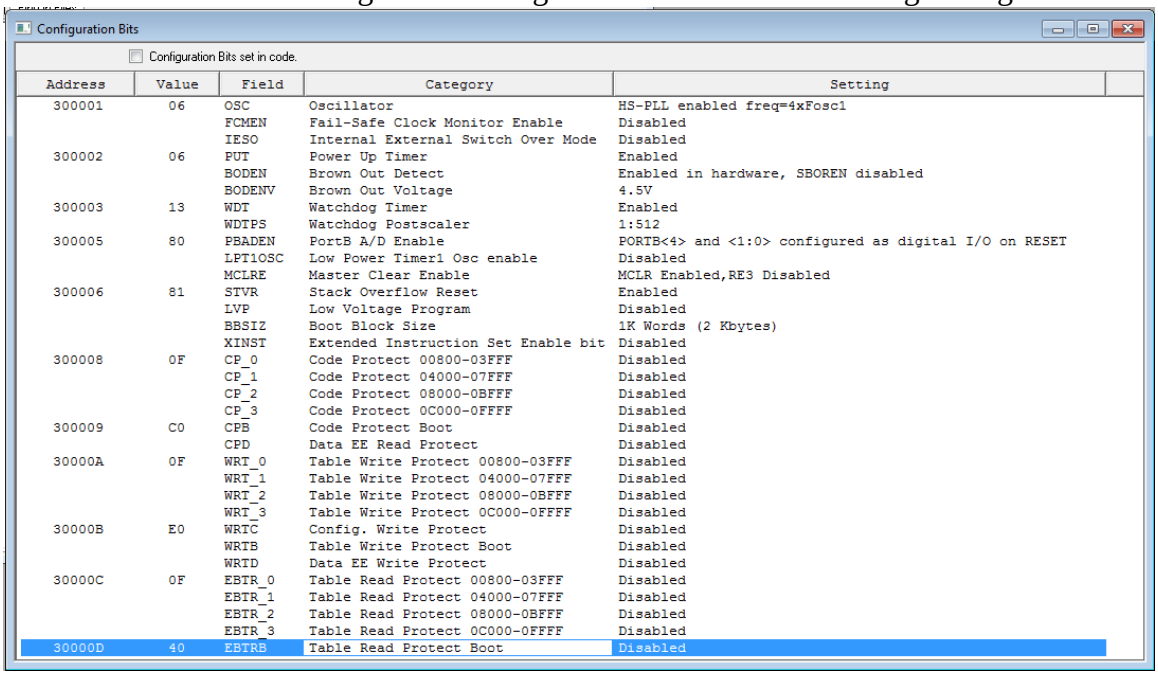
2. Start the MPLAB IDE program, and select the menu : Configure -> Select Device , and chose PIC18F4680 :



3. Then select MPLAB ICD-2/ICD-3 or as programmer :

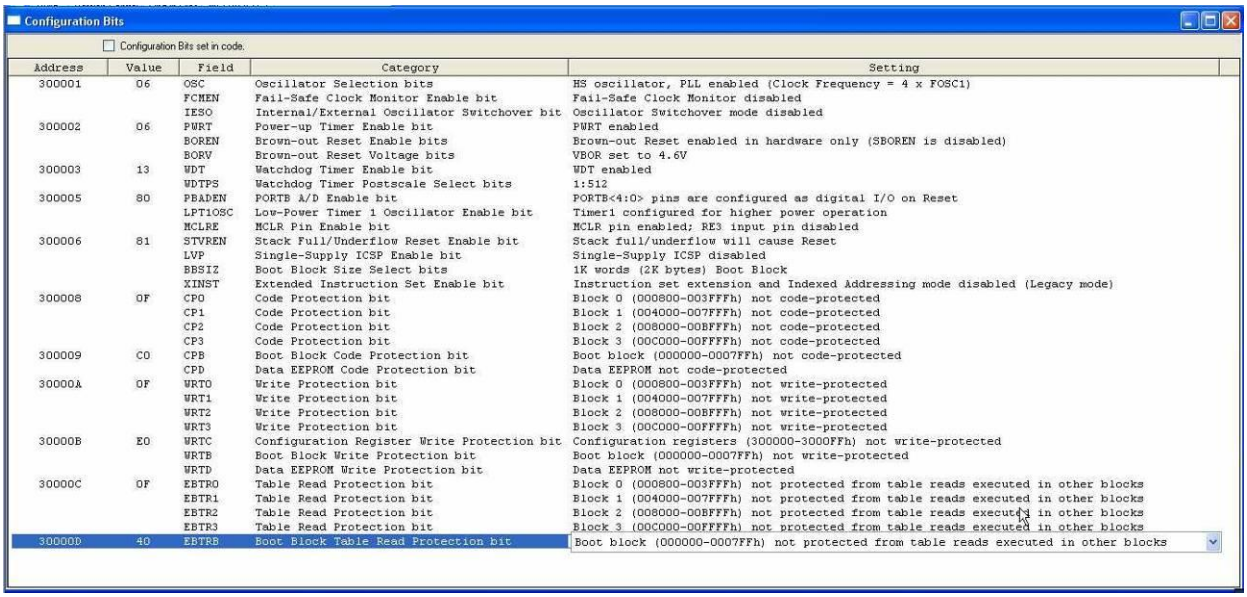


4. Then in menu Configure -> Configuration Bits select following settings for ICD-2:

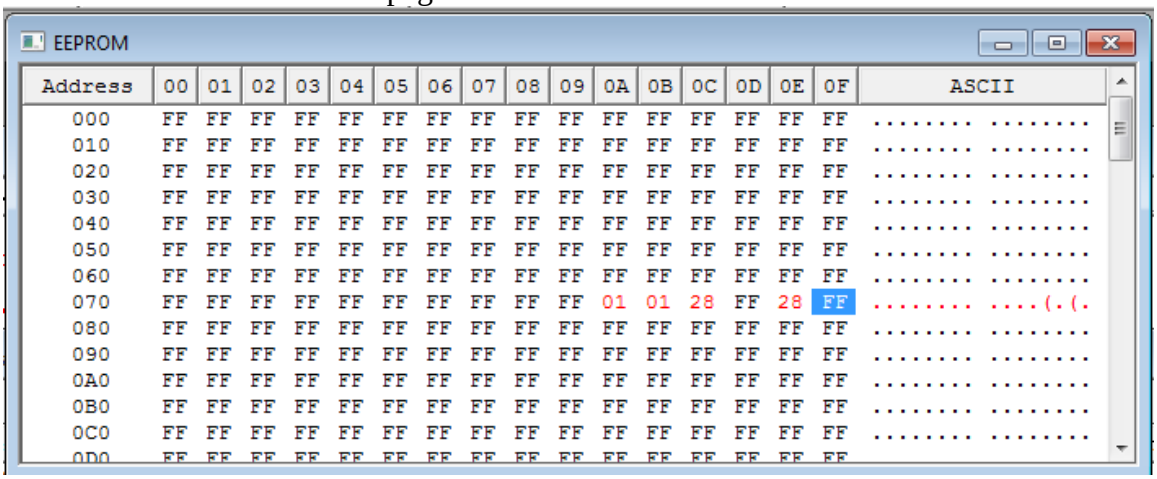


Address	Value	Field	Category	Setting
300001	06	OSC	Oscillator	HS-PLL enabled freq=4xFosc1
		FCMEN	Fail-Safe Clock Monitor Enable	Disabled
		IESO	Internal External Switch Over Mode	Disabled
300002	06	PUT	Power Up Timer	Enabled
		BODEN	Brown Out Detect	Enabled in hardware, SBOREN disabled
		BODENV	Brown Out Voltage	4.5V
300003	13	WDT	Watchdog Timer	Enabled
		WDTPS	Watchdog Postscaler	1:512
300005	80	PBADEN	PortB A/D Enable	PORTB<4> and <1:0> configured as digital I/O on RESET
		LPT1OSC	Low Power Timer1 Osc enable	Disabled
		MCLRE	Master Clear Enable	MCLR Enabled,RE3 Disabled
300006	81	STVR	Stack Overflow Reset	Enabled
		LVP	Low Voltage Program	Disabled
		BBSIZ	Boot Block Size	1K Words (2 Kbytes)
		XINST	Extended Instruction Set Enable bit	Disabled
300008	0F	CP_0	Code Protect 00800-03FFF	Disabled
		CP_1	Code Protect 04000-07FFF	Disabled
		CP_2	Code Protect 08000-0BFFF	Disabled
		CP_3	Code Protect 0C000-0FFFF	Disabled
300009	C0	CPB	Code Protect Boot	Disabled
		CPD	Data EE Read Protect	Disabled
30000A	0F	WRT_0	Table Write Protect 00800-03FFF	Disabled
		WRT_1	Table Write Protect 04000-07FFF	Disabled
		WRT_2	Table Write Protect 08000-0BFFF	Disabled
		WRT_3	Table Write Protect 0C000-0FFFF	Disabled
30000B	E0	WRTC	Config. Write Protect	Disabled
		WRTB	Table Write Protect Boot	Disabled
		WRTD	Data EE Write Protect	Disabled
30000C	0F	EBTR_0	Table Read Protect 00800-03FFF	Disabled
		EBTR_1	Table Read Protect 04000-07FFF	Disabled
		EBTR_2	Table Read Protect 08000-0BFFF	Disabled
		EBTR_3	Table Read Protect 0C000-0FFFF	Disabled
30000D	40	EBTRB	Table Read Protect Boot	Disabled

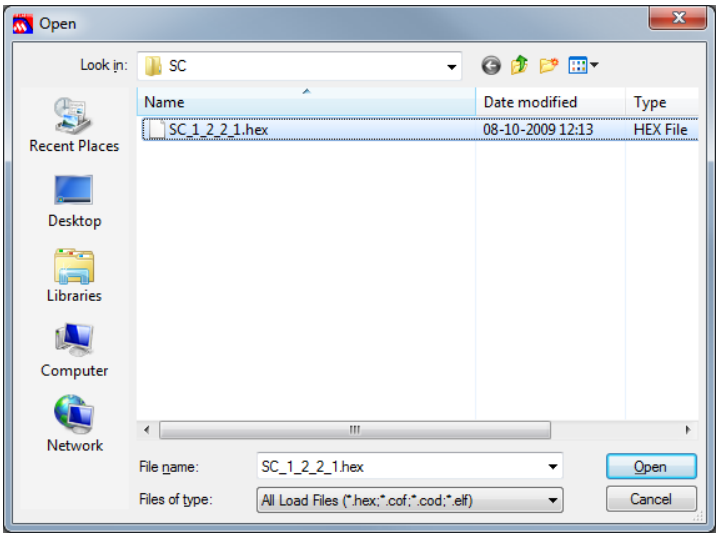
And for ICD-3:



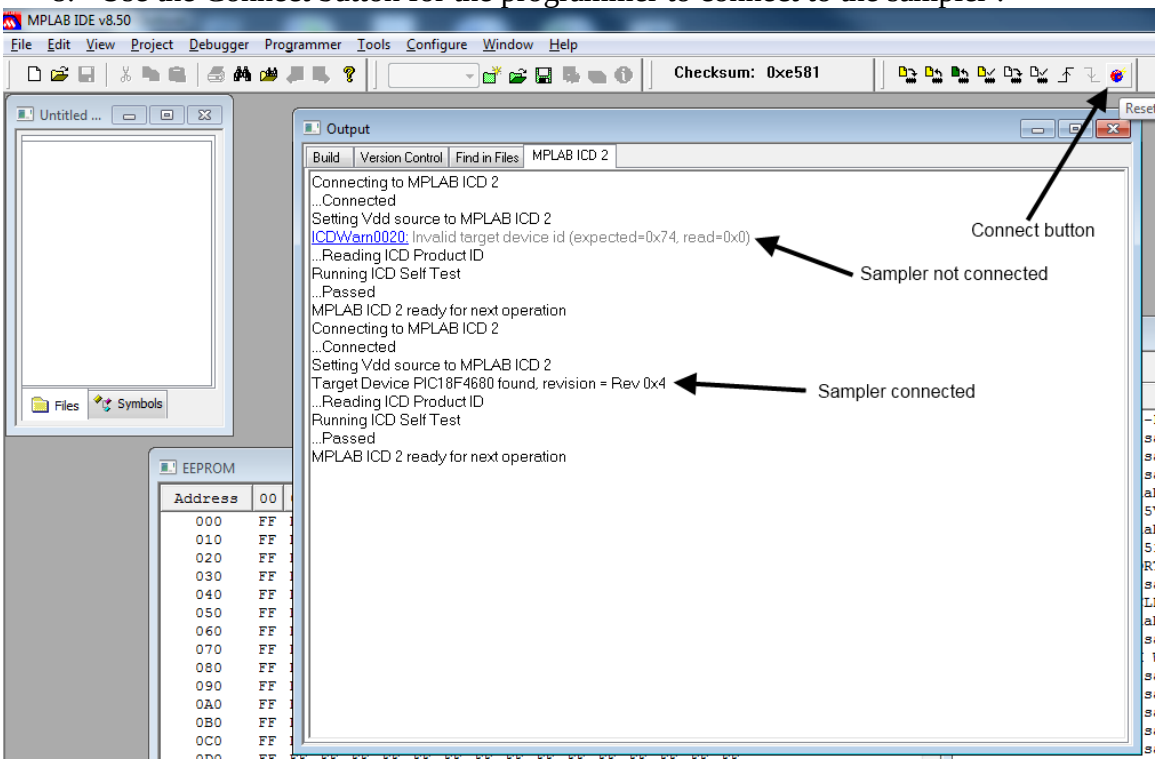
5. Then open menu View -> EEPROM and write 01 at 7A and 7B, and put in the samplers address at 7C and 7E using HEX numbers (in the example it is sampler 40 = 28Hex) conversion table is on page 98 :



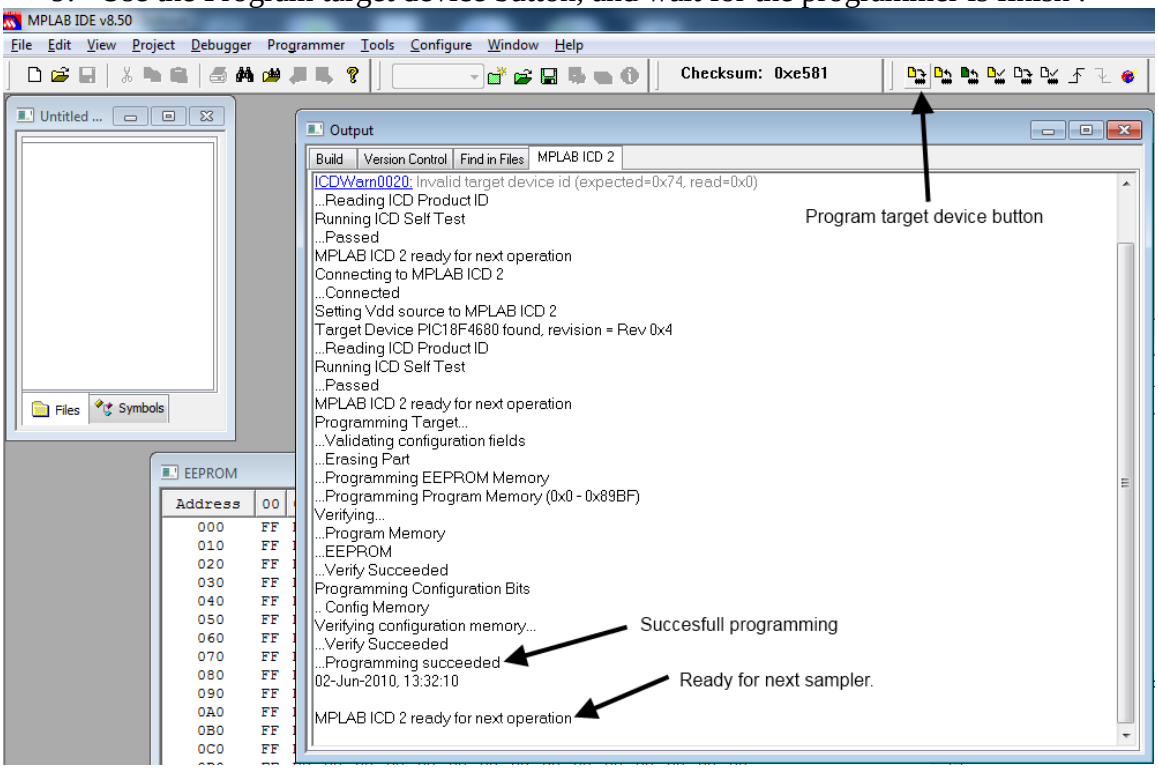
6. Then open menu File -> Import and select the new software to program :


Open
Look in:
SC
Name
Date modified
Type
SC_1_2_2_1.hex
08-10-2009 12:13
HEX File
Recent Places
Desktop
Libraries
Computer
Network
File name:
SC_1_2_2_1.hex
Open
Files of type:
All Load Files (*.hex;*.cof;*.cod;*.elf)
Cancel

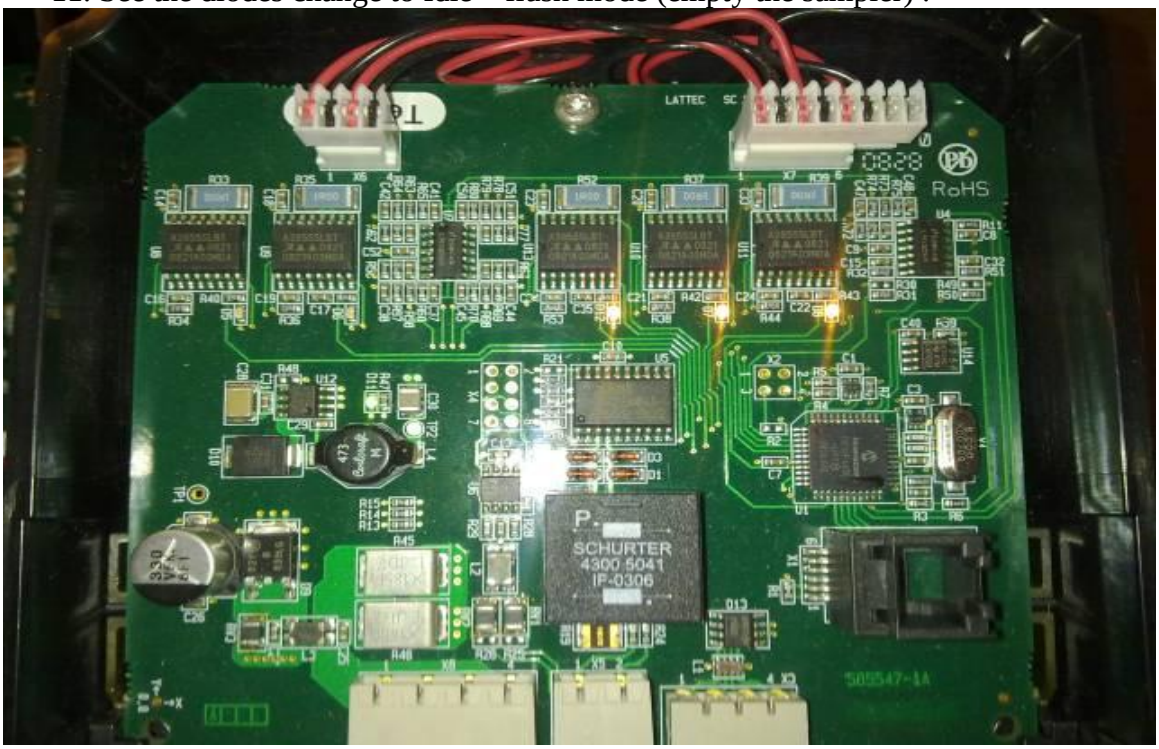
7. Connect the ICD-2 programmer to the sampler
8. Use the Connect button for the programmer to connect to the sampler :



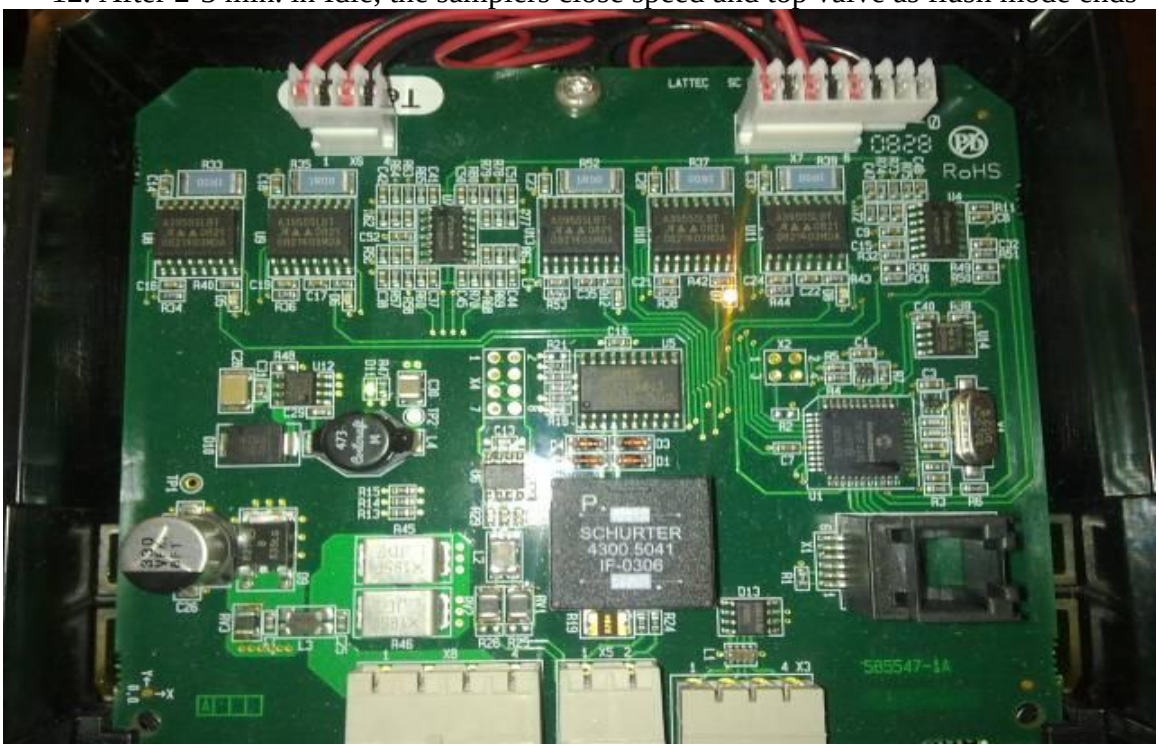
9. Use the Program target device button, and wait for the programmer is finish :



10. After successful programming, disconnect programmer from sampler.
11. See the diodes change to Idle – flush mode (empty the sampler) :



12. After 2-3 min. in Idle, the samplers close speed and top valve as flush mode ends



13. Then if more samplers needs to be programmed, change address (nr. 5) and program the new sampler (nr. 7-12).

14. After end programming, turn off all the power for 2-3min, and power HN up again.
15. For a last checkup, use the AC to see if all samplers is online on the Alcom bus in menu : Information -> AC Information -> Alcom (3->1->2)

5.4.1 Decimal - hexadecimal conversion table

Dec	Hex
40	28
41	29
42	2a
43	2b
44	2c
45	2d
46	2e
47	2f
48	30
49	31
50	32
51	33
52	34
53	35
54	36
55	37
56	38
57	39
58	3a
59	3b

Dec	Hex
60	3c
61	3d
62	3e
63	3f
64	40
65	41
66	42
67	43
68	44
69	45
70	46
71	47
72	48
73	49
74	4a
75	4b
76	4c
77	4d
78	4e
79	4f

5.5 Updating FPGA software on HN2 AI

Needed software and tools :
USB-Blaster from Van Tool Kit.
Quartus II Programmer Version 10.1 SP 1 from Altera.
Software can be downloaded from :
https://www.altera.com/download/programming/quartus2/pq2-index.jsp

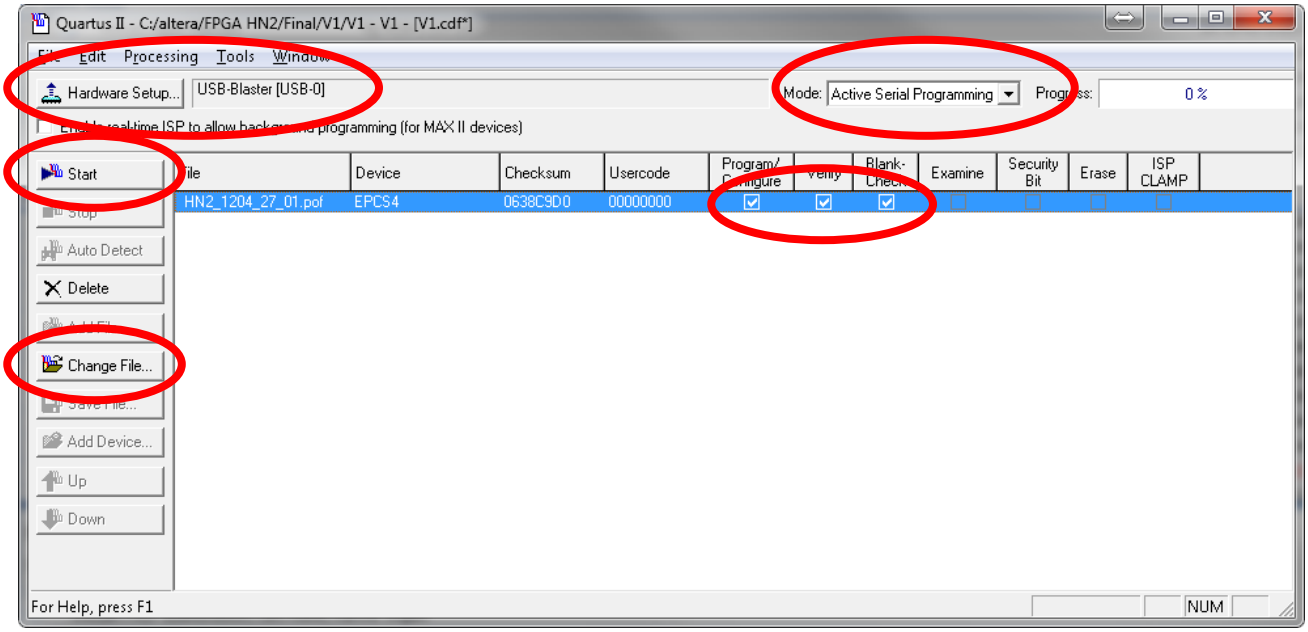
WARNING : The USB Blaster must be disconnected from the USB cable when connected and disconnected to AI, else there is high change for burning the board.

First Time use :

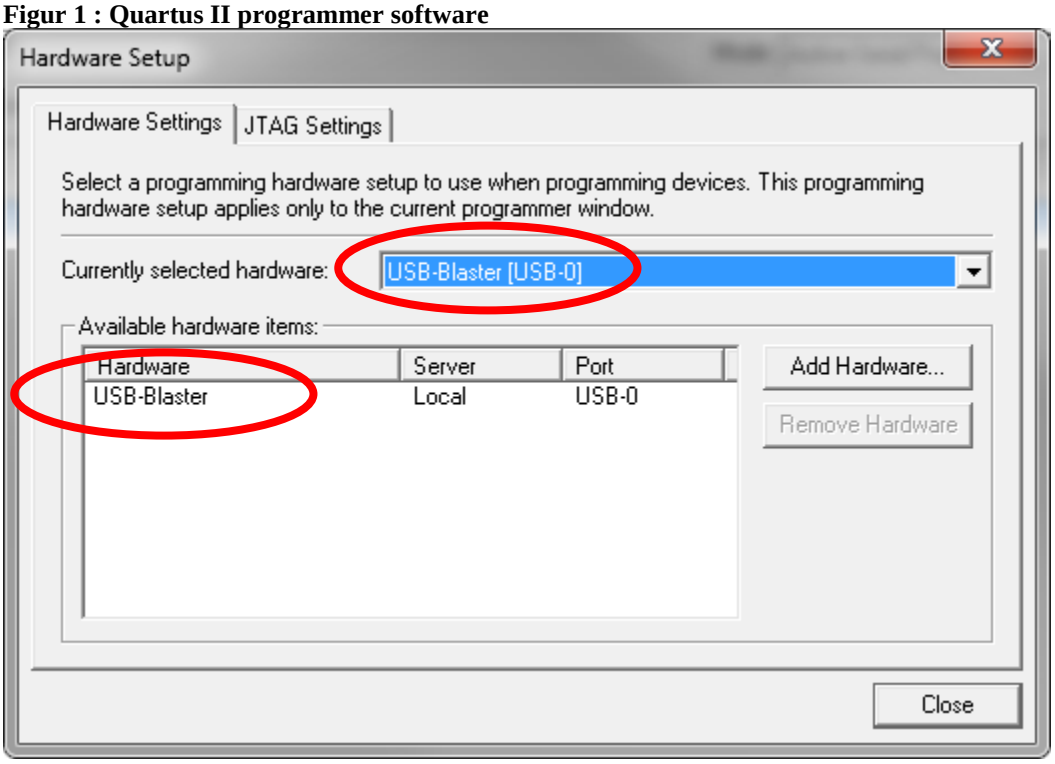
1. Install software.
2. Inset USB-Blaster to USB port, and install driver (Driver files is where the program is installed).
3. Remove USB Cable from USB Blaster.

Programming :

1. Start Altera Programmer software.
4. Chose ”Active Serial Programming” Mode. (Figur 1)
5. Chose ”USB-Blaster” In the Hardware Setup Menu (Figur 2)
6. Chose ”Change File” and select the software to be programmed (Figur 1)
7. Select the 3 flags : Program / Verify / Blank Check.
8. Connect the USB-Blaster in AI (WARNING – mount whiteout USB Cable first).(Figur 3)
9. Plug-in USB Cable to USB-Blaster, and then the PC. (Figur 4)
10. Press ”Start”. (Figur 1)
11. When AI startup again, and Progress bar is 100% the FPGA is programmed.
12. Remove USB Cable first.
13. Disconnect the USB-Blaster.
14. You are done.

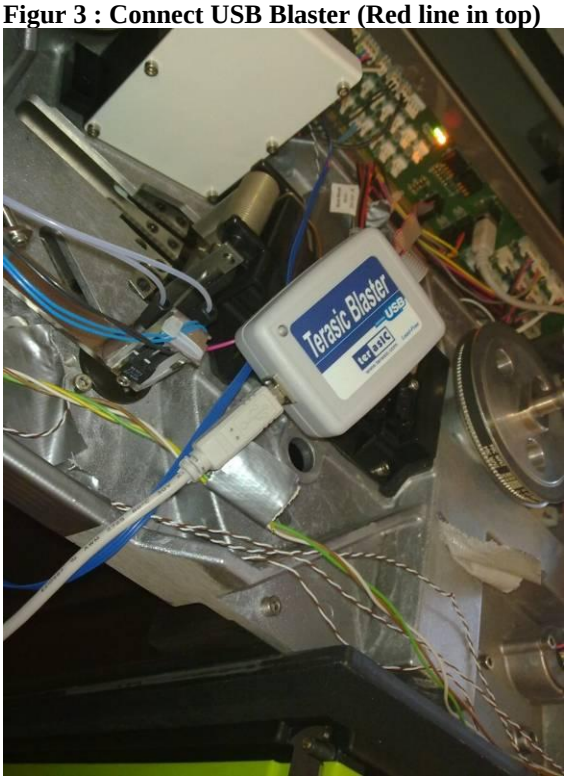


Figur 1 : Quartus II programmer software



Figur 2 : Hardware settings

Figur 3 : Connect USB Blaster (Red line in top)

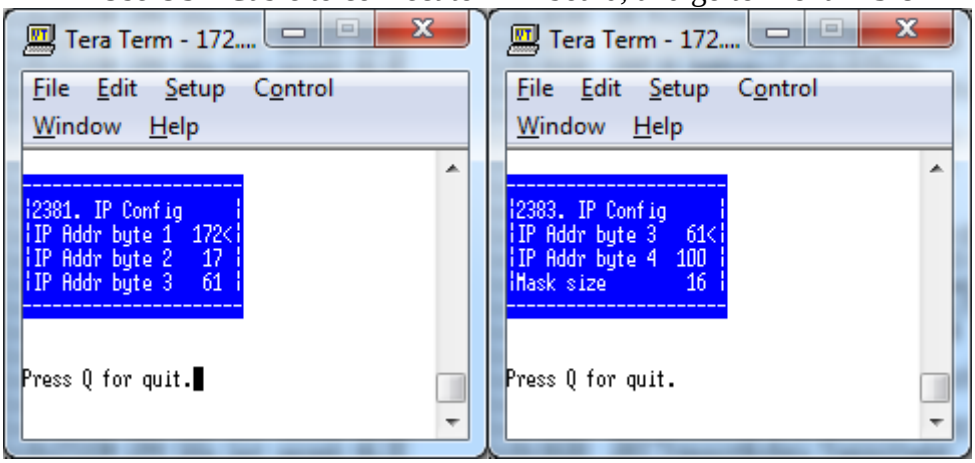


Figur 4 : WARNING - Connect USB cable LAST.

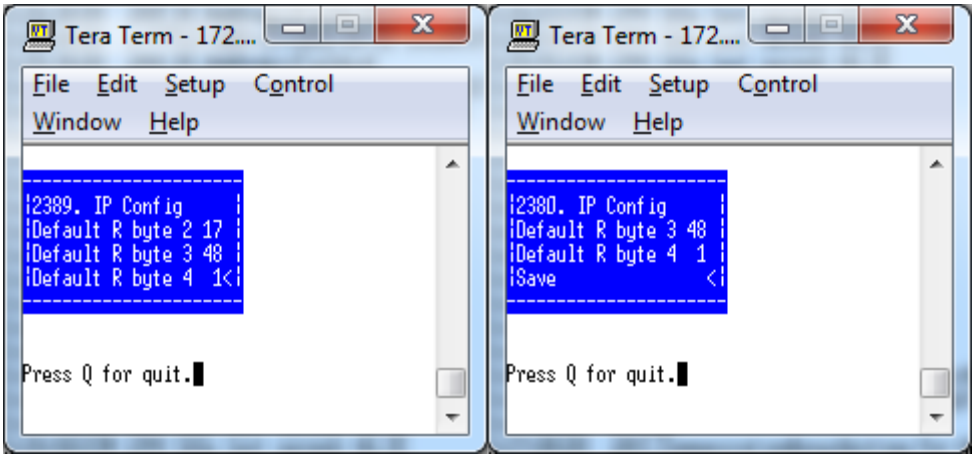
5.6 HN2 AI startup settings.

5.6.1 Step 1 : Connect AI to the Ethernet.

Use USB Cable to connect to AID board, and go to Menu 2-3-8-1

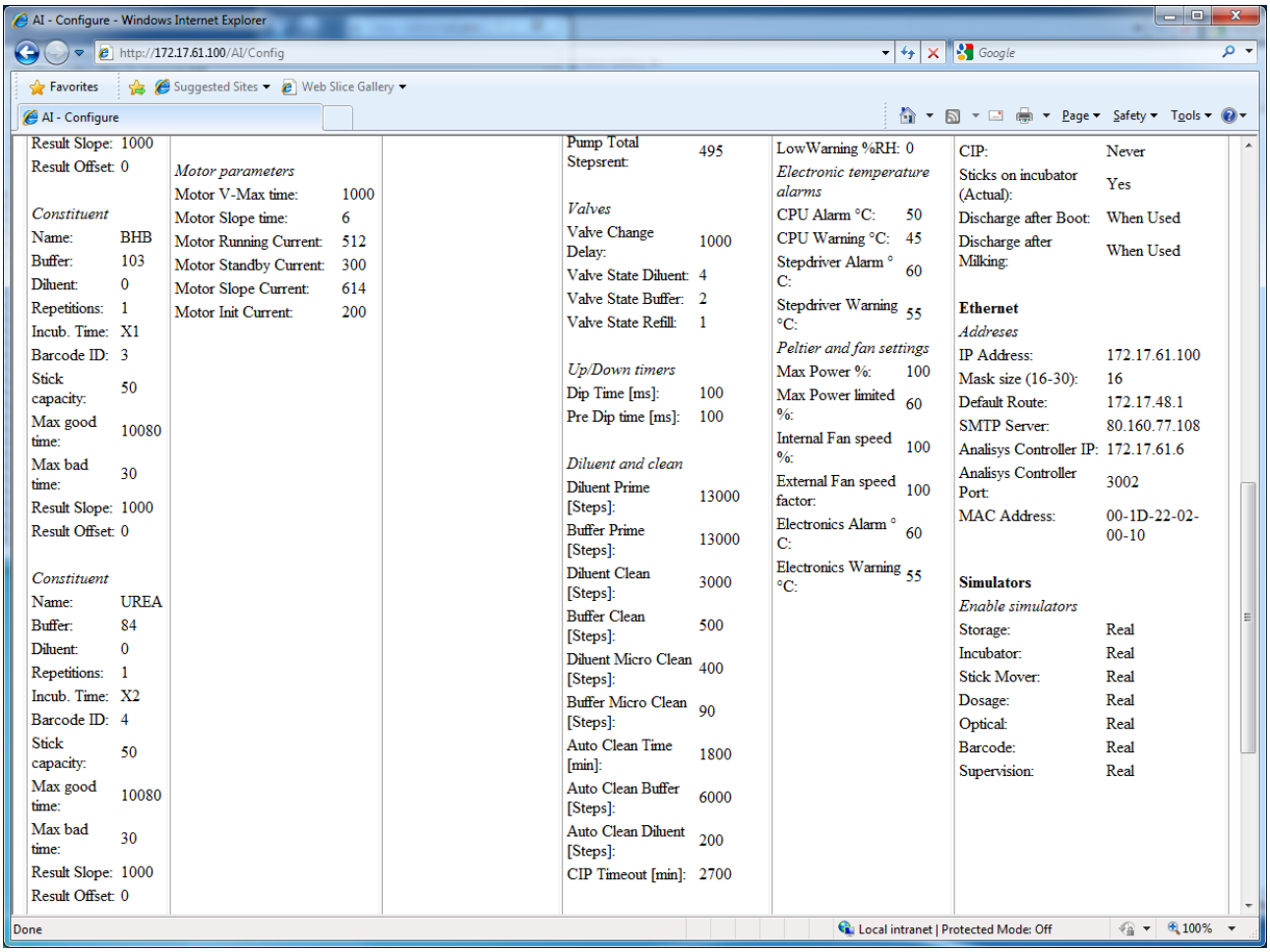


Enter the IP address for the AI. + Set Mask size (standard is 24 = 255.255.255.0)

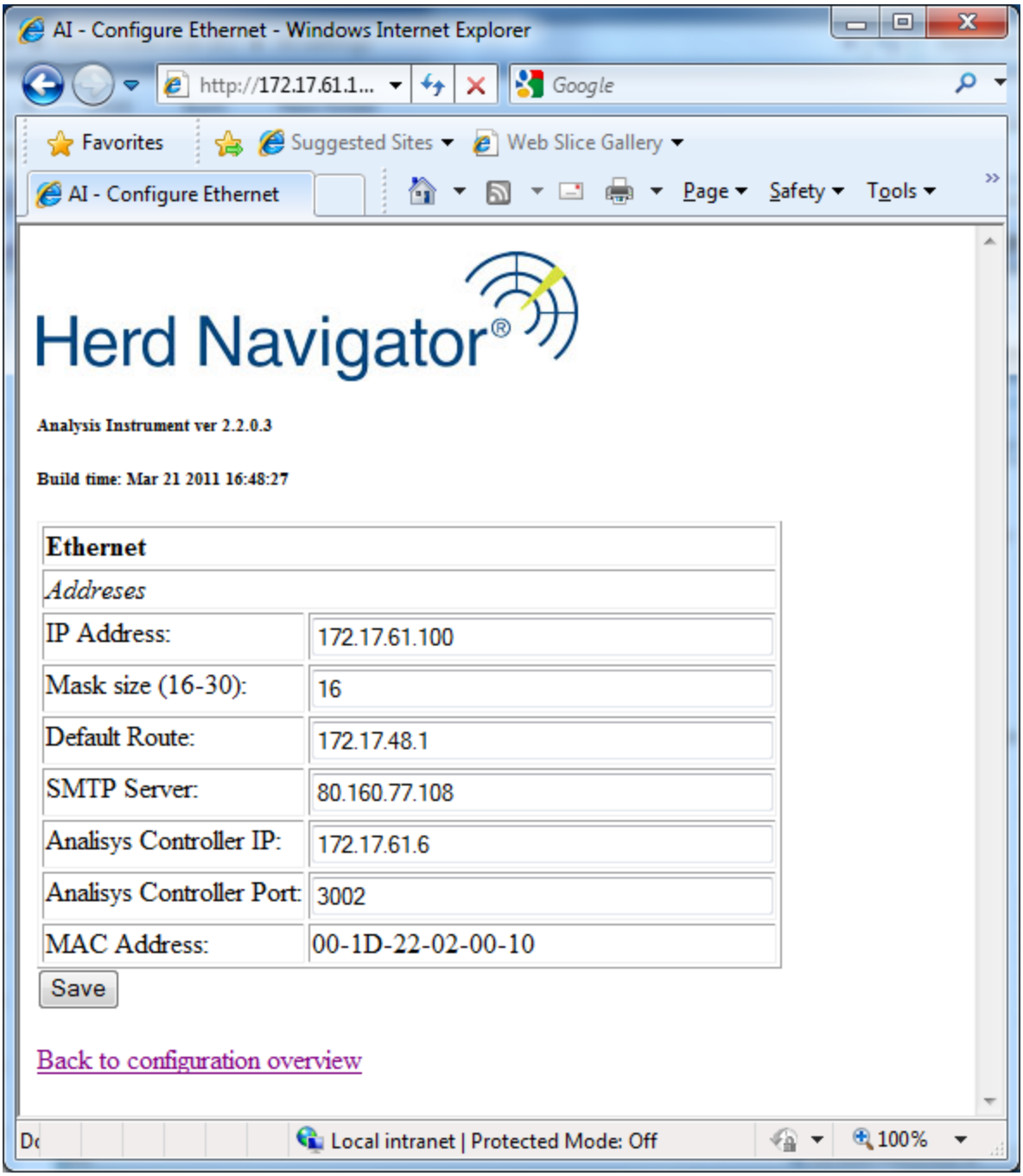


Enter the Gateway/router address.
Remember to Save the new settings.

5.6.2 Step 2: Entering the rest of the Ethernet settings in the AI configuration.

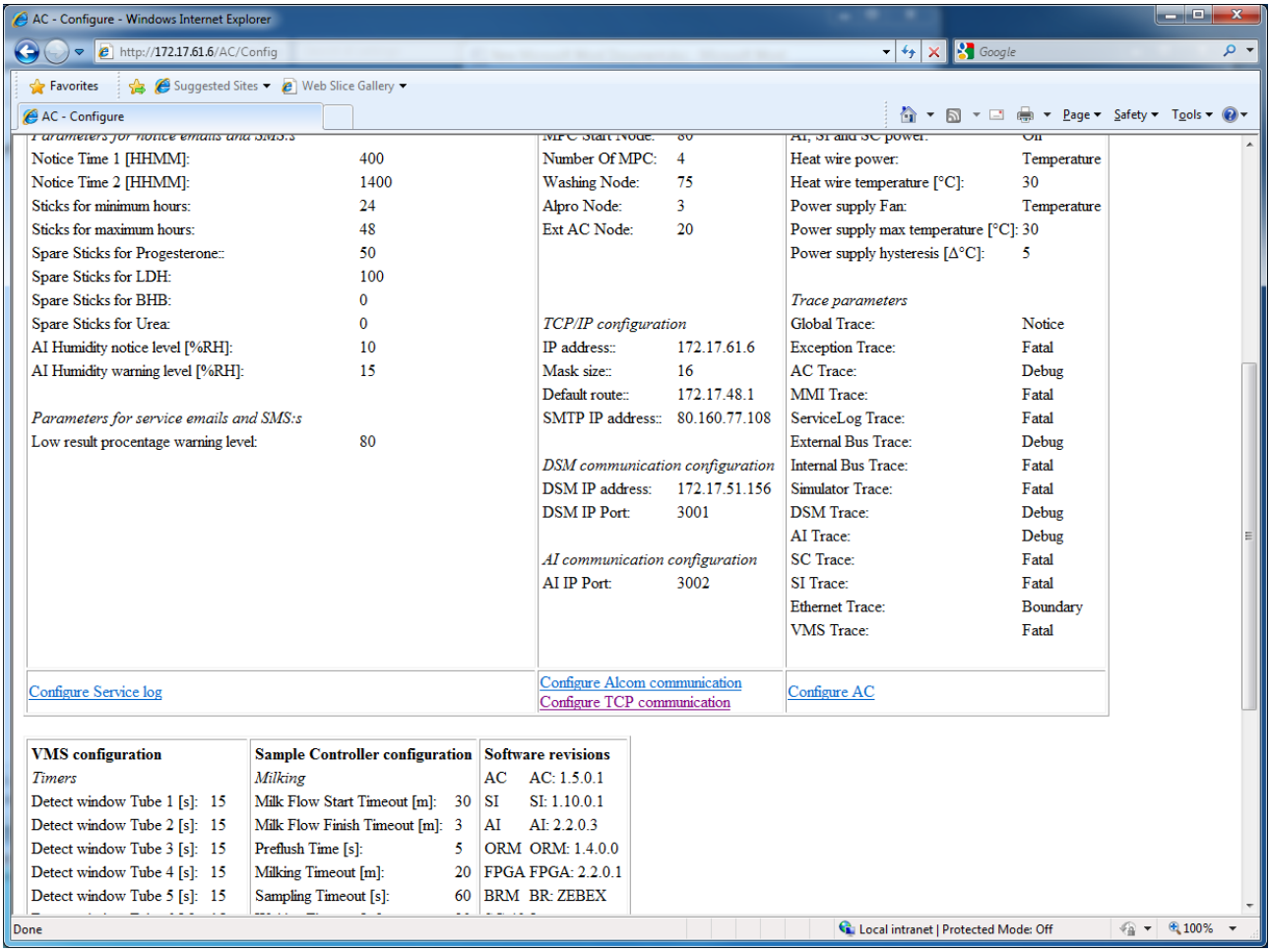


Start Web browser, and enter the AI address http://AI_IP_Adress/AI/Config Then go to the Configure Ethernet Menu.

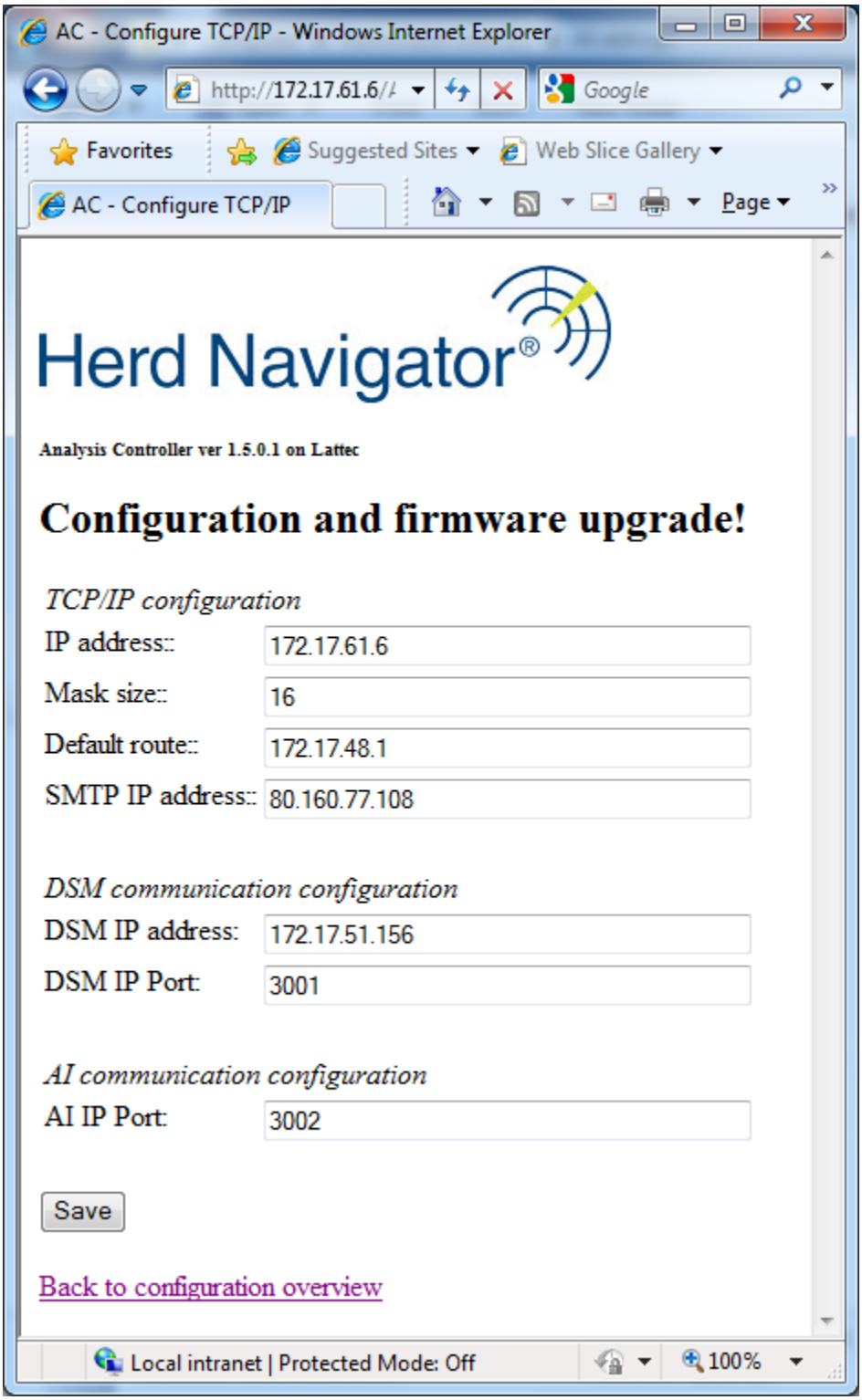


Enter the IP for the AC in the Analysis Controller IP field, and if there is more than one AI, change Analysis Controller Port, normal installations use 3002.
Remember to save the new settings.

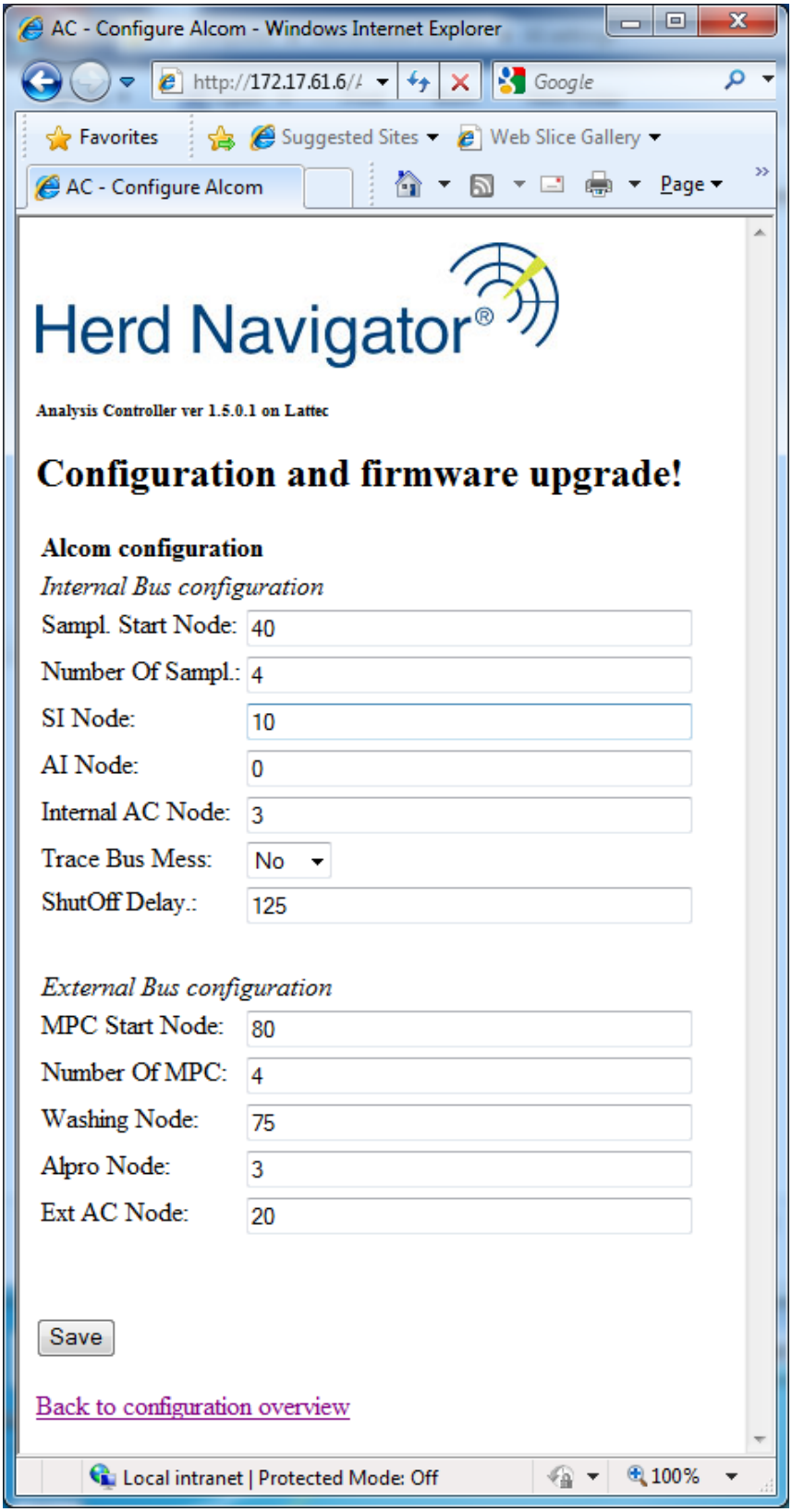
5.6.3 Step 3 : Use the AC's Web interface to setup AC to use HN-2 AI.



Start Web browser, and enter the AC address http://AC_IP_Adress/AC/Config then go to the Configure TCP/IP communication menu.

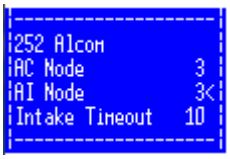


Make sure the AI IP Port is the same as in AI settings, standard = 3002 , Remember to save if changes are made.
Then go back to configuration overview and choose the configure Alcom connection menu.



Set AI Node to 0

5.6.4 Step 4 : Setup the Alcom address for the AI in Sample Intake to same address as the AC.



In Menu 2-5-2 Change AI node from 19 to 3