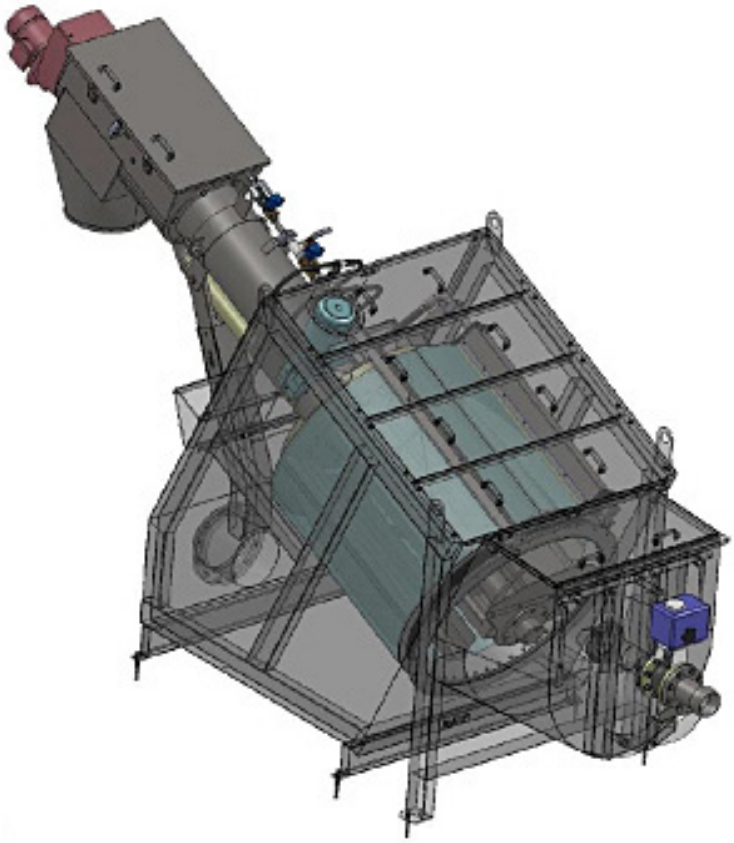
EN

VFA

SEPTAGE RECEIVING STATIONS

1

TECHNICAL CATALOGUE



Manual No. SAVI.VFA.--.T.A.0118.EN Issue: A Latest update: January 2018
ORIGINAL INSTRUCTIONS IN ENGLISH

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WAMGROUP

SAVI

All the products described in this catalogue are manufactured according to **SAVI S.r.l. Quality System procedures**.
The Company's Quality System, certified in 1999 according to International Standards **UNI EN ISO 9001** and **ISO 18001**, ensures that the entire production process, starting from the processing of the order to the technical service after delivery, is carried out in a controlled manner that guarantees the quality standard of the product.

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1.1 Description

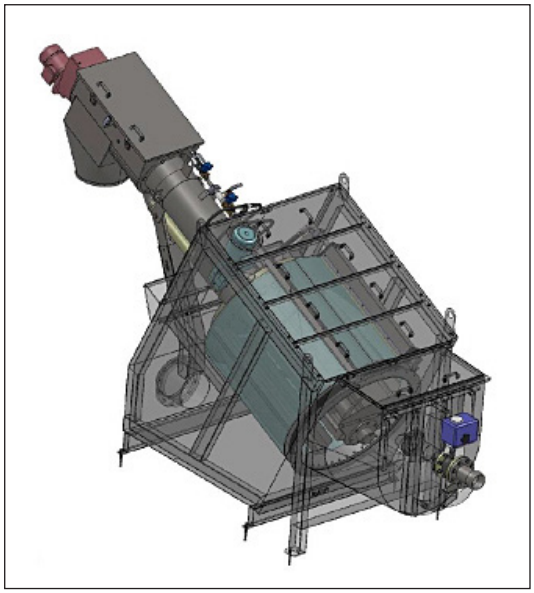
EQUIPMENT CODE

- VFA DM

EQUIPMENT TYPE

Septage Receiving Stations.

1.2 Function



VFA DM Septage Receiving Stations manufactured by Savi for septage treatment screens, washes, conveys, and dewaters screenings all in one unit, thus eliminating the need for multiple pieces of equipment.

The waste water is fed into the Septage Receiving Stations through the nozzle placed at the tank inlet and screened by a filtration system.

The screen is equipped with a filtering body having round holes that optimize separation of the material. Rotating around its axis, the cylindrical filter conveys the screenings into a loading hopper placed in the centre. The the screen is cleaned by a washing bar equipped with a series of spraying nozzles placed at the filter outlet, by a plastic bristles brush and by a flushing bar positioned inside the tank.

The filtering body is connected to an auger housed inside a conveying tube equipped with dedicated geared motor, which collects and conveys the screened material toward subsequent treatment stages.

In this phase the screened material is removed most of the organic substances it contains, which are conveyed along with the filtered waters to the purification phase. Subsequently, solids are compacted and dewatered in the compacting and drainage area. Finally, solids are discharged through a discharge chute. The system operation is fully automatic (and requires, thus, no operator to manage the compartment); adjustments are made by the control system.

2.1 Main features

- The maximum input flow varies from120 to 200m^3/h depending on the machine size.
- The installation is fast and easy.
- All maintenance operations are simple to implement.

N.B.: Maximum flow indicated refer to a maximum percentage of 4 % of SS. ?????

CONSTRUCTION MATERIALS

Metal parts and main components:
- SS 304L
- SS 316L

Solid extraction screw conveyor:
- RAL 5010 powder coated carbon steel
- 304 SS
- 316 SS

Drum motor power:
- Variable on the basis of the machine size.

Extracting screw motor power:
- Variable on the basis of the machine size.

Standard machine finishing:
- Washing, pickling, ball blasting, passivation.

N.B.: Customised upon request:
- Electro-polishing
- ATEX components

2.2 Safety prescriptions for use

The machine function is the screening of civil and/or industrial waste waters and must be used exclusively by trained personnel.

To operate the machine under safety conditions, the material characteristics and the working environment must comply with the specifications given in Chapter 4.

In general:

The machine has been designed and manufactured for the separation of solids having the particle size indicated in the assembly drawing and in the technical annexes.

The machine must be used only after complete assembly, according to the instructions in this manual.

The machine can only be used after the hydraulic and electrical connections have been performed.

The user must install the machine according to the instructions contained in this manual, by ensuring the necessary space for installation and additional space for maintenance.

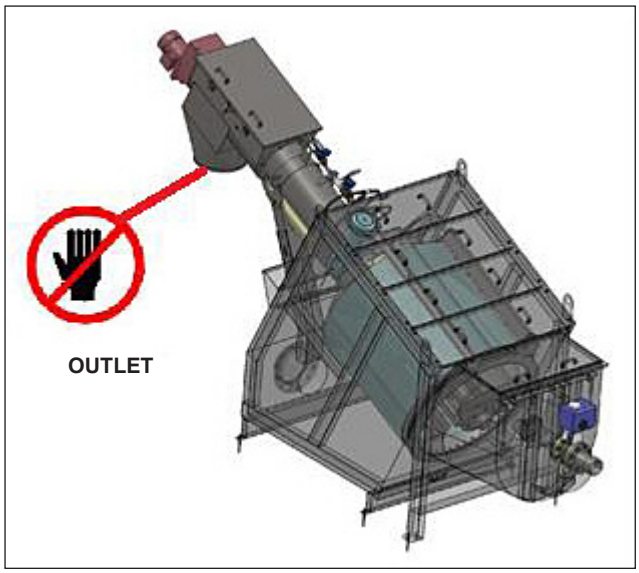
The machine can be installed in outdoors on condition that the temperature and humidity specified in this manual (paragraph 2.3) are complied with.

The machine must be put into operation with all safety guards installed.

This machine cannot be used unless connected to a main control panel, that feeds and controls the motors and the cleaning cycle solenoid valves.

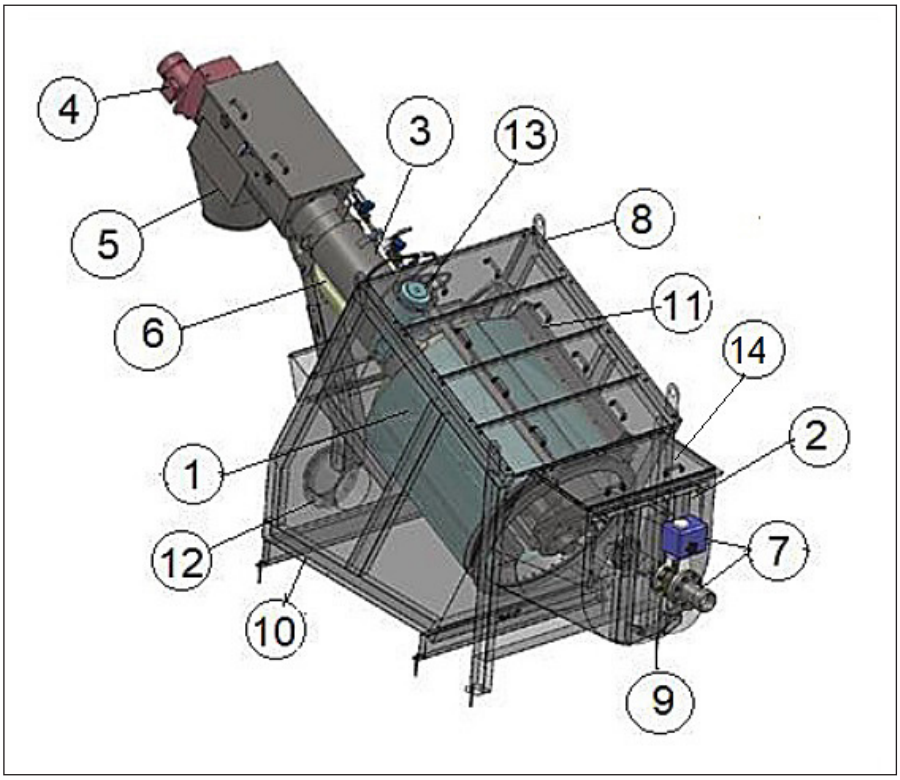
The machine is equipped with all the necessary protections; however, due to its design and the functionality there are two areas of the machine which can be protected only within the system in which it is installed.

These necessary protections will therefore be in charge of the plant fitter (see drawing below):



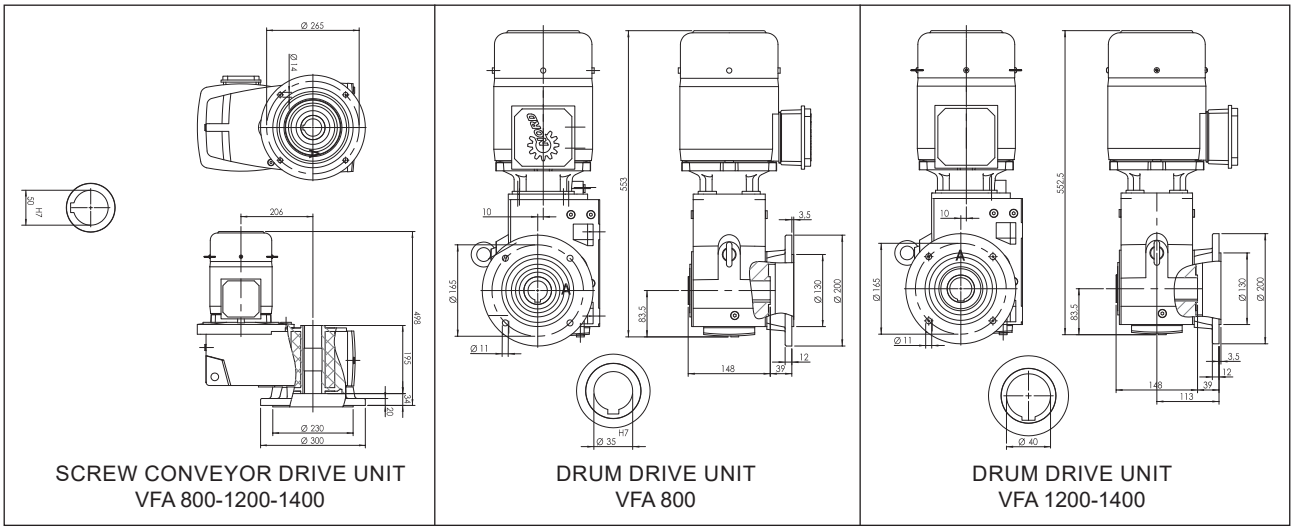
3.1 Standard machine description

The standard supply includes the following components.



Item Pos.	NAME
1	Filtering drum
2	Inlet hopper
3	Screened material conveying system
4	Solids extraction screw conveyor geared motor
5	Separated solids outlet
6	Draining liquids collecting area
7	Inlet area with motorised valve
8	Machine guards housing
9	Input waste water washing area
10	Separated liquids collecting area
11	Drum cleaning system
12	Separated liquid outlet
13	Prearrangement for conductive level probes
14	Drum geared motor

DRIVE UNIT



SCREW CONVEYOR DRIVE UNIT
VFA 800-1200-1400

DRUM DRIVE UNIT
VFA 800

DRUM DRIVE UNIT
VFA 1200-1400

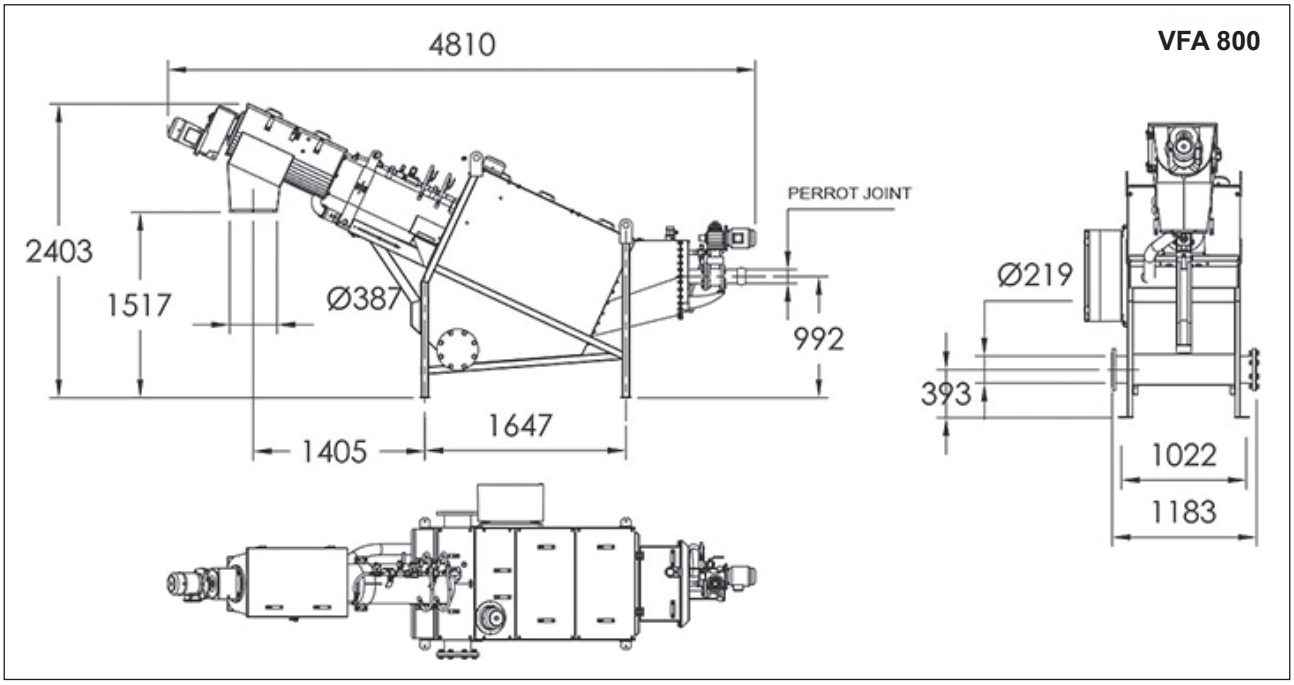
Specifications Handling VFA 800- 1200-1400 drive units	
Brand	NORD
Type	SK4282 AF
Type	Helical geared motor
Reduction ratio	80
Drive Power [kW]	1.5
Voltage / Frequency	230/400V, 50/60 Hz, 4 poles, 3 phased
Efficiency [%]	81
Protection	66
Insulation class[IP]	F
Class and thermal protection	B
Drive unit weight (Kg)	86

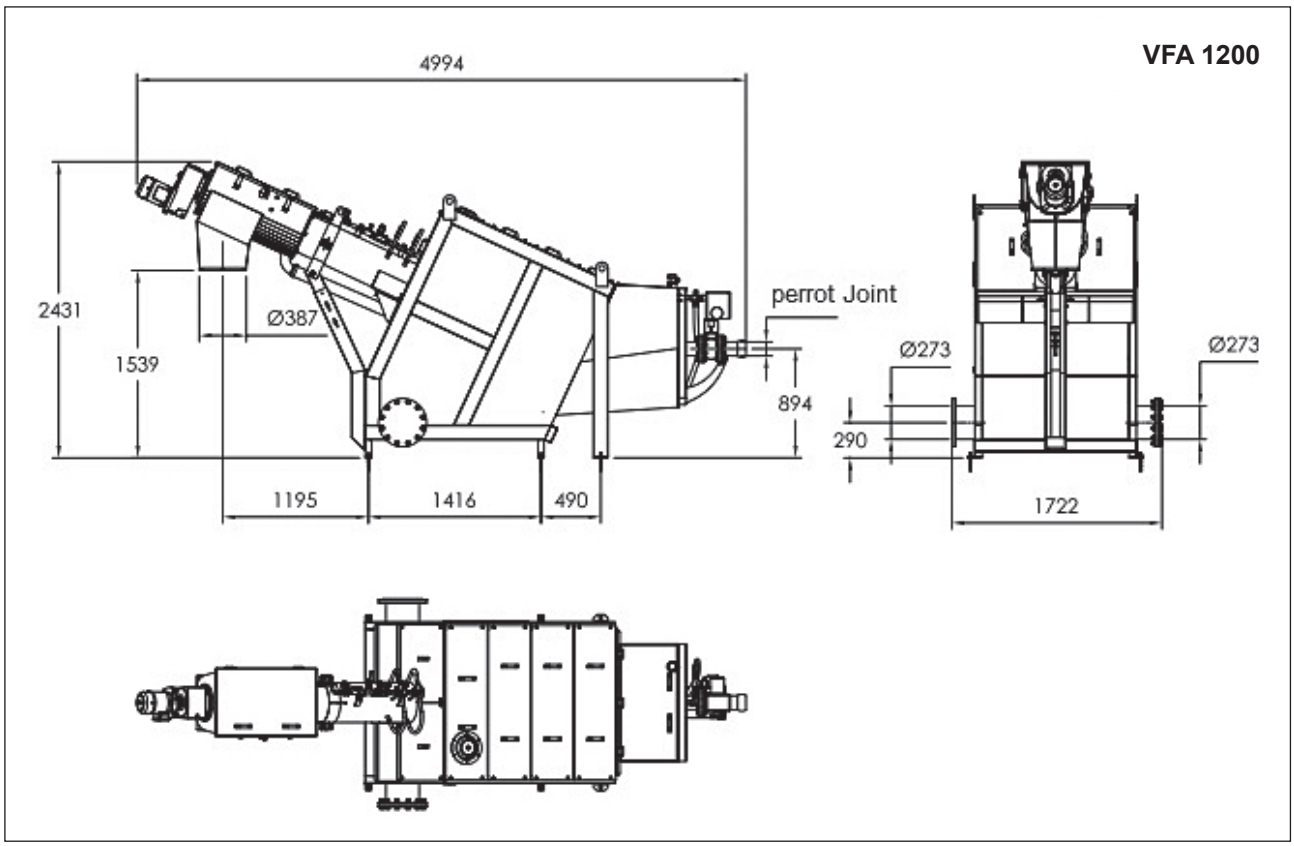
Specifications Handling VFA 1200-1400 drive units	
Brand	NORD
Type	SK9016-1AF
Type	Orthogonal Axis
Reduction ratio	25
Drive Power [kW]	1.5
Voltage / Frequency	230/400V, 50/60 Hz, 4 poles, 3 phased
Efficiency [%]	81
Protection	66
Insulation class[IP]	F
Class and thermal protection	B
Drive unit weight (Kg)	50

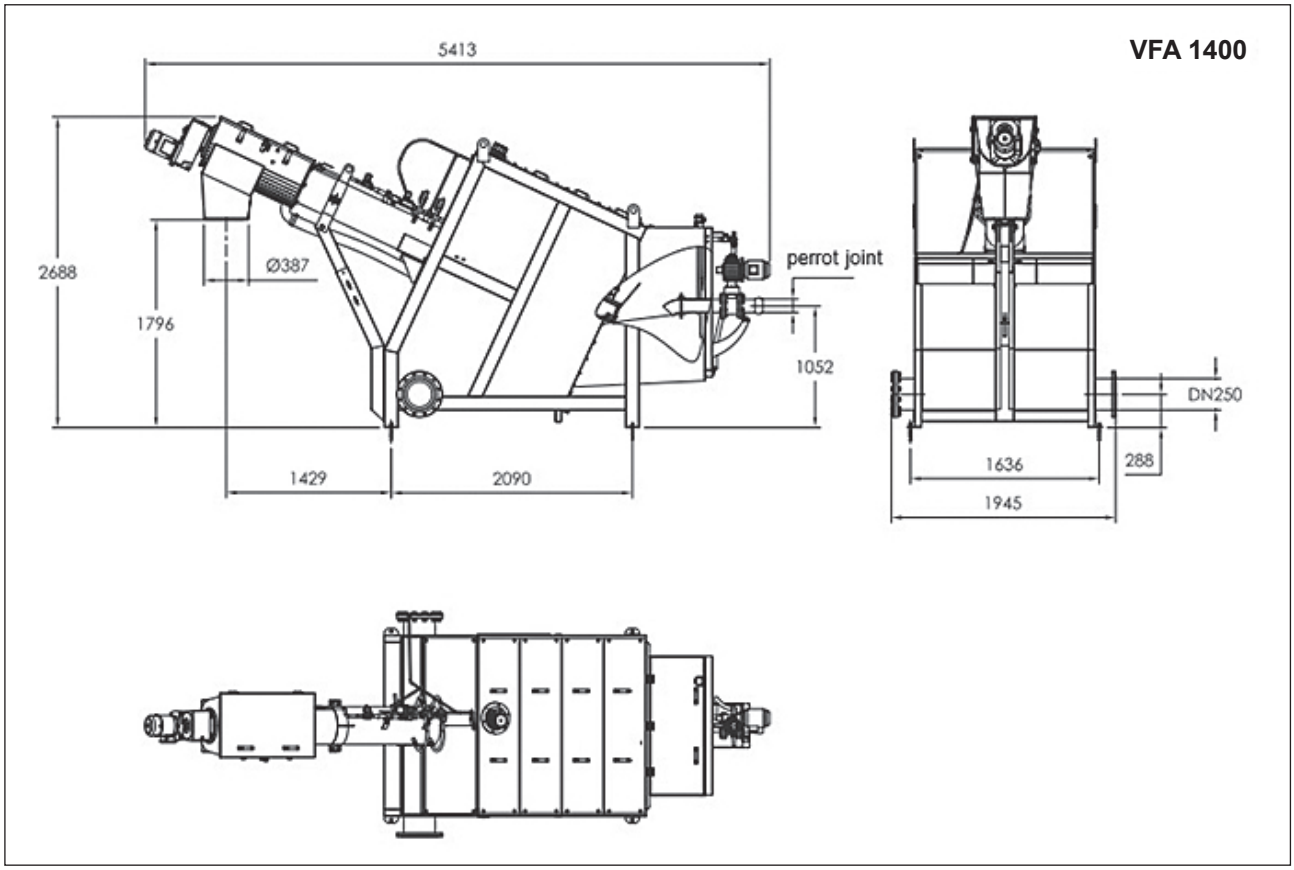
Specifications Handling VFA 800 drive units	
Brand	NORD
Type	SK9012-1AF
Type	Orthogonal Axis
Reduction ratio	25
Drive Power [kW]	1.1
Voltage / Frequency	230/400V, 50/60 Hz, 4 poles, 3 phased
Efficiency [%]	81
Protection	66
Insulation class[IP]	F
Class and thermal protection	B
Drive unit weight (Kg)	68

3.2 Versions - Order code

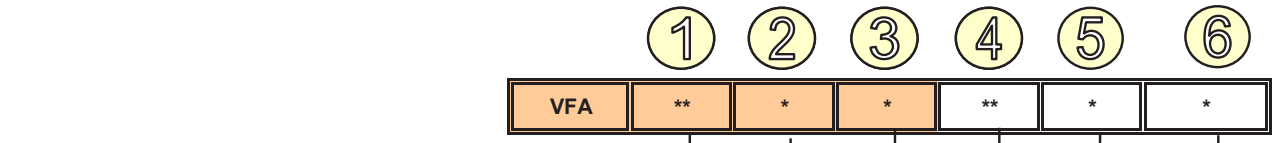
Range






VFA 1400
5413
2688
1796
Ø387
perrot joint
1052
1429
2090
DN250
1636
288
1945

Modular key



Size	
08	= 800
12	= 1200
14	= 1400

Body material	
2	= 304L SS
3	= 316L SS

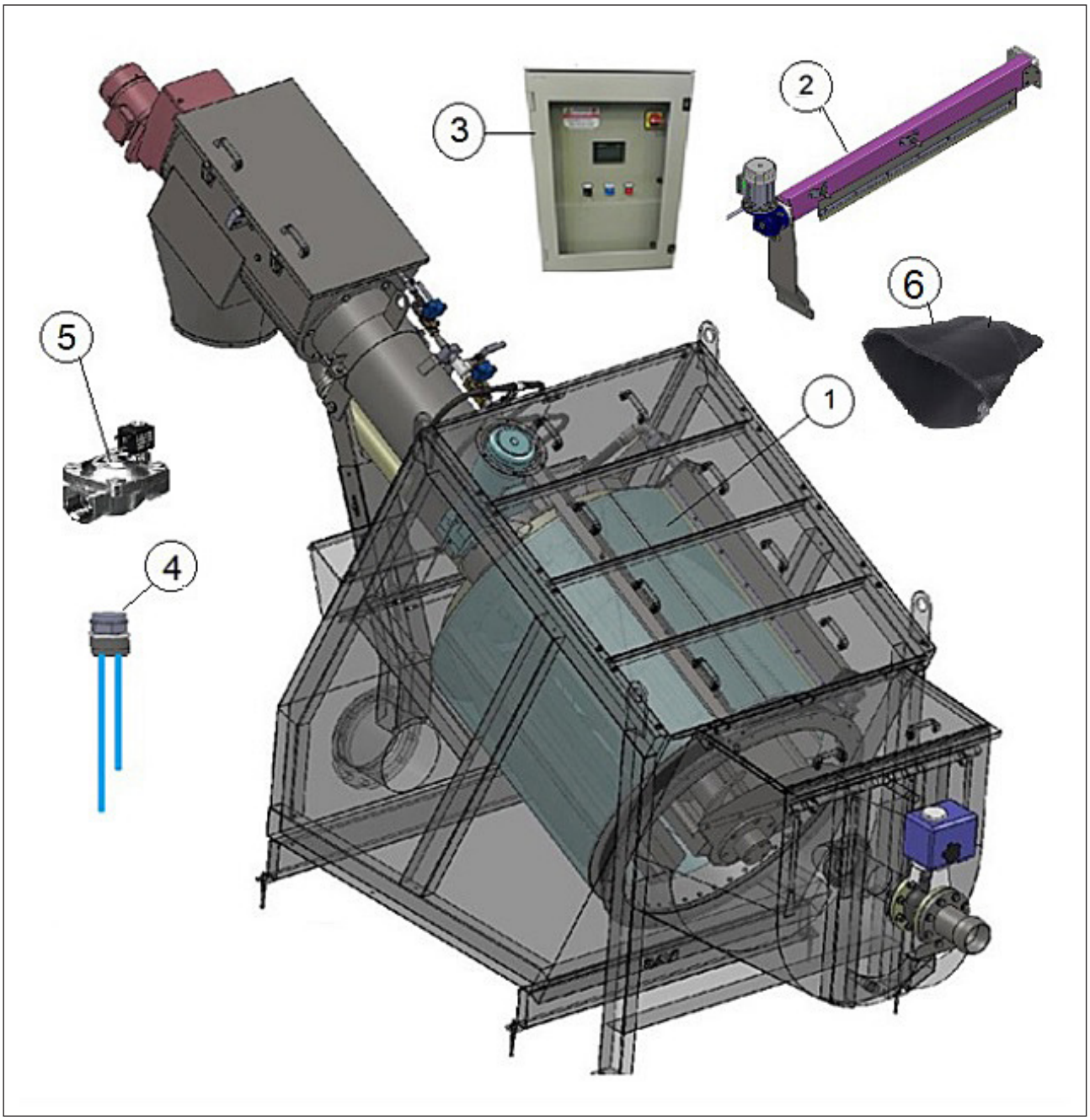
Auger material	
1	= Carbon Steel
2	= 304 SS
3	= 316 SS

Screen drilling	
R5	= 5mm
R6	= 6mm

Additional washing system	
N	= without
W	= with touch screen display

Control Panel	
N	= without
F	= with touch screen display

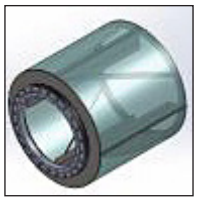
3.3 Options and accessories



Item	Description	Type
1	Filtering element mesh diameter	Option
2	High pressure washing	Option
3	Electric Panel	Option
4	Two conductive rod sensor kit	Accessory
5	Brass solenoid valves	Accessory
6	Barrier bag with salts for drive units	Accessory

3.3.1 Options

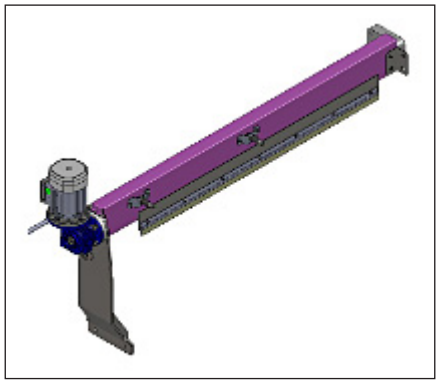
FILTERING DRUM MESH DIAMETER



The drum of the VFA Septage Receiving Stations is available with in Ø5 mm and Ø 6mm versions, both in 304L SS and 316L SS.

Empty over full percentage:
Metal sheet with Ø5mm mesh = 46%
Metal sheet with Ø6mm mesh = 51%

HIGH PRESSURE WASHING



The high pressure washing is particularly indicated when the material to be treated has high solids concentrations, which makes the screen particularly difficult to clean.

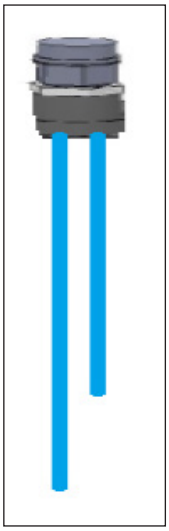
N.B.: The material of the additional high pressure washing system must match the material of the machine structure.

CONTROL PANEL WITH TOUCH SCREEN

SAVI WAMGROUP	**Issued on: January 2018**	**REV.00**	
DISCONTINUOUS	DUTY		
NO. OF UNITS	1		
MACHINE SERIAL NUMBER MATCHED TO THE CONTROL PANEL	GIVEN ON THE CONTROL PANEL PLATE		
CONTROL PANEL CODE	044001146		
INSTALLATION	OUTDOOR		
TECHNICAL FEATURES OF THE TOUCH SCREEN CONTROL PANELS FOR VFA			
SCHNEIDER COMPONENTS			
CONTROL PANEL NAME	VFA CONTROL PANEL	ANTI-CONDENSATION HEATER	Supplied
CASE DIMENSIONS	Height 747 x 536 Width x Depth 300	CASE MATERIAL	Glass fibre reinforced polyester
CASE TYPE	Double door with seal. External transparent door	CASE COLOUR	Grey RAL 7035
CASE LOCKS NUMBER	2	CASE CABLE ENTRIES	Multi-standard grommets plate for 25 cables
IP INSULATION DEGREE	IP66 IEC 60529	IK INSULATION DEGREE	IK08 IEC 62262
STORAGE TEMPERATURE	-35...90 °C	VOLT - STAGES - CYCLES	400+/-5% V - 3 - 50+/-5% HZ
FIREPROOF	960 °C IEC 62208	PANEL FASTENING BRACKETS	Supplied
LOGICS MANAGEMENT	PLC (Internal)	PLC model	Zelio logic
TOUCH SCREEN OPERATOR PANEL	YES	OPERATOR PANEL MODEL	HMISTO501 - 3"4 Black and white control panel touch screen W/P/R for Zelio.
SAFETY DEVICES MODULE	Class 2	PROFIBUS INTERFACE	None
MULTILANGUAGE CONTROL PANEL	YES	LANGUAGES AVAILABLE	ITALIAN,ENGLISH,GERMAN, FRENCH, SPANISH, ROMANIAN
INVERTER	SCHNEIDER	MAXIMUM TORQUE DETECTOR	Threshold set on the INVERTER
SOFT START	Starting ramp set on INVERTER	EMERGENCY BUTTON WITH KEY	Supplied 1 piece for free installation
SOUND AND LIGHT BEACONS TOWER	Supplied	POSSIBLE LEVEL SENSORS TYPE	rod (maximum no. 3)
MEASUREMENT RELAY FOR LEVEL PROBES MANAGEMENT	Supplied	PREARRANGEMENT FOR AUTOMATIC RESTART	Supplied
HMI			
Main power switch with door lock			
Two-position MANUAL / AUTOMATIC switch			
Touch screen panel that displays the various statues in automatic mode(cycles pause, levels in the tank, alarms)			
Control on touch screen panel for the management in manual mode of the screw conveyor motor (NORMAL ROTATION / REVERSED ROTATION). Reversed unstable, when the operator is present)			
Control on touch screen panel for the management in manual mode of the drum motor (NORMAL ROTATION / REVERSED ROTATION). Reversed unstable, when the operator is present)			
Control on touch screen panel for the management in manual mode of the motorized valve no. 1 for waste water flow managing at inlet			
Control on touch screen panel for the management in manual mode of the motorized valve no. 2 for waste water flow managing at inlet			
External push-button panel with reset button and selector for the management of 1 or 2 motorized valves.			
Filter high pressure washing system management			
RESET emergency blue button, on the control panel front			
Green blinking light inserted in the beacons tower supplied that indicates the control panel is powered.			
Steady green light inserted in the beacons tower supplied that indicates the plant status in the automatic cycle.			
Green backlight of the touch panel that indicates the control panel is powered.			
Red backlight of the touch panel coupled with buzzer to highlight the alarm status.			
INDICATORS IN THE JUNCTION BOX			
Alarm Status (motor overload, emergency mushroom button depressed, guard opened (protected by safety interlock)			
Machine started up (automatic cycle enabled)			
Minimum level			
Alarm level			
Alarm level			
REMOTE CONTROLS			
Reset start			
Stop			
External consent			
Automatic cycle			
DOCUMENTATION REQUIRED			
DECLARATION OF CONFORMITY and FINAL TESTING CERTIFICATE			
Low voltage control panels according to the individual tests provided by CEI **17-13/1 (IEC 439-1 EN 61439-1)**			
Control panel wiring diagram in paper format supplied with the control panel + electronic format sent via e mail.			
DEDICATED USE AND MAINTENANCE MANUAL OF THE CONTROL PANEL			

3.3 Accessories

TWO CONDUCTIVE ROD SENSOR KIT



SS 316 L SOLENOID VALVES

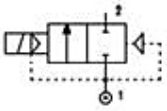
MANUFACTURED BY ACL

GENERAL FEATURES
2-way normally closed solenoid valve made from stainless steel 316, membrane-operated

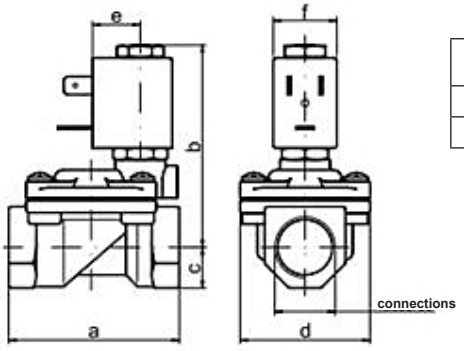
MATERIALS

Body and lid	Stainless steel
Guiding pipe	Stainless steel
Mobile and fixed core	Stainless steel
Springs	Stainless steel
Seals	NBR FPM EPDM

FEATURES
Minimum differential pressure 0.15 bar
Maximum permitted pressure 25 bar *
Maximum fluid viscosity 25cSt (mm²/s)
Ambient temperature: with class F -10 °C +55 °C coil
with class H -10 °C +80 °C coil
Mounting position: preferably with the coil upwards



OVERALL DIMENSIONS



CONNECTION	a	b	c	d	Weight Kg
G 1/2"	59	70	13	45	0.32
G 1"	96	85	20	72	1.35

The machine has been designed and built for both outdoor and indoor operation. For temperature below 0 °C the user must provide adequate insulation (option).

SHIPPING WEIGHT / DIMENSIONS

COMPLETELY ASSEMBLED MACHINE OVERALL DIMENSIONS				
VFA Size	**LENGTH [mm]**	**WIDTH [mm]**	**HEIGHT [mm]**	**WEIGHT [Kg]**
800	4800	1200	2400	1150
1200	5000	1750	2450	1600
1400	5450	1950	2700	1950

NO customisation available for this type of machine.

6.1 Electrical requirements

DRIVE UNIT

VFAsize	PN [KW]	f [HZ]	Size	n° poles	IN [A]	MN [N*m]	Cos θ	U [V]	ΔU [%]+/-	Nn [1/min]	η	Kg	Cable entry in the junction box
800-1200-1400	1.5	50	90LH4	4	3.34	10.1	0.79	400	5	1415	82.2	17	2 x M20 x1.5
		60			2.95	8.3	0.76	460	10	1725	84.4	17	
800-1200-1400	1.1	50	80LP4	4	2.42	7.32	0.8	400	5	1435	81.4	15	2 x M20 x1.5
		60			2.15	6.02	0.76	460	10	1745	84	15	

The cable glands are made of plastic. The junction box is on the LH side of the motor (seen from the guard).

N.B.: Painted in Blue Gentian RAL 5010.

The motors in the table are manufactured by NORD and comply with the European standards IEC as well as with DIN regulations with regard to the joints (glands) in the junction box.

This means the user can employ any motor brand as long as they follow the same standards, without having to change drive unit completely.

Should it be necessary a motor with different characteristics (voltage, frequency, polarity, etc.) please contact our Technical Assistance.

Technical features of standard motors:

- version B5 flanged;
- voltage 230/400 V 50Hz , 440/480 V 60 Hz
  210-230 / 360-400 V 60Hz;
- 4 poles; rotation speed 1450 min.-1 approximately;
- insulation class F;
- motor and junction box protection IP 55 or IP65;
- IE3 motor efficiency (only for power values higher than 0.75 Kw)

Compliant with the requirements of:

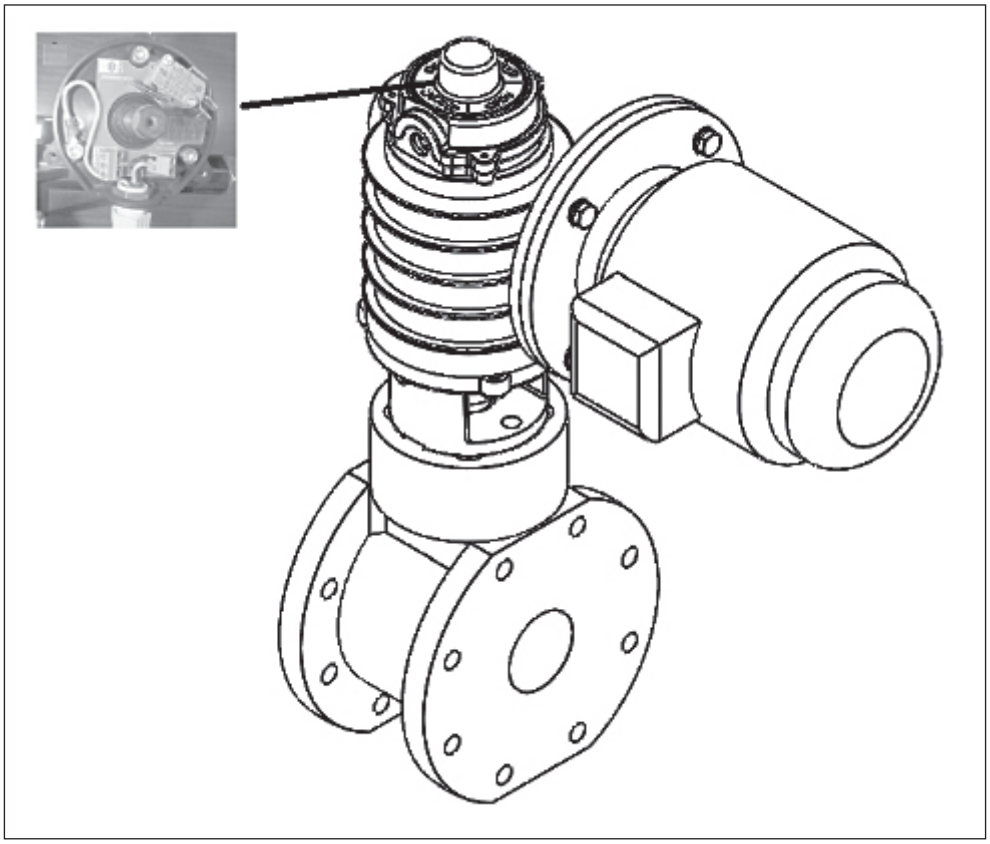
Low Voltage Directive 73/23/EEC and subsequent additions and modifications, Directive 98/37/, Electromagnetic Compatibility 89 /336/EEC and subsequent additions and modifications.

Positive opening contacts in accordance with the following regulations:

IEC 947-5-1, EN 60947-5-1, CEI EN 60947-5-1, VDE 0660-206

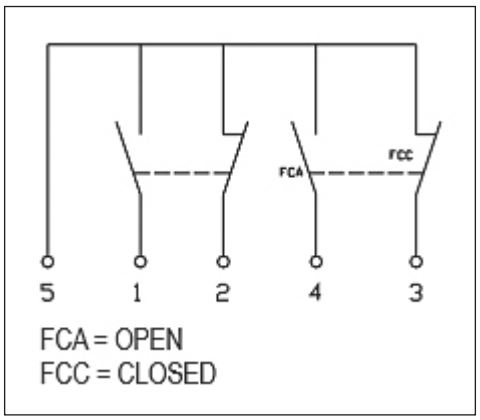
MOTOR-OPERATED VALVE

ELECTRICAL board fixed to the gear reduction end, allows managing no.2 positions of the ball valve, to suitably adjust the two cams.



ELECTRICAL CONNECTIONS

The board is provided with terminal blocks for the connection of electrical cables having Ø 2.5 mm^2 cross-section. Do not exceed the maximum allowed current 10 (4) to 250 V AC (see diagram shown in the figure).



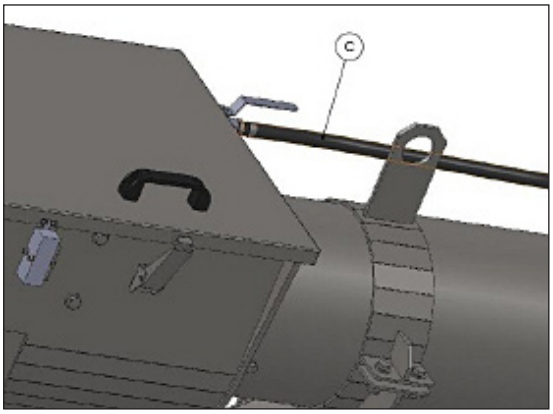
N.B.: The MIC 23 must be connected to the safety circuit in accordance with CEI 64/8.

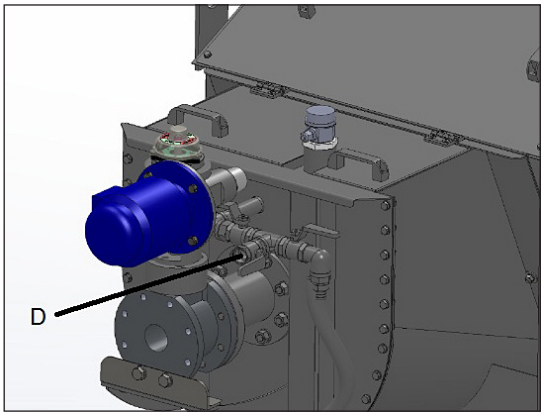
6.2 Pneumatic and hydraulic requirements

WASHING SYSTEM

The washing system consists of:

A) A bar equipped with spraying nozzles placed above the drum to facilitate the removal of the screened material inside the filter so as to make it drop into the screenings collection hopper.
B) Screened washing nozzles located in the conveying area, placed downstream the filter in order to dissolve the organic material contained.
C) Washing tube fitted in the compaction screen, which allows keeping clean the compaction zone (if provided).
D) One valve on the body, at the inlet, for the washing and removal of solids that could settle on the inlet.





Water supply connection:	800	1200	1400
Water type	For water supply containing not more than 300µm impurities	For water supply containing not more than 300µm impurities	For water supply containing not more than 300µm impurities
Nominal pressure [bar]	5	5	5
Maximum pressure [bar]	8	8	8
Minimum pressure [bar]	4	4	4
Water consumption [l/min]	150	150	200
Nozzle	1/4" MC3-20-65°	1/4" MC3-20-65°	1/4" MC3-20-65°

6.3 Performance

Operation performances:	SIZE		
	800	1200	1400
Liquid type	Municipal and/or industrial waste water	Municipal and/or industrial waste water	Municipal and/or industrial waste water
Filtration type	Round mesh Ø 5mm and Ø 6mm	Round mesh Ø 5mm and Ø 6mm	Round mesh Ø 5mm and Ø 6mm
Filtration mesh [mm]	See the data sheet annexed	See the data sheet annexed	See the data sheet annexed
Maximum flow rate [mJ/h]	100	150	200

N.B.: Maximum flow rate calculated considering 4 % TSS.