DANAK
PROD Reg.No. 7025

FORCE Certification

EC-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI005-006

Issued by FORCE Certification, Denmark
EC-notified body number 0200

In accordance with the Directive 2004/22/EC of the European Parliament and Council of March 31st, 2004 on measuring instruments (MID) with later amendments.

Issued to:	**Ingeniørfirmaet Poul Tarp A/S** **Jomfruløkken 4** **DK - 8930 Randers NØ** **Denmark**
Reference No.:	114-30557
Type of instrument:	Milk Measuring System on road tankers (or stationary)
Type designation:	PT LVMS - Poul Tarp Liquid Volume Measuring System
Type variants:	type 2, type 3 and type 4
Valid until:	January 9, 2025
Number of pages:	36 including appendix
Date of issue:	January 9, 2015

Approved by

Lars Parmo
Certification Manager

Processed by

Lars Poder
Examiner

The conformity markings may only be affixed to the above type approved equipment. The manufacturer's Declaration of Conformity may only be issued and the notified body identification number may only be affixed on the instrument when the production/product assessment module (D or F) of the Directive is fully complied with and controlled by a written inspection agreement with a notified body.
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Appendix to

EC-Type Examination Certificate
Measuring Instrument Directive

Number: DK-0200-MI005-006
Issued by FORCE Certification, Denmark
EC-notified body number 0200

Revision	Issue date	Changes
DK-0200-MI005-006	09-01-2015	First issue

The measuring system has the following characteristics

Accuracy class	0.5
Mechanical class	M3
Electromagnetic class	E3
Climatic class	Condensing/open location, H3
Ambient temperature	-25 /+55 °C
Liquid temperature	0 / +50 °C
Liquid pressure max	1 bar
Liquid types	Milk (Raw milk)
Liquid density	1,035 Kg/L at 5 °C +/- 0,02 Kg/L
Liquid conductivity	≥ 5 µS/cm
Accuracy class	0.5

Flow characteristics for Measuring System, including Minimum Measured Quantity (MMQ), depends on actual flow sensor Proces Data 340 series in combination with Gas Elimination Device (GED) used:

MS/Meter Type	GED Type	Qmax [m^3/h]	Qmax [L/m]	Qmin [m^3/h]	Qmin [L/m]	MMQ [L]	Inlet [mm]
Type2+4/C51	PTø355	22,2	370	4	67	300	51
Type3/C63	PTø506	80	1334	5	84	300	63,5
Type3/C76	PTø506	90	1500	12	200	300	75
Type3/C102	PTø506	90	1500	18	300	300	102

Note: The ratio between Qmax and Qmin of the measuring system, shall be at least 5 (5:1) within the flow rate range of the actual meter sensor in combination with relevant Gas elimination device.

Primary display on flow computer S12:

Indication:

Maximum capacity	99999 L	or	99999,9 L
Minimum increment of registration	1 L		0,1 L

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Applied documents

Recommendations	Guides
OIML R117 (1995)	WELMEC Guide 10.5 Marking of fuel dispensers (2006)
OIML R117-1 (2007)	WELMEC Guide 10.6 Sealing of fuel dispensers (2008)
OIML D11 (2004)	
OIML R117-2 Annex – E (CD2)	

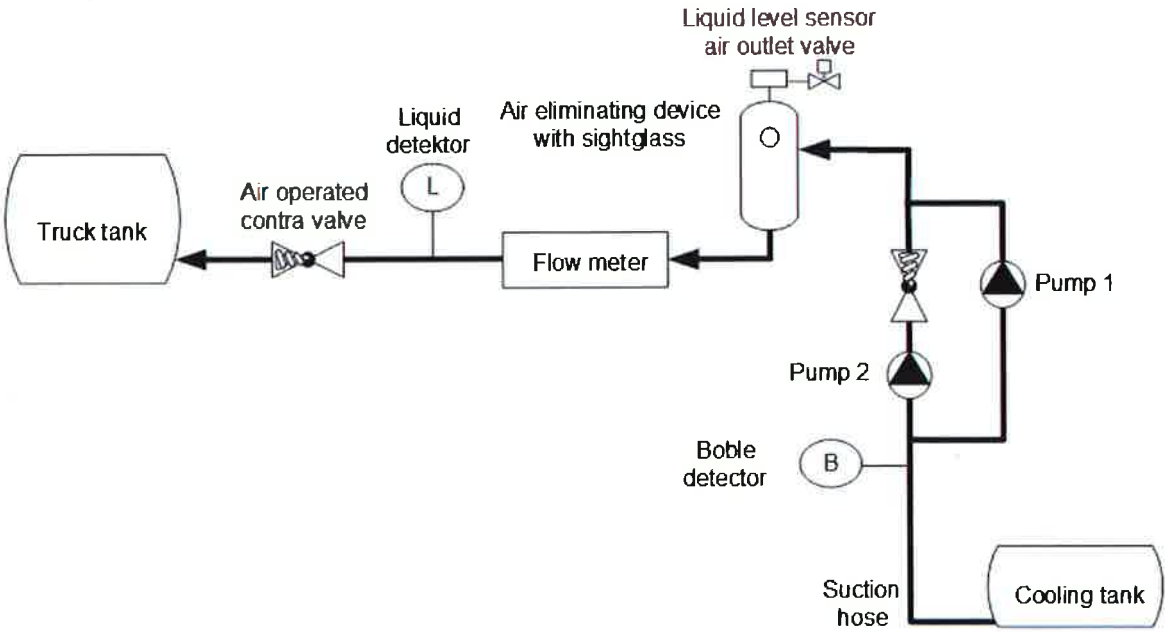
Applied Evaluation Certificates belonging to this Type Examination Certificate:

- Evaluation Certificate Force Certification No. 111-30730, issued 26.11.2012
- Evaluation Certificate and Description NMI no. TC7204 rev 6, issued 26 august 2014
- Documentation folder NMI no. TC7204-4

Technical documentation

Reference no.: 114-30557.

Princip of a milk receiving system



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1. Information on the Measuring System

1.1 The Liquid Volume Measuring System (PT LVMS)

The function of the LVMS is to pump (by suction) and measure the uncompensated volume of a certain liquid amount of milk, from one external reservoir to a road tanker compartment as receiving system and/or to pump and measure the volume of a certain liquid amount of milk from road tankers compartment to one external reservoir.

1.2 Construction of the PT LVMS

For essential components as well as the general requirements and demands for non-essential components - the Liquid Volume Measuring System is constructed according to specific demands and requirements of the manufacture in accordance with this Type Examination Certificate, and general requirements for these systems.

1.3 General conditions

The construction and design of the LVMS ensures that the system will retain its metrological reliability when used and installed correctly, and according to manufacture specification and this Type Examination Certificate, and when used in the appropriate systems environment. Measuring and indication of the liquid volume measured, may not be affected by external influences in a way that will cause the system to lead to measuring errors.

2 Description

The measuring system (MS) consist of several constituent elements. These constituent elements of the measuring system, shall comply with the relevant requirements. The constituent elements is distinguished between essential and non-essential components. The measuring system can be either a receiving measuring system fitted to a road tanker for pumping and measuring a certain amount of milk from one external reservoir to a road tanker compartment by pumpsuction – or a delivering measuring system fitted to a road tanker for pumping and measuring a certain amount of milk from the compartment of the road tanker to an external reservoir by pumping. Measuring systems on a road tanker can be with both a receiving and delivering function.

3 PT LVMS - measuring of liquid

3.1 Receiving system

A hose is connected to a reservoir containing the liquid to be collected. The liquid is pumped by suction from the external reservoir, through the hose, in the pipework through the bubble detector, the pump(s), the gas elimination device, the flow sensor and finally passing the liquid detector and the system outlet valve to the collecting tank.
After the hose is connected, the process is started and controlled from the S12 computer until the reservoir is emptied, and/or the measurement is finished.

The gas elimination device extracts any gas/air pockets or dissolved gas/air in the liquid before it is measured in the flow sensor. The bubble detector is fitted in front of the pump. When bubbles are detected, the pump speed are lowered to ensure the correct function of the gas eliminator. The gas elimination device makes use of a constant level tank which is part of and combined with the gas elimination device. The level in the constant level tank, before and after each measurement is established automatically. The transfer point of the measuring system is defined

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by the constant level sight glass in the Gas elimination device, which is upstream of the meter. The sight glass can be controlled before and after measurement.

The S12 computer register the pulses from the flow sensor and continuously displays the measured volume. To ensure that the flow sensor is working correct, the flow pulses are only detected, when the liquid detector is active, otherwise the measuring will stop.

When measuring is finished, the measured volume is displayed on the S12 computer and can be printed (optional).

3.2 Delivering systems

The pipework is connected to the road tankers compartment containing the liquid to be delivered. The liquid is pumped by suction from the compartment, through the pipework, the bubble detector, the pump(s), the gas elimination device, the flow sensor and finally passing the liquid detector and through the delivery hose system and the nozzle with sight glass to the external tank.
The process is started and controlled from the S12 computer until the measurement is finished.

The gas elimination device extracts any gas/air pockets or dissolved gas/air in the liquid before it is measured in the flow sensor. The bubble detector is fitted in front of the pump. When bubbles are detected, the pump speed are lowered to ensure the correct function of the gas eliminator. The gas elimination device makes use of a constant level tank which is part of and combined with the gas elimination device. The level in the constant level tank, before and after each measurement is established automatically. The transfer point of the measuring system is defined by the nozzle of the delivering hose. The constant level sight glass in the Gas elimination device, which is upstream of the meter. The sight glass of the constant level and the delivering nozzle can be controlled before and after measurement.

The S12 computer register the pulses from the flow sensor and continuously displays the measured volume. To ensure that the flow sensor is working correct, the flow pulses are only detected, when the liquid detector is active, otherwise the measuring will stop.

When measurement is finished, the measured volume is displayed on the S12 computer and can be printed (optional).

4 The components of the PT LVMS

The measuring system comprises essentially of a pump (pump and/or suction), a gas/air eliminating device, a liquid detector, a bubble detector, a flow meter sensor with an internal flow transmitter optional including an indication device, and a flow computer including an indicating device. The system can include one or two optional printer(s), which is not under legal control. A receiving measuring system consists of empty hose, and a delivering system consists of a full hose with a valve/nozzle (with a sight glass for full hose detection). Other parts of the system includes valves, tubes, samplers etc.

The LVMS consists of

- a flow computer type S12 with one or two optional printer(s):
  See Evaluation Certificate Force Certification No. 111-30730
- a flow sensor of type Proces Data PD340 Cxx.
  See Evaluation Certificate NMI no. TC7204 rev 6
- a gas elimination device with a constant level sightglass
  See section 7.3

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- a liquid detector:
  See section 9
- a bubble detector
  See section 8
- a controllable outlet valve or a non-return valve
- a temperature sensor (optional – not under legal control)
- a pump RPM sensor (optional)
- a tank liquid level sensor (optional)
- a CIP detergent pressure sensor (optional)
- sample valves
- hydraulic valves
- pneumatic valves
- one or two pumps
- pipe system
- collecting hose
- emergency switch

4.1 Essential components

The following components are mandatory in a LVMS:

- a flow computer type S12 with one or two optional printer(s)
- a flow sensor of type Proces Data PD340 Cxx
- a gas eliminator
- a bubble detector
- a liquid detector

4.2 Non-Essential components

A number of non-essential components can be connected to or fitted on the LVMS.
Some of them have critical influence on correct measurement:

- a controllable outlet valve or a mechanical non return valve (critical component)
- a temperature sensor (optional - non critical component)
- a pump RPM sensor (on systems with analog pump control) (critical component)
- a tank liquid level sensor (optional – non critical component)
- a CIP detergent pressure sensor (optional – non critical component)
- sample valves (optional – non critical component)
- hydraulic valves (critical component)
- pneumatic valves (critical component)
- one or two pumps (critical component)
- pipe system (critical component)
- Hose for receiving and delivery systems (critical component)
- Nozzle with sight glass for delivery systems
- filter for impurities (optional – non critical)

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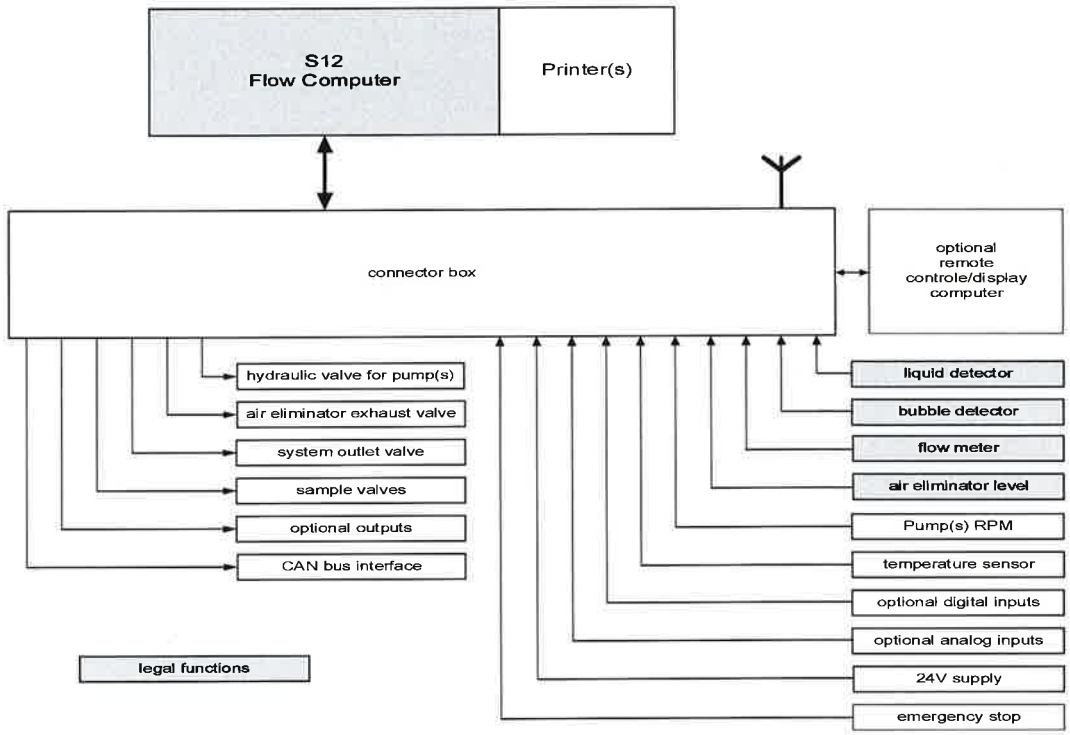
5 PT LVMS electronic construction, overview

The electronic construction of the LVMS is based on a S12 flow computer. The other electronic components are connected to the S12 computer either directly or through a connector box.



6 PT LVMS external interface

It is possible to connect external data logging or data communication equipment to the S12 Flow computer using different communication interfaces. This external equipment is not a part of the legal system.

7 Essential components in the measuring system

Basically the system consists of essential and non essential components. The essential components are flow computer, flow sensor, gas eliminator, bubble detector and liquid detector.

Each individual measuring system is defined by dimensions of pipework and actual components, which are documented in the Datasheet of the measuring system. See example on the following page.

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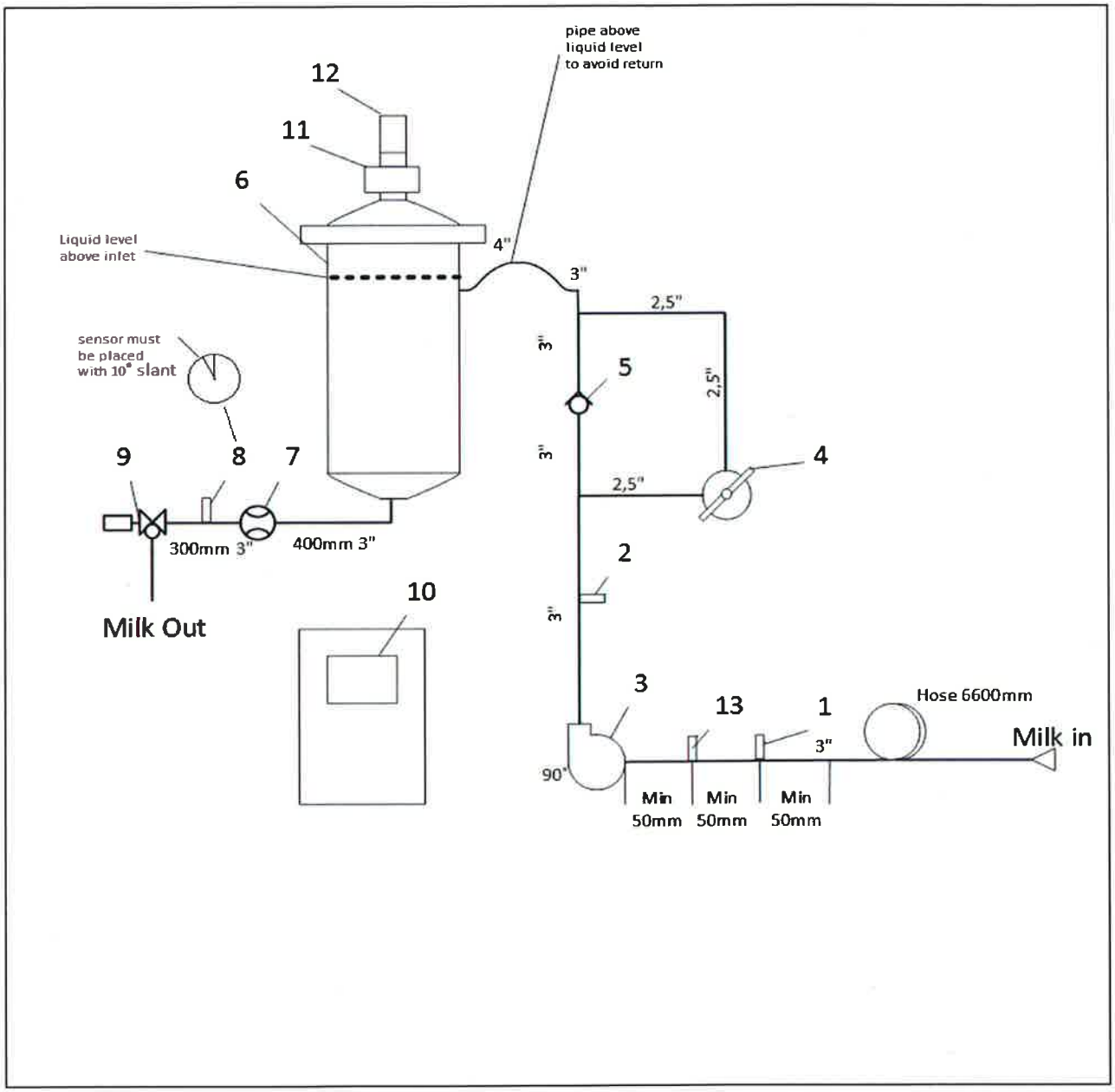

Measuring system with pipe work dimensions and actual components.

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7.1 Flow computer S12

For documentation and further description, see Evaluation Certificate, Force Certification No. 111-30730, issued 26.11.2012

Poul Tarp flow computer S12

7.2 Flow sensor: Proces Data PD340 Cxx series

Change of measurement accuracy of the meter sensor, and all other calibration factors are changed in the PD340 Cxx. For documentation and further description, see Evaluation Certificate NMI no. TC7204 rev 6, and belonging Documentation folder NMI no.TC7204-4, issued 26 August 2014.

Proces-data flow sensor PD340 series

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7.3 Gas Elimination Device

The gas elimination device ensures that the liquid passing through the flow sensor is free of gas/air pockets and gas/air bubbles mixed with the liquid, to obtain an accurate registration of the liquid volume.
The gas elimination device consists of a container with a liquid mechanical float level sensor and a venting valve. If the liquid contains air bubbles, they will leave the liquid as it passes the container and fill the top of the container with air, resulting in a decreasing liquid level. When the liquid surface passes a certain level, the vent valve is opened and the air is exhausted resulting in an increasing liquid level. When the liquid surface passes a certain level, the vent valve is closed again. The gas elimination is controlled from the S12 computer.

A constant level sight glass is mounted on the gas elimination device

7.3.1 Function of the Gas elimination device

The gas elimination device is active when a liquid measurement is in progress. The air mixed with the liquid, or airpockets in the liquid or gas dissolved in the liquid. When a measurement starts, the hose is filled with air pockets. When the reservoir is about to be emptied the liquid is filled with dissolved gas changing over gas pockets to pure airgas when the reservoir is empty. The S12 computer controls the elimination of air/gas:

Does the S12 detect low level, the S12 controls:
- on systems with 2 pump speeds, the low speed is selected
- the system outlet valve is closed
- the vent valve on top of the gas eliminator is opened

The liquid is still pumped, and depending how much gas it contains the liquid level in the gas eliminator will rise, and when the level is OK the S12 controls:
- the vent valve is closed
- the outlet valve is opened
- on systems with 2 pump speeds, high speed is selected after a certain amount of liquid has been pumped. The amount is a part of the S12 setup parameters.

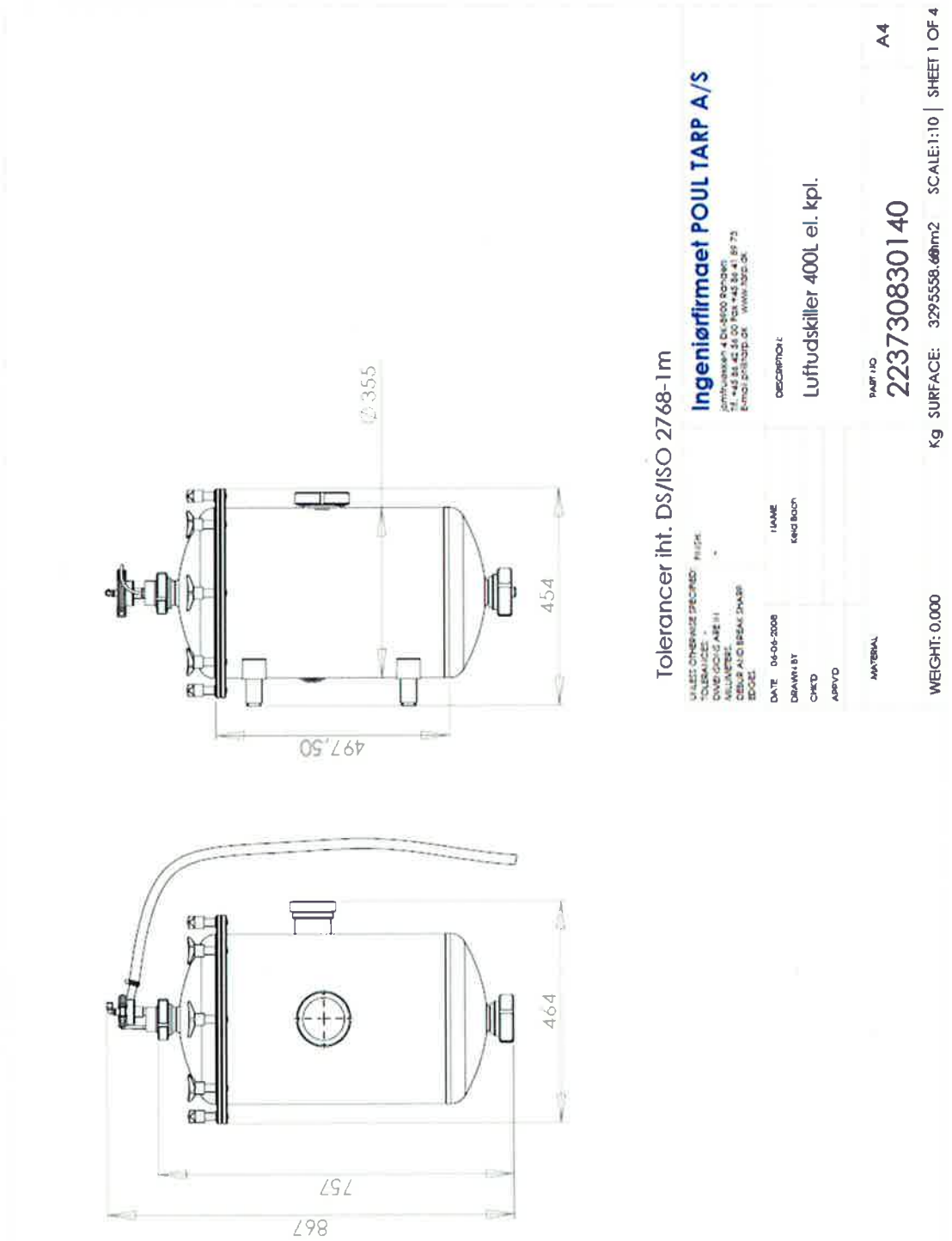
This continues until all the liquid is pumped. When the reservoir is empty the liquid measurement is stopped after a timeout.

The setting and flowcomputer S12´s control of the pumps speed of rotation is of essential importance of the Gas elimination device function, which require the pumps RPM fixed and described in the Datasheet of the individual measuring system.

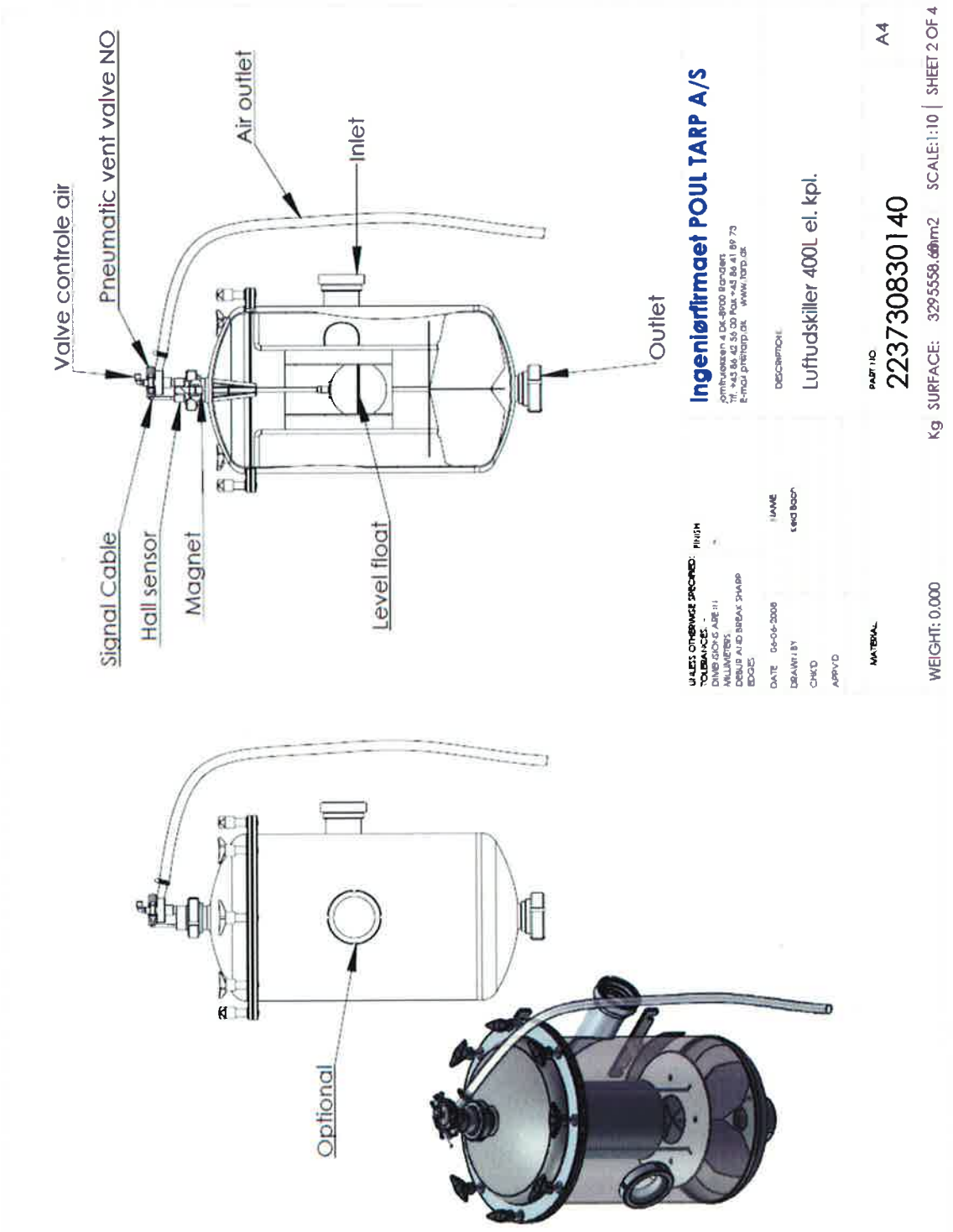
7.3.2 Gas eliminating devices - specifications and drawings

Type	Qmax	Qmin	Constant level sightglass marks	Drawing no.
	[L/m]	[L/m]	[L] / [mm]	
PTø355	400	70	3 / 350	223730830140
PTø506	1500	250	3 / 153	223730830282

Drawing 223730830140 page 1 of 4, Type øPT355



Drawing 223730830140 page 2 of 4, Type øPT355



Drawing 223730830140 page 3 of 4, Type øPT355

ITEM NO.	PART	VARENR.	QTY.
1	Luftudskiller 400L/min. med indløb	83.026	1
2	Bundstyr 400L luftudskiller el.	83.043	1
3	Rustfri svømmer	28.072	1
4	O-ring 8x2	26.086	1
5	Svømmerstang 230 mm	28.078	1
6	Magnet kpl.	28.080	1
7	M10 planskive	80.282	8
8	Vinggreb M10 lang model	83.67702	8
9	2" valsenippel DS	33.184	1
10	2" pakning DS	33.193	1
11	2" føler med rør for afluftning	29.120	1
12	2" omløber DS	33.175	1
13	Afluftningsventil mini	29.106	1
14	Ø12-22mm spændebånd AISI 316	71.070	1
15	Plastslange_Ø21-Ø16_L1000_luftudskiller	70.150	1m
16	3" pakning DS	33.235	1
17	Skueglas Ø94x6	28.061	1
18	Beskyttelsesring for skueglas	28.062	1
19	3" omløber DS	33.217	1
20	3" valsenippel SMS	33.376	1
21	3" pakning SMS	33.367	1
22	2½" valsekrave SMS	33.349	1
23	2½" omløber SMS	33.343	1
24	Svømmerstyr 104	28.086	1
25	Pakning for 400L luftudskiller	83.06602	1

Tolerancer iht. DS/ISO 2768-1m

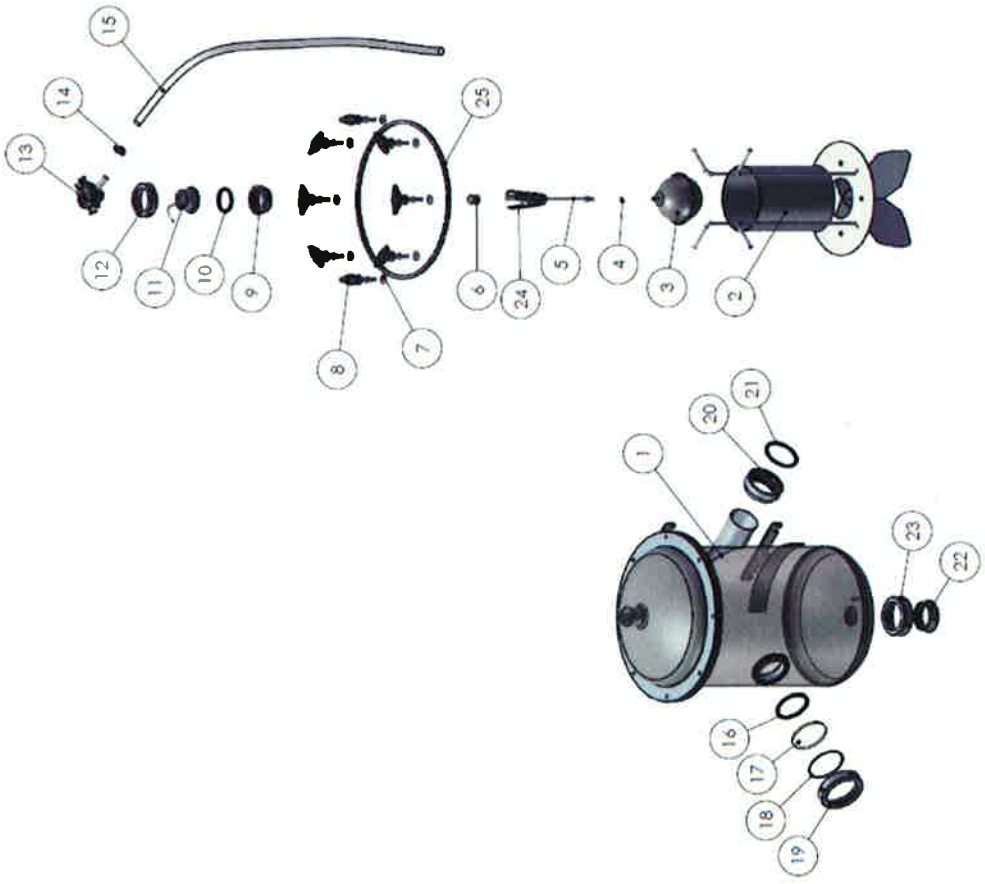
Ingeniørfirmaet POUL TARP A/S

Luftudskiller 400L el. kpl.

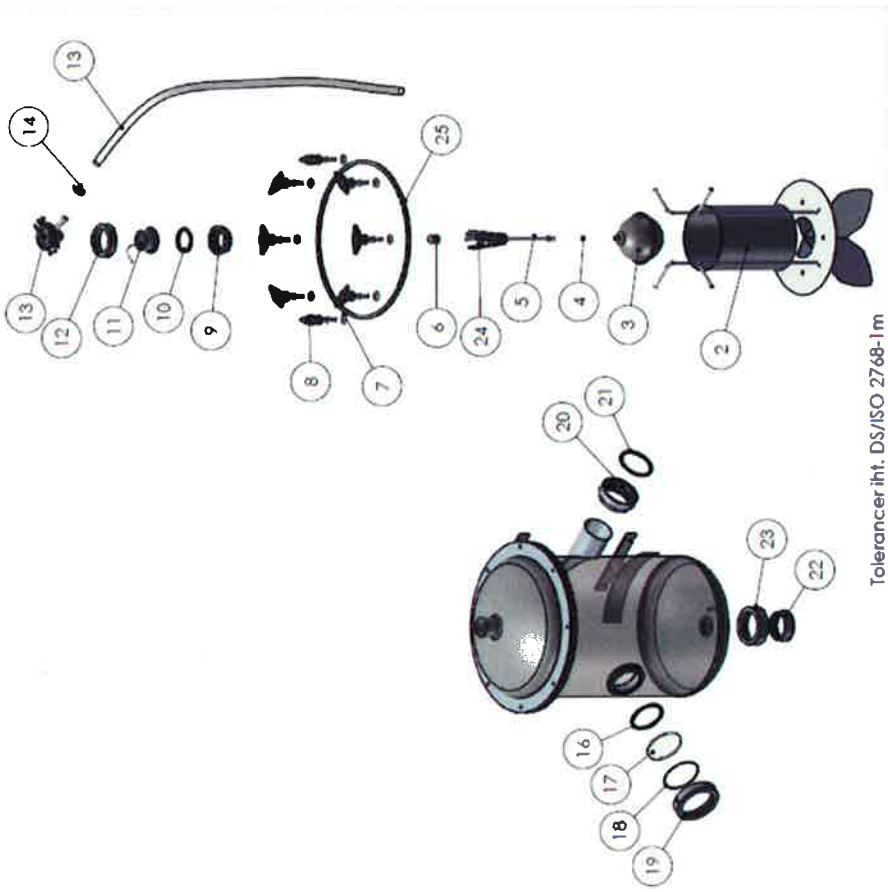
A3

223730830140

WEIGHT 0.000 Kg SURFACE: 3295568 mm2 SCALE:1:10 | SHEET 3 OF 4



Drawing 223730830140 page 4 of 4, Type øPT355



Tolerancer iht. DS/ISO 2768-1 m

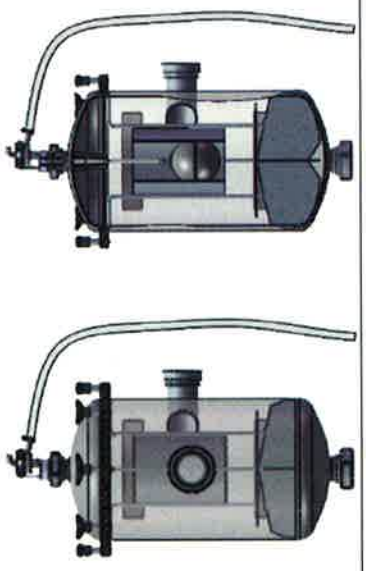
Ingeniørfirmaet POUL TARP A/S

Luftudskiller 400L el. kpl.

223730830140

A3

WEIGHT: 0.000 Kg SURFACE: 3295558.68mm2 SCALE:1:10 | SHEET 4 OF 4



ITEM NO.	PART	VARENR.	QTY.
1	Luftudskiller 400L/min. med indløb	83.026	1
2	Bundstyr 400L luftudskiller el.	83.043	1
3	Rustfri svømmer	28.072	1
4	O-ring 8x2	26.086	1
5	Svømmerstang 230mm	28.078	1
6	Magnet kpl.	28.080	1
7	M10 planskive	80.282	8
8	Vingegreb M10 lang model	83.67702	8
9	2" valsenippel DS	33.184	1
10	2" pakning DS	33.193	1
11	2" føler med rør for afluftning	29.120	1
12	2" omløber DS	33.175	1
13	Afluftningsventil mini	29.106	1
14	Ø12-22mm spændebånd AISI 316	71.070	1
15	Plastslange_Ø21-Ø16_L1000_luftudskiller	70.150	1m
16	3" pakning DS	33.235	1
17	Skueglas Ø94x6	28.061	1
18	Beskyttelsesring for skueglas	28.062	1
19	3" omløber DS	33.217	1
20	3" valsenippel SMS	33.376	1
21	3" pakning SMS	33.367	1
22	2½" valsekrave SMS	33.349	1
23	2½" omløber SMS	33.343	1
24	Svømmerstyr 104	28.086	1
25	Pakning for 400L luftudskiller	83.06602	1

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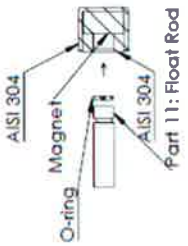
Drawing 223730830182, page 1 of 2, Type PTø500

ITEM NO.	material	PART NUMBER	DESCRIPTION	QTY.
1	AISI 304	83.02820	Air Seperator Tank	1
2		83.67702	Wing Handle Long	8
3	AISI 304	80.282	M10 Washer	8
4	EPDM	33.346	Gasket SMS 2½"	1
5		33.364	33.364	1
6	EPDM	33.235	Gasket 2½" sms	2
7	Glass	28.061	Inspection Glass	1
8	Nylon 6-6	28.062	Support Ring	2
9	AISI 304	33.217	Nut 3"	1
10	AISI 304	28.072	Float	1
11	AISI 304	28.074	Float Rod 155mm	1
12	AISI 304	28.080	Magnet (304 covered)	1
13	EPDM	33.193	Gasket 2"	1
14		29.120	Transmitter 2" w. Airduct	1
15	AISI 304	33.175	2" Nut	1
16		29.106	Breather Valve	1
17	Silicone-rubber	70.150	ø21/16 Tube	1
18	AISI 304	71.070	Hose Clamp	1
19	EPDM	26.086	O-ring FDA 8x2mm	2
20	AISI 304	28.084	Float Guide	1
21	AISI 304	223730011001	Bottom Guide	1
22	EPDM	284030000101	Gasket Air seperator Lid	1
24	Glass	223732806101	Inspection Glass w. level lines	1



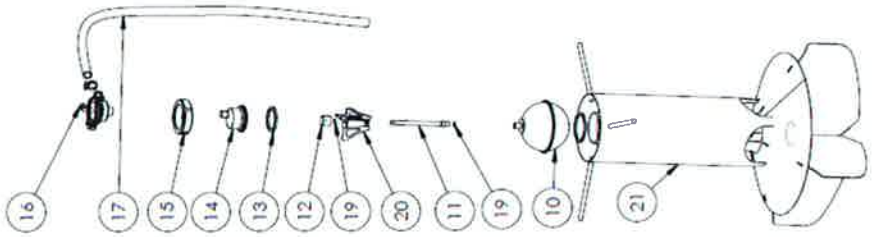
Ingeniørfirmaet POUL TARP A/S

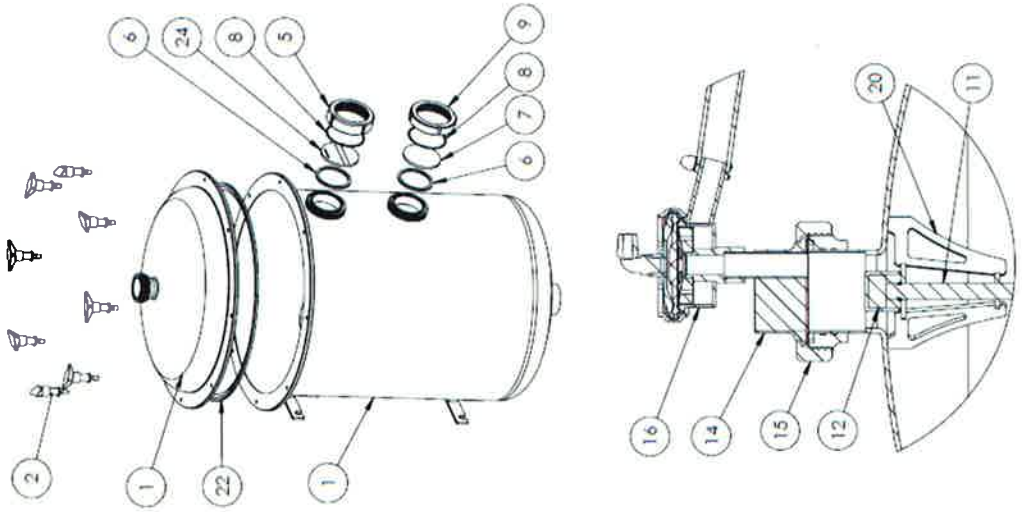
Air Bubble Seperator 1500 liter

A3

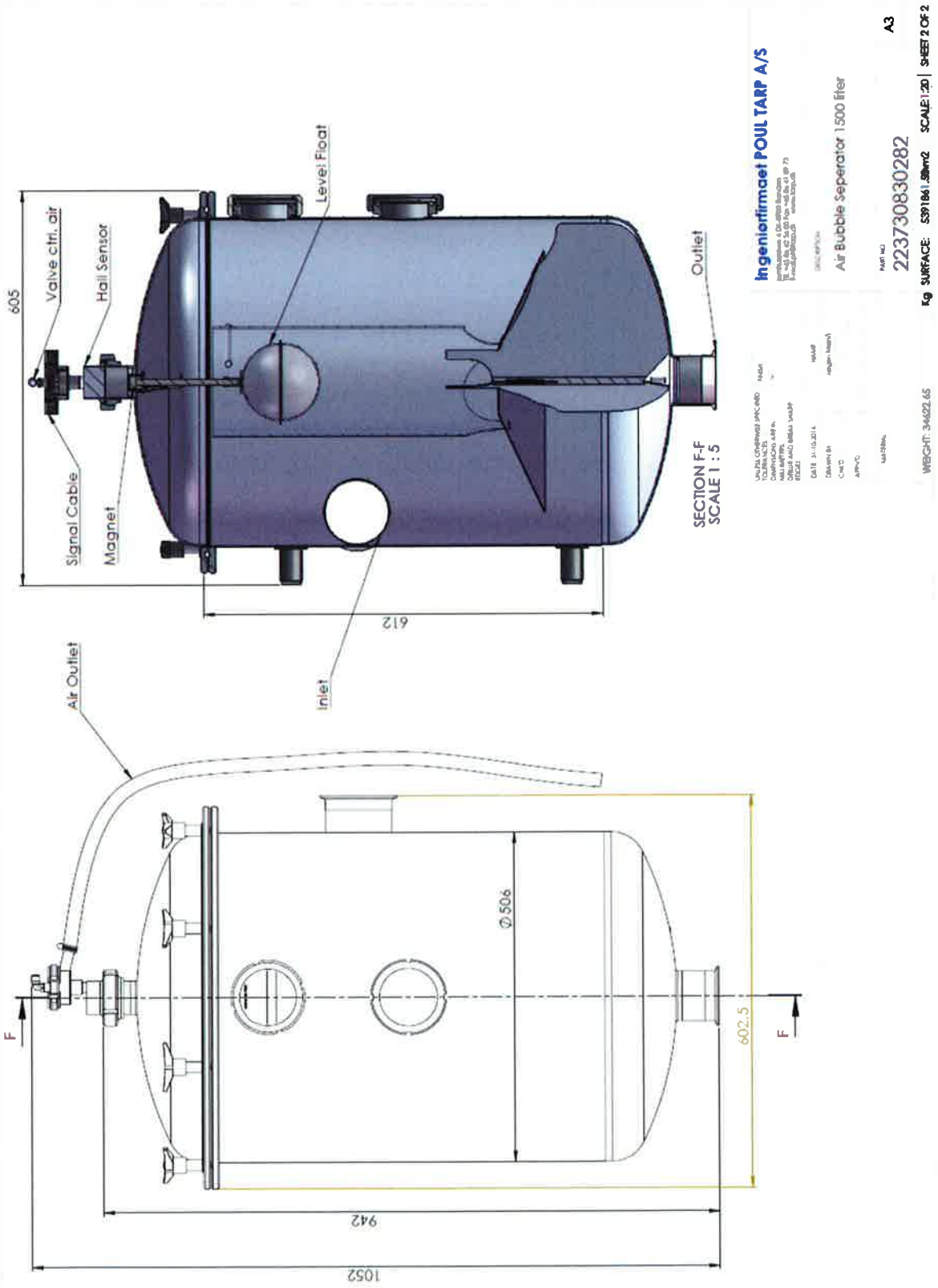
223730830282

WEIGHT: 34622.65 kg SURFACE: 5391861.38cm2 SCALE:1:50 | SHEET 1 OF 2





Drawing 223730830182, page 2 of 2, Type PTø500



8 Bubble detector

8.1 Bubble detector mode of operation

A bubble detector is fitted to raise the capacity of the system. The detector is placed at the inlet of the pump system. If bubbles are detected in the liquid, the pump speed is immediately switched to low speed to make the Gas Elimination Device perform with a better elimination of air/gas.

When the liquid no longer contains bubbles and when a certain settable volume is pumped or settable time is elapsed, the speed is changed to high speed again controlled by the S12.

8.2 Bubble detector sensor

The conductivity of the liquid is measured between electrode and sensor housing in a sensor and the value is converted to a 4-20mA signal. Variations in the conductivity are converted to a 4-20mA signal that indicates the amount of bubbles present in the liquid.

In the S12 flow computer thresholds for the conductivity and bubbles are set up, and the computer compares these levels to the actual levels to signal level or not. Bubbles are only checked if liquid level is detected.

8.3 Bubble detector interface

- 24V DC Power supply
- Conductivity 4-20mA
- Bubbles 4-20mA

9 Liquid detector

The pulses from the flow sensor are counted only when the liquid detector signals liquid.

9.1 Liquid detector mode of operation

When the liquid detector signals liquid, the mechanical construction of the system ensures that the measuring chamber of the flow sensor is fully filled with liquid, and the accuracy is within the specifications.

9.2 Liquid detector sensor

The conductivity of the liquid is measured between electrode and sensor housing in a sensor and converted to a 4-20 mA signal. In the S12 computer, a threshold for the conductivity is set up, and the computer compares this level to the actual level to signal liquid level or not.

9.3 Liquid detector interface

- 24V DC Power supply
- Conductivity 4-20mA

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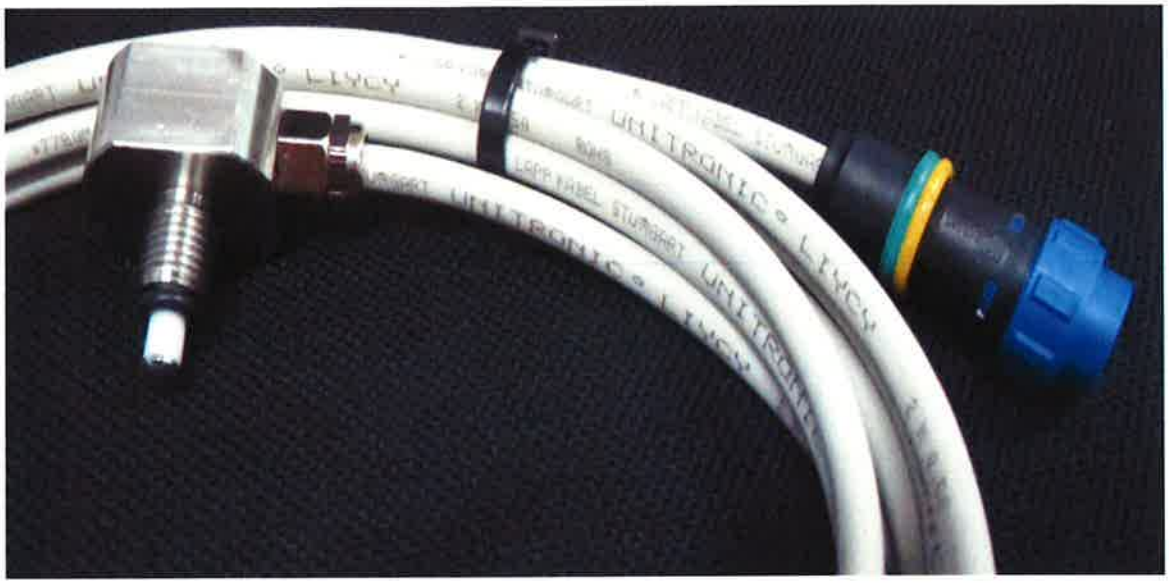

Photo of bubble and liquid detector

10 The Pump system

The volume measuring system can be fitted with various pump systems. There can be one single or two pumps, which can be switched ON/OFF or analogue controlled. Analogue controlled pumps have a RPM feedback making it possible to compensate for variations in hydraulic pressure and temperature and to maintain an accurate RPM.

In systems with two pumps the low speed pump is used to fill the hose, the pipe system, the high speed pump and the gas eliminator at the beginning of a measurement. Switching to the high capacity pump takes place, when a certain settable volume is pumped.

The analogue control of the pumps makes it possible to control the acceleration and deceleration of the pumps when starting and stopping. The timing for this is settable in the flow computer.

Maximum pump capacity is determined by the size of the pumps and the hydraulic system. The maximum admissible pump capacity is determined by the type of flow sensor and gas eliminator.

10.1Pump system variants

10.1.1 Single pump with ON/OFF control

Is used on systems with pump flow speed up to 150 liter/minute. The pump is controlled by a digital signal.

10.1.2 Single pump system with ON/OFF control and two speeds

The pump is controlled by two digital signals. One for start/stop and one for low/high speed.

10.1.3 Single pump with analog control

The pump is controlled by an analogue signal.

10.1.4 Two pumps with ON/OFF control and two speeds

There is a separate pump for low and high speed. The two pumps are fitted in parallel and each pump is controlled by a digital signal.

10.1.5 Two pumps with analogue control

The system consists of two separate pumps. One for low and one for high speed. The pumps are controlled individually by an analog signal each.

10.2 Pump system control

On systems with two pumps or one pump with two speeds a measurement is always started at the lowest speed. Change to high speed is done when:

- the liquid detector signals liquid
- the level in the gas eliminator is OK on systems with eliminators with electronic level sensing
- there are no bubbles at the bubble detector (when fitted)
- a settable amount of liquid is pumped after the above 3 requirements has been meet

Change to low speed is done when/if

- the actual pump flow is below a settable value
- there is low liquid level in the gas eliminator
- bubbles are detected by the bubble detector (on systems with bubble detector)

The change to high speed is done again, when all the requirements for change to high speed is present.

11 Prime volume amount

Once the volume measuring system is cleaned, the pipework is completely empty, detected by the liquid detector sensor.

When the first measurement with an empty system is completed, the pipe system and the air/gas eliminator will contain a volume of liquid that is not registered. To compensate for this, a certain determined prime volume is automatically added to the first registration when the Air Eliminator tank is filled up.

The prime value is a characteristic volume for each system depending on the dimensions of the pipe system and the gas eliminator. The value is determined prior to initial verification, and set and fixed in the S12 computer.

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12 Transfer Point

12.1 Receiving systems

For receiving systems, the transfer point is defined as the constant level in the Gas Elimination Device (Constant Level Tank). The marking of the constant level sight glass shall be as mentioned in 7.3.2. It shall be possible to check the constant level before and after measurement.

Sight glass Constant level

12.2 Delivery systems

For delivering systems the transfer point is defined as the nozzle on delivery hose. Between nozzle and hose is mounted a sight glass to check full hose before and after measurement.

Sight glass fullhose

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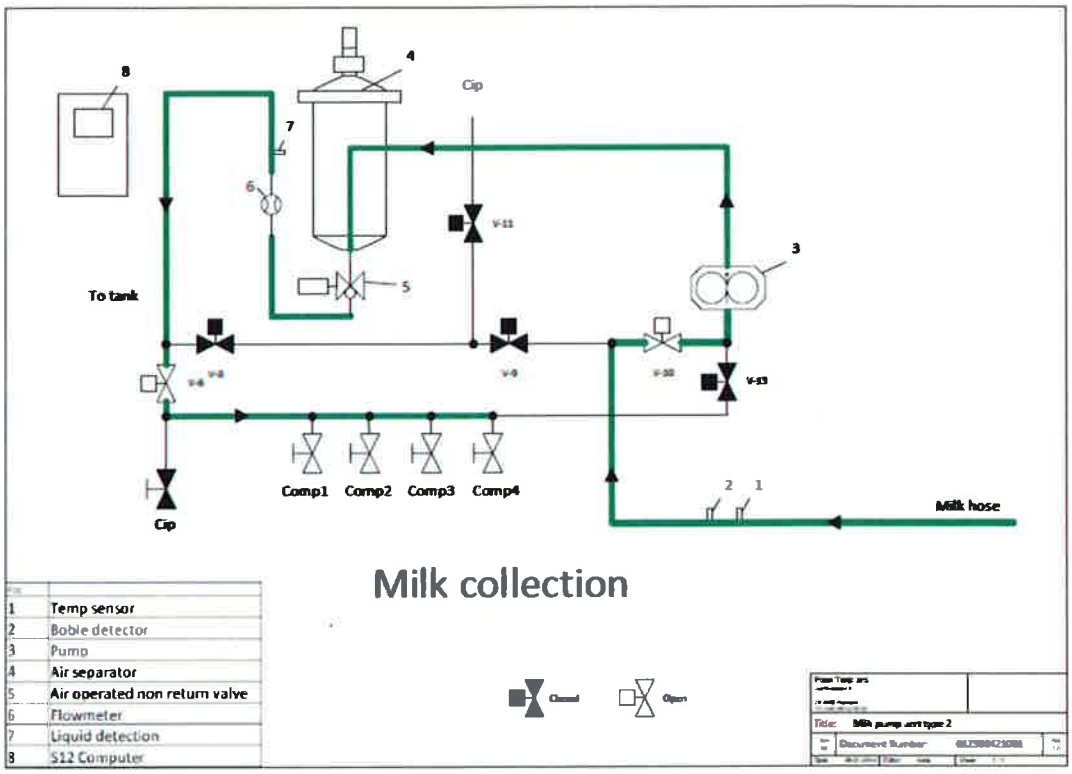
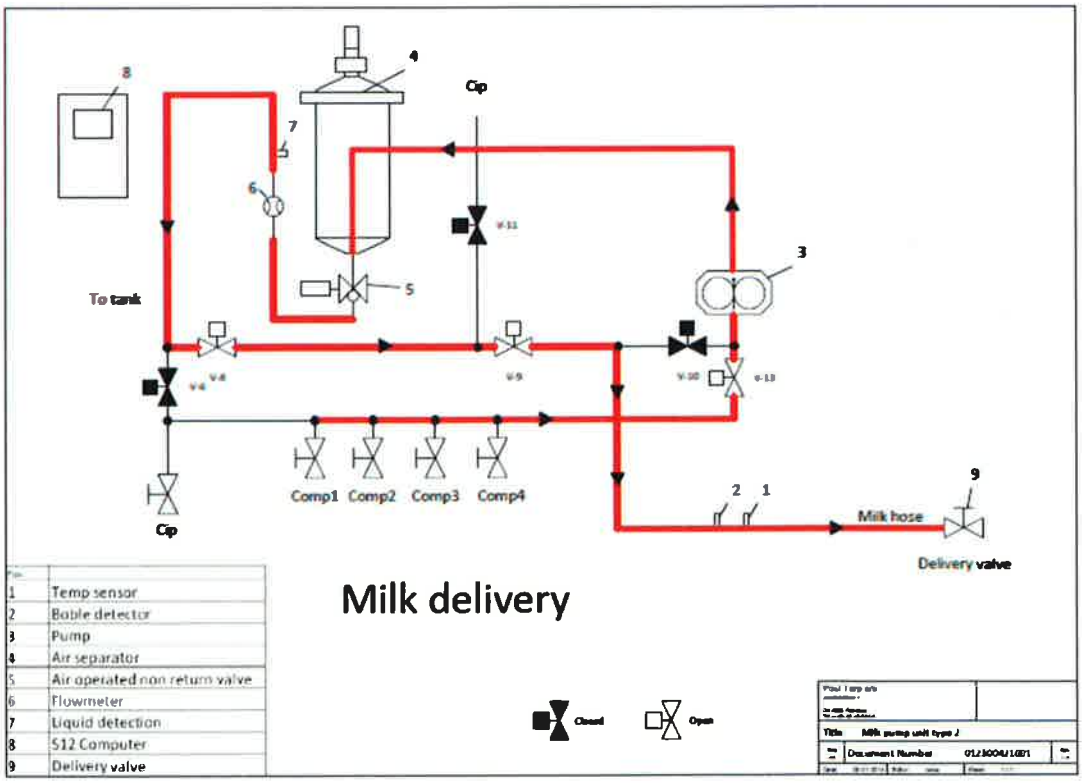
13 Flow diagrams for measuring systems:

Receiving systems



Delivering systems



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14 Sealing procedures

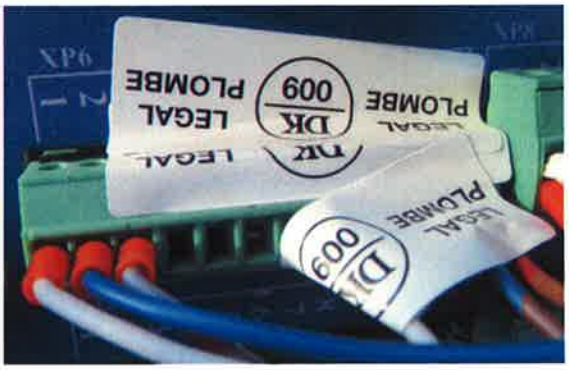
14.1
Sealing S12 computer connections:

14.1.1 Flowmeter connections, and parameter log:

Connectors to XP2 on 3,4 against connection and 5,6,7,8,9 and 10 against removal. Connector and board against removal.

14.1.2 Liquid (Milk) and bubble detector connections:

Connectors to XP6 on 7,8,9,10,11 and 12 against removal. Connector and board against removal.

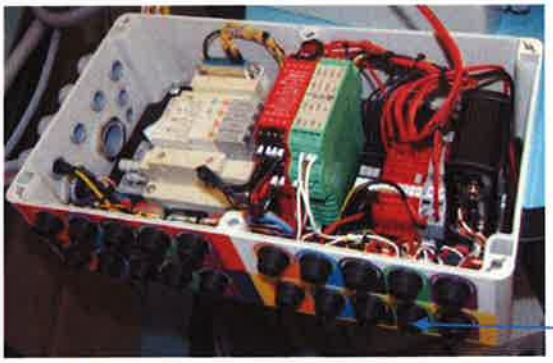


14.1.3 S12 bios (legal SW) programming connector (USB):

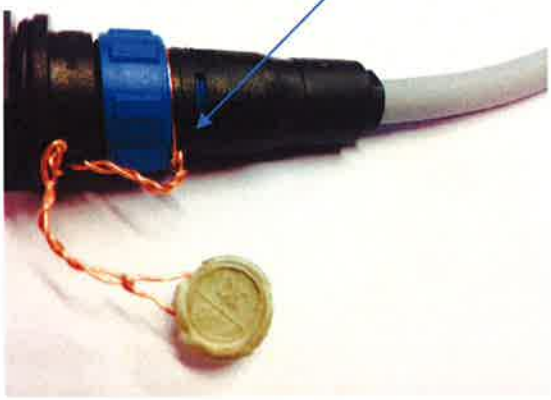
USB connection against opening.

14.1.4 Sealing of connections to electronic connectorbox:

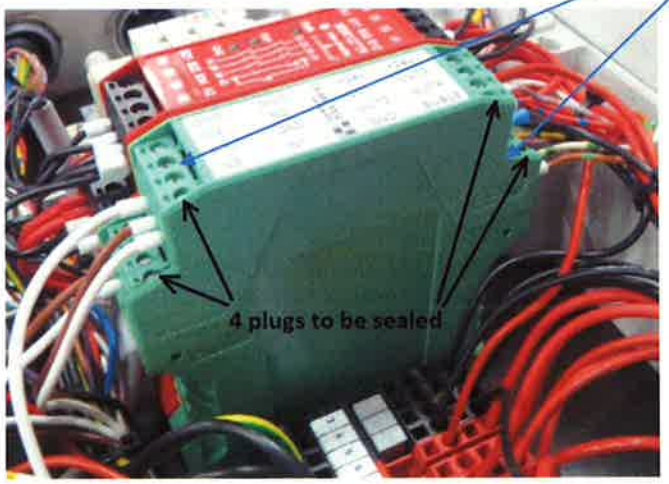
Bubble, Flow and Milk detectors connection to connectorbox, against removal.



Sealing connections from flowsensor, Bubble and milk (liquid) detector, to connectorbox, with wire and lead seals



Inside connectorbox, sealing four connections from bubble and milk (liquid) detector, in and out to conductivity converter, with stickers



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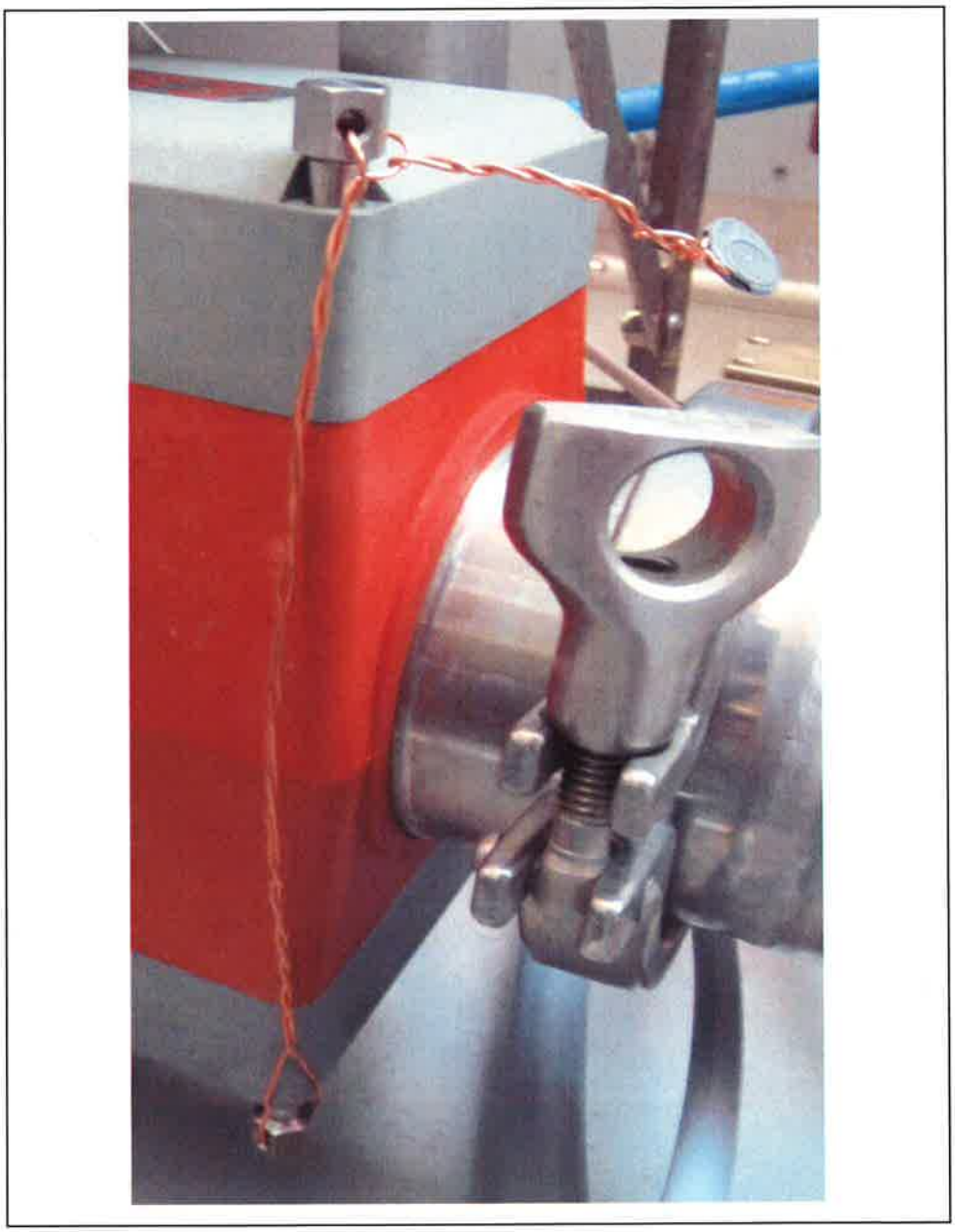
14.2 Sealing Flowmeter PD340 Cxx

The bolts used for keeping the meter and the electronic modul and terminal modul together – is sealed through small holes in screw heads (See also TC 7204 rev 6 and TC 7204-4).



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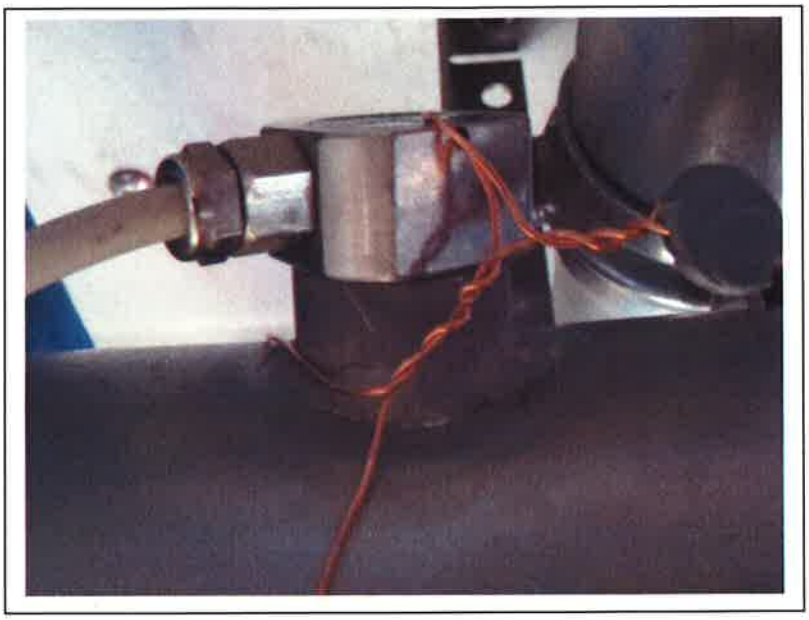
14.3 Sealing Liquid detector

The liquid detector is sealed against disconnection and removal from pipework.



14.4 Sealing Bubble detector

The bubble detector is sealed against disconnection and removal from pipework.

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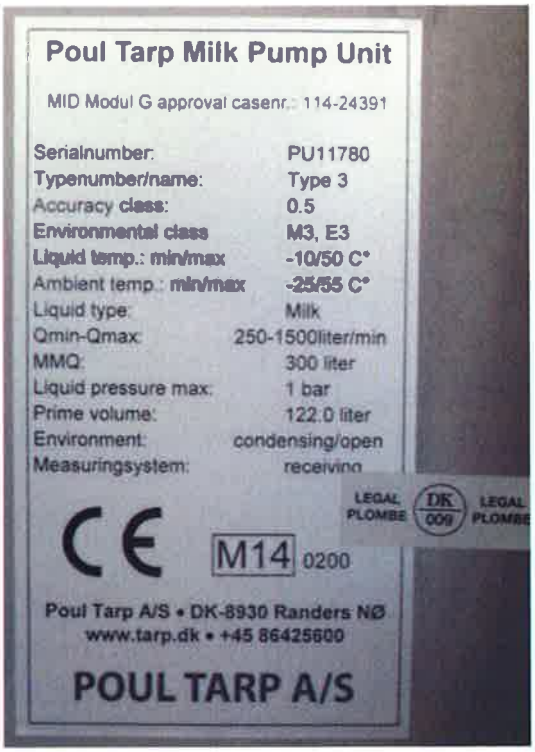
14.5 Nameplate

Nameplate (Example) is sealed with a sticker to the frame of the measuring system.



14.6 Data Sheet

Data sheet can be marked/sealed with a sticker to secure its belonging to the measuring system

15 Identification of the PD340 Cxx software

15.1.0 Connect PD4000 control panel with P-net A and B, and 24V DC and ground.
15.1.1 From control panel select
15.1.2 Push: Setup
15.1.3 Select: Manual
15.1.4 Push: "="
15.1.5 Select: Ident
15.1.6 Push: "="
15.1.7 On display is SW version and serial number displayed. (**Approved SW version = 701**)

(See also Evaluation Certificate and Description NMI no. TC7204 rev 6, issued 26 august 2014).

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16 Identification of the S12 software

The S12 software is divided in a legal and a non-legal part.

16.1 S12 Legal software identification

The identification is shown on the display, when the power supply is connected to the LVM system,

Bios 733006 rev. 2012-11-21
Bios CRC = 40E9B23B
Setup CRC = xxxxxxxx
CPU Serial = xxxxxx

or by pressing and holding the TEST key on the S12 front:

I/O board = xxxxxx
Prog Nr = xxxxxx
Prog Ver = xxxx-xx-xx
Bios Ver = 2012-11-21
Bios Prog = 733006
Bios CRC = 40E9B23B

The legal program part of the program is the bios.

Bios Ver yyyy-mm-dd
Bios prog 733006
Bios CRC hhhhhhhh

yyyy = year, mm = month, dd = day.
The date reflects the date of the build of the program.
hhhhhhhh = 32 bit hexadecimal number bios program CRC value.
The date and the CRC value are changed at each change of the legal part of the program.

(See also Evaluation Certificate Force Certification No. 111-30730, issued 26.11.2012)

16.2 S12 legal setup parameters

The setup parameters can be read and checked from the power up picture of the S12

Pump unit type 2
Prime volume press F5, F4
Flow sensor settings press F5, F3, F2, F1, F1

Pump unit type 3
Prime volume press F5, F7, F2
Flow sensor settings press F5, F4, F4, F5

If the parameters has to be changed, insert a wire between connector XP2 pin 3,4 and insert a operator/service key in key reader slot A.
A flashing cursor will indicate, that the parameters can be altered.

17 Nameplate information

Manufacturer	Ingeniørfirmaet Poul Tarp A/S
EU-Type examination certificate number	DK-0200-MI005-006
Measuring System (serial) no.	xxx
Type no.	Type 3
Accuracy class	0.5
Mechanical class	M3
Electromagnetic class	E3
Climatic class	H3
Liquid temperature max. / min.	0/+50 °C
Operating temperature min. / max.	-25/+55 °C
Liquid type	Milk
Qmin – Qmax	xxx – xxx l/min
MMQ	xxx litres
Liquid pressure max	1 bar

17.1 Example of nameplate

Poul Tarp Milk Pump Unit

EC TEC: DK-0200-MI005-006

Serial number:	7025
Type number/name:	Type 3
Accuracy class:	0.5
Environmental class	M3, E3
Liquid temp.: min/max	0/50 °C
Ambient temp.: min/max	-25/55 °C
Liquid type:	Milk
Qmin-Qmax:	250-1500 litres/min
MMQ:	300 litres
Liquid pressure max:	1 bar
Prime volume:	122.0 litres
Environment:	Condensing/open
Measuring system:	Receiving

CE M14 0200

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POUL TARP A/S

18 Example of Datasheet

Datasheet for Milk receive pump unit					
Manufacturer:	Poul Tarp A/S	**Legal system parameters:**			
Product number:	type 3				
Serial number:	7095				
S12 flow computer with printer					
Manufacturer:	Poul Tarp A/S				
Product number:	01630321001				
Serial number:	174133476				
Software version:	733006, 2012-11-21				
Volume Meter					
Manufacturer:	Process-Data A/S				
Product number:	C76				
Serial number:	770635				
Software version:	A570043-2 ver. 701				
Gas eliminator device					
Manufacturer:	Vito A/S				
Product number	223730830282				
Serial number					
Bubble detector					
Manufacturer:	Poul Tarp A/S				
Product number:	018302561001				
Serial number:	473127949				
Milk detector					
Manufacturer:	Poul Tarp A/S				
Product number	018302561001				
Serial number:	114131709				
Approved by:		**Date:**			

The datasheet can be supplemented with an appendix as shown on the following pages.

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Milk receive pump unit, datasheet appendix

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1. System til hentning af mælk

Systemet styrer volumen registrering ved indvejning fra leverandørtank.

1.1 System komponenter

Se vedlagte rordiagram (tal henviser til rordiagram)

- bobledetektor (1)
- temperatur sensor (2)
- væskepumpe højt flow (3)
- væskepumpe lavt flow (4)
- kontraventil (5)
- luftudskiller (6)
- flow meter (7)
- mælkedetektor (8)
- luftstyret udgangs/kontraventil (9)
- S12 styrecomputer (10)
- Luftudskiller væskeniveau detektor (11)
- Luftudskiller udluftningsventil (12)

S12 flowcomputeren styrer indpumpning af væske ved at styre ventiler, pumper, luftudskiller og flowmåler funktioner. Enhederne er koblet direkte til S12 computeren.

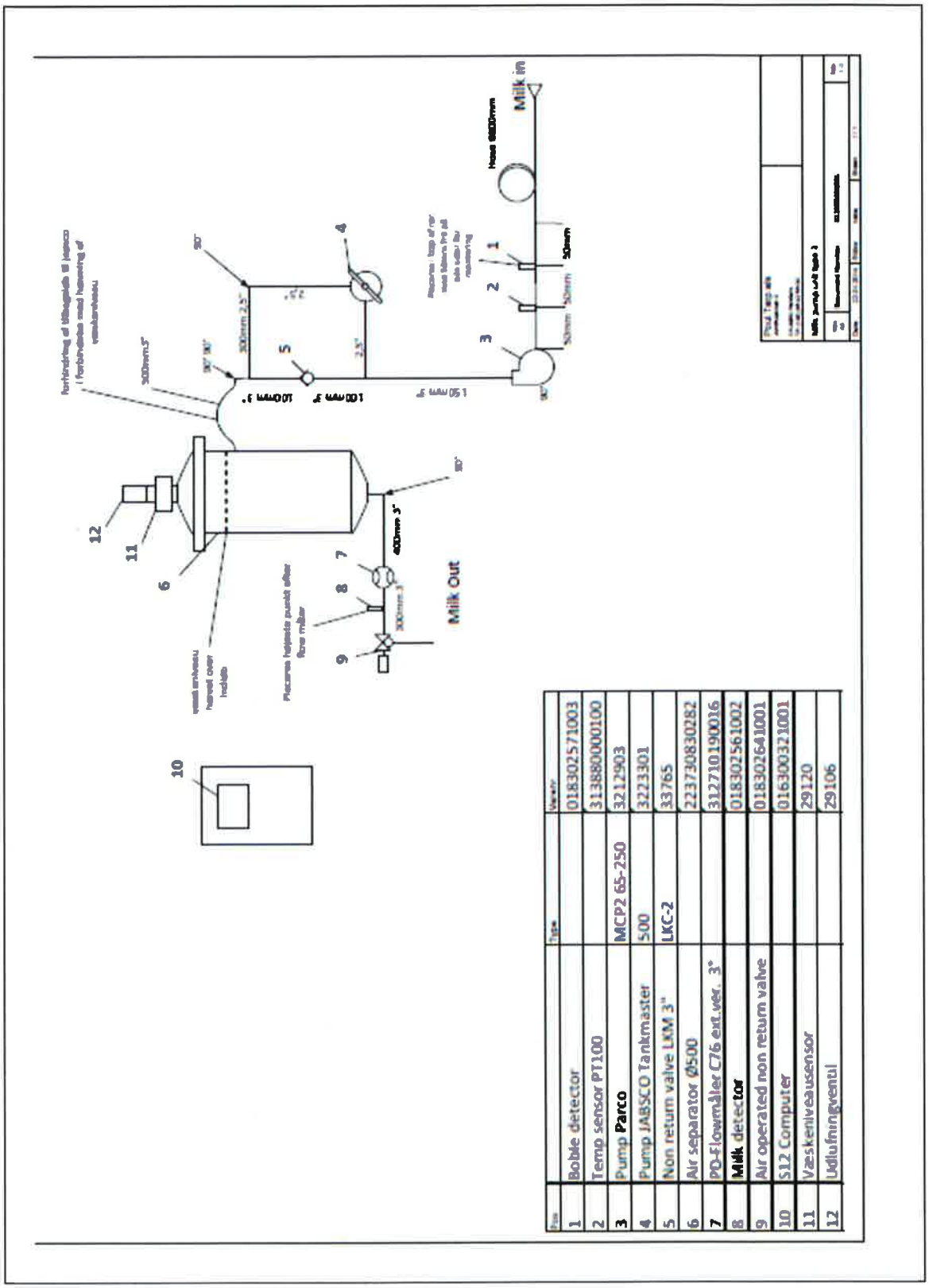
1.2 Indvejning af mælk

Indleveringsslangen forbindes til leverandørtanken og tankens hane åbnes. Leverandørnr registreres på S12 computeren, og indvejningen startes herfra.

S12 computeren registrerer pulser fra flow måleret og viser løbende den indpumpede væske mængde på displayet. For et sikre korrekt funktion registreres flowpulser kun når mælkedetektoren registrerer tilstedeværelse af væske.

Når leverandørtanken er tom vises den indvejede volumen på S12 displayet og på den udskrevne kvittering.

Appendix to data sheet, page 3 of 6



Pos		Type	Varenr
1	Boble detector		018302571003
2	Temp sensor PT100		313880000100
3	Pump **Parco**	MCP2 65-250	3212903
4	Pump JABSCO Tankmaster	500	3223301
5	Non return valve LKM 3"	LKC-2	33765
6	Air separator Ø500		223730830282
7	PD-flowmåler C76 ent.ver. 3"		312710190016
8	**Milk detector**		018302561002
9	Air operated non return valve		018302641001
10	S12 Computer		016300321001
11	Væskeniveausensor		29120
12	Udluftningsventil		29106

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1.3 Verifikation

1.3.1 Provningsomfang ved produktverifikation

For tomt system (forste måling – luftlomme start/slut):

I) 2 målinger ved MMQ hvor systemet er tomt – prime måling

For fyldt system med transfer point ved constant level (luftlomme start/slut):

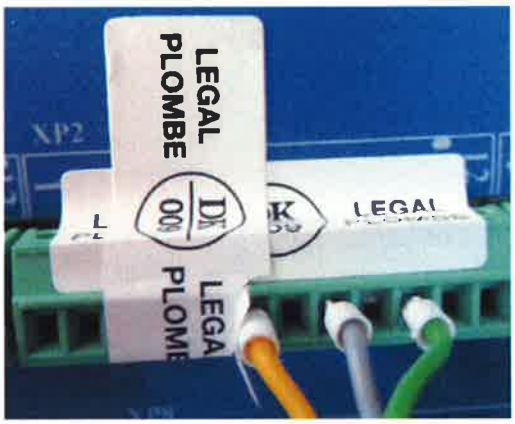
II) 2 målinger ved MMQ. Qmin

III) 2 målinger ved MMQ. Qmax aktuel

IV) 2 målinger ved volumen svarende til et minuts udmåling Qmax aktuel

1.3.2 Forsegling

1.3.2.1 S12 computer tilslutninger



Flowmeter forbindelser

Mælkedetektor og bobledetektor forbindelser

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1.3.2.2 S12 bios (legal) programmerings connector (USB)

1.3.2.3 Mælke detektor

1.3.2.4 Bubble detektor

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1.3.2.5 Flow meter

1.3.2.6 Flowmeter firmware identifikation

Flowmåler type PD340 Cxx
Tilslut PD4000 betjeningspanel med P-net A og B samt 24V DC og ground.
Fra betjeningspanelet vælges:
Tryk på Setup.
Pil frem / tilbage til: Manual
Tryk "="
Pil frem / tilbage til: Ident
Tryk på "="
Den viser nu type. sw version. serienummer. SW version skal være 701.
Som standard har PD 340 måleren P-NET nummer 11 (hex) = 17 (decimal).

1.4 Eksempel på Navneskilt

5/5

19 Initial verification: Identification, Test and handling

1. Identification of essential components, correct installation and function of Measuring System, according to this EC TEC and general requirement
2. Sufficient and adequately information on name plate
3. Sufficient and adequately information on Data Sheet
4. Check of relevant sealing and securing of essential components
5. Check of legal SW/firmware on Flow transmitter (Proces Data 340Cxx) and flow computer S12

6. Accuracy calibration of measuring system:

   A calibration of the Measuring system is performed under normal condition of use, which means air pocket in the beginning and end of the measurement for receiving systems, and measuring system filled with liquid to transfer point (nozzle with sight glass) for delivering systems. Calibration is performed with actual liquid (Milk).

   1. Calibration at Qmax in at least one minute
   2. Calibration at Qmax at MMQ, and/or
   3. Calibration at ½Qmax in at least one minute
   4. Calibration at Qmin at MMQ
   5. Calibration with empty system (Prime volume check).

      Note: Before calibration and measurement, the constant level sight glass is checked to be within the markings on the Gas Elimination Device for receiving systems and Nozzle full hose sight glass checked to be without air for delivery systems.

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