

OMICRON 2900UV series

AUTOMATIC SCREEN FILTRATION + ULTRAVIOLET LIGHT DISINFECTION



OMICRON WATER TECHNOLOGIES 526 West 26 Street New York NY 10001
T: 844 204 5400

Note: The specification information and documents herein reference a single unit unless otherwise indicated.

For higher flow rates:

OMICRON TWIN 2900UV-CP skid assemblies

are manufactured as turn-key solutions to support higher flow requirements. See twin drawing (next page) for dimensions, and identification and positioning of components included on the skid.

On the twin skid two **2900UV** units (50 micron or 25 micron) are mounted side by side with:

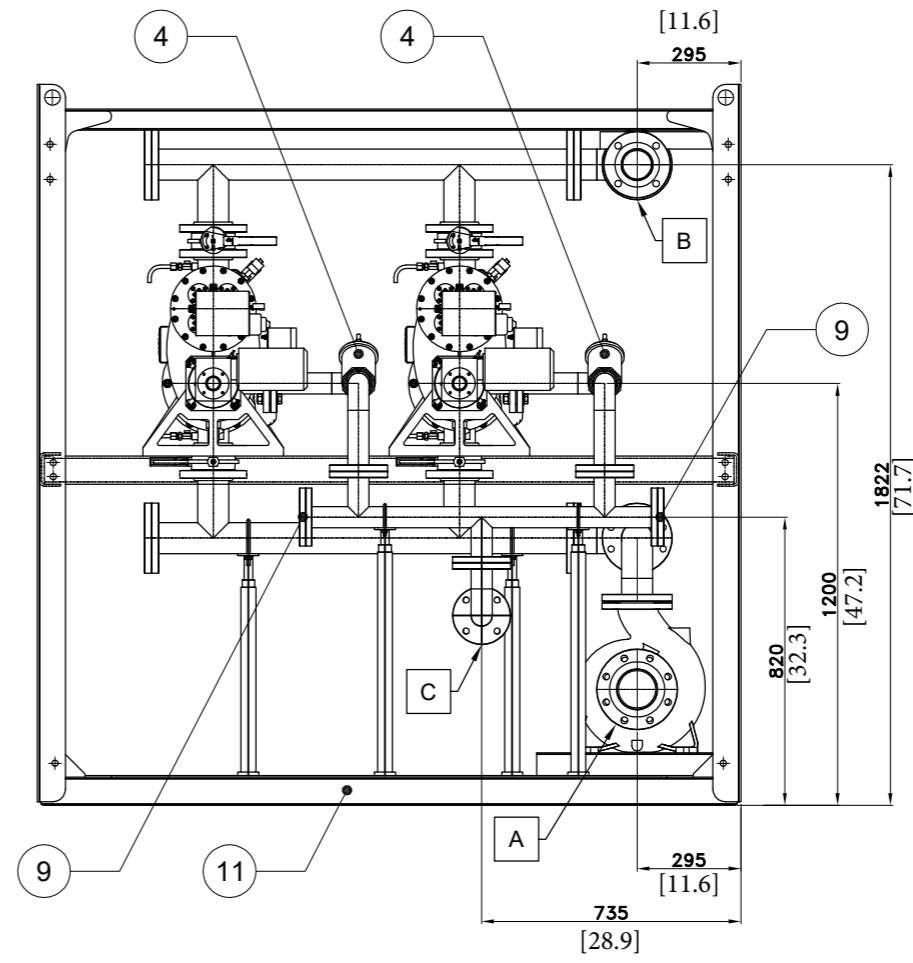
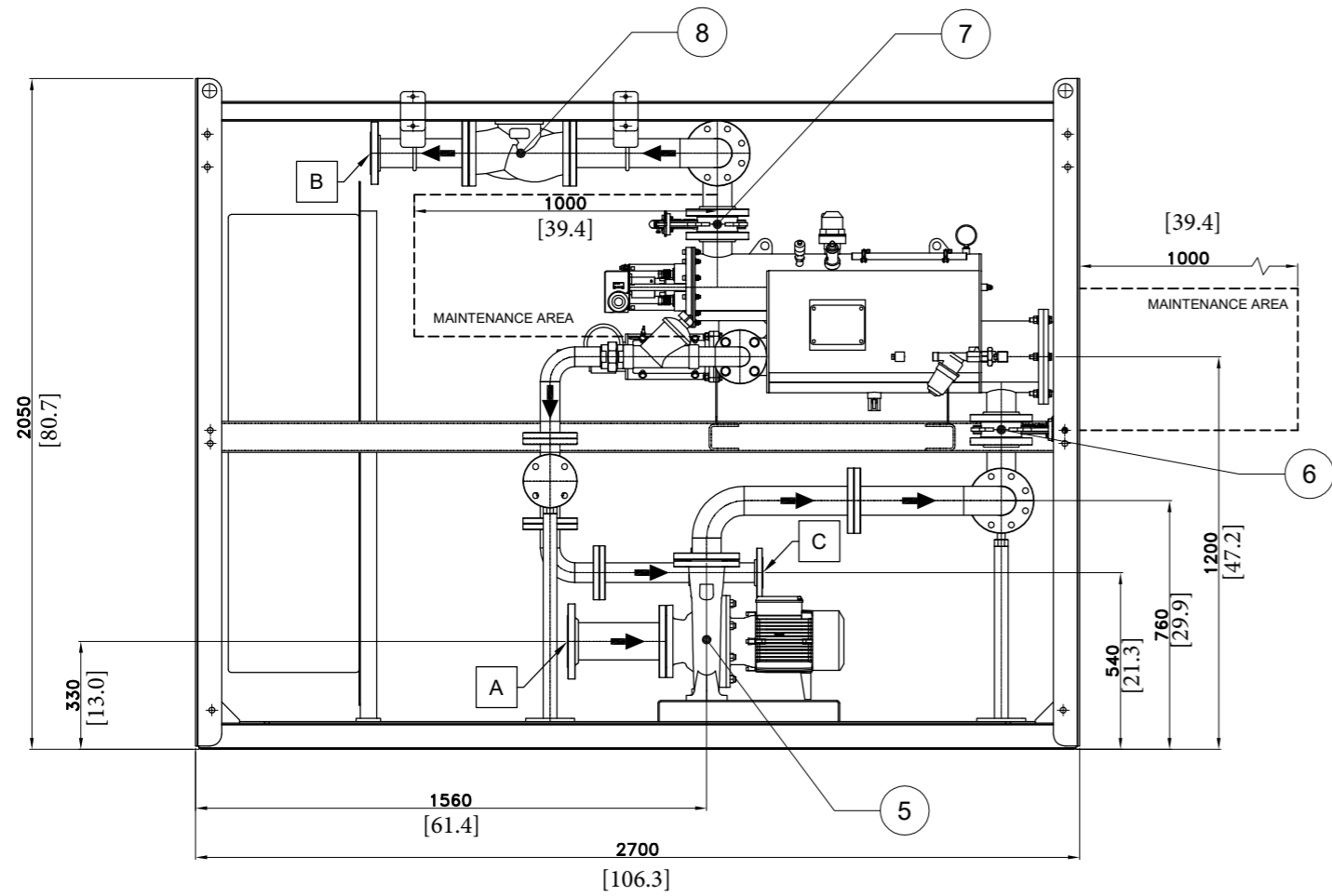
- Pressure sustaining valve
- Circulation pump supplying sufficient pressure to assure both forward flow and backwash cycles
- Panel controlling all functions including staggered flush cycles

The above components are also available with single unit assemblies.

Using a 25 micron screen instead of 50 micron will assure clearer water to the UV downstream in the sequence, and reduces the maximum flow rate by about the same ratio. Below are the options:

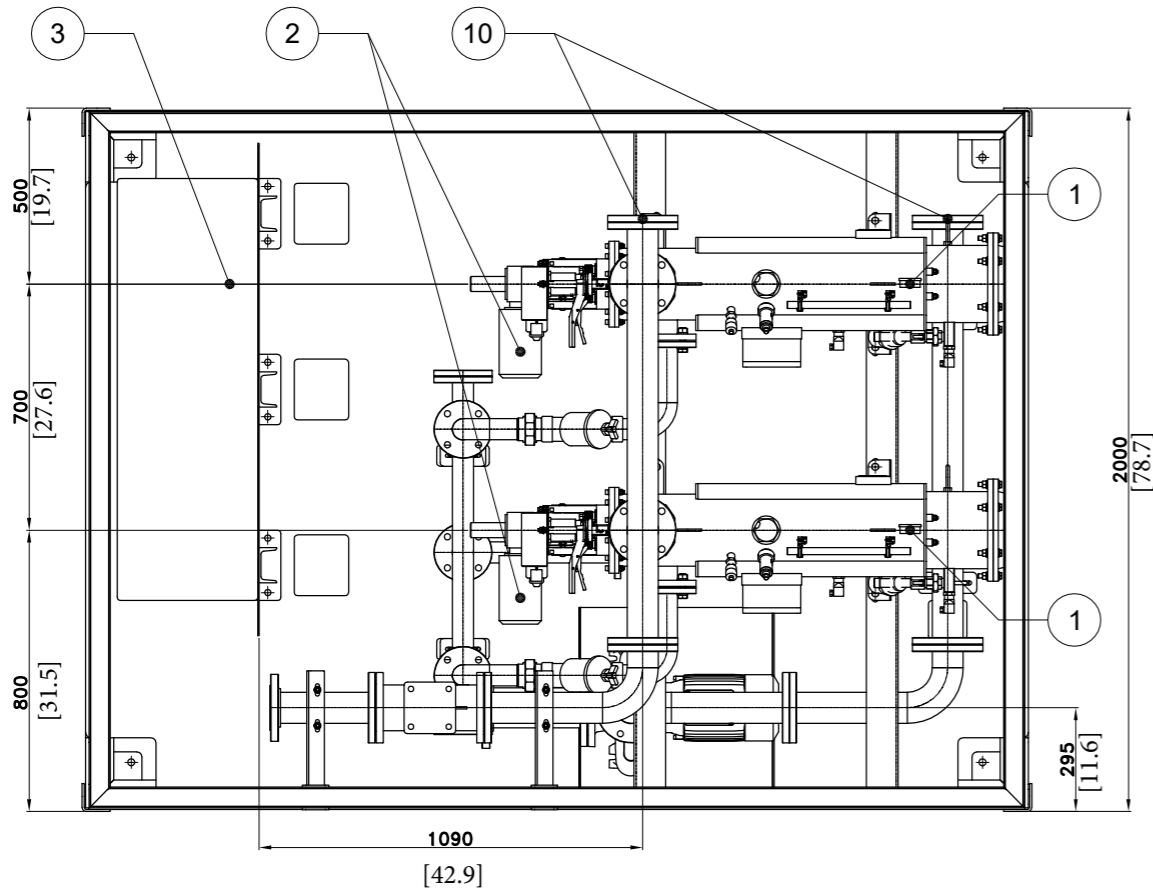
MAX FLOW RATES

	SINGLE	TWIN PARALLEL
25 micron	60 gpm	120 gpm
50 micron	110 gpm	220 gpm



OMICRON TWIN 2900UV-CP (50 or 25 micron)

mm / [in]



TWIN PARALLEL SKID:
 With 50 micron screens, up to 220 GPM.
 With 25 micron screens, up to 120 GPM.



MARK.	LINE	CONNECTION
A	RAW WATER INLET	3" 150# ANSI
B	FILTERED WATER OUTLET	3" 150# ANSI
C	BACKWASH OUTLET	2" 150# ANSI

ITEM	DESIGNATION	QTY	MATERIAL	OBSERVATIONS
1	UV AUTOMATIC FILTER: FMA-7003 UV WITH INLET / OULET NOZZLES 3"-150lbs	2	AISI-304L	
2	ELECTRIC MOTOR	2	***	
3	CONTROL PANEL DIMENSIONS: 55.1 x 47.2 x 15.7" / 1400 x 1200 x 400 mm	1	***	
4	BACKWASH VALVE DN50 THREADED	2	PLASTIC	BACKWASH OUTLET
5	PUMP (DIN CONNECTION) DN100 INLET / DN80 OULET	1	***	RAW WATER INLET
6	BUTTERFLY VALVE 3" - 150LBS	2	IRON CAST	RAW WATER INLET
7	BUTTERFLY VALVE 3" - 150LBS	2	IRON CAST	FILTERED WATER OUTLET
8	SUSTAINING VALVE DN80 FLANGE L = 310	1	IRON CAST	FILTERED WATER OUTLET
9	BLIND FLANGE DN50-PN10 DN 2576	2	AISI-304L	
10	BLIND FLANGE DN80-PN10 DN 2576	2	AISI-304L	
11	SKID	1	S-275-JR	

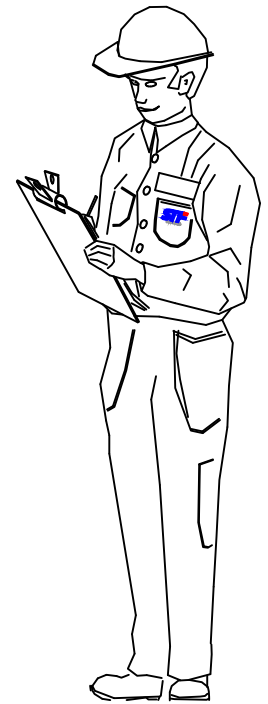
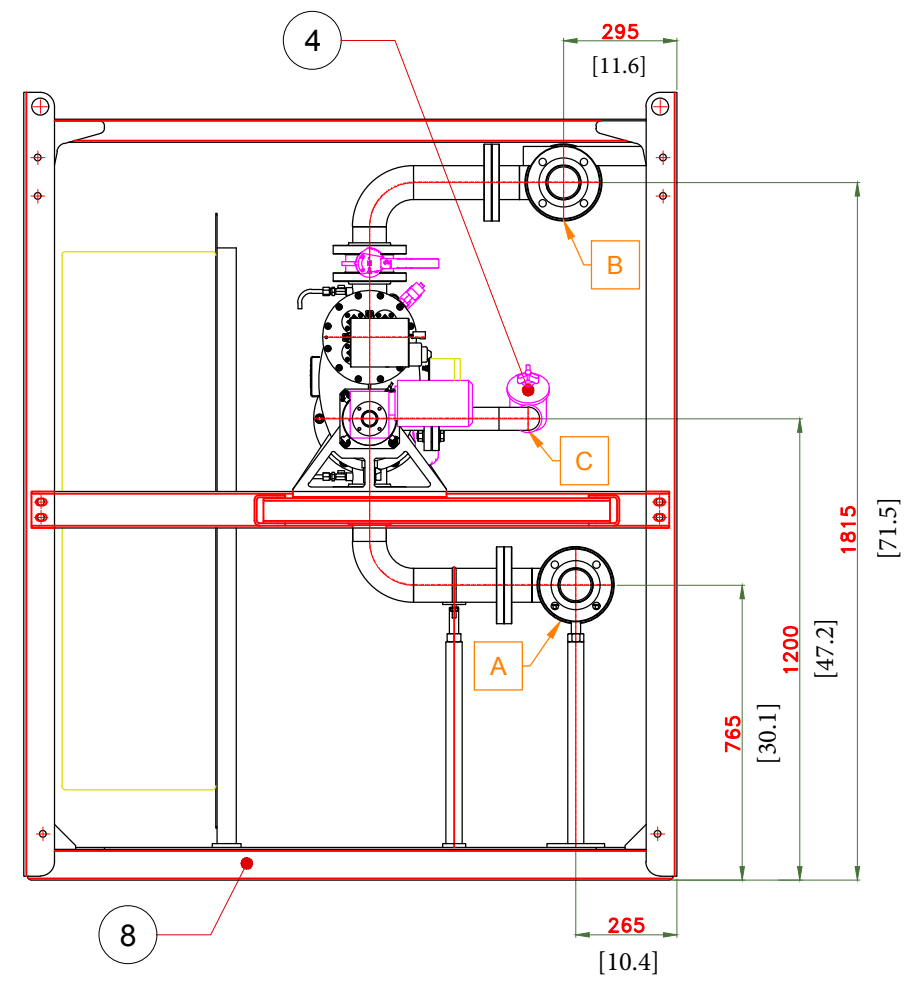
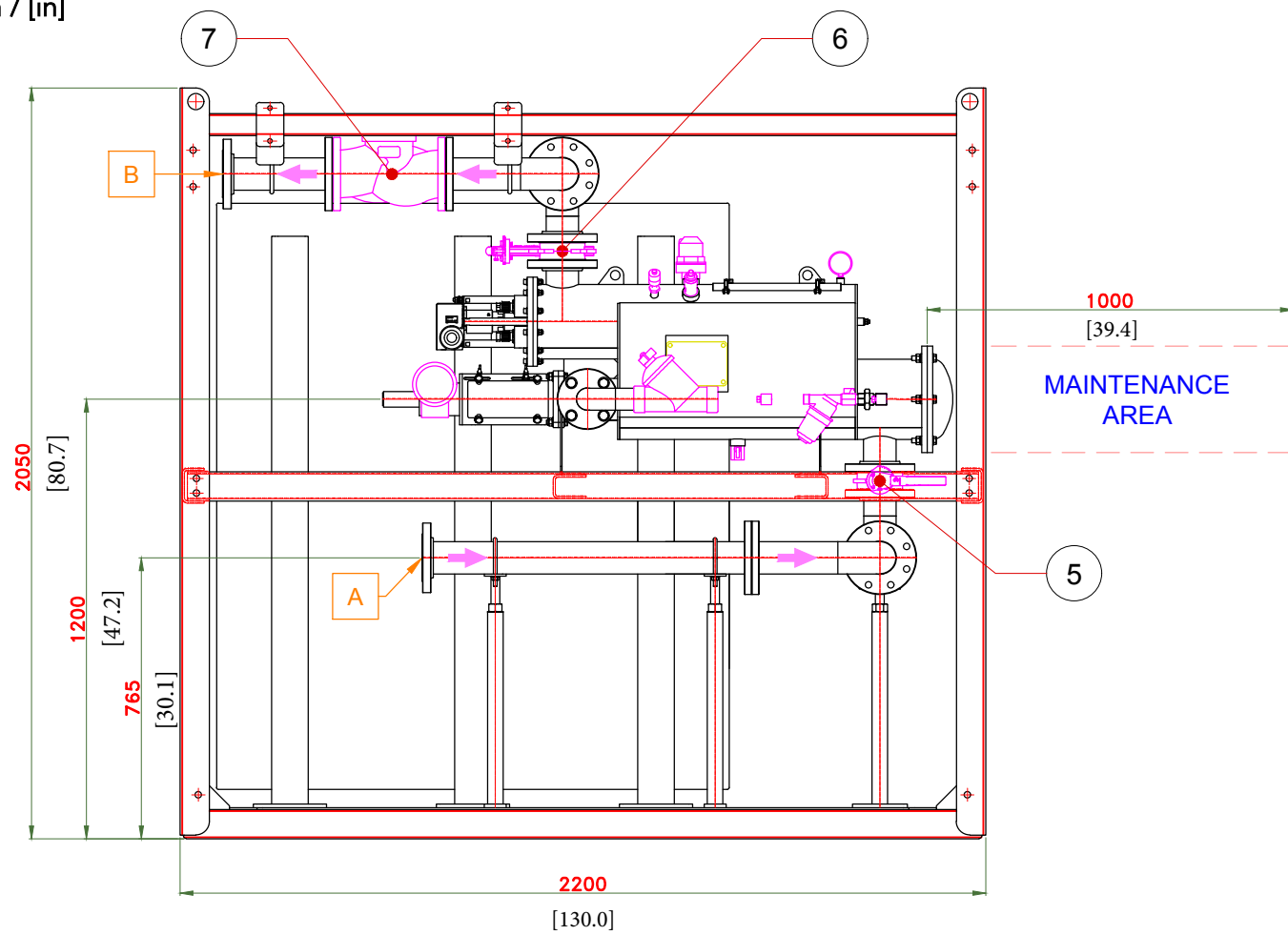
NO.	ITEM	QUANTITY	MATERIAL	OBSERVATIONS
***	2 FMA-7003 UV WITH MANIFOLD	1	STAINLESS STEEL	***
1	Modification	Date	Name	Sign.
1	First edition	18/10/17	J.P.R.	
2	Maintenance area	02/02/17	J.P.R.	
3	CLIENT: OMICRON WATER TECHNOLOGIES			
4	REFERENCE: *****			
5	DESCRIPTION: *****			
6	Work Order	Nº Drawing	Projection	
	xxxxx	17.xxxxx.00.00		

Scale: 1:1
 Format: A3

Polig. Industrial Armentera MONZON (Huesca)

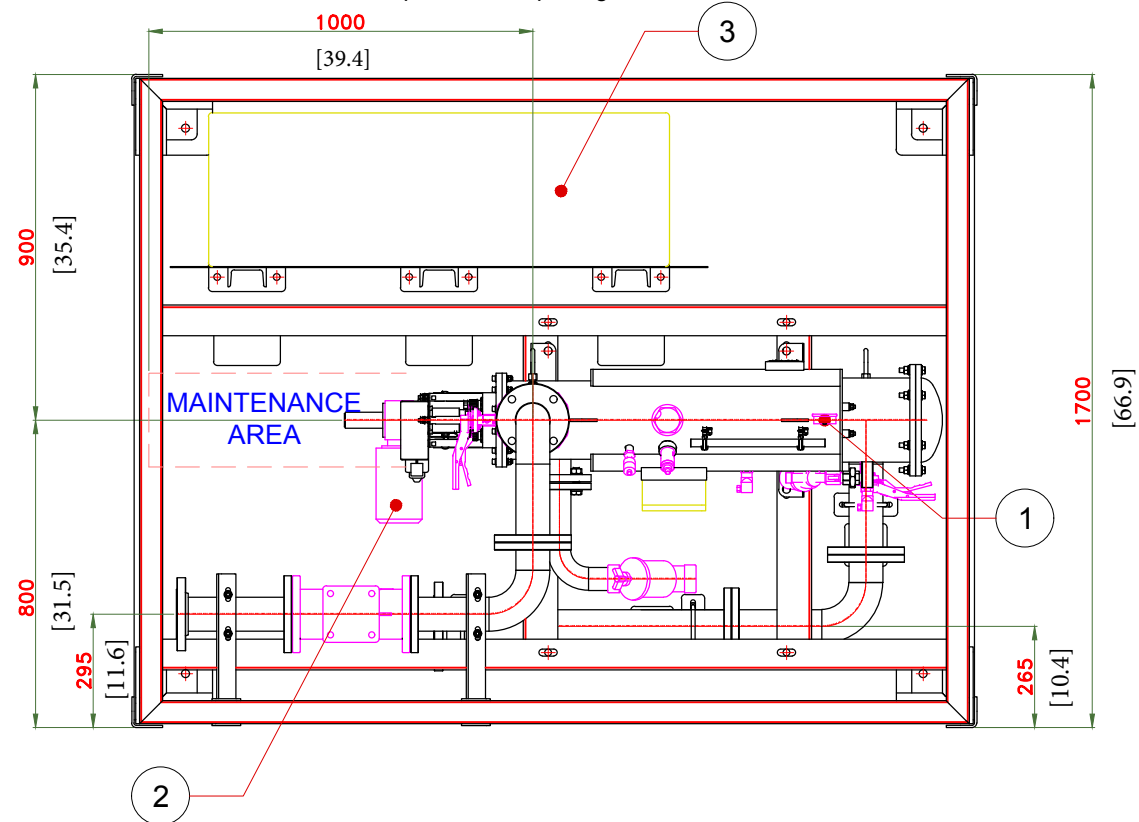
Date	Name	Signed
18/10/17	J.P.R.	
02/02/18	J.P.R.	

mm / [in]



OMICRON 2900UV SINGLE SKID (no pump)

Allow min 48" clearance panel door opening.



MARK.	LINE	CONNECTION
A	RAW WATER INLET	3" 150# ANSI
B	FILTERED WATER OUTLET	3" 150# ANSI
C	BACKWASH OUTLET	2" THREAD

ITEM	DESIGNATION	QTY	MATERIAL	OBSERVATIONS
1	UV AUTOMATIC FILTER: FMA-7003 UV WITH INLET / OULET NOZZLES 3"-150lbs	1	AISI-304L	
2	ELECTRIC MOTOR	1	...	
3	CONTROL PANEL 55.1" x 47.2" x 15.7" DIMENSIONS: 1400 x 1200 x 400	1	...	
4	BACKWASH VALVE DN50 THREADED	1	PLASTIC	BACKWASH OUTLET
5	BUTTERFLY VALVE 3" - 150LBS	1	IRON CAST	RAW WATER INLET
6	BUTTERFLY VALVE 3" - 150LBS	1	IRON CAST	FILTERED WATER OUTLET
7	SUSTAINING VALVE DN80 FLANGE L = 310	1	IRON CAST	FILTERED WATER OUTLET
8	SKID	1	S-275-JR	

NO.	ITEM	QUANTITY	MATERIAL	OBSERVATIONS
***	SINGLE 2900UV WITH MANIFOLD	1	STAINLESS STEEL	***
1	Modification	Date	Name	Sign.
1	First edition	26/02/18	J.P.R.	
2				
3				
4				
5				
6				

CLIENT: **OMICRON WATER TECHNOLOGIES**

Scale: 1:1

Format: A3

DESCRIPTION: **OMICRON 2900 UV SKID**

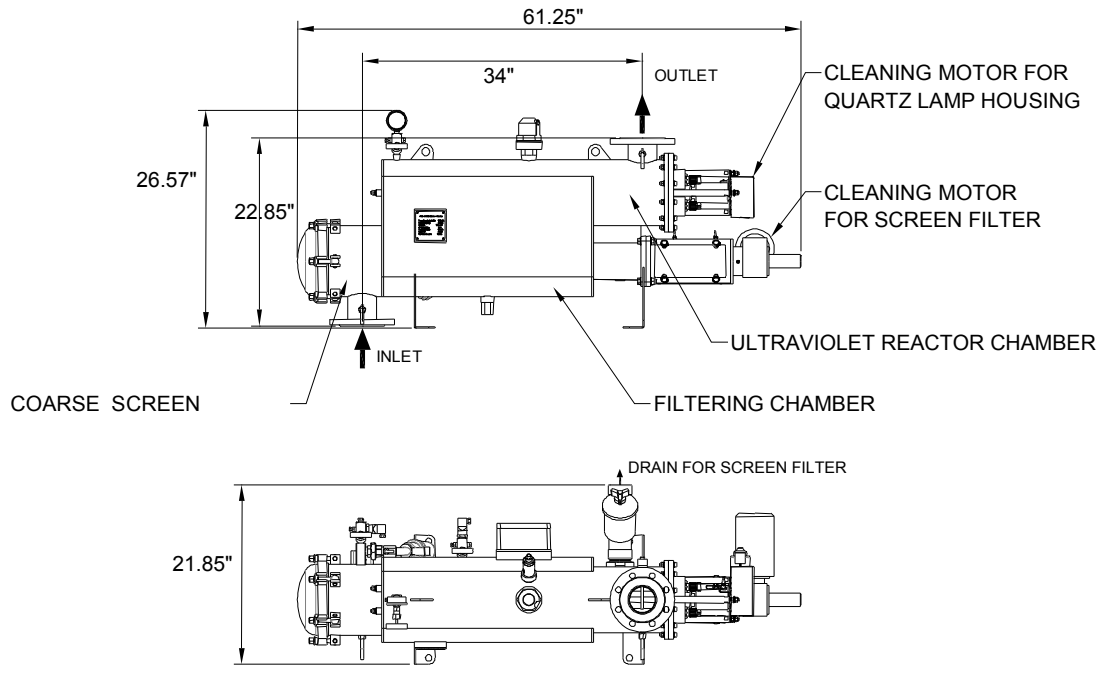
Work Order: xxxxx | N° Drawing: 18.xxxxx.00.00 | Projection:

Date	Name	Signed
26/02/18	J.P.R.	
27/02/18	J.P.R.	

STF
FILTROS
Polig. Industrial Armentera
MONZON (Huesca)

DIMENSIONS (single, no manifold)

ALLOW MINIMUM 30" CLEARANCE ON EACH END FOR MAINTENANCE.
 PER DRAWING BELOW: SCREEN SERVICE FROM LEFT, UV LAMPS FROM RIGHT.



Certificado del Sistema de Gestión de la Calidad



ER
UNE-EN ISO 9001

ER-0233/2004

AENOR, Asociación Española de Normalización y Certificación, certifica que la organización

SISTEMAS DE FILTRADO Y TRATAMIENTO DE FLUIDOS, S.A.

dispone de un sistema de gestión de la calidad conforme con la Norma UNE-EN ISO 9001:2008

para las actividades: El diseño, el desarrollo, la gestión de la producción, el montaje y la asistencia técnica de sistemas de filtración y tratamientos de fluidos.

que se realizan en: P.I. LA ARMENTERA PARCELA 49, 29420 - MARAZITA (BIZKAIA)

Fecha de emisión: 2004-02-12
 Fecha de renovación: 2010-02-12
 Fecha de expiración: 2013-02-12



AENOR Asociación Española de Normalización y Certificación
 Sistema S. 2004 (Madrid) España
 Tel. 902 303 201 - www.aenor.es

Entidad acreditada por (ENAC) con nº 1265-SC02
 AENOR es miembro de la RED AENOR (Red Internacional de Certificación)

Certificado del Sistema de Gestión Ambiental



GA
UNE-EN ISO 14001

GA-2008/0396

AENOR, Asociación Española de Normalización y Certificación, certifica que la organización

SISTEMAS DE FILTRADO Y TRATAMIENTO DE FLUIDOS, S.A.

dispone de un sistema de gestión ambiental conforme con la Norma UNE-EN ISO 14001:2004

para las actividades: El diseño, el desarrollo, la gestión de la producción, el montaje y la asistencia técnica de sistemas de filtración y tratamientos de fluidos.

que se realizan en: P.I. LA ARMENTERA PARCELA 49, 29420 - MARAZITA (BIZKAIA)

Fecha de emisión: 2008-09-23
 Fecha de renovación: 2013-09-23
 Fecha de expiración: 2016-09-23



AENOR Asociación Española de Normalización y Certificación
 Sistema S. 2004 (Madrid) España
 Tel. 902 303 201 - www.aenor.es

Entidad acreditada por (ENAC) con nº 1265-SC02
 AENOR es miembro de la RED AENOR (Red Internacional de Certificación)

OMICRON 2900UV (single)

Two electrically operated water technologies consolidated into one unit: (1) Screen filtration followed by (2) Ultraviolet light disinfection.

FILTER DESCRIPTION (Stage one)

Single inlet and outlet, drain outlet for backwash discharge. The filter is comprised of a housing with two separate chambers within. The first chamber, with the filtration screen, connects to the water inlet port; the second is the backwashing chamber.

Water circulates through the body of the filter from the inside out. The collected solids in suspension are retained within the filtering component (the screen). This chamber connects to the filtered water outlet to supply the intended operation: potable water, process water, cooling tower water, etc.

The outlet of the backwashing chamber is connected to the drainage valve that enables rinse water run off, once the self-cleaning process has been initiated. The backwashing chamber is otherwise sealed from the filtration chamber.

The suction scanner is located on the central axis of the filtration element, and is hydraulically connected to the backwashing chamber. The scanner's suction nozzles terminate in nylon bristles that extend to within a few microns of the screen mesh. Nozzle positioning is calibrated to effect contact with the entire inner surface of the mesh as a consequence of the motorized spiral motion of the scanner, combining longitudinal motion with rotation.

OPERATION SUMMARY

- The water enters the filtration chamber and passes through the fine screen to produce surface mechanical filtration at the filtration degree according to the selected screen rating, from 10 to 2000 microns.

- As the collected particles accumulate on the inner surface of the fine mesh, their build-up causes a progressive loss of pressure between the filter inlet and outlet. When the differential pressure reaches 0.3 bar (about 4.4 psi), two analog transducers initiate the backwashing sequence. Other backwash methods are available, including time delay, combined pressure and time delay, or continuous backwashing.
- When the differential pressure switch reaches 0.3 bar (4.4 psi), the drainage valve is signaled to open. This generates a pressure differential between outside (atmospheric pressure) and inside the filter (working pressure), which induces a current of fast-flowing water that rushes through the mesh and out through the inner hole of the suction scanner nozzles. At this point a signal is sent to the motor to start operating.
- The result of simultaneous spiral movement of the suction scanner inside the filter and the suction effect from the nozzles on the accumulated filter cake enables successful cleaning of the fine screen.
- During the 25-second self-cleaning process (or 32 seconds for 10-micron filters), filtered water flows without interruption to the intended application.

UV DISINFECTION (Stage two)

Filtered water passes through a conduit into the disinfection chamber. Interleaved ultraviolet lamps (4) emit light at the 254 nm wavelength capable of penetrating the cell membrane of microorganisms that may be present in the water flowing through the chamber, which permanently alters their DNA structure by the process of thymine dimerization.

An automatic cleaning system for the quartz glass housing each UV lamp maintains the efficacy of the system throughout the lifetime of the lamps. Cleaning is initiated by time or when the sensor indicates a reduction in radiation.

ENGINEERING SPECIFICATIONS:

OMICRONSEQUENCE 2900-25UV (single)

Furnish one Omicron Water Technologies model **2900-25UV** automatic water filtration + UV disinfection system manufactured by **Sistemas de Filtrado y Tratamiento de Fluidos S.A. (STF)** in **Monzon, Spain**: 3-inch inlet and outlet, 150# raised face flange connections. Unit shall continuously process up to 60 gallons / minute, using a weave wire screen rated at 25 micron and accordingly providing (1) near total reduction of total suspended solids (TSS) above 50 microns, and additional reduction of TSS smaller than 25 microns as is characteristic of screen filtration technology; (2) disinfection by exposure of the filtered water to ultraviolet light at the 254 nm wavelength to permanently alter the DNA structure of microorganisms by the process of thymine dimerization.

Operation Description

The water enters the stainless steel fine filter element inside out, allowing the dirt to accumulate on the inside surface of the element. A Differential Pressure Switch (DPS) senses the pressure differential across the filter as filter cake builds up on the element. The DPS shall signal the PLC control panel to initiate the cleaning cycle of the filter when the filter cake causes a pressure differential of 0.3 bar (4.4 psi), visible on the PD display. PD set point shall be user adjustable via the HMI touchscreen. During the flushing cycle, there shall be no interruption of flow. With a clean screen at the maximum flow rate, the filter shall lose less than 1 psi. The filter operation and flushing shall be controlled and monitored by a touchscreen PLC control panel. The control panel, and its related circuitry, shall be housed in a NEMA 12 enclosure.

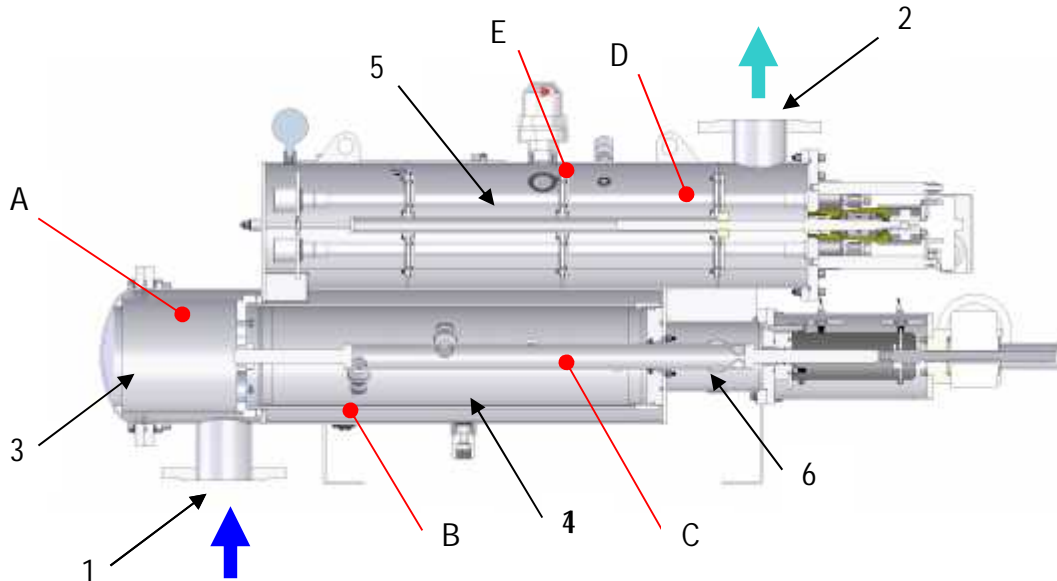
Cleaning Mechanism

The unit's filter cleaning mechanism shall consist of a spiral-moving suction scanner, constructed of a 316 stainless steel assembly. By opening a 1" flush valve, the scanner shall create high efficiency suction force on each of the 4 cleaning nozzles. During that time, the nylon brush nozzles shall clean the total area of the screen. The nozzle head shall contact the screen surface at a constant pressure in order to maximize cleaning efficiency. At 45 PSI, the flushing flow rate shall not exceed 90 gallons per minute. Assuring a maximum flush flow rate of 90 gpm regardless of pressure shall be enabled by a flow control



Nozzle detail

valve in the drain line. The cleaning cycle shall be completed in 25 seconds or less, consuming approximately 38 gallons. The minimum pressure required for flushing shall be 45 PSI during the flush cycle.



- 1 – Raw water inlet.
- 2 – Treated water outlet.
- 3 – Roughing chamber.
- 4 – Filtration chamber.
- 5 – Disinfection chamber.
- 6 – Backwashing chamber.

- A – Roughing cartridge
- B – Filtered cartridge.
- C – Cleaning scanner.
- D – UV lamps.
- E – Lamp cleaning sleeve.

Driving Mechanism

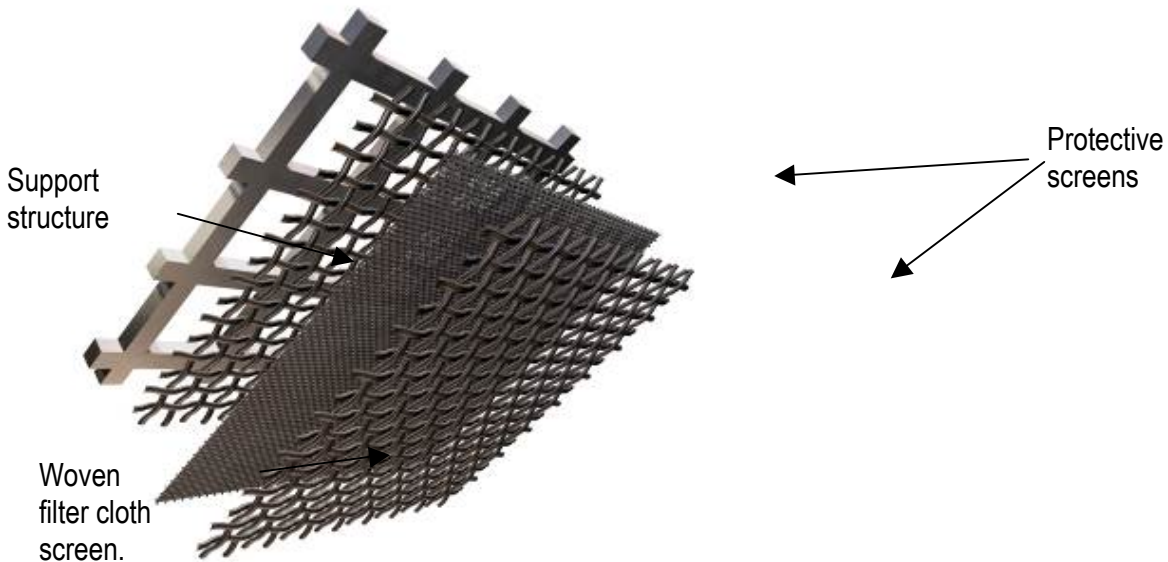
The suction scanner shall be driven by a 0.5 hp (0.37 kW) electric motor that is connected to the suction scanner through a threaded shaft that travels inside a threaded bearing. The movement created by the electric motor shall cause the scanner to move in a spiral motion at a speed of 17 RPM (@208V AC 60 Hz). The control of the scanner by the electric motor shall be limited by two normally closed limit switches and monitored by the control panel.

Housing Construction

The filter and UV housings shall be of 316L stainless steel. The filter body and UV chamber shall have a maximum operating pressure of 145 PSI, and a maximum operating temperature of 120° F. The filter housing shall have the capability to accept filter elements with varying micron degrees, which are totally interchangeable in the same housing.

Filtration Element

The filter element shall be of a patented construction of a combination of wedge and weave wire screens, consisting of 3 layers, fabricated together in order to achieve both greater open area and mechanical strength. The collective screen shall be made of 316L stainless steel. The screen's external support shall be constructed of wedge-wire for mechanical strength. The fine weaved-wire screen shall be sandwiched (protected) between two 2000-micron weaved-wire additional layers. The total surface area of each screen shall be 2900 cm² (449 in²) and shall be able to withstand an internal to external pressure differential of 100 PSI without any damage.



Disinfection Chamber

The water flow shall be controlled to ensure turbulence and adequate contact time with the UV lamps by means of scraper support discs. Lamps shall be activated manually (on/off buttons) or automatically, enabled by (1) detection of pressure within the unit (water is flowing) and (2) temperature below the switch-off threshold (both must be true), which shall be settable within the control panel. The UV chamber shall have an independent cleaning system to maintain clarity of the quartz sleeves encasing the lamps, enabled (1) manually, (2) by timer, or (3) by sensing a decrease in UV transmittance (settable parameter).

Control System

The filter control system shall consist of a NEMA 12 PLC with HMI that controls all aspects of the system's operation including: Monitoring the pressure transducers

and limit switches, and operating the flush valve, electric motors, UV operational parameters and by-pass valves. The control panel shall include a flush counter to monitor average flush intervals. Control features shall include dry contact outputs to remotely indicate flush in progress and fault situations, and inputs to remotely initiate a start or stop of the filtration system.

The filter shall conform to international quality code ISO-14001.

Meets or exceeds all current US domestic quality requirements for filtration devices including, but not limited to, NSF, ANSI, AWWA, ASE, and others.

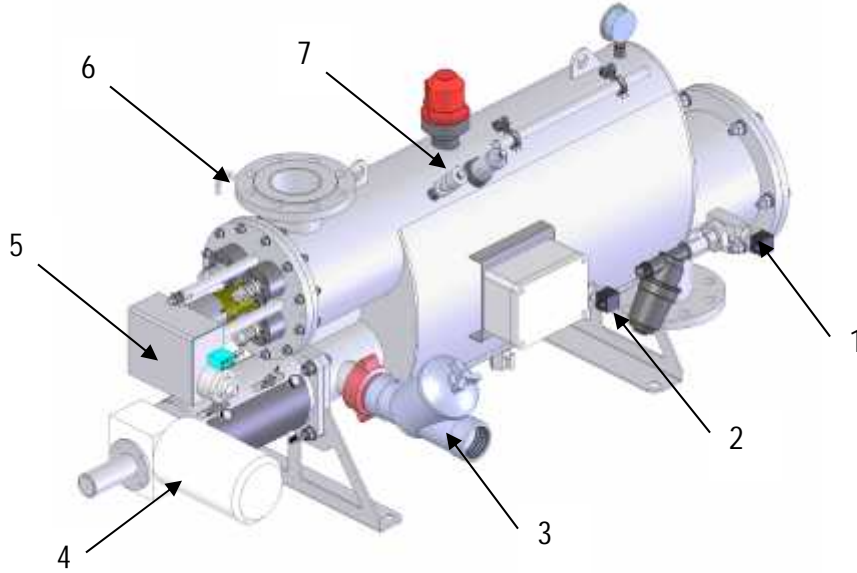
Note: the manufacturer reserves the right to change product specifications without prior notice.

MOTOR DATA

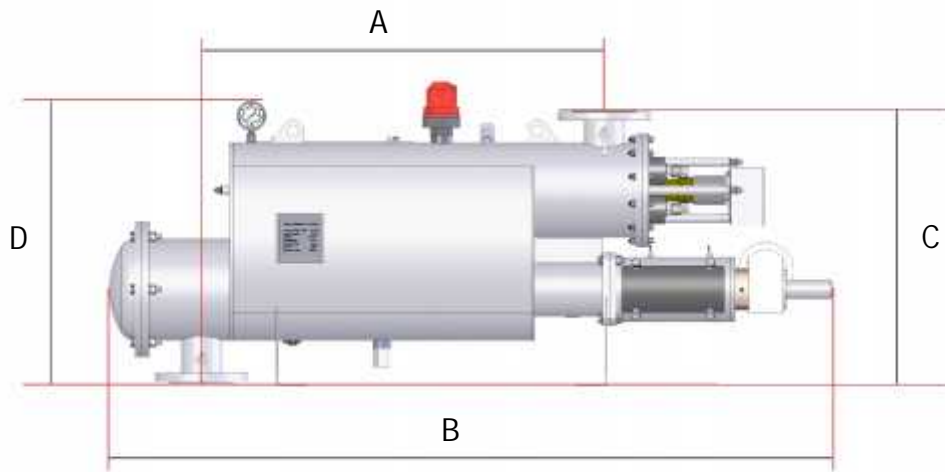
CHARACTERISTICS:

- Brand:	SIEMENS
- Model:	1LA7073-4AB91-Z
- Extra options:	L1Y
- Rated Voltage:	208 V
- Frequency:	60 Hz
- Power:	0.43 kW
- Insulation:	155(F) to 130(B)
- Duty Type:	S1
- Material of terminal box:	Aluminum
- Protection Degree:	IP55
- Cable entry:	M25x1.5 + M16x1.5

TECHNICAL FEATURES



- 1 – Inlet pressure transducer
- 2 – Outlet pressure transducer
- 3 – Backwashing valve.
- 4 – Filter drive unit set.
- 5 – Backwashing drive unit set.
- 6 – Temperature sensor.
- 7 – UV radiation intensity sensor.



MODEL	DIMENSIONS (in)					Net Filtering area (cm ²)
	A	B	C	D	DN	
2900-50UV	34	61.25	22.85	26.57	3	2900

MODEL	OMICRON 2900UV	
GENERAL CHARACTERISTICS		
Inlet/Outlet Diameter (1)	DN-80 (3")	
Max/Min working pressure	2 bar / 10 bar	
Max. fluid temperature	40 °C	
STAINLESS STEEL MESH SUPPORT	50 microns	25 microns
Max. Flow (gpm)	110	60
Net filtering surface (cm2)	2.900	
Unladen weight (kg)	135	
Laden weight (kg)	200	
Filtration sizes available	50 / 25 microns	
BACKWASHING		
Backwashing valve	G-2" thread	
Backwashing min. pressure	2.5 bar	
Backwash cycle length	26 seconds	
Backwash flow (gpm)	40	
Backwash water consumption (gallons)	17.33	
ELECTRICAL DATA		
Supply voltage	208 V AC 60 Hz Three-phase	
Control voltage	24 V DC	
Electric motor power	0.18 kW	
Electric motor consumption	1 A	

STANDARD MATERIALS	
Filter housing and covers	AISI-316 stainless steel
Finish treatment	Glass bead blasting
Suction scanner	AISI-304 stainless steel
Filtration mesh	AISI-316 stainless steel
Suction nozzle	PVC with AISI 316 stainless steel ring and nylon bristles
Backwash valves	Polypropylene
Bolting	A-4 stainless steel
Joints	NBR – EPDM - Viton
ULTRAVIOLET DISINFECTION	
Ultraviolet lamp	Low voltage amalgam
Number of lamps	4 units
UVC	50 W
Dose	400 J / m ²
Transmittance	45 %
Lamp cleaning motor / Intensity	24 V DC / 3A



Skid-assembled with duplex pump set.



Shown: Application in a sewage water treatment plant

