



## Alfa Laval Clara 20

Multi-purpose centrifuge module for food and beverage industries



Alfa Laval Clara 20 separation unit.

The Alfa Laval Clara 20 is a complete “plug & play” separation system, based on the LAPX 404 centrifuge, which is mounted on a flexible and cost efficient module. It is designed for the food and beverage industries but can also be used for general purpose duties.

The Alfa Laval LAPX 404 separator, which is the core component of the Clara 20 system, has all product wetted parts in stainless steel and o-rings and gaskets are food grade. The unit is suitable for clarification, concentration or purification duties with a wide range of solids content.

### Standard design

The Clara 20 system includes:

- Valves and components for product and utility handling.
- Inductive flow meter with volumetric totalizer.
- Sight glass in product outlet.
- Regulating valve for back pressure control.
- Pressure sensor with alarm for operating water supply.
- Flushing of the bowl exterior surface.
- Electrical cabinet, including PLC type EPC 60.
- Possibility to communicate with external system by Modbus TCP.

### Clara 20 Range

- There are six different Clara 20 systems:
- Low flow clarifier.
- Low flow purifier.
- Low flow concentrator.
- High flow clarifier.
- High flow purifier.
- High flow concentrator.

“High flow” and “low flow” refer to the hydraulic capacity and not separation capacity.

### Options

- Stand alone feed pump
- Solids receiving unit, incl pump
- Turbidity triggering of discharge (on high flow version only)

### Technical specification

Hydraulic capacity (max)	
- High flow version	4 m <sup>3</sup> /h
- Low flow version	0.500 m <sup>3</sup> /h
Solids space clarifier	1.1 lit
Solids space pur/conc	0.6 lit
Discharge volume	1.1 lit
Power consumption max	2.2 kW
Motor power	3.7 kW
Weight complete module incl. separator	460 kg
Weight separator, total	232 kg
Weight bowl	37 kg
Weight motor	21 kg

### Connection details Clara 20 HF Clarifier

Connection no	Description	Type / Size / Std.
201	Product inlet	Clamp Ferrule DN 25 / DIN 32676
227	Product outlet	Clamp Ferrule DN 25 / DIN 32676
222	Solids outlet	Clamp Ferrule OD 63.5 / ISO 2852
370	Operating water	Hose Nipple / DN 15
460	Separator drain	Hose Nipple / DN 20

### Operating principles

The feed containing the liquid and the solids is led into the unit (Fig. 2) through connection 201 into the separator. The solids are collected in the periphery of the rotating bowl and are discharged at preset intervals. The solids are discharged from the separator via a cyclone and leaves the module from connection 222, alternatively via an integrated solids pump (see options). The clarified liquid is pumped out of the bowl by means of a built-in paring disc and leaves the module through connection 220.

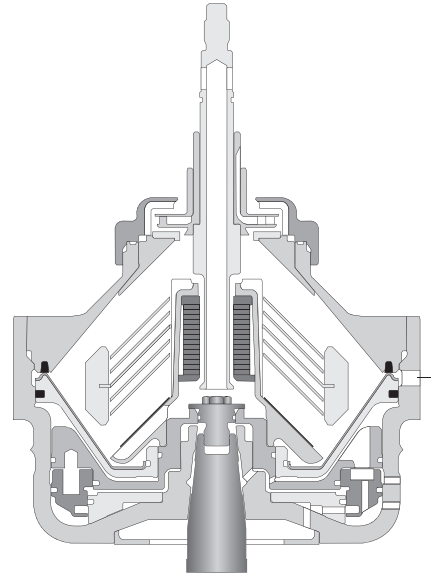
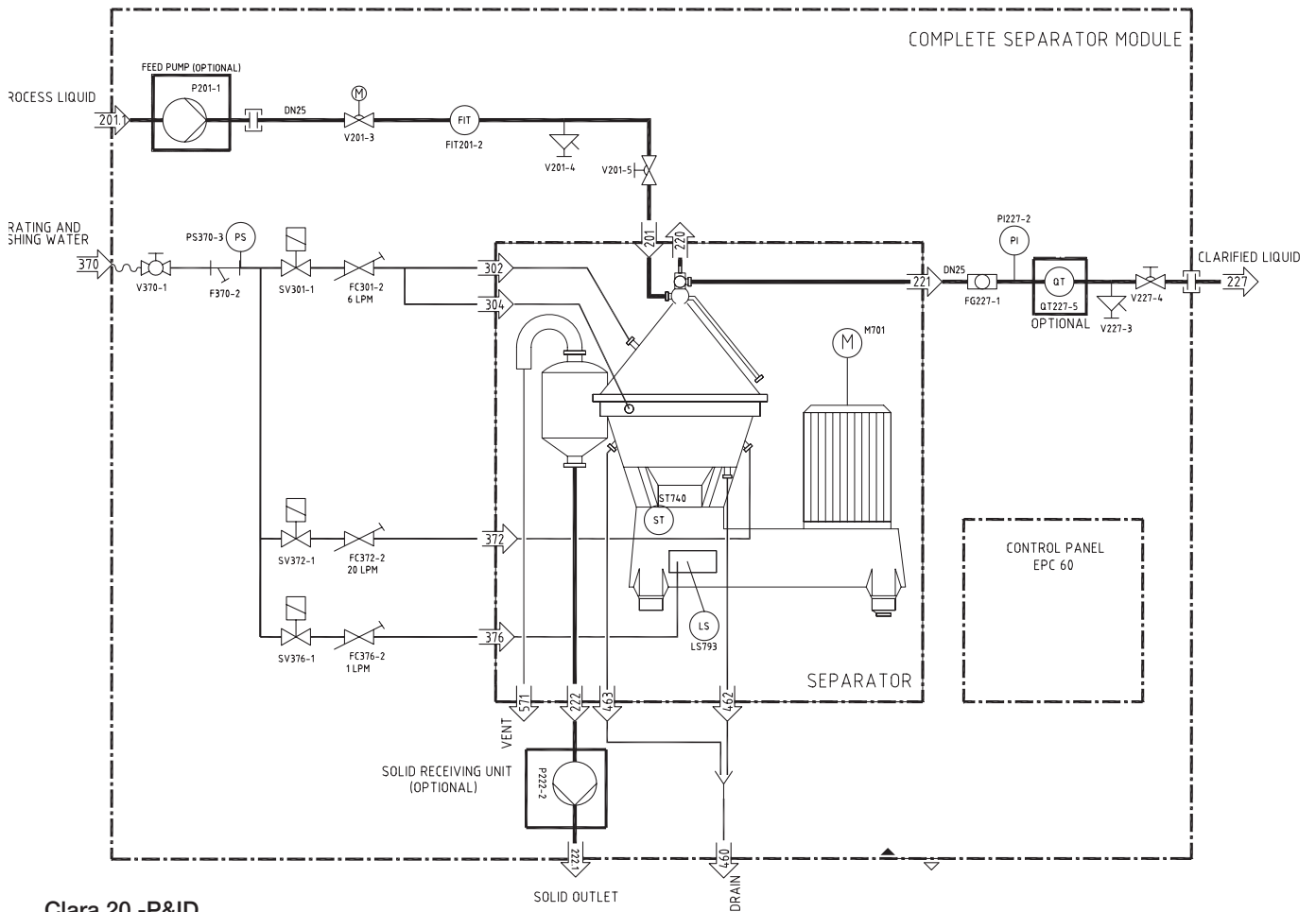
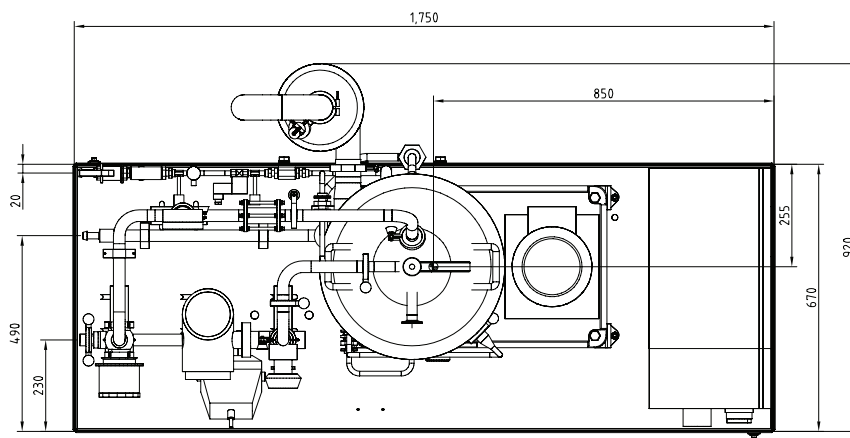
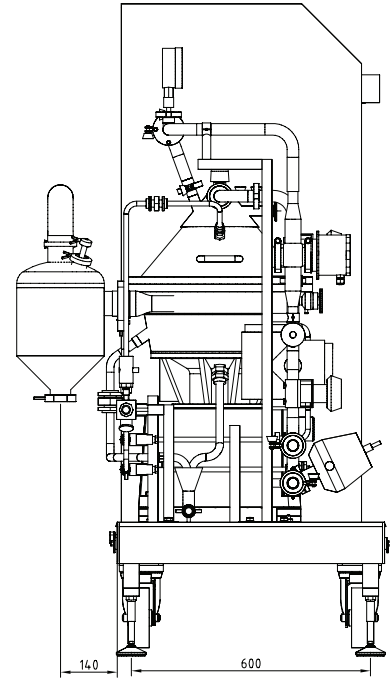
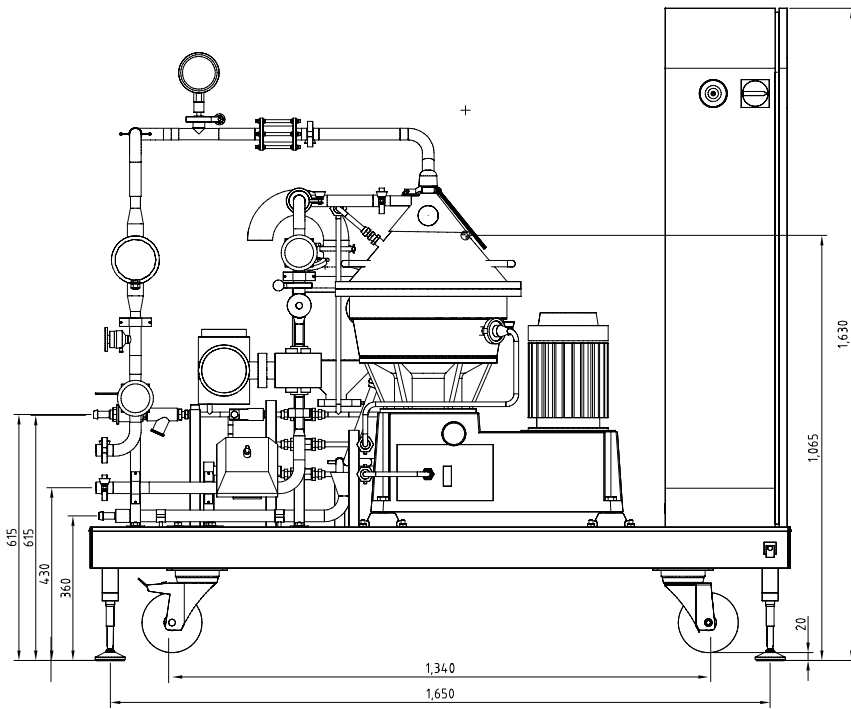


Fig 1. Typical bowl drawing for a solids-ejecting centrifuge in clarifier executing. Drawing details do not necessarily correspond to the centrifuge described.



Clara 20 -P&ID  
Fig 2.



### Clara 20 - Layout

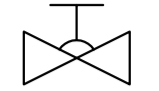
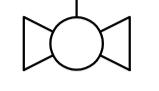
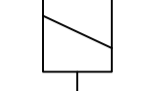
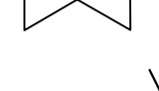
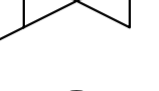
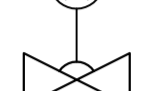


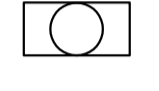




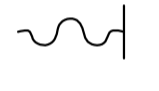

Fig 3.

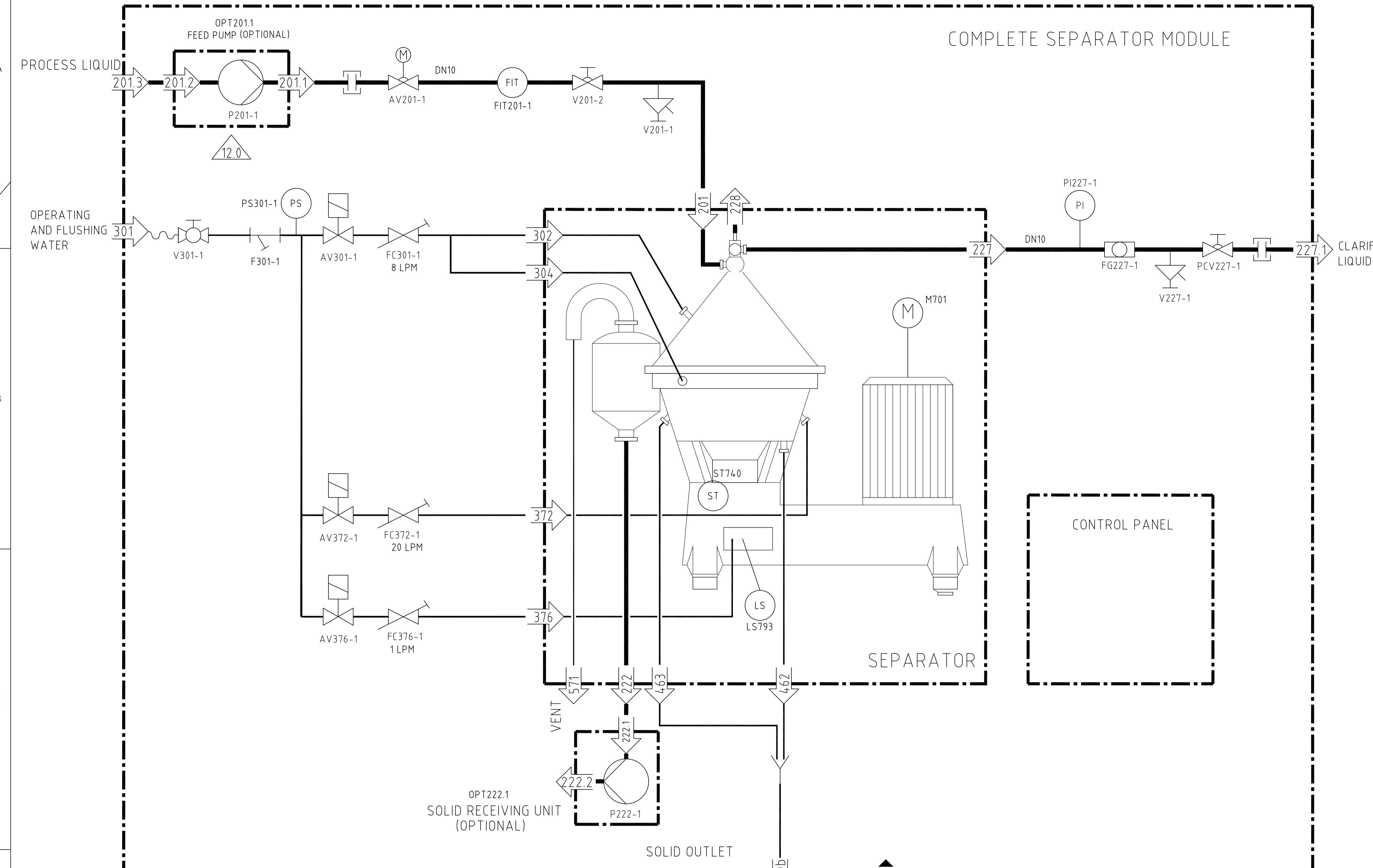
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#### How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)

LEGEND

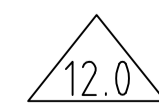
-  MANUAL DIAPHRAGM VALVE
-  MANUAL BALL VALVE
-  SOLENOID VALVE
-  FLOW RESTRICTOR
-  ELECTRICALLY ACTUATED VALVE
-  STRAINER
-  SIGHT GLASS
-  PRESSURE INDICATOR
-  FLOW INDICATOR TRANSMITTER
-  PUMP
-  HOSE NIPPLE
-  TRI CLOVER CONNECTION
-  SAMPLE VALVE
-  PRESSURE SWITCH
-  CENTRIFUGAL PUMP

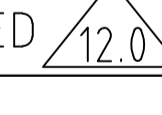

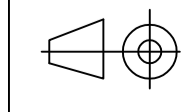


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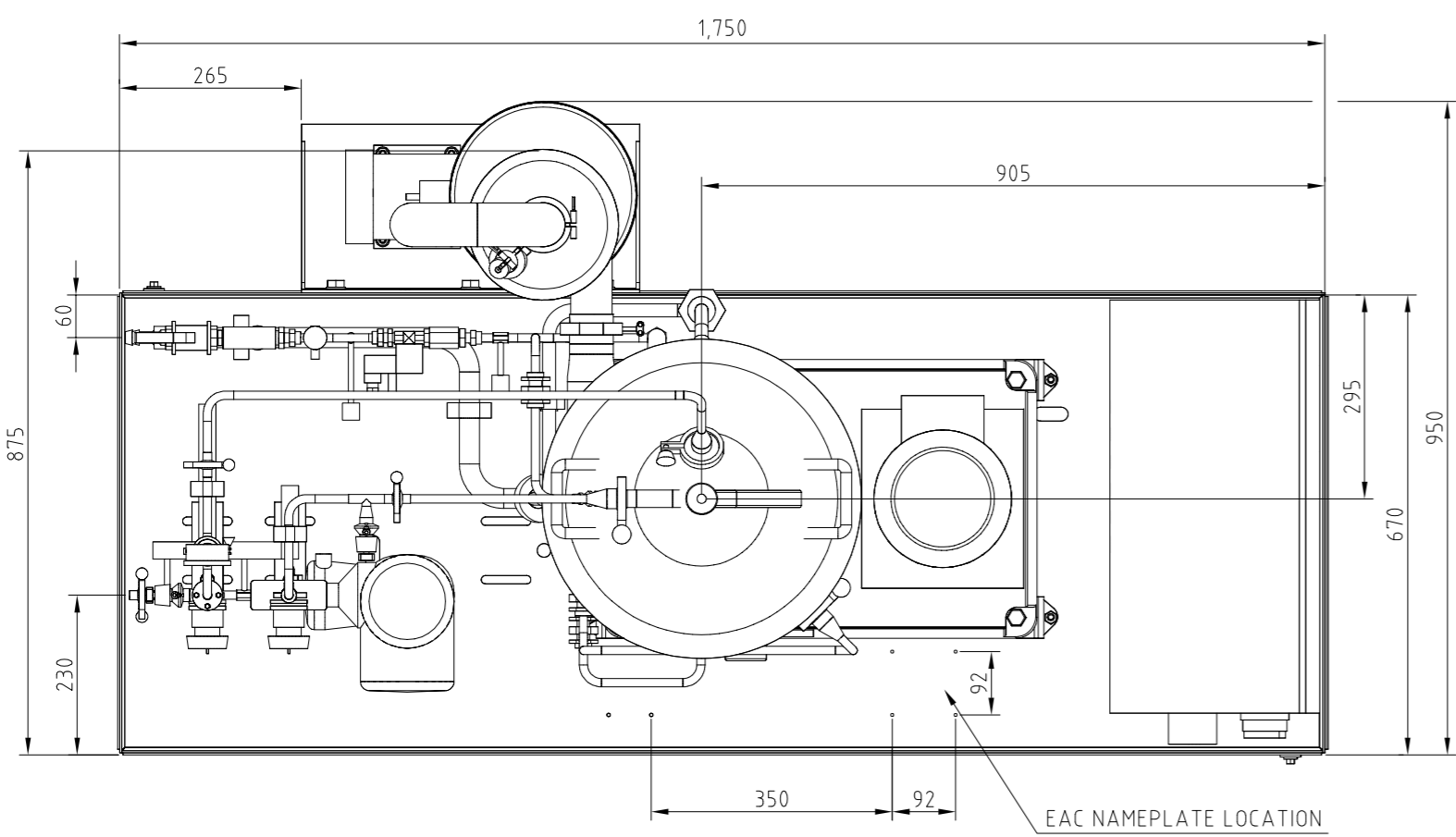
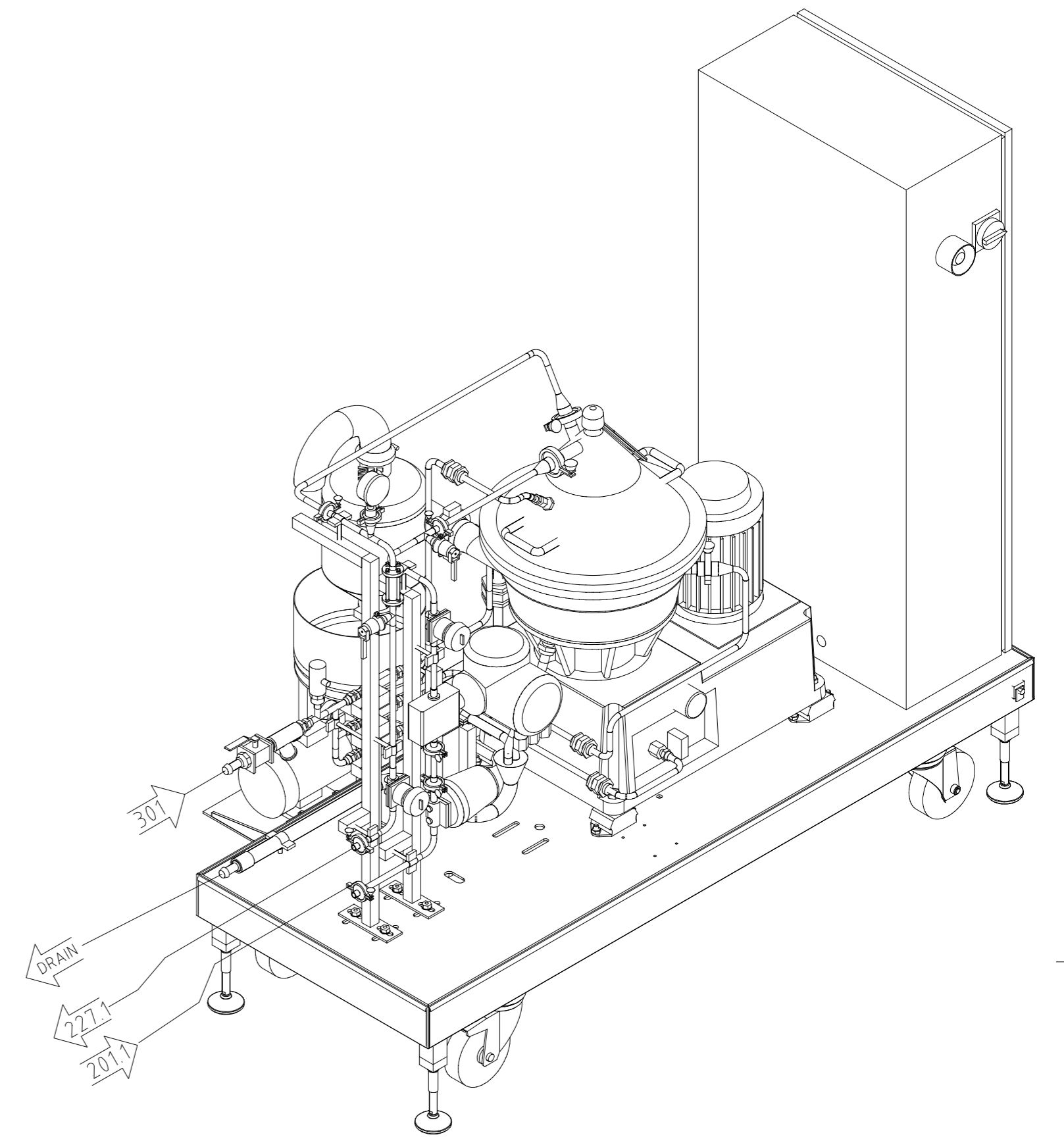
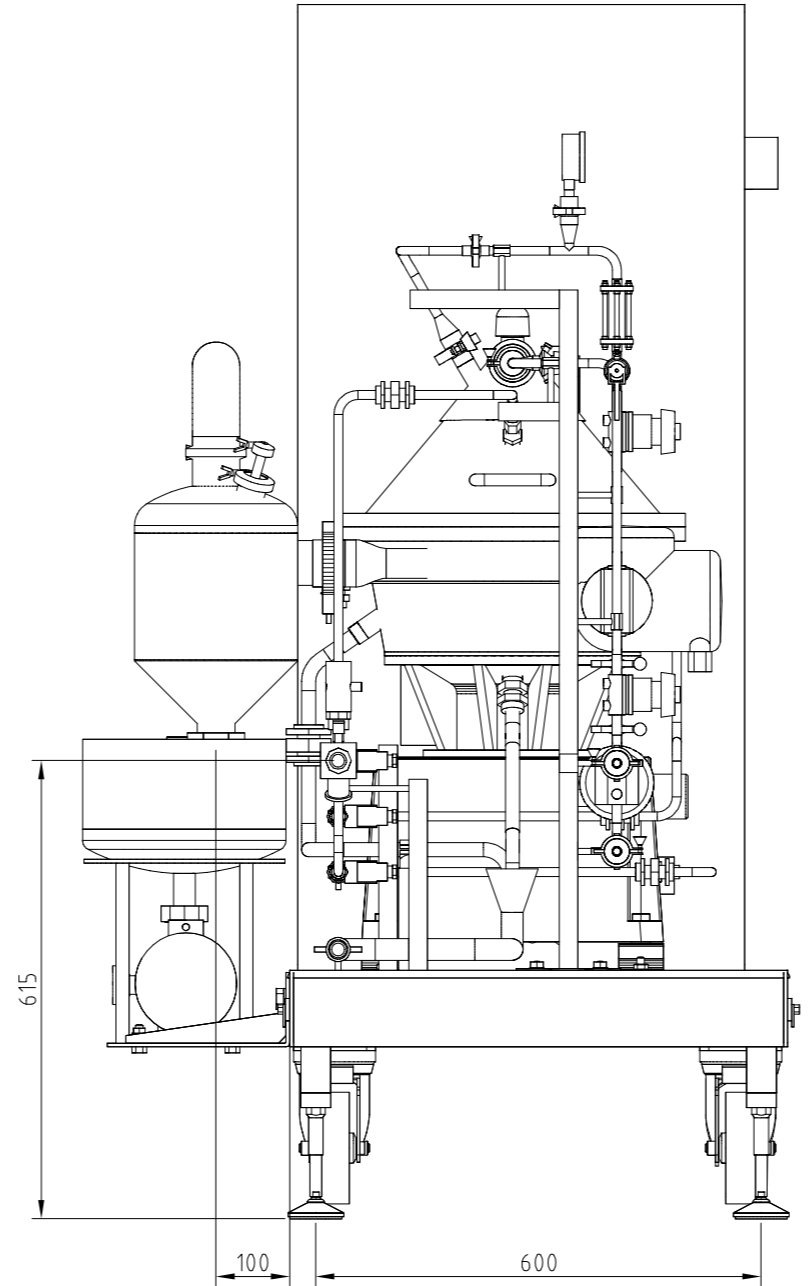
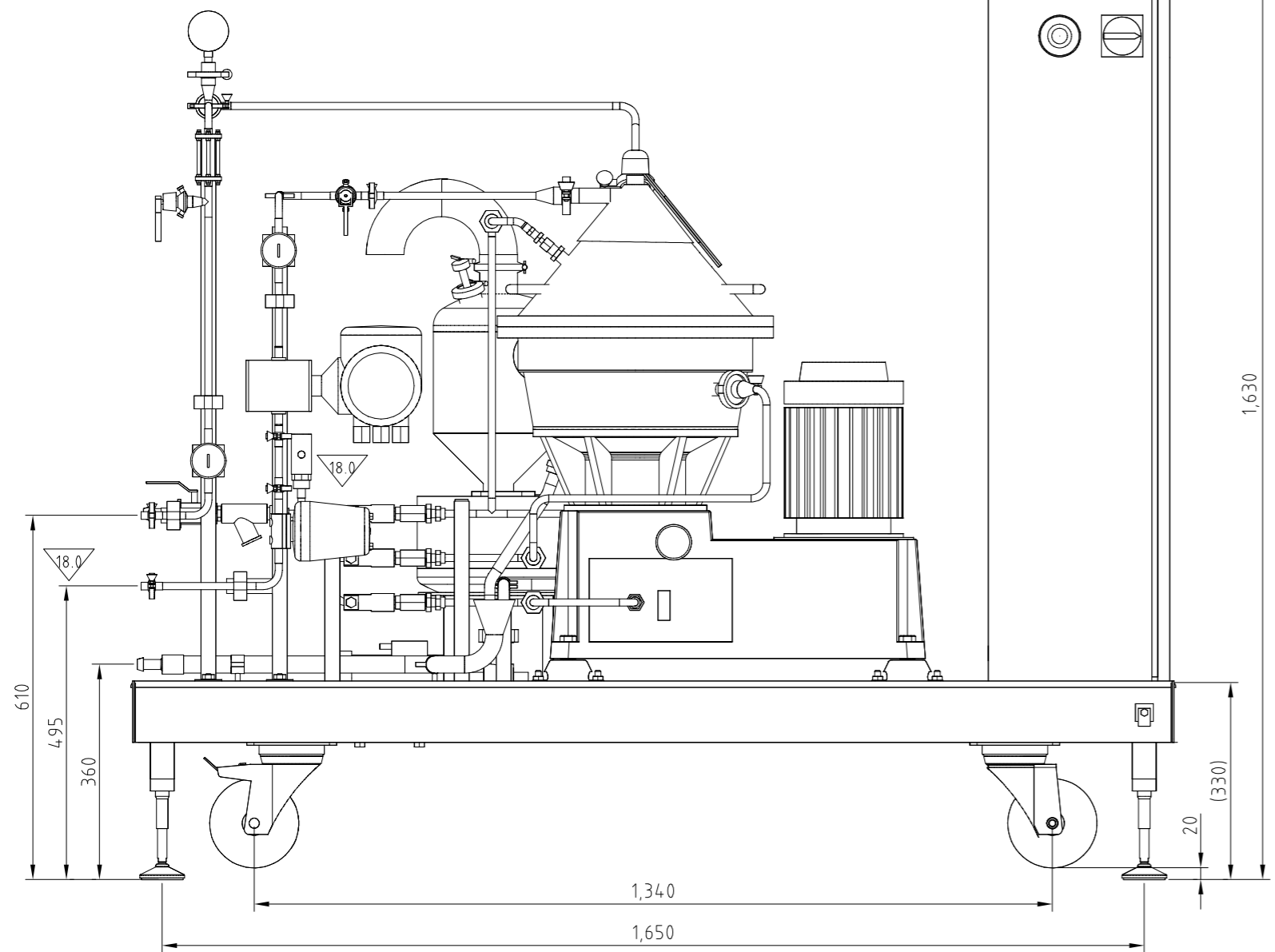
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- Notes:
1. Product wetted material: SS316L = EN1.4404. 
  2. Pipe specification: DIN 11850-2.

12.0	P201-1 CHANGED & NOTES UPDATED 	27-02-2020	INPODKRA	INPAMBE	SETUYDU
11	P201-1 IS CENTRIFUGAL PUMP	16-03-2019	INPAGATA	SETUKHN	SETUKHN
10	High capacity flow restrictor	28-02-2017	INPAMBE	INPAGATA	INPAGATA
Rev No	Revision text	Date	Drawn	Checked	Appr.
		Title <b>P&amp;I Diagram CLARA 20 LOW FLOW CLARIFIER</b>			
Location Alfa Laval India Private Limited		Proj. No ---	Proj. Type ---	Proj. Name STANDARD MODULE	
Date 21-11-2007	Drawn BEBRGGSa	ISO Method E 	Size A2	Dimensions without tolerances: ISO 13920-B, ISO 2768-M	
		Scale NTS	Sheet 1 OF 1	Drawing No 9699641400	Rev 12.0

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CONNECTION DETAILS		
CONN NO	DESCRIPTION	TYPE-SIZE-STD
201.1	PRODUCT INLET	CLAMP FERRULE-DN10-DIN32676
227.1	PRODUCT OUTLET	CLAMP FERRULE-DN10-DIN32676
222	SOLIDS OUTLET	CLAMP FERRULE-OD63.5-ISO2852
301	OPERATING WATER	HOSE NIPPLES-DN15
DRAIN	SEPARATOR DRAIN	HOSE NIPPLES-DN20

18.0	Line 201 updated	11-03-2020	INPAMBE	SETUYDU	SETUYDU
17.0	MODEL 2020 CATAGORY 1 UPDATES	28-02-2020	INPODKRA	INPAMBE	SETUYDU
16	Type of FIT201-1 Changed.	13-08-2019	INPODKRA	SETUKHN	SETUKHN
Rev No	Revision text	Date	Drawn	Checked	Appr.

		<b>LAYOUT DRAWING</b> <b>CLARA 20 LOW FLOW CLARIFIER</b>			
		Proj. No ---	Proj. Type ---	Proj. Name STANDARD MODULE	
Location Alfa Laval India Private Limited		ISO Method E 	Size A2	Dimensions without tolerances: ISO 13920-B, ISO 2768-M	
Date 24.12.2010	Drawn INPAGDH	Scale 1:10	Sheet 1 OF 1	Drawing No CD02133	Rev 18.0


NOTES:  
1. PRODUCT WETTED MATERIAL: SS316L = EN1.4404.

## Connection list Clara 20


Electrical power supply: 3x400-460V 50/60Hz Min 16A. Max 25A

For connections to the separator, please see the connection list in the instruction book for the separator.

PROCESS CONNECTIONS		
Connection	Description	Requirements
201.1	Inlet process liquid	<ul style="list-style-type: none"> <li>• allowed temperature: 0 - 100°C</li> <li>• max allowed density: 1100 kg/m<sup>3</sup></li> <li>• High flow range: 400 - 4000 l/h</li> <li>• Low flow range: 50 - 500 l/h</li> <li>• Concentrator pressure max: 60 kPa</li> <li>• Purifier pressure max: 30 kPa</li> <li>• Clarifier pressure max: 120 kPa</li> </ul>
201	Outlet non-separated process liquid	<ul style="list-style-type: none"> <li>• Connected to 201 on Separator</li> </ul>
227	Outlet separated liquid	<ul style="list-style-type: none"> <li>• Concentrator: maximum counter pressure: 330 kPa</li> <li>• Purifier: maximum counter pressure: 330 kPa</li> <li>• Clarifier: maximum counter pressure: 330 kPa</li> </ul>
221	Inlet clarified process liquid from Separator	<ul style="list-style-type: none"> <li>• Connected to 221 on Separator</li> </ul>
228 (only for concentrator and purifier)	Outlet heavy phase liquid	<ul style="list-style-type: none"> <li>• Concentrator: maximum counter pressure: 110 kPa</li> <li>• Purifier: maximum counter pressure: 150 kPa</li> </ul>
220	Inlet clarified process liquid from Separator	<ul style="list-style-type: none"> <li>• Connected to 220 on Separator</li> </ul>
222 222.2	Outlet solids from cyclone or solids receiving unit (optional)	<ul style="list-style-type: none"> <li>• volume/discharge: 1.1 litres</li> <li>• max. 30 discharges/hr</li> </ul>
222.1	Solids inlet solids receiving unit (optional)	<ul style="list-style-type: none"> <li>• Connected to 222 on Separator</li> </ul>
301	Operating and flushing liquid	<ul style="list-style-type: none"> <li>• required pressure: 200 - 600 kPa</li> <li>• flow, momentary: 1 m<sup>3</sup>/h</li> <li>• consumption: 0.6 l/discharge plus flushing</li> <li>• max allowed density: 1000 kg/m<sup>3</sup></li> <li>• quality requirements: see 553406</li> </ul>

CONNECTION LIST		Clara 20					Document:	9660001296		
Rev. No:	Rev Date:	Complementary information:	Project:	Prepared:	Checked:	Approved:	Date:	Page:	Total:	
04	27/06/2017	Flowcharts 9699641100, 9699641200, 9699641300, 9699641400, 9699641500, 9699641600	STANDARD	INPAGATA	INPAPLR	SETUKHN	01/03/2010	1	1	

462	Drain outlets	• no back pressure allowed
463		
571	ventilation outlet	• no back pressure allowed

CONNECTION LIST		Clara 20					Document:	9660001296		
Revised for:		As per Clara face lift								
Rev. No:	Rev Date:	Complementary information:	Project:	Prepared:	Checked:	Approved:	Date:	Page:	Total:	
04	27/06/2017	Flowcharts 9699641100, 9699641200, 9699641300, 9699641400, 9699641500, 9699641600	STANDARD	INPAGATA	INPAPLR	SETUKHN	01/03/2010	1	1	



# Component List



Title: <b>CLARA 20 Low Flow Clarifier</b>		Date: 01-03-2017	Project no: ---	Document no: <b>9611640100</b>	Rev: 11
Created by: INPARFE	Checked by: INPAGATA	Approved by: INPAKHN	Customer: ---		
<b>Tag no.</b>	<b>Qty.</b>	<b>Part no.</b>	<b>Denomination</b>	<b>Description</b>	<b>Manufacturer/ Supplier</b>
<b>Comment</b>	<b>Certificate</b>				

AV201-1	1 PCS	618-10-D-17-40-13-C4-AE-1502-A0	Diaphragm Valve	Type: Diaphragm Valve 618, 2/2 Way Body, End Connection: DN10 DIN 11850-2 Welded, Body Material: AISI 316L, Seat Material: EPDM, supply voltage 24V AC	Gemu / ---	
AV301-1	1 PCS	VX212M22A	Solenoid valve	Type: VX21, Connection: 1/4" Ins. Thr., Safetyposition: NC, Material: SS304, Gasket material: NBR, Voltage: 24V DC, Electrical connection: DIN Connector with LED, Flow rate: 600 LPM	SMC / SMC	
AV372-1	1 PCS	VX212M22A	Solenoid valve	Type: VX21, Connection: 1/4" Ins. Thr., Safetyposition: NC, Material: SS304, Gasket material: NBR, Voltage: 24V DC, Electrical connection: DIN Connector with LED, Flow rate: 600 LPM	SMC / SMC	
AV376-1	1 PCS	VX212M22A	Solenoid valve	Type: VX21, Connection: 1/4" Ins. Thr., Safetyposition: NC, Material: SS304, Gasket material: NBR, Voltage: 24V DC, Electrical connection: DIN Connector with LED, Flow rate: 600 LPM	SMC / SMC	
F301-1	1 PCS	Fig16L 1/2"	Y-Type Strainer	Y-Type Strainer, Fig16L, Austenitic Stainless Steel, Austenitic Stainless Steel, Reinforced Exfoliated Graphite, Ins. Thr., 1/2", BSP, undefined	Spirax Sarco / Spirax Sarco	
FG227-1	1 PCS	7006010120-041	Sight Glass	Sight Glass, Type: 7006, Product Contact Material: EN 1.4404 (AISI 316L), End Connection: Welded DN10, Connection Standard: DIN	Kieselmann / Kieselmann	
FIT201-1	1 PCS	50H08-UJ0A1AA0ABAA	Electromagnetic Flowmeter	Type: Electromagnetic Flowmeter Promag 50H, End Connection: DN8, DIN 11850 Socket welded, Material Product Wetted Part: EN 1.4404 (AISI 316L) and Liner - PFA, Measuring Range: acc. to spec., Cable Entry: M20, Power Supply: 24VDC, Output: 4-20mA SIL HART + Frequency	Endress+Hauser / Endress+Hauser	
FC301-1	1 PCS	REG-1208D	Flow Restrictor	Flow Restrictor, REG-12, Stainless Steel, 8lpm, Ins. Thr., 1/2", BSP,	Kobold / ---	
FC372-1	1 PCS	REG-1220D	Flow Restrictor	Flow Restrictor, REG-12, Stainless Steel, 20lpm, Ins. Thr., 1/2", BSP,	Kobold / ---	
FC376-1	1 PCS	REG-1201D	Flow Restrictor	Flow Restrictor, REG-12, Stainless Steel, 1lpm, Ins. Thr., 1/2", BSP,	Kobold / ---	
LS793	1 PCS	---	(LS) Level switch		--- / ---	Included with separator

# Component List



Title: <b>CLARA 20 Low Flow Clarifier</b>		Date: 01-03-2017	Project no: ---	Document no: <b>9611640100</b>	Rev: 11
Created by: INPARFE	Checked by: INPAGATA	Approved by: INPAKHN	Customer: ---		
<b>Tag no.</b>	<b>Qty.</b>	<b>Part no.</b>	<b>Denomination</b>	<b>Description</b>	<b>Manufacturer/ Supplier</b>
<b>Certificate</b>					<b>Comment</b>

P201-1	1 PCS	Reform B FU 500-10000 I/h	Feed Pump	Impeller Pump Reform B AISI 304 with frequency transformer 2.2KW, 500-10000 i/h, impeller neoprene, incl. 10m cable firmly attached, + plu functions: on/off, forward/reverse, high/low speed, incl. 2 mtr. contr. cable, mains voltage 3 x 400V, 50 Hz, 1.5kW motor incl. stainless steel chassis and bypass connection, DIN 11851 DN25. Inlet : Male, Outlet : Liner + Nut	Schneider / ---	Optional
P222-1	1 PCS	FIP25SH-SMS 72 M01 F80	Solids Pump	Material of Pump body: Stainless steel (AISI 316) & hygienic version Size: DN25 union Impeller: EPDM Motor size: IEC 80, 2.2kW	Johnson / ---	Optional
PCV227-1	1 PCS	61210D17401301TS1502	Diaphragm Valve	Type: Diaphragm Valve 612, 2/2 Way Body, End Connection: DN10 DIN 11850-2 Welded, Body Material: AISI 316L, Seat Material: EPDM,	Gemü / Gemü	
PI227-1	1 PCS	85115702 + 31913WS	Bourdon Tube Pressure Gauge with Diaphragm seal	Type: Bourdon Tube Pressure Gauge RF63ChGly,D702 with diaphragm seal MD61, End Connection: DN20 clamp DIN32676., Material Product Wetted Part: AISI 316L, Measuring Range: 0/10 bar, Nominal size: 63mm, Class: 1.6	Afriso / ---	
PS301-1	1 PCS	PN 5004	Pressure Switch	Pressure Switch, Type: PN500X, Product Contact Material: Stainless Steel (303S22), Other Material: Stainless Steel (304S15), Gasket material: , End Connection: Ins. Thr. 1/4", Connection Standard: BSP,	IFM Electronic Gmbh / ---	
ST740	1 PCS	---	Speed Transmitter		--- / ---	Included with separator
V201-1	1 PCS	PEC-15L	Sampling Device	Type: Sampling Device PEC 15, End Connection: Welded NW15, Body Material: AISI 316L, Seat Material: EPDM	Sanprotek / ---	
V201-2	1 PCS	61210D17401301TS1502	Diaphragm Valve	Type: Diaphragm Valve 612, 2/2 Way Body, End Connection: DN10 DIN 11850-2 Welded, Body Material: AISI 316L, Seat Material: EPDM,	Gemü / Gemü	
V227-1	1 PCS	PEC-15L	Sampling Device	Type: Sampling Device PEC 15, End Connection: Welded NW15, Body Material: AISI 316L, Seat Material: EPDM	Sanprotek / ---	
V301-1	1 PCS	KUG-ZER 15	Ball Valve	Type: three piece, full bore, 2 way, End connection: 1/2" BSP, Ins Thr, Body material: AISI 316, Gasket: PTFE	KOBOLD / Kobold	



# Component List

Title:		CLARA 20 Low Flow Clarifier		Date:	01-03-2017	Project no:	---	Document no:	9611640100	Rev:	11
Created by:	INPARFE	Checked by:	INPAGATA	Approved by:	INPAKHN	Customer:	---	Sheet: 3/3			
Tag no.	Qty.	Part no.	Denomination	Description			Manufacturer/ Supplier	Certificate	Comment		

Revision text:	
Rev. 11	By: INPAMBE/01-03-2017
Comments:	1) High capacity flow restrictor FC301-1