



# TI RANGE SPECIFICATIONS



# TI RANGE SPECIFICATIONS

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# TI WASHERS SPECIFICATIONS

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## 1. SCOPE

### 1.1. TI SCOPE

TI washers have been designed to meet the growing demand of all kinds of industry (cosmetics, petroleum, pharmaceutical, agritech, ...) concerned by validatable processes and requiring washers manufactured with materials withstanding the contact with aggressive products.

### 1.2. TI RANGE

#### 1.2.1.

TI washers range is built around 4 basic models corresponding to 4 chamber dimensions :

- 1400 TI
- 1600 TI
- 4500 TI
- 4800 TI

The models 1400 TI and 1600 TI are equipped with a filtered air chamber drying system, or without drying at all (**option MV14TI S/S or MV16TI S/S**), the models 4500 TI and 4800 TI have no drying system as standard.

These models are also available in double door pass-through version:

- 1400 TI DP
- 1600 TI DP
- 4500 TI DP
- 4800 TI DP

The models 1400 TI DP and 1600 TI DP are also available without drying at all.

### 1.2.2.

TI washer/dryers range is built around 4 basic models corresponding to 4 chamber dimensions :

- 1400 TI SS
- 1600 TI SS
- 4500 TI SS
- 4800 TI SS

They are equipped with a filtered air drying system (chamber and injectors).

These models are also available in double door pass-through version:

- 1400 TI DP SS
- 1600 TI DP SS
- 4500 TI DP SS
- 4800 TI DP SS

See all TI range dimensions in APPENDIX (pages 29 to 44).

## 1.3. CHAMBER DIMENSIONS

Major difference between the models is the chamber size. All other specifications, such as Materials, Instrumentation, Controls, Welding, Piping are the same except if differently specified in the following description :

### INTERNAL CHAMBER DIMENSIONS (OVERALL / EFFECTIVE)

in mm	1400 TI/TI SS	1600 TI/TI SS	4500 TI/TI SS	4800 TI/TI SS
H	640 / *	855 / *	1030 / *	850 / *
D	500 / 490	660/645	850 / 775	850 / 775
W	580/560	655/630	850 / 775	1300 / 1225

\* Depending on baskets

As an option, some models may have the height of the chamber extended according to 2 different chamber elevation (option):

- **option chamber stretched by 150 mm**
- **option chamber stretched by 250 mm**

Please consult Lancer for this option.

## 1.4. WASHING LEVELS

Appropriate baskets are designed to hold the items to be washed, rinsed and dried in the chamber (to be ordered as accessories)

TI washers are equipped with water inlets in the chamber allowing for washing from 1 to 3 levels depending on the model:

- 1400 TI: 2 levels
- 1600 TI: 3 levels
- 4500 TI: 1 level
- 4800 TI: 1 level

See APPENDIX (pages 45 to 52) to have more information about the internal configuration of the chamber for every model.

The water inlets are equipped with automatic connections so that in case there is no basket connected, the water inlet remains closed.

## 1.5. LOAD / UNLOADING

Drop down door of the washer are equipped with gas spring and can be used as a loading / unloading table.

A complete line of transfer carts are available for loading / unloading of racks and baskets (**option**).



## 2. UTILITIES

TI washers work with the following utilities. The features of the utilities are detailed in APPENDIX (page 53).

### 2.1. WATER

3 water inlets allow water admission of up to 3 different water types :

- hot water
- cold water
- purified water (demineralized or reverse osmosis treated water)

The water intakes supplied with the machine are: male 20/27 connection, 2 m. s.s. flexible supplied. As an option, one or various water intakes can be supplied with tri-clamp connections (**option CLAMP EAU**).

Hot and cold water shall be softened.

Water pressure from 2 to 6 bars (30 to 90 PSIG).

Flow from 20 to 100 l/mn (depending on the model).

As an option, the customer water loop can be piloted by the washer. See details on this option in APPENDIX (page 60).

### 2.2. ELECTRICAL REQUIREMENTS

Standard electrical configurations are the following :

- 230 V. III + earth, 50 Hz.
- 400 V. III + N + earth, 50 Hz.

The required voltage shall be indicated by the customer at the order. All other voltage configurations (ex. 480 V. III + earth, 60 Hz.) can be evaluated upon request (**option**).

### **2.3. STEAM (IF STEAM HEATING OPTION)**

Steam allows a fast and precise water temperature adjustment

Connections on washer are male threaded fittings 15/21 (1400 & 1600 TI) or 20/27 (4500 & 4800 TI).  
Hoses for connection to the washer are not provided (by Others).

Steam pressure from 2 to 6 bars (30 to 90 PSIG)  
Consumption depending on model. See APPENDIX (page 53).  
Strainer and steam trap have to be provided by customer

Steam heating option (**option CHAUF VAP TI**) is free of charge.

When heating by steam, hydraulic testing of the steam coil is possible (**option TEST H VAP**).

### **2.4. COMPRESSED AIR**

Compressed air is needed for valve control and door locking.

The washer is delivered with a compressed air hose, length 1.5m with 20/27 femelle threaded fitting.

Required pressure : 6 to 8 bars (90 to 116 PSIG).  
Consumption according to models. See APPENDIX (page 53).

### **2.5. DRYING AIR**

Filtered drying air intake (for the washer/dryers models) is located on the front or on the back of the washer/dryer, according to machine configuration.



## **2.6. DRAINING**

Draining is gravity type (drop drain).

Connection on machine is a tube diam. 48mm (connecting hose not provided).

Draining by pump is an option. A plastic pump is placed after the draining valve, and a polypropylene pipe is supplied to direct the waste water to the drainage.

For this option, an exhaust for the overflow tube of the machine has to be provided plus to the pump draining exhaust.

- 1400 TI / 1600 TI : **option 90010123**
- 4500 TI / 4800 TI : **option 90010124**

Drain temperature cooldown (under 60°C) is an option.

- 1400 TI / 1600 TI : **option 01060133**
- 4500 TI / 4800 TI : **option 01060181**

## **2.7. VAPOUR EXTRACTION**

During drying phase, hot moist air is vent out of the chamber through the chimney tube (to be connected to an extraction network).

Extraction network must be able to suck the drying air flow.

Please refer to APPENDIX (page 53) where different connection and piloting configurations are described (option).

### 3. GENERAL CONSTRUCTION AND DESIGN

#### 3.1. GENERAL

##### 3.1.1.

Design and construction of the washers and washer/dryers are done in order to meet the most rigorous cleaning requirements of the industrial applications. Design features and material definition conform to the specifications listed below.

##### 3.1.2.

All features are standard except if specifically mentioned as optional.

#### 3.2. CLEANING AND DRYING PROCESS

##### 3.2.1.

LANCER TI washers are specially designed to provide an adequate cleaning process using exclusively mechanical, thermal and chemical cleaning properties.

##### 3.2.2.

For the 1400 TI and 1600 TI models, the drying air is blown into the chamber by a powerful turbo fan. These models are available as an option with no drying at all (**option MV14TI S/S or MV16TI S/S**).

##### 3.2.3.

LANCER super drying system is available on TI SS range. This system uses filtered air, pulsed at the same time in the chamber and directly through each injector, for a perfect drying of holloware. More details provided in section DRYING SYSTEM page 13.

## 4. HYDRAULIC CIRCUIT

### 4.1. GENERAL

#### 4.1.1.

Hydraulic circuit is entirely built in 304L stainless steel. As an option, hydraulic circuit can be manufactured in 316L stainless steel.

- 1400 TI/TISS : **option 90010118**
- 1600 TI/TISS : **option 90010119**
- 4500 TI/TISS : **option 90010120**
- 4800 TI/TISS : **option 90010121**

### 4.2. PIPING

#### 4.2.1.

All piping is in 304L stainless steel. (see above for option 316L stainless steel).

#### 4.2.2.

Welding is done by highly skilled and certified welders.

### 4.3. CHAMBER & DOOR

#### 4.3.1.

Chamber material is stainless steel 316 L with a 220 grit finish.



4800 TI / TISS

#### 4.4. PUMP

Recirculating pumps are in stainless steel. The pump is automatically drained after each cycle.



1600 TI / TI SS

#### 4.5. VALVES

##### 4.5.1.

The water inlet valves, are piston valves (pneumatically controlled) in AISI 316L stainless steel with tri-clamp connections (20/27 male threaded fittings on water inlets out of the washer).

##### 4.5.2.

The draining valve and the drying valve (model TI SS), are piston valves (pneumatically controlled) in AISI 316L stainless steel with threaded connections.



4800 TI SS

## 5. DRYING SYSTEM

### 5.1. TI MODELS

Ti Models (1400 & 1600) are equipped with a chamber drying circuit only:

- External drying of the items by filtered hot air pulsed into the chamber by a centrifuge fan. The temperature is programmable up to 110°C.

### 5.2. TI SS MODELS

TI SS models are equipped with a double drying circuit:

- External drying of the items by filtered hot air pulsed into the chamber by a centrifuge fan. The temperature is programmable up to 110°C.
- Internal drying of the items (placed on the injector baskets) by filtered hot air pulsed into the hydraulic circuit. The air is pulsed through one or two (depending on model) gas ring compressors (turbines). The heating of the air is done by electric heating elements. The temperature is programmable up to 110°C.

As standard, the TI SS models are equipped with a filter.

An absolute filtration of the drying air in TI SS models through prefilter and HEPA filter 99,999% is possible (**option 01060192**).

The drying module, located on top of the washer can be designed so that it can be disassembled for transport or installation purposes (**option CASECD TISS**).

## 6. HEATING OF THE WATER

### 6.1. HEATING METHOD

Two versions for the heating of the water are available:

### 6.2. ELECTRICAL HEATING

Electric heating (standard): Screwed electric 316L stainless steel heating element (12 to 24 kW. depending on model).

### 6.3. STEAM HEATING

As a **free of charge option**, the heating system for water can be provided by steam instead of electricity. This provides a quick and accurate temperature adjustment and reduces the running costs (particularly for the 4500 TI and 4800 TI models).

We strongly recommend this option, which uses a tri-clamped 316 L stainless steel steam exchanger instead of the electric heating element.

As an option (**option TEST H VAP**), the steam coil can be hydraulically tested by an independent party (Apave, ...)

## **7. OUTER PANELLING, DOORS AND INSULATION**

### **7.1. WASHER FRAME / PANELS & DOOR**

Washer frame is made of AISI 304. Outer panelling and door/s are made of 304L.

### **7.2. STANDARD VERSION**

Standard version will be a cabinet mount.

### **7.3. MOVEMENT OF THE DOOR**

The opening/closing movement of the door is eased by an ergonomic handle (two handles for 4500 TI and 4800 TI models) and gas dampened supports.

### **7.4. DOOR LOCKING**

Door/s are equipped with a pneumatic locking system. The door is “normally closed” (no power, no pressure). A door opening button allows the opening of the door at the end of cycle.

### **7.5. INSULATION**

The chamber and the outer panelling are insulated by a particle-free thermic and acoustic insulation.

### **7.6. LIFTING LUGS (OPTION)**

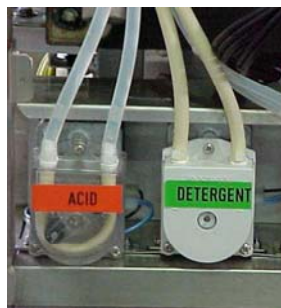
As an option, lifting lugs may be necessary if the washer has to be lifted to an upper floor.

Please consult Lancer for this option.

## 8. DETERGENT AND NEUTRALISER INTAKE

### 8.1. METERING PUMPS & FLOW-RATE

All TI / TI SS washers are fitted with 2 metering pumps for proper dosing of neutraliser and detergent.



pump 280ml/min

Metering pumps rate is 280 up to 1000 ml/min according to model.

### 8.2. STORAGE AREA

The washers 1400 TI and 1600 TI have a storage system for two 10 liters chemical tanks (dimensions maxi. H 320 x W 230 x D 200 mm).



1400 TI / 1600 TI

Two emptying tanks H 320 x W 230 x D 200 mm are provided with the washers 1400 TI and 1600 TI.

In case of tanks exceeding the above dimensions, the tanks will have to be located out of the machine (**free of charge option**).



### **8.3. LEVEL SENSORS**

All TI / TI SS are fitted with level sensors (for tanks dimensions H 320 x W 230 x D 200 mm) to prevent pumping in the absence of liquid.

Visual and audible alarm warns in case of lack of chemicals.

In case of tanks exceeding the above dimensions, the level sensors can be adapted to specific tanks (**option**).

Please consult Lancer for this option.

### **8.4. FLOWMETER (OPTION)**

If the washer is equipped with the Validation Monitor (**option MONVAL**), it is possible to have a flowmeter system (**option 01060231**) which allows a precise measure of detergent and/or acid intakes (and compares it to a reference value).

### **8.5. ADDITIONAL METERING PUMP (OPTION)**

**In option**, the TI and TI SS models can be equipped with additional metering pumps (1 up to 3) for specific applications (i.e. cosmetic industry). This option includes associated level sensor.

The number of additional metering pumps depends on the model and options of the washer.

- dosing pump 30ml **option 90010208**
- dosing pump 280ml **option 90010209**
- dosing pump 1000ml **option 90010130**
- dosing pump 280ml if option Monval **option 90010132**
- dosing pump 1000ml if option Monval **option 90010133**

## 9. FINAL RINSE WITH PURIFIED WATER

The final rinse is carried out with purified water using the main recirculation pump.

A conductivity meter (**in option**), permits to control the water quality at the end of the last rinsing. The conductivity meter will also give useful indications for the validation team.



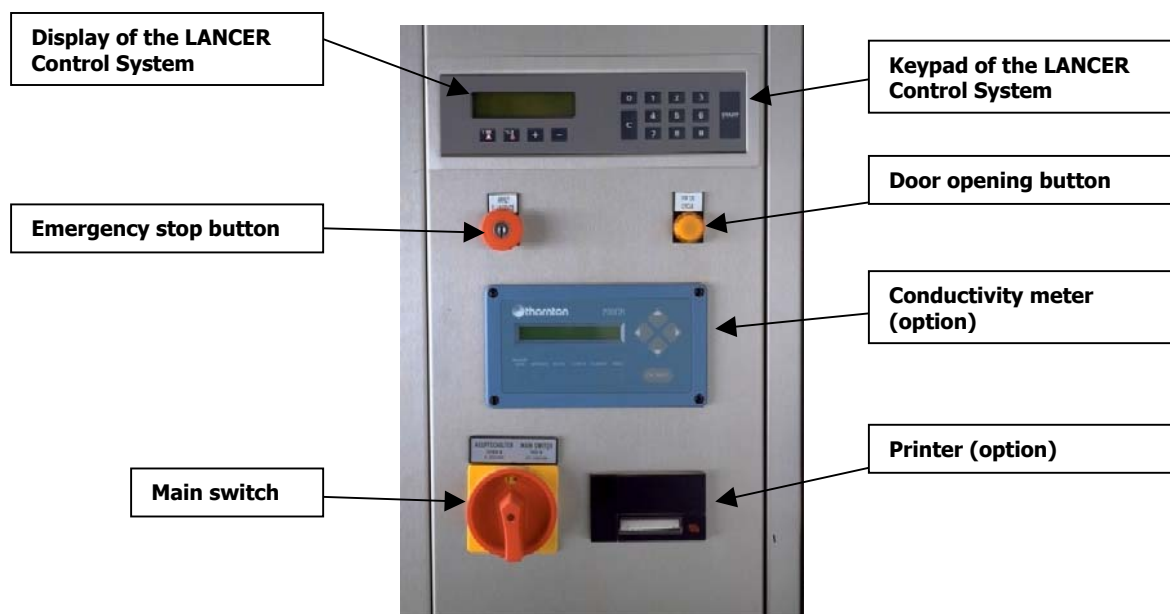
- POLYMETRON-ZELLWEGER conductivity meter, with screwed sensor, cell constant 0,01 (**option 90010229**).

This option includes two non return valves welded on chamber which close additive circuits at the end of each additive intake.

If the washer is equipped with more than 2 additive lines (see page 17), a non return valve welded on chamber can be provided on each additional additive line.

- Non return valve on additive line **option 90010230**

## 10. LANCER CONTROL SYSTEM



### 10.1. MICRO PROCESSOR

A micro processor with 40 adjustable programmes ensures the TI washer control. The control system is mounted in a 400 mm. width stainless steel module permitting to fit not only the microprocessor but also the different available options (printer, conductivity meter, chart recorder,...)

### 10.2. PARAMETERS

Control system can to set up different parameters for each storable program such as :

- number of phases for the program (pre wash, wash, neutralizing rinse...)
- duration for each phase
- water inlet selection for each phase
- temperature for pre-wash, wash and final rinse
- 1<sup>st</sup> and 2<sup>nd</sup> additive intake
- drying time
- drying temperature (TI SS only)
- customised wash protocols are available upon request (memory creation **option 01060132** or memory copy **option 90010156**)

### **10.3. ALARMS**

The LANCER control system has an extensive number of alarms such as lack of additives, filling pressure, high level of conductivity (**optional**), drying temperature (for drying models), cycle interruption, water level as well as being completely self-diagnostic.

### **10.4. ACCESS CODES**

Three levels of codes allow the access to different functions of the control system :

- supervisor code allows access to every functions
- technician code allows access to test, calibration and start functions
- operator code allows access to start functions

### **10.5. OPERATOR INTERFACE**

Operator interface consists of a 2 lines display with a numerical keyboard et 4 function keys.

### **10.6. RS-232 PORT (OPTION)**

To enable the washer to communicate with external devices, a RS-232 can be provided on the washer (**option 90010155**).

### **10.7. PRINTER AND RS-232 PORT (OPTION)**

To ensure cycle documentation, information can be printed on a impact printer. (**option 01060207**)

This printer gives documented evidence of the cleaning process including cycle parameters, operator number, time of program start, phase duration, probe temperature during each phase.

This option includes also a RS-232 on the main board of the washer.

### **10.8. VALIDATION MONITOR (OPTION)**

TI washer with LANCER control system can be fitted in option with a Validation Monitor (**option 01060195**).

This Validation Monitor has its own electronic board and its own probes to check and validate every parameter of the cycle of the washing cycle.

Its printer gives documented evidence of the cleaning process including date, machine number, time of program start, phase duration, probe temperature at each phase of the cycle when water is heated, detergent and acid intake, etc.

The Validation Monitor option includes the impact printer and the RS 232 connection.

### **10.9. FLOW METER (OPTION)**

When the washer is equipped with the Validation Monitor (**option 01060195**), flow-meters allow to measure the exact quantity of chemical taken by the machine during the cycle.

This information is sent to the Validation Monitor which compares it to the theoretical values programmed for the cycle.

- Flow-meter if option Validation Monitor (**option 90010210**)

## 10.10. LINEAR CHART RECORDER (OPTION)

A linear chart recorder 144x144 mm. can also be mounted as an option to keep a record of the cycle parameters.

Several type of chart recorders are available :



- 1 pen chart recorder (**option EN ANA 1V**) with 1 temperature sensor.
- 2 pen chart recorder (**option EN ANA 2 V**) with 1 temperature sensor and 1 free track.



- 3 tracks digital chart recorder, paperless (**option ENR NUM 3V**) with 1 temperature sensor and 2 free tracks. This chart recorder creates a hard copy of the records on a floppy disk and is supplied with a software to read and print the database on an external PC.
- 6 tracks digital chart recorder, paperless (**option ENR NUM 6V**) with 1 temperature sensor and 5 free tracks. This chart recorder creates a hard copy of the records on a floppy disk and is supplied with a software to read and print the database on an external PC.

The parameters that can be recorded in the free tracks are:

- Track for temperature (with Pt-1000 probe) (**option 90010112**)
- Track for pump pressure (with pressure transmitter) (**option 90010113**)
- Track for pump pressure (if option Monval) (**option 90010207**)
- Track for dosing pump (with pressure transmitter) (**option 90010114**)
- Track for dosing pump (if option Monval) (**option 90010206**)
- Track for conductivity (if option conductivity meter) (**option 90010116**)

The sensors linked to the chart recorder are independent from those used for cycle regulation.

## 11. CALIBRATION

### 11.1. TEMPERATURE PROBES

The Pt-1000 temperature probe/s (1 to 3 depending on model) are independent and can be adjusted according to pattern probes.

### 11.2. PROBE CALIBRATION

A tri-clamp dismounting system for these probes allows a calibration in an outside thermostatic bath.

### 11.3. THERMOCOUPLE ENTRY PORT (OPTION)

To enable the washer to be validated by using external calibrated probes, as an option, validation ports on top or bottom of chamber can be provided.

- Top entry port                      **option 01060171**
- Bottom entry port                **option 01060172**
- Top & bottom entry port       **option 01060173**

## 12. DOCUMENTATION, QUALIFICATION & CERTIFICATES

### 12.1. DOCUMENTATION

One complete set of documentation according to Lancer Standards is given with the washer including:

- installation manual
- user's manual
- technical manual
- maintenance manual
- electrical diagram
- P I D (see APPENDIX page 55)
- spare parts list
- exploded view

## **12.2. QUALIFICATION (IQ/OQ, F.A.T, S.A.T)**

*IQ : Installation Qualification*  
*OQ : Operating Qualification*  
*FAT : Factory Acceptance Test*  
*SAT : Site Acceptance Test*

As an option, the TI washers can be qualified at the factory and on site

### **12.2.1. IQ/OQ documentation and FAT protocol (option 90010184)**

As an option, the TI washers can be qualified at the factory according to a IQ/OQ protocol.

This filled protocol is given with the documentation set of the machine.

A blank copy of this protocol is also given so as to realize, by yourself on site, the same protocol (SAT protocole).

### **12.2.2. IQ/OQ documentation and FAT protocol in presence of the customer (option 90010134)**

As an option, the TI washers can be qualified at the factory in presence of the customer according to a IQ/OQ protocol.

This filled protocol is given with the documentation set of the machine.

A blank copy of this protocol is also given so as to realize, by yourself on site, the same protocol (SAT protocole).

### **12.2.3. IQ/OQ documentation and SAT protocol (option 90010183) ou IQ/OQ documentation and SAT protocol with MONVAL (option 90010182)**

As an option, the TI washers can be qualified on site, in presence of a LANCER technicien, according to the SAT LANCER protocol.

*This option is only available in France (for your country, please ask your local representative)*



### **12.3. RISK ANALYSIS & MACHINE CONFORMITY CERTIFIED (OPTION)**

Several options are available so as to certify TI washers.

#### **12.3.1. Machine conformity certified by a notified body (option)**

As an option, TI washers can be certified by a notified body (Apave, ...).

Please consult Lancer for this option.

#### **12.3.2. Risk analysis & Machine conformity certified by a notified body (option)**

As an option, TI washers can be checked and certified by a notified body (Apave, ...).

Please consult Lancer for this option.

## 13. BASKETS AND ACCESSORIES

Lancer has designed a standard line of racks to answer most of the washing needs (please refer to APPENDIX page 56) :

- the **basic basket (PST)** allows to wash parts with large neck which can be laid flat. This basket is only used on the lower level of the washer to benefit from the spraying of the lower chamber washing arm.
- the **basic basket + washing arm (PSBT)** is designed the same way as the PS but it is fitted with a washing arm. This feature allows to locate it on the upper level of the chamber (accessory not available for models 4500 and 4800).
- the **jet basket** allows to wash parts with small neck. Jets can be fitted with spherical spreader for the washing of large containers. Height and diameter of the jets have to be adapted to the part geometry to ensure an optimum result.

Baskets can also be designed for specific application such as :

- **tube washing.** Our tube baskets allows to wash long tubes thanks to helicoidal supports.
- **valve washing.** Our valve baskets have distributing line with different clamp sizes to connect the valves.
- **special set of parts washing.** Special baskets can be designed to fit the more complex geometry. They can also take into account devoted location of parts (for instance the pump body and its piston side by side).

Accessories can help to load and maintain parts onto baskets :

- mesh baskets type **ST / LT** can contain small dimension parts.
- grid can hold large parts vertically

The main technical characteristics of TI baskets are the following :

- Polyacetal wheels
- injectors threaded onto manifolds
- Stainless steel construction

# TI RANGE SPECIFICATIONS

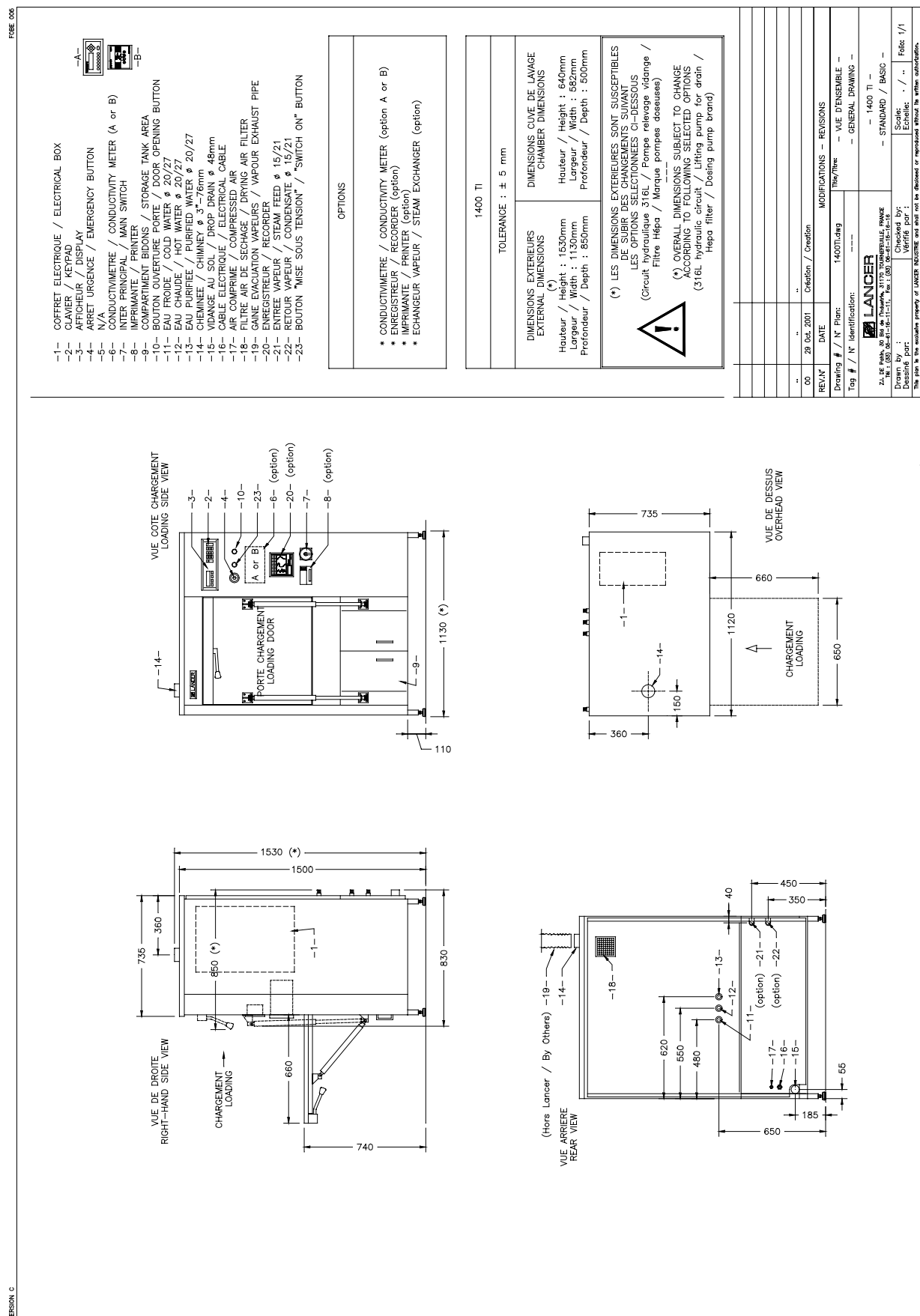
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## APPENDIX 1: DIMENSIONS – 1400 TI

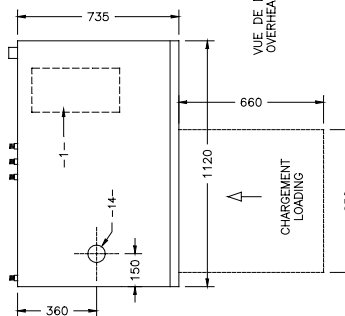
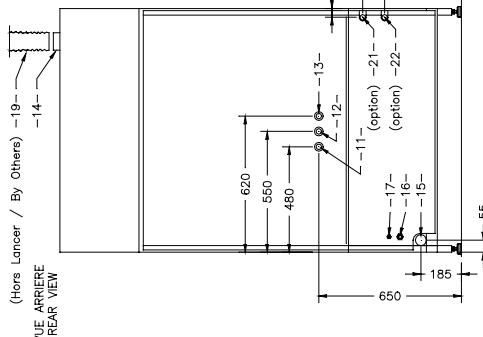
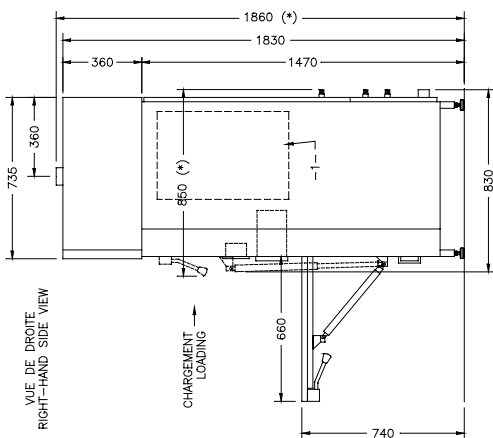
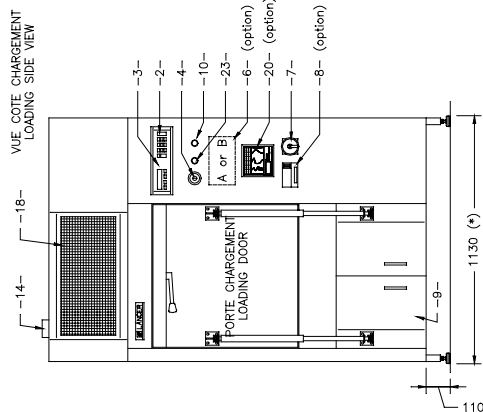


# APPENDIX 1: DIMENSIONS – 1400 TI SS

FIG. 005

VERSION G

- 1- COFFRET ELECTRIQUE / ELECTRICAL BOX
- 2- CLAVIER / KEYPAD
- 3- ECRAN / DISPLAY
- 4- ARRET URGENCE / EMERGENCY BUTTON
- 5- N/A
- 6- CONDUCTIVIMETRE / CONDUCTIVITY METER (A or B)
- 7- INTER PRINCIPAL / MAIN SWITCH
- 8- IMPRIMANTE / PRINTER
- 9- COMPARTIMENT BIDONS / STORAGE TANK AREA
- 10- BOUTON OUVERTURE PORTE / DOOR OPENING BUTTON
- 11- EAU FROIDE / COLD WATER Ø 20/27
- 12- EAU CHAUDE / HOT WATER Ø 20/27
- 13- EAU PURIFIEE / PURIFIED WATER Ø 20/27
- 14- CHIMNEE / CHIMNEY Ø 3"-76mm
- 15- VIDANGE AU SOL / DROP DRAIN Ø 48mm
- 16- CABLE ELECTRIQUE / ELECTRICAL CABLE
- 17- ARRETEMENT / STOP
- 18- FILTRE AIR DE SECHAGE / DRYING AIR FILTER
- 19- CANE EVACUATION VAPEURS / VAPOUR EXHAUST PIPE
- 20- ENREGISTREUR / RECORDER
- 21- ENTRETEE VAPEUR / STEAM FEED Ø 15/21
- 22- RETOUR VAPEUR / CONDENSATE Ø 15/21
- 23- BOUTON "MISE SOUS TENSION" / "SWITCH ON" BUTTON



OPTIONS	
* CONDUCTIVIMETRE / CONDUCTIVITY METER (option A or B)	
* ENREGISTREUR / RECORDER (option)	
* IMPRIMANTE / PRINTER (option)	
* ECHANGEUR VAPEUR / STEAM EXCHANGER (option)	

1400 TI SS	
TOLERANCE : ± 5 mm	
DIMENSIONS EXTERIEURES EXTERNAL DIMENSIONS	DIMENSIONS CUVES DE LAVAGE CHAMBER DIMENSIONS
Hauteur / Height : 1860mm	Hauteur / Height : 640mm
Largeur / Width : 1130mm	Largeur / Width : 582mm
Profondeur / Depth : 850mm	Profondeur / Depth : 500mm

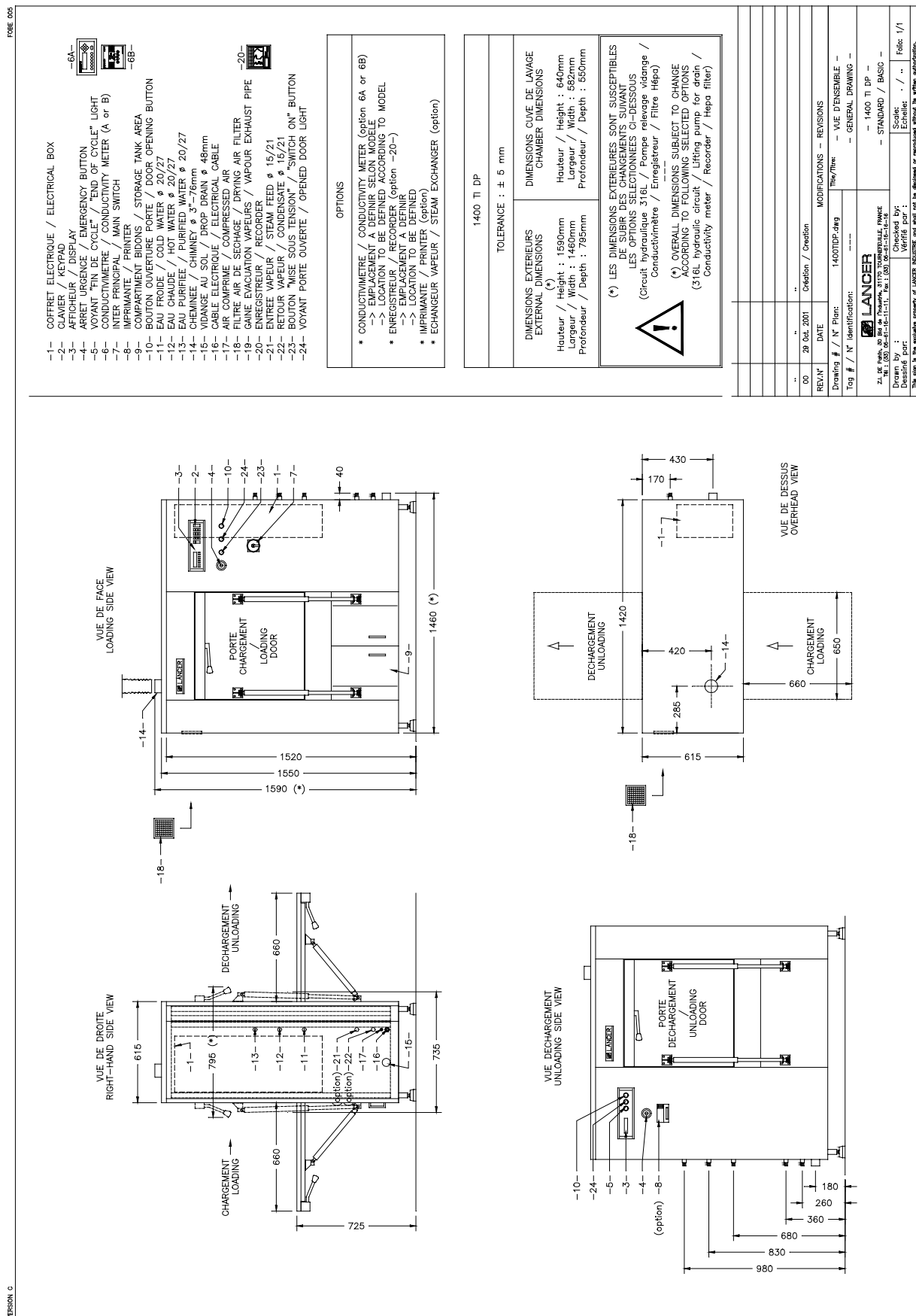
(\*) LES DIMENSIONS EXTERIEURES SONT SUSCEPTIBLES DE SUBIR DES CHANGEMENTS SUIVANT LES OPTIONS SELECTIONNEES CI-DESSOUS  
(\*) OVERALL DIMENSIONS SUBJECT TO CHANGE ACCORDING TO FOLLOWING SELECTED OPTIONS  
(316L hydraulic circuit / lifting pump for drain / Dosing pump brand)



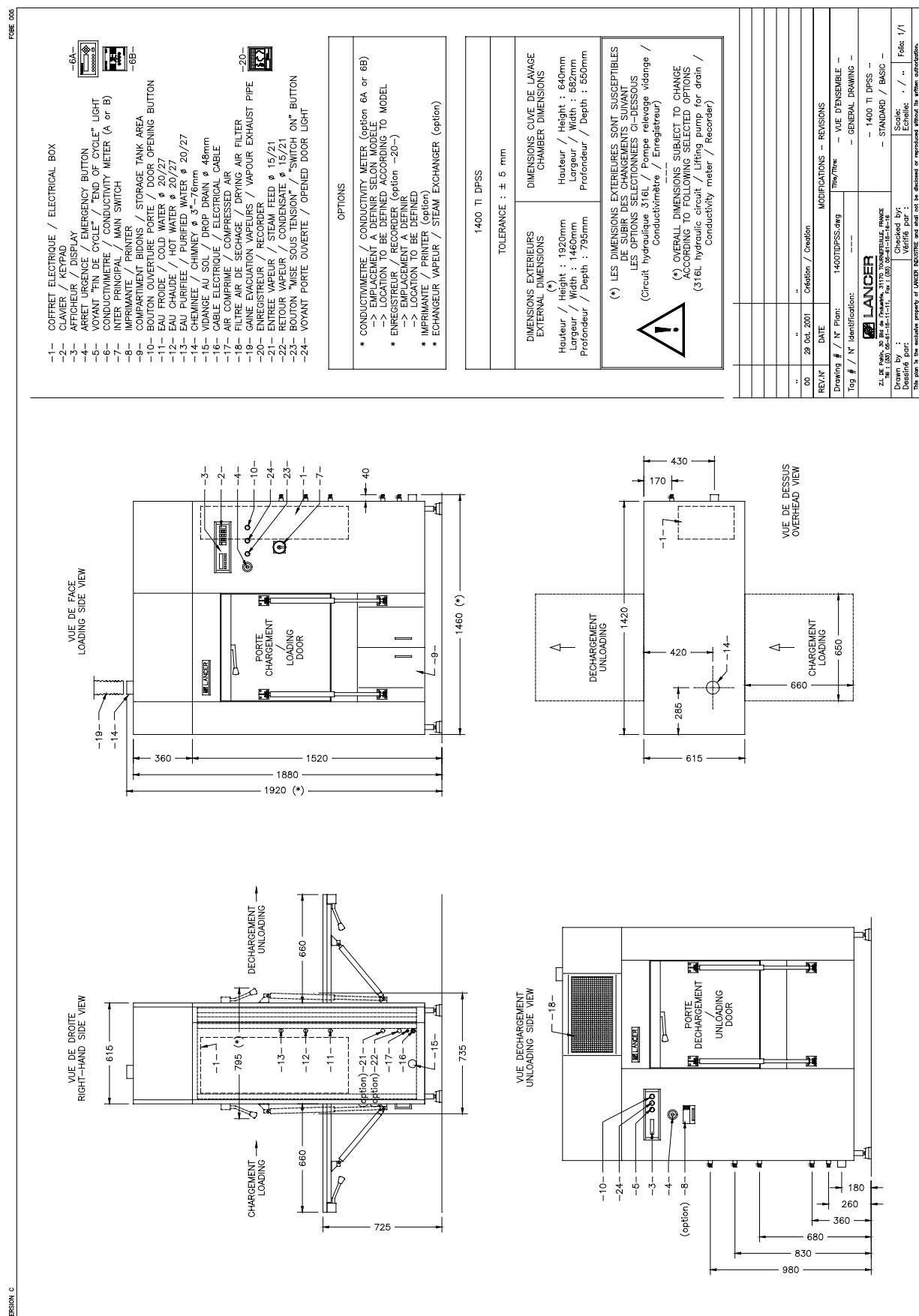
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## APPENDIX 1: DIMENSIONS – 1400 TI DP



## APPENDIX 1: DIMENSIONS – 1400 TI DPSS





# APPENDIX 1: DIMENSIONS – 1600 TI

FORE 005

VERSION C

- 1- COFFRET ELECTRIQUE / ELECTRICAL BOX
- 2- CLAVIER / KEYPAD
- 3- AFFICHEUR / DISPLAY
- 4- ARRÊT URGENCE / EMERGENCY BUTTON
- 5- N/A
- 6- CONDUCTIVIMETRE / CONDUCTIVITY METER (A or B)
- 7- INTER PRINCIPAL / MAIN SWITCH
- 8- IMPRIMANTE / PRINTER
- 9- COMPARTIMENT BIDS / STORAGE TANK AREA
- 10- BOUTON D'OUVERTURE / DOOR OPENING BUTTON
- 11- EAU FROIDE / COLD WATER ø 20/27
- 12- EAU CHAUDE / HOT WATER ø 20/27
- 13- EAU PURIFIEE / PURIFIED WATER ø 20/27
- 14- CHEMINÉE / CHIMNEY ø 3"-76mm
- 15- VIDANGE AU SOL / DROP DRAIN ø 48mm
- 16- CABLE ELECTRIQUE / ELECTRICAL CABLE
- 17- AIR COMPRIME / COMPRESSED AIR
- 18- FILTRE AIR DE SECHAGE / DRYING AIR FILTER
- 19- GÂNE EVACUATION VAPEURS / VAPOUR EXHAUST PIPE
- 20- ENREGISTREUR / RECORDER
- 21- RETOUR VAPEUR / CONDENSATE ø 15/21
- 22- BOUTON "MISE SOUS TENSION" / "SWITCH ON" BUTTON
- 23- BOUTON "MISE SOUS TENSION" / "SWITCH ON" BUTTON



## OPTIONS

- \* CONDUCTIVIMETRE / CONDUCTIVITY METER (option A or B)
- \* ENREGISTREUR / RECORDER (option)
- \* IMPRIMANTE / PRINTER (option)
- \* ECHANGEUR VAPEUR / STEAM EXCHANGER (option)

## 1600 TI

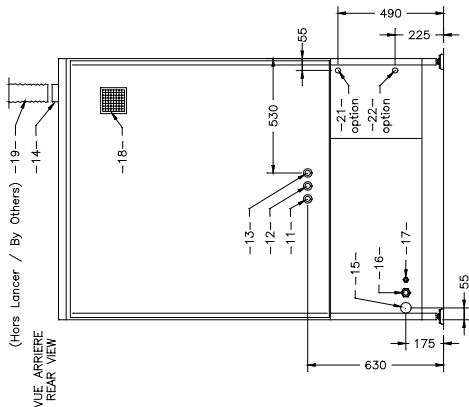
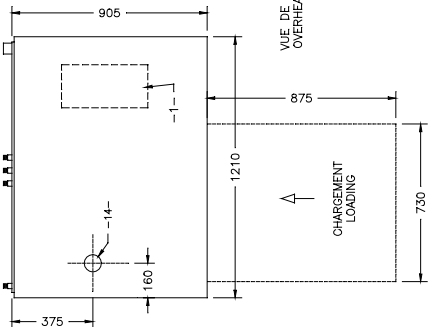
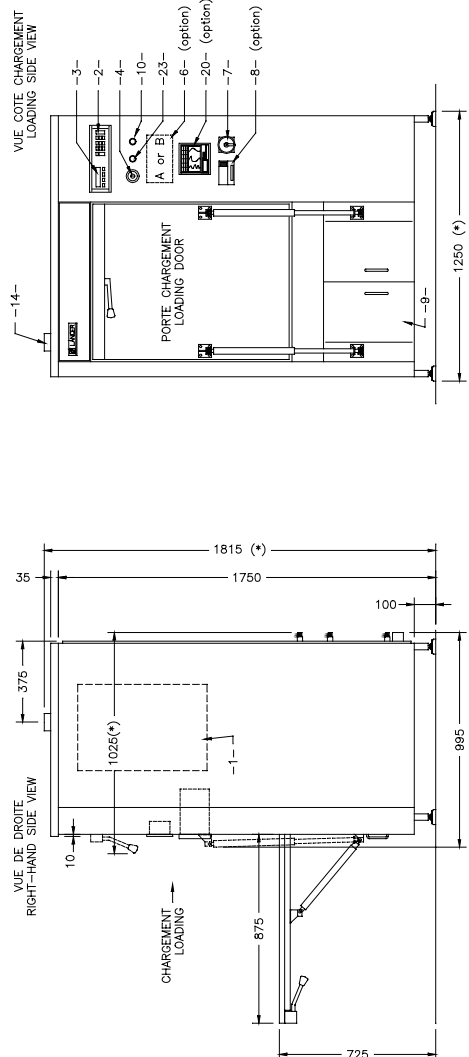
TOLERANCE : ± 5 mm

DIMENSIONS EXTERIEURES EXTERNAL DIMENSIONS	DIMENSIONS CUVES DE LAVAGE CHAMBER DIMENSIONS
Hauteur / Height : 1815mm	Hauteur / Height : 855mm
Largeur / Width : 1250mm	Largeur / Width : 655mm
Profondeur / Depth : 1025mm	Profondeur / Depth : 660mm

(\*) LES DIMENSIONS EXTERIEURES SONT SUSCEPTIBLES DE SUBIR DES CHANGEMENTS SUIVANT LES OPTIONS SELECTIONNEES CI-DESSOUS  
(Circuit hydraulique 316L / Pompe relevage vidange / Filtre Hépa)

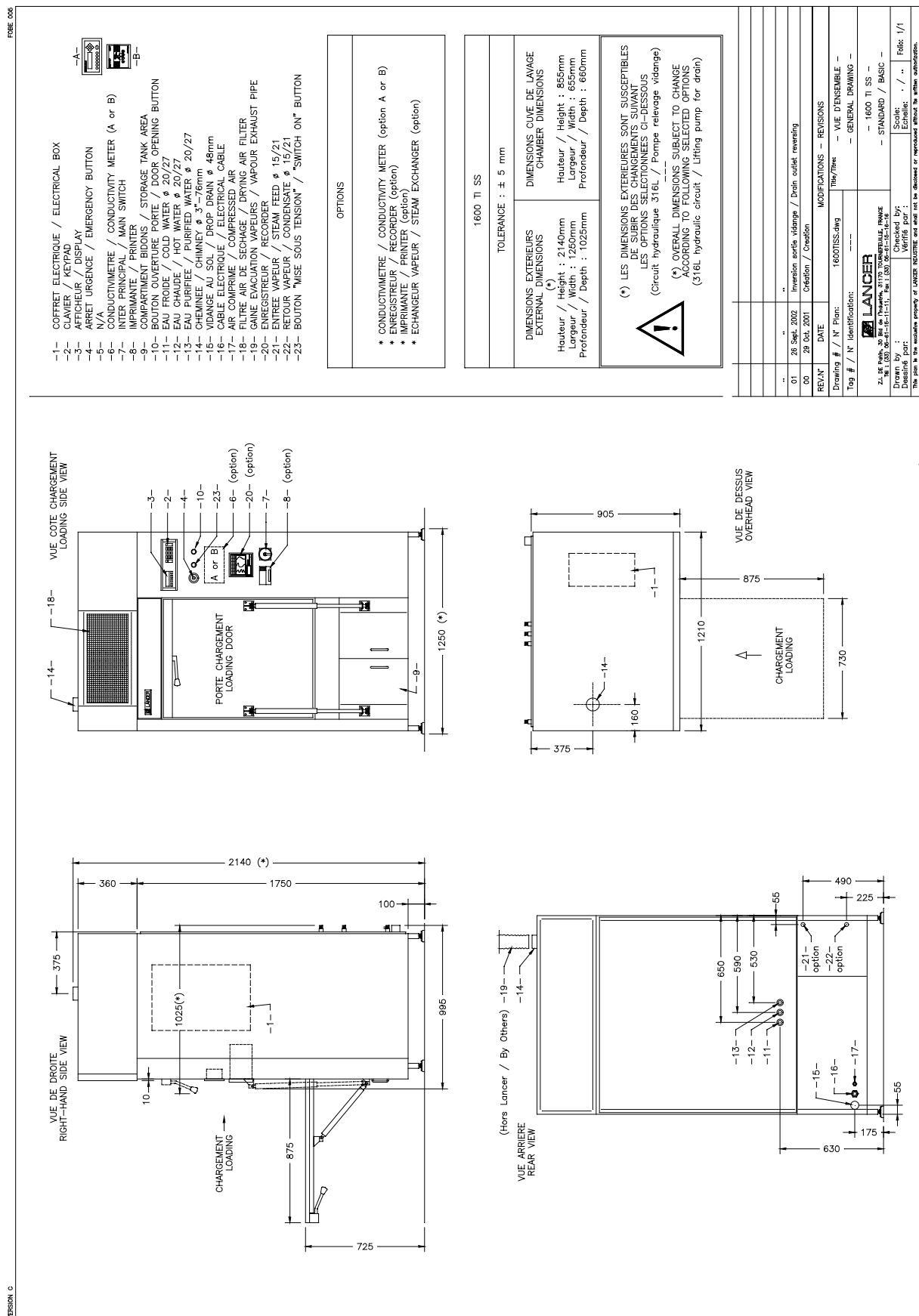


(\*) OVERALL DIMENSIONS SUBJECT TO CHANGE ACCORDING TO FOLLOWING SELECTED OPTIONS  
(316L hydraulic circuit / Lifting pump for drain / Hepa filter)

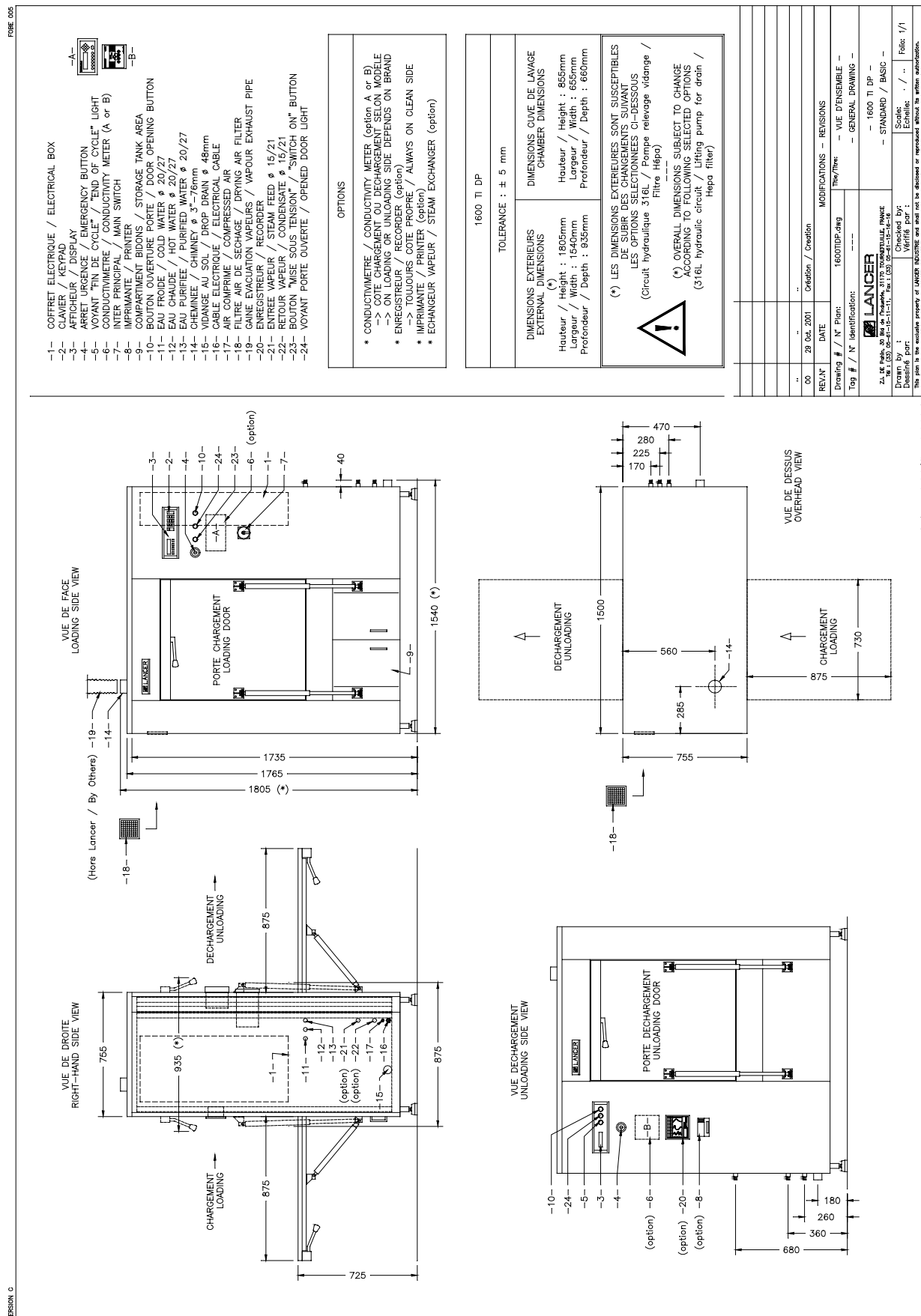


Données non contractuelles / Non contractual drawings

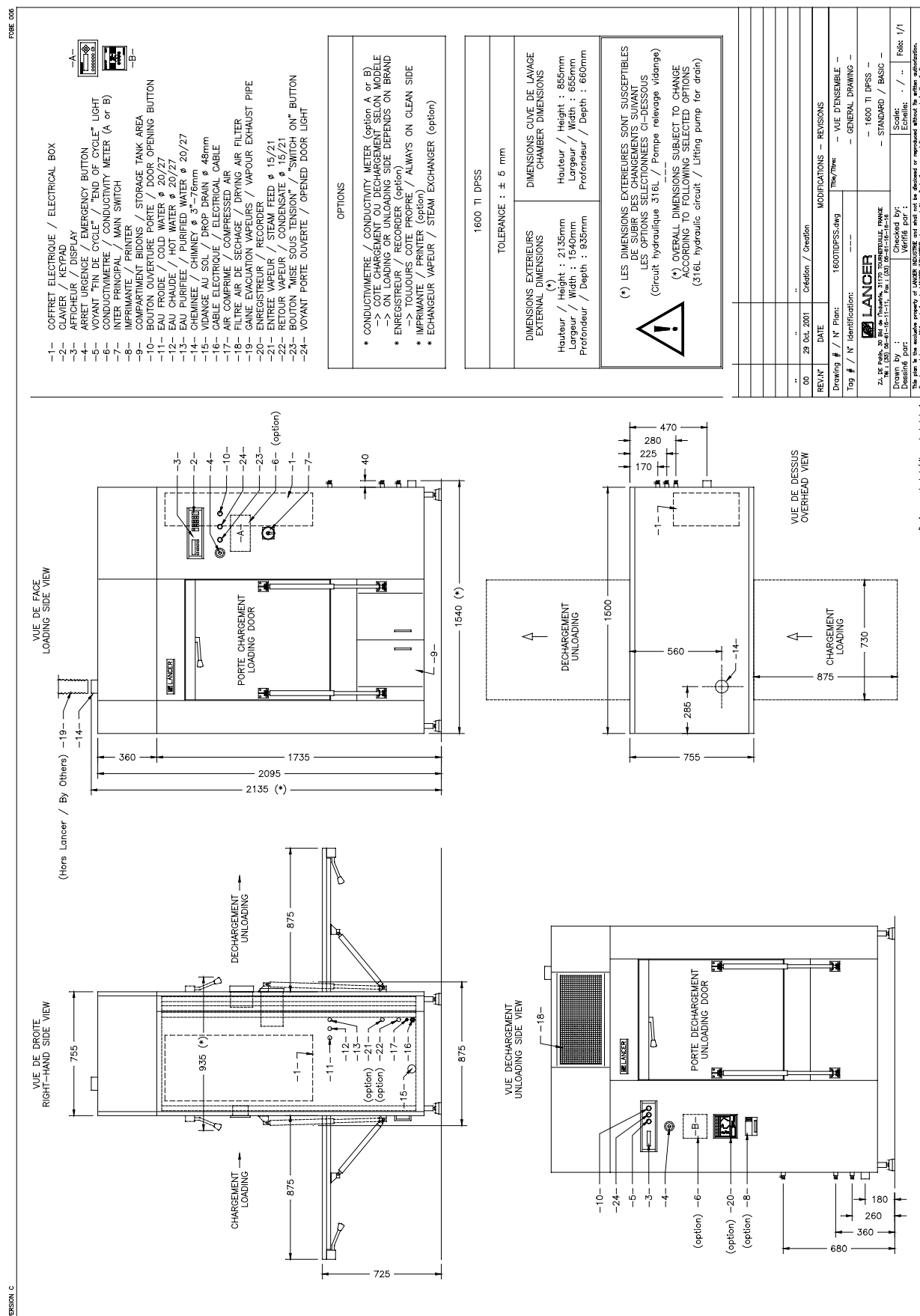
# APPENDIX 1: DIMENSIONS – 1600 TI SS



## APPENDIX 1: DIMENSIONS – 1600 TI DP



## APPENDIX 1: DIMENSIONS – 1600 TI DPSS



## APPENDIX 1: DIMENSIONS – 4500 TI

[illegible]



## APPENDIX 1: DIMENSIONS – 4500 TI DP

FORN 001

PERSON C

COFFRET COMMANDE / CONTROL BOX

VUE DE GAUCHE  
LEFT-HAND SIDE VIEW

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

Technical drawings of the LANCER unit showing left-hand side and loading side views. The left-hand side view (top) shows dimensions: 28"-710, 39.7"-1010, 4.7"-120, 52.7"-1340 (\*), 43.3"-1100, 18", 17", 16", 7"-178, 14.1"-360, 30"-760, 37.8"-960, 45.6"-1160, 5.3"-135, 13, 12, 11, 21 (option), 22 (option), 19, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. The loading side view (bottom) shows dimensions: 78.7"-2000 (\*), 77.1"-1960, 68.5"-1920, 82.6"-2100, 84.6"-2150 (\*), 2"-50, 14, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Callouts include: 1- COFFRET COMMANDE / CONTROL BOX, 2- CLAVIER / KEYPAD, 3- AFFICHEUR / DISPLAY, 4- ARRÊT URGENT / EMERGENCY STOP, 5- COFFRET À CLAVIER / KEYPAD BOX, 6- CONDUCTIVIMÈTRE / CONDUCTIVITY METER (A or B), 7- INTÉR PRINCIPAL / MAIN SWITCH, 8- IMPRIMANTE / PRINTER, 9- COFFRET À CLAVIER / KEYPAD BOX, 10- COFFRET PUISSANCE / POWER BOX, 11- EAU FROIDE / COLD WATER # 20/27, 12- EAU CHAUDE / HOT WATER # 20/27, 13- EAU CHAUDE / HOT WATER # 20/27, 14- CHEMINÉE / CHIMNEY # 4.5"-14.3mm, 15- VIDANGE AU SOL / DROP DRAIN # 48mm, 16- CÂBLE ÉLECTRIQUE / ELECTRICAL CABLE, 17- TUYAU À VIDE / VACUUM PIPE, 18- TUYAU À VIDE / VACUUM PIPE, 19- TUYAU À VIDE / VACUUM PIPE, 20- TUYAU À VIDE / VACUUM PIPE, 21- TUYAU À VIDE / VACUUM PIPE, 22- TUYAU À VIDE / VACUUM PIPE, 23- TUYAU À VIDE / VACUUM PIPE, 24- TUYAU À VIDE / VACUUM PIPE, 25- TUYAU À VIDE / VACUUM PIPE, 26- TUYAU À VIDE / VACUUM PIPE, 27- TUYAU À VIDE / VACUUM PIPE.

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE DE GAUCHE  
LEFT-HAND SIDE VIEW

Technical drawings of the LANCER unit showing left-hand side and loading side views. The left-hand side view (top) shows dimensions: 28"-710, 39.7"-1010, 4.7"-120, 52.7"-1340 (\*), 43.3"-1100, 18", 17", 16", 7"-178, 14.1"-360, 30"-760, 37.8"-960, 45.6"-1160, 5.3"-135, 13, 12, 11, 21 (option), 22 (option), 19, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. The loading side view (bottom) shows dimensions: 78.7"-2000 (\*), 77.1"-1960, 68.5"-1920, 82.6"-2100, 84.6"-2150 (\*), 2"-50, 14, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Callouts include: 1- COFFRET COMMANDE / CONTROL BOX, 2- CLAVIER / KEYPAD, 3- AFFICHEUR / DISPLAY, 4- ARRÊT URGENT / EMERGENCY STOP, 5- COFFRET À CLAVIER / KEYPAD BOX, 6- CONDUCTIVIMÈTRE / CONDUCTIVITY METER (A or B), 7- INTÉR PRINCIPAL / MAIN SWITCH, 8- IMPRIMANTE / PRINTER, 9- COFFRET À CLAVIER / KEYPAD BOX, 10- COFFRET PUISSANCE / POWER BOX, 11- EAU FROIDE / COLD WATER # 20/27, 12- EAU CHAUDE / HOT WATER # 20/27, 13- EAU CHAUDE / HOT WATER # 20/27, 14- CHEMINÉE / CHIMNEY # 4.5"-14.3mm, 15- VIDANGE AU SOL / DROP DRAIN # 48mm, 16- CÂBLE ÉLECTRIQUE / ELECTRICAL CABLE, 17- TUYAU À VIDE / VACUUM PIPE, 18- TUYAU À VIDE / VACUUM PIPE, 19- TUYAU À VIDE / VACUUM PIPE, 20- TUYAU À VIDE / VACUUM PIPE, 21- TUYAU À VIDE / VACUUM PIPE, 22- TUYAU À VIDE / VACUUM PIPE, 23- TUYAU À VIDE / VACUUM PIPE, 24- TUYAU À VIDE / VACUUM PIPE, 25- TUYAU À VIDE / VACUUM PIPE, 26- TUYAU À VIDE / VACUUM PIPE, 27- TUYAU À VIDE / VACUUM PIPE.

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE DE GAUCHE  
LEFT-HAND SIDE VIEW

Technical drawings of the LANCER unit showing left-hand side and loading side views. The left-hand side view (top) shows dimensions: 28"-710, 39.7"-1010, 4.7"-120, 52.7"-1340 (\*), 43.3"-1100, 18", 17", 16", 7"-178, 14.1"-360, 30"-760, 37.8"-960, 45.6"-1160, 5.3"-135, 13, 12, 11, 21 (option), 22 (option), 19, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. The loading side view (bottom) shows dimensions: 78.7"-2000 (\*), 77.1"-1960, 68.5"-1920, 82.6"-2100, 84.6"-2150 (\*), 2"-50, 14, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Callouts include: 1- COFFRET COMMANDE / CONTROL BOX, 2- CLAVIER / KEYPAD, 3- AFFICHEUR / DISPLAY, 4- ARRÊT URGENT / EMERGENCY STOP, 5- COFFRET À CLAVIER / KEYPAD BOX, 6- CONDUCTIVIMÈTRE / CONDUCTIVITY METER (A or B), 7- INTÉR PRINCIPAL / MAIN SWITCH, 8- IMPRIMANTE / PRINTER, 9- COFFRET À CLAVIER / KEYPAD BOX, 10- COFFRET PUISSANCE / POWER BOX, 11- EAU FROIDE / COLD WATER # 20/27, 12- EAU CHAUDE / HOT WATER # 20/27, 13- EAU CHAUDE / HOT WATER # 20/27, 14- CHEMINÉE / CHIMNEY # 4.5"-14.3mm, 15- VIDANGE AU SOL / DROP DRAIN # 48mm, 16- CÂBLE ÉLECTRIQUE / ELECTRICAL CABLE, 17- TUYAU À VIDE / VACUUM PIPE, 18- TUYAU À VIDE / VACUUM PIPE, 19- TUYAU À VIDE / VACUUM PIPE, 20- TUYAU À VIDE / VACUUM PIPE, 21- TUYAU À VIDE / VACUUM PIPE, 22- TUYAU À VIDE / VACUUM PIPE, 23- TUYAU À VIDE / VACUUM PIPE, 24- TUYAU À VIDE / VACUUM PIPE, 25- TUYAU À VIDE / VACUUM PIPE, 26- TUYAU À VIDE / VACUUM PIPE, 27- TUYAU À VIDE / VACUUM PIPE.

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE DE GAUCHE  
LEFT-HAND SIDE VIEW

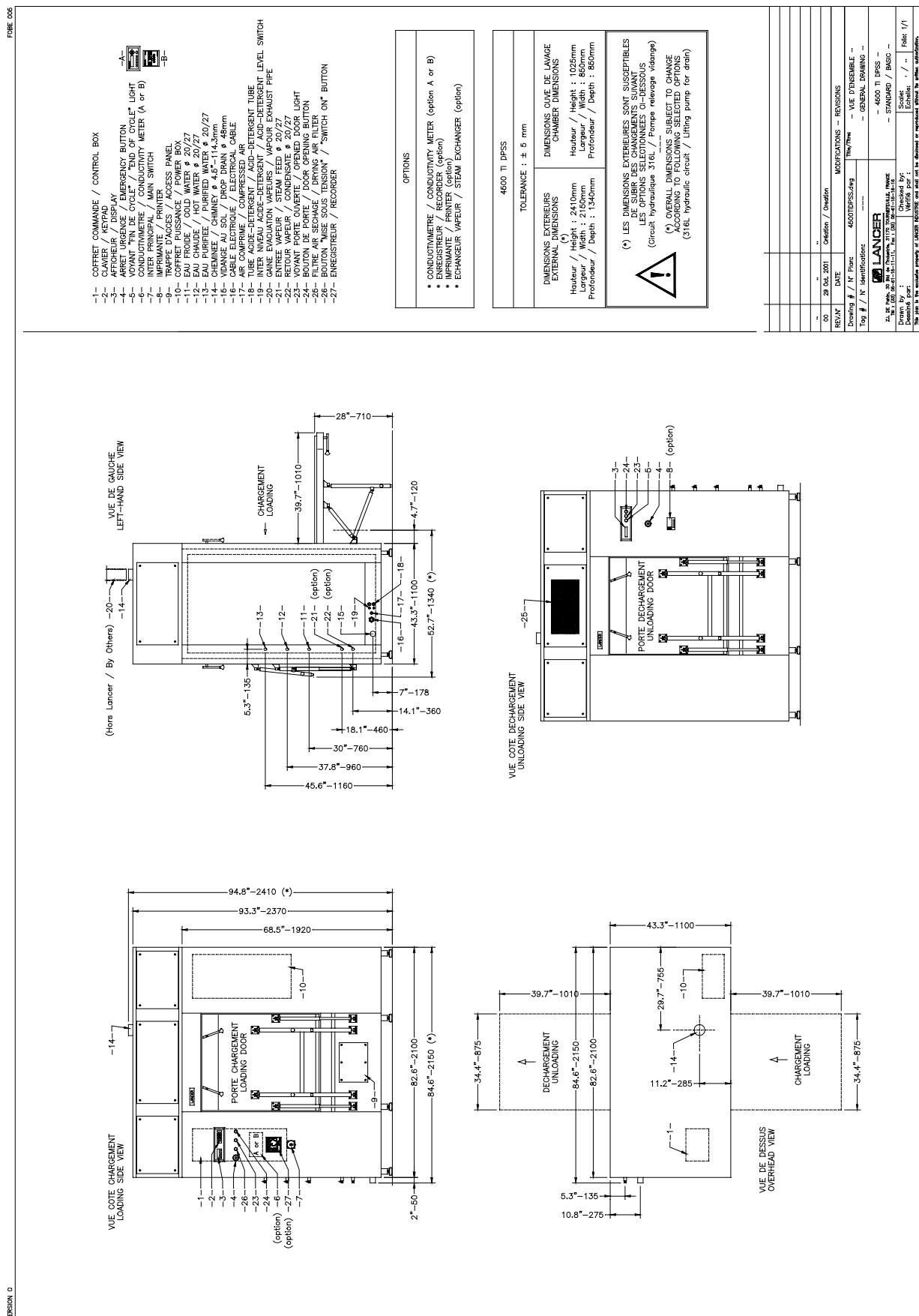
Technical drawings of the LANCER unit showing left-hand side and loading side views. The left-hand side view (top) shows dimensions: 28"-710, 39.7"-1010, 4.7"-120, 52.7"-1340 (\*), 43.3"-1100, 18", 17", 16", 7"-178, 14.1"-360, 30"-760, 37.8"-960, 45.6"-1160, 5.3"-135, 13, 12, 11, 21 (option), 22 (option), 19, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. The loading side view (bottom) shows dimensions: 78.7"-2000 (\*), 77.1"-1960, 68.5"-1920, 82.6"-2100, 84.6"-2150 (\*), 2"-50, 14, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Callouts include: 1- COFFRET COMMANDE / CONTROL BOX, 2- CLAVIER / KEYPAD, 3- AFFICHEUR / DISPLAY, 4- ARRÊT URGENT / EMERGENCY STOP, 5- COFFRET À CLAVIER / KEYPAD BOX, 6- CONDUCTIVIMÈTRE / CONDUCTIVITY METER (A or B), 7- INTÉR PRINCIPAL / MAIN SWITCH, 8- IMPRIMANTE / PRINTER, 9- COFFRET À CLAVIER / KEYPAD BOX, 10- COFFRET PUISSANCE / POWER BOX, 11- EAU FROIDE / COLD WATER # 20/27, 12- EAU CHAUDE / HOT WATER # 20/27, 13- EAU CHAUDE / HOT WATER # 20/27, 14- CHEMINÉE / CHIMNEY # 4.5"-14.3mm, 15- VIDANGE AU SOL / DROP DRAIN # 48mm, 16- CÂBLE ÉLECTRIQUE / ELECTRICAL CABLE, 17- TUYAU À VIDE / VACUUM PIPE, 18- TUYAU À VIDE / VACUUM PIPE, 19- TUYAU À VIDE / VACUUM PIPE, 20- TUYAU À VIDE / VACUUM PIPE, 21- TUYAU À VIDE / VACUUM PIPE, 22- TUYAU À VIDE / VACUUM PIPE, 23- TUYAU À VIDE / VACUUM PIPE, 24- TUYAU À VIDE / VACUUM PIPE, 25- TUYAU À VIDE / VACUUM PIPE, 26- TUYAU À VIDE / VACUUM PIPE, 27- TUYAU À VIDE / VACUUM PIPE.

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE COTE CHARGEMENT  
LOADING SIDE VIEW

VUE DE GAUCHE  
LEFT-HAND SIDE VIEW

## APPENDIX 1: DIMENSIONS – 4500 TI DPSS





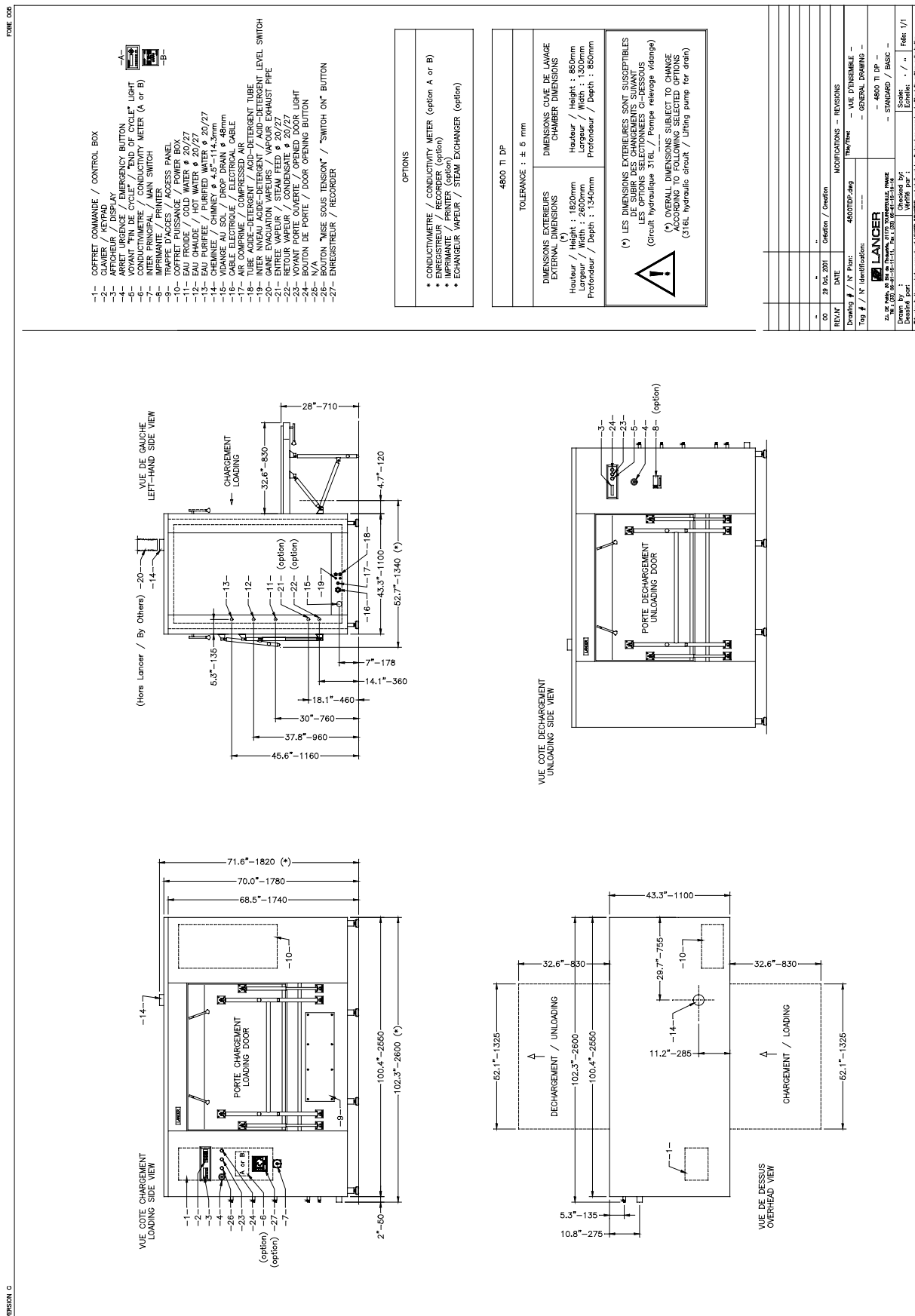
## APPENDIX 1: DIMENSIONS – 4800 TI

[illegible]

## APPENDIX 1: DIMENSIONS – 4800 TI SS

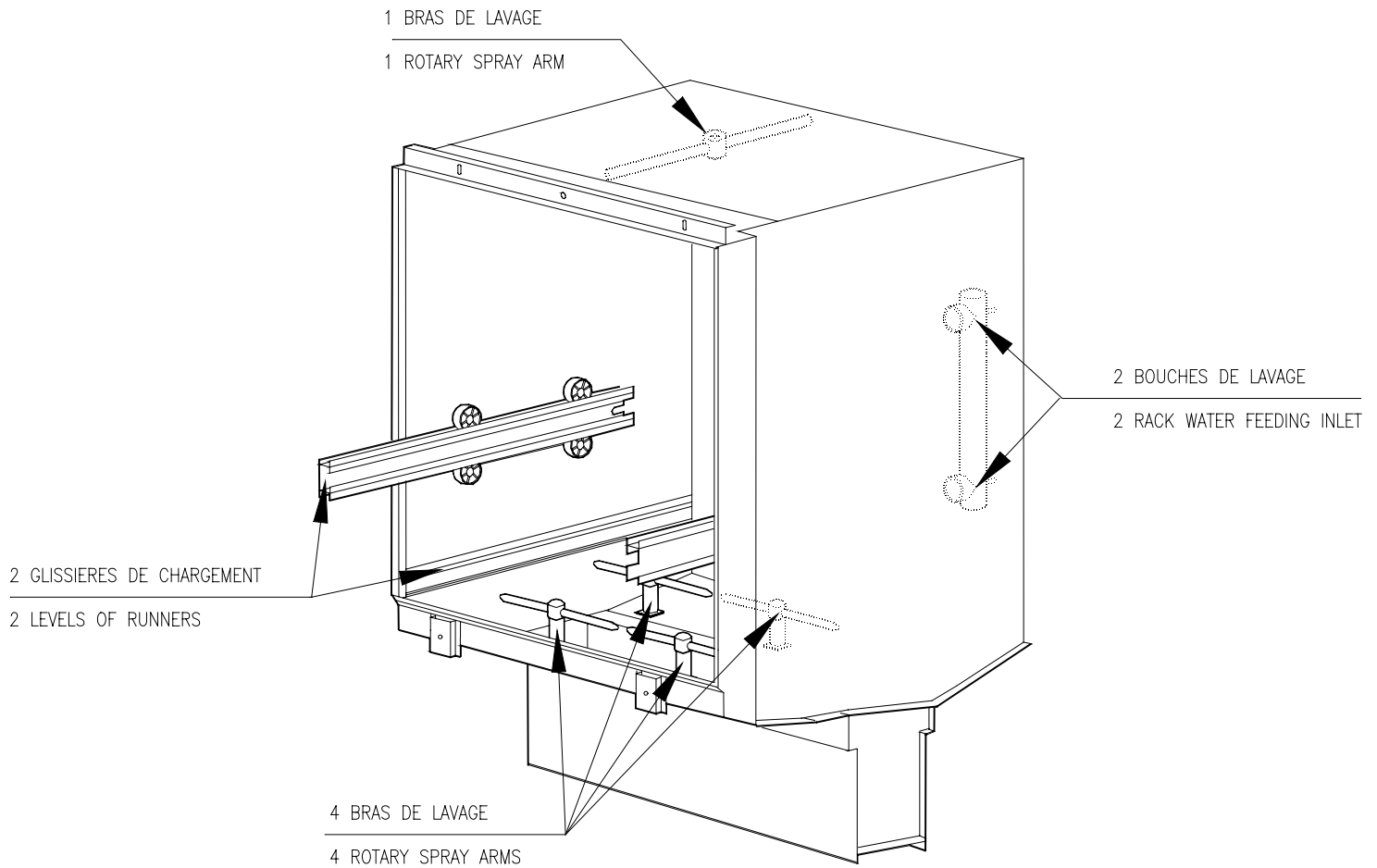
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# APPENDIX 1: DIMENSIONS – 4800 TI DP

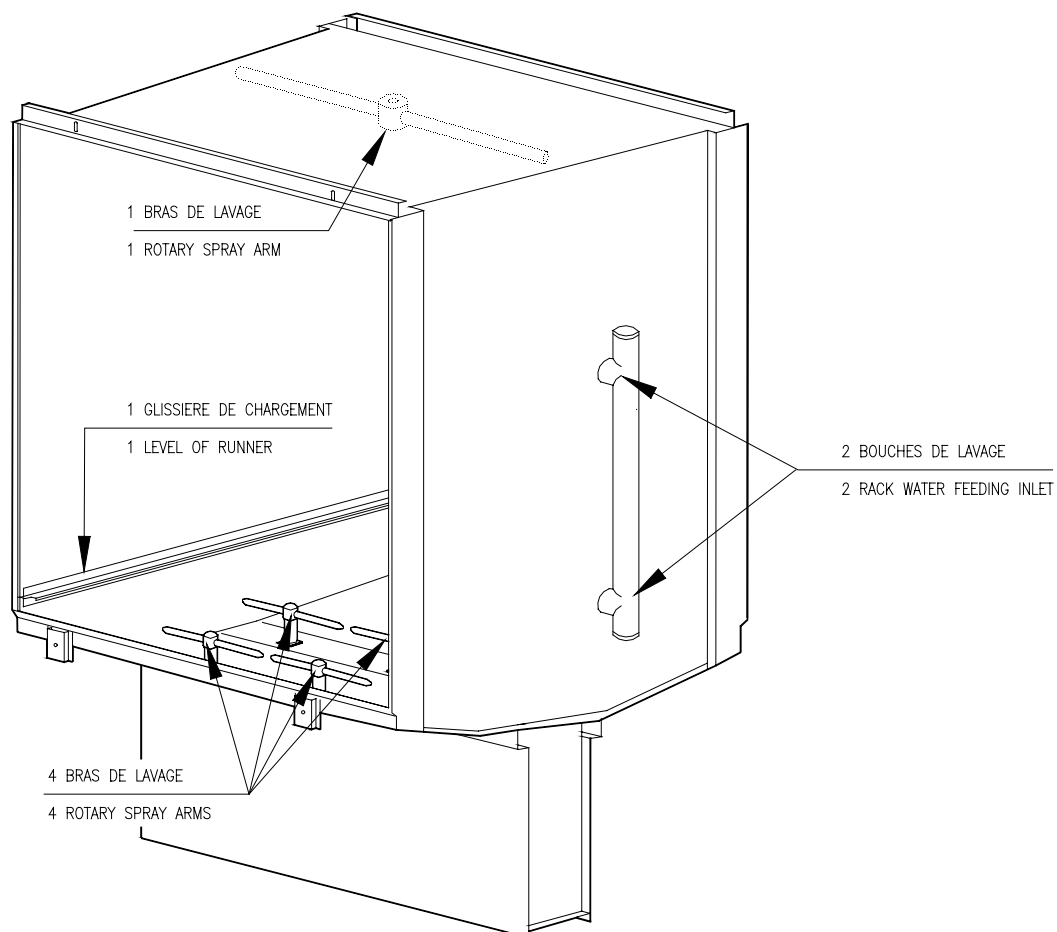




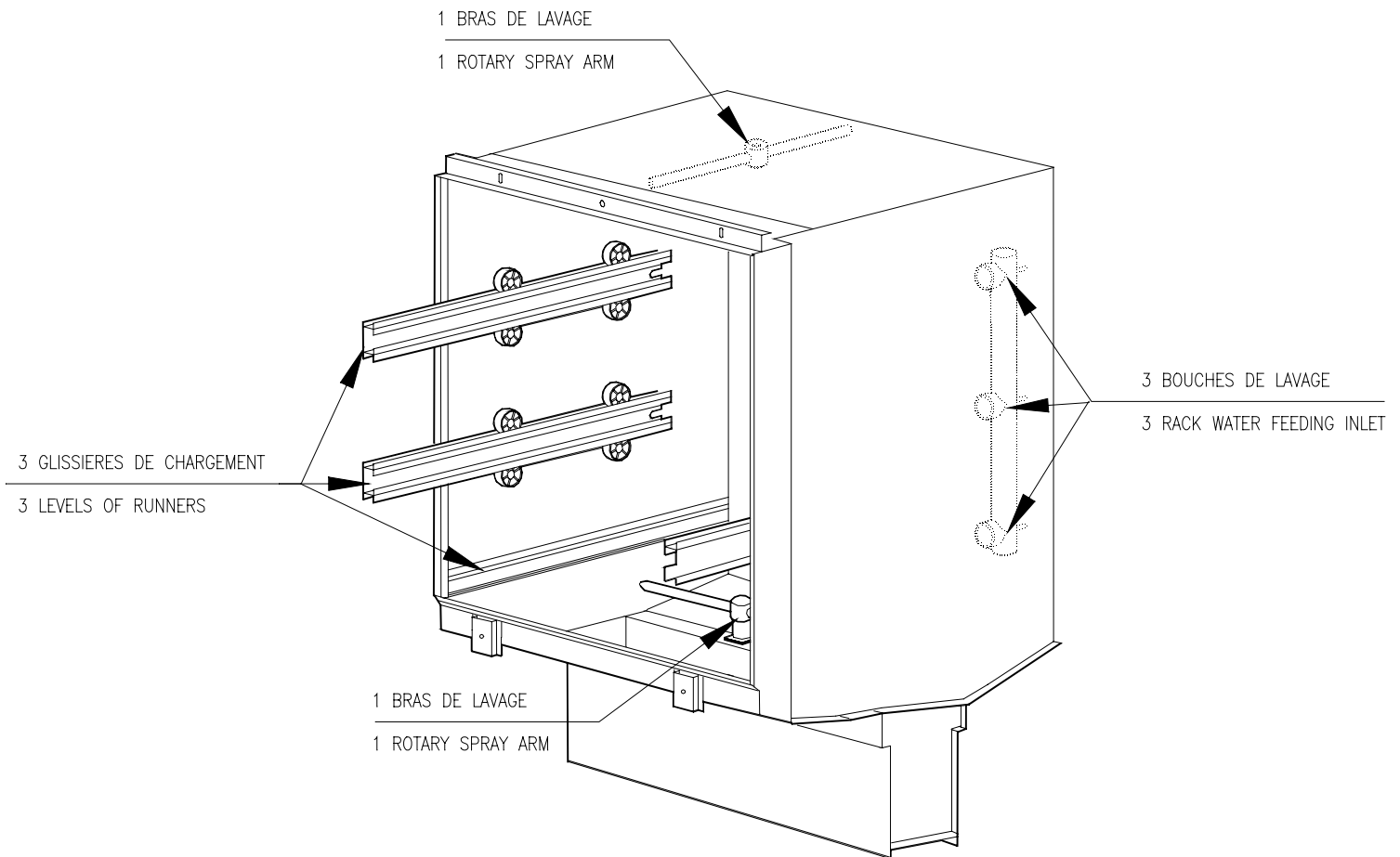
• **APPENDIX 2: CHAMBER – 1400 TI / TI SS**



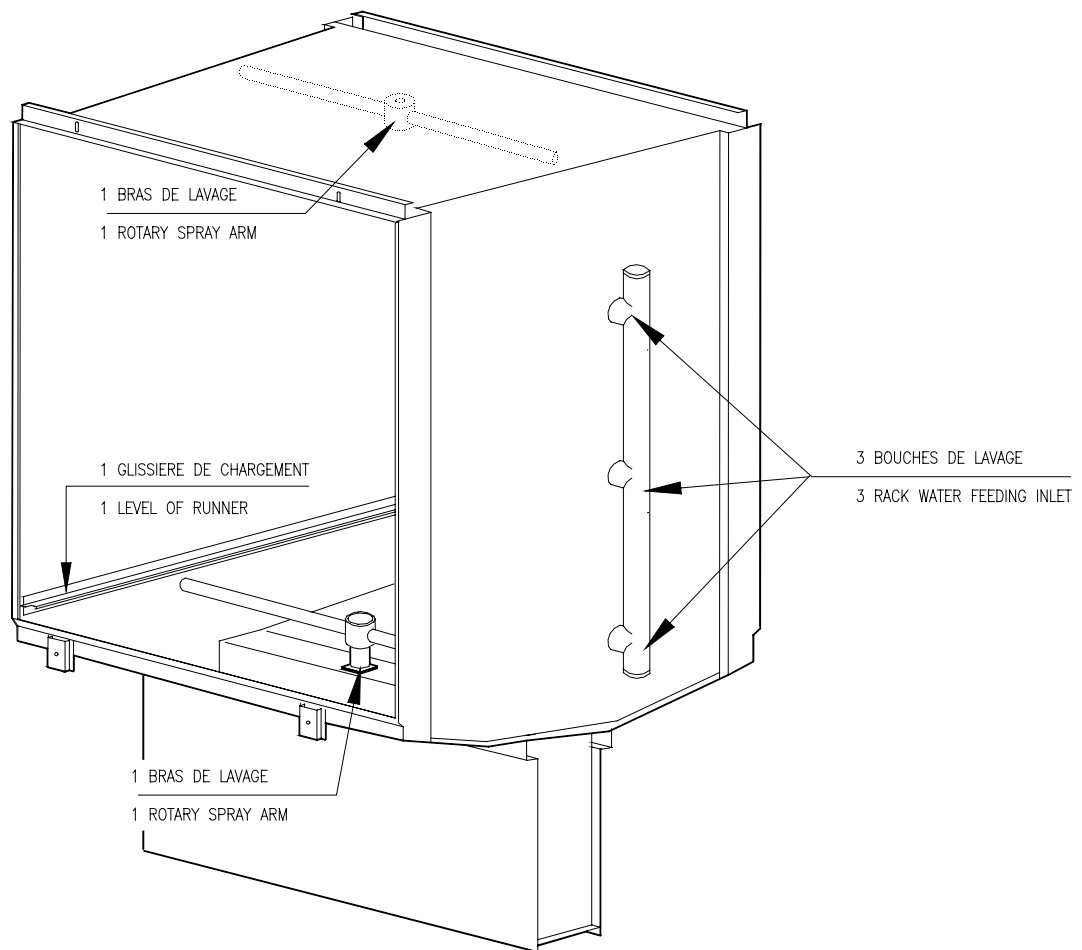
• APPENDIX 2: CHAMBER – 1400 TI DP / TI DPSS



• **APPENDIX 2: CHAMBER – 1600 TI / TI SS**

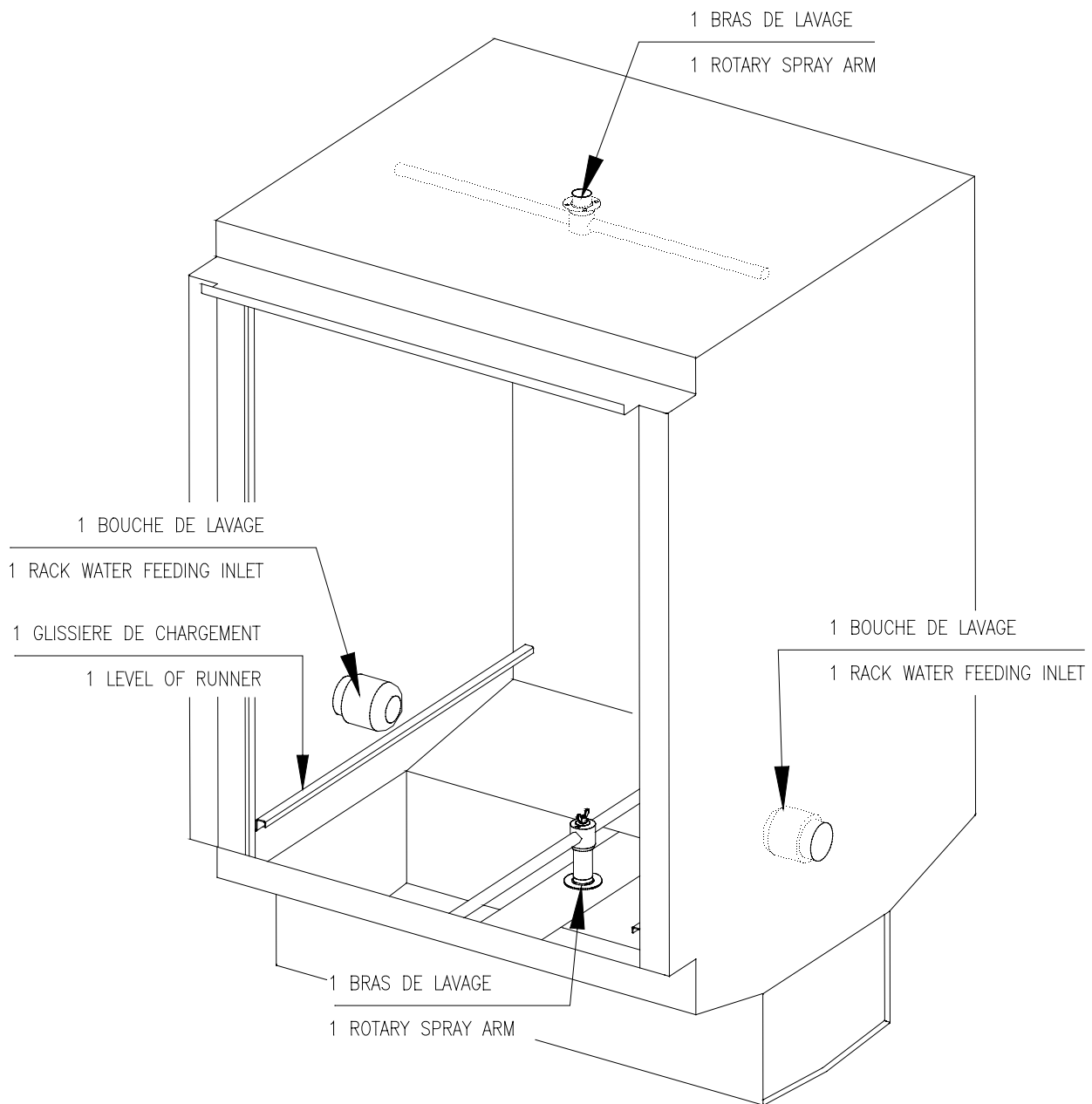


• APPENDIX 2: CHAMBER – 1600 TI DP / TI DPSS

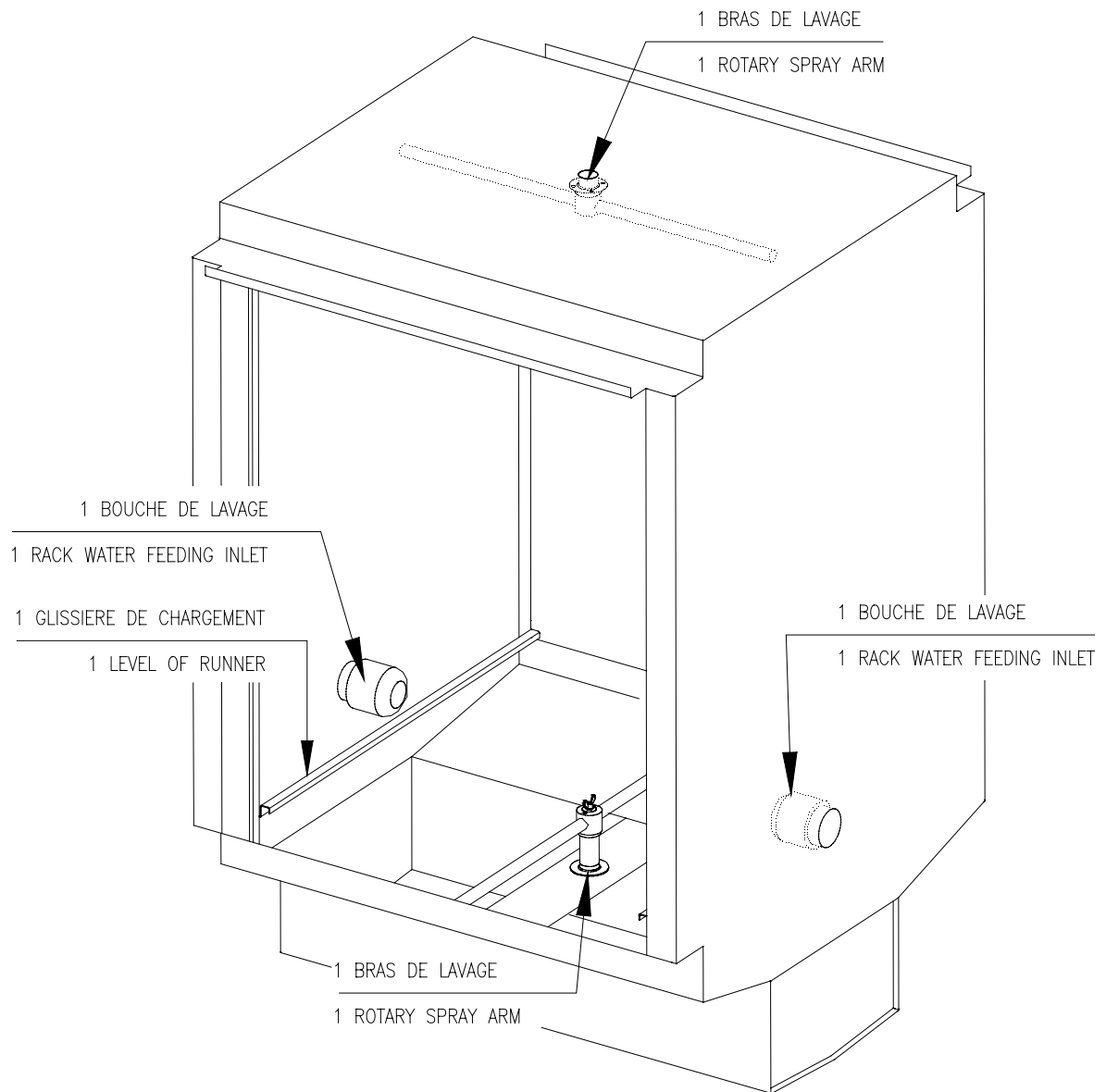




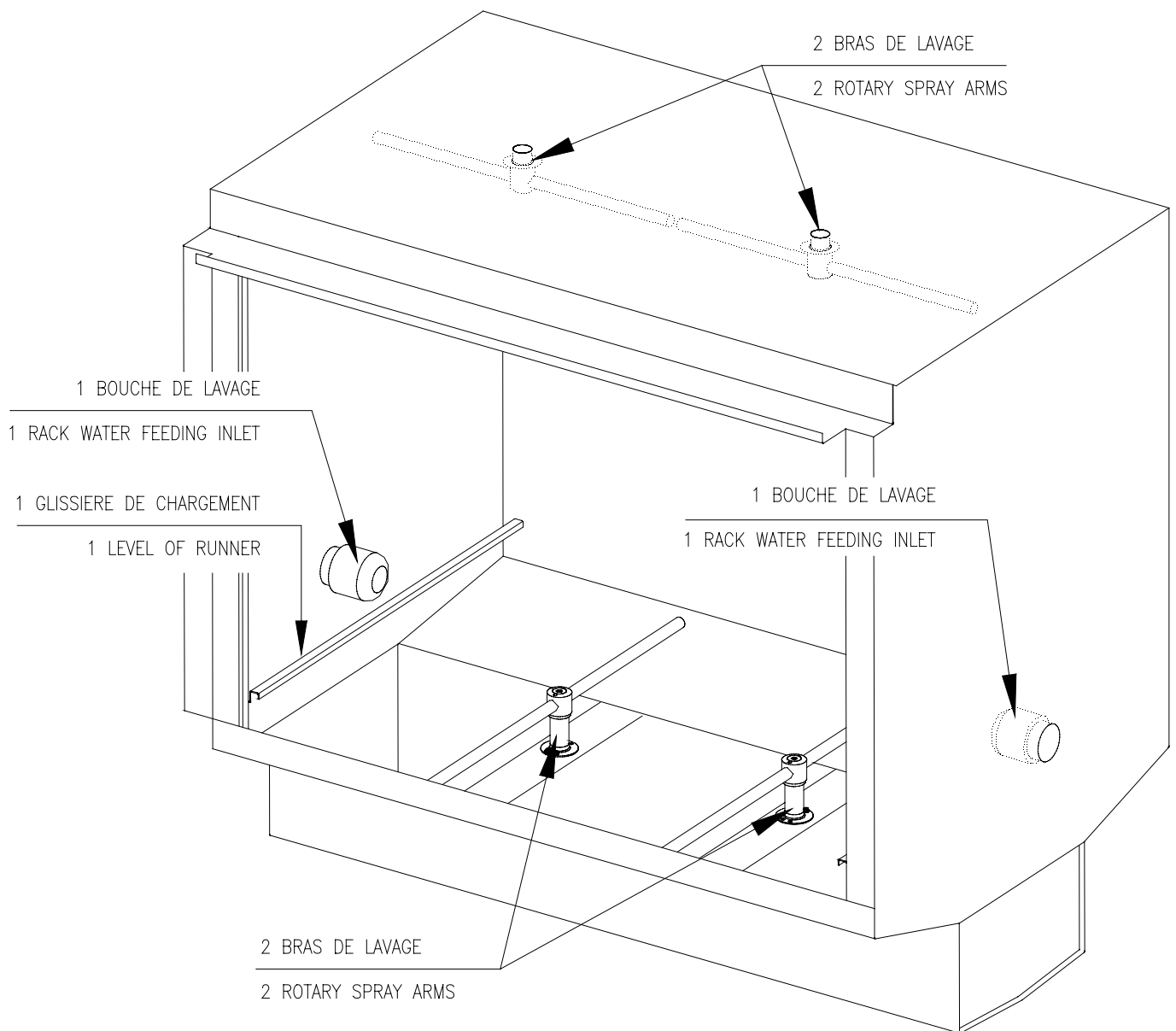
• APPENDIX 2: CHAMBER – 4500 TI / TI SS



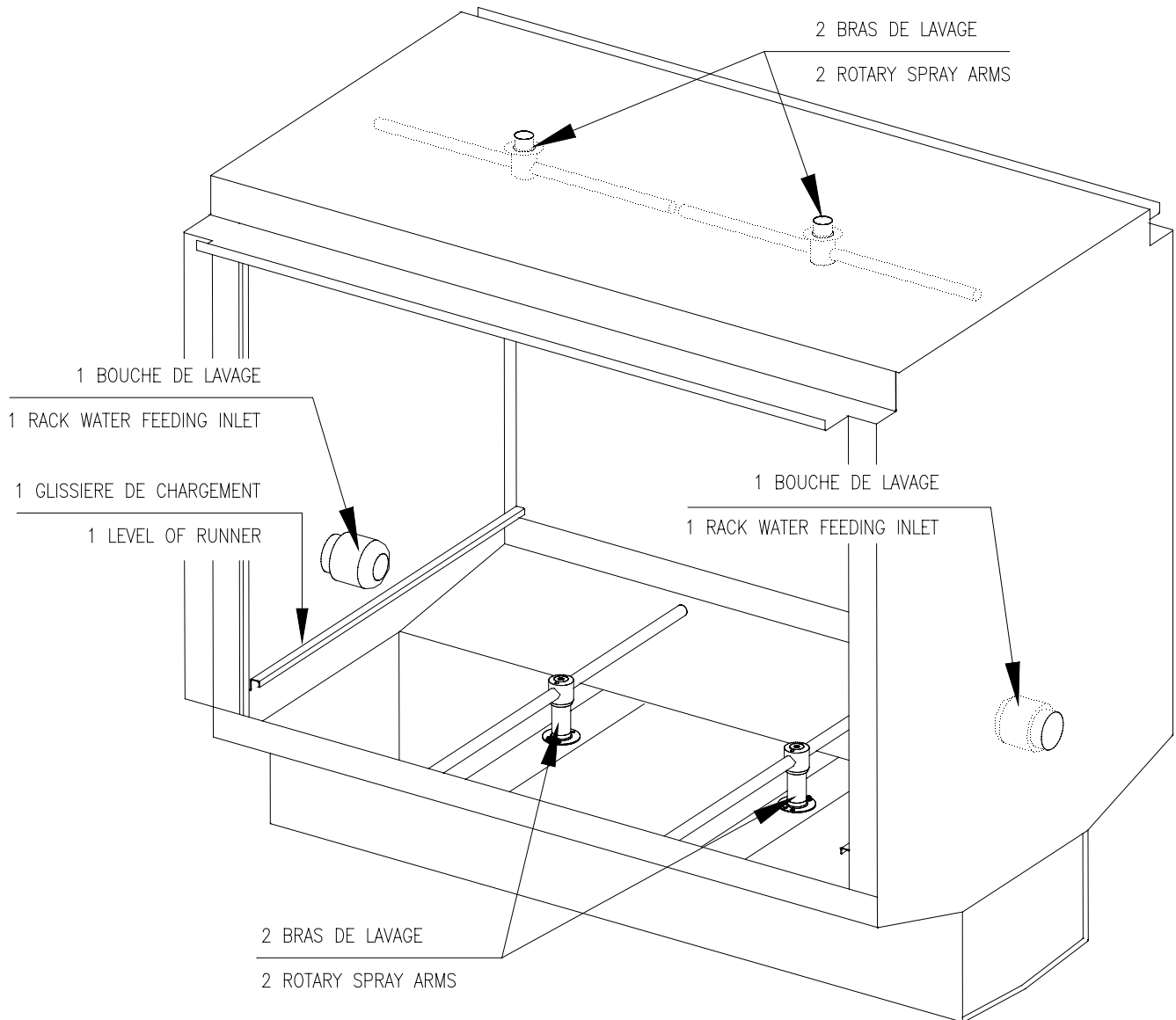
• **APPENDIX 2: CHAMBER – 4500 TI DP / TI DPSS**



• **APPENDIX 2: CHAMBER – 4800 TI / TI SS**



• **APPENDIX 2: CHAMBER – 4800 TI DP / TI DPSS**



## • APPENDIX 3: UTILITIES

### 1400 & 1600

Utilities	Characteristics	Connections	Consumptions			
			1400 TI	1400 TI SS	1600 TI	1600 TI SS
Water (1)	pressure : 2 to 6 bar flow : 20 to 100l/min	Threaded 20/27	20L	20L	25L	25L
Compressed air	pressure : 6 to 8 bar Filtration : 5μ	Threaded 20/27	70L	80L	70L	80L
Steam	pressure : 2 to 6 bar	Threaded 15/21	35kg	35kg	40kg	40kg
Electricity	Voltage : 400tri+N ou 230tri 50Hz	Bare cable	11kW*	16kW*	11kW*	16kW*
			14,5kW**	16kW**	21kW**	21kW**
Drying air	Athmospheric	tube Ø 76	200m3/h	250m3/h	200m3/h	250m3/h
Drain	By gravity	tube Ø 48	50L/min	50l/min	80l/min	80l/min

### 4500 & 4800

Utilities	Characteristics	Raccordements	Consumptions			
			4500 TI	4500 TISS	4800 TI	4800 TISS
Water (1)	pressure : 2 to 6 bar flow : 20 to 100l/min	Threaded 20/27	100L	100L	125L	125L
Compressed air	pressure : 6 to 8 bar Filtration : 5μ	Threaded 20/27	70L	90L	70L	90L
Steam	pressure : 2 to 6 bar	Threaded 20/27	70kg	70kg	70kg	70kg
Electricity	Voltage : 400tri+N ou 230tri 50Hz	Bare cable	6kW*	17,5kW*	6kW*	17,5kW*
			30kW**	30kW**	30kW**	30kW**
Drying air	Athmospheric	tube Ø 76	/	200m3/h	/	200m3/h
Drain	By gravity	tube Ø 48	80L/min	80L/min	80L/min	80L/min

(1) : for each filling phase

\* total consumption for a steam heating washer

\*\* total consumption for an electrical heating washer

## • APPENDIX 4: VAPOUR EXTRACTION

### Principle :

A continuous extraction is not recommended because it increases the water heating time by sucking calories into the chamber.

Two configurations are advised :

- **Double speed extractor (to be provided by customer)**

The extractor in high speed sucks the vapours during the drying. The extractor in low speed during the other cycle phases does not suck calories into the chamber and does not increase the water heating duration.

As an option (**option 90010084**), the washer control system closes a relay during the drying phase to switch the extractor in high speed mode (extractor piloting to be provided by customer).

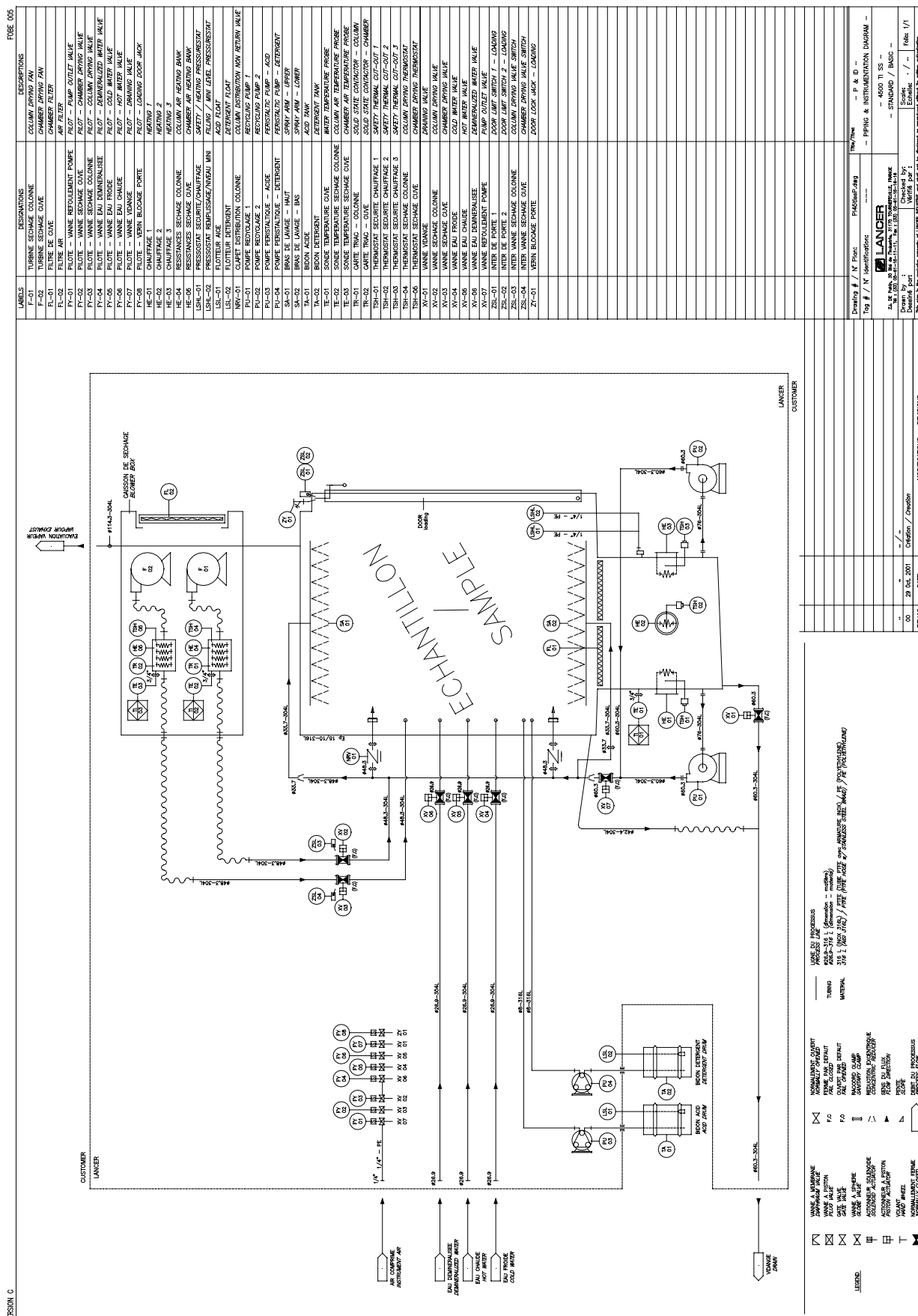
In order to avoid any condensation back flow on the top of the washer, a drain system on the line is recommended.

- **Single speed extractor and hood (to be provided by customer)**

A hood located above the chimney washer sucks the vapours during the drying. The hood being not directly connected to the chamber, there is no heating loss and a single speed extractor can be used.

In order to avoid any condensation back flow on the top of the washer, a drain system on the hood is recommended.

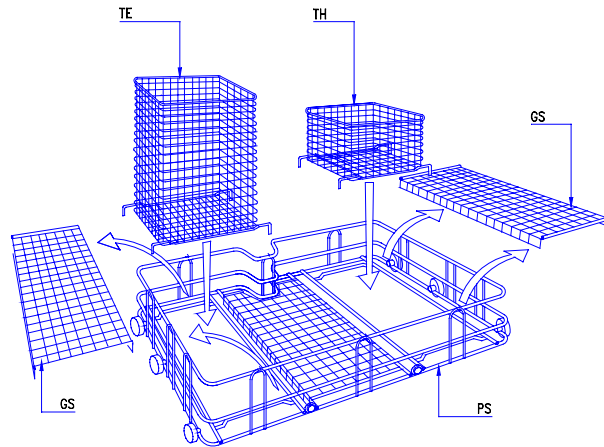
## APPENDIX 5: PIPING & AND INSTRUMENT DIAGRAM (P&ID)



## • APPENDIX 6: BASKETS AND ACCESSORIES

### BASKET "PST" AND ACCESSORIES

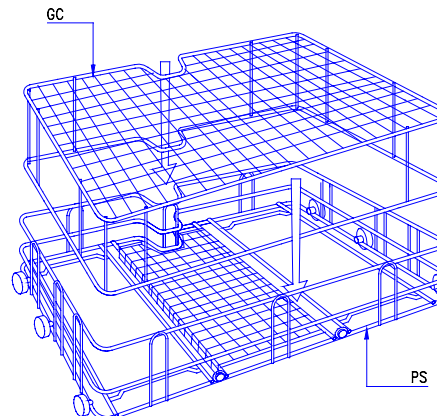
In order to wash items in "ST" or "LT" type baskets, place the baskets on the "PST" (basic rack) or "PSBT" (basic rack with spray arm) after removing one or more "GS" (support grilles). Check that the basket is correctly fitted on the rods of the rack designed for that purpose. Reinstall the grilles for any washing operation that does not require the use of "ST" or "LT" type baskets.



**Remark :** The "PST" should only be positioned at the bottom level of the washer chamber where washing action is provided by the lower spray arm. The "PSBT" can be positioned on any level.

### BASKET "PS" AND ACCESSORIES

It is extremely important that the items to be washed are prevented from moving in order to obtain correct cleaning and to avoid breakage of fragile items. Items that can be easily moved or knocked over when loaded on the "PST" or "PSBT" rack should be secured in place. The "GC" hold down screen should be used for "PST" or "PSBT" racks. The "GCI" hold down screen should be used for injector racks.

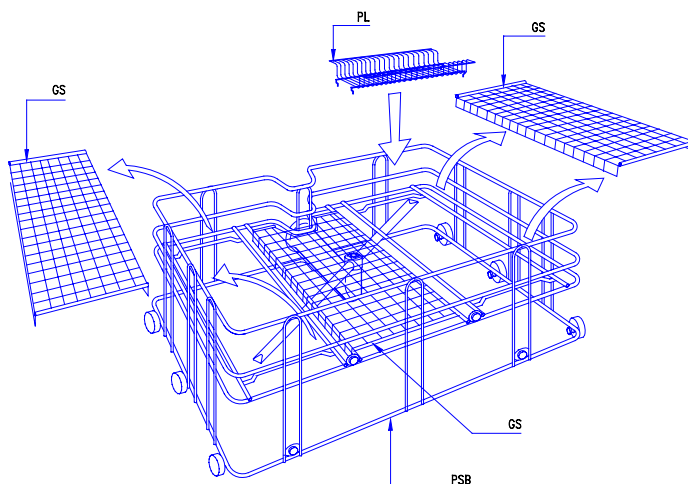


**Remark :** The "PST" should only be positioned at the bottom level of the washer chamber where washing action is provided by the lower spray arm. The "PSBT" can be positioned on any level.



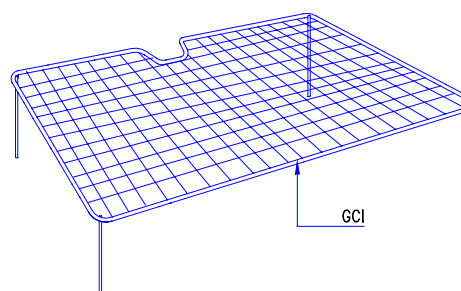
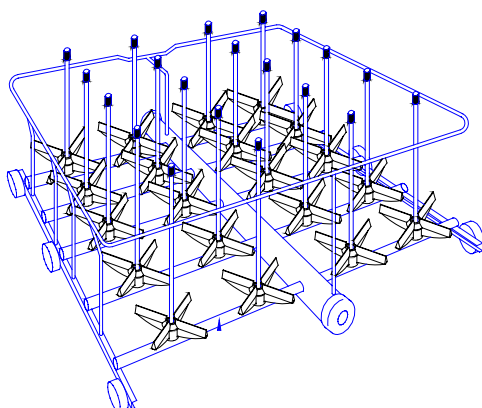
## BASKET "PSBT" AND ACCESSORIES

In order to wash items on a "PL" type basket (for cleaning slides), place the baskets on the "PST" (basic rack) or "PSBT" (basic rack with spray arm) after removing one or more "GS" (support grilles). Check that the basket is correctly fitted on the rods of the rack designed for that purpose. Reinstall the grilles for any washing operation that does not require the use of "PL" type baskets.



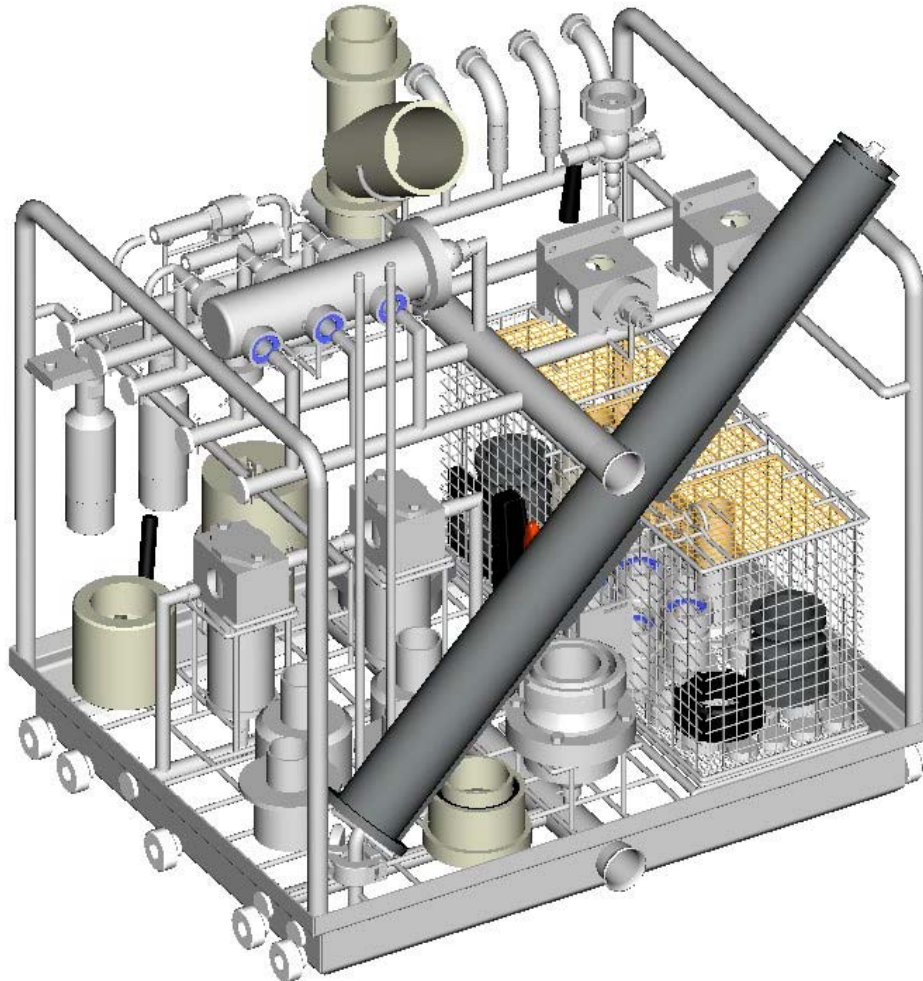
**Remark :** The "PST" should only be positioned at the bottom level of the washer chamber where washing action is provided by the lower spray arm. The "PSBT" can be positioned on any level.

## JET RACK AND ACCESSORIES



In the case of washing items with small diameter openings such as volumetric flasks, it is very important that the flow rate of the injectors used must be lower than the flow capacity of the flasks to be washed in order to avoid a gradual filling of the flasks during the washing cycle. If the diameter of the opening is too small to allow the water to escape from around the injector the mechanical action of the injector can be absorbed by the water contained in the glassware giving poor cleaning results. It is imperative to use baskets with injectors of proper diameter and, above all, to secure lightweight items with a "GCI" hold down screen.

## CUSTOM RACK



- **APPENDIX 7: IQ/OQ PROTOCOL (option)**

**F.A.T FOR TI RANGE :**  
**ITES042&-Summary**

LIST OF TESTS PERFORMED AT FACTORY (F.A.T) IN THE IQ/OQ PROTOCOL ITES042& :

TEST BENCH PARAMETERS :

- To check the parameters of the tests (water pressure, voltage ...).

DIMENSIONS CHECKING :

- To check the external and internal dimensions in comparison with the installation drawings.

SENSORS CALIBRATION :

- To check the calibration of temperature probes, of pressure transmitters and flowmeters.

PUMP AND TURBINES ROTATING WAYS :

- To check the functioning of the recycling pump and the drying turbines.

DOSING PUMPS CHECKING :

- To check the functioning of the dosing pumps and to measure their flow rate.

OUTPUT TEST :

- To check the outputs of the main electronic board.

DOOR SWITCH / DOOR LOCKING :

- To check the functioning of the door switch and of the door locking device.

HEATING TEST :

- To check the functioning of the heating.

EMPTYING TEST :

- To check the functioning of the emptying.

MAIN BOARD ALARMS :

- To simulate faults and check all the alarms from the main electronic board.

NORMAL CYCLE:

- To perform a cycle where all the parameters have a different value in order to check a complete cycle.

Note : When there is a Validation Monitor, another protocol is added. It is the ITES009& document where all the Validation Monitor alarms are tested.

- **APPENDIX 8: LOOP PILOTING (option pilot ppi)**

- **Loop valve piloting by compressed air (option 90010122)**

The washer control system opens the washer inlet valve and in the same time opens pneumatically the loop valve

- **Loop valve piloting by relay (option 90010084)**

The washer control system opens the washer inlet valve and in the same time closes a relay. The closing of this relay is taken into account by the PCL controlling the loop. The PLC opens then the loop valve.

If loop is not available, the loop PLC does not open the loop valve. A temporisation allows to wait the opening authorisation. Should the waiting be too long, a filling fault alarm occurs.

## • APPENDIX 9: SUMMARY FOR STANDARDS & OPTIONS

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Chamber elevation +250mm	Option (consult Lancer)	5
Hydraulic circuit in 304L stainless steel (recirculation pump & piping)	Standard	11
Hydraulic circuit in 304L stainless steel (recirculation pump & piping) 1400TI/TISS	Option 90010118	11
Hydraulic circuit in 304L stainless steel (recirculation pump & piping) 1600TI/TISS	Option 90010119	11
Hydraulic circuit in 304L stainless steel (recirculation pump & piping) 4500TI/TISS	Option 90010120	11
Hydraulic circuit in 304L stainless steel (recirculation pump & piping) 4800TI/TISS	Option 90010121	11
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Draining by lifting pump 4500/4800 TI	Option 90010124	9
Drain cooling 1400/1600 TI	Option 01060133	9
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